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DEVOTED TO THE SCIENCE AND ADVANCEMENT OF AMATEUR RADIO

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In this Issue

RADIO SOCIETY OF GREAT BRITAIN
NATIONAL CONVENTION—BRISTOL 1954
Programme of Events

HERE is the full programme of events for Convention. An application form for tickets was enclosed in the July issue. In order to give the Convention Committee as much time as possible to complete their many arrangements, members are requested, as a matter of urgency, to complete and return their form, together with the necessary, remittance, to the Honorary Secretary, Convention Committee, without delay.

Friday, September 17th

10.00 a.m. *Amateur Radio Exhibition opens.

1.45 p.m. Visit to the Bristol Aeroplane Company, Ltd., Aircraft Division, Filton. (Accommodation for 30—duration 2½ hours.)

2.15 p.m. Visit to W. D. & H. O. Wills' Tobacco Factory, Bedminster. (Accommodation for 30—duration 2½ hours.)

2.50 p.m. Visit to Council House (City's Historic Relics and Regalia), Corn Street. (1st Party, Accommodation for 25—duration 2 hours)

3.00 p.m. Visit to B.E.A. Control Room, Clifton. (Accommodation for 40—duration 1½ hours)

3.00 p.m. Visit to B.B.C. West of England Studios, Control Room and Recording Department, Clifton. (Accommodation for 12—duration 2 hours)

3.20 p.m. Visit to Council House, Corn Street. (2nd Party, Accommodation for 25—duration 2 hours)

3.30-6 p.m. *Informal Tea.

6.30 p.m. *Informal Reception by the President (Arthur O. Milne, Esq., G2MI).

7.00 p.m. *CONVERSAZIONE & BUFFET.

8.30 p.m. *Film Show and Demonstration of Large-screen Television, including TV Camera Equipment.

10.30 p.m. *Amateur Radio Exhibition closes.

Saturday, September 18th

9.45 a.m. Visit to Burden Neurological Institute, Stapleton. (Accommodation for 20—duration 2¼ hours)

10.00 a.m. *Amateur Radio Exhibition opens.

10.30 a.m. *Lecture, "Stereophonic Sound," by A. H. Radford, A.M.I.E.E. (G6YA).

10.30 a.m. Visit to B.B.C. Television Outside Broadcast Unit, Whitchurch (subject to B.B.C. commitments). (Accommodation for 20—duration 2 hours)

10.45 a.m. Visit to G.P.O. Automatic Exchange and Repeater Station, Telephone Avenue. (Accommodation for 20—duration 2¼ hours)

10.45 a.m. Visit to "Bristol Evening Post" Newspaper Offices, Silver Street. (Accommodation for 15—duration 2¼ hours)

11.45 a.m. *Lecture, "Aerials for DX," by F. J. H. Charman, B.E.M. (G6CJ).

2.00 p.m. Visit to B.E.A. Generating Station, Portishead. (Accommodation for 30—duration 3 hours)

2.00 p.m. Visit to G.P.O. Radio Station, Portishead. (Accommodation for 30—duration 3 hours)

2.00 p.m. Visit to Blaise Castle and Grounds. (Duration 2¾ hours)

2.00 p.m. Visit to Cheddar Gorge, via Burrington Combe and the Mendips, with optional visit to Caves. (Duration 3¼ hours)

2.30 p.m. *Lecture "TVI Problems" by Louis Varney, A.M.I.E.E. (G5RV).

2.45 p.m. Visit to Council House, Corn Street. (1st Party, Accommodation for 25—duration 2 hours)

3.00 p.m. Visit to B.E.A. Control Room, Clifton. (Accommodation for 40—duration 1½ hours)

3.05 p.m. Visit to Council House, Corn Street. (2nd Party, Accommodation for 25—duration 2 hours)

3.45 p.m. *Lecture, "Recording and Interpretation of Brain Potentials," by Dr. W. Grey Walter, M.A.

5.45 p.m. OFFICIAL RECEPTION BY THE PRESIDENT at Victoria Rooms.

6.45 p.m. CONVENTION DINNER at Victoria Rooms. (8 p.m., Toasts, 9 p.m., Interval, 9.30 p.m., Draw for Free Prizes).

8.00 p.m. *Amateur Radio Exhibition closes.

Sunday, September 19th

9.30 a.m. *Amateur Radio Exhibition opens.

10.00 a.m. Visits to Electron Microscope at Royal Fort, Bristol University, commence. (Duration 1 hour)

10.00 a.m. Conducted Tour of Bristol by coach. (Duration 2 hours)

11.00 a.m. Morning Service at St. Mary Redcliff Church.

12.30 p.m. *Amateur Radio Exhibition closes.

2.30 p.m. Visit to Bristol Zoological Gardens (Tea may be obtained at the Restaurant in the Gardens if required).

Events marked thus * take place at the Royal West of England Academy, Queen's Road, Clifton, Bristol, 8.

Members attending the Convention are requested to Register at the Reception Desk in the Royal West of England Academy on arrival.

CURRENT COMMENT

National Radio Show and "The Guide"

IN addition to running its own Exhibition in November, the Society will this year, for the first time since 1938, be represented at the National Radio Show. When that Show opens at Earls Court on August 24 the R.S.G.B. stand—No. 209 in the Gallery—will become a rendezvous for all who are interested in Amateur Radio.

"Amateur Radio through the Years" is to be the main theme, with special prominence given to the recently introduced Radio Amateur Emergency Network.

The space made available to the Society, thanks to the generosity of the Radio Industry Council (whose Director is Vice-Admiral J. W. S. Dorling), is commensurate with the growth of the Society.

Those of us who were members prior to the war will recall, with a sense of nostalgia, those hectic days—and nights—at Radiolympia when all and sundry, suffering from a surfeit of "furniture gazing" on the ground floor, found welcome relief on the Society's stand in the gallery.

Thinking of pre-war Radio Shows takes our mind back to "*A Guide to Amateur Radio.*"

It is now 21 years since a small but devoted group of members sat round a table in the Society's pre-war Headquarters at 53 Victoria Street and planned the first edition of that wonderful little publication. "The Guide" appeared for the first time on the Society's stand at the 1933 Exhibition; within the compass of four more years it had "grown" to a 164-page publication, selling at 6d. a copy! The success of that publication encouraged the Council "to take the chance" and produce a full-size handbook. The first edition of *The Amateur Radio Handbook* (a 5,000 printing) made its debut at the 1938 Exhibition. It sold well, so well, in fact, that in preparation for the 1939 Exhibition a reprinting of 3,000 copies was ordered. It was fate that the first batch of the new printing should come to hand on Saturday, September 2, 1939. On the following day Neville Chamberlain declared war on Germany! The future looked grim, yet there were some among us who felt sure that before long there would be a great demand for technical literature. So, with patience, Headquarters staff—now reduced to two—set about the task of "selling" those 3,000 copies to the Services and to bookshops. It is history now that before the war ended more than 180,000 copies had been sold, to say nothing of 115,000 copies of the Handbook Supplement.

Ever since the war, succeeding Councils have given careful consideration to the question of producing a new edition of the Handbook, but many factors, in addition to high production costs, have been against such a project.

On the Society's stand at Earls Court this year the Sixth Edition of "The Guide" will make its bow. Is it too much to hope that this new edition will pave the way, as did earlier editions, to the preparation of a new Handbook? We believe that it will.

See you on Stand 209.—A.O.M.

Dotted-line Deadline

AN Amateur Radio National Convention is by no means an everyday event, nor in fact an every-year one. Indeed, the last, excluding the special celebration of the Festival Year of 1951, was held as long ago as 1949 in Manchester.

No one could say, then, that Conventions come too often. On the contrary, the famous Shakespearean remark to the effect that "when they seldom come they wished for come" might serve as a suitable motto for them, if translated into the Latin of heraldry and used on a symbol appropriate to the event (perhaps a diamond).

Five years is a long time in the development of Amateur Radio, and the five years that have elapsed between the Manchester and the Bristol events have witnessed a great deal of progress in very many fields. Amateur Television, the practical application of transistors and the further exploration of the v.h.f.s are but three of the branches of our hobby that have shown major developments, quite apart from the natural improvements in equipment and technique that must go on all the time if the art is not to stagnate. All of these things looked very different in 1949 from the way they do now, and all of them, we may be quite sure, will receive plenty of discussion at Bristol next month.

Another interesting reflection that may be made upon Convention, 1954, is that to a large section of the Society's membership it will be the very first of its kind. In those preceding five years hundreds of people have become Amateur Radio enthusiasts, and have joined the Society. This large national assemblage of their own kindred spirits will be something which, at Bristol, many of them will be experiencing for the first time.

Probably by now most members who intend to be at Bristol have completed the application form that went out with the July BULLETIN and sent it in. Any who have still to do so are reminded that the deadline for signing on that dotted line is fast approaching, and will be but a fortnight ahead by the time these words appear.

Then, little more than a fortnight after that it will be—SEE YOU IN BRISTOL!

* * *

Rescue Work

WHEN a road accident happens no one troubles to think to himself: "Am I a member of the A.A. or R.A.C.?" before he goes to the rescue. Ordinary humanitarian instincts impel the individual to offer whatever succour he can, irrespective of any affiliations he may or may not have.

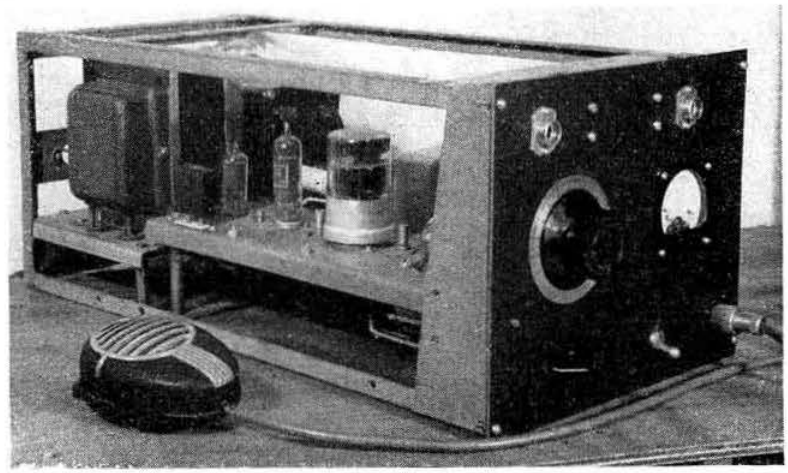
That is how it is with the Radio Amateur Emergency Network. Any British radio amateur may belong to it whether he is a member of the National Society or not.

In practical cases it may well happen that with many an R.A.E.N. unit most, if not indeed all, of the members are R.S.G.B. members as well. The unit may turn out to be a

(Continued on page 64)

Compact Two Metre Phone Transmitter

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



THE range of the transmitter to be described depends almost entirely on the aerial system and prevailing conditions. No TVI has been caused during the many months it has been in use, despite the fact that a television aerial is located on the "wrong" side of the transmitter from Alexandra Palace.

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

The R.F. Stages

The efficiency of the r.f. stages (Fig. 1) is reasonably good and each operates well below its maximum rating. Adequate drive is obtainable without difficulty.

The crystal oscillator-multiplier stage (V1) is similar to that used in the SCR522 transmitter, the valve being a miniature audio output type N77. The stage employs an 8 Mc/s crystal, with output on 24 Mc/s. The second multiplier stage (V2)—using an N78—acts as a tripler to 72 Mc/s.

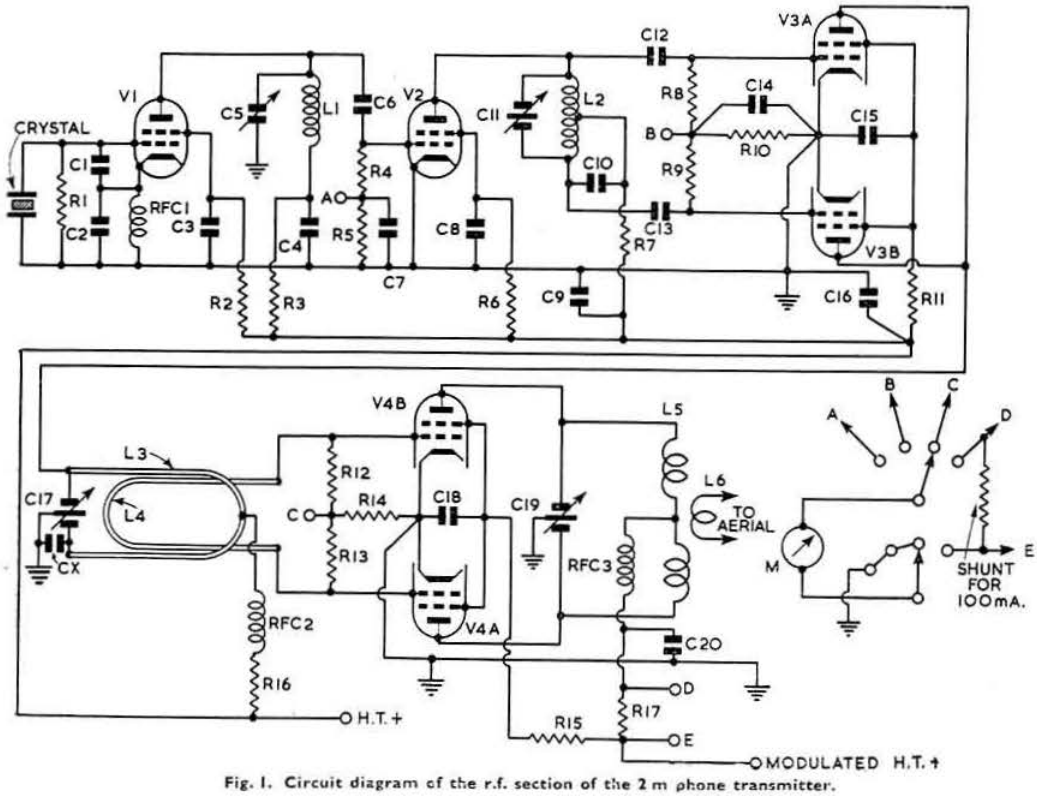


Fig. 1. Circuit diagram of the r.f. section of the 2 m phone transmitter.

Although it was originally designed as a high sensitivity audio output valve, the N78 has been found to be most effective for low power multiplier service. It requires very little drive for considerable output at frequencies up to about 100 Mc/s.

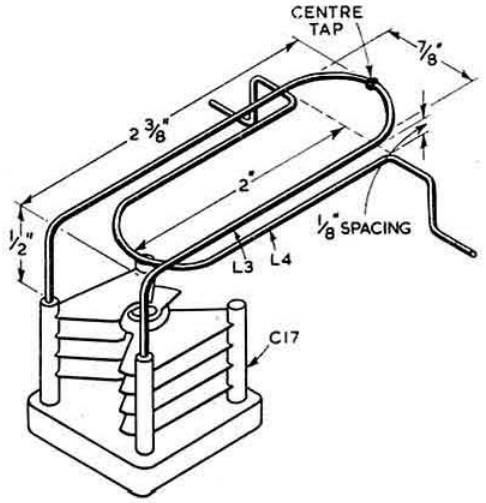


Fig. 2. Arrargement of the anode circuit of the doubler and the grid coil of the p.a.

The tank circuit of this stage is balanced in order to drive V3, the push-push doubler to 144 Mc/s. The use of a TT15 in this stage may be regarded as unnecessarily elaborate and undoubtedly a QQV04/7 could be used provided there was no intention to use a larger output valve than the 832. The writer decided, however, to make provision for the employment of a larger valve. The actual drive to the p.a. stage is determined by the value of the screen resistor to the TT15. A variable resistor could be used as an adjustable drive control if considered necessary.

After much experiment it was found that inductive coupling from the doubler anode circuit to the grid of the p.a. stage gave the greatest drive. This form of coupling has the added advantage that it is easy to construct (Fig. 2). The grid circuit of the final amplifier consists of a hairpin loop similar to that used in the anode circuit of the doubler stage. Although untuned, p.a. grid current of between 2 and 6 mA is obtainable when doubler screen resistors of between 160,000 and 50,000 ohms are used.

The p.a. stage employs an 832 valve which has been found to be quite stable without neutralisation, due no doubt to the isolation provided by the chassis and the Johnson valveholder screening ring. No feedback has occurred between the anode of the 832 and the anode of the TT15. The p.a. tank circuit consists of a small butterfly variable condenser and a p.a. coil from an SCR522. (If a coil of this type is not available one can be made to the dimensions shown in Fig. 3.) The efficiency of this stage is relatively high. No doubt a linear circuit would produce greater efficiency but the increase in physical size which would become necessary did not appear to be justified.

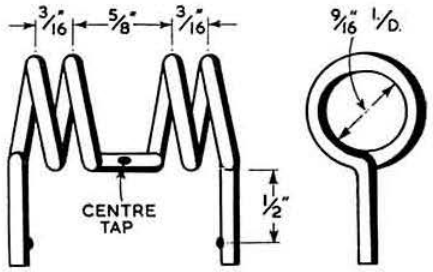


Fig. 3. Construction of the p.a. tank coil.

The grid currents of V2, V3 and V4 and the anode current of V4 are read on a 0–5 mA meter used in a simple switching circuit and in conjunction with a 6-position switch. A suitable shunt is brought into circuit when reading V4 anode current. The switch used was also taken from an old SCR522: the contact spacing of 60° is an advantage when switching a meter into h.t. and grid circuits. If desired, the two unused positions can be arranged to read modulator current and total current. Alternatively one of the unused positions could be arranged to read the diode current of a germanium diode r.f. monitor. With an h.t. voltage of 275, grid currents should be approximately as follows: V2—0.8 mA; V3—1.2 mA; and V4—2.2 mA. The anode current to V4 is 56 mA giving an input of about 15 watts.

Speech Amplifier and Modulator

The speech amplifier (Fig. 4) consists of a B309 (12AT7), the first section of which (V1A) is used as an earthed grid amplifier resistance capacity coupled to the second section V1B. A carbon microphone is connected in series with the cathodes of both sections, a cathode current of 15 mA being sufficient to activate the microphone. The speech quality at this low value of current is much better than that obtained by the battery method where the higher current can cause

Components List for Fig. 1

C1	30μμF, ceramic	L1	15 turns, 16 s.w.g., spaced diameter of wire, 7/16in. i.d.
C2	40μμF ceramic	L2	7 turns, 16 s.w.g., centre tapped, spaced diameter of wire, 7/16in. i.d.
C3, 4, 9	0.001μF, mica	L3	hairpin of ¼in. silver plated copper wire (see Fig. 2)
C5	50μμF air trimmer	L4	hairpin of 16 s.w.g. wire (see Fig. 2)
C6	47μμF ceramic	L5	2 turns, centre tapped, ⅜in. silver-plated copper, 9/16in. i.d. (see Fig. 3)
C7, 14	560μμF ceramic	L6	2 turns, 16 s.w.g., ⅛in. i.d.
C8	500μμF, ceramic	M	0–5 mA m.c. meter
C10, CX	10μμF, ceramic	R1, 4, 8, 9	56,000 ohms, ½ watt
C11	Eddystone type 584 (reduced to 4 fixed and 4 moving vanes)	R2	25,000 ohms, ½ watt
C12, 13	15μμF, ceramic	R3	1,000 ohms, ½ watt
C15	820μμF, ceramic	R5, 7, 10, 14	2,200 ohms, ½ watt
C16	0.001μF, mica	R6	100,000 ohms, ½ watt
C17	Eddystone type 739 (1 moving vane removed)	R11	160,000 ohms (two 220,000 ohms, ½ watt in parallel, in series with one 50,000 ohms, ½ watt)
C18	200μμF, ceramic tubular	R12, 13	22,000 ohms, ½ watt
C19	Eddystone type 739	R15	20,000 ohms, 2 watt (two 40,000 ohms, 1 watt, in parallel)
C20	100μμF, ceramic feed through type	R16	330 ohms, ½ watt
		R17	20 ohms, ½ watt
		RFC1	Eddystone type 1010
		RFC2	Ohmite Z–O (ex-SCR522)
		RFC3	Eddystone type 1022
		V1	N77 or EL91
		V2	N78
		V3	TT.15
		V4	832

appreciable loss of quality and background noise. The use of the earthed grid connection for the first section also avoids the necessity of employing a high ratio microphone transformer. It also reduces the risk of hum and feedback. The second section drives the modulator stage through the driver transformer.

The modulator stage is conventional apart from the use of a small stabiliser valve (V4) in series with the h.t. supply to the screens of the push-pull N78s. This arrangement ensures a constant potential difference between the anodes and screens, which results in a high level of audio output and avoids the power wastage of the old low resistance potentiometer method. The driver and modulation transformers were both obtained from the SCR522. The modulation transformer was designed to match 10,000 ohms impedance, the optimum load for push-pull N78s. The gain control is not brought out to a panel control because once the level has been set no further adjustment is necessary.

Reports on the quality, hum level and depth of modulation have been complimentary and it is doubtful if the additional amplifiers necessary for use with a crystal microphone would be justifiable.

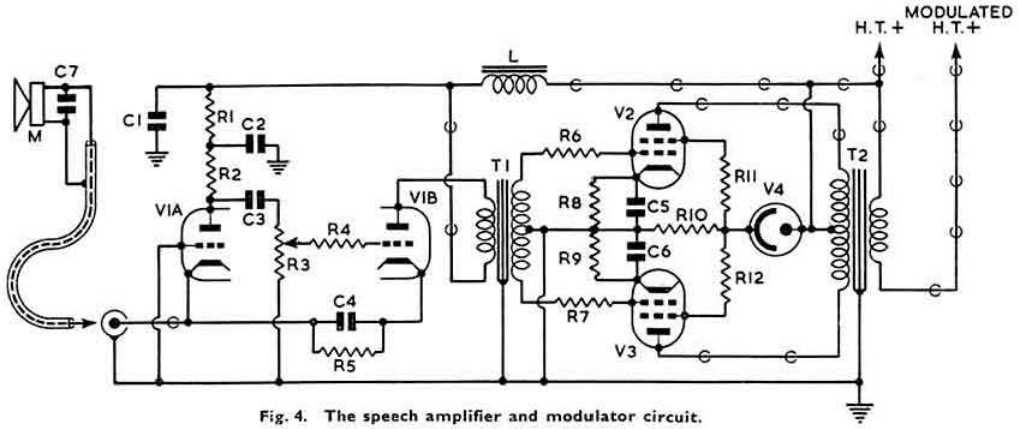


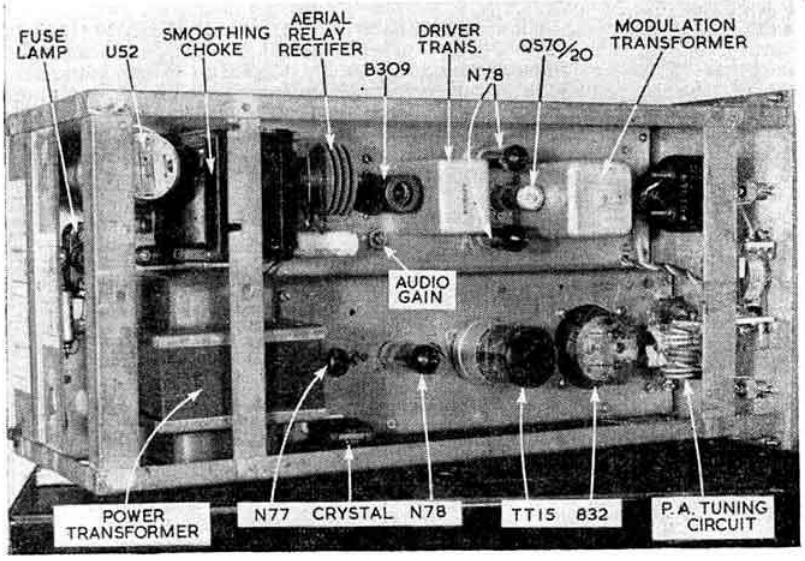
Fig. 4. The speech amplifier and modulator circuit.

C1, 2	4μF, 350V, T.C.C.	R1	27,000 ohms, ½ watt	T1	Driver transformer (ex-SCR522)
C3	560μμF, ceramic, Erie	R2	10,000 ohms, ½ watt	T2	Modulation transformer (ex-SCR522)
C4	25μF, 10V, T.C.C.	R3	500,000 ohms potentiometer	V1	B309, Osram
C5, 6	10μF, 25V, T.C.C.	R4	50,000 ohms, ½ watt	V2, 3	N78, Osram
C7	1,000μμF, ceramic, Erie	R5	500 ohms, ½ watt	V4	QS70/20, Marconi
L	5 to 10H midget choke	R6, 7	4,700 ohms, ½ watt		
		R8, 9	330 ohms, ½ watt		
		R10	40,000 ohms, ½ watt		
		R11, 12	150 ohms, ½ watt		

As can be seen from the circuit of the power supply, the main smoothing is very elementary and additional smoothing is therefore incorporated in the supply line to the speech amplifier.

Power Supply

A single power transformer with four secondary windings is used in the power supply (Fig. 5). The two 6.3V windings



The layout of the main components can be clearly seen in this view of the 2 m transmitter. The aerial changeover relay is mounted on the front panel.

are wired so that 12.6V is available to feed the full wave rectifier used to supply the aerial relay, which also switches the h.t. supply. The r.f. and audio circuits use separate heater supplies as a contribution to general stability.

A fuse lamp is wired in series with the h.t. secondary centre tap to guard against accidental damage. This simple method of protection has been in use at G6JP for many years and is well worthwhile. It is recommended as standard practice. The lamp can also be arranged to indicate when the h.t. supply is on.

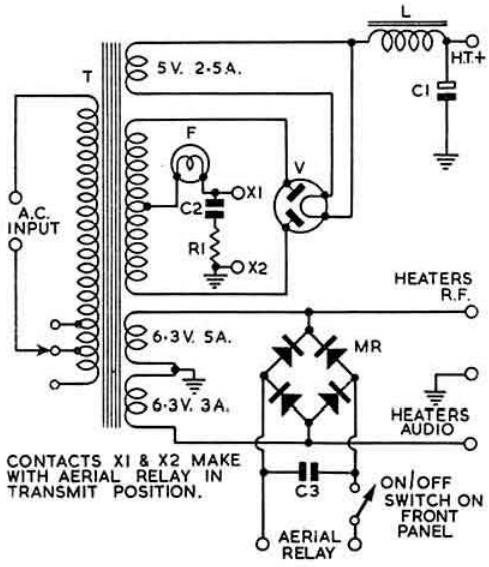


Fig. 5. The power supply circuit.

C1, 32μF, 500V, T.C.C.; C2, 0.05μF, 500V; C3, 25μF, 25V, T.C.C.; F, fuse lamp, 2.5V, 0.3A, Osram; L, 5H, 150mA, Ferranti; MR, bridge type metal rectifier, S.T. & C.; R1, 40 ohms, ½ watt; T, 350-0-350V, 150mA, 5V, 3A, 6.3V, 5A, 6.3V, 3A; V, U52.

Construction

The complete transmitter was built into a surplus c.r.t. indicator unit type 10T/500 case which measures 7½in. high × 8in. wide × 18in. long. Although the front panel is small this is no disadvantage as there are only a few controls. The unit is divided into three smaller units to facilitate construction and servicing. Very little screening was found necessary other than that provided by the usual valve can and the screening cases of the transformers. The general layout can be seen in the accompanying photograph.

Screened wire is used throughout except for leads carrying r.f. voltages.

Type 68 Set for R.A.E.N. Use

BY W. J. RIDLEY (G2AJF)*

THE type 68 is an infantry pack set comprising a carrying case divided into three compartments.† A 4-valve superhet receiver, with a feedback arrangement on the second detector for c.w. reception, is in the upper compartment with the transmitter, consisting of an e.c.o./p.a. (with provision for crystal control), immediately below it. The batteries are housed in the bottom compartment. The frequency range is 3 to 5.3 Mc/s. A netting switch is provided and a micro-ammeter may be switched to read (a) current consumption, (b) transmitter l.t. volts, (c) receiver l.t. volts, (d) h.t. volts, and (e) aerial current.

The transmitter can be operated on phone or c.w. When on phone, a carbon microphone with a "press-to-talk" switch gives automatic changeover from "receive" to "transmit"—interrupting the l.t. supply to the receiver or transmitter as required.

The battery used with this set is believed to be the same as that used with the type 18 which is similar to the type 68 except in frequency coverage. A 120V h.t. battery, 3V l.t. and 9V grid bias battery have been used externally during tests.

Performance

Two sets were used in the Chelmsford area in conjunction with the R.A.E.N. group. G3GNQ used a 120V h.t. battery. 3V l.t. and 9V grid bias at a location 250ft. a.s.l. The input was 1.5–2 watts and the aerial a 9ft. whip. G2AJF, also 250ft. a.s.l., used a 230-volt rotary transformer, 3V l.t. and 4½V grid bias. The input was 3–4 watts and the aerial a 13ft. whip.

The maximum effective ranges with various aerials were as follows:—

Type 68 set (whip) to type 68 set (whip): Telegraphy, 10–14 miles; Telephony, 4–5 miles.

Type 68 set (whip) to type 68 set (130ft. long wire): Telegraphy, 20–? miles; Telephony, 8–9 miles.

Type 68 set (long wire) to type 68 set (long wire): Telegraphy, 20–? miles; Telephony, 20–? miles.

In these tests, minimum signal reports of RST559 or RS56 were considered necessary in determining the maximum effective range.

The set has proved very successful on phone in heavily built-up areas giving RS56 signals over a radius of four miles. During tests it was noticed that certain stations had difficulty in copying signals while others at an equal distance but in different directions reported S8–9 signals. This effect was often present and affected one group of stations only on the fringe of the useful signal area.

The main limitations to the range of the equipment is the QRM on 3.5 Mc/s; if this could be silenced the range would easily be greatly increased.

Acknowledgments

The writer would like to express his appreciation to the following amateurs for their patience in carrying out the tests: G3ABB, G3GNQ, G3HPY and G3HQV.

* *Chairman, R.A.E.N. Committee, "Littlefield," Ford End, Chelmsford, Essex.*

(†Type 68 sets are available from Government surplus dealers from time to time.—ED.)

Council Members "Rotate"

BY sheer coincidence the names of two members of the Council appear on the programme card of the Lowestoft Rotary Club. Neither knew the other was going to speak! On July 14, Dr. A. C. Gee (G2UK) was down to speak on "The British Total Eclipse Expedition," while on September 15, Hon. Editor Jack Hum is due to talk on "Television."

A Small Hi-fi Amplifier

High Quality at Reasonable Cost

By A. H. KOSTER, Dr. Ing. (G3ECA)*

Interest in high-fidelity reproduction—"Hi-Fi" to the ardent quality enthusiast—has increased greatly in recent years. Unfortunately, high fidelity often means high cost but in this article the author describes how excellent reproduction of all types of modern recordings and television sound may be achieved without strain on the bank balance.

FOR many years it has been customary to design high-fidelity amplifiers with a peak output of about 15 watts. There are certainly good reasons for doing so and no doubt some enthusiasts are in the fortunate position to be able to benefit fully from such amplifiers. Most people, however, find themselves restricted through considerations which they owe their neighbours. Furthermore, a good amplifier is only part of the equipment required for high quality reproduction. Often it is the cheapest link in the chain between the record or tuner unit and the room in which reproduction takes place. Unless the remaining equipment is such that the best of amplifiers is necessary in order to do justice to it, their utility is questionable. There are many excellent descriptions of near perfect designs in the 15 watt class and those who feel that they need one will find a formidable literature on the subject(1).

The unit to be described in the present article is not original in any way but it will give a peak output of 6 watts with negligible distortion and has been built with the intention of getting the best from reasonably priced components.

The Circuit

The circuit of the amplifier with its associated television sound receiver is shown in Fig. 1. Switching is provided for other inputs and tone correction devices allow for base boost and top cut. It is quite easy to add top boost and bass reduction if required.

The power requirements are derived from a mains transformer rated at 250–0–250 V, 100 mA. The first stage of smoothing consists of CH1, C33 and C34, being sufficient for the operation of the push-pull output valves V5 and V6. A second stage of smoothing is provided by CH2 and C31 for the h.t. supply to the pre-amplifier V4A, the phase splitter V4B and the television sound receiver. H.T. to the input amplifiers V3A and V3B is smoothed by CH3 and C23. Individual decoupling is achieved by the RC combinations R29, C28, R24, C26 and R13, C16. It is convenient to mount the decoupling resistors on top of the cans of their respective condensers as shown in the photograph.

The output stage consists of two EL32 valves in push-pull. These valves were chosen because, when properly operated, they produce little distortion even without negative feedback, and because their fairly low mutual conductance aids stability and freedom from spurious responses when feedback is applied.

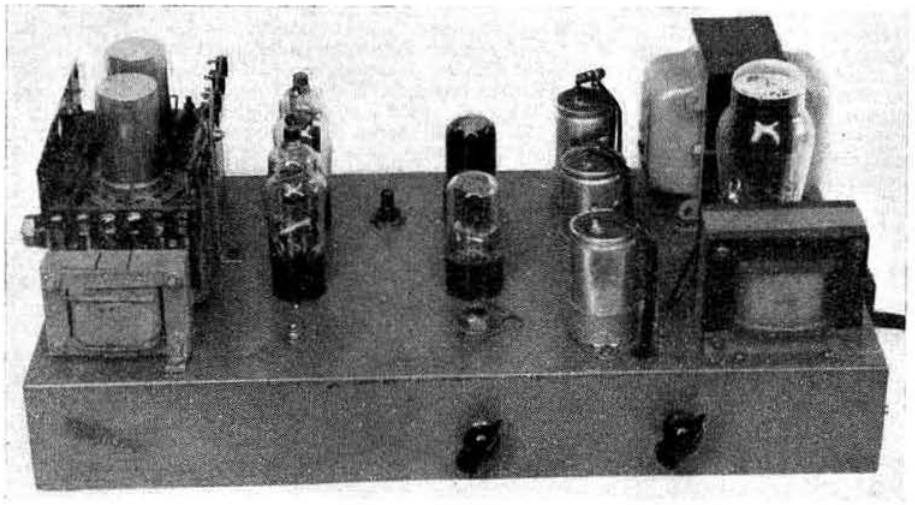
Pentodes and tetrodes owe their popularity to the large outputs they will give for little input but they have some drawbacks which have to be counteracted. These are sensitivity to load changes (in particular to the increase in impedance presented to the valves when the speaker has to reproduce high frequencies) and the high slope resistance which cannot damp the speaker resonance efficiently. This results in a certain amount of harshness in the upper registers and in boominess in the bass which is objectionable to those who enjoy good reproduction. Correct matching of the speaker to the valves and the use of negative feedback will reduce these faults to negligible proportions(2).

Biassing and balancing of the output valves is by a network of resistors. For setting up purposes, the slider on VR3 is first set to a mid-position and VR4 reduced until the total anode current is 54 mA. The slider on VR3 is then adjusted so that the anode current of each valve is 27 mA. The d.c. voltage at the h.t. rail should be 240 to 250 V. The effective grid bias will be about −23 V.

The optimum anode-to-anode load is 8000 ohms, *i.e.*, for a 3-ohm speaker T2 should have a ratio of 52:1. Under these conditions, and before application of any feedback, the total distortion is about 1 per cent at 6 watts output. Negative feedback reduces this to a fraction of 1 per cent. How small the fraction can be made depends on the amount of feedback the circuit will accept without going into oscillation or producing spurious outputs at certain frequencies or amplitudes. This, in turn, depends largely on the quality of the output transformer. If there is money to spare, it should therefore go in buying a good transformer of the 10 watts class.

V4 is a twin triode which serves as a pre-amplifier and phase splitter in a conventional circuit. R26 and R28 should be selected so that R26+R27 equals R28, *i.e.*, approximately 15000 ohms. R22 and C25 serve to reduce the gain at supersonic frequencies and to avoid instability in that region.

*195 *Woodford Avente, Ilford, Essex.*



The television sound receiver is on the left-hand side of the chassis in this picture of the small high-fidelity amplifier.

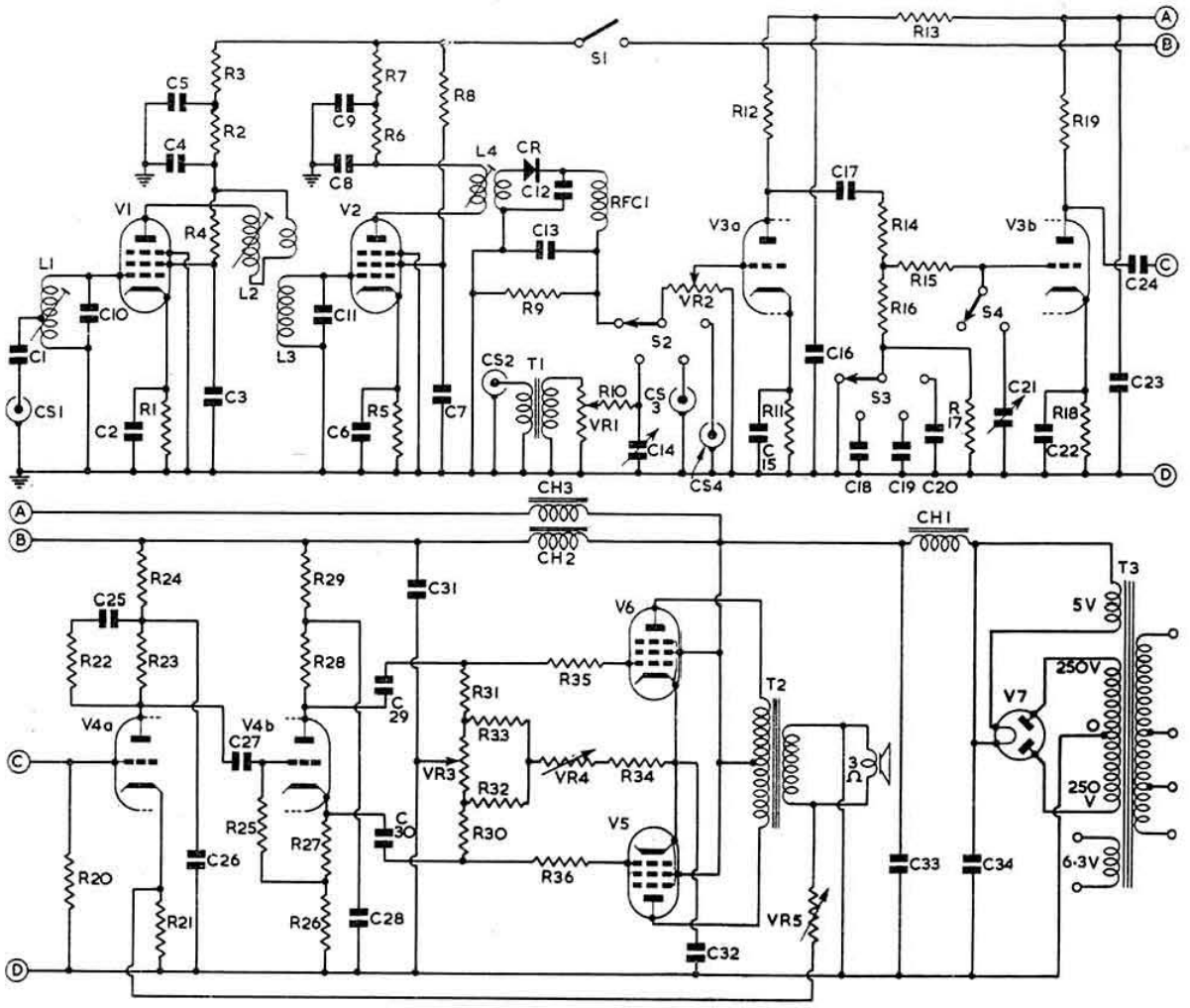


Fig. 1. Circuit diagram of the simple high-fidelity amplifier with its associated television sound receiver.

Components List

C1, C13	50 μμF
C2, C3, C4, C5, C6, C7, C8, C9	0.001 μF
C10	5 μμF
C11, C12	10 μμF
C14	750 μμF (see text)
C15, C22	50 μF 12 V
C16, C23, C26, C28, C31	8 μF, 300 V
C17, C18, C29, C30	0.25 μF
C19, C24, C27	0.1 μF
C20	0.05 μF
C21	500 μμF
C25	200 μμF
C32	50 μF 50 V
C33	16 μF 300 V
C34	8 μF, 350 V
CH1	9H 100 mA
CH2	50H 60 mA
CH3	50H 20 mA
RFC, 100 turns 32 s.w.g. enam., ½in. diam.	
CR	Germanium diode
L1, 7 turns 24 s.w.g. enamel, ½" diam. tapped 3 from cold end	
L2, 10+3 turns, 24 s.w.g. enamel, ½" diam.	
L3	8 turns 24 s.w.g. enamel, ½" diam.
L4	10+3 turns 24 s.w.g. enamel, ½" diam.
R1, R2, R3, R5, R6, R7, R8, 330 ohms, ½ watt	
R4, R9	33000 ohms, ½ watt
R10, R14, R15, R30, R31, 100,000 ohms, ½ watt	
R11, R18	3300 ohms, ½ watt
R12, R19	100000 ohms, ½ watt
R13	10000 ohms, ½ watt
R16	8200 ohms, ½ watt
R17	1 Megohm, ½ watt
R20, R25	470,000 ohms, ½ watt
R21	470, ½ watt
R22	4700 ohms, ½ watt
R23	39000 ohms, ½ watt
R24, R29, R35, R36, 1000 ohms, ½ watt	
R26	13000 ohms, ½ watt (see text)
R27	1800 ohms, ½ watt (see text)
R28	15000 ohms, ½ watt (see text)
R32, R33	100 ohms, ½ watt
R34	200 ohms, 1 watt
VR1	1 Megohm potentiometer
VR2	2 Megohm potentiometer
VR3, VR4	100 ohms variable
VR5	2500 ohms variable
T1	1:5
T2	52:1 for 3-ohm speaker
T3, 250-0-250 V, 100 mA, 6.3 V, 5 A, 5 V, 3 A	
V1, V2	EF50
V3, V4	6SN7
V5, V6	EL32
V7	5U4

Tone Correction

V3 is a twin triode used as an input amplifier with means for tone correction[3]. It provides bass boost and treble cut. If treble boost is required, a variable condenser of 50 $\mu\mu$F capacity should be connected from the junction of C17 and R14 to the grid of V3B. For bass cut, condensers ranging from 0.005 to 0.01 μF should be inserted between R14 and the junction of R15 and R16. These facilities have, however, been left out of the present design because it is difficult to justify them.

For high fidelity broadcasts, such as the television sound, no correction is required apart from a little bass boost if the loudspeaker or the acoustics of the listening room demand it, *e.g.*, a 10in. loudspeaker in a solid 3ft. by 3ft. baffle working in a large living-room can be coloured favourably with a little bass boost. In the Wrotham f.m. transmissions the high frequencies are boosted but as it is customary to include de-emphasis circuits in the receiver no further correction is called for.

Records require bass boost and, most of them, treble cut. Therefore, means for these two types of correction only have been provided. The switch S3 permits unboosted reproduction and three degrees of boost. C21 provides a continuously variable treble cut and S4 permits the residual capacity of C21 to be removed from the circuit.

To understand the working of the bass boost circuit, consider first the position of S3 when R17 is short-circuited. The signal at the grid of V3B is then R16/(R14+R16) times the signal at C17, *i.e.*, 1/14. This cancels the gain of V3A which is arranged to be 14, hence the signal on the grid of V3B is the same as at the grid of V3A *for all frequencies*. If S3 is turned to bring C18, C19 or C20 into circuit, these condensers will still represent a short circuit to medium and high frequencies but not to low frequencies. The lower the frequency the more effective R17 will become. Assuming a limiting case of the lowest possible frequency, the ratio becomes

$$\frac{R16+R17}{R14+R16+R17}$$

i.e., nearly 1. The full gain of 14 provided by V3A therefore becomes operative. Hence the lower the frequency the greater the boost.

With C18 in circuit, bass boost begins at approximately 200 c/s, with C19 at 500 c/s and with C20 at 1,000 c/s. Treble cut is achieved in a more familiar manner by means of R15 and C21, whereby the high frequencies pass through the condenser to earth but the low frequencies remain unaffected.

A point of some concern when applying bass boost to records is the "rumble" which frequently occurs. It is particularly noticeable with long-playing records. The only real cure lies in precision turntables and pick-ups which are expensive and may well cost more than the amplifier. Alternatively, a compromise may be made at the expense of bass boost which, in the case of long-playing records, is richly compensated for by the low surface noise which makes these records especially enjoyable.

A number of input arrangements may be selected by means of S2. One is designed for 78 r.p.m. records reproduced by a lightweight moving iron pick-up which has its own treble cut and volume controls located at the turntable, remote from the amplifier. This is useful in adjusting for surface noise and input voltage which vary widely with such records. C14 is a variable 750 $\mu\mu$F condenser with solid dielectric. An ordinary air-spaced condenser would be rather bulky.

All connections to the grid of V3A, including volume controls, tone controls and switching, must be thoroughly screened.

Adjustment of Negative Feedback

Before considering the circuit of the television sound receiver, the adjustment of the negative feedback will be discussed.

The first point is the connection of the feedback lines to the secondary of the output transformer. If the connections are made the wrong way round, it will be instantly recognisable. However, even an instant may suffice to damage the speaker and it should therefore be replaced by a 6 watt car bulb which will light if the connections are incorrect. Having found the right way, the speaker may be reconnected, VR5 set to its maximum value and VR2 (the volume control) set to zero. A crystal diode in series with a 3300 ohms resistor and a milliameter should be connected across the secondary of the output transformer. Feedback is increased by reducing VR5 until the meter suddenly shows a reading; VR5 is then increased until the reading disappears again. The feedback under these static conditions is rather more than is permissible and VR5 is therefore increased a little more.

It will be noticed that V3 has its own h.t. rail with a separate choke CH3 and condenser C23. This proved necessary because, for reasons which seem difficult to explain, the feedback has to be reduced if V3 is fed from a point which is common to either V4 or V5 and V6, despite the fact that each section has its own decoupling.

The Sound Receiver

The television sound receiver comprises two stages of r.f. amplification using EF50 valves and a crystal rectifier.

L1 is tapped one-third from its earth end and the aerial fed in *via* a 50 $\mu\mu$F condenser. L2 and L3 are mounted parallel to each other with centres 2in. apart. L2 has 10 turns on one former and 3 turns interwound with 8 turns at the earthy end of L3. L4 has 10 turns with 3 turns for the secondary interwound at the earthy end. In areas of low signal strength it may be advantageous to increase the secondary to 6 turns. The input and output sides of each valve must be well screened from each other, the screens going diagonally across the valve holders between pins 4 and 5 and pins 8 and 9.

The values given for C10 and C11 refer to 41.5 Mc/s. For higher frequencies these values must be reduced and a turn or so taken off L2 and L4.

The unit shown in the photograph is a piece of surplus equipment which requires only a few modifications and the addition of a crystal rectifier to conform to the circuit shown.

References

[1] High Quality Amplifier, D. T. N. Williamson. *Wireless World*, August, October, November and December, 1949, May, 1952.

[2] *Radio Receiver Design*, by K. R. Sturley. Vol. II, page 65.

[3] *Amplifiers for High Fidelity Sound Reproduction*. An Osram Technical Publication (No. TP1).

Dame Rumour

THE Society has no knowledge whatsoever of a suggestion that the 144 Mc/s amateur band is to be lost to Band 3 television. The G.P.O. certainly advised the Society a short time ago that amateurs in the U.K. may eventually lose 10 Mc/s between 420 and 460 Mc/s to accommodate services displaced by Band 3 Television, but even that is by no means a certainty. As soon as the Society heard of the proposal in respect to the 420 Mc/s band a strong protest was sent to the G.P.O.

Members would be well advised to ignore rumours.

Bristol Calling the U.K.

The Recipe

IT takes all sorts to make a world; and it takes all sorts to make a Convention. There are some who have attended every R.S.G.B. National Convention held. There are others who wouldn't go to one for all the QSL cards ever printed. Both believe implicitly in their own choice. The first base theirs on past experience; the latter on the lack of it. Between the two extremes are the infinite variety of folk, from those who attend because they are genuinely interested to find out what it is all about, to those whose desire it is simply to meet fellow amateurs—in a spirit of festive friendliness.

The number of recipes which exist for the production of a successful gathering of this kind are as countless as the possible ingredients from which they may be contrived. Probably no two members of the Society would produce lists of essential attractions in the same order of priority. It is easy to see, therefore, that no National Convention is ever quite like another.

Next month's arrangements differ in one important aspect from the start—a Society event of this magnitude has never before been staged in the West Country. The mixture, as it were, is being stirred in a new bowl, and, to complete the metaphor, the proof of the goodness of the fare will inevitably be in the tasting.

Convention Headquarters

In devising their version of "the recipe for a Convention," Region 9 members had at the outset to overcome a major problem. It was their unanimous opinion—fully shared by Council—that a central venue, capable of adaptation as a Convention "Headquarters," was of utmost importance. They would be the first to admit their good fortune in having at their disposal the Royal West of England Academy.

Occupied by Government departments throughout the war, the Academy opened its refurbished, rebuilt galleries in 1950. With their near-perfect lighting, clear floor space and excellent acoustics, they are recognised as some of the finest in the country and provide a fitting background for the events which will take place there on September 17, 18 and 19.

Convention Exhibition

The main galleries are particularly well suited for the special Amateur Radio Exhibition which will be staged in them and it is significant of the high regard in which the Society is held that such keen interest is being shown in this event by the radio trade.

Electrical measuring equipment of all kinds will be displayed by Taylor Electrical Instruments, Ltd. and Automatic Coil Winder & Electrical Equipment Co., Ltd. Latest developments in "made to measure" metalwork for transmitters and receivers will be the speciality of E. J. Philpott's Metalworks, Ltd. A complete range of "Eddystone" receivers and accessories will be included on the stand of Cranbrook Radio, of Bristol, while a neighbouring display by the South-West Region Engineering Branch of the General Post Office will have been specially constructed for this Exhibition.

In addition to their large range of components Southern Radio & Electrical Supplies will be showing a transmitter of unique design. Francis & Lewis will feature a large section of one of their lattice towers, surmounted by a rotary beam. Marconi International Marine Communication Co., Ltd. introduce a new note to exhibitions of this kind with their massive display of electronic marine equipment. Black & Decker, Ltd. will show how every amateur can "motorise" his workshop and achieve a professional finish with their comprehensive range of power tools. Barton Radio will show a miscellaneous range of small components. A stand of unusual interest, showing an official application of radio, will be manned by the staff of the Fire Service Radio Telephones.

Electric soldering irons designed to suit the needs of radio constructors will be demonstrated by four firms specialising in this field, Adcola Products, Ltd., the "Litesold" instruments of Light Soldering Developments, Ltd., the "Solon" range by W. T. Henley's Telegraph Works Co., Ltd., and the "Antex" brand, manufactured by Anglo-Netherland Technical Exchange, Ltd. Cyril French Holdings, Ltd. will be showing their specialist range of McMurdo mountings and insulations, while S. G. Brown, Ltd. will display their famous headphones.

There is a place for you at
NATIONAL CONVENTION
— apply for it now!

On the R.S.G.B. stand, manned by Headquarters staff, queries and information relating to Society matters will be dealt with. There also will be shown examples of amateur-built gear ranging from 160 metre to u.h.f. equipment, communication receivers and measuring devices. A section of this display will be devoted to equipment being developed for use by members of R.A.E.N.

Throughout the period of the Convention the Exhibition Station (GB3NCB) will be operating on 1.8, 3.5 and 14 Mc/s. These bands have been selected as the most

Made of Devon pottery and gaily coloured, this attractive ashtray will provide a pleasing souvenir of the Bristol Convention. Members unable to attend Convention may obtain one of these ashtrays from the Honorary Secretary, Convention Committee, (Mr. D. F. Davies, G3RQ, 51 Theresa Avenue, Bishopston, Bristol, 7), price 3s. 6d. post free.

reliable for obtaining the maximum number of contacts in a short space of time and a beautifully produced QSL card, marking the occasion, has been specially printed and presented by Eric Martin (G6MN) of Worksop.

Amateur Television will be demonstrated from camera to screen by a complete station operating, on this occasion, for obvious reasons, over a closed circuit. A side gallery is being turned into a theatre where large-screen television and sound films will be shown. Other galleries will be utilised as a lecture theatre and a " private " room for members, where refreshments will also be availale.

Among the various miscellaneous items and demonstrations included for the enjoyment and interest of visitors, two at least are worthy of special mention. One is the " Machina Speculatrix," devised by Dr. Grey Walter and his team. This " near-animal with a mind of its own " has been seen by television viewers, when it was described by its less technical title of " electronic tortoise." It will be seen giving its uncanny exhibition in company with its " brother." The other deals with high-fidelity sound reproduction and is a demonstration arranged by the General Electric Company of the latest results of their researches into " hi-fi " reproducers, including the newly developed metal cone speaker, details of which were given in the June issue of the R.S.G.B. BULLETIN.

Reception Arrangements

On entering the Academy, visitors will arrive at the Reception Desk, which will be, more or less, the " heart " of Convention during its three days of life. All aspects of the arrangements will be dealt with here and advice given on local facilities in addition to those provided in the official programme. To facilitate the work of the Reception Desk a private telephone is being specially installed for the time it is in operation and it may be reached by ringing BRISTOL 33811 during the period of Convention.

For the Record

It has become the custom, established by Conventions of past years, to make some provision to enable members to remember the particular occasion. At Bristol every feature of the three days' programme will be recorded—both by moving and still picture cameras—so that an official photographic record may be preserved. For the knick-knack hunter a specially designed and nicely produced ashtray in well-known West Country pottery will be available.

Free Draw

It can also be said that most of those who attend the Convention Dinner in the neighbouring Victoria Rooms on the Saturday evening will have especially good reason to remember the Bristol Convention. It is then that the much-discussed free draw will take place and—for the record—the value of the prizes already donated by generous friends of the Society amounts to more than £200. And prizes are still coming in . . .

No Chance to Get Lost

Of general arrangements it should be said that every effort is being made to assist visitors both on their arrival and during their stay. Full instructions and information are being despatched as applications for tickets are received from members. For the convenience of those travelling by car, the roads in and around Bristol are being signposted by courtesy of the Automobile Association. If, by chance, some enterprising late arrival should charter an aircraft, he is advised to look out for the Morse symbols " B-R-I-S-T-O-L," which will be flashed by light signals at regular intervals from the top of the Cabot Tower, the city's loftiest monument . . .

VK/ZL DX Contest, 1954

THE rules for this year's VK/ZL DX Contest, organised by the New Zealand Association of Radio Transmitters, are the same as in previous years. The telephony section will run from 1000 G.M.T. on October 2 to 1000 G.M.T. on October 3 and the telegraphy section from 1000 G.M.T. on October 9 to 1000 G.M.T. on October 10.

Each contact on a specific band with any VK/ZL district will score one point, the total score being obtained by multiplying the total number of contacts by the number of Australian and New Zealand districts worked. These districts are ZL1, 2, 3 and 4, and VK1, 2, 3, 4, 5, 6 and 7. Serial numbers of six figures (five for phone) made up of the RST report plus three figures commencing with 001 and increasing by 1 for each contact, must be exchanged.

Entry logs, showing the date, time (G.M.T.), call-sign of station contacted, serial numbers, and band, accompanied by a summary sheet giving the total score, call-sign, name, address and details of equipment, must be posted to reach the N.Z.A.R.T., Box 489, Wellington, New Zealand, by January 21, 1955.

World Wide DX Contest, 1954

THE operating periods for the World Wide DX Contest, 1954, are as follows:—

Telephony Section: 0200 G.M.T., October 23 to 0200 G.M.T. October 25.

Telegraphy Section: 0200 G.M.T., October 30 to 0200 G.M.T., November 1.

Serial numbers to be exchanged will consist of the RST (or RS) report followed by the number of the zone in which the competitor is located. Stations in Zones 1 to 9 will prefix the zone number with zero, *i.e.*, 01, 02, etc. Contacts may be in any band from 1.8 to 28 Mc/s.

Entries must be postmarked not later than December 15, 1954, and addressed to the International DX Club, Post Office Box 100, Buchanan, Michigan, U.S.A., from whom further details may be obtained.

Denco (Clacton), Ltd.

IT is much regretted that two errors occurred in the Denco (Clacton), Ltd. advertisement printed in the July issue.

In line 5 of the heading the word " perspect " should read " perspex." The paragraph headed " Tube " should read: " Tube: $\frac{3}{8}$" O/D × $\frac{1}{4}$" I/D " and not " Tube: $\frac{3}{8}$" O/D × $\frac{1}{4}$" I/D."

These errors were brought about because our printers did not submit proofs in sufficient time for Denco (Clacton), Ltd. to check them.

CURRENT COMMENT (Continued from page 55)

more efficient one for the very reason that those who belong to it know each other pretty well through constant association at Town Group meetings.

The principle still stands that all who care to join R.A.E.N. may do so irrespective of any other loyalties they may hold. The Emergency Network came into being as the result of R.S.G.B. initiative, but that does not make it in any way an R.S.G.B. " branch," as the Society has been careful subsequently to emphasise.

The R.A.E.N. by its insistence on high standards of discipline and operating skill demands the very best of its members. It can afford no dead wood whatsoever; for if it were called upon to go into action (and who can tell what visitations of nature the coming winter may have in store?) every one of its units must know exactly what to do. Amateurs who wear its red diamond badge can be proud to belong to it.—J. H.

TWO METRES AND DOWN

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

The Two Metre Open Contest

CONDITIONS during this event were generally poor and in most parts of the country activity left much to be desired. **G5MA** and **G2XV** operated portables in Wales, the latter from the summit of Snowdon, from where he obtained contacts with 38 stations including GD3UB, GM2HCJ/P, G3WW and G4MW, the last two being the more distant. **G3WW** worked both the Welsh portables in the early hours of July 4 at which time most other stations over 80 miles away were unreadable owing to severe fading. G4JJ/P was, however, audible at around RST449 throughout the period. G3WW made 30, and **G5YV** (nr. Leeds, Yorks.) 51 contacts.

Members of the Bradford Society operated for nine hours on the Sunday from Baildon Moor, 927ft. a.s.l. and about 4½ miles from the centre of the city. The 7-valve transmitter, running 8 watts to a 5763 doubler, and the 9-valve receiver, housed in one small cabinet, were constructed by G2FCL and produced contacts with, among others, G3IOO (Oswestry) 85 miles; G3CCH (Scunthorpe) 50 miles; G3DMU (nr. Scunthorpe) 45 miles; and G3IUD (Wilmslow) 35 miles. The aerial in use was a 5-element Yagi.

Another station working portable during the contest was **G8PX**, who took the opportunity of testing some new gear. From a site at Beckley, 650ft. a.s.l., signals were much stronger than at the home location in Oxford and among those contacted were G2YB, 3BJQ, 3CRH, 3CVK, 3DO, 3GVS/P, 3IRA/P, 3NL, 4SA, 5JU. 5ML, 6VX/P and GW5MA/P. The receiver comprised a 6BQ7–12AT7 ON4BZ converter into a modified Command receiver tuning 24 Mc/s to 26 Mc/s. The transmitter employed an EF91 with 8 Mc/s crystal, EF91 and QV04–7 multipliers and 832 p.a. with an input of 10 watts. Modulation was provided by a carbon microphone into a 6SN7 g.g. amplifier driving p.p. EL42s. The receiver and exciter sections were powered from an HRO vibrator pack and the p.a. and modulator from another vibrator giving 280 volts at 90 mA. The main difficulty was vibrator hash and '8PX would be glad to have some hints on clearing up this trouble.

Two Metre Openings

After the very disappointing conditions—both radio and weather—which occurred almost without exception until the end of the first week in July, things brightened up somewhat and there was a limited number of openings for the British Isles between then and the time of writing. One of the best evenings was July 19 with the band wide open to the north and north-west. **G5YV** heard Scottish and Northern Ireland stations better than they had ever been, with GI3FZQ, GI3GQB, GI5AJ, GM3EGW, GM3FYB, GM3JDD/P (Roxburghshire) and GD3UB among the best. The good conditions must have been quite widespread because GM3EGW was heard calling G3EHY (Banwell, Som.), who has reappeared on the band after a long absence. From the south-west were heard G3DLU, '3EHY, '3FIH, '3FMO and '3HVO. G5YV is running a sked with PE1PL on 144 Mc/s at 1245 B.S.T. every day except Sundays and for a week at least in July, contact was 100 per cent.

G6XX (Goole, Yorks.) was also operating on July 19 and worked GI5AJ—his first GI since March last year, heard GI3GQB and raised GM3JDD/P the operators of which were G3JDD and G3CYY, both of Newcastle-on-Tyne. At the same time G3FAN (I.o.W.) and G3EHY were good signals even off the back of the beam.

G3BW (Whitehaven, Cumb.) heard G2DVD (Slinfold, Sx.) on July 19 but was not able to attract him despite calling him for 45 minutes. Other good signals on that evening were G2AK (Aldridge, Staffs.) who was S9 plus, G3WW (S8) and the " regulars " G3FRY, 6NB and 8OU. G3BW wishes to record his appreciation of GM2HCJ's portable efforts from various places in Scotland which enabled him to compare results from different sites.

Also on July 19 **G3WW** (March, Cambs.) worked G3IOE (Northumberland), a very strong signal, 4LX (Newcastle), 3IWJ (Liverpool), 3AGS (Manchester) and heard, among others, G2IQ, 2OI, 3BW, 3CSY (Liverpool), GM3EGW (RST339) and GW5BI (also 339). Turning towards the south-west contact was made with G3FMO (Chard, Som.), who said that stations in that area had been working into Lancashire and Yorkshire all the evening and that G3BW was an excellent signal. G3AUS (Torquay, Devon) was heard together with F9JY (144.2 Mc/s).

G2CZS (Chelmsford, Essex) worked G3ABH (Poole, Dorset) and heard G2BMZ and GW3EJM during the period June 21–24 and on July 11 and 12, when conditions again were quite good, worked G2ATH (Birmingham) and heard G3DQQ, '3EPW and '3IOO. A 6J6 pre-amplifier has been added to the converter and arranged so that the coils are tuned by stray capacities only, with considerable improvement in results.

G5MR (Hythe, Kent) listened and called CQ on a northerly bearing during the period of near-totality of the solar eclipse on June 30 but heard nothing. G3ENS and G5YV were worked on July 11.

Reporting for the month ending July 17, **G8VN** (Rugby) found conditions fair but worsening during the last few days. G4JJ/P and GW5MA/P were worked on July 4 together with G2AIW, '3CGQ, '3DVK, '4SA, '5BM/P, '6RH and '6XM during the rest of the period. After having some difficulty with the R.S.G.B. Converter, G8VN has produced a modified version which includes a tapped-down parallel tuned input circuit, additional screening in the i.f. amplifier and oscillator injection through a 2$\mu\mu$F condenser tapped one turn up from the earthy end of L3. A Mullard ECC81 is used in place of the 12AT7 r.f./mixer stage and a 6J6 as oscillator/doubler but the latter possesses a much greater thermal drift than the 12AT7 specified.

G3CCH, who incidentally finishes the " Ladder " with the same number of stations worked this year as last but with his full quota of Regions, is somewhat surprised at the fact that, when the 2 m band opens TV hours seem to have little effect on activity. This can mean one of two things; a blissful disregard of TVI in pursuit of DX or an indication that the programme is less interesting than Amateur Radio for once! He also points out that a number of stations in Lancashire and Yorkshire are using frequencies between 144.17 Mc/s and 144.2 Mc/s and are thus causing interference to certain Scottish stations which, in accordance with the Band Plan, work in that portion of the band. Further

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

remarks regarding the interference, caused locally, by stations employing excessive amounts of modulation in an endeavour to increase their audibility at extreme range, will no doubt find an echo in many other parts of the country. (Readers' views on apparent under-modulation on the v.h.f.s. appear elsewhere in this issue.—Ed.)

G3CCH, in addition to his activities on 2 m operates s.s.b. on 80 m and is considering trying the system on the v.h.f. band. Apart from the difficulties to be overcome in the transmitter there is the problem of adequate stability in the receiver and it will be interesting to see if he has any support for his project.

Portable Operation

G2BDQ and **G3CYY** planned a portable 2 m holiday in Cornwall but owing to bad weather in the south-west it was decided not to remain in one place all the time. Between June 7 and 11 signals were radiated from Lands End, Penzance and Redruth but only three stations (G3AGA, 3AET and 3JGJ) were worked during that time. From a site 5 miles west of Dorchester 23 stations came back to them between June 13 and 16 including five Fs and GC2FZC and GC3EBK. The next three days were spent around Harwich and Colchester in Essex and another 13 QSOs appeared in the log followed by 1¼ hours' operation on June 20 near Oakham, Rutland, where four more stations were contacted. The two calls were used alternately on successive evenings.

G3CYY comments that they were agreeably surprised to find so much activity in the south of England—similar observations have been made, we believe, by southerners listening for the first time on 2 m in the north! The equipment employed comprised a 6SH7 c.o./multiplier for either 5.3 or 8 Mc/s crystals, two EL91 multipliers and a pair of 6C4s in push-pull in the p.a. with an input of 10 watts, modulated by two p.p. N78s driven *via* a transformer from a carbon microphone, while the receiver consisted of a Command set tuning 6 to 8 Mc/s preceded by a c.c. converter with two CV66 e.g.t.s, and a ½6J6 mixer. Both transmitter and receiver were arranged for 12 volt operation and h.t. was provided by a 250-volt generator. The aerial was a 3-element Yagi 18ft high with gamma matching to 52 ohm coaxial cable.

Northumbrian calls to look for in portable operation are G3JDD, '4LX and the two just mentioned. Expeditions are planned to various Scottish counties before the end of September.

GM3BDA, the only 2 m station in East Lothian, will be operating for the next three months from a new site 240ft. a.s.l. and with a clear view to the south, east and west. Input is 65 watts to a Mullard QQV06–40 on 144.077 Mc/s with a 16-element stack; time of operation is most evenings from 2200 B.S.T. **G2HCJ** who was active from the counties of Lanark, Peebles, Roxburgh, Kirkcudbright, Wigtown and Dumfries between June 28 and July 7 plans another trip to Scotland towards the end of the month or early in September.

GW2ADZ contacted a number of stations on July 10–11 including G2AIW, 2WJ (also an excellent signal on 70 cm with his new 64-element stack), 3AEX, 3EGV, 3GGJ, 3HWJ, 3HXS, 3ISA, 3WW, 4SA, 5BD, 5RZ, 6XX and EI2W.

A further " country " again available on 2 m is represented by **GD3UB** (Port Moar, nr. Ramsey, I.o.M.), who is on every evening at 2300 B.S.T. on 144.108 Mc/s and is willing to arrange skeds for any time, day or night. An input of 10 watts to a 12-element stack is at present in use.

G3JGJ (Plympton, Devon) uses a v.f.o. on 2 m and 20 watts input to an 832 and calls CQ beaming east every evening at 2000 B.S.T. on approximately 145.5 Mc/s. So far he has had no replies although he is received fairly regularly in Southampton at a distance of 120 miles. Reports and contacts would be welcome. Normal working is between 1830 and 2200 B.S.T.

G3IUD (Wilmslow, Ches.) has already worked 54 stations in 12 Regions and five countries since July 1 including G3FIH, '3IRA, '3WS, '4SA, '5DS, '6RH, GI3GQB and GM3JDD/P.

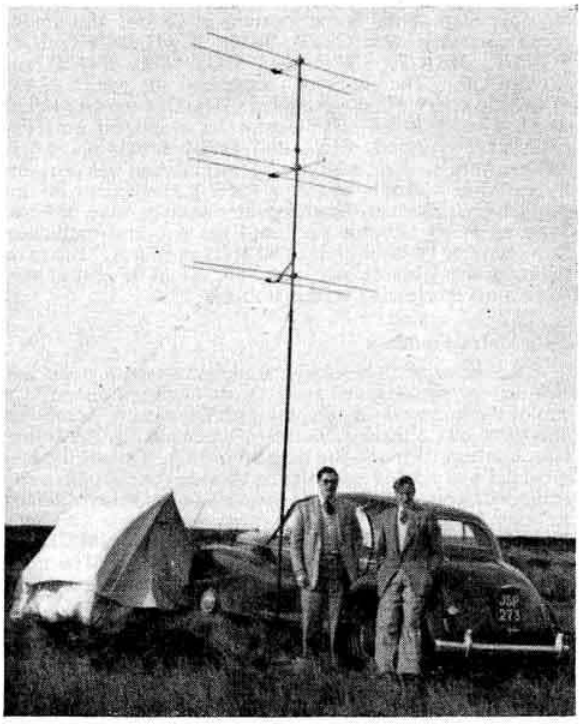
With **G3WW** conditions improved somewhat on July 9, when G6XX was RS58 at 2140 B.S.T., G5YV back again to S9 both ways and G5BM/P heard. Next evening G2ATK/M, thought to be the first 2 m mobile, was contacted when between Tarporley and Wynchurch, Cheshire, at a distance of 130 miles. He was RS57 on his 3-element beam 10ft. high and RS53 on his vertical quarter wave rod aerial. Other stations coming in well from 2000 B.S.T. were GW2ADZ, G3IWJ (Liverpool), '2HCJ/P (N. Cheshire) and '3EPW.

Some contacts were made during the afternoon of July 11 and the band was well populated, particularly from the north, in the evening. F9EA/P and PA0FC were worked, the latter (RS57) saying that '3WW (RS56) was the only G station heard. **G8SB** will be working from Anglesey during the last week in August on 144.39 Mc/s.

B.R.S.19264 although in a somewhat screened position in the lea of the Cotswolds at Cheltenham, and with an indoor beam, has recently heard G3CVK, '3EIY, '3FRY, '3IER, '4FA, '5JU, '6VX and GW5MA/P and so far has received cards for all his reports. His equipment comprises a 6J6 mixer/oscillator, 6AM6 i.f. amplifier and SX24 main receiver tuning 7 Mc/s to 9 Mc/s.

The 70 cm Band

G3JHM (Worthing, Sx.) who would be interested in skeds. towards the London area has so far only heard two local stations on the band. He uses a Mullard QQV06–40 tripler on 434.92 Mc/s, a 16-element stack and 6-element Yagi and a receiver with two r.f. stages, crystal mixer, s.e.o.



G3EGW/P, Cleveland Hills, Yorkshire, during the 2 m Field Day in May with the operators GM3EGW (left) and GM3FYB.

and head amplifier. Times of operation are normally 1900 or 2000 B.S.T. on weekdays and any time up to 2000 B.S.T. on Sundays. **G3FP** (Thornton Heath, Sy.) is on 434.98 Mc/s with 16 watts input to an 832 tripler, c.c. converter and two stacked skeleton slots with reflectors.

G2RD's London Area Activity Report for the month ending July 20 lists G2HDZ, '2RD, '2WJ, '3FP, '3GDR, '3HBW, '3IRW, '3JQN, '3MI, '5CD, '5DS, '5DT, '5RD, '5UM and '6NF.

F8GH, a regular station on 2 m, is able to change to 70 cm at short notice and is willing to carry out comparative tests.

Irish V.H.F. News

The chief news from Ireland is the 70 cm contact between **EI2W** and **GW2ADZ** on July 10. EI2W was first heard in Llanymynech during the afternoon and contact was established at 2200 B.S.T., conditions at that time being better than on 2 m. The signal from Dublin varied in strength between S5 and S8; in the opposite direction S7 was recorded. Both stations were having some difficulty with their modulation. EI2W wishes to place on record his thanks to GM6WL, GW2ADZ and G2FKZ whose help made this contact possible.

EI2W has now resumed the 70 cm sked. mentioned in the July BULLETIN and will continue it until the end of August.

On 2 m G5TZ, GI3FZQ and GI3GQB were all S9 in Dublin on June 26. The next spell of good conditions occurred ten days later when G3BW, GM3EGQ, GM3DDE, GI3FZQ and GI3CWY were all good signals, the last named, located at Whitehead, 30 miles north of Belfast, making his first appearance on the band. GW2COP/A, operating from a caravan at sea level in Carnarvonshire, was worked by EI2W at S9 on July 9.

Scandinavian V.H.F. Contest, 1954

This contest, sponsored by the Danish Society E.D.R., will take place at the same time as the European V.H.F. Contest, details of which will be found elsewhere in this issue.

An "OZ Contest Diploma" will be awarded to the members of R.S.G.B., V.E.R.O.N., U.B.A., D.A.R.C., R.E.F. and U.S.K.A. who obtain the highest number of points through contacts with stations in Scandinavia, the score being based upon the distance separating the foreign and Scandinavian stations measured in kilometres.

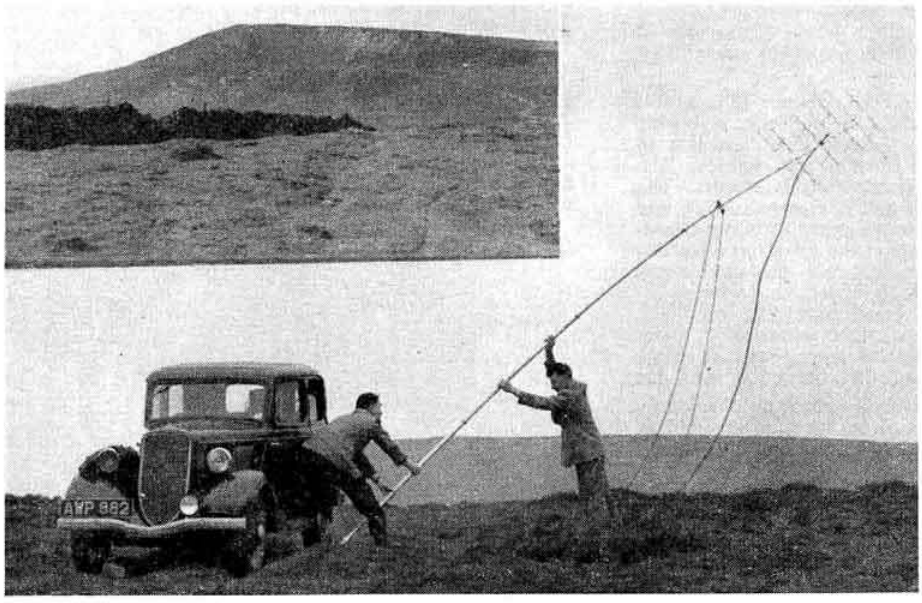
Copies of logs should be sent to the Traffic Department, E.D.R., Post Office Box 335, Aalborg, Denmark, post-marked not later than September 15, 1954.

Regional V.H.F. Ladder

TWO METRE BAND

FINAL PLACINGS

Posn.	Call & Location	Worked Regions	Worked Stations	Worked Countries
1.	G5YV *Morley, Leeds, Yorks.*	15	368	12
2.	G5BD *Mablethorpe, Lincs.*	15	160	12
3.	G3CCH *Scunthorpe, Lincs.*	15	121	9
4.	G6XX *Goole, Yorks.*	14	205	10
5.	G2FJR *Sutton Bridge, Lincs.*	13	166	7
6.	G3BW *Whitehaven, Cumb.*	13	66	5
7.	G6TA *London, S.W.12.*	11	125	2
8.	G3IUD *Wilmslow, Ches.*	11	124	4
9.	G5ML *Coventry, Warks*	11	75	3
10.	G3DO *Sutton Coldfield, Warks.*	10	161	6
11.	G2CZS *Chelmsford, Essex.*	10	132	7
12.	G3GBO *Denham, Bucks.*	10	109	7
13.	G8VN *Rugby, Warks.*	10	102	2
14.	G2DDD *Littlehampton, Sussex.*	10	81	5
15.	GM3EGW *Dunfermline.*	10	56	4
16.	G3HBW *Wembley, Middx.*	10	40	2
17.	G6LI *Ludborough, Lincs.*	10	29	10
18.	G5MR *Hythe, Kent.*	9	104	7
19.	G2AHP *Perivale, Middx.*	9	88	3
20.	G3FIJ *Colchester, Essex.*	8	52	7
21.	G3GOP *Southampton, Hants.*	8	49	2



Up She Goes!

Erecting the 16-element stack at G3GZM/P during the 420 Mc/s Contest. The station was operated throughout the contest by G3FOP (left) and G3GZM (right). The inset shows the 100ft. higher ground which prevented some contacts to the north.

(Photo by Ron Barrell, G3FOP.)

Regional Ladder Results

Three operators, G5YV, 5BD and 3CCH, succeeded in working 2 m stations in all 15 Regions in the year ended June 30 against only one (G3BW) last year. G5YV, with a score of 368 different stations in 12 countries, was 33 stations and one country "down" on his 1954 performance but still managed to finish 163 stations ahead of his nearest competitor, G6XX.

Second on the list was G5BD, also with 12 countries to his credit; G6XX (4th) and G6LI (17th) were the only other stations to make double figures in countries.

The smaller number of entrants, 21 against 38 last year, undoubtedly reflects the poorer conditions prevailing during the past twelve months. Several members have written asking for the Ladder to be continued in the coming year and as no letters have been received stating contrary views it is proposed to carry on under the same rules as appeared on page 402 of the March, 1954, issue with the exception, of course, that the closing date will be June 30, 1955.

Two Metre Achievements in Switzerland

We are informed by U.S.K.A. of the following performances put up by Swiss stations, both fixed and portable, on the 2 m band:—

Call	*Countries*	*Best DX*	*Call*	*Countries*	*Best DX*
HB9AA	5	515 km	HB1LE	5	375 km
HB9BZ	6	513 ,,	HB1DK	3	210 ,,
HB9CB	2	425 ,,	HB1KI	3	220 ,,
HB1IV	10	1060 ,,	HB1G	4	263 ,,

* * *

The response to our request for v.h.f. reports has again been most encouraging and members are thanked for their letters even if it has not been possible in all cases to quote extensively from them.

The next issue will, we hope, contain preliminary details of how things went on the second 2 m Field Day. As this is being written the weather is reminiscent of N.F.D. but there is plenty of opportunity for it to improve in the next three weeks and perhaps, for once, a v.h.f. event will coincide with a real band opening!

Closing date for the September issue will be August 20.

Eurovision Alpine Link

ONE of the outstanding technical achievements associated with the recent European television "hook-up," was the development of a microwave radio link from Chasseral in Northern Switzerland, through a relay station located 12,000ft. up the Jungfrau, to Monte Generoso in Southern Switzerland—a distance of 125 miles.

The link is the only connection between Italian and German television and provides a one-way reversible channel, handling signals with a bandwidth extending to 5.5 Mc/s so that it is suitable for 625 line pictures. The power output of the terminal transmitters is 2 watts. The system is frequency modulated and operates on 1776 and 1848 Mc/s. Two frequencies are necessary to prevent feedback from receiver to transmitter at the relay station which is of the non-demodulating type, since this avoids the distortion which would be introduced into the video signal if modulators and demodulators were used. The equipment has been designed so that it requires the minimum of maintenance and the valves are run under conditions that ensure maximum life, the highest voltage used being 300 volts d.c.

The aerials consist of 12ft diameter paraboloid reflectors excited by assemblies mounted at the focus of the mirror. The effective bandwidth is 150 Mc/s and a gain of 34db is achieved at 2,000 Mc/s.

The radio equipment was supplied by The General Electric Co., Ltd., to the order of the Swiss firm Hasler S.A., acting on behalf of the Swiss P.T.T. Department. The paraboloid reflectors were spun from aluminium by Precision Metal Spinners, Ltd.

Similar equipment is to be supplied by the G.E.C. to carry television programmes in Canada between London and Windsor, Ontario. It will be capable of handling 525-line pictures in black and white or in colour.

Point-to-point Radio Services

British Council Course

FROM June 27 to July 9, 1954, the British Council held their first course on Point-to-Point Radio Services for the benefit of overseas research and administrative communication engineers. The technical side of the course was conducted by the Radio Planning and Provision Branch of the Post Office.

The course included 14 lectures which covered all aspects of h.f., v.h.f. and u.h.f. work. In addition to lectures on the principles of telephony and telegraphy, talks were given on receiving and transmitting equipment, propagation and aerials. The lectures were supplemented by copious written notes prepared by the lecturers, all of whom are G.P.O. experts in their respective subjects.

Visits were paid to the Post Office receiving station at Baldock, the transmitting station at Rugby, the research station at Dollis Hill, the telegraph terminal at Electra House and the telephone terminal at Brent. Visits were also made to the Marconi, Standard Telephones and G.E.C. factories where a great deal of excellent equipment was seen.

Not least valuable during this short but concentrated course was the interchange of views and experiences between the various delegates, all of whom expressed great satisfaction at the outstanding work done by the British Post Office.

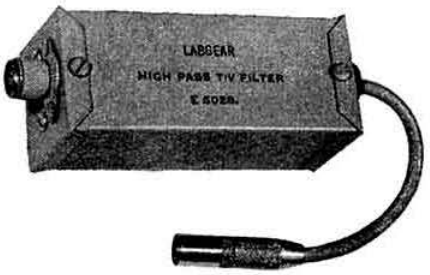
J.D.K.

Transistor Tests

THE QRP Society has arranged transistor transmitter tests for the period 2130 to 2145 B.S.T. on August 15, 16 and 17 and all licensees using transistor equipment are invited to participate. During the period of each test, participants will transmit "QRP test TTX de G . . .", announcing their location after each third repetition of the text which will be sent at 10 w.p.m. so that short wave listeners may copy the calls accurately. During the tests G3IEE (Kingston-on-Thames) will operate on 1875 kc/s and G3JNB (Surbiton, Surrey) on 1856 kc/s. B.R.S. reports should be addressed to V. Brand (G3JNB), 137 Surbiton Hill Park, Surbiton, Surrey.

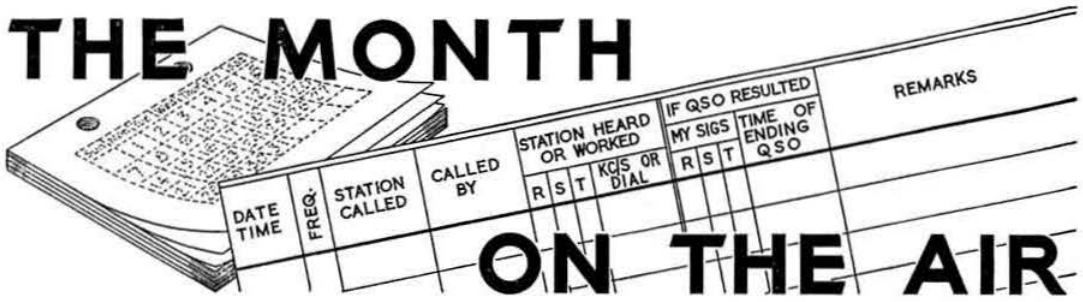
Labgear High Pass Filter

INTERFERENCE due to overloading of television receivers by fundamental transmissions on frequencies below that of the Television Service can only be dealt with at the receiver. The Labgear high pass filter type E.5028 has been specifically designed to minimise such interference caused by transmitters operating on frequencies below



The Labgear High Pass Filter.

30 Mc/s. The filter is housed in a metal case 3½in. long by 1½in. square and may be inserted in series with the aerial feeder to any receiver having co-axial input. The attenuation at 30 Mc/s is approximately 40 db, rising to 80 db at 3 Mc/s, but the insertion loss over the whole of Band I is negligible.



By S. A. HERBERT (G3ATU)*

DURING the past month, DX conditions took a decided turn for the worse. Many people, in fact, wisely spent most of the Month *off* the Air, so before dealing with the band reports in detail, it seems a good idea to list the rare ones who are active now or are likely to be so in the near future.

First comes **ZD3BFC** (G3BFC, ex-MT2BFC, VQ6BFC), who is putting out a powerful phone signal around 14100 kc/s. Bill knows how to deal with the pile-up and is making rapid QSOs in order to give a new country to as many people as possible. He expects to be in Gambia for two years or so and will use both phone and c.w. with either a Vee beam or a rhombic replacing his present aerial—a 756ft long-wire. Gambia, in fact, should be available!

LA4KD, in the course of a QSO, said that LB7UE is now on an island near Spitsbergen, and will count as that country. He is expected to start up soon, using 7 and 14 Mc/s. **LA6U** mentions activity on Spitzbergen itself. LH2P is there until August 20; he is to be found on 3524, 7021, 14025 and 14045 kc/s, with probable operating times 0600–0800 and after 2100 G.M.T. The prefix LB corresponds broadly with the British /A or /P; many LB stations are in Norway proper. LB3TD is near Oslo and LB8GB near Larvik. Readers will be interested to know that LB8GB, in hospital there, uses a bedside rig. **FD8RG** is active on 14 c.w., as is **FC9UC** (Corsica). HE9LG has also been heard, but some of the HB9s express doubts as to his genuineness! So far, nothing has been heard of VQ1AC, who was due to put Zanzibar on the DX map in late July.

The West Gulf DX Club's *Bulletin* researchers have their ears to the ground as usual and detail the following for future use: W4QCW, W4VZQ and WN4HBC left for Navassa Is. on August 1. They should have arrived about August 4 and operated as **KC4AB** for a week, using 50 watts on all the normal communication bands.

HB9LA applied for permission to operate from Corsica for ten days, from July 29, followed by four days as 3A2LA. If Corsican plans misfired, both weeks were to be spent in Monaco. KV4AA reports that two W4s may operate HV1AA on phone for a time. Definite information is apparently not yet to hand. TI9RCC hopes to be active on Cocos Is. during August. KV4BB cabled Ascension Is. and received a reply that there is no current amateur activity, but a station should soon be in action for a two-year period. (This seems to dispose of ZD8V, who has been heard recently.) SV0WG planned operation from Crete, starting July 31.

Overseas News

G4HK (ex-ST2HK, VQ4HK) has gone off on his travels again, this time bound for Malaya, Sarawak, Brunei and British North Borneo. He will be in the last three territories for a year, seconded to the Post Office there, and will apply for VS4 and VS5 licences. He hopes to be allotted VS4HK and VS5HK and will use 14 c.w. only. QSL returns for ST2 and VQ4 were poor, so cards for this trip will be strictly on a one-for-one basis. **G3IAG** (R/O R. F. Pilkington, M/T *British Swordfish*) was, until recently, on the West African run and passes his regards to his many friends in ZD1, 2 and 4. ZD1SW, '2CDB, '2EHW, '2GAJ and '2HAH are active. '2EHW uses 14 Mc/s phone and '2GAJ prefers 7 Mc/s phone, while the other ZD2s are on c.w. In the Gold Coast, ZD4BR is new; ZD4BM (ex-G2ATU) is a good friend of the writer. Some years ago, our similar call-signs caused considerable chaos on the bands! G3IAG is bound for Australia, where he hopes to meet B.E.R.S.195 and other friends. He would like to hear from anyone who has taken out a 28 Mc/s Maritime Mobile licence.

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

The Winter, 1954, Edition of the Society's Call Book is now being prepared. Licensees who have not yet notified the Call Book Editor (Mr. J. P. P. Tyndall) of their call-sign, name and address should do so as soon as possible. Members who change their address should inform Headquarters who automatically notify the Call Book Editor.

The address of the Call Book Editor is 174 The Drive, Ilford, Essex.

G2MI reports that **5A2CO** is now QSL Manager for Cyrenaica, in place of 5A2CA, who is going to Cyprus. Also from '2MI comes news of Bahamas activity. **VP7NM** writes that VP7NH, '7NI, '7NF, '7NL, '7NM, '7NP, '7NR, '7NU, '7NV and one other (possibly '7NT) are licensed. VP7NM will be on Top Band again as soon as the static level decreases. His excellent results last winter were accomplished with 30 watts and a 250ft long-wire, using a crystal-controlled frequency of 1879 kc/s. Conditions prevented QSOs with a ZL and CN2AO. Both heard '7NM and he heard them at different times, so that contacts should result during next winter. Charles finds conditions to Europe much improved of late, but he has not heard VK or ZL for a year. A harrowing experience took place when he heard CE0AD at S8, in QSO with a CP. One-and-a-half hours later, the QSO ended and '7NM called. The CE answered a W3, who asked him to listen for '7NM. "Right," said the CE0, "but first I must fill the tank. I'm running out of gas." The gang sat tight, but he did not come back! Which is a shade tough. Charles is awaiting delivery of a supply of QSLs. When they arrive, they will be used 100 per cent as usual

*Roker House, St. George's Terrace, Roker, Sunderland.

He would be glad to see cards from ZK2AA and VS9AP.

GW2FUD, who has been in regular touch with G3AAT/OX for the past year, confirms that the station will close down when the British North Greenland Expedition leaves the country. The departure is scheduled for approximately August 19. **G3HT** has news from ex-G3CAT, who is now VQ4FB (I/P Fred Ward, Signals Officer, Kenya Police Div. H.Q., Meru, Kenya) and active on 3.5, 7 and 14 Mc/s, c.w. and phone. He has worked VQ4EV (ex-G3GBO), who contacts Europe well on 7 Mc/s c.w. VQ4RF, '4AQ, '4CH and '4FB are trying to stir up 3.5 Mc/s interest in East Africa. **G3JFF,** who has been on a cruise covering EI, GM, LA and OZ, managed to find time for some land-based operation during the trip. Using an Army 12 Set and a long-wire, he worked portable from EI, GM (Ross and Rosyth) and from Bergen, where he had permission to operate as G3JFF/LA and hooked VQ4RF on 7 Mc/s as his best DX.

B.E.R.S.195 continues to keep us in touch with Pacific affairs. VR3A is heard daily on 14 c.w. and peaks in VK3 at 0300 G.M.T. He QSLs, but Fanning Is. has only three mails a year. VR6AW has been active on 3.5 Mc/s. ZK4AC is a " phoney," according to New Zealand reports. ZM6AS, using 7 c.w., is operated by L. Reid, Bank of N.Z., Apia. ZM6AQ and ZM6AP (father and son, incidentally) are also active. JZ0KF keeps up his good work on 14 c.w. and says his QSLs are slow, but quite sure. FK8AI is at present in France, but FK8AC '8AE and '8AL are keeping New Caledonia on the active list (14 Mc/s). VR4AE has departed and the remaining Solomons representative, VR4AB, seems inactive. ZK1AM (Aitutaki) likes 14 c.w. and phone; ZK1AB is very active on 7 and 14 c.w., while both ZK1BH and ZK1BG include 3.5 c.w. in their DX programme. Carolines Is. are represented by KC6AG (Ponape), KC6UZ (Truk), KC6AE (Koror), KC6KU (Kusaie) and '6AA, '6AF and '6ZA on Yap. VK1AC (Macquarie) is a good signal and VK1GA is a new station there. In Antarctica, VK1EG (Bill Storer) with three companions 100 miles from Base, battled for existence for two weeks. They lost two " weasel " transports and finally reached Base by dog sled. Bill has been on the air but has not yet worked VK proper. VK1HM/ZC2 now uses c.w. quite often. VK9OK and VK9RH (Norfolk Is.) are frequently on 7 c.w. (0700–1200 G.M.T.). VK2KB is congratulated on his re-election to the Australian Federal Parliament.

B.E.R.S.195 remarks on the poor state of 7 Mc/s for Europe. No Gs have been heard for some time, the last to break through being G2XD and G3IRR. He wonders if anyone had a QSL from HE1AA, covering 7 Mc/s activity during March, 1953. (We would imagine not.) Eric has 229 countries heard post-war, with 221 confirmed—a tribute to his detailed and efficient method of reporting.

Twenty Metres

After all that rare Pacific DX, the signals audible in this country tend to look rather pale and insignificant. However, while we wait for a year or so for the sun to do its stuff, here's what goes on. **G2DHV** didn't do too badly to pick up ET3S (Ethiopia), VS6CT, CP5EK, FI8AI and HV1AA on c.w. (However, that HV1 may not be all he should be. '3ATU heard him and wondered, too. Doubtless, time will tell.) '2DHV—who is Hon. Secretary of the British Two-Call Club—says club member VE7ASL will be working portable W9 and W0 on 28 Mc/s, before going to Hawaii in November. **G3HEV** recently worked OH2UA/M, 4X4GD, FF8AJ, OD5LJ and OD5LC. **G3AAE** found things mediocre and so confines his list to the ten stations it gave him most pleasure to work. C.W. gave him SV2RI (Rhodes) for a new one, ZK1BG (2130), MP4BBL, '4BBE, ZC6UNS, JY1PB, CE3AG, '3QW, ZD2DCP and HE9LG. **G3GMY** is confining his interest for the time being solely to 14 Mc/s c.w., using 120 watts to a TVI-proof transmitter. (It is band-switched, so he should do well on the other bands when the time comes.) His latest catches are PX1AR, CR6CS, ZD2DCP, OQ5CP, TF5TP, ZS6CY, JA, VS2, VS6 and PJ2AI, but he was unlucky with ZK1BG.

B.R.S.20106 heard VR1A again on c.w., calling or working G2LB at 1000. The time is right and he seems genuine. He also heard G3ATU on phone, calling FB8XX, who was not audible. (The FB8 was readable for five minutes or so, coming through U.K. skip, but contact was not made.) Norman finds JA, KR6 and KH6 still there and heard VE6UB, '6NX, '7AS, '7ZK and '7WW, with other western DX, W6AKG/KL7, MP4QAJ, I5SG on the key. On phone, ZD3BFC was a new one, making 252 post-war and 178 countries this year. VK phones have started to arrive, though weakly, in the mornings and should get stronger from now on. **B.R.S.20133** remarks on the westerly character of his recent DX. On phone, CE2GW was a new zone for him and made the phone score 29 zones and 116 countries for 1954. He logged CP5EK, KA7RC, KG4AC, TI2RC, VP5AK and ZC7DO in addition and mentions a report in the National Press that the U.S.A. may establish radar and radio stations on Ascension and St. Helena, which leads to the intriguing possibility of amateur operation from those remote outposts. **A1167** logged two good ones in the shape of VS5RO and XE1AX (0015, working W1AW, A.R.R.L. Headquarters Station), plus ZE5JH, EL2L, JY1PB, VQ2AB, VP7NM, JA and KL7. **B.R.S.19894** pulled in VE8ML on phone and VE8ZK, 8MA, 8OG, 8YT and 8SO (Fort Nelson) on c.w., mostly between 0700–0830. HH2JJ was a new one on phone, as

Bands Available

THE following is a summary of the bands in which amateur operation is permitted. The table also shows the maximum power input and types of emission allowed to holders of Amateur (Sound) Licences. It should be noted, however, that operation on frequencies below 420 Mc/s is restricted to A1 (c.w. telegraphy) during the first year. Holders of Amateur (Sound Mobile) Licences are permitted to operate under the same conditions.

Frequency in Mc/s	Maximum d.c. input (Watts)	Types of Emission†
1.8–2.0	10	A1, A2, A3, A3a, F1, F2, and F3
3.5–3.635	150	A1, A2, A3, A3a, F1, F2 and F3
3.635–3.685	150	A1, A2, A3, A3a, F1, F2 and F3
3.685–3.8	150	A1, A2, A3, A3a, F1, F2 and F3
7.0–7.3	150	A1, A2, A3, A3a, F1, F2 and F3
14.0–14.35	150	A1, A2, A3, A3a, F1, F2 and F3
21.0–21.45	150	A1, A2, A3, A3a, F1, F2 and F3
28.0–30.0	150	A1, A2, A3, A3a, F1, F2 and F3
144.0–144.5	150	A1, A2, A3 and A3a
144.5–145.5	150	A1, A2, A3, A3a, F1, F2, and F3
145.5–146.0	150	A1, A2, A3 and A3a
420–460	150	A1, A2, A3, A3a, F1, F2 and F3
1215–1300	150	A1, A2, A3, A3a, F1, F2 and F3
2300–2450	150	A1, A2, A3, A3a, F1, F2 and F3
2350–2400	25 (mean) and 2.5 kW peak	P1, P2d, P2e, P3d and P3e
5650–5850	150	A1, A2, A3, A3a, F1, F2 and F3
5700–5800	25 (mean) and 2.5 kW peak	P1, P2d, P2e, P3d, and P3e
10000–10500	150	A1, A2, A3, A3a, F1, F2 and F3
10050–10450	25 (mean) and 2.5 kW peak	P1, P2d, P2e, P3d and P3e

† *As defined in International Radio Regulations (Atlantic City, 1947), Chapter II, Article 2. Types of emission were also set out in simplified form on page 252 of the December, 1952, issue of the R.S.G.B. BULLETIN.*

was EL2X on c.w., with KM6AA at S5 (1830) with the usual QRN and short-skip. PI1LS, logged at S8, is a Netherlands weather ship, normally stationed in the Atlantic. **P. M. Crawford** describes conditions as generally very poor, but he caught some brief openings and heard phone from KR6, KH6IJ, SU1BB, MP4BBL numerous JA and KA, CR4AP, XZ2LT, VP9AX PX1DL, plus the usual over-modulated variety from nearer home.

The Other Bands

28 Mc/s continues to open spasmodically, mostly for European short-skip, although **B.R.S.20133** was lucky to log LU4DZI, '9AW and '7DI. 21 Mc/s is a little better. **B.R.S.20106** quotes G3DCU as reporting All India Radio audible again on 21.71 Mc/s, so there is a chance of hearing VU, AP, VK, etc. during the mornings.

In the meantime, TF5TP and CE3DG on c.w. and VQ5BVF, CR6BH and ZS5WA on phone were the best signals logged. Norman found 3.5 Mc/s providing some interesting c.w. and mentions W2GGL (who seemed strong enough to have got across on Top Band), KN2GAU, '2HFA, WN4ALE and YV5DE (0415). 7 Mc/s, poor though it is these days, produced ZL2ASA (0425), ZL3JT, LU0EAB, CO2OZ, '8AQ and some interesting U.S.A. signals from K5FGJ, W5UOH, '5NRC, '5JUL and '7AZX (0415). **B.R.S.20133** heard CN8, CR6BH, TF5TP and ZB2A on 21 Mc/s phone, but his best was ZS9G on the same band.

G6PD mentions a 14 Mc/s contact with VP4LZ who said he will be operating on Top Band during the autumn and winter, looking for Gs. Main frequency will be 1830 kc/s with 1810 and 1878 as standbys. He suggests that Gs should keep clear of 1845–1855 kc/s because the West Coast American Loran chain on 1850 kc/s is often received in Bermuda. '4LZ is with P.A.A. and is in Bermuda for two days or so every two or three weeks.

Mobile Working

With the availability of the new Mobile Licence, the experiences of **G2ACT** using portable equipment should interest car owning enthusiasts. The transmitter comprising a 6AC7–QV04/7, modulated by a Class A 6L6, runs at 12 watts input. The receiver uses a crystal-controlled converter and operation is on 14 and 28 Mc/s, using either a 12ft or 14ft standard " fishpole " whip aerial. Some years ago, this little rig worked all continents except Oceania, while recent QSOs include F8OZ on 28 Mc/s and ZB2A and W1CUX on 14 Mc/s. Results should be interesting when the high-frequency bands really liven up once more.

* * *

Thank you for your reports and comments and please post the next batch to arrive by August 20.

Australian Radio Amateur Call Book

IN producing the first edition of the *Australian Radio Amateur Call Book* the Federal Council of the Wireless Institute of Australia have met a very real need, particularly among those who uphold the age-old tradition of sending a QSL card after completing a first contract with another amateur station.

The listings are fully up-to-date and accurate. To provide for a continuation of accuracy in the future a special " tear out " sheet has been included for use by Australian amateurs.

The listings cover VK1 (Antarctica and Cocos Island) VK2 (New South Wales), VK3 (Victoria), VK4 (Queensland), VK5 (South Australia), VK6 (Western Australia), VK7 (Tasmania), VK9 (Papua-New Guinea).

The addresses of Overseas QSL Bureaux are given as well as details of Australian Broadcast stations. There are also useful notes on first aid in cases of electrical shock.

Copies of the Call Book, which sells at 4s. 6d. in Australia, can be obtained from the Federal Secretary, W.I.A., Box 2611W, G.P.O. Melbourne C1.

Slow Morse Practice Transmissions

Organiser: C. H. L. Edwards (G8TL)*

B.S.T.	Call	kc/s	Town
Sundays			
09.00	G3GYV	1900	Whitley, near Warrington
09.30	G3BKE	1900	Newcastle on Tyne
10.00	G6MH	1990	Southend-on-Sea
11.00	G2FXA	1900	Stockton-on-Tees
11.00	G3GZA	1837.5	Bristol
12.00	G3LP	1850	Cheltenham
12.00	G3JBU	1850	Northampton
12.00	GI5UR	1860	Belfast
14.00	G5AM	1900	Witnesham, Ipswich
21.00	G2FIX	1812	Nr. Salisbury
Mondays			
19.00	G3NC	1825	Swindon
19.00	G3JBU	1850	Northampton
19.15	G2FRX	1850	Plymouth
21.00	G3BLN	1900	Bournemouth
21.00	G3FSM	1900	Brentwood
22.15	G2BRH	1900	Ilford
22.30	G8TL	1900	Ilford
Tuesdays			
18.30	G2FXA	1900	Stockton-on-Tees
18.30	G3JMP	1875	Bristol
20.30	G3GDZ	1905	Kingsbury, N.W.9
21.00	G3EFA	1855	Southport
21.30	G3DBP	1915	Nottingham
Wednesdays			
19.00	G3GZA	1837.5	Bristol
22.30	G3FBA	1910	Bath
Thursdays			
19.00	G3NC	1825	Swindon
19.15	G2FRX	1850	Plymouth
20.00†	G2CPS / G2CNX / G3GWT	1910	Hull, Yorks.
20.30	G3JQM	1878	Barwick, Yeovil
22.30	G3ADZ	1940	Southsea
23.00	G3LA	1915	Brentwood
Fridays			
18.00	G3GEN	1900	Gloucester
19.00	G3BLN	1900	Bournemouth
20.00	G3IIH	1900	Wirral
20.30	G3IMP	1920	Romford
Saturdays			
13.00	G2FXA	1900	Stockton-on-Tees

† *Alternately.*

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

Members using this service are requested to send listener reports to the stations concerned.

" Handbook For Wireless Operators "

THE *Handbook for Wireless Operators Working Installations Licensed by Her Majesty's Postmaster-General* has now been revised in accordance with the International Radio Regulations (Atlantic City, 1947) and the Merchant Shipping (Radio) Rules, 1952. Although primarily intended as a manual for the guidance of wireless operators on board ship and at coast stations, every licensed radio amateur should have one in his shack. He will find it a mine of information. The *Handbook* costs 3s. from Her Majesty's Stationery Office.

Side Slips

MR. LORIN KNIGHT'S article " Introduction to Transistors " published in the July issue contained the following errors:—

Page 12 Para. 3. The second sentence should read:

" Without the influence of the emitter, *holes* would be attracted towards the base connection, *electrons* would be attracted to the collector . . . "

Page 13. Fig. 5. " *Emitter* microamps " should read: " *Base* microamps ".

Page 13. Line 7. P1 should read P2.

The R.S.G.B. in Retrospect

1925—1933

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

THE year 1925 witnessed the birth in Paris, under the leadership of Hiram Percy Maxim (President of the A.R.R.L.), of the International Amateur Radio Union (I.A.R.U.). The Union had—and still has—for its objects the promotion and co-ordination of two-way radio communication between amateurs of all countries and the advancement of the radio art. It was also visualised that the Union would represent radio amateurs at international telecommunication conferences. The American Radio Relay League agreed to act as the Headquarters Society of the Union, a task which it has undertaken right up to the present time. The first secretary of the Union was K. B. Warner (Secretary, A.R.R.L.) and included in the list of distinguished Vice-Presidents was the name of Gerald Marcuse (G2NM).

Trans-Atlantic Tests

During the year 1925 the T. and R. Section, as part of its policy of looking after the interests of transmitting amateurs, persuaded the G.P.O. to issue special permits to enable members to participate in a second series of trans-Atlantic tests on 23 and 45 metres. Excellent results were achieved.

The Charter

It was during the following year (1926) that the Society received its Charter of Incorporation and became known as the Incorporated Radio Society of Great Britain. At that time the membership of the Sociery totalled 844 with some 200 clubs and societies affiliated to it.

Two new sections were started during the year—namely the QSL and QRA sections. The organisation of the QSL service was undertaken by Mr. C. A. Jamblin (G6BT) of Bury St. Edmunds, who ran it for a year and then handed it over to Mr. A. Hinderlich (G2QY). As a matter of interest, the first known QSL card was designed and used by Mr. W. E. Corsham (2UV).

In September 1926, the Society held its first Convention—at the Institution of Electrical Engineers, London. Also that year a stand was taken—for the first time—at Radiolympia. It was during this year that the diamond-shaped T. & R. badge replaced the old " Union Jack " badge. During the autumn of the same year the Society's first Articles of Association were approved—a Constitution which stood up to the test of time for more than 25 years. Subscription rates at that period were £1 1s. 0d. per annum for London members living within a radius of 25 miles of Charing Cross, and 15s. per annum for Country members. In addition, there was an entrance fee of 10s. 6d. The higher subscription rate for London members was intended to cover the cost of lecture meetings at the I.E.E.

The First B.R.S. Members

During 1927 it was decided to identify non-transmitting members by issuing them with a B.R.S. (British Receiving Station) number. The first B.R.S. number was issued to Mr. H. A. G. Quaintance of London, N.16. The wavebands in common use at about this time were 90/100 metres, 44/46 metres, 32/34 metres and 23 metres.

In September, 1927, the Society held another Convention in London and again a stand was taken at Olympia. As the result of a suggestion made by Capt. Hampson (6JV) at the 1927 Convention, the British Empire Radio Union (B.E.R.U.) came into being two years later under the able leadership of the Chairman of the recently established Publicity Committee, Mr. A. E. Watts (G6UN). An important object of B.E.R.U. was to look after the welfare of radio amateurs within the British Empire, particularly those in countries which had no national Amateur Radio organisation. It was hoped, eventually, if sufficient support was forthcoming, to change the name of the Society to " The Radio Society of Great Britain and the British Empire " but although a great deal of hard work was put in by Mr. Watts and others the original intention was never achieved.

The Washington Conference

Capt. Ian Fraser became President in January, 1928, during which year important changes in amateur frequencies occurred. These changes resulted from the Washington I.T.U. Conference held a year earlier. The new allocations (defined for the first time in terms of frequency rather than of wavelength) gave amateurs the use of wide bands around 1.7, 3.5, 7, 14, 28 and 56 Mc/s.

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

The first R.S.G.B. Convention held in the Lecture Theatre of the Institution of Electrical Engineers, London, on September 17 and 18, 1926, with Mr. H. Bevan Swift (G2TI) in the Chair.

Prior to the Washington Conference British amateur call-signs had commenced with the numeral 2, 5 or 6, *viz.* 2MT. As a result of decisions reached at the Conference it was agreed to introduce International Prefixes. The letter G was assigned to Great Britain so that the call-sign 2MT became G2MT. Under the terms of a new amateur licence, the G.P.O. permitted amateurs to use the band 75/84.9 metres for special experimental work, permits for which were granted *only* on the recommendation of the R.S.G.B.

To encourage young enthusiasts to join the Society, the Associate Grade of membership was introduced for which the annual subscription was 10s. Associate Members, however, were not allowed to vote and were classed as non-Corporate Members. During the year 1927 the Society produced an Annual, which sold at 2s. 6d. a copy.

The Beginning of Empire Broadcasting

Broadcasting to the Empire on short waves which had not, up to this time, been attempted by the B.B.C., was proposed and undertaken (with the permission of the G.P.O.) by Mr. Gerald Marcuse (G2NM), who, at his own expense, set-up a studio in his home at Caterham, Surrey, and commenced a regular programme for overseas listeners. It was from this simple beginning in the home of a Society member that the Overseas Service of the B.B.C. grew to the vast organisation that it is today.

At about this time BCI was becoming a problem, with the result that most amateurs did not start operating until 11 p.m. when the B.B.C. stations closed down .

In December, 1928, the country was divided into 16 districts each under a District Representative. A booklet containing a list of British amateur call-signs and a log book was compiled and sold but the experiment was not repeated.

Television

December, 1929, saw the advent of the first experiments in television and it is interesting in this connection to note that the system now in general use was envisaged by the Society's first President (Mr. A. A. Campbell Swinton) as far back as 1895.

The Society, now under the presidency of Mr. Gerald Marcuse (G2NM) was still expanding and nearly 2000 amateur transmitting stations were in operation. Following protests by the Society the G.P.O. took active steps to have foreign commercial stations removed from the exclusive amateur bands. As had now become customary, the Society took a stand at Radiolympia. Convention held in September had by now become one of the highlights of the Society's year.

Honorary Secretary

In January, 1930, Mr. John Clarricoats (G6CL) —a forceful personality with unbounded enthusiasm for the interests of the Society, who had been very prominent during the previous few years as an organiser of Society social functions and as a member of both the Council and the T. & R. Committee—was elected Honorary Secretary in succession to Mr. G. F. Gregory of Ilford, who had taken office a year earlier on the understanding that Mr. Clarricoats would carry out the major responsibilities. We owe to "Clarry," as he is universally known, a great debt for his services to the Society, particularly during the difficult war years 1939–45 when he produced the BULLETIN, without loss of continuity, from his home in Palmers Green—no mean feat with little paper, little material, and many sleepless nights during the bombing of the Capital.

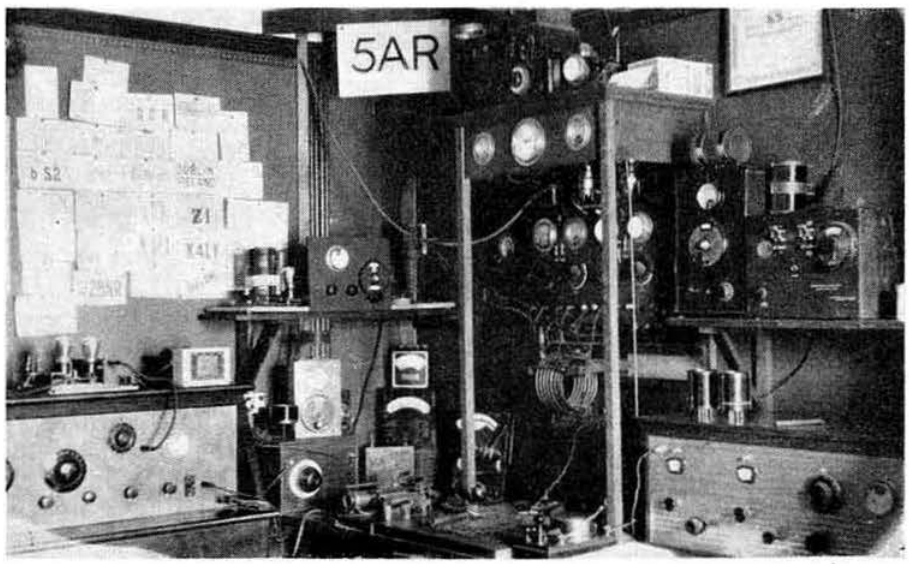
In December, 1929, Miss May Gadsden, who had been rendering private clerical assistance to Mr. Clarricoats during that year and earlier, joined the Society as Assistant Secretary, an office she has held ever since.

The 3.5 Mc/s band was released for experimental use in May, 1930, but those who wished to avail themselves of this facility had to apply through the Society and the Society had the privilege of endorsing their applications and submitting them to the G.P.O.

First Loyal Relay

The first Loyal Relay was organised to mark the occasion of the 36th birthday of the Society's Patron (H.R.H. The Prince of Wales, K.G.). Selected British Isles stations listened for and accepted birthday greetings from other amateur stations in Empire countries. The messages were forwarded to Headquarters and delivered personally to Buckingham Palace by Mr. Watts, who was continuing his interest in the B.E.R.U. The selected stations were known as Empire Link Stations and the operators could be distinguished by a special E.L.S. badge. "B.E.R.U. News" was a regular monthly feature in the BULLETIN.

Contact Bureau was inaugurated at about this time, while the Publicity, Social, QSL, and QRA Sections were all flourishing under their respective Managers. Contact Bureau, as its name implied, was designed to put members interested in specific technical subjects into touch with one another. Mr. T. Palmer Allen (GI6YW) of Belfast was the first Contact Bureau Manager.



A view of Mr. E. Dawson Ostermeyer's station (5AR of South Woodford) about the year 1928.

County Representatives

During 1931, under Mr. Bevan Swift's presidency, it was decided to enlarge the Scheme of Representation by providing for the election of County Representatives. From that time onwards the District Representatives were nominated by the Council (the D.Rs were equivalent to the present Regional Representatives) whilst the C.Rs were elected by the members. There were no Town Representatives.

At about this time a Calibration Service was established by Mr. A. D. Gay (G6NF). Members possessing crystals without the necessary calibration certificates (as then called for by the G.P.O.) could have them certified for 2s. 6d. For 5s., home constructed wavemeters were also calibrated. The service ran very successfully until the outbreak of war in 1939. In November, 1931, the first Slow Morse Practice Transmissions were started—a service still in operation today.

The Madrid Conference

1932 was an especially important year in the history of the Society because it was during that year that another Radio Conference took place—this time in Madrid. Prior to the Conference, Messrs. Watts, Marcuse, Swift and Clarricoats kept in close touch with the G.P.O. in order to present the Society's viewpoint. Following these discussions the G.P.O. informed the R.S.G.B. that the U.K. Government intended to vote for the retention of all the amateur bands on the basis of the Washington Convention. The G.P.O. spokesmen also said that the U.K. delegation would welcome the presence of a Society delegate at the Madrid Conference to advise them on matters affecting Amateur Radio. As a result Mr. A. E. Watts (who had then become Acting Vice-President) attended the Conference as a representative of the I.A.R.U. At that conference, Top Band—one of the main bones of contention—was held for amateur use.

At about this time Messrs. Swift, Watts and Clarricoats were invited by the Admiralty to serve on a Committee set up by the Director of Signals (Vice-Admiral Dorling) to discuss the possibility of forming a reserve of expert radio men to serve the country in time of emergency. Shortly afterwards, at the invitation of the Admiralty, Mr. Clarricoats, accompanied by senior naval officers, addressed Society meetings in many parts of the country and gave full details of the proposals. Within a few months the Royal Naval Wireless Auxiliary Reserve (R.N.W.A.R.) became firmly established. The support which it gave to the Reserve placed the Society on a much firmer footing with the Government, as well as increasing its status.

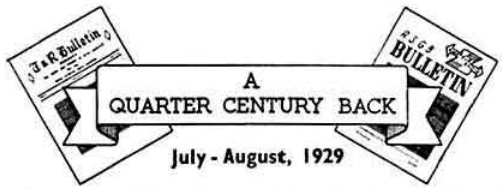
Early in 1932 Mr. Douglas Chisholm (G2CX) took over the QSL Bureau, the cards being sorted at Headquarters and dispatched from his home. In December of the same year Mr. Clarricoats, who had served for three years as Honorary Secretary, was appointed full-time Secretary, an office which he still holds today.

Mr. H. Bevan Swift was again President in 1933 by which year membership had risen to about 1800. Conventionettes were held all over the country and were well attended. The QSL Bureau was handling about 200,000 cards a year while the QRA Section under Mr. M. Pilpel (G6PP) dealt with some 700 new and changed addresses. " The Month on the Air " was introduced as a regular BULLETIN feature, whilst new Q signals based on decisions reached at the Madrid Conference came into general use. Car plaques were made available for the first time.

The First National Field Day

The weekend of June 10 and 11, 1933, witnessed the first National Field Day event. The competing stations, which operated on a District basis, were allowed a maximum power of 10 watts on Top Band and 25 watts on 3.5, 7 and 14 Mc/s. Much the same rules were in force then as today. The event started at 6 p.m. on the Saturday and finished at the same hour the following day.

(To be continued.)



" AT no time during the year does Amateur Radio come before the public eye so much as during the ten days when the R.M.A. Exhibition is held in London. For several years past this period has been one when all who are able foregather to examine with critical eyes the latest developments of the radio art; for three years too your Society has been represented at Olympia." (Editorial—August.)

* * *

Captain Hartridge—deputising for Mr. A. Hinderlich, at a London Area meeting—discoursed at length on " Methods of Modulating Crystal Controlled Transmitters." " The usual form of c.c. transmitter, consisting of a number of valves in cascade acting as amplifiers or frequency doublers, lends itself very well to modulation by choke control on one of the sub-amplifiers. A comparatively low-power stage can therefore be modulated with, of course, total absence of frequency modulation."

* * *

In an article on Chemical Rectifiers, R. L. Varney (G5RV) emphasised that provided such devices are made properly they are capable of really excellent service. Writing about his own station, he said: " the cells are built in half-pound jam jars and are very compact. They will easily pass 200mA with almost imperceptible heating and very little sparking . . . The usual load is 40mA to the c.c. transmitter. Smoothing is carried out by a bank of condensers, the total capacity being 10μf."

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W. A. Bousfield contributed an account of the part played by radio amateurs during a recent flood disaster in Tasmania.

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L. A. Lafone (G6ZA) offered some useful advice on keying methods. Best results were achieved when " the key is placed in the bias lead of the last valve; when " up " the grid of this valve is isolated, the anode current falls to zero and no output is obtained. All reports give the note as steady and no chirp, so it seems to be in a fairly good position."

* * *

The first Welsh District Conventionette was held in Swansea . . . " Radio and Weather " was the title of an article by E. L. Owen (G2OW) . . . W. H. Hebdige wrote about " Wireless in Lighthouses." B. Christian invited tenders for the construction of a c.c. transmitter (7 Mc/s and 14 Mc/s) and s.w. receiver suitable for use at sea.

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It was reported that a highly successful Conventionette had been held in Queen's Café, Bristol, on May 25, with Gerald Marcuse G2NM (then President), in attendance. His address on " Amateur Radio " was well received.

* * *

Maurice Gibson wrote about Dull Emitter Valves in Laboratory Oscillators.

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G6XJ gave notice of his intention to operate portable XG6XJ from the Norfolk Broads using 10 watts on 7 and 14 Mc/s.

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W. H. Kempton (G2AI) described the procedure for winding small power transformers using cores supplied by W. Bryan Savage of 146 Bishopsgate, London.

A Radio Angle to the Solar Eclipse Expedition, 1954

By DR. ARTHUR C. GEE (G2UK)*

THE writer had the good fortune to be invited to join the British Government Eclipse Expedition which went to the island of Öland off the east coast of Sweden in June to carry out geodetic work in connection with the total eclipse of the sun on June 30 last. By profession a doctor of medicine, it was gratifying to have been also invited because one was also a radio amateur; my duties were, in fact, chiefly to install and operate the radio equipment required to provide very accurate time signals.

The project which Dr. d'E. Atkinson, Chief of Greenwich Observatory, carried out, consisted of ascertaining with great accuracy the times at which certain phases of the eclipse took place. This was done by taking a ciné film of the eclipse and recording the time at which each frame was exposed. The camera ran at 20 frames a second, so it will be seen that the time could be recorded down to a fraction of a second.

Essential Time Signals

From the radio angle, the expedition can be divided into two phases. The first consisted of getting normal B.B.C. time " pips " on the radio throughout the day, so that the surveying and laying out of the " piers " or foundations for the astronomical equipment could be carried out. Similar time signals were required to calibrate the chronometers needed for the final stage of the project. Experience as a radio amateur (or rather, as a short-wave listener) was invaluable in this first stage, as past experience was the best guide to suggest where to look for suitable transmissions.

Generally speaking, it was found that the 11 Mc/s broadcast band proved best during the middle hours of the day, with the 9 Mc/s band giving the best results in the mornings and evenings. Later observations were usually checked from stations in the 7 Mc/s band—which, for once, proved a blessing to a radio amateur!

The Finnish eclipse expedition were equipped with transmitting gear with which they kept in touch with their Headquarters at Helsinki and with their colleagues manning a similar station on the west coast of Norway. They had two commercial channels allocated to them and it was quite an interesting experience to take part in some of their QSOs and to discover that QRM on commercial frequencies can be just as bad as on amateur ones.

The second phase of the work required much greater accuracy in timing. Signals from GBR on 16 kc/s were radiated specially for the eclipse. They were received on a long-wave naval receiver, passed to a special rectifier and switching unit and used to actuate a recording pen beneath which ran paper tape such as in a Morse code tape recorder. A second pen was also provided which could be actuated by the chronometers or the camera shutter mechanism, so that two traces were drawn on the tape, one giving the time signals and the other the chronometer second beats or the camera film speed as required. In this way comparisons between the various signals could be made with great accuracy.

The HRO receiver, the long-wave receiver, the switching unit, chronograph motor and camera motor and their various electrical circuits worked on 24 volts d.c., for which we had a battery of accumulators and a petrol charging engine. The first few days were reminiscent of N.F.D., much activity taking place installing the gear, putting up aerials, filling and charging accumulators and so on. Meanwhile, the site for the optical gear was being prepared, and finally a concrete bed 6ft. long, 3ft. wide and about 4ft. deep was constructed. Every one gave a hand with this job—including the radio operator! If ever a man was put to digging his own grave!

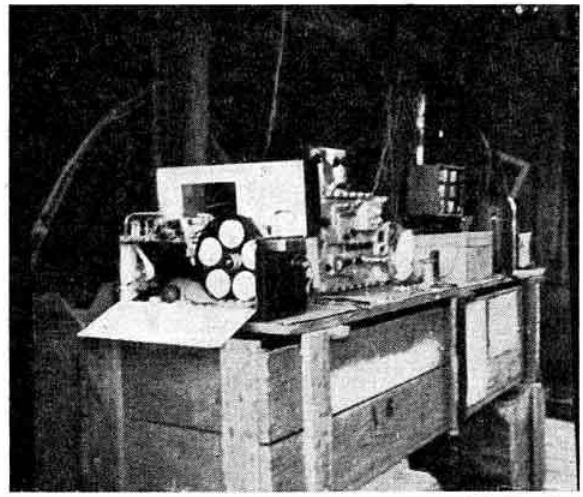
Once everything was installed, life settled down to a more tranquil routine—morning chronometer checks from some short-wave broadcast signal or other, accumulator charging, more time checks, a bit of tidying up the gear here and there, the evening chronometer checks—not forgetting to wind them—and so on.

We were very fortunate that half a dozen or so other scientific expeditions were also located around us. The Swedes themselves had chosen Öland as the most favourable location, as had three of the German expeditions, the Italian expedition and a Finnish, a Swiss and an Irish expedition. For accommodation we took over a small *pension* in which we had meals of a primitive Swedish type, consisting chiefly of pickled fish of one variety or another, various sorts of pressed meat, potatoes, black bread, cucumber in syrup and milk. Needless to say, we got very tired of this, and the diet was, in fact, the cause of the writer becoming occupied in his professional capacity in quite a big way.

It can be easily imagined how interesting was such a collection of people. In the evenings we sat and discussed the various aspects of science in which we happened to be interested. The writer was told by some of those who prepare the sunspot records at Zurich Observatory that the present minimum has been an unusually long one, and sunspot activity may suddenly shoot up to the next maximum. So it may not be too early even now to start digging out those 28 Mc/s beams again!

The Day

The day of the eclipse itself dawned grey and miserable. After the weeks of preparation, depression settled on us heavily. However, about half-an-hour before " zero hour " the clouds thinned and by the time the eclipse had begun, visibility was quite good. Baily's beads were distinctly visible—the last bright specks of light which occur just



A corner of the shack, showing the equipment used by Dr. Gee during his visit to Öland in connection with the solar eclipse.

*" *East Keal*," *Romany Road, Oulton Broad, Lowestoft, Suffolk.*

before totality, due to irregularities on the surface of the moon. The blackness which came with totality was an eerie experience which will not easily be forgotten. It was quite dark, and electric torches had to be used to check that the gear was operating properly. The sea birds ceased their incessant cries and after it was all over, cocks crowed. It was an experience which gave one the feeling that one had witnessed what the end of the world might well be like.

And so within a few minutes, the event for which we had all prepared so strenuously was over. Some of the scientific work suffered from poor visibility. But even so, the money and time expended will have been to good purpose. Much useful training was given to personnel, apparatus was checked in the field and a really genuine international goodwill established between all the teams, no matter what their varied political backgrounds happened to be. And for the writer it was the biggest and best N.F.D. ever!

V.H.F. Broadcasting

THE B.B.C. has been given permission to proceed with its plans to introduce v.h.f. broadcasting. The nine stations authorised, which will each carry the Home, Light and Third programmes, will be sited at Wrotham (Kent), Pontop Pike (near Newcastle), Divis (Northern Ireland), Meldrum (near Aberdeen), South Devon, Sutton Coldfield, West Wales and Holme Moss. Frequency modulation will be employed and the stations will operate in the band 88 to 95 Mc/s.

Receiving Licences

AT the end of June, 1954, there were 13,512,275 broadcast receiving licences in force in the United Kingdom, including 3,411,046 for television and 236,057 for sets fitted in cars. The number of television licences increased by 31,680 during the month.

London Members' Luncheon Club

THE Rev. Canon Noel Waring, EI8J, Maria A. Monteiro, CT1YA, Jose Moreira Monteiro, CT1JM, George F. Barratt, ZC4IP (ex G8IP) and Mrs. Barrett were welcome visitors to the Club Luncheon held on Friday, July 16, 1954.

In the absence of the Chairman (Stanley Vanstone, G2AYC), Mr. Arthur Milne, G2MI, presided.

The Club is due to meet again on Friday, August 20, 1954, at the Bedford Corner Hotel, Tottenham Court Road, at 12.30 p.m. Provincial and overseas amateurs are assured of a very cordial welcome. Those who intend to be present should telephone May Gadsden on HOL 7373, well in advance.

Hamfest in Holland

A GROUP of Dutch amateurs is to hold a Hamfest in Voorthuizen, half-way between Apeldoorn and Amersfoort, during the weekend September 25-26, 1954. The programme includes dances, film shows, cabaret, technical lectures, a D/F competition and an exhibition of modern equipment. The cost for the whole weekend, including accommodation (in bungalows) and all meals, will be 10 Guilders (£1). There will be special prizes for those coming the greatest distance.

Further details can be obtained from PA0XE, Claes de Vrieselaan 153A, Rotterdam, Holland.

North-Western Topsfest

A HAMFEST, organised by the Tops C.W. Club, will be held at Walton Hall, Warrington, on August 29, commencing at 3 p.m. Members of the Warrington society will act as guides to visitors and will wear badges marked "G3CKR-Warrington" as a means of identification. Tickets, price 6s. 6d. including tea, may be obtained from J. P. Evans (GW8WJ), 2 Ffordd Ty Newydd, Meliden, Flintshire, North Wales.

Mobile Column

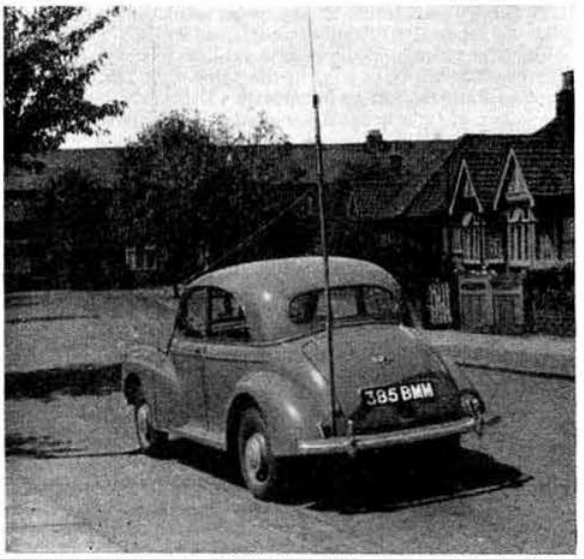
A new BULLETIN *feature devoted to the interests and activities of mobile and portable-mobile operators.*

ALTHOUGH mobile operation has only been permitted in the United Kingdom since June 1, 1954, interest in this new branch of Amateur Radio activity is already running high. There is no doubt that mobile operation and the equipment necessary has a particular fascination of its own. Technically, it offers a new challenge in miniature, high efficiency gear and apart from the obvious merits of being able to operate while actually in motion it appeals to all types of radio amateur, from Top Band enthusiast to v.h.f. worker. For the latter, portable-mobile has one particular advantage compared with fixed-station working: if the site is no good, it is a simple matter to move to another!

Equipment and Results

G3BLE/M is lucky to have the assistance and advice of W5RWH, who has had mobile experience at home in U.S.A. During a recent test, G3BLE/M contacted G2AYQ and G3HFS (both in Cornwall) on 3735 kc/s while on the road in Oxford—a distance of well over 200 miles. The transmitter in use comprised a 6AQ5 crystal oscillator driving an 807 p.a. with an input of about 20 watts and was modulated by a pair of 6AQ5s fed by a carbon microphone. A dynamotor was used to supply 470 volts to the p.a. and 275 volts to the crystal oscillator and modulator. The aerial was an 8ft. centre loaded whip, the loading coil being space wound on a ribbed former 8in. long and 2½in. in diameter. For reception, a Gonset converter feeding into a standard car radio on 1500 kc/s was employed.

G3MY/M (Sheffield) operates crystal controlled on 3625, 3700 and 3778 kc/s, the line-up being : 6C4 Pierce crystal oscillator, 2E30 p.a. running 12-15 watts ; 9003 speech amplifier, N78 modulator with which a crystal microphone is used. Power is obtained from a 300-volt vibrator pack. On the receiving side, a crystal controlled converter employing a 6AG5 and 6BE6 feeds into the car radio which tunes from 800 to 1100 kc/s. The complete transmitter and converter is built into a cabinet measuring only 4in. by 3½in. by 10in. and is mounted on the glove tray beneath the dashboard. The aerial is a centre-loaded 10ft. whip mounted on the rear bumper, the loading coil being wound with 16 s.w.g. enamelled wire on a 2½in. perspex former. The coil is fitted with a brass tuning slug (as suggested by *QST*) which permits the aerial to be resonated anywhere in the range 3600 to 3800 kc/s. Heavy TV-type co-axial cable is used to connect the aerial to the pi-network output circuit in the transmitter. Best DX so far is 70 miles. Sky-wave contacts with the vertical appear to be somewhat difficult but ground-wave coverage is excellent. A description of G3MY's very interesting 144 Mc/s mobile equipment will appear shortly.



The whip aerial used by G8TL/M on all bands from 1.8 to 28 Mc/s. The loading coil is tapped for band selection.

G2ACT/M (of Preston, Lancs) who is away from home a great deal finds that mobile operation enables him to follow the hobby very satisfactorily. At the moment, he is operating on 14, 21 and 28 Mc/s. Recent contacts, all on phone, have included CN8EB (RS5/7-9, 14, 2200), F7CX (5/7, 14, 1830), DL4GW (5/6, 14, 2000), DL4QX (5/7, 14, 1930), ZB2A (5/8, 14, 2215), DL2IY (5/6, 14, 0815), SM5TF (4/4, 21, 2215), F7DH (5/5, 21, 1900), and DL4AD (5/9, 14, 2130)—a list which should certainly dispel any ideas that mobiles are useful only for purely local work! The receiver in use is a triple superhet consisting of a crystal controlled converter working into the r.f. and mixer stages of a BC454 receiver which in turn feeds into a medium-wave Command set in which a noise limiter has been installed. G2ACT points out that re-arranging the a.f. circuits to provide bass cut is a most important aid to intelligibility.

One of the first to commence mobile operation on 144 Mc/s was **G2ATK/M,** who travels widely in the Midlands, Southern England and Scotland. He says there is no difficulty in working mobile to fixed stations up to 20 miles with a quarter wave (19in.) vertical aerial clipped to the top of the near side rear window. Recent contacts of this type have been with G2HCG (who is himself equipped for 144 Mc/s mobile operation), G3HHY, G6FK, G3ABA and G8VN. Best DX to date was a contact with G3WW while in Cheshire—a distance of about 130 miles using the quarter wave whip! The first mobile-to-mobile contact was with G5ML/M while travelling through Coventry.

The equipment used by G2ATK/M comprises a double superhet receiver, a transmitter with a push-pull 6C4 p.a stage running 10 watts and a p.p. modulator, all in a cabinet measuring 10in. by 4½in. by 6in. Power is derived from a genemotor, the total consumption from a 12 volt battery being 10 amps on phone, 8 on c.w. 7 on receive, and 2 on standby (heaters only). '2ATK comments that 6C4s have been found to be the most satisfactory valves for use in the p.a. stage. 5763s are extremely difficult to neutralise but are excellent for driver stages. His mobile frequency is normally 144.64 Mc/s.

Another v.h.f. enthusiast is **G3GOP** (Southampton), whose transmitter and receiver are built as one unit in a case measuring 10in. by 5 in. by 12in. deep. The input is 8 watts and the transmitter works well into a quarter wave whip. Best contacts so far have been with G3APY/P (Leeds) and G3AGS/P in Lancashire. During a recent trip to the West Country many contacts were made, including G6AG, G6NB and G5TZ. G3GOP will be visiting the Midlands, and the South Coast and south-west areas during August, September and October.

G3IVP/M, 32 Feversham Road, Salisbury, will appreciate reports on his Top Band mobile transmissions. He works on various frequencies between 1800 and 1850 kc/s.

Mobile Calling Frequencies

G3MY raises the question of calling frequencies and suggests that 3595 kc/s should be voluntarily set aside for this purpose. However, as most mobile operation is likely

to be on phone, 3600 kc/s might be better in order to conform with the Band Plan. While on this question, now seems to be the time to name a **National Mobile Calling** frequency on 28 Mc/s. A frequency at the high end of the band—say, 29627 kc/s—is suggested as this is one for which surplus crystals are available. Being at the high end, this frequency is least likely to suffer from QRM when the band opens again for DX. So far as 144 Mc/s is concerned, the Zone Plan would seem to rule out any fixed calling frequency. Similarly, 7, 14 and 21 Mc/s calling frequencies would be impracticable owing to the international nature of these bands. Comments on these suggestions will be most welcome.

Power Supplies

One of the principle difficulties in starting mobile operation is the power supply. Operators who have solved the problem satisfactorily are asked to send the following details for future publication: type number, input supply volts, input current (loaded and unloaded) and output voltage and current. Other comments and some indication of the present supply position would also be useful.

* * *

All those who have made this column possible by writing interesting and informative letters are thanked for their co-operation. Only space considerations have prevented more lengthy extracts. Reports, comments and descriptions of equipment for inclusion in this feature should be addressed to "Mobile Column," R.S.G.B. BULLETIN, New Ruskin House, Little Russell Street, London, W.C.1.

The Under-Modulation Phenomenon on 144 Mc/s

The apparent difficulty of fully modulating a 2 m transmitter is well known to all v.h.f. workers. It was expected, therefore, that the paragraph "Fact or Fiction" in Around the V.H.F.s in the April, 1954, issue of the BULLETIN would bring forth a variety of views, some of which are presented here. Whether or not one of them is the right answer is left to readers to decide after reading the evidence.

ALTHOUGH the reasons put forward by members in an attempt to explain the difficulties of modulating v.h.f. transmitters are many and varied, they broadly fall into two categories—transmitter effects and the behaviour of receivers at differing carrier levels.

G3CVO considers that the transmitter may be under-modulated owing to low impedance, low-Q tank circuits, the greater influence of valve inter-electrode capacity at the higher frequencies causing degeneration and to the onset of transit time effects which tend to put grid and anode more than 180 degrees out of phase. He quotes as reference *V.H.F. Techniques*, Volume 1, Chapter 17, pps. 392 and 405 and recommends a combination of grid and anode modulation in the p.a. stage similar to that employed in the SCR522 (where some 20 per cent of the normal modulation is applied to the grid) or, better still, by simultaneous modulation of p.a. and driver stages. He points out that such an arrangement is particularly necessary when dealing with video modulators of considerable bandwidth.

G6LI's view is that feed-back of the r.f. output of the transmitter into the modulator is responsible for apparent lack of output from the latter, a condition aggravated by poor r.f. screening in many amateur constructed modulators.

An experiment which seems to indicate that the receiver and not the transmitter produces the effect of under modulation is described by **G3ENI.** A station was contacted on 2 m such that the strength reports, with beams aligned, was S9. The depth of modulation using a speech-clipper at G3ENI was adjusted to 100 per cent and monitored on an oscilloscope. The beams were slowly rotated until background noise just became apparent at the distant receiver. At that point the transmission was still reported as fully modulated. The received signal was further weakened by beam rotation and reports on modulation depth noted until speech became inaudible.

It was found that after the onset of receiver noise, reports indicated an apparent decrease in the depth of modulation down to the point where modulation was imperceptible but the carrier still audible. At any point, a report of full modulation could be obtained by over-modulation of the transmitter or by introducing up to 6 db of speech clipping.

The effect is explained by the fact that the noise component of the local oscillator beating with the incoming carrier becomes more noticeable at low signal levels and tends to drown the modulation. It is desirable, therefore, that the mixer be adjusted for optimum conversion conductance and oscillator injection to make the most of weak 'phone signals.

As one of the most successful 2 m operators in this country, the views of **G3BLP** are obviously of interest in this connection. He also is of the opinion that the receiving end is mainly to blame. On 2 m, due to the absence of much of the noise which affects weak signal reception on the lower frequencies, the detectable signal is limited mainly by receiver noise, and normal signals may be much less than 1μV at the input of the converter. Over-modulation makes these signals more readable and the operator is thus under the impression that a 2 m transmitter requires more modulation than on other bands. As most amateurs rarely measure their modulation depth, gross over-modulation with its consequent broadening of the transmitted signal, severe interference to neighbouring stations and infringement of the licence regulations is rife on the band to-day. G3BLP's suggestion—the obvious one, surely—for overcoming the trouble is not to try to push 'phone through when the received signal is too weak but to use c.w. instead.

A point which seems to require some clarification is this: why do weak 2 m 'phone signals, which are comparable with valve noise, appear under-modulated, while signals on other bands, do not suffer in the same way, although they have to compete, not so much with valve noise, but with all the other disturbances to which the lower frequencies are heir?

Apropos G3ENI's reference to the importance of a mixer running at optimum conversion conductance and oscillator injection, does this indicate that it might be profitable, in the interests of weak 'phone reception, to make sure that the oscillator voltage reaching the mixer is as pure as possible and free from all frequencies other than that required for the purpose of conversion? It has been found necessary with 70 cm receivers to interpose a high-Q filter between the end of the oscillator chain and the crystal mixer in order to achieve a satisfactory noise factor. It would be interesting to learn from those who are known to be experimenting with this feature on 2 m whether the addition has resulted in any improvement in the reception of weak 'phone signals.

W.H.A.

Medway Area Two Metre Round Robin

ON the last Sunday in each month G3BSU, G3FPV, G4OU, G6CH and G6NU hold a 2 m Round Robin, commencing at 1830 B.S.T. Beams are turned east, north, west and south, and "CQ 2 m Round Robin" used as the call.

CQ
Single Sideband

By H. F. Knott (G3CU)*

PLANS for mobile s.s.b. operation are the main topic of discussion at the moment on 3.5 Mc/s, with G3CWC, G5IX and G6HV planning for early participation. The power supply problem is alleviated by the economical requirements of s.s.b. operation, the main saving being realised during periods of no speech when only a small standing input is being dissipated. G6HV, apart from working out plans for his particular need in power units, is contemplating a versatile mobile rig of unit construction. It is intended to use a single oscillator for both transmitter and receiver, and two identical crystal filters for circuit simplification.

Eighty Metres

G3ILI (London) and G3AOO (Manchester) are now using the system, the former with a phasing rig. Although modest at present, the p.a., consisting of a pair of 6BW6s in class AB1 (output 12 watts), puts out a very potent signal. G3FRN has redesigned the half lattice crystal filter installed in his HRO, giving a better skirt selectivity characteristic. While considering a new linear amplifier designed around

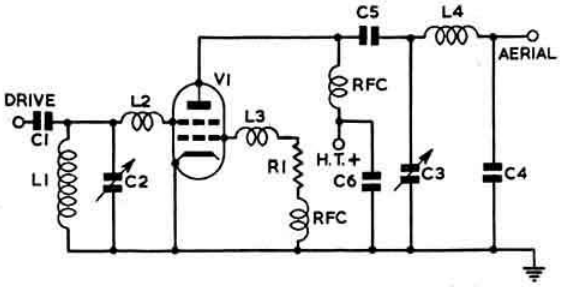


Fig. 1. A screen-driven linear amplifier for single sideband operation. C1, 100 μμF; C2, L1, low " C " circuit; C3, 230 μμF (for 3.5 Mc/s) C4, 400 μμF; C5, 0.002 μF; C6, 0.001 μF; L2, L3 (for 3.5 Mc/s), 30 turns, 28 s.w.g. enam., ¾ in. former; L4, to suit band; R1, 100 ohms; R.F.C., 2.5 mH r.f. chokes; V1, 12A6, KT66 or CV57.

an 805, '3FRN is having continued success with a single 811 running an indicated peak input of 90 watts. (Anode voltage 1400, and 4½ volts grid bias). G3ESV, preparing for another trip to GD, is building a full lattice filter transmitter with all miniature valves and components. '3ESV suggests that for an electronic change-over relay (similar to that described in the June issue) for use with open wire transmission line (as in the case of an end fed Zepp), the TR switch should be tapped on to one side of the tuned feeders. Voltages are naturally much higher than with " flat " 80-ohm co-axial cable, but the switch stands up well to the job.

G3CWC is getting excellent results from a 6AG7 mixer, the output of which is suitable for driving a 6L6 in class A. With 300 volts on the anode and screen grid, the s.s.b. signal is fed to grid 1 and the local oscillator voltage by cathode injection (3 volts r.m.s.) *via* a low impedance link.

News from Europe

Denmark is again showing a lead in the ratio of s.s.b. stations to those licensed. Further new stations have been added to the already long list, most of which are using the phasing method of single sideband generation. The Danes are permitted to use power inputs of up to 300 watts under their Class A Licence. The following are those known to be regularly active: OZ1CH, 1SB, 1WW, 2JO, 2BB (300 watts), 2XT, 3EA, 5AL, 5BS, 5AM, 7T (300 watts), 7BO (300 watts), 7KJ (100 watts), 7NU, 7BR (35 watts), 8BM and 8CP.

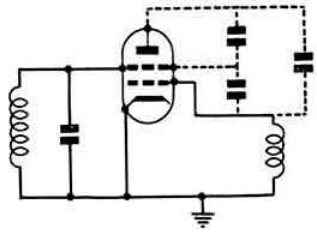


Fig. 2. The capacities which exist within a tetrode are indicated by the dotted lines in this drawing.

Technical Topics

With the rapid increase in the number of stations using class B amplifiers either for single sideband or TVI-proof transmitters, a demand has arisen for a power amplifier which is easily driven, yet makes no special demand on a bias supply.

After investigation into the operating characteristics of zero-bias triodes, grounded grid stages, low impedance drive of triode-connected tetrodes as well as biased tetrodes, G2AW (who is responsible for the development work of the circuit shown in Fig. 1), finally decided on a screen driven amplifier, which is a very satisfactory answer to the requirements of linear amplifier service. As may be seen, the circuit is simple and requires no special components or critical adjustments.

The control grid is returned to the cathode through an r.f. choke and drive applied to grid 2 across a low capacity tuned circuit. The d.c. resistance of the tuned circuit should be kept low and no milliameter included. If it is felt that some form of indicator is necessary it should be placed between the r.f. choke and cathode in the control grid circuit. Probably the most convenient arrangement for the anode circuit is the *pi*-network, where the anode to cathode capacity should be high, as with any class B linear amplifier. For 3.5 Mc/s, 230μμF is recommended.

It is well known that regeneration is most undesirable in a modulated power amplifier, but the case of a linear amplifier for a modulated wave or a single sideband is rather different. The circuit shown is stable and will not sustain oscillation when properly set up. The dotted lines in Fig. 2 show the important capacities that exist within a tetrode, and a little thought will show how the phase change across the capacities brings about this stable condition. Most of the usual valves in use by amateurs have been tested in the circuit and none have required external neutralising capacities. The valves most suited are those with " screen sensitive " characteristics such as the 12A6, KT66, CV57 and most of the surplus pulse modulator types. However, this does not mean that the popular 807 may not be used. Drive requirements are a little more than in the biased tetrode connection, and of course very much less than if the valve is used as a triode. Setting up is simple. Very heavy anode loading is used at first; then, with drive on, the anode and grid circuits are brought into tune. The anode loading may then be decreased and the anode tank re-tuned before the grid circuit. This process should be continued with modulation until limiting commences. At this point a slight increase of anode loading should be made to prevent this limiting, and the

* *5 Kevington Drive, St. Paul's Cray, Orpington, Kent.*

p.a. is ready for use. If it is desired to use valves in parallel or pushpull a separate r.f. choke must be used in each control grid circuit. It must also be recognised that considerable de-tuning of anode and grid circuits will cause oscillation just as in grounded grid or cathode follower circuits. The arrangement may also be used in balanced modulator stages with the modulation applied in series with the control grids.

Precautions must be taken to prevent parasitic oscillation of any type, but the use of an r.f. choke in each screen lead at the valveholder, together with a 100 ohm resistor in each control grid lead in series with the r.f. choke, appears to be more than adequate.

In certain cases, with low or high plate voltages, bias may be applied, either positive or negative, to the control grid to move the operating conditions of the stage towards class A or class C.

* * *

Stand space has again been allocated for a display of s.s.b. equipment at the Eighth Annual Amateur Radio Exhibition to be held in London during the week ending November 27. Those willing to loan equipment are asked to communicate with G3CU as soon as possible.

Reports for publication in the October issue should reach the writer not later than September 14.

Instruction Courses

COURSES of instruction have been arranged at the colleges and institutes listed below for the benefit of those who wish to study for the Radio Amateurs' Examination. The courses are held in the evening and have been planned in conjunction with the Local Education Authority concerned.

Ilford Literary Institute (High School for Girls), Cranbrook Road, Ilford. (Adjacent to Gants Hill station, Central Line.) *Radio Amateurs' Examination Course.* An eight months' course for those intending to take the examination. Wednesdays, 7.30 to 9.30 p.m. *Morse and Codes of Practice.* A six-months' course for those who wish to learn Morse up to G.P.O. requirements for an amateur licence. Arrangements have been made for those who, in the opinion of the instructors, have reached the required speed, to be tested at the Institute by a representative of the Post Office.

The fee for either course is 10s. or 17s. 6d. for both for those living in the Essex County Council area. Students from other areas will be admitted as out County Students provided the Local Authority is informed. Enrolment will take place during the evenings of September 6, 7 and 8, and classes commence on September 20. Those who intend to enrol are advised to send their names to C. H. L. Edwards (G8TL), 10 Chepstow Crescent, Newbury Park, Ilford, **at nce,** so that a place may be assured.

Islington L.C.C. Men's Evening Institutes, Grafton School, Eburne Road, Holloway, N.7.

A course of instruction, including Morse, for those who wish to take the Radio Amateurs' Examination will be given on Monday evenings, from 7 to 10 p.m., commencing September 27. Enrolment will take place from September 20 to 24 but applications should be made in the first instance to A. W. H. Wennell (G2CJN), Hon. Secretary, Grafton Radio Society, 145 Uxendon Hill, Wembley Park, Middlesex. The instructor will be A. Perry (G3DKX) and the fee 10s.

Wembley Hill Evening Institute, Copland School, Wembley (next to Wembley Hill Cinema).

Instruction in preparation for the Radio Amateurs' Examination and the Morse Test will be given at the following times on Monday evenings, commencing September 20. *Morse*: 7 to 8 p.m.; *Theory*: 8 to 10 p.m. Enrolment will take place in the evenings during the week September 13 to 17. Mr. Alan Bayliss (G8PD) will be the instructor.

Society News

Subscriptions Paid by Bankers' Order

IT has come to the notice of the Council that a number of members whose subscription is renewed annually by means of a Banker's Order, have failed, notwithstanding several requests from Headquarters, *to amend* the Order to conform to the new subscription rate or alternatively to send a remittance to settle the balance due for the current year.

The Council is most anxious not to remove the names of such members from the Register but this course of action will become inevitable unless the balance is paid within three months of the subscription becoming due.

The Council hope that this further appeal will bring forth an immediate response from those members who have not, so far, carried out their full financial responsibilities to the Society for the current year.

J. Jamie

THE Radio Society of Great Britain has been authoritatively informed by his employers that Mr. M. Jamie, the operator of Amateur Radio Station ST2UU, known to radio amateurs all over the world as J. Jamie, has not left Khartoum since April, 1953. Further, Mr. Jamie was not in Afghanistan during 1952. Contacts made when he was signing with any other call-sign than ST2UU during this period were therefore with his station in Khartoum and the use of such call-signs as FB8UU, FL8UU, HZ1UU, MS4UU, 4W1UU, VQ6UU, VQ7UU, VQ9UU and VS9UU, etc., was unauthorised. QSL cards sent out by Mr. Jamie for these call-signs did not, in fact, confirm contacts with the countries indicated.

R.S.G.B. Amateur Radio Call Book Winter, 1954, Edition

MEMBERS who have studied the notes appended to the new Amateur (Sound) Licence will have seen that the Postmaster-General now regards himself as free to publish the licensee's name and address at his discretion unless the licensee specifically asks that this should not be done.

It is hoped that eventually the Society will be in a position to make full use of this information thereby ensuring an even higher degree of accuracy for the *R.S.G.B. Amateur Radio Call Book* than has hitherto been possible. In the meantime the G.P.O. have agreed that the Society may make use of a list of call-signs (prepared from official sources) which have been cancelled during the past two years, in order that such calls may be deleted from the new edition of the Call Book now being prepared. This list, however, may include call-signs which have subsequently been re-issued. If, therefore, *your* call has been cancelled or held in abeyance at ANY time during the past two years and you wish it to appear in future editions of the *R.S.G.B. Amateur Radio Call Book* you should write to the Call Book Editor, on a postcard please, without delay. If this is not done the call-sign will be deleted from the Call Book.

The Call Book Editor is Mr. J. P. P. Tyndall, G2QI, 174 The Drive, Ilford, Essex.

Members' Notepaper

HEADQUARTERS is now in a position to supply a slightly cheaper type of Members' notepaper than hitherto. The new paper sells at 5s. 6d. per 100 sheets post free.

Radio Amateur Emergency Network

AN encouraging feature is the increasing amount of interest in R.A.E.N. which is becoming apparent. Groups in various parts of the country are obtaining the ready co-operation of official bodies such as the police and fire services. In this connection, the **Hull** E.C.O. (G4LH) recently had an interview with the Chief Constable with the result that, although Hull is not officially regarded as a danger spot, the group is now on the official flood warning list so that in the event of a "red" warning they will be notified immediately by telephone or police patrol car. Similarly, **South Wigston** (Leicestershire) have arranged for one or two operators to accompany the local police whenever they are called out by the Mablethorpe and Sutton-on-Sea authorities in the event of an emergency. Incidentally, the latter is an excellent example of an inland group being willing to help in another area.

County Controllers

Lt.-Col. A. C. Dunn (G2ACD) has been appointed County Controller for the East Riding of Yorkshire, with a watching brief for the rest of the county until other appointments are made. This is the first appointment of its kind.

Reports from the Groups

The Hon. Secretary is still receiving very few monthly reports from E.C.O.s. It is realised that at this time of year many people are on holiday and it may prove difficult to keep up activity, with the result that there is little to report. However, some have *never* sent in a report since they were appointed! All E.C.O.s are requested to write to the Hon. Secretary in time for the September issue of the BULLETIN, even if it means only the equivalent of the Services' "Nil report."

South Wigston (Leics.) recently carried out a successful exercise in co-operation with the police. The object was to show what could be done in getting to a position at a moment's notice. The group were actually on the air within 25 minutes of reaching the site. A report of this exercise was given to H.M. Inspector of Police who arrived in Leicester the following day. The **Bristol** E.C.O. (G3JMP) reports that a talk on R.A.E.N. was given recently to the group by G3FKO of Bath who also demonstrated some of the equipment used by his own group. Although great interest was shown, it is unlikely that much progress will be made until after National Convention.

Chelmsford group have held a test in which flooding was assumed to have occurred at Maldon, 5 miles away. Stations were set up on top of Danbury Hill (5 miles from control), and at two points near Maldon: one on the river beach, the other just outside the town. Those taking part were G5RV (Control), G2AJF (using a type 68 set), G3GNQ (also using a 68 set), and G4VF and G3ABB who together operated a CNY2. The test is to be repeated later. Meanwhile equipment for 144 Mc/s is being constructed. In **Bayswater,** London, G3JEA is trying to get a group going and has designed a small transmitter which performed well during N.F.D. **Broadstairs** now has a local net on 3730 kc/s phone on Sundays at 1200.

Hull has made arrangements for messages from the group to be accepted at the Operations Room in Police Headquarters. The mobile police hope to carry out tests in the future. **Lichfield** group are holding a meeting on August 19 to discuss plans for their exercise on September 5. G3GXZ (E.C.O. for South Wigston) is joining in the exercise and it is hoped that G3COY (E.C.O. for N. Staffs) will also be able to take part.

Calling Frequencies

The response to the request for suggestions as to National calling and working frequencies has been very poor. Nevertheless it is hoped to make an announcement shortly. The Lichfield E.C.O. suggests that it might be as well to tell only E.C.O.s of the actual frequencies as "there are, unfortunately, a few anti-social hams who might sit on the frequencies just for the fun of the thing"! He supports his contention by referring to the jamming of the code test transmission sponsored by V.E.R.O.N. G3GXZ suggests 3545 kc/s and 3590 kc/s; 28.2 Mc/s and 28.5 Mc/s; and 145.5 Mc/s, plus or minus 50 kc/s.

Appointment

Mr. C. E. Biggs, Winterbourne Abbas, Dorchester, has been appointed an Acting E.C.O.

Correction

The address of the E.C.O. for Broadstairs (G3CED) should have been shown as 17 Ethel Road, Broadstairs, in the list published last month.

The "Modern Walkie-Talkie" Again

By BERNARD HOWLETT (G3JAM)*

TESTS of a more exhaustive nature have now been carried out on the "Modern Walkie-Talkie" described in the May, 1954, issue of the R.S.G.B. BULLETIN, and from these it appears that the life of the U16 cells, used to energise the carbon microphone, is inadequate. A satisfactory cell is the Ever Ready D14, 1.5 volt hearing aid cell. Its dimensions are identical to the penlight U12, but its internal construction is such as to prolong its life on 30mA discharge to double that of a standard U12 penlight cell, or 9–10 hours at 12 hours/day rating, representing 50 per cent.–on 50 per cent.–off time (with fresh batteries, of course). The price is the same (3d.).

The loop can be made of heavy-gauge solid rod or tube without any centre support, no deterioration of performance being observed. Indeed, with the higher Q obtained, oscillation takes place even more readily and the instrument is usable down to lower battery voltages. Tests carried out since indicate that for car-to-car working, 100 yards can be obtained irrespective of the material of which the vehicle is made. This may be a useful feature for passing instructions from one car to another in traffic without having to employ the main receiver and transmitter for the purpose, and will assist in keeping the main emergency channel clear. The engine of the vehicle must be suppressed, of course.

A further use for the "Modern Walkie-Talkie" is in harmonic detection and TVI investigations. For these purposes a smaller loop is fitted of about 6in. to 10in. diameter, when the local TV frequencies can be covered. It is inadvisable to use the "gimmick" during transmission hours, however, because of radiation.

It might be added finally, that, with the walkie-talkie, ranges of 0.8 mile, 0.7 mile, 0.9 mile continue to be "clocked," ground to ground. It is expected to get up to 1.2 or 1.3 miles eventually by carefully picking a pair of elevated sites with a valley between.

*219 Chigwell Road, Woodford Green, Essex.

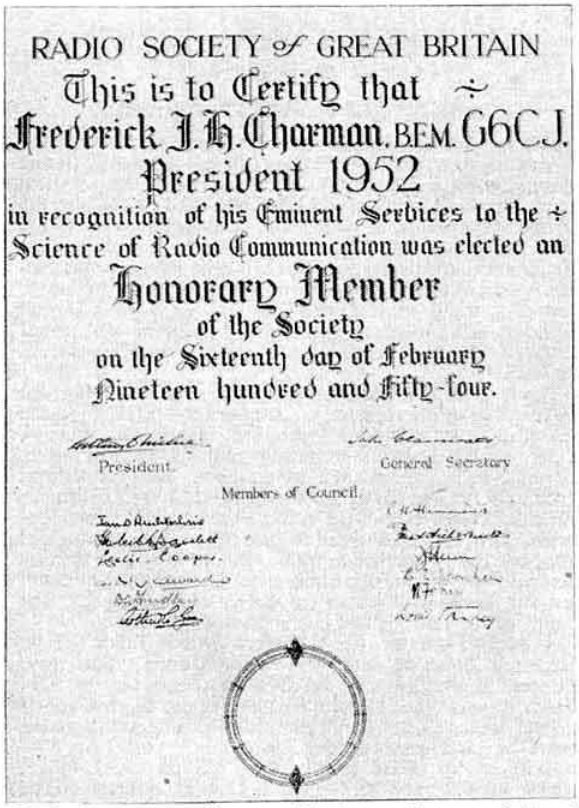
Complimentary Dinner

New Honorary Members Honoured

AT the Kingsley Hotel, Holborn, on Tuesday, July 13, 1954, 16 Members and past Members of the Council met under the Chairmanship of the President, Mr. Arthur O. Milne (G2MI), to pay tribute to three recently elected Honorary Members—Messrs. W. A. Scarr, M.A. (G2WS); Rene H. Klein (G8NK) and F. J. H. Charman, B.E.M. (G6CJ).

At the conclusion of dinner the President extended a warm welcome to the new Honorary Members, after which the General Secretary eulogised their good work. He reminded those present that more than 41 years had passed since Mr. Klein, with the support of the late Mr. Leslie McMichael and a few other enthusiasts, founded the London Wireless Club, from which sprang the Wireless Society of London and later the Radio Society of Great Britain. "It is given to few men," said Mr. Clarricoats, "to witness for so long a youthful ambition grow to full maturity."

Mr. Clarricoats spoke of the sorrow with which the Council heard of Mr. Klein's illness a few weeks before he was due to open the Amateur Radio Exhibition last November and of his pleasure, and the pleasure of all his colleagues, in seeing Mr. Klein now in such good health. The General Secretary, after recalling that Mr. Klein still maintains an active station on the air under the call G8NK, mentioned that his name would for ever be linked with the Society through the handsome Founder's Cup which he recently donated.


RADIO SOCIETY of GREAT BRITAIN

This is to Certify that

Frederick J. H. Charman, B.E.M. G6CJ.

President 1952

in recognition of his Eminent Services to the Science of Radio Communication was elected an

Honorary Member

of the Society

on the Sixteenth day of February

Nineteen hundred and Fifty-four.

President. General Secretary

Members of Council

On election, each new Honorary Member receives a special hand produced certificate on vellum signed by the menbers of the Council in office at the time and sealed with the seal of the Society. This is a reproduction of the certificate recently presented to Mr. F. J. H. Charman, B.E.M. (G6CJ).

After extending to him a welcome back to England, the General Secretary spoke of Mr. Scarr's great work for the Society during his term of office as President, mentioning in particular his outstanding leadership at the 1950 I.A.R.U. Conference in Paris. Mr. Clarricoats referred to Mr. Scarr as "the 100 per cent amateur" whose experimental work had always been of the highest order. Like Mr. Klein his name would always be remembered in Society circles through his gift of the Calcutta Key. Mr. Clarricoats expressed the hope that Mr. Scarr would again stand for election to the Council.

The General Secretary spoke of his long association with Mr. Charman—an association dating back to 1926 when he enjoyed the first of many two-way contacts with G6CJ. Mr. Clarricoats referred to the outstanding work done by Mr. Charman as a Member of the old "Guide" Committee and in more recent years as a Member of the Technical Committee. The results achieved by Mr. Charman in his experiments with aerial systems for the amateur had earned for him high praise in many quarters, whilst his scientific approach to such events as B.E.R.U. Contests and N.F.D. had won for him the admiration of many U.K. and overseas amateurs. Mr. Clarricoats also referred to the fact that Mr. Charman's war-time activities earned for him the award of the British Empire Medal.

At the termination of the Secretary's eulogy, Mr. Leslie Cooper, G5LC (Immediate Past-President); Mr. H. A. Bartlett, G5QA (Executive Vice-President) and Mr. R. L. Varney, G5RV spoke of the work done by the new Honorary Members.

The President, after formally proposing the health of the new Honorary Members, presented to each of them a framed certificate, hand produced on vellum in black and gold. The new Honorary Members then thanked the President and Members of Council for the honour which had been conferred upon them.

Mr. Scarr spoke of the valuable experience he had gained as the result of his recent visit to India and of his keen desire to continue to help the Society to the best of his ability. Mr. Klein referred to the early days of the Society and to the pleasure he had derived from his long association with many of those present that evening. Mr. Charman traced back his interest in wireless to just after the first World War when he constructed his first, very inefficient, spark transmitter. He referred to his first contact with the Society when he was "persuaded" to give a lecture on certain aspects of radio which he knew very little about! From that time onwards he had been constantly "persuaded" to lecture and write on many subjects connected with Amateur Radio. His enthusiasm for the hobby remained unabated.

In addition to the persons mentioned above, the following were present at the Dinner:—Messrs. C. H. L. Edwards (G8TL); D. A. Findlay (G3BZG); I. D. Auchterlonie (G6OM); N. F. O'Brien (G3LP); A. P. G. Amos (G3AGM); W. H. Allen, M.B.E. (G2UJ); P. A. Thorogood (G4KD); W. N. Craig (G6JJ); T. L. Herdman (G6HD); F. Hicks-Arnold (G6MB) and D. N. Corfield (G5CD).

L.A.B.R.E. Contest

THE third DX contest organised by the Brazilian Society L.A.B.R.E., will be held in September. Copies of the rules are available from Headquarters on receipt of a stamped addressed envelope. The supply is limited.

Around the Shows

Southgate Amateur Radio Exhibition

THE Amateur Radio Exhibition organised by the Southgate and District Group of the R.S.G.B.—the first of its kind held in the District—was opened by the Mayor of Southgate (Councillor R. C. Evans, J.P.) at 3 p.m. on Saturday, June 26, 1954, in Broomfield House, Broomfield Park, London, N.13.

The Opening Ceremony was attended by the Mayoress (Mrs. R. C. Evans), the President of the R.S.G.B. (Mr. Arthur O. Milne, (G2MI), the Hon. Secretary (Mr. C. H. L. Edwards, G8TL), the Assistant Secretary (Miss May Gadsden), Members of the Southgate Borough Council and their ladies and a goodly number of local R.S.G.B. members.

The Chair at the opening ceremony was taken by Alderman John Clarricoats (G6CL) in his capacity as Chairman of the Southgate Parks Committee. In his speech and in those made by the Mayor, the President of R.S.G.B. and Mr. Styles (T.R for Southgate and District) there were references to the world-wide scope, the potential good for international relations, and the friendliness of Amateur Radio. Following the official opening the Mayor of Southgate spoke over the air during a duplex contact between the Exhibition Station (GB3SRA) and G3BWQ. The proceedings up to this point were recorded on tape, being transferred later to records for preservation in the archives of the Group for posterity.

This was an exhibition with a difference—being staged with one purpose in mind, namely, to enable members of the public to obtain an insight into the scope of Amateur Radio. It was not intended to provide the technically-minded amateur with ideas for new designs in equipment. The transmitter and all other apparatus on show, except the receivers used for GB3SRA, were constructed by Group members and all displayed a high degree of workmanship.

Part of the story of Amateur Radio was effectively told by means of four display boards depicting: (a) local activity (Southgate and District R.S.G.B. Group); (b) National activity (the R.S.G.B. Organisation and Amateur Radio in the U.K.); (c) International Amateur Radio; (d) radio and television interference. The local activity section was augmented by the working station and by exhibits loaned by Group members, some of which had gained Certificates of Merit in a recent competition for the G6QM Trophy.

The Mayor and Mayoress of Southgate (Councillor R. C. Evans, J.P. and Mrs. Evans) with the President of the R.S.G.B. (Mr. Arthur Milne), the Southgate and District T.R. (Mr. E. G. Styles) and the General Secretary of the R.S.G.B., and Mrs. Clarricoats. A picture taken at the opening of the Southgate Amateur Radio Exhibition.
(Photo by E. J. Starmer)

Exhibition Station

The transmitter used at GB3SRA—built by Clem Jardine (G5DJ) and housed in a self-contained rack—employed a pair of 807s in parallel, pi-section output in an *Elizabethan* circuit with an input of 100 watts. The modulator used a pair of zero bias 807s—all single switch relay controlled. The receivers in use were a Radiovision *Commander* and a modified BC348.

The station, using 'phone and c.w., was operated (mainly on 3.5 and 14 Mc/s bands) with dipole aerials throughout the period of the exhibition from June 26 to July 3, 1954. A large number of contacts were made and listened to with great interest by the general public and visiting amateurs. Special QSL cards were presented to the Group by

Some of those who helped to make the Southgate Amateur Radio Exhibition such a great success. From left to right: B.R.S.16483, G3JFI, B.R.S.20049, G3FYA, G5DJ (North London D.R.), G3JSE (Southgate & District T.R.), J. G. Ponker and G4BC.
(Photo by E. J. Starmer)

the Borough of Southgate. Tape recorder demonstrations were given daily.

As a result of the Exhibition, membership is expected to increase greatly during the coming months.

The organisers are to be congratulated on a job well done and the results achieved should more than repay the hard work and thought that has gone into the show. Thanks are also due to the Parks Committee of the Borough of Southgate and the Curators of the Broomfield House Museum for their help in making the Exhibition possible. Thanks are also recorded to Mr. E. J. Starmer for the excellent photographs which were produced at short notice. G5FA

Eric Cosh, G2DDD, President, Littlehampton Rotary Club, is seen here at the recent Littlehampton Hobbies Exhibition discussing an exhibit with Harry Thompson (left), President of Rotary District 14.

York Conventionette

A MOST enjoyable Conventionette was held at the Windmill Hotel, York, on Sunday, July 11, when more than 80 members met together for a social and business gathering. Headquarters was represented by the President, Mr. A. O. Milne (G2MI) and Council Member Frank Hicks-Arnold (G6MB). Also in attendance were the C.R.s from Durham (T. Orr, G3IV), West Riding (J. Petty, G4JW), and the East Riding (Cliffe Metcalfe, G3DQ).

The proceedings commenced at 2 p.m. when the ladies' and children's parties left for sightseeing tours and river trips. The business meeting was opened by the R.R. (C. A. Sharp, G6KU), who welcomed members and visitors from other regions and thanked the officers of his Region for their services during the past year. Apologies were tendered for the absence of the General Secretary who was attending a meeting in connection with the National Convention. The Chairman then introduced the President and Mr. Hicks-Arnold. Mr. Milne spoke on licences and other general matters and invited questions on any subject. Many questions were put forward, all of which were answered by the President and Mr. Hicks-Arnold.

The President pushes the boat out; a picture taken at the York Conventionette. From left to right, G6MB, G3DTA, G2MI, Miss G8TL, Mrs. G8TL and G6KU. Standing in the boat is G3DQ.

The proceedings throughout were noticeable for a lightness of atmosphere, the deadly seriousness of previous meetings being absent. On the termination of the meeting small parties visited places of interest or indulged in general discussions. On their return, they were joined by the ladies and the party sat down to a welcome tea.

A raffle was organised by Mr. Cliffe Metcalfe, with the usual humorous comments. After tea, photographs were taken and members who had not to make an early departure were entertained to a film show.

Expressions of satisfaction with the event were evident, and the thanks of the R.R. are tendered to the York T.R. (George Nottingham, G3DTA), and his financée Anne and to Mr. Metcalfe for their untiring efforts and assistance in helping to provide an excellent day's programme.

G6KU

Amateur Radio at the Southampton Show

THE Southampton R.S.G.B. Group for the second year running staged an Amateur Radio Exhibition at the Annual Show held on Southampton Common on July 16 and 17, 1954.

Two stations (G3HKT and G3TR) were in operation, each being arranged in the form of a typical shack. G3HKT employed a Panda transmitter, an R.C.A.AR88 receiver and a dipole aerial on 3.5 Mc/s, while G3TR used his complete home station, including the rotary beam, on 14 Mc/s. Twenty-seven countries were worked in all continents except Australasia.

A particular feature of the exhibition was a series of photographs and exhibits which explained the purpose and organisation of R.A.E.N. to the general public. In addition, G3CGE, acting as control station in a 144 Mc/s demonstration network, maintained two-way communication with mobile stations installed in cars travelling through the town.

Home constructed equipment on display demonstrated the wide variety of local interests, the Gardner Cup being awarded to G2DSW for a very fine oscilloscope. G3ABZ acted as judge.

Thanks are recorded to all those members who contributed towards the success of the exhibition, which received excellent publicity in the local press. G2FGD

Medway Hamfest

THERE was an attendance of more than 300 at the Annual Hamfest, organised by the Medway Receiving and Transmitting Society, held at the Franklin Rooms, Gillingham, on July 18. Among those present were G2MI (President, R.S.G.B.), G8TL, G2UJ, G4IB and GW5FN. YI2AM from Iraq was warmly welcomed.

In the grand raffle, a feature of these hamfests, there were 54 prizes. There was a separate raffle for the ladies. A cake presented by Mrs. Butcher, mother of G3CUH, was offered to anyone with a birthday that day, and was won by a little girl. Entertainment was provided by Les Skinner, magician and ventriloquist.

Photographs taken at the gathering by G2BBT may be obtained, price 6d. each, from W. E. Nutton (G6NU), 42 Richmond Road, Gillingham, Kent.

The thanks of the committee of M.A.R.T.S. are recorded to all those members who helped to make the event a success, in particular Percy Bishop. G6NU

Tests and Contests

The B.E.R.U. Contest, 1954

THERE was a small, but very welcome, increase in the number of logs received for the Senior section of the contest this year. It is a matter for regret that the considerably higher activity—the leading stations made over 300 contacts—was not proportionately reflected by this increase, and it is hoped that next year everyone who takes part will submit an entry.

R. G. Henwick (ZS2A) placed third last year, has succeeded in reaching the top of the list this year, with a lead of 300 points over the second competitor, G. J. Dent (VQ4AQ). In third place is V. Williams (VE3KE). The winner of the Junior Section is A. E. Dowdeswell (ST2AR) with a lead of only three points over T. F. Hall (ZD4AB). Third place in this section is taken by Vincent Genovese (ZB1BF).

The results have been tabulated in a different form this year, to enable competitors to see at a glance their position in relation to others in their own zone.

Conditions in general were fair, bright spots on 3.5, 7 and 14 Mc/s being reported in many instances even if only for short periods; small activity was reported on 21 and 28 Mc/s.

Little criticism was made concerning the rules—the changes made from the 1953 rules were the subject of much favourable comment, as was the 48-hour operating period. It is now hoped to stabilise the rules, and only very minor alterations are anticipated for 1955. The major complaint is still lack of publicity for the rules and results, and efforts will continue to be made to improve this position, although it should be said that in addition to publication in the BULLETIN, all information is sent in good time for publication to all Empire Societies every year, and many copies of reprints of rules are circulated direct to those known to be interested each year. A number of suggestions were received concerning the dates of the contest and the timing of the operating period, many of which appear to have been made without consideration of the effects on competitors in other parts of the Empire, and reflect only the particular point of view of the writer—several Gs complained of cold feet!

Once again, the Contests Committee offers thanks to all who sent letters, and entries or check logs. VU2JP, one of the most regular competitors since the inception of B.E.R.U., was unfortunately prevented by illness from competing this year; however, it is learned that he is well on the road to recovery and expects to be active again next year.

Support for the Receiving Section was again very poor, with wide misinterpretation of the rules.

Rules for the 1955 Contest will appear in September—good hunting!

RESULTS—SENIOR B.E.R.U. CONTEST, 1954

Zone	Call-sign	Scoring QSOs	Points	Final placing	Zone	Call-sign	Scoring QSOs	Points	Final placing	Zone	Call-sign	Scoring QSOs	Points	Final placing
1	4S7XG	116	1495	17	2(c)	G5MR	50	665	46	11	*VK3XK	164	1536	15
2(a)	*GM2FHH	111	1428	19		G5ZK	48	638	52		VK3HG	33	460	67
	G2QT	117	1382	20		G5CP	30	409	73		VK3JA	34	406	74
	G2AOW	53	728	44		G5US	24	338	78	12	VK5FO	110	1142	27
	G2YS	35	478	66		G6CL	19	251	84		VK6RU	161	1011	31
	G2AJB	18	256	83		G8KU	15	211	88	13	VK9WZ	56	783	41
	G2XG	20	251	84	3	DL2RO	224	2295	4	16	*VQ4AQ	332	2894	2
	G4XC	7	103	91	5	*VE1PA	131	1262	23		ZE3JP	227	2246	6
2(b)	*G3DIY	117	1421	18		*VE1EK	103	950	32		VQ4RF	56	617	55
	*G3FXB	99	1299	22		VO3X	60	807	38	17	MP4BBE	70	812	37
	G3BKF	93	1214	26		VE1RR	83	664	48	19	*VS1FE	101	1251	24
	G3AZ	66	928	34		VE1IM	72	649	49		VS1FZ	27	373	76
	GM3EOJ	60	788	40		VO6N	60	640	51		VS6AE	24	352	77
	G3BDQ	56	770	42		VE1OM	39	510	63	21	*ZL2FA	142	1689	11
	G3BTU	51	672	45		VO6U	38	486	65		ZL3JA	139	1601	13
	G3EPG	51	628	53		VO1D	34	459	68		ZL3GQ	154	1550	14
	GM3CIX	47	626	54		VE1DG	55	456	69		ZL1AIX	91	1094	29
	G3GFG	48	593	56		VE1DB	38	452	70		ZL1RD	72	892	36
	G3GWO	42	566	60		VE1CU	63	309	79		ZL2BJ	67	801	39
	G3IVR	40	521	61	6	*VE2WW	199	1805	9		ZL3AB	75	746	43
	G3GWT	32	452	70		VE2WA	118	1246	25		ZL4DV	61	653	50
	G3EGQ	24	299	80		VE2OL	35	498	64		ZL3GR	23	292	81
	GM3GJB	15	216	86	7	*VE3KE	240	2341	3	22	ZS2A	315	3176	1
	GM3IGW	11	150	89		VE3LJ	51	587	57	23	*ZS6R	187	2275	5
2(c)	*G5RI	171	2059	7		VE3BMB	33	440	72		ZS6RB	50	656	49
	*G5DQ	127	1613	12		VE3ADV	9	128	90		ZS6AEW	41	580	58
	G6GN	115	1517	16	8	VE5AT	35	403	75		ZS6BJ	37	521	61
	G6RH	111	1351	21	10	*VK2GW	165	1907	8	24	ZS5U	67	941	33
	G5PQ	87	1127	28		VK2DI	174	1775	10		ZS4FP	20	290	82
	G6PD	86	1035	30		VK2PV	49	574	59					
	G5WP	67	921	35		VK2HZ	18	213	87					

Check logs: G2MI, 3AAE, 3CXM, 3EEM, 3RB, 6AH, 6BB, 6CJ, 8DR, 8KS, VE1AE, 1AEE, 1ZZ, 3XY, 8OG, VK3XB, ZS1BM, 2X.

RESULTS—JUNIOR B.E.R.U. CONTEST, 1954

Zone	Call-sign	Scoring QSOs	Points	Final placing	Zone	Call-sign	Scoring QSOs	Points	Final placing	Zone	Call-sign	Scoring QSOs	Points	Final placing
1	4S7LB	54	732	8	2(b)	G3DYY	13	189	17	17	ST2AR	138	1547	1
2(a)	G4RJ	21	270	14	4	ZB1BF	112	1326	3	19	VS2DW	15	217	16
	G2DHV	5	74	18		MD5XZ	76	850	7		VS6CT	39	437	11
2(b)	*G3IDC	67	937	6	11	VK3HL	22	298	13	20	ZD4AB	162	1544	2
	GW3AHN	44	573	9	14	VP1AA	18	247	15		ZD4AE	103	1079	5
	G3GNS	33	454	10	16	VQ3EO	101	1205	4	21	ZL2ARL	38	395	12

* *Zone awards*

Results—B.E.R.U. Receiving Contest, 1954

Posn.	Name	Points
1	A. R. Gilding, ex-G3GZP	11000
2	*J. L. Hall, B.R.S. 19107	7866
3	C. A. Bradbury, B.R.S. 1066	6160
4	J. Burgess, B.R.S. 19804	5525
5	R. W. Thomas, B.R.S. 15822	4515
6	E. W. Trebilcock, B.E.R.S.195	4320
7	E. F. Jones, G3EUE	3296
8	H. D. Woodward, A.1226	770

* *Zone award*

First 420 M/cs Contest

CONDITIONS were very disappointing for this Contest, in fact, according to several logs, they could hardly have been worse.

In these circumstances it is not surprising that no outstanding contacts were made; 100 miles was exceeded only on one or two occasions.

Fifteen competitors were keen enough to submit entries and after a study of the comments made the Contests Committee were prompted to arrange another Contest in conjunction with the 420 Mc/s Tests. The rules were published in the July issue of the BULLETIN, and it is to be hoped that better weather and conditions will encourage a larger entry.

Results—First 420 Mc/s Contest

Psn.	Call-Sign	Location	Points	Contacts
1	G3GZM/P	Ludlow, Salop	565	12
2	G5TP	Stoke Row, Oxon.	537	15
3	G3BKQ	Blaby, Leics.	513	11
4	G2FKZ	London, S.E.22	436	14
5	G2HDZ	Pinner, Middx.	395	24
6	G3FP	Thornton Heath, Surrey	373	22
7	G3JMA	Harlow, Essex	371	15
8	G2RD	Wallington, Surrey	326	20
9	G8QY/P	Ilmington Downs, Warks.	281	8
10	G2XV	Cambridge	278	8
11	G5CD	London, N.W.11	236	15
12	G2HDJ	Ashford, Middx.	222	13
13	G2DDD	Littlehampton, Sussex	220	4
14	G2HDY	London, S.W.15	219	14
15	GW2ADZ	Llanymynech, Mont.	92	3

Check logs: B.RS.20/E0, G2WJ, 2BVW, 3HBW, 8SK.

Fourth D/F Qualifying Event, 1954

THE Peterborough Group, organisers of the Fourth Qualifying Event, were fortunate in having good weather on July 11, when 11 competitors with their teams assembled on quaint little Elton village green for the start.

Signal strength on the first transmission was low, due to an ailing accumulator, and it was necessary for a second battery to be dragged half a mile through the undergrowth for the subsequent transmissions.

The hidden transmitter, G3EEL/P, was operated byG3IUF and G3HJY, and was concealed in the heart of a prickly bush near Aldwinkle St. Peter. The first competitor to arrive, at 1509, was T. C. Reynolds (B.T.H. Rugby). Mr. Reynolds has successfully located the transmitters in each of the 1954 events to date, and qualified for the National Final in both the Slade and South Manchester events. His efforts on this occasion were rewarded with the Miles Trophy, awarded annually to the winner of the Peterborough event. A close second was G. T. Peck (High Wycombe) at 1510, followed in quick succession by R. K. Seabrook (Southend) at 1511 and G. C. Simmonds (Slade Radio) at 1512½. Other competitors to locate the transmitter were P. J. Evans (B.T.H. Rugby) at 1517; H. Drury (Romford) at 1530; N. B. Simmonds (Slade Radio) at 1530½; and J. Grant (B.T.H. Rugby) at 1540.

As Messrs. Reynolds, G. C. Simmonds, P. J. Evans, and H. Drury had already qualified for the National Final in previous events, those qualifying on this occasion were Messrs. Peck, Seabrook and N. B. Simmonds.

During tea, served at the " Crown," Elton, the organiser, Keith Gasson (G3EPT), announced the results and qualifiers. Mr. Reynolds proposed a vote of thanks to Mr. Gasson and his assistants, and paid tribute to the drivers and navigators who play such important parts in D/F events but seldom enter the limelight.

Have you sent off your application form for NATIONAL CONVENTION ?

If not, don't delay—send it now

European V.H.F. Contest, 1954

THE 1954 European V.H.F. Contest is being sponsored by the Swiss National Amateur Radio Society, U.S.K.A., and the rules are as follows:—

1. The Contest is open to any amateur who is a member of a National Amateur Radio Society affiliated to I.A.R.U. Region I.

2. Multiple-operator entries are permitted, provided all work is done under the same call-sign.

3. The contest will commence at 1500 G.M.T. on Saturday, August 28, and finish at 1500 G.M.T. on Sunday, August 29, 1954.

4. Frequency band: 144–146 Mc/s. Modes of transmission: A1, A2, A3.

5. The power input is limited by the official regulations of the entrant's country. Power may be taken either from mains supply or independent supply.

6. Any location may be used. Change of location during the contest is allowed, but of several contacts made with a specific station only one shall be counted for points.

7. Incomplete contacts shall not be counted for points. Every first contact with a new canton, county, province or district may be counted twice. Reports shall include RST or RS followed by the code number of the contact starting with 001, e.g., 559001 for the 1st contact (c.w.).

8. Call-signs of portable stations have to be followed by a fractional bar and the letter " P," e.g., G5YV/P.

9. There will be two categories, one for fixed stations and one for portable stations.

10. Scoring will be based on distances, which must be shown in kilometres, as follows:—

0	*10 km.*	*0 points.*
10	*25 km.*	*1 point.*
25	*50 km.*	*2 points.*
50	*75 km.*	*3 points.*
75	*100 km.*	*4 points.*
100	*150 km.*	*6 points.*
150	*250 km.*	*9 points.*
250	*350 km.*	*12 points.*
350	*500 km.*	*16 points.*
500	*750 km.*	*22 points.*
750	*1000 km.*	*30 points.*
1000 km. and over		*50 points.*

For limit value the higher number of points will be counted, e.g., 100 km—6 points. In case of equal scores, the higher maximum distance will decide.

11. A Certificate of Merit entitled " European-VHF Contest-1954 " will be awarded to the first three entries from each country and category.

12. Logs should be set out in the following form:—

EUROPEAN VHF CONTEST, AUGUST 28–29, 1954

Call-sign ..... QTH ..... QRG ..... QAH (height above sea level).....

Equipment ..... Operators .....

Date	Time GMT	Stn.wkd.	QTH of stn.wkd.	RST/Code SENT	RST/Code REC'D.	Distance	Points

13. The closing date for receiving logs will be September 15, 1954, and they should be sent to: U.S.K.A., P.O. Box 1203, St. Gallen, Switzerland. Logs will be judged by a Contest Committee consisting of three members of the Central Committee of U.S.K.A. Members of this Committee may take part in the contest, but their entries will not be classified.

Low Power Contest, 1954

THERE is little alteration in the Rules for this year's contest, with the exception of the re-instatement of the "County bonus," and some adjustment of the length and timing of the operating period.

Rules

1. The Contest is open to all fully paid-up members of the Society resident in Europe.

2. The Contest will run from 1800 to 2330 G.M.T. on Saturday, October 2, 1954 and from 0800 to 2000 G.M.T. on Sunday, October 3, 1954.

3. Entries will only be accepted if submitted in the form set out below, using one side of the paper only :—

LOW POWER CONTEST, OCTOBER 2-3, 1954

Call Sign.....Claimed Score.....

Code Number.....

Name .....

Address .....

Transmitter .....

Aerials ..... Receiver.....

G.M.T.	Power	Call Sign of Station Worked	My Report on His Signals	His Report on My Signals	Points claimed	Code No. of Station Worked
1810	*0.5*	*G3...*	*589*	*559*	*20*	*12*
1817	*0.5*	*G4...*	*579*	*459*	*20*	*17*
1824	*1.0*	*G5...*	*589*	*559*	*10*	*20*

Total ... ...

.....Code areas worked × 20 ... .

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. will be final in all cases of dispute.

Signed.....

4. A circuit diagram of the transmitter and power supply must be given on a separate sheet, signed by the competitor. Competitors using grounded grid p.a. stages must add for purposes of calculating power input to the p.a. 50 per cent. of the power input to the stage driving the p.a.

5. All contacts must be made between 3,500 and 3,600 kc/s.

6. The power input to the transmitter shall not be intentionally varied during any contact.

7. The Contest is confined to two-way telegraphy (A1) contacts and any competitor receiving tone reports lower than T9 may be disqualified.

8. Only one contact with a specific station will be allowed to count for points.

9. Power input, in watts to the p.a. stage (but see Rule 4), must be recorded in the second column at the time of the contact.

10. No preceding stage may have a power input in excess of that to the p.a.

11. Scoring will be as follows:—

Watts input to the p.a. stage	Up to *0.5*	To *1*	To *2*	To *3*	To *4*	To *5*
Points per contact	*20*	*10*	*5*	*3*	*2*	*1*

A bonus of 20 points may be claimed for the first contact with each different Code Area, as listed at the end of these Rules.

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

13. Competitors must call "CQ CQ CQ QRP de (call sign) AR."

14. An exchange of RST and Code Numbers—both of which must be acknowledged by the signal R—will be required before points may be claimed (e.g. RST 579 NR 17). Where non-competitors do not give a Code Number, this may be inserted, provided this fact is indicated on the log sheet.

15. Proof of contact may be required.

16. Contacts with unlicenced stations will not count for points.

17. Only the competitor may operate the station during the Contest period.

18. Entries must be addressed to the Hon. Secretary, R.S.G.B. Contests Committee, Radio Society of Great Britain, New Ruskin House, 28/30, Little Russell Street, London, W.C.1. and must bear a postmark not later than Friday, October 15, 1954.

Contests Diary

1954

August 15 - -	144 Mc/s Field Day (No. 2) §
August 29 - -	D/F Qualifying (Romford/ Southend)*
September 5 -	Low Power Field Day†
September 11-12	420 Mc/s Test and Contest §
September 12 -	D/F National Final*
September 25-26	420 Mc/s Test and Contest §
October 2-3 -	Low Power Contest ††
November 13-14	"Top Band" (No. 2)

* *For rules, see page 328, January, 1954* BULLETIN.
† *For rules, see page 570, June, 1954* BULLETIN.
§ *For rules, see page 37, July, 1954* BULLETIN.
†† *For rules, see page 87, August, 1954* BULLETIN.

Code Numbers

A list of Code Numbers is set out below.

ENGLAND (G).

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

SCOTLAND (GM).

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

WALES (GW).

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

NORTHERN IRELAND (GI).

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

CHANNEL ISLANDS (GC).

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

97. ISLE OF MAN (GD).

98. ALL STATIONS OUTSIDE THE UNITED KINGDOM.

Council Proceedings

Resumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Tuesday, June 15, 1954, at 6 p.m.

Present.—The President (Mr. A. O. Milne in the Chair), Messrs. H. A. Bartlett, L. Cooper, C. H. L. Edwards, D. A. Findlay, R. H. Hammans, F. Hicks-Arnold, J. H. Hum, L. E. Newnham, N. F. O'Brien, R. L. Varney, and John Clarricoats (General Secretary).

Apologies.—Apologies were submitted for the absence of Messrs. I. D. Auchterlonie and A. C. Gee.

* * *

Membership

Resolved (a) to elect 53 Corporate Members and 2 Associates; (b) to grant Corporate Membership to 17 Associates who had applied for transfer.

The Secretary reported that of the 817 Members whose subscriptions became due on March 1, 1954, 223 became overdue on May 31, 1954.

The Secretary submitted details of the reasons given by the 84 members who wrote to resign during the six weeks ended June 12, 1954. The analysis showed that 16 had resigned for financial reasons, 31 gave no reason, 22 had lost interest, six had resigned for personal reasons and the remaining nine gave various reasons.

Affiliation

Resolved to grant affiliation to the Rees Mace Marine Amateur Radio Club.

Regional Representatives' Conference

It was reported that the total cost of the recent Conference was £182 10s. 0d.

Invitations

Resolved (a) to authorise the President to accept an invitation extended to him by the Hastings and District Amateur Radio Club to open the Hastings Hobbies and Crafts Exhibition on July 3, 1954; (b) to authorise the General Secretary to accept an invitation extended to him and Mrs. Clarricoats by the Slade Radio Society to attend the Annual Dinner of that Society on October 23, 1954; (c) to authorise the General Secretary to accept an invitation extended to him by the Spen Valley Radio and Television Society to lecture to that Society on " The History and Development of Amateur Radio in the United Kingdom " on the understanding that his out-of-pocket expenses will be met by the Spen Valley Radio and Television Society.

New Amateur Licences

It was reported that the G.P.O. now issues a booklet entitled *How to Become a Radio Amateur* to those who seek information in regard to amateur licences. With the approval of the G.P.O. the information set out in the booklet would be reproduced in the Sixth Edition of *A Guide to Amateur Radio.*

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

Resolved to accept an estimate from South London Press, Ltd. dated May 24, 1954, for printing 3,000 copies of a 4th Edition of the *R.S.G.B. Amateur Radio Call Book.*

R.S.G.B. Bulletin

It was reported that, following a meeting between representatives of the Society and Patina Press, Ltd. the President had instructed the General Secretary to accept the estimate of Patina Press, Ltd. for printing Volume XXX of the BULLETIN.

Resolved to confirm the action taken by the President.

The Council expressed satisfaction with proofs of a new front cover design produced by Patina Press, Ltd. The Secretary reported upon a recent visit he had paid to the works of Patina Press, Ltd. and spoke of the assistance which that Company had already given to the Society in matters concerning the layout of the BULLETIN.

It was reported that South London Press, Ltd. had been notified that their estimate for printing Volume XXX of the R.S.G.B. BULLETIN had not been accepted.

I.T.U. Conference

The Secretary reported upon private correspondence which had passed between himself and a member of the I.T.U. Secretariat in Geneva. From this correspondence it seemed unlikely that the next Radio Administrative Conference would take place prior to 1957.

Interlopers in Exclusive Amateur Bands

The Secretary reported upon recent correspondence which had passed between the Editor of *The Short Wave Magazine* and himself. The gist of the correspondence was to the effect that Mr. Forsyth had requested Mr. C. I. Orr-Ewing, M.P. to ask a question in Parliament regarding the continued presence of interlopers in exclusive amateur bands. The Secretary also read to the meeting the text of the question which Mr. Orr-Ewing had set down for the Assistant Postmaster-General to answer on June 16.

Resolved to receive the correspondence.

420 Mc/s Contest and Tests

Resolved to approve a recommendation of the Contests Committee that a 420 Mc/s Contest should run simultaneously with the 420 Mc/s Tests.

Cash Account

Resolved to approve and adopt the Cash Account for May, 1954, as prepared and submitted by the Secretary.

" *A Guide to Amateur Radio* "

The Secretary reported that a suggestion for the front cover, submitted by Mr. N. F. O'Brien, had been developed into an attractive finished design by South London Press, Ltd. The Secretary also reported generally on the progress which had been made to date in connection with the production of the Guide.

Reports of Committees

Exhibition (Home Constructor's Section)

Resolved to receive, as Reports, the Minutes of Meetings of the Exhibition (Home Constructor's Section) Committee held on May 18 and May 28, 1954.

Radio Amateur Emergency Network

Resolved (a) to receive, as a Report, the Minutes of a Meeting of the Radio Amateur Emergency Network Committee held on May 22, 1954; (b) to accept and adopt Recommendations A and B contained therein. The recommendations were to the effect that, in future, no person shall be appointed an Emergency Communications Officer unless he holds an amateur transmitting licence and that no one shall be appointed an E.C.O. who is not a member of the R.S.G.B. unless his appointment meets with the approval of the local R.S.G.B. group.

Contests

Resolved (a) to receive, as a Report, the Minutes of a Meeting of the Contests Committee held on May 20, 1954; (b) to accept and adopt the Report of a Meeting of a Sub-Committee of the Contests Committee set up to review the List of British Commonwealth and Colonial Empire Call Areas.

The meeting terminated at 8.40 *p.m.*

Forthcoming Events

REGION 1

Bury.—No meeting in August. September 9, 7.30 p.m., 52 The Drive, Seedfield, Bury.
Chester (C. & D.A.R.S.).—Tuesdays, 7.30 p.m., Tarran Hut, Y.M.C.A.
Crosby.—Tuesdays, 8 p.m., over Gordon's Sweetshop, St. John's Road, Waterloo.
Lancaster.—September 1, 7.30 p.m., George Hotel, Torrisholme.
Liverpool (L. & D.A.R.S.).—Tuesdays, 8 p.m., St. Barnabas Hall, Penny Lane, Liverpool 15.
Manchester (M. & D.R.S.).—September 6, 7.30 p.m., Brunswick Hotel, Piccadilly, Manchester.
Preston.—August 27, September 10, 24, Belle Vue Hotel, New Hall Lane.
Rochdale (R.R.T.S.).—Fridays, 7.45 p.m., 1 Law Street, Sudden.
South Manchester (S.M.R.C.).—Fridays, 7.45 p.m., Ladybarn House, Mauldeth Road, Manchester 14.
Southport.—Thursdays, 8 p.m., Y.M.C.A., off Eastbank Street, Southport.
Stockport.—August 18, September 1, 15, 8 p.m., Blossoms Hotel, Buxton Road, Stockport.
Warrington (W. & D.A.R.S.).—August 17, September 7, 21, 7.30 p.m., Kings Head Hotel, Winwick Street, Warrington.
West Cumberland.—September 2, 7 p.m., Kells Community Centre, Whitehaven.
Wirral (W.A.R.S.).—August 18, September 1, 15, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

REGION 2

Barnsley.—September 10, 7.30 p.m., King George Hotel, Peel Street. (A.G.M.)
Bradford.—August 17, September 14, 7.30 p.m., Cambridge House, 66 Little Horton Lane.
Catterick.—Wednesdays, 7 p.m., Loos Lines, Catterick Camp.
Darlington.—Thursdays, 7.30 p.m., 129 Woodlands Road.
Doncaster.—September 8, 7.30 p.m., Y.W.C.A., Cleveland Street.
Gateshead.—Mondays, 7.30 p.m., Mechanics Institute, 7 Whitehall Road.
Hull.—August 31, September 14, 7.30 p.m., "Rampant Horse," Paisley Street.
Middlesbrough.—Thursdays, 7.30 p.m., Joe Walton's Boys' Club, Feversham Street.
Middlesbrough (T-S.A.R.C.).—September 2, 8 p.m., 2nd Eston Scout Hut, Eston.
Newcastle-upon-Tyne.—August 31, 7.30 p.m., c/o D. G. Lucas, 33 Broad Chare, Quayside.
Pontefract (P.A.T.G.).—August 19, September 2, 16, 8 p.m., "Fox Inn," Knottingley Road, Pontefract.
Rotherham.—Wednesdays, 7 p.m., "Cutlers Arms," Westgate.
Scarborough.—Thursdays, 7.30 p.m., B.R. Rifle Club, West Parade Road.
Sheffield.—August 25, 8 p.m., "Dog and Partridge," Trippet Lane. September 15, 8 p.m., Albreda Works, Lydgate Lane.
Slaithwaite.—Fridays, 7.30 p.m., 3 Dartmouth Street.
York.—Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.

REGION 3

Birmingham (South).—September 6, 7.30 p.m., Friends Hall, Watford Road, Cotteridge. **(M.A.R.S.).**—September 21, 6.45 p.m., Imperial Hotel. **(S.R.S.).**—August 20, September 3, 7.45 p.m., The Church House, High Street, Erdington.
Coventry.—August 27, 7.30 p.m., Priory High School, Wheatley Street. **(C.A.R.S.).**—August 30, September 13, 7.30 p.m., 9 Queens Road.
Kenilworth, Leamington & Warwick.—September 16, 7.30 p.m., Dalehouse Lane.
Malvern.—September 6, 8 p.m., "Foley Arms."
Solihull.—August 20, September 3, 17 The Old Manor House, High Street.
Stoke-on-Trent.—August 25, 8 p.m., "Lion's Head," John Street, Hanley.
Stourbridge (St. A.R.S.).—September 7, 8 p.m. King Edward VI School.
Wolverhampton.—September 13, 27, 8 p.m., Stockwell End, Tettenhall.
Wrekin.—September 6, 8 p.m., Wrekin Services Club, Roseway, Wellington.

REGION 4

Alvaston.—Tuesdays and Thursdays, 7.30 p.m. Sundays, 10.30 a.m., Nunsfield House, Boulton Lane, Alvaston, Nr. Derby.
Chesterfield.—Tuesdays, 7.30 p.m., Bradbury Hall, Chatsworth Road.
Derby (D. & D. A.R.S.).—Wednesdays, 7.30 p.m., Derby College Arts and Crafts. Sub-basement, Green Lane.
Leicester (L.R.S.).—August 16, 30, September 13, 7.30 p.m. Hollybush Hotel, Belgrave Gate.
Lincoln (L.S.W.C.).—September 1, 7.30 p.m. Technical College, Cathedral Street.
Mansfield (M. & D.A.R.S.).—September 8, 7.30 p.m. Denmans Head Hotel, Market Place, Sutton-in-Ashfield, Nottingham.
Newark.—August 22, September 5, 7 p.m., Northern Hotel, Appleton Gate.
Northampton (N.S.W.C.).—Fridays, 7 p.m., September 3, 6 p.m., Club Room, 8 Duke Street.
Nottingham.—September 17, 7.30 p.m., Sherwood Community Centre, opposite Woodthorpe Drive, Sherwood.
Peterborough.—September 1, 7.30 p.m., 21 Hankey Street.
Retford.—September 6, 7 p.m., "Sun Inn," Cannon Square, Retford.
Worksop.—September 6, 7 p.m., King Edward Hotel.

REGION 5

Chelmsford.—September 7, 7.30 p.m., Marconi College, Arbour Lane.
Lowestoft & Beccles (L. & B.A.R.C.).—August 25, September 8, 7.30 p.m., Y.M.C.A., Lowestoft.
Southend.—August 25, 8 p.m., G2BHA, 27 Park Road, Southend.

REGION 6

Gloucester (G.R.C.).—Thursdays, 7.30 p.m., The Cedars, 83 Hucclecote Road, Gloucester.
Oxford (O. & D.A.R.S.).—August 25, September 8, 7.30 p.m., "Magdalen Arms," Iffley Road, Oxford.

REGION 7

Acton, Brentford & Chiswick.—Tuesdays, 7.30 p.m., A.E.U. Rooms, 66 Chiswick High Road, W.4.
Barnes, Putney & Richmond.—September 3, 7.30 p.m., 337 Upper Richmond Road, S.W.14.
Bexleyheath (N.K.R.S.).—August 26, September 9, 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.
Bromley (N.W.K.A.R.S.).—September 3, 8 p.m., "Shortlands Tavern," Station Road, Shortlands, Bromley.
Chingford.—August 27, September 10, 24, Venue from G4GA (SIL 5635) or B.R.S.19765 (SIL 6055).
Chislehurst & Sidcup.—September 8, "Seven Stars," High Street, Footscray.
Croydon.—September 8, 7.30 p.m., "Blacksmith Arms," 1 South End.
Dorking.—Tuesdays, 7.30 p.m., 5 London Road.
East Ham.—Tuesdays, 8 p.m., August 17 and 31, 57 Leigh Road.
Ealing.—Sundays, 11 a.m., A.B.C. Restaurant, Ealing Broadway, W.5.
East London District.—September 19, Town Hall, Ilford.
Enfield.—Sunday, September 19, 3 p.m., George Spicer School, Southbury Road, Enfield.
Finsbury Park.—August 17, 7.30 p.m., 164 Albion Road, Stoke Newington, London, N.16.
Guildford & Woking.—Summer Recess (next meeting September 26, "Royal Arms Hotel," North Street, Guildford).
Hendon & Edgware.—Wednesdays, 8 p.m., 22 Goodwins Avenue, Mill Hill, N.W.7.
Hoddesdon.—September 2, 8 p.m., "Salisbury Arms."
Holloway (G.R.S.).—No meetings in August. September 10, 17 (A.G.M.), 24, 7.30 p.m., L.C.C. School, Eburne Road, Holloway, N.7.
Ilford.—Thursdays, 8 p.m., G2BRH, 579 High Road.
Kingston (K. & D.R.S.).—Alternate Wednesdays, 7.45 p.m., Penrhyn House, Penrhyn Road.
Lewisham (R.A.R.C.).—Wednesdays, 8 p.m., Durham Hill School, Downham.
Norwood.—August 21, September 18, Windermere House, Weston Street, Crystal Palace.
Southgate & Finchley.—September 9, 7.30 p.m., Arnos School, Wilmer Way.
Sutton & Cheam (S. & C.R.S.).—August 17, "The Harrow," Cheam Village, Surrey.
Welwyn Garden City.—September 7, 8 p.m., 38 Elmwood. ("First Steps on 70 cm," J. H. Hum, G5UM).

REGION 8

Brighton.—T.R. at home, 7.30 p.m., 27 Warren Avenue, Woodingdean. (B.D.R.C.) Tuesdays, 7.30 p.m., "Eagle Arms," Gloucester Road.
Chatham—(M.A.R.T.S.).—August 30, September 13, 27, 7.30 p.m., Services Rendered Club, 14 High Street, Brompton, Chatham.
Hastings (H. & D.R.C.).—August 31, September 14, 28, 7.30 p.m., Saxons Café, Denmark Place.
Isle of Thanet (I.O.T.R.S.).—Fridays, 7.30 p.m., Hilderstone House, Broadstairs.
Maidstone (M.K.A.R.S.).—Tuesdays, 7.30 p.m., Elms School, London Road.
Worthing.—8 p.m., September 13, Adult Education Centre, Union Place.

REGION 9

Bristol.—August 20, 7.15 p.m., Carwardine's Restaurant, Baldwin Street, Bristol, 1.
Exeter.—September 3, 7 p.m., Y.M.C.A., St. David's Hill, Exeter.
North Devon.—September 2, G2FKO, 38 Clovelly Road, Bideford.
Penzance.—September 2, "Railway Hotel," Penzance.
Torquay.—August 21, 7.30 p.m., Y.M.C.A., Castle Road.
West Cornwall (W.C.R.C.).—August 19, September 2, "Fifteen Balls," Penryn, Nr. Falmouth.
Weston-super-Mare.—September 7, 7.30 p.m., Y.M.C.A.
Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road.

REGION 10

Cardiff.—September 13, 7.30 p.m., "The British Volunteer," The Hayes.
Neath & Port Talbot.—September 8, 7.30 p.m., "Royal Dock Hotel," Briton Ferry.

REGION 13

Dunfermline.—Mondays and Thursdays, 7.30 p.m., behind 34 Viewfield Terrace, Dunfermline.

REGION 14

Falkirk.—August 27, September 10, 7.30 p.m., Temperance Café, High Street, Falkirk.
Glasgow.—August 25, September 29, 7 p.m., Institute of Engineers and Shipbuilders, 39 Elmbank Crescent, Glasgow, C.2.

Regional and Club News

BRIGHTON & DISTRICT RADIO CLUB.—Meetings are held at the "Eagle Inn," Gloucester Road, on Tuesday evenings when visitors will always be welcomed. A new transmitter is being built for the club station which is active on 3.5 Mc/s phone and c.w. *Hon. Secretary*: T. J. Huggett, 15 Waverley Crescent, Brighton.

BRITISH TWO-CALL CLUB.—Under new rules, all associates have become full members. The Vice-President of the Club, G8DK, is now DL2VR. ZL1MP hopes to settle in VP7. *Hon. Secretary*: G. V. Haylock (G2DHV), 63 Lewisham Hill, London, S.E.13.

BRISTOL.—At the July meeting, G3JMY and G3IYW described experiments with simple 70 cm equipment, some of which was demonstrated. The August meeting will be devoted to local arrangements in connection with National Convention.

CHELTENHAM.—An inquest on N.F.D. was held at the July meeting and preparations made for members to accompany G5BM on another of his 2 m trips to Wales during which G3CGD will operate on 80 m. In conjunction with Cheltenham Amateur Radio Society, the Group is taking part in the local Hobbies Exhibition from September 27 to 30. Those willing to help man the exhibition station (G3GPW) or to loan equipment should contact the T.R., J. J. Yeend (G3CGD), 30 Luke's Road, Cheltenham.

GRAFTON RADIO SOCIETY.—The first meeting of the winter session will be held at Grafton L.C.C. School, Eburne Road, N.7, on September 10 at 7.30 p.m. The A.G.M. is arranged for September 17. *Hon. Secretary*: A. W. H. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex.

KINGSTON & DISTRICT AMATEUR RADIO SOCIETY.—The QRP section is very active with three transistor transmitters and a transistor receiver built by a listener member now in operation. A "Practical Introduction to Transistor Equipment" is on the future programme of lectures. Three members (G3GVU, G3DHZ and G3HUK) have been recently married.

LANCASTER & DISTRICT AMATEUR RADIO SOCIETY.—Recent activities have included a visit to the Mullard factory at Blackburn, a successful junk sale and a visit to the local telephone exchange. *Hon. Secretary*: A. O. Ellefsen, 10 Seymour Avenue, Heysham.

NORWOOD & DISTRICT.—At the meeting on August 21, C. H. L. Edwards (G8TL) will lecture on "R.A.E.N. portable equipment." The group is to visit Tatsfield Receiving Station on September 11.

RAVENSBOURNE AMATEUR RADIO CLUB.—Two amateur stations were in operation under the call-signs G3HEV and G3FTI/A at the club's recent exhibition. Other activities have included a field day at Hextable, Kent, when G2DHV/P was active.

READING RADIO SOCIETY.—A practical lecture on fault finding, and a visit to the B.E.A. Generating Station at Earley were both popular. Next meetings on September 11 ("Alignment of Radio Receivers") and September 25 ("Old and New Radio"). *Hon. Secretary*: L. A. Hensford, B.E.M. (G2BHS), 30 Boston Avenue, Reading.

SALISBURY & DISTRICT SHORT-WAVE CLUB.—The main exhibits on the club's stand at the local Model Engineering Exhibition were two transmitters (one operating on 3.5 Mc/s, the other on 14 Mc/s), a tape recorder and an oscilloscope. G3IVP/M, operating from his car, co-operated in R.A.E.N. demonstrations. Films of radio interest were also shown. A visit was paid recently to Portishead G.P.O. Station. The club will be exhibiting again at Wilton Carnival on August 21. *Hon. Secretary*: H. G. Futcher, 171 Castle Road, Salisbury.

Some of the prizes in the mammoth raffle at the Medway Hamfest. On the platform to the rear are G2UJ and G2MI. The speaker is G6NU (President, M.A.T.S.).

SLADE RADIO SOCIETY.—The fourth of the season's D/F events for the Harcourt Trophy was due to be held on August 15. A double midnight D/F contest will take place on September 26. The club room at Church House, High Street, Erdington, is now open every day; transmitting and receiving equipment is being installed and constructional facilities are available. *Hon. Secretary*: C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.

SOUTH MANCHESTER RADIO CLUB.—Lectures are arranged for August 27 ("Construction of Amateur Radio Equipment") and September 10 ("Design of Mains Transformer and Chokes"). A series of talks for the beginner has resulted in increased membership. *Hon. Secretary*: M. Barnsley (G3HZM), 17 Cross Street, Bradford, Manchester 11.

SOUTH SHIELDS & DISTRICT AMATEUR RADIO CLUB.—The club is again taking part in the annual South Shields Flower Show from August 26 to 29. The exhibit will include a station operating under the call-sign GB3SFS on 3.5, 7 and 14 Mc/s. Offers of "skeds" to coincide with the official opening at 1300 on August 27, will be appreciated as will offers of co-operation in connection with a R.A.E.N. demonstration. It is suggested that August 29 at 1030 B.S.T. would be suitable on 3525 kc/s telegraphy and 3700 kc/s telephony. Recording equipment will also be on view. Meetings are held on Fridays at Trinity House Social Centre, 134 Laygate Lane, South Shields, when G3DDI is in operation on 3.5 Mc/s. Workshop facilities are available. *Hon. Secretary*: W. Dennell (G3ATA), 12 South Frederick Street, South Shields.

TEES-SIDE AMATEUR RADIO CLUB.—Meetings are now held on the first Thursday in the month at the 2nd Eston Scout Hut, Eston. Further details may be obtained from the *Hon. Secretary*: H. Walker (G3CBU), 64 Ayresome Street, Middlesbrough.

TORBAY AMATEUR RADIO SOCIETY.—"Aspects of Crystal Grinding" will be the title of a talk by W. A. Launder, B.Sc. (G3FHI) at the meeting on August 21. *Hon. Secretary*: L. H. Webber (G3GDW), 43 Lime Tree Walk, Newton Abbot.

WARRINGTON & DISTRICT RADIO SOCIETY.—Recent activities have included the annual social outing to Trentham Gardens and Lecturettes for Beginners. A listener member gained first place in the Association of North-Western Radio Societies' Receiving Contest. The Society is taking part in Region 1 Field Day from a site at Higher Whitley, Cheshire, on August 29. At 7.30 p.m. on September 7 at the "King's Head Hotel," Winwick Street, Warrington, there will be a meeting devoted to radio control of model aircraft. *Hon. Secretary*: G. H. Flood, 32 Capesthorne Road, Orford, Warrington.

Representation

THE following is an amendment to the list of Town Representatives published in the December, 1953, issue:—

Region 3—Warwickshire

Solihull, Shirley, Acocks Green and Hampton-in-Arden area of Birmingham

G. Swinnerton (G6AS), 120 Grange Road, Olton, Birmingham 27.

* * *

Vacancy

Mr. D. I. Thompson (3IDT) has resigned as representative for the town of Pontefract. Nominations for his successor should be made in the prescribed form and sent to reach the General Secretary by not later than September 30, 1954.

New National Society in India

FROM Mr. J. S. Nicholson (VU2JP) we learn that the Amateur Radio Club of India has been wound up and a new organisation, known as the Amateur Radio Society of India, formed.

Mr. Nicholson has been asked by the newly-formed Society to run and revitalise the QSL Bureau.

Members are asked to note that the only official QSL Bureau of the A.R.S.I. is that run on behalf of the Society by Mr. Nicholson. The official address for the Bureau and the one to which all QSL cards should be sent is Box 1, Munnar P.O., Travancore, Southern India.

Correspondence for the Society, other than for the QSL Manager, should be sent to Box 584, New Delhi.

LONDON MEMBERS' LUNCHEON CLUB

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

at 12.30 p.m. on August 20 and September 24, 1954.

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

Affiliated Societies

The following Clubs and Societies were affiliated to the Radio Society of Great Britain as at July 19, 1954.

ABERDEEN AMATEUR RADIO SOCIETY, c/o Mr. A. G. Knight, 6 Blenheim Lane, Aberdeen.
ACTON, BRENTFORD & CHISWICK RADIO CLUB (G3HU), c/o Mr. R. G. Hindes, 51 Rusthall Avenue, Bedford Park, Chiswick, London, W.4.
ADMIRALTY ELECTRONICS SOCIETY (G3BPU), c/o Mr. W. J. Green, 82 Bloomfield Avenue, Bath, Som.
*AIRCRAFT APPRENTICES RADIO CLUB (G3ID), c/o Officer-in-Charge, c/o No. 1 Radio School, R.A.F. Locking, Weston-super-Mare, Som.
*AMATEUR RADIO SOCIETY OF UGANDA, c/o Mr. L. A. Seeley, P.O. Box 1803, Kampala, Uganda.
ARIEL RADIO CLUB, c/o Mr. B. A. Toms, 38 Ashbourne Avenue, South Woodford, London, E.18.
ARMY APPRENTICES' SCHOOL RADIO CLUB, c/o Mr. F. Hall, Telecommunications, Army Apprentices' School, Arborfield, Berks.
BABCOCK & WILCOX STAFF ASSOCIATION, RADIO SECTION, c/o Mr. A. J. Taylor, Babcock House, 35 Farringdon Street, London, E.C.4.
BALLYMENA RADIO CLUB, c/o Mr. S. B. Caldwell, Tullygarley Road, Ballymena, Co. Antrim, N. Ireland.
BARNSLEY & DISTRICT AMATEUR RADIO CLUB, c/o Mr. P. Carbutt, 33 Woodstock Road, Barnsley, Yorks.
BENSON AMATEUR RADIO CLUB, c/o Master Navigator R. Pontet, Royal Air Force, Benson, Oxon.
BLACKPOOL & FYLDE AMATEUR RADIO SOCIETY, c/o Mr. H. G. Newland, 161 Penrose Avenue, Blackpool, Lancs.
*BOURNEMOUTH RADIO & TELEVISION SOCIETY (G3FVU), c/o Mr. J. Ashford, 119 Petersfield Road, Boscombe East, Bournemouth, Hants.
BOURNVILLE RADIO SOCIETY (G6BV), c/o Mr. W. V. Shepard, 174 Gristhorpe Road, Selly Oak, Birmingham 29.
BRADFORD AMATEUR RADIO SOCIETY, c/o Mr. F. J. Davies, 39 Pullan Avenue, Eccleshill, Bradford 2, Yorks.
*BRENTWOOD & DISTRICT AMATEUR RADIO SOCIETY, c/o Mr. J. S. Thornton, 18 Western Avenue, Billericay, Essex.
BRIGHTON & DISTRICT RADIO CLUB, c/o Mr. T. J. Huggett, 15 Waverley Crescent, Brighton 6, Sussex.
BRITISH AMATEUR TELEVISION CLUB, c/o Mr. D. W. E. Wheele, 56 Burlington Gardens, Chadwell Heath, Romford, Essex.
BRITANNIA RADIO CLUB, c/o Hon. Secretary, Britannia Royal Naval College, Dartmouth, Devon.
B.T.H. RECREATION CLUB (RADIO & TELEVISION SECTION), c/o Mr. R. T. Craxton, The British Thomson-Houston Co., Ltd., Recreation Club Office, Rugby, Warwicks.
BURTONWOOD AMATEUR RADIO CLUB c/o A/IC John Crudge, AF12327397, HQ.Sq. 7559th Air Base Gp. Depot, Box 402, Burtonwood U.S.A.F., Warrington, Lancs.
CAMBRIDGE & DISTRICT AMATEUR RADIO CLUB, c/o Mr. F. A. E. Porter, 38 Montague Road, Cambridge.
*CAMBRIDGE UNIVERSITY WIRELESS SOCIETY (G6UW), c/o Mr. R. C. Marshall, St. John's College, Cambridge.
CATTERICK AMATEUR RADIO CLUB (G3CIO), c/o L/Cpl. G. Gaughan, 2 (Radio) Squadron, Loos Lines, No. 1 Training Regiment, Catterick Camp, Yorks.
*CHELTENHAM AMATEUR RADIO SOCIETY, c/o Mr. E. A. J. Miles, 8 Elmfield Road, Cheltenham, Glos.
CHESTER & DISTRICT AMATEUR RADIO SOCIETY, c/o Mr. A. Norman Richardson, 23 St. Mary's Road, Dodleston, Nr. Chester.
CITY OF BELFAST Y.M.C.A. RADIO CLUB (GI6YM), c/o Mr. H. J. Campbell, 36 Lisburn Avenue, Belfast, N. Ireland.
CO-OP RADIO SOCIETY (GI3IBC), c/o Mr. D. Wilson, 189 Cregagh Street, Belfast.
COURTAULDS' AMATEUR RADIO GROUP, c/o Mr. W. P. Stevens, Courtaulds, Ltd., Foleshill Road, Coventry, Warwicks.
*COVENTRY AMATEUR RADIO SOCIETY, c/o Mr. K. Lines, 142 Shorncliffe Road, Coventry, Warwicks.
DERBY & DISTRICT AMATEUR RADIO SOCIETY (G3ERD), c/o Mr. F. C. Ward, 5 Uplands Avenue, Littleover, Derby.
DORKING & DISTRICT RADIO SOCIETY, c/o Mr. J. Greenwell, 7 Sondes Place Drive, Dorking, Surrey.
*EAST SURREY RADIO CLUB, c/o Mr. L. Knight, "Radiohme," 6 Madeira Walk, Reigate, Surrey.
ELECTRONICS & AMATEUR RADIO SOCIETY, QUEEN MARY COLLEGE c/o Mr. A. G. Betjemann, 10 Warren Road, Cricklewood, London, N.W.2.
EDGWARE & DISTRICT RADIO SOCIETY, c/o E. Taylor, 241A Burnt Oak Broadway, Edgware, Middlesex.
EDINBURGH AMATEUR RADIO CLUB, c/o Mr. D. Black, 16 Edina Place, Edinburgh 7.
*GARATS HAY RADIO CLUB (G3CHR), c/o Mr. F. Armstrong, Garats Hay, Woodhouse, Nr. Loughborough, Leics.
GATESHEAD & DISTRICT AMATEUR RADIO CLUB, c/o Mr. J. Kennedy, 11 Lanthwaite Road, Low Fell, Gateshead 9, Co. Durham.
GLASGOW WESTERN SHORT WAVE CLUB, c/o Mr. R. F. D. Moir, 18 Haldane Street, Glasgow, W.4.
GRAFTON RADIO SOCIETY (G3AFT), c/o Mr. A. W. H. Wennell, 145 Uxendon Hill, Wembley Park, Middx.
GRAVESEND AMATEUR RADIO SOCIETY (G3GRS), c/o Mr. R. E. Appleton, 23 Laurel Avenue, Gravesend, Kent.
*GREAT PORTLAND RADIO CLUB (G3GJD), c/o Mr. F. V. Turner, 18 Henley Road, Edmonton, London, N.9.
HARLOW & DISTRICT RADIO SOCIETY, c/o Mr. H. Ivan Wright, "Folly's," Cock Green, Great Parndon, Harlow, Essex.
*HENLOW RADIO SOCIETY, c/o 584769 Cpl. Tranmer, R.R.S., R.E.U., R.A.F., Henlow, Bucks.
HOFFMAN GLOUCESTER ATHLETIC & SOCIAL CLUB, RADIO & ELECTRONICS SOCIETY (G3IFH), c/o Mr. S. R. Boakes, Cambridge Villa, Bristol Road, Cambridge, Glos.
HOUNSLOW & DISTRICT RADIO SOCIETY, c/o Mr. R. J. Parsons, 16 Cypress Avenue, Whitton, Twickenham, Middx.
HULL & DISTRICT RADIO SOCIETY, c/o Mr. R. C. Parnaby, 32 Cartwright Lane, Beverley, E. Yorks.
H.M.S. "ARIEL" AMATEUR RADIO SOCIETY, c/o The Training Commander, H.M.S. "Ariel," Winchester, Hants.
*ILFORD & DISTRICT RADIO SOCIETY (G3QU), c/o Mr. C. E. Largen, 44 Trelawney Road, Barkingside, Ilford, Essex.
ISLE OF MAN AMATEUR RADIO CLUB (GD3FLH), c/o Mr. R. S. Trickey, 35 Sunningdale Drive, Onchan, Isle of Man.
ISLE OF THANET RADIO SOCIETY, c/o Mr. J. P. Barnes, 18 Grange Road, Ramsgate, Kent.
KINGSTON & DISTRICT AMATEUR RADIO SOCIETY, c/o Mr. R. S. Babbs, B.Sc., 28 Grove Lane, Kingston, Surrey.
LANCASTER & DISTRICT AMATEUR RADIO SOCIETY, c/o Mr. A. O. Ellefsen, 10 Seymour Avenue, Heysham, Lancs.
LEEDS AMATEUR RADIO SOCIETY, c/o Mr. B. A. Payne, 454 Kirkstall Road, Leeds 4, Yorks.
LEICESTER RADIO SOCIETY, c/o Mr. W. N. Wibberley, 21 Pauline Avenue, Belgrave, Leicester.
LEWES & DISTRICT MODEL ENGINEERING CLUB, c/o Mr. J. Toole, 69 Highdown Road, Lewes, Sussex.
LINCOLN SHORT WAVE CLUB, c/o Mr. S. Harrison, 4 Prefab Main Avenue, Bracebridge Heath, Lincoln.
LIVERPOOL & DISTRICT AMATEUR RADIO CLUB (G3AHD), c/o Mr. A. D. H. Looney, 81 Alstonfield Road, Knotty Ash, Liverpool 14.
LIVERPOOL DIOCESAN REGIMENT CHURCH LADS' BRIGADE (RADIO SECTION) (G35CA), c/o Lt.-Col. E. C. Arden, LL.B., T.D., 5 Canning Place, Liverpool 1.
LOTHIANS RADIO SOCIETY, c/o Mr. L. Stuart, 38 Caledonian Crescent, Edinburgh.
LOUGHBOROUGH COLLEGE RADIO SOCIETY, c/o Mr. R. A. Harrison, Loughborough College, Loughborough, Leics.
LOWESTOFT & BECCLES AMATEUR RADIO CLUB c/o Mr. P. Hayward, 58 Edgerton Road, Lowestoft, Suffolk.
MANCHESTER & DISTRICT RADIO SOCIETY, c/o Mr. K. Brockbank, 17 Burleigh Road, Stretford, Manchester, Lancs.
*MANSFIELD RADIO SOCIETY, c/o Mr. G. Aldridge, 13 Felley Avenue, East Kirkby, Notts.
MEDWAY AMATEUR RECEIVING & TRANSMITTING SOCIETY, c/o Mr. D. H. Brett, 14 Connaught Road, Chatham, Kent.
MERSEYSIDE RADIO SOCIETY (G3DPZ), c/o Mr. J. B. Trueman, 141 Ince Avenue, Liverpool 4.
MIDLAND AMATEUR RADIO SOCIETY, c/o Mr. D. Hall, 144 Hill Village Road, Sutton Coldfield, Nr. Birmingham, Warwicks.
MURPHY RADIO SPORTS CLUB RADIO SECTION (G8LM), c/o Mr. J. Burton, The Grange, Cecil Crescent, Hatfield, Herts.
NORTHAMPTON SHORT WAVE RADIO CLUB (G3GWB), c/o Mr. V. R. Hartopp, 22 Purser Road, Northampton.
NORTH KENT RADIO SOCIETY, c/o Mr. C. J. Leal, 1 Deepdene Road, Welling, Kent.
NORTH WEST KENT AMATEUR RADIO SOCIETY, c/o Mr. B. Herbert, 18 Leamington Close, Bromley, Kent.
NORWICH & DISTRICT RADIO CLUB (G3JGI), c/o Mr. D. Youngs, 53 Salisbury Road, Thorpe Road, Norwich, Norfolk.
NOTTINGHAM UNIVERSITY RADIO SOCIETY, c/o Mr. P. W. Smith, The Union Room, University of Nottingham, University Park, Nottingham.
NOTTINGHAM & DISTRICT SHORT WAVE CLUB, c/o Mr. N. D. Littlewood, 129 Standhill Road, Nottingham.
OXFORD & DISTRICT AMATEUR RADIO SOCIETY, c/o Mr. J. Hickling, 47 Banbury Road, Oxford.
PORT OF LONDON AUTHORITY STAFF CLUB RADIO SECTION (G3HXL), c/o Mr. R. T. Seaton, Lighterage Section, Northern Dept., Port of London Authority, Millwall Dock, Poplar, London, E.14.
PORTSMOUTH & DISTRICT RADIO SOCIETY, c/o Mr. L. Rooms 51 Locksway Road, Milton, Portsmouth, Hants.
QRP SOCIETY, c/o Mr. J. Whitehead, 92 Rydens Avenue, Walton-on-Thames, Surrey.
*RADIO SOCIETY, CITY & GUILDS COLLEGE (G5YC), Exhibition Road, South Kensington, London, S.W.7.
RADIO SOCIETY, LEICESTER COLLEGE, c/o Mr. N. Pereira, University College, Leicester.
*R.A.F. (LOCKING) AMATEUR RADIO CLUB (G3IRS), R.A.F. Station, Locking, Weston-super-Mare, Som.
*R.A.F. (SWANTON MORLEY) AMATEUR RADIO CLUB, c/o Mr. A. E. White, R.A.F. Station, Swanton Morley, Dereham, Norfolk.
*R.A.F. (YATESBURY) AMATEUR RADIO SOCIETY (G3HWF), c/o Mr. K. Smith, No. 2 Radio School, R.A.F., Yatesbury, Calne, Wilts.
RAVENSBOURNE AMATEUR RADIO CLUB (DOWNHAM) (G3HEV), c/o Mr. J. H. F. Wilshaw 4 Station Road, Bromley, Kent.

REES MACE MARINE LTD. AMATEUR RADIO CLUB (G3JRM), c/o Mr. D. W. McKay, School Road, Oulton Broad, Lowestoft, Suffolk.
READING RADIO SOCIETY, c/o Mr. L. A. Hensford, B.E.M., 30 Boston Avenue, Reading, Berks.
RIBBLESDALE AMATEUR RADIO SOCIETY, c/o Mr. E. Pearson, 1 Cowper Avenue, Clitheroe, Lancs.
*RISLEY RADIO SOCIETY, c/o Mr. D. Harper, Risley Club, Nr. Warrington, Lancs.
ROYAL SIGNALS BOYS' AMATEUR RADIO CLUB, c/o Major Ian McAinsh, 6 (Boys') Training Regt., R. Signals, Normandy Camp, Beverley, E. Yorks.
ST. ATHAN AMATEUR RADIO SOCIETY (GW3CKB), 32 MU, R.A.F., St. Athan, Barry, Glam., S. Wales.
SALISBURY & DISTRICT SHORT WAVE CLUB (G3FKF), c/o Mr. H. G. Futcher, 171 Castle Road, Salisbury, Wilts.
SCARBOROUGH AMATEUR RADIO SOCIETY, c/o Mr. P. B. Briscombe, 31 St. John's Avenue, Scarborough, Yorks.
SHEFFIELD AMATEUR RADIO CLUB, c/o Mr. C. Leadwood, 103 Bodmin Street, Sheffield 9, Yorks.
SHEFFORD & DISTRICT AMATEUR RADIO SOCIETY, c/o Mr. G. R. Cobb, 7 Hitchin Road, Shefford, Beds.
*SINGAPORE AMATEUR RADIO TRANSMITTERS SOCIETY, c/o Mr. S. P. Shotam, P.O. Box 176, Singapore.
SLADE RADIO SOCIETY, c/o Mr. C. N. Smart, 110 Woolmore Road, Erdington, Birmingham 23.
SOUTHEND & DISTRICT RADIO SOCIETY (G5QK), c/o Mr. J. H. Barrance, M.B.E., 49 Swanage Road, Southend-on-Sea, Essex.
SOUTH MANCHESTER RADIO CLUB, c/o Mr. M. Barnsley, 17 Cross Street, Bradford, Manchester 11, Lancs.
SOUTH SHIELDS & DISTRICT RADIO CLUB (G3DDI), c/o Mr. W. Dennell, 12 South Frederick Street, South Shields, Co. Durham.
SPEN VALLEY & DISTRICT RADIO & TELEVISION SOCIETY, c/o Mr. N. Pride, 100, Raikes Lane, Birstall, Nr. Leeds, Yorks.
S.R.D.E. AMATEUR RADIO SOCIETY, c/o Mr. A. E. Rhodes, S.R.D.E., Somerford, Christchurch, Hants.
STOCKPORT RADIO SOCIETY, c/o Mr. G. R. Phillips, 7 Germans Buildings, Buxton Road, Stockport, Ches.
STOURBRIDGE & DISTRICT AMATEUR RADIO SOCIETY, c/o Mr. F. W. Meredith, 26 Gilbanks Road, Wollaston, Stourbridge, Worcs.
*STROUD & DISTRICT AMATEUR RADIO SOCIETY, c/o Mr. B. L. Horton, Prescott, Haven Avenue, Bridgend, Stonehouse, Glos.
SURREY RADIO CONTACT CLUB (CROYDON), c/o Mr. S. A. Morley, 22 Old Farleigh Road, Selsdon, South Croydon, Surrey.
SUTTON & CHEAM RADIO SOCIETY, c/o Mr. F. J. Harris, 143 Collingwood Road, Sutton, Surrey.
THAMES VALLEY AMATEUR RADIO TRANSMITTERS SOCIETY, c/o Mr. K. A. H. Rogers, 21 Links Road, Epsom, Surrey.
*TORBAY AMATEUR RADIO SOCIETY, c/o Mr. L. D. Webber, 43 Lime Tree Walk, Newton Abbott, Devon.
VICKERS-ARMSTRONGS, LTD. (WEYBRIDGE) SOCIAL & ATHLETIC CLUB (ELECTRONICS SECTION), c/o Mr. D. Warner, Sales Accounts Dept., Weybridge Works, Weybridge, Surrey.
UNIVERSITY RADIO SOCIETY, c/o The Secretary, The Union, University Road, Edgbaston, Birmingham.
WARRINGTON & DISTRICT RADIO SOCIETY (G3CKR), c/o Mr. G. H. Flood, 32 Capesthorne Road, Orford, Warrington, Lancs.
WELLS & DISTRICT RADIO & TELEVISION SOCIETY, c/o Mr. G. R. L. Sotham, Crookesbury, Wookey Road, Wells, Somerset.
WEST CORNWALL RADIO CLUB, c/o Mr. R. A. V. Allbright, Greenacre, Lidden, Penzance, Cornwall.
WEST KENT AMATEUR RADIO SOCIETY, c/o Mr. H. F. Richards, 17 Reynolds Lane, Tunbridge Wells, Kent.
*WEST LANCS RADIO SOCIETY, c/o Mr. B. Whitty, 46 Argo Road, Waterloo, Liverpool 22.
WIRRAL AMATEUR RADIO SOCIETY, c/o Mr. A. C. Wattleworth, 17 Iris Avenue, Claughton, Birkenhead, Ches.
WOLVERHAMPTON AMATEUR RADIO SOCIETY, c/o Mr. H. Porter, 221 Park Lane, Wolverhampton, Staffs.
WORTHING & DISTRICT AMATEUR RADIO CLUB, c/o Mr. J. F. Wells, 37 Salvington Gardens, Worthing, Sussex.
WREKIN AMATEUR RADIO SOCIETY, c/o Mr. G. N. Myatt, 12 Swan Street, Broseley, Shropshire.
YEOVIL AMATEUR RADIO CLUB (G3CMH), c/o Mr. D. L. McLean, 55 Cedar Grove, Yeovil, Somerset.
YORK AMATEUR RADIO SOCIETY (G3HWW), c/o Mr. G. F. Nottingham, 51 Carr Lane, Acomb, York.

*Denotes Secretary's name and address subject to confirmation. Corrections or amendments to this list should be sent to R.S.G.B. Headquarters.

Can You Help?

● G. H. Rathbone (G3HKK), 37 Blandford Road, Fleetville, St. Albans, Herts, who requires the technical manual and/or circuit diagram for the American v.h.f. aircraft receiver type R-3/ARR-2X?

● W. H. Olliver, 32 Stratford Road, Thornton Heath, Surrey, who requires the circuit diagram for the "Troubador" midget receiver which is fitted with a "Troubascope Looptenna"?

● A. O. Milne (G2MI), 29 Kechill Gardens, Hayes, Bromley, Kent, who urgently requires the Instruction Book No. 2 (Technical) for the No. 22 set?

Letters to the Editor

Due to pressure on available space a number of 'Letters to the Editor' have been unavoidably held over from this issue.

New Books

AMPLITUDE FREQUENCY CHARACTERISTICS OF LADDER NETWORKS. By E. Green, M.Sc. 156 pages, 88 illustrations. Page size 9¾in. × 7in. Published by Technical Information Division, Marconi's Wireless Telegraph Co., Ltd., Chelmsford. Price 25/-.

This is one of the first published books dealing with the synthesis and analysis of filter-type networks by means of modern network theory. The work began as an investigation of the possibilities of increasing the bandwidths of the output circuits of television transmitters and only gradually developed into the general synthesis of ladder networks to give Butterworth or Cherbyshev amplitude response in the pass-band.

It is to the credit of the Marconi Wireless Telegraph Co. and to the author that they are in the vanguard of those who are making the information available to the design engineer.

LAPLACE TRANSFORMS FOR ELECTRICAL ENGINEERS. By B. J. Starkey, Dipl.Ing., A.M.I.E.E. 280 pages. Page size 8¾in. × 5¾in. Published for *Wireless Engineer* by Iliffe and Sons, Ltd. Price 30/-.

The method of solving linear differential equations originally published by Laplace has been in use by mathematicians for well over a century, but only in recent years have engineers begun to realise its usefulness to them. The Laplace transformation theory is, however, extremely helpful in providing quick solutions to a great range of engineering and physical problems, and often saving much laborious calculation by other methods.

Normally, the language used by mathematicians to present the theory is rather difficult for the engineer whose knowledge of higher mathematics may not go beyond the differential and integral calculus and the theories of complex numbers and vector analysis. In this book, however, the language used is well known to engineers in general, and the methods of explaining the problems is particularly familiar to electrical engineers.

Although the work is not intended as more than a general introduction to a very large subject it should prove of value in supplementing the more rigorously mathematical texts that have previously appeared.

A BIBLIOGRAPHY OF COLOUR TELEVISION. 20 pages. Issued by The Television Society. Price 2/6.

This bibliography is divided into two sections: Optical and Electrical. An author index and a list of abbreviations of periodical titles has also been included.

EXCHANGE AND MART SECTION

ADVERTISEMENT RATES. MEMBERS' PRIVATE ADVERTISEMENTS **2d.** per word, minimum charge **3s.** **Trade Advertisements 6d.** per word, minimum charge **9s.** (Write clearly. No responsibility accepted for errors). Use of Box number **1s. 6d.** extra. Send copy and payment to **National Publicity Co., Ltd., 36-37 Upper Thames Street, London, E.C.4, by 22nd** of month preceding date of issue.

A BARGAIN. R1155 and T1154 for £7 10s. A.M. test set 73, £3. Chemical apparatus, £3. Variable inductors, 1/- doz. Knobs. 2/6 doz. Jack plugs (short), 2/- doz. Brass terminals, 3/- doz. Carr, extra. (G3CER) BM/HWMO, London, W.C.1. (220

ACCOMMODATION required for self and XYL in South Birmingham area. Please write to G3HZG. (218

AVOMINOR Universal, factory overhauled—£5/10-. Triplett multimeter—£4/10-; 27/30 Mc/s Converter, 35/-. Amphenol coaxial unused plugs (5) and right-angle adaptors (4) 2/6 each. BC454 less 12K8, 30/-; 5ft. 6in. relay rack, 30/-. Wanted: 1.5/3 Mc/s Command Set, or coilpack same. Casson, 2 Richmond Terrace, Barrow-in-Furness. (236

BUG key required: Lionel or other fully adjustable type only. G3HAT, 1 Ashbourne Road, London, W.5. PER 8263. (221

BULLETINS from August, 1942, to date, good, clean condition. What offers? A. Langley, 28 Cleveleys Avenue, Fulwood, Preston. (230

B2 MINOR, modified for bandspread. Phones, key, spare valves and plugs, attache case, £5. Johnson, 35A Birdhill Road, Woodhouse Eaves, Loughborough. (235

CRYSTALS 200 kc/s, American G.E.C.; 465 kc/s S.T.C. ½in. spacing. All new, boxed; 10/- each. Hundreds of other bargains for Hams. Charles Britain (Radio), Ltd., 11 Upper St. Martin's Lane, London, W.C.2.

CR100 Parts. I.F. Transformers 7/6, with crystal 15/-. Spare 465 crystals 10/-. 4-gang condenser, £1. Ditto with slow-motion gears complete, £2/10-. Box 237, National Publicity Co., Ltd., 36/37 Upper Thames Street, London, E.C.4. (237

EDDYSTONE 750, with matching speaker. Perfect condition, and less than 80 hours use since checked and re-aligned by makers. First offer over 40 guineas. B.R.S. 16252, "Gaythorne," Upper Colwyn Bay, N. Wales. (228

EXCHANGE wanted. Transmitting valves 813s, etc., offered for Class "D" wavemeter in good condition. Offers to: 30 Ross Crescent, Camelon, Falkirk, Stirlingshire. (215

FOR SALE: Collins TCS12 transmitter/receiver in first class condition, or will exchange for test equipment. Box 227, National Publicity Co., Ltd., 36-37 Upper Thames Street, E.C.4. (227

FOR SALE: Gear of the late G3DIL. Atlas rectifier unit type 12W input 230V 50 c/s output 230V d.c. at 200/230 mA. Post Office type carbon microphone. Morse key. Wavemeter class C No. 1 with 120V battery. Miscellaneous items. Radio books, instruction books for AR88D, AR77, AR77E and type 358 receivers. Write or call. E. Grant (G4DV), The Rookery, Leasingham, Sleaford, Lincs. (232

FOR SALE cheap. *Wireless World*, November, 1945, to July, 1952. BULLETIN, August, 1947, to June, 1953. QST November, 1946, to December, 1952. *Short-Wave Magazine*, June, 1947 to September, 1952. Also many odd copies. Offers for lot to G3EXD, 30 Kingsmead, New Barnet. (241

IMPORTANT NOTICE

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

THE NATIONAL PUBLICITY CO., LTD.
36-37 Upper Thames Street, London, E.C.4

The Society and its Advertisement Manager cannot intercede in any matters arising from advertisements appearing in this section.

HRO Junior p.p. g.c. coils, 1-4, 7-14 Mc/s; 8in. speaker £17 o.n.o. Lambert, Jun., 327 Parkway, Iver Heath, Bucks. (244

HRO Senior, 11 Coils, 4 Bandspread, p.p., spare valves, £32. R1132A and Power Pack 3, £5. Table-top T1403 with valves, new, £5. G62A, 100 kc/s. Crystal Oven, 9 Valves, £4/10-. Meters 1 mA 3½in. scale, 12/6; 100 μA 5in. Scale, £3/10-. Noise generator, silver-plated box, CV172, 15/-. Octal and miniature valves, 5/-. List on request. Carriage extra. B.R.S. 17492, 23 Compton Avenue, London, E.6. (245

METALWORK.—All types cabinets, chassis, racks, etc., to your own specifications. Philpott's Metal Works, Ltd. (G4B1), Chapman Street, Loughborough. (99

OPERATION clear out. Ham offers the following for sale: 1131 transmitter modified for 7, 14, 21 and 28 Mc/s, with spares. 2 metre transmitter 6J6, 6J6, 832, 829B with power supplies. 2 metre 6J6 convertor. Army sender 12 transmitter. 1155 Receiver with p.p. and 6V6

(Continued on page 96)

EXCHANGE AND MART SECTION

(*Continued from page 95*)

incorporated. 6ft. P.O.-type rack. BC 614 speech amplifier. H.M.V. Autochanger, new Viewmaster, unused, without tube. Power supplies, valves, transformers, meters, must be cleared. Reasonable offer secures any item. J. H. McErving, 89 Armadale Street, Glasgow. (239

PATENTS and Trade Marks. Handbooks and advice free. Kings Patent Agency, Ltd. (B. T. King, G5TA, Mem. R.S.G.B., Reg. Pat. Agent), 146A Queen Victoria Street, London, E.C.4. Phone: City 6161. 50 years' refs. (98

QSL.s and log book (P.M.G. approved). Samples free. State whether G or B.R.S. Atkinson Bros., Printers, Elland. (772

RECEIVER R109 with vibrator pack, less speaker, £5. Universal AvoMinor, £5; 500V megger, £10. Various meters, valves, etc. S.A.E. enquiries to G3CPR, 143 Beaver Green, Ashford, Kent. (238

SENDER 12, A.T.U. and all accessories, and spare valves, microphone and manual, £12. Canadian 58 transmitter/receiver unfilled accumulators, Vibrapack. Covers 40 metres, £6. Buyers collect please. Clague, Lamana, Hannafore, Looe, Cornwall. (223

SELLING up small stock of 807 valves. Brand new and guaranteed, 8/- each. Post paid. G2IJ, 13 George Street, Kingston, Portsmouth. (222

SEVERAL Young Engineers, preferably with a degree, Grad. I.E.E. or equivalent are required for the application of valves, cathode-ray tubes, and transistors, to circuits of A.M., F.M., V.H.F., U.H.F., and Television equipment. Apply to the Personnel Manager, Brimar Valve Works, Footscray, Kent. (231

TELEVISION "Superhet Chassis" (9 valves) complete sound and vision channels Marconi VC.76.DA, unused, £8 or near offer. Listed price £15.19.6. J. Walker, 33 Ashford Square, Eastbourne. (229

WANTED: 2 metre converter or receiver. Write giving details and lowest price to R. Williams, B.R.S.19617, Fancroft House, Roscrea, Co. Tipperary, Eire. (240

WANTED: *CQ*, January, March, April, June, November, December, 1945, May, 1946. *Radio* before 1936. *R/9* before April, 1935. *QST* before 1924. Also your unwanted copies *Amateur Radio, Break-In, Xtal, Radio ZS, I.R.T.S. News*. Your prices paid, if reasonable. G3IDG, 95 Ramsden Road, London, S.W.12. (243

WANTED: Collins TCS Equipments: Transmitters, Receivers, Antenna Loading Units, Cables, etc. Also other American Radio and Test Equipment. Offers, describing the condition to Z & I Aero Services, Ltd., 19 Buckingham Street, London, W.C.2. Telephone: TRAfalgar 2371. (247

WANTED: HRO coils, receivers, power packs, AR88Ds, AR88LFs, SX28s, BC348s, AR77s, and many other types, also laboratory test equipment and R54/APR4, TN17, TN18 and TN19 units. Details please to R. T. & I. Service, 254 Grove Green Road, Leytonstone, London, E.11. (LEY 4986).

WANTED: BC610 Hallicrafters, ET4336 transmitters AR88s receivers and spare parts for above. Best prices. P.C.A. Radio, Beavor Lane, Hammersmith, W.6. (224

WANTED: RCA speech amplifiers type M1-11220 J or K, and aerial tuning units BC939a. Offers stating quantity and price to P.C.A. Radio, Beavor Lane, Hammersmith, W.6. (225

WANTED: BC221 frequency meter, also Hallicrafter SX28 receiver condition and price to 32 Saville Road, Blackpool. (219

150W transmitter push-pull TZ40s Labgear components, Philpotts enclosed metal rack. Modulator, D104 microphone etc. HRO receiver six coil units power pack and additional speaker, numerous spare valves for above, etc. Also CRO (less tube). Buyer collects. Sacrifice, to clear, £50. Model 40 Avo, £6. V. Williams, Burtley Cottage, Bottom Lane, Seer Green, Nr. Beaconsfield, Bucks. (233

APPOINTMENTS SECTION

Situations Vacant

SENIOR WIRELESS OPERATOR MECHANIC required by the FALKLAND ISLANDS GOVERNMENT for service in South Georgia. Tour of 18, 24 or 30 months in the first instance. Commencing salary according to age in scale £400 rising to £540 a year plus FREE quarters, light, heat and rations. Free passages and liberal leave on full salary. Candidates must hold 1st class P.M.G. Cert. and have a thorough knowledge of Creed Automatic Transmitting equipment. They must be familiar with standard coast station transmitting and receiving procedure and accounting. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/30640/RC. (216

ASSISTANT TECHNICAL SUPERVISORS required by the NIGERIAN BROADCASTING SERVICE for two tours of 15 to 18 months each in the first instance. Salary scale (including expatriation pay) £807 rising to £1,115 a year. Gratuity at the rate of £100/150 a year. Outfit allowance £60. Free passages for Officers and wives. Assistance towards cost of children's passages or grant up to £150 a year for their maintenance in U.K. Liberal leave on full salary. Candidates should have some administrative ability and have had wide theoretical and practical experience of low-frequency amplifiers and radio equipment. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/30482/RC. (217

WIRELESS STATION SUPERINTENDENTS required by the NIGERIA Posts and Telegraphs Department for one tour of 18 to 24 months in the first instance. Option of appointment (a) on temporary terms with salary scale (including Expatriation pay) £864 rising to £1,392 a year. Gratuity at the rate of £100/£150 a year, or (b) with prospect of pensionable employment with salary scale (including Expatriation pay) £750 rising to £1,175 a year. Outfit allowance, £60. Free passages for officer and wife. Assistance towards cost of children's passages or grant up to £150 annually for maintenance in U.K. Liberal leave on full salary. Candidates must have had wide practical experience of modern radio techniques and equipment, in particular V.H.F. equipment, and preferably also V.H.F. multi-channel equipment. Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/30086/RC. (226

MINISTRY OF EDUCATION: MUSEUM ASSISTANTS, SCIENCE MUSEUM. The Civil Service Commissioners invite applications, from men only, for at least two posts. Age at least 16 on 1st June, 1954. Candidates should normally have School Certificate or General Certificate of Education, or Scottish Leaving Certificate, or equivalent, with qualification in mathematics or a science subject. Usually appointment is to the unestablished grade with establishment after two years, but there is provision for direct recruitment to established posts in certain cases. Salary: (unestablished) £215 (age 16) to £410; (established) £250 (age 18) to £520. Starting salary according to age up to £365 (unestablished) or £380 (established). Prospects of promotion. Application forms from Secretary, Civil Service Commission, Burlington Gardens, London, W.1, quoting No. 143/54 to be returned by August 26, 1954. (234

MULTITONE ELECTRIC COMPANY, LTD., require tester for audio amplifiers including valve and transistor instruments. No age limit. Works canteen; 5-day week. 223-227 St. John Street, Clerkenwell, London, E.C.1. (246

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