

R S G B



BULLETIN

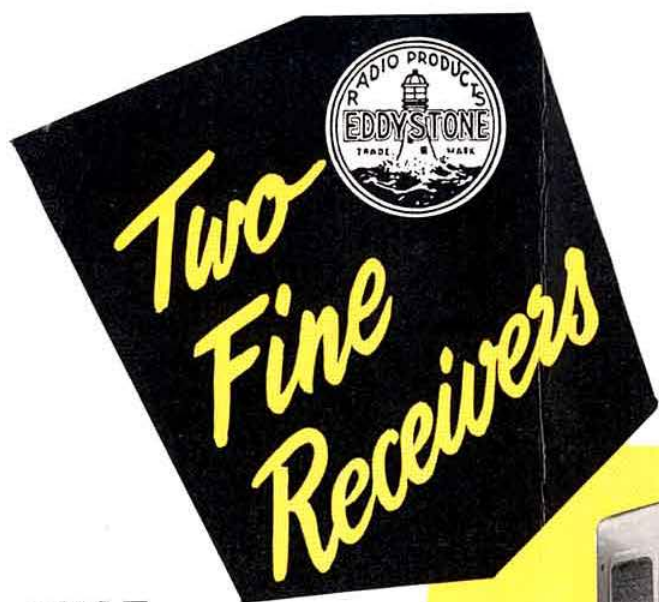
AUGUST 1964

VOL. 40, No. 8



THE PRINCESS TRANSMITTER

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN



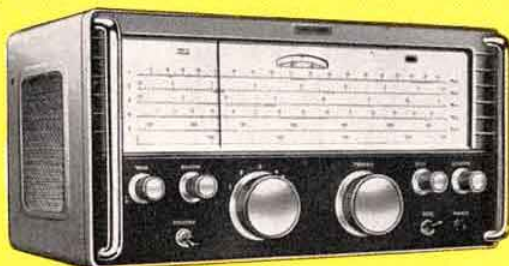
THE EDDYSTONE '940'



The Eddystone "940" is a larger and more elaborate communications receiver, with a correspondingly better performance. It has two fully tuned radio frequency stages and two intermediate frequency stages; variable selectivity with a crystal filter; built-in carrier level meter and push-pull output stage. Sensitivity is very high and outstanding results can be expected. Workmanship, construction and finish are all to the usual high Eddystone standards. Styling is modern with two-tone grey finish.

List price £125. 0s. 0d.

THE EDDYSTONE '840c'



The Eddystone "840c" is an inexpensive, soundly engineered communications receiver giving full coverage from 480 kc/s to 30 Mc/s. It possesses a good performance and is built to give years of reliable service. The precision slow motion drive—an outstanding feature of all Eddystone receivers—renders tuning easy right up to the highest frequency, and the long horizontal scales aid frequency resolution. Modern styling and a pleasing two-tone grey finish lead to a most attractive receiver.

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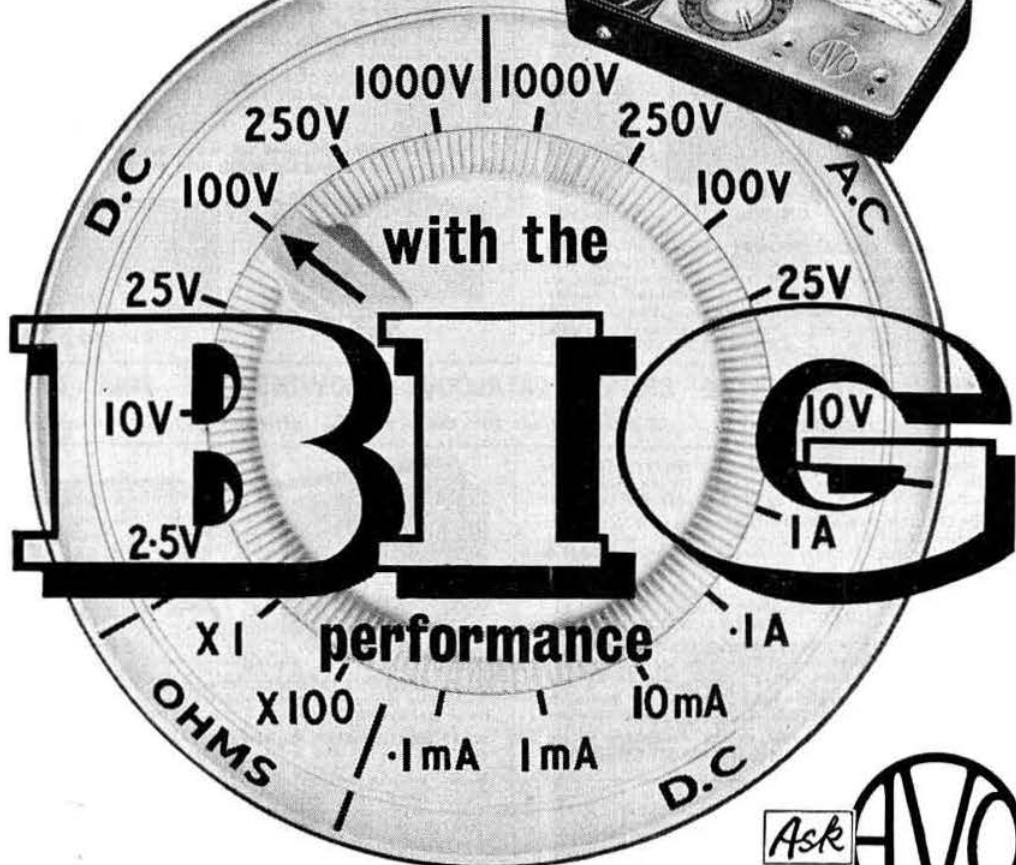
THERE'S AN EDDYSTONE COMMUNICATIONS RECEIVER

FOR ANY FREQUENCY
BETWEEN
10 kc/s and
1,000 Mc/s

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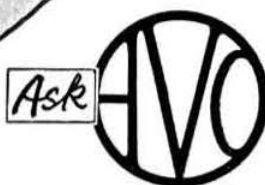
The little instrument



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to send you a full specification of this great little instrument. It measures only 7½ x 4 x 1½ ins. and weighs only 24 ozs.

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SENSITIVITY: 10,000 Ω /V on d.c. voltage ranges.
 1,000 Ω /V on a.c. voltage ranges.

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MM18





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SB-10U



DX-40U



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GC-1U

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RG-1



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Full details of model(s).....

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KITS**

Volume 40 No. 8

August 1964

3/- Monthly

RSGB BULLETIN

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Front Cover: The Princess Transmitter, which was designed and built for the RSGB by G. F. Gearing, G3JJG. The first part of the article describing this transmitter was published in the July issue of the BULLETIN, and the second part begins on page 505 of this issue.

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Will you spare an hour a month to stop this?

"It's heartbreaking to see little children with nowhere to turn for help"

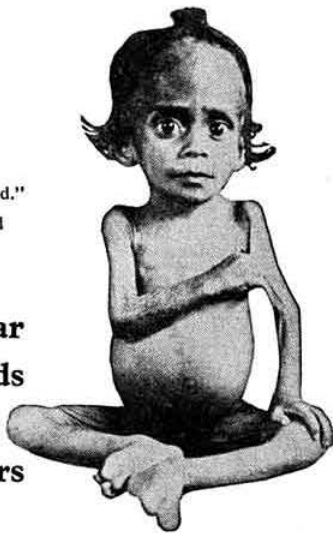
"... only one meal in two days."

"He asked the children to pray and all their prayers were for food."

"4-year-old Peter, weighing 16 lb., pot belly, swollen hands, and feet covered with sores."

"Often we have no bread..."

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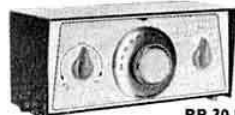
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AMATEUR RADIO EQUIPMENT



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FREQUENCY RANGE 1.5-30 Mc/s

The PR 30 R.F. Preselector is used in commercial and amateur stations throughout the world. It will definitely improve the performance of any superhet receiver, whatever its age or make. Provides up to 20db gain, features include precision vernier tuning, selector switch for either dipole or single wire antenna, silver plated H.F. coils.

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Both models complete, ready for use with all plugs, cables.

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12 volt P.S.U. available shortly. Illustrated leaflets on request.



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Cat. No. RQ 10X. Self powered model for 200/250 volts A.C. Fitted with accessory socket to provide up to 25 Ma at 200 volts H.T. and 6-3 volts 1 amp for other accessories. £8/8/0. Carr. 3/-.

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CODAR RADIO COMPANY

BANK HOUSE, SOUTHWICK SQUARE, SOUTHWICK, SUSSEX. PHONE 3149

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DL96	5/6	EL84	5/-	PEN25	4/6	UY21	7/6
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W21	5/-	6AH6	10/-	68A7	7/-	25Z4G	6/6	958A	4/-
X66	7/6	6A15	8/6	68ATGT	6/6	25Z5	7/6	1612	5/-
YF	1/-	6AJ7	3/-	68K7GT	4/-	25Z6GT	8/6	1616	3/-
Y63	5/-	6AK5	5/-	68C7	7/-	25D7	6/-	1619	5/-
Y65	4/-	6AK6	6/-	68C7GT	5/-	30	5/6	1622	12/-
Y66	8/-	6AK7	6/-	68D7	5/-	30C15	9/6	1625	6/-
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Z800U	20/-	6AL5W	7/-	68G7	3/6	30PL1	10/6	1629	4/6
Z801U	10/-	6AM5	2/6	68J7	5/-	30P19	12/-	2051	5/-
1A3	3/-	6AM6	4/-	68J7GT	5/6	30PL1	8/-	4043C	13/6
1A5GT	5/-	6AQ5	7/-	68J7Y	6/6	35L6GT	7/-	4063	8/-
1B22	30/-	6AQ5W	9/-	68K7	4/6	35T	17/6	5704	9/-
1C5GT	6/-	6A86	4/-	68L7GT	5/6	35W4	5/-	5726	6/-
1D8GT	9/-	6AS6W	9/-	68M7	3/6	35Z3	8/-	6064	7/-
1E7G	7/6	6ASTG	22/6	68Q7	6/-	35Z4GT	6/-	6065	6/-
1F2	3/-	6AT6	3/6	68R7	2/-	35Z5GT	6/-	6080	22/-
1G6GT	6/-	6AU6	7/-	6U4GT	9/6	37	4/-	7193	1/9
1L4	2/6	6AX4	8/-	6V6G	5/-	38	4/-	7475	2/-
1LA6	6/-	6B4G	8/-	6V6GT	5/6	41MP	4/-	8013A	25/-
1L6C	7/-	6B7	6/6	6V6M	8/-	44A100N	30/-	8020	8/-
1L14	4/-	6BR6	2/6	6X4	3/6	6158G	6/-	9001	3/-
1N21B	5/-	6B6A	4/-	6X5G	5/-	65L6GT	8/-	9002	4/6
1N43	3/6	6B6E	4/3	6X5GT	5/3	53A	7/6	9003	6/-
1N70	4/-	6BR7	9/-	6Y6G	6/-	58	6/-	9004	2/6
1R4	5/-	6BW6	9/-	6-3012	10/-	59	5/6	9006	2/6
1R5	3/6	6C4	2/-	6Z4	5/-	75	5/6		
1R4	5/-	6C5G	2/6	7B7	7/6	76	6/-		
1R5	4/6	6C5GT	6/-	7C5	10/-	77	8/6		
1T4	2/-	6C6	4/-	7C6	7/-	78	5/-		
2A3	5/-	6C6G	3/-	7C7	8/-	80	5/6		
2A3	6/-	6C8G	3/-	7H7	7/3	81	5/6		
2A6	7/-	6C9G	4/6	7Q7	7/-	82	8/-		
2B26	8/-	6C21	80/-	7V7	5/-	84	8/-		
2C26	7/-	6D6	3/-	7Z4	4/6	85A2	8/-		
2C26A	3/-	6E5	6/-	8D2	2/6	90C1	8/-		
2C34	2/6	6F5G	5/6	986	3/6	90C1	8/-		
2C43	42/6	6F6GT	5/9	9D2	3/-	210VPT	3/-		
2C45	22/6	6F6G	4/-	11E3	37/6	7-pin	2/6		
2C46	6/-	6F7	2/6	12A6	2/6	220PA	2/6		
2C51	12/-	6F8G	6/6	12AH7	5/-	220TH	4/-		
2D21	5/-	6F12	4/-	12AH8	11/-	225DU	9/-		
2X2	3/-	6F13	5/-	12AT7	4/-	307A	5/6		
3A108A	20/-	6F32	4/-	12AU7	5/-	313C	25/-		
3A146J	35/-	6F33	3/-	12AX7	6/-	350B	8/-		
3A167M	25/-	6G0G	2/6	12AY7	10/-	357A	7/6		
3D6	4/-	6H1	6/-	12BA6	5/6	368A	5/-		
3D7	4/-	6H6M	1/6	12BE6	7/-	393A	15/-		
3G4	5/-	6J4	9/-	12BH7	7/-	446A	8/-		
3J5	6/-	6J4WA	10/-	12C8	3/-	703A	30/-		
3J5	3/6	6J5	3/6	12H6	2/-	705A	10/-		
3J5	6/6	6J5G	2/-	12L6GT	2/6	715B	60/-		
3J6W	4/-	6J6	3/6	12J7GT	6/6	717A	3/-		
3J6W	4/-	6J6W	4/-	12K7GT	2/-	724A	15/-		
6J7G	5/9	6J7G	5/9	12K8M	10/-	801	6/-		
6K6GT	5/6	6K6GT	5/6	12TGT	3/3	803	22/6		
6K7G	2/-	12A7	7/-	12B7	7/-	805	30/-		
6K7GT	4/9	12B7	7/-	12C7	7/-	807B	7/6		
6K8G	3/-	12B7G	3/-	12D7	3/-	808	8/-		
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6L9T	4/-	17L7T	7/-	17L7T	7/-	840	15/-		
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6L9T	4/-	17L7T	7/-	17L7T	7/-	842	15/-		
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6L9T	4/-	17L7T	7/-	17L7T	7/-	844	15/-		
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6L9T	4/-	17L7T	7/-	17L7T	7/-	887	15/-		
6L9T	4/-	17L7T	7/-	17L7T	7/-	888	15/-		
6L9T	4/-	17L7T	7/-	17L7T	7/-	889	15/-		
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6L9T	4/-	17L7T	7/-	17L7T	7/-	892	15/-		
6L9T	4/-	17L7T	7/-	17L7T	7/-	893	15/-		
6L9T	4/-	17L7T	7/-	17L7T	7/-	894	15/-		
6L9T	4/-	17L7T	7/-	17L7T	7/-	895	15/-		
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6L9T	4/-	17L7T	7/-	17L7T	7/-	902	15/-		
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6L9T	4/-	17L7T	7/-	17L7T	7/-	906	15/-		
6L9T	4/-	17L7T	7/-	17L7T	7/-	907	15/-		
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6L9T	4/-	17L7T	7/-	17L7T	7/-	909	15/-		
6L9T	4/-	17L7T	7/-	17L7T	7/-	910	15/-		
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6L9T	4/-	17L7T	7/-	17L7T	7/-	912	15/-		
6L9T	4/-	17L7T	7/-	17L7T	7/-	913	15/-		
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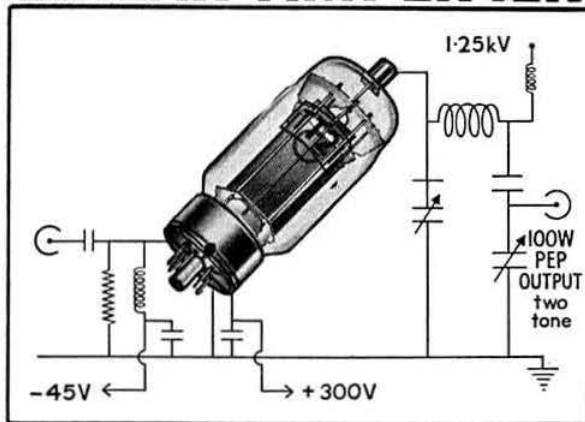
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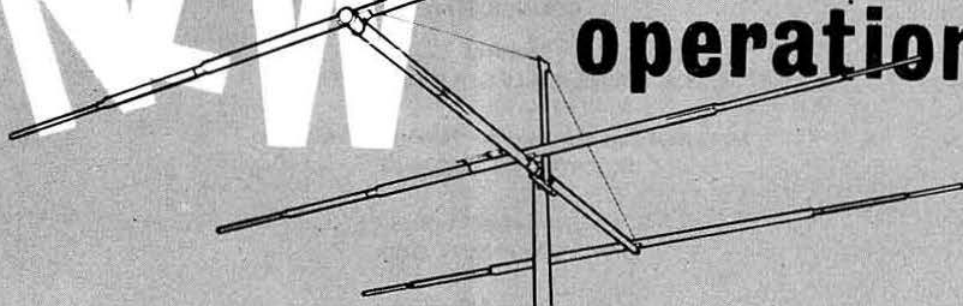
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SPECIFICATIONS AND PERFORMANCE DATA:

- GAIN (8 db.) (F/B 24 db.)
- HANDLES MAXIMUM LEGAL POWER
- BOOM LENGTH 24 ft.
- MAXIMUM ELEMENT LENGTH 37 ft.
- TURNING RADIUS 22 ft.
- WIND LOAD (80 mph wind)—140 lbs.
- ASSEMBLED WEIGHT 40 lbs.
- SHIPPING WEIGHT 49½ lbs.

Mosley has designed the most outstanding three element array for 20 metres on the market today. This clean-line aerial will give you that DX punch that will override QRM. This aerial has a new anti-flutter design which virtually eliminates element flutter and boom vibration. The A-203-C is a wide spaced, gamma matched, full size beam, built with swaged tubing elements for extra durability. This antenna will approach the performance of many four to six element beams without the headaches of large size and weight necessary for these large beams.

for SHORT WAVE LISTENERS



SWL-7 DIPOLE KIT for 11, 13, 16, 19, 25, 31, and 49 metres.

Here's an inexpensive 7-band receiving dipole that uses little space yet offers real "DX-Ability" for adding more hard-to-get stations to your log. The SWL-7 is a complete aerial... just attach the wires to trap assemblies, strain-relief center connector and end insulators. Tie the end insulators to any convenient supports. You're on the air in minutes! The SWL-7 trap assemblies are fully enclosed in High-impact Styrene for stable performance in all weather. The SWL-7 is resonant over the full width of each of the 7 bands yet measures just 40 feet in length! Made of No. 16 tinned copper wire with glazed porcelain insulators. The SWL-7 is fed with 75 ohm twin-lead transmission line, supplied. This dipole aerial is intended for receiving purposes only.

Model RD-5 for 10, 15, 20, 40 and 75/80 metres.

Mosley Electronics Ltd.
40, Valley Road, New Costessey, Norwich, Norfolk, Nor. 26K

Current Comment

discusses topics of the day



The ARRL

AT the National Convention to be held in New York on August 21-22, 1964, the fiftieth birthday of the American Radio Relay League is to be celebrated.

ARRL grew out of an idea expounded by Hiram Percy Maxim, 1WH, in a letter he wrote on March 25, 1914, to David L. Moore, 1WK, president of the Radio Club of Hartford. Maxim's idea was to set up an American Amateur Radio League and to appoint official relay stations, for at that time, with the equipment and frequencies available, the maximum range of an amateur station was about 100 miles and then only under favourable conditions.

Within a few months the League was established under the name we now know so well. In December, 1915, every member received a copy of a 16 page bulletin, *QST*. Although started as a private venture, *QST* became an official League publication soon after the First World War.

In the years that have followed the League has developed in a manner its founders could surely not foresee. But it has not been only in its home country that the influence of ARRL has been felt: throughout the world, wherever Amateur Radio is practised, radio amateurs owe a debt of gratitude to the farsightedness of Maxim, Moore and Tuska who met together as a result of the letter of March 25, 1914.

On the occasion of the official celebrations in New York of the fiftieth anniversary of that historic event, the RSGB salutes ARRL and wishes the League even greater success during the next half century.

Exhibition Ahead

"YES, but what does the RSGB do, apart from sending me the BULLETIN?" How often have you been asked that question when attempting to enrol another member for the RSGB? Often, we hope, because this means you are doing your bit to help the growth of the Society. But do you really know the answer to the question?

We venture to suggest that a good many members may not realise the full extent of the Society's activities on their behalf.

For this reason, we are taking "What the Society does for the membership" as the theme of the RSGB exhibits at this year's International Radio Communications Exhibition. By means of special exhibits, together with all the usual attractions, the Exhibition Committee hopes to send visitors to the Show away with the answers to the question.

The Exhibition relies on the membership for its success, and once again your help is needed. Elsewhere in this issue you will find details; we hope you will give us your usual support.

REGION 12 REGIONAL MEETING

Seaview Hotel, John O'Groats
Saturday, August 29, 1964

Programme

Saturday, August 29

- 1.15 p.m. Lunch at Station Hotel, Wick.
- 2.30 p.m. Bus tour for the ladies to Dunnet Head and the Gardens of the Castle of Mey. There will be a stop for afternoon tea.
- 3 p.m. Official Regional Meeting at the Seaview Hotel, John O'Groats.
- 4.45 p.m. Tea at Seaview Hotel.
- 5.15 p.m. Lecture: "The Ionosphere," by Mr W. D. Oliphant, G3FZL.
- 7.30 p.m. Dinner at Seaview Hotel, dress informal, followed by music and dancing.

Sunday, August 30

- 10.30 a.m. Bus leaves Thurso for visit to Dounreay Experimental Reactor Establishment Exhibition.
- 1 p.m. Lunch at Royal Hotel, Thurso.
- 2.15 p.m. Members disperse.

A Special Events Station will be operating on 3.5 Mc/s and above using the call-sign GB2JOG.

Tickets are available as follows:

Lunch (Saturday) ...	9s. 6d.
Afternoon tea (members only) ...	3s.
Bus tour to Castle of Mey and afternoon tea (adults) ...	9s.
(school children) ...	5s.
Dinner (Saturday) ...	21s.
Lunch (Sunday) ...	9s. 6d.

Further information may be obtained from the Regional Representative, Mr G. B. Woffinden, GM3COV, 9 Hakon Road, Thurso, Caithness, or from Mr A. J. Oliphant, GM3SFH, 17 Rockwell Crescent, Thurso.

The Council will be represented by the President, Mr G. M. C. Stone, G3FZL, the Zone F Representative, Mr A. D. Patterson, G13KYP, and the General Manager, Mr John A. Rouse, G2AHL.

An Improved Crystal-Controlled Converter for 10, 15 and 20 Metres

By R. T. AXTELL, Grad.I.E.E., Grad.I.E.R.E., VE3FQC, G3OKP*

THE converter to be described is the result of several modifications to the original circuit which was to provide an efficient unit of modern design but straightforward enough to be built and made to work by the average amateur, particularly those who, as in the writer's case, have little or no test gear. The converter is used in conjunction with the main station receiver and the i.f. range covered is approximately 3-6 Mc/s.

Circuit

The converter (Fig. 1) consists basically of a tuned r.f. amplifier, tuned mixer, crystal controlled oscillator and cathode

follower output. Modern h.f. techniques are used in the interests of screening and stability, with feed-through capacitors where applicable and heater chokes on the r.f. stage and mixer. These chokes are available on the surplus market or may be wound as shown in Table 1 on page 502.

No r.f. switching is used, giving short r.f. leads with no interaction between input and output, and the converter is taken out of circuit merely by removing the aerial lead and connecting direct to the receiver.

H.t. and heater supplies are borrowed from the receiver and the converter may be switched off when not in use. The consumption is 250 volts at 25 mA and 6.3 volts at 0.725A.

The r.f. amplifier (V1) uses the low noise v.h.f. pentode type 6AK5, with the input tunable from 14-30 Mc/s, and

* APT 504, 300 Main Street West, Hamilton, Ontario, Canada.

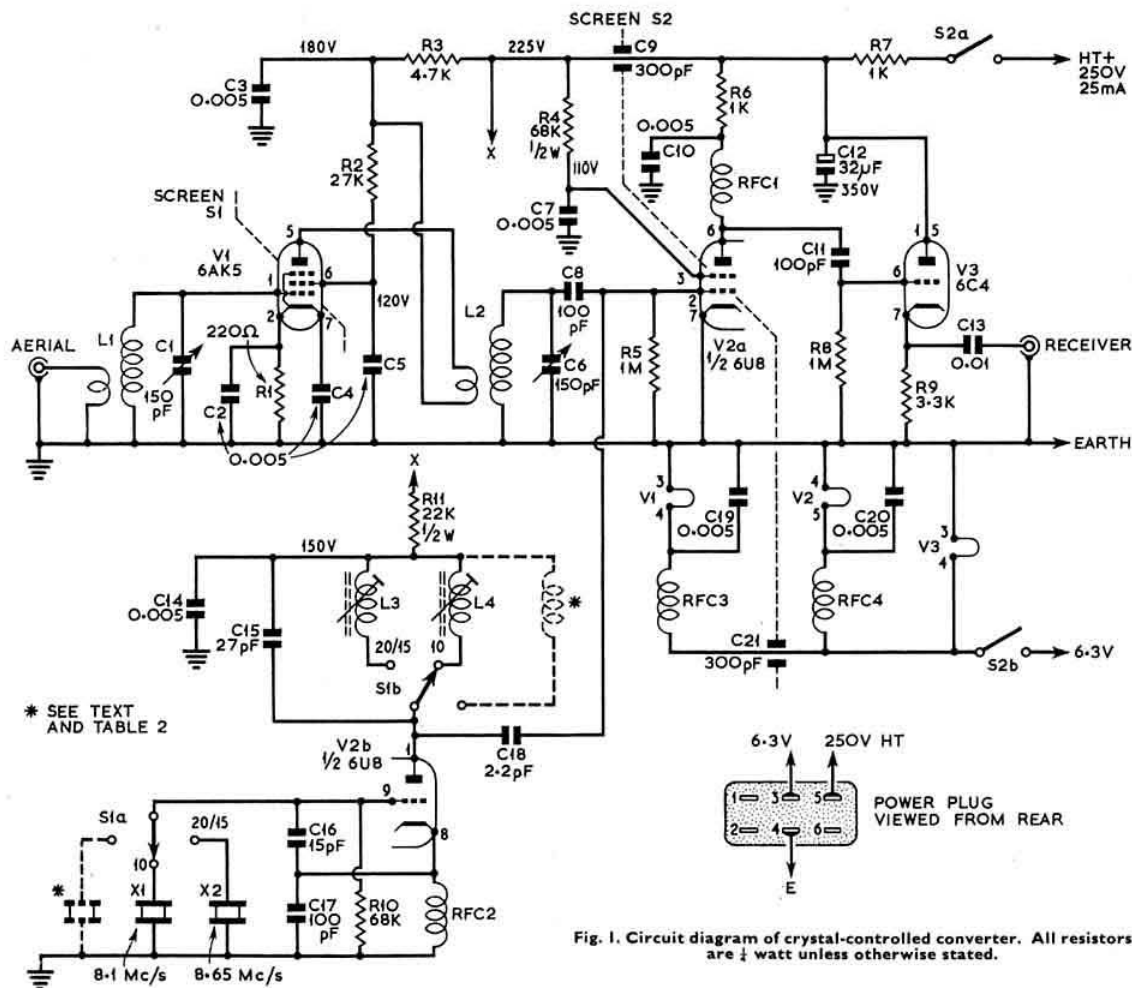


Fig. 1. Circuit diagram of crystal-controlled converter. All resistors are $\frac{1}{2}$ watt unless otherwise stated.

link coupled output to the mixer grid. To prevent oscillation, the grid circuit is completely isolated from the anode circuit by the screen S1.

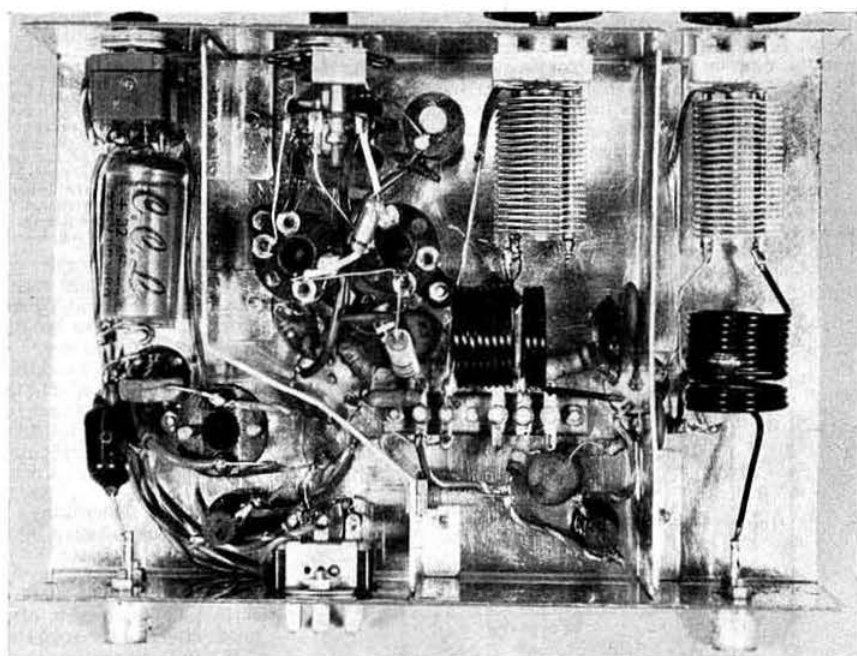
For compactness and ease of operation a triode pentode 6U8 is used as mixer and oscillator (V2).

The mixer (V2a) uses the pentode half of the 6U8 with tuned input and untuned output. In this way an r.f. choke replaces the more common fixed tuned i.f. transformer, and, although not giving such high gain as the tuned circuit, is very wide-band with a substantially constant output even over a bandwidth of 2 Mc/s at an intermediate frequency of 4 Mc/s or so. A tuned circuit, however, would only have a working Q of 2 in order to cover the same bandwidth at the same frequency, while to cover 0.5 Mc/s the working Q would be 8. Both cases are clearly inefficient.

The local oscillator (V2b) is crystal controlled and employs the triode half of the 6U8 as a Colpitts crystal oscillator with the anode circuit tuned to the desired harmonics. Since the mixer output is untuned, the choice of crystal and intermediate frequency is left to the individual as the circuit is completely flexible. In the writer's converter, two crystals are used to cover the three h.f. bands, one crystal covering both 15 and 20m with the main receiver tuning "backwards" for 20m. Ideally, each band would start at the same intermediate frequency and tune in the same direction, requiring three crystals and therefore three slug tuned oscillator coils. Sufficient data for a two or three crystal converter is given in Tables 1 and 2.

The Colpitts oscillator is preferred since it uses simple two terminal coils with no critical tapping points, works every time with almost any crystal and gives useful harmonics, both odd and even up to the 7th, which can be selected and used for mixing.

The output stage uses a 6C4 as a cathode follower with an output impedance of approximately 400 ohms. This provides a reasonable match into most receivers and minimises stray pickup. Since the input impedance of the cathode follower



Under chassis view of the crystal-controlled converter.

is high, in this case 1 Megohm, it follows that full gain of the choke loaded mixer can be obtained, thus compensating for the absence of a tuned circuit in the output.

An alternative cathode follower output stage for use with receivers designed for 80 ohm input is shown in Fig. 2.

Construction

The construction of the converter is based on the American Mini-box system, making for easy assembly with every part of the circuit easily accessible for servicing. The main dimensions of the chassis, cover and screens are shown in Fig. 3. A 12 in. \times 18 in. sheet of 18 s.w.g. aluminium will meet all requirements.

First, all construction lines and holes should be marked on the aluminium sheet using a set square to ensure a right angle where required. All holes should be cut before any bending is attempted. While all small holes can obviously be drilled, it is sometimes difficult to cut large holes. The writer finds that an Abraflex for roughly cutting the hole and a half round file for exact shaping give excellent results. Then cut the flat aluminium sheet into chassis and cover sections and bend up the front and rear of the chassis through 90° with a bending machine or bending bars held in a vice. The front of the chassis holds all controls and forms the front panel of the converter.

The front and rear lips on the cover should next be bent up

TABLE 2

Band	Frequency Mc/s			
	R.F.	Crystal	Oscillator	I.F.
10m	28-29.7	8.1	24.3	3.7-5.4
15m	21-21.45	8.65	17.3	3.7-4.15
20m	14-14.35	8.65	17.3	3.3-2.95
20m	14-14.35	*10.3	10.3	3.7-4.05
		See text		

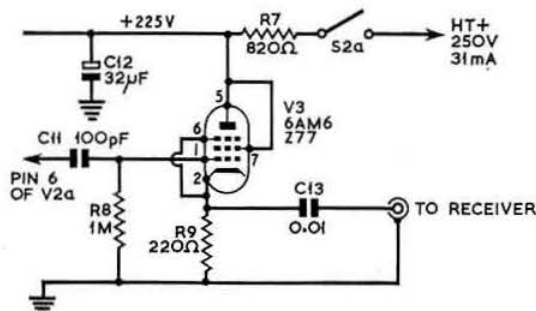


Fig. 2. Circuit diagram of alternative cathode follower output stage for use with receivers designed for 80 ohm input.

90°, and then, using some form of bending block which will fit between the lips, bend the two sides up 90°. If the lips have not been angled properly at 45°, it may not be possible to bend the sides up fully. This can be overcome by filing the angled lip edges with a small file until a 90° bend is obtained. If the finished cover does not fit the chassis correctly, the lips can be adjusted by holding the cover in a vice and tapping them in the required direction with a hammer until a perfect fit is obtained.

The major components such as valveholders, switches and tuning capacitors should be test fitted on the chassis to enable exact positioning of the two screens to be made.

The screens should first be cut, drilled and bent up as

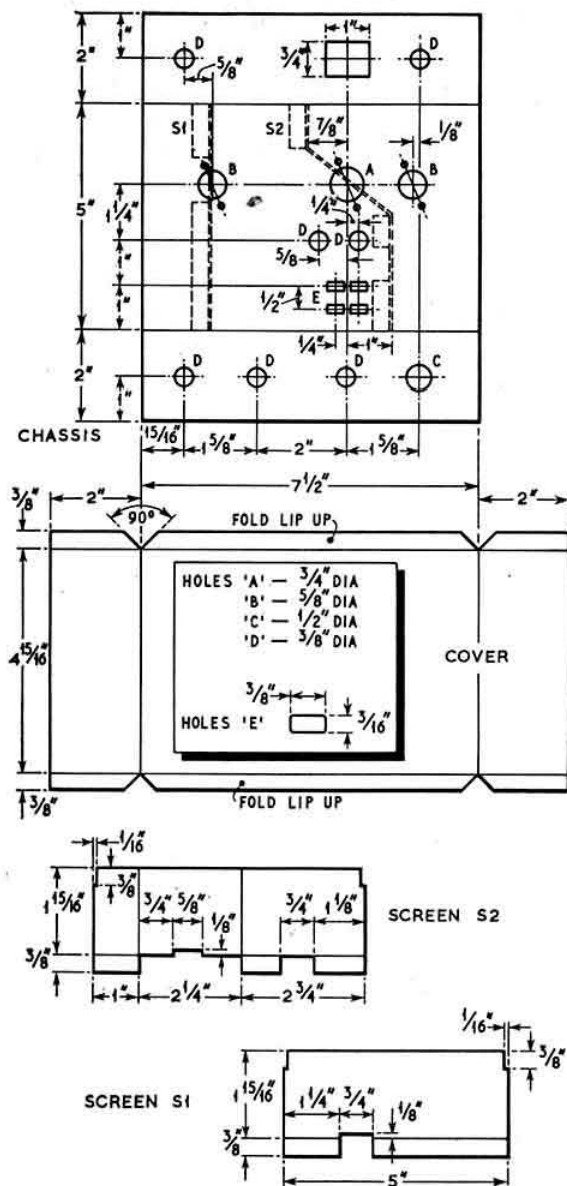


Fig. 3. Chassis and screen construction details.

TABLE I

Coil	Construction
L1, L2	8 turns, 14 s.w.g. enam., $\frac{1}{2}$ in. dia. close wound, air spaced. 3 turn link spaced 1 turn from main coil.
L3	3-2 μ H, 16 turns, 20 s.w.g. enam., close wound on $\frac{1}{2}$ in. dia. slug-tuned former.
L4	1-6 μ H 10 turns, 20 s.w.g. enam. close wound on $\frac{1}{2}$ in. dia. slug-tuned former.
*See text	9 μ H 27 turns 24 s.w.g. enam., close wound on $\frac{1}{2}$ in. dia. slug-tuned former.
RFC3, 4	10 μ H (approx.) 31 turns 24 s.w.g. enam. close wound on $\frac{1}{2}$ in. dia. former, or 10K ohm $\frac{1}{4}$ W carbon resistor wound full 24 s.w.g. enam.

shown in Fig. 3 and then test fitted, splaying the pins on valveholders V1 and V2 so that none touch the screens; the latter may have to be slightly bent by hand to take up construction tolerances.

The two units should then be fitted together and the holes for the six retaining self-tapping screws marked on the cover through the holes already drilled in the chassis.

Finally, give the outside of the chassis and cover a coat of grey plastic enamel paint—a well-known brand is obtainable in small tins for a few pence.

Wiring and Assembly

Before commencing wiring, note carefully the following points:—

(a) The variable capacitors should be of the completely insulated type. The shaft does not touch the chassis and an earth lead—preferably of 22 s.w.g. tinned copper wire—is taken direct to the solder tags at V1 and V2.

(b) It is important that all earth leads of components around the r.f. and mixer stages be taken only to solder tags at V1 and V2 respectively, as shown in Fig. 1, and that the only connection to screen S1 is the centre spigot of valveholder V1. If the r.f. stage is not wired carefully as described, oscillation may result due to the high gain with input and output tuned to the same frequency.

Fit all the major components such as the valveholders (with solder tags under each securing nut), variable capacitors, coaxial sockets, power plug, all r.f. chokes, on-off switch, crystal holders, oscillator coils and six-way tag strip.

Commence wiring with the valve heaters (as far as possible), earth leads and solder L1 and L2 in position. As much wiring as possible should be done without the screens in position, starting with components lying near the chassis and working upwards. Use 22 s.w.g. tinned copper wire for all tuned circuit and earth leads. Fit the two screens S1 and S2 and then complete the wiring.

Testing

Carefully check the wiring, plug in the valves and connect the converter output to the receiver by co-axial lead and the aerial to the converter input. Switch on h.t. and i.t. and check that the oscillator is functioning by listening for the crystal fundamentals on 8.1 and 8.65 Mc/s with S1 in 10m and 15m/20m positions respectively. The required harmonics for mixing are 24.3 Mc/s for 10m and 17.3 Mc/s for 15m and 20m and are obtained by tuning with the slugs of L4 and L3 respectively, resonance being indicated by any of three methods:—

(a) By using a receiver which covers the required frequencies and adjusting for maximum S meter deflection.

(b) By holding an absorption wavemeter near the coils and adjusting for maximum meter deflection.

(c) By measuring the voltage drop across R11 with a voltmeter and adjusting for minimum voltage.

The value of C18 should be adjusted for optimum oscillator injection to the mixer (V2a). Too much injection will give rise to spurious responses or "birdies", and so C18 should be as small as possible consistent with good performance. The writer found 2.2 pF optimum,

although stray capacitance between pins 1 and 2 of V2 may be sufficient. C18 may be made from a 2in. length of flat twin mains cable or two insulated wires twisted together.

Set the main receiver to 3.1 Mc/s, which corresponds to the centre of the 20m band, and set S1 to 15m/20m. Tune C6 until a sharp increase in noise or signals is heard. Tuning C1 to a similar position will bring in signals at a very high level. Repeat for 15m with the receiver set to 3.8 Mc/s. With the receiver still at 3.8 Mc/s, set S1 to 10m and adjust C1 and C6 for maximum noise or signal as before. For best results, always tune the mixer first and the r.f. stage second and then re-adjust if necessary. Car ignition noise is useful for tuning up on 10m and 15m and after some practice it will be easy to tune up for any band and to peak up for any part of a band. The nominal positions for 10m, 15m and 20m should then be marked on the front panel for easy resetting of C1 and C6.

Results

So far the converter has been used in conjunction with the writer's 80m long wire, with no aerial tuner unit whatsoever and has been giving excellent results, especially on 10m and 15m. No accurate signal-to-noise measurements have been made but a good indication of the converter's performance is that if an S9 signal is tuned in on 10m, using a.g.c. and the a.f. gain set to a comfortable listening level, the background noise is barely audible when the aerial is removed from the converter.

The performance could be further improved by using resonant aerial systems for the bands concerned, but even performing on a 6ft. piece of wire, the converter has pro-



The completed crystal controlled converter.

vided duplex working on 160m and 10m with a local station running 0.5 watt on 10m.

In conclusion, the converter will enable any receiver with an upper frequency limit of 10 Mc/s or so to give good results on the h.f. bands without the expense of buying a new receiver and will also improve the h.f. performance of some of the older receivers which already cover 10m, 15m and 20m.

Amateur Radio "Down Under"

By A. G. BLACKMORE, G3FKO (ex-VK5II) *

THE first thing that strikes a UK immigrant or visitor to Australia who applies for a transmitting licence is the low annual fee of £1 Australian (equals 16s. sterling!) No extra charge is made for mobile operation but prior permission must be sought for /P operation, whether from a temporary portable or alternative address.

For those already the holders of a current UK licence, or who held one until say six or seven weeks prior to arrival in Australia, issue of a new VK licence is a friendly formality.

If not yet in possession of a UK licence then the new arrival must sit a Radio Theory and Morse (15 w.p.m.) examination similar to the UK one. Without the Morse examination, however, permission may be obtained to work on the v.h.f. bands, telephony only, for which a special series of 'Z' calls is allocated, e.g. VK5ZAA.

Operating

What a pleasure operating in Australia is. One is immediately made to feel at home among the thousands of VK's who hold licences.

The Australian operates in almost empty bands compared with the overcrowded conditions to be heard on any receiver in the Northern Hemisphere.

Furthermore, 150 watts is the maximum permitted power on all amateur bands from 160 to 2m. Add to this the use of 6m (52 to 54 Mc/s) plus a neighbourly tolerance of large aerial towers (many TV receivers in country areas have 57 ft. monsters); good sunny weather for eight months of each year and the feeling of being a sought after call-sign if

you work 14 and 21 Mc/s DX. I can see some pre-war as well as post war G's booking on the next boat "down under" already!

Equipment Available

Most equipment is very dear by UK standards; for example, an Eddystone 888A would sell new for more than £200 and a good condition HRO for £80.

Luckily the Wireless Institute of Australia (equivalent to RSGB), through some of its state Divisional bodies, has been able to arrange trade price facilities with selected local distributors. Membership in the VK5 Division also entitles one to the first class disposal equipment arranged by the WIA Disposals sub-committee in South Australia at give-away prices.

Thus the usual tendency is towards "home brew" rigs or converted Government surplus.

To visitors and intending immigrants alike, the Australian Department of Customs extends a very helpful hand. So if you are bound for the land of the Southern Cross, take all you can afford so that you can sit back one balmy Australian evening and work those few G's who are early risers.

In conclusion the XYL and I would like to say 73s to all those VK5 hams and their XYLS who made our three year stay in their sunny land such a memorable one; maybe we will be amongst you again one day.

RSGB International Radio Communications Exhibition, October 28-31

In view of the number of enquiries received for stand space at this year's show it has been decided to open the gallery at the Seymour Hall to exhibitors. Firms who intend to take part are recommended to contact the organizer, Mr P. A. Thorogood, 35 Gibbs Green, Edgware, Middlesex.

* 7 Boundary Close, Tilehurst, Reading, Berks.

A Touch of the Sun

By ALEC D. VANCE

LOVELY sunny Sunday.

Must go mobile and join the gen boys. Will use big loaded whip with large hat. Should impress non-tech neighbour who doesn't understand about TVI. Will pacify XYL with constant yen to "get out." Maybe can duck gardening.

Not much room in "Daisey"—some days 'e goes, some days 'e doesn't—after XYL and four harmonics aboard. Still, good motors these 1932 Austin 7's. Careful cogitation. Will build boot on rear. Solid anti-rot job in oak. Weighs a ton. Can't lift it. Jack it up. Secure with a dozen coach bolts. Sure won't shift. Release jacks. Oh heck! Boot on deck—front wheels in air. Get in. Helluva crunch as front end comes down. Bonnet flies open. Leap clear. Wollop! Back down, front up. Now what? Lumber old kitchen sink from garage and heave into front seat. That's better.

Now for the aerial. Wade through gen books. Plenty of gen but not much dope. In best book funny weather chart on page 383. Sure going to be a poor summer. Ah! Who'd've thought of that. Under *Mobile*. 12 ft. best length. Can do. Two 6 ft. scaffold poles. That's ingenuity. Saw up punt pole for loading coil. Tie one end of coil wire to lamp-post and walk up street winding coil. TVI neighbour convinced I'm touched, or making some devilish device wot will block out his radio as well. Complete aerial. Wire capacity hat looks daft. Use old dustbin lid. That's better. Right proportions. Will help keep rain off coil. Sure rugged structure. Fit to front bumper to counterbalance boot. Looks real technical.

Struggle two 12V 80Ah batteries into boot. Real bargain these. Ex-local bus company. Fit motor-gene—whipped from Flying Fortress. Make control unit from some old light

switches. Test. Wow! Just listen to that power! Switch on and off several times. Fascinated by gene screaming up to full tilt.

"Please Sir"—it's the little boy from Texas Valley—"my Dad says will you be long vacuuming your car 'cause 'e wants to listen to 'is radio and when you are 'e can't."

Nice little boy really. Pity about his parents.

Fit transmitter into boot. Oh! Car poised on rear wheels and gently rocking up and down. Hastily put BC348 receiver on front seat. Restores equilibrium. Wire it all up. It works! Always knew this mobile lark was a piece of cake.

Ask XYL if she'd like a quick run out. Get kissed. Odd, it's not my birthday. Park four harmonics in back. Sit in driving seat. Kick out sink. XYL climbs aboard. Receiver on her lap. Take off. Bit slow to go. Start calling CQ. At 30 m.p.h. sudden noise like stuck fog horn. Whale of a din. Gone at 25 m.p.h. Unbearable at 35 m.p.h. Is engine out of oil? Penny drops. Wind across end of whip tube. Stop under tree. Shin up tree and out along branch. Take off shoe, take off sock, stuff sock in end of whip pipe.

Take off again calling CQ. Large Jag comes up fast, but fast, and sits on tail. Chauffeur driven. Whoo... oo... sh! Sounds of bells ringing. Large notice flashing POLICE. STOP. Hastily do so. Try to look nonchalant. By lad, this one's really got flat feet. Large head on even larger shoulders fills window.

"You G3ZZZ?"

"Yes." How did he know? Must be telepathic.

"Want a word with you?"

He disappears to back of car. Get out. Half way down side wondering where he went when agonizing yell from rear of car.

"!xx??xx!!"

Well travelled bobby this. Fluent Arabic.

Run to back. Hon. officer's head trapped between bottom of boot and roadway.

"Can I help?" XYL.

Oh crickey! With XYL out, car tipped again.

Get back! Get back!! Get back in!!!

She does. Crunch! Equilibrium restored. Somewhat less confident officer extracts himself. Large lump of soft tar on end of nose. Funny glazed look in eyes. Seems to have some loose teeth.

"What happened?" he asked.

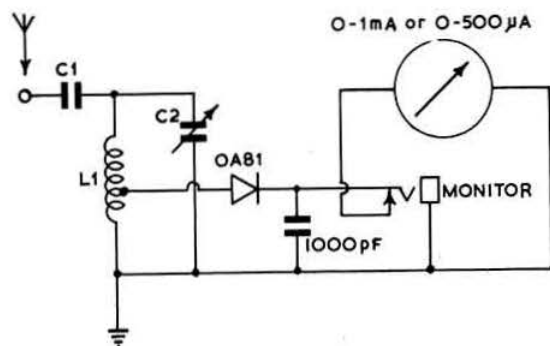
I really *did* try to tell him. Somehow it didn't sink in. "But I was only trying to look at your number plate, Sir. Do you know that for the past two hours you have been blocking out all the county radio services and..."

Can't be. I'm on Top Band and they are on v.h.f.

When you are mobile, do you take any steps to verify your transmitted frequency? The licensing authority requires every licensee to be able to check the frequency of transmission, and this applies just as much to a mobile station as to a fixed one. The minimum acceptable verification is given by either an absorption wavemeter, or a tuned field strength meter, and the requirement implies that such a device should really be part of any mobile system.

Fig. 1 gives details of a suitable device, which, in addition to monitoring frequency, will be found useful in checking aerial radiation. It can be made very compact.

Better be safe than sorry.



Band (Mc/s)	L1 Turns	S.W.G.	Tap	C1 (pF)	C2 (pF)
1.8	100	34	25	20	150
3.5	75	34	20	20	100
7	45	28	15	10	50
14	17	22	4	5	25
21	12	18	3	5	25
28	7	18	2	5	25
70	5*	16	1 1/2	2	20
144	3*	16	1/2	2	15

All coils close wound on 1/4 in. diam. Paxolin formers, except those marked * which are self supporting, the turns being spaced equal to the wire diameter.

Fig. 1. A simple field strength meter with coil and capacitor details for operation on all bands from 1.8 to 144 Mc/s.

Claims for RSGB Certificates

Members are reminded that claims for RSGB Certificates should be sent direct to Headquarters. Claims are acknowledged on arrival and passed to the Honorary Certificates Manager for attention.

The Princess Transmitter†

By G. F. GEARING, G3JJG*

THE increasing popularity of single sideband operation indicates that the Princess will be obsolescent in five years' time and the chances are that the constructor will try sideband long before that. The aim was therefore to design the equipment in such a way as to be straightforward in its a.m. role but capable of extensive modification at a later date, with minimum wastage, for all-band s.s.b. operation.

In its modified form, the power supply, linear amplifier, metering, control and speech amplifier circuits would remain. A new exciter, replacing V2 to V7, could be built and fitted in the space occupied by the existing exciter.

V2 to V7 are contained in a separate assembly measuring 10½ in. × 5 in. × 3 in. deep (Fig. 8); this fits from below into the main chassis (Fig. 9). It is, in its own right, a five-band 15 watt input transmitter which worked the first W it was used to call! All outgoing connections are made on double-ended tags.

Grouped around the exciter are the power supply, occupying one side of the main chassis, and the linear amplifier and speech circuits sharing the other side.

Two sub-assemblies are constructed to save space in the power supply. Rectifiers MR1 to MR17 are supported by

* 65 Ringwood Close, Furnace Green, Crawley, Sussex.

† Part 1 of this article was published in the July, 1964 issue of the RSGB BULLETIN.

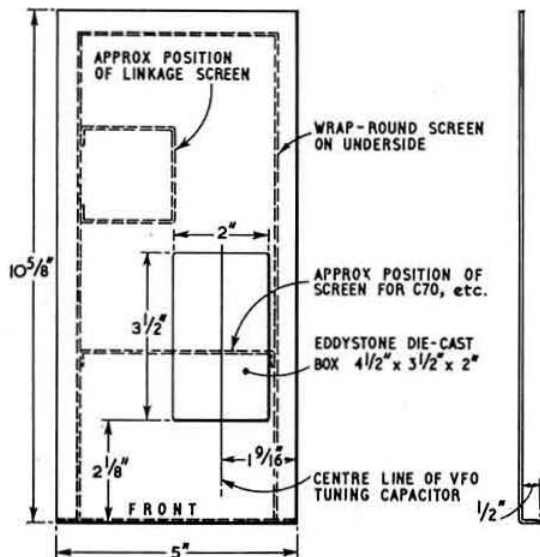


Fig. 8. Construction of the exciter sub-assembly.

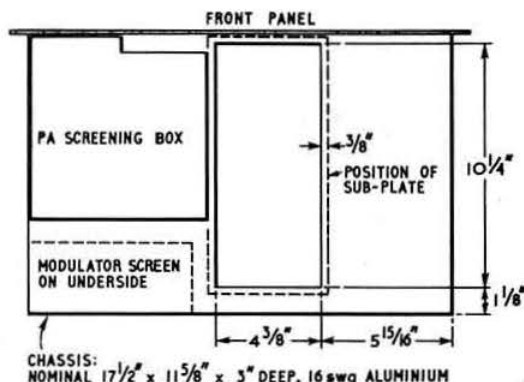


Fig. 9. Layout of the main sub-assemblies.

stand-off insulators on a flat plate 7 in. × 2½ in. This is mounted on a chassis side wall, using space otherwise of little value. Capacitors C3, C4 and C5 with associated resistors occupy a small chassis 6 in. × 2 in. × 1 in. high on top of the main chassis, just behind and below the panel meter. The choke, CH1, fits under the chassis where the capacitors would otherwise have projected.

Components concerned with the bias circuitry are found on the rear wall of the chassis. Capacitors C6, C10 and valve V1, with relay RLC, are arranged to the side of the transformers. Fuses, mains input plug and the variable bias control, VR1, are on the back drop.

Control relays RLA and RLB will be seen on the narrow strip at the rear of the main chassis, behind the exciter. On the back drop close by, an octal socket carries station control connections. The key jack, J1, is adjacent.

A screen (Fig. 10) enclosing the speech circuit separates it from the linear amplifier. When the equipment is converted to s.s.b., V12, V13 and T11 will not be required and, although not so in the prototype, they may be mounted on a detachable sub-chassis similar to the exciter; the extra space would be very valuable. V10 and V11 perform the same function in either mode. The a.f. gain control, VR4, is mounted on the front panel and connected to V10 by screened wire.

The large screening box (Fig. 10) contains V8, V9 and associated tank circuit. L4 and L5 must be mounted well away from surrounding metal but in close proximity to S6. The ideal arrangement is to drive the switch through a right angle so as to place all p.a. anode wiring above the chassis. A simpler and, as it proved, decidedly inferior system was used in the prototype and is not recommended. Later the prototype was modified as above, with great success.

Amplifier grid circuitry is screened from other sections by the exciter side plate and the modulator screen. A further screen can be used to cover the drive control, VR3, and the control switch, S2.

Exciter Construction

Description of the exciter has been left until the last because it is somewhat more complex in its method of assembly and construction. A flat plate (Fig. 8) 10½ in. × 5 in. fits, from below, a cut-out 10½ in. × 4½ in. in the main chassis (Fig. 9). On the plate are two screens. A transverse one holds the p.a. grid tuning capacitor, C70, and the main control spindle of the exciter band switches. The other screen is 2 in. × 2 in. × 2½ in. and holds S3, S4 and S5 together with their mechanical linkage. Both these screens are shown in Fig. 10.

Assembly, wiring and testing of the exciter, connected by

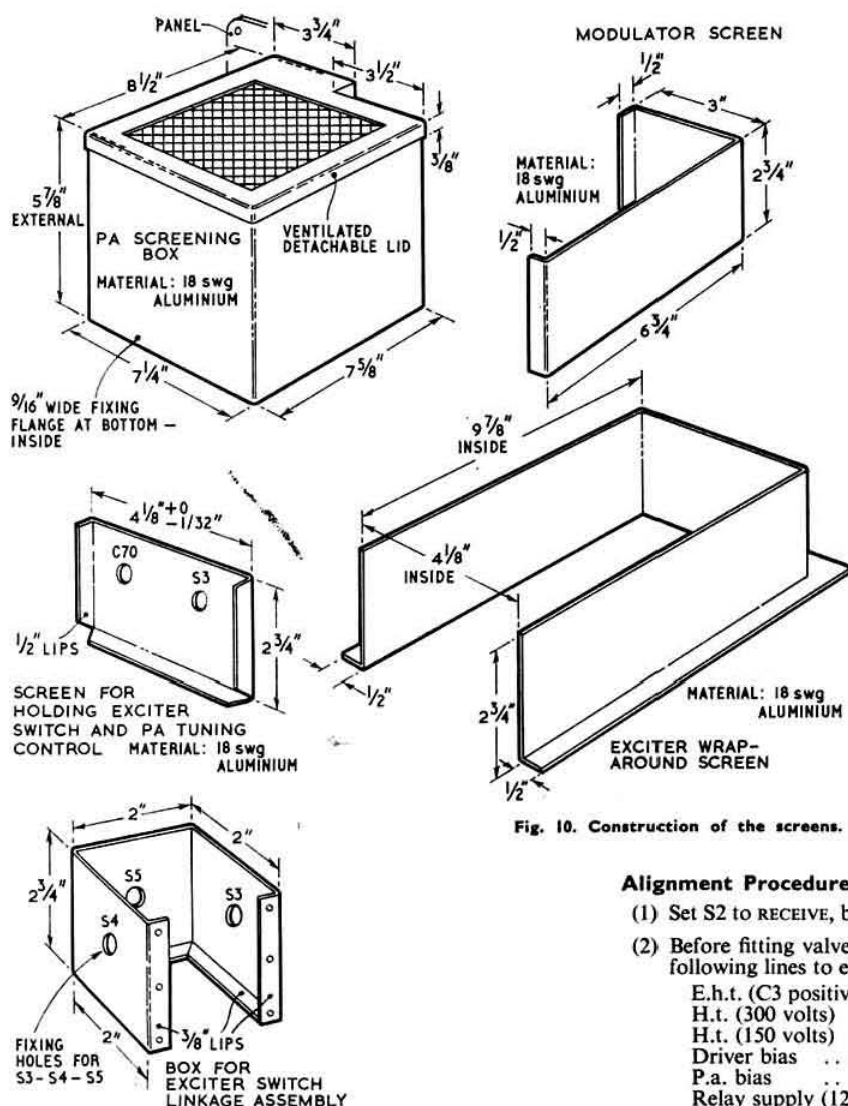


Fig. 10. Construction of the screens.

long supply leads to the transmitter, must be completed successfully before the wrap-around screen is bolted on, otherwise great difficulty will be experienced in correcting any faults.

Above the exciter plate, an Eddystone die-cast box, $4\frac{1}{2}$ in. \times 3 $\frac{1}{2}$ in. \times 2 in., mounted on end, houses the v.f.o. tuned circuit. Fig. 11 shows the exact drilling dimensions for mounting the v.f.o. tuning capacitor, C13, and coupling it to the Eddystone dial. Accuracy here is essential.

The anode circuit of V7 should be encased in a well ventilated screen but as S5 is mounted below the chassis, immediately underneath L2/L3, it cannot be included. A feed-through insulator and the low power r.f. output socket are on the wrap-around screen adjacent to S5b.

Main Assembly

The chassis, panel and outer case are by Philpotts, from their standard range. Side members, from chassis to panel,

improve the rigidity, a very necessary feature with heavy transformers. Runners along the depth of the inside of the case take the distributed weight of the transmitter. A cut-out at the rear of the case, 17 in. \times 2 $\frac{1}{4}$ in., allows access to various services on the back drop of the chassis. Ventilation is adequate as the top and sides of the case are perforated. A perforated cover must be fitted to the underside of the chassis to give double screening. Essential details are shown in Fig. 12.

Drawings show all major dimensions and, where applicable, the method by which one section is assembled into the whole. Detailed drilling information would not be a desirable feature. From the drawings and the photographs, a good impression will be gained of the prototype. Obviously, alternative layouts will suggest themselves to the individual.

Testing

On completion of the transmitter, it is advisable to adopt a logical sequence of tests, thus ensuring that, for instance, h.t. supplies are not applied to a stage lacking bias due to a fault.

Alignment Procedure

- (1) Set S2 to RECEIVE, band switches to 80m, and key up.
- (2) Before fitting valves, fuses, relays or crystal, check the following lines to earth:

E.h.t. (C3 positive terminal) ..	200K ohms.
H.t. (300 volts) ..	35K ohms.
H.t. (150 volts) ..	40K ohms approx.
Driver bias ..	2700 ohms.
P.a. bias ..	1000 ohms.
Relay supply (12 volts) ..	20K ohms.
Mains at S1a/b ..	Infinity.
- (3) Fit F1 and F2 only. Connect mains. Set VR1 to maximum resistance. Set SYSTEM switch (S1) to EXC. ON. LP1 should light. Check that the following voltages are present:

Junction MR10-MR11 ..	350 volts positive to chassis.
Junction VR1-R16 ..	10 volts negative to chassis.
Junction R40-R44 ..	60 volts negative to chassis.
Across C8 ..	16 volts negative to chassis.
Across LP1 ..	6-6 volts a.c.
- (4) Set p.a. bias line to -45 volts by means of VR1.
- (5) Fit valves with the exception of V1. Check that valve heaters light. Measure heater voltage at pins of V7, V8 and V9: this should be between 6.0 volts and 6.7 volts a.c.
- (6) Measure negative voltage at pin 5 of V7: should be approximately 60 volts.

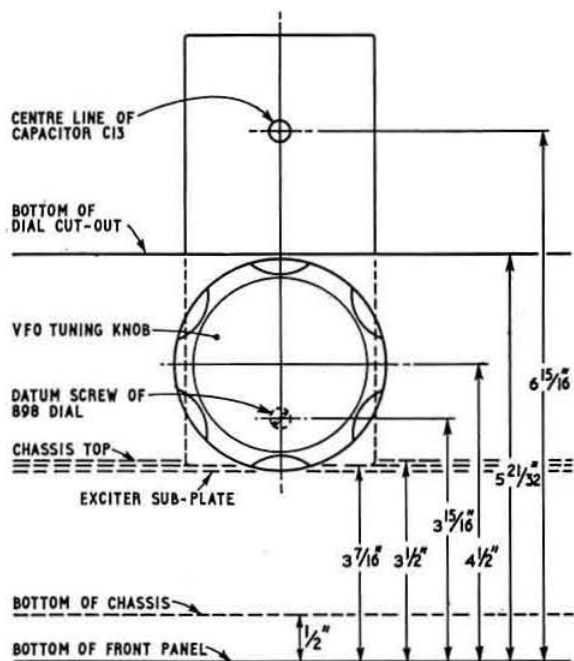


Fig. 11. Dimensions for determining the accurate positioning of the v.f.o. tuning capacitor, C13.

- (16) Set SYSTEM switch (S1) to NET. Relay RLB/4 should open. Return S2 to RECEIVE. Check receiver control (transmit) is open circuit and receiver control (receive) is earthed. Supply to RLD/1 should be open circuit.
- (17) Set C12 and C15 to approximately mid position, and C13 to 95 per cent of maximum capacity.
- (18) Loosely couple a receiver covering 1.4 Mc/s to 2.1 Mc/s to the anode circuit of V2. V2a should be oscillating in the region of 1.5 Mc/s. Adjust C12 so that 1.5 Mc/s corresponds to a dial setting of 20.
- (19) The band 1.5 Mc/s to 2.0 Mc/s should be covered across the swing of C13 with an overlap at each end.
- (20) Plug in the 5.5 Mc/s crystal. With a receiver, check that V2b is oscillating at this frequency. The note should be pure. Disconnect R46 at the screen grid of V7.
- (21) Set C13 to correspond to 1.970 Mc/s, giving a frequency of 3.530 Mc/s at the anode of V3.
- (22) Connect a test meter on a low voltage range (2.5 volt f.s.d.) to TP1. Set VR3 to minimum.
- (23) Peak the reading by adjustment of the cores in T4.
- (24) Set C13 to 1.73 Mc/s to give a mixed frequency of 3.77 Mc/s. Readjust T4 to equalize the drive over the whole range 3.5 Mc/s to 3.8 Mc/s. Note that it may prove necessary to alter the values of C30 and C31 within small limits.
- (25) Select 40m on EXCITER switch. Tune T5 and select C33 and C35 if necessary. Tracking frequencies 7.030 Mc/s and 7.220 Mc/s. Range 7.000 Mc/s to 7.250 Mc/s.
- (26) Loosely couple receiver to the grid circuit of V7. Set band switch to 80m, frequency to 3.530 Mc/s, S7 to grid of V7. VR3 at maximum.

- (7) Fit V1 (OA2). Fit F4. Voltage across C6: 325 volts approximately. Voltage across V1: 150 volts.
- (8) Check anode current of V7 on meter position 2: should be less than 30 mA.
- (9) Switch to NET. Check that JK1 is shorted.
- (10) Check static voltages of V2 to V7 for any obvious irregularities.
- (11) Disconnect h.t. to screens of V8 and V9 at R53.
- (12) Fit relay RLB/4 and check that disconnected screen supply (11) reads 15 volts negative.
- (13) Set SYSTEM switch (S1) to A1, and S2 to TRANSMIT. Relay RLB/4 should operate. Check that disconnected screen supply (11) now reads 300 volts positive.
- (14) Check receiver control (transmit) is earthed.
- (15) Check feed to relay RLD/1 (aerial c/o) is 12 volts positive earthed).

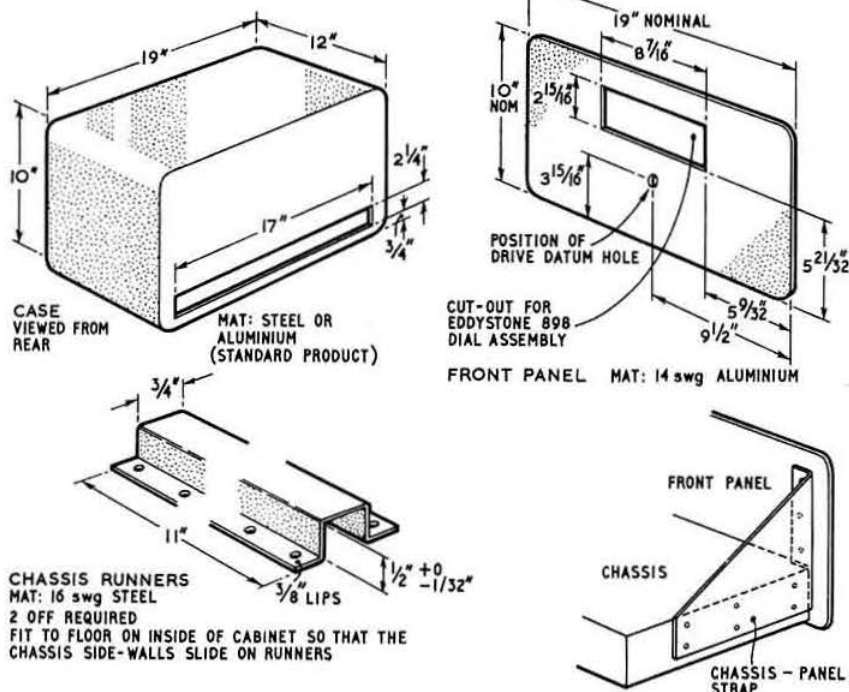


Fig. 12. Essential cabinet and panel dimensions.

- (27) Tune T6. Note that the meter has a suppressed zero and may not read until resonance is closely approached.
- (28) Compromise adjust T6 across the whole band, altering the tuning of T4 to improve the broadband response. Check that VR3 controls the drive level to V7.
- (29) Repeat for 40m, tuning T7. C45 may not be needed due to the high stray capacities in circuit.
- (30) Select 20m. Tune T8, then peak reading with C48. Note that maximum drive to V7 on the three higher bands may not occur at the maximum setting of VR3 and this control should be set to the optimum position.
- (31) Select 15m. Tune T9. Only a slight indication or even no reading may be noticed. Do not despair at this stage. Rely on the receiver for indications of resonance.
- (32) Select 10m. Tune T10. Peak with C57. Similar remarks apply.
- (33) Reconnect R46 to the screen grid of V7. Select 80m and set to 3-530 Mc/s. Set S7 to read the anode current of V7. Tune P.A. GRID control. Anode current to V7 should be about 35 mA at resonance.
- (34) Repeat for all bands. The figure for 10m operation at resonance should be in the region of 50 mA.
- (35) It may be found necessary to alter slightly the values of C73-C77. An increase in capacity reduces the loading.
- (36) Under (31) and (32) it was stated that little indication of drive would be obtained. Accurate tuning may be effected by setting C70 well off resonance and tuning T9 (for 15m) and T10 (for 10m) for maximum reading of anode current to V7. At all frequencies this should exceed 75 mA.
- (37) The exciter may be tried as a low power c.w. transmitter by disconnecting the lead to the p.a. grid resistor, R48, and feeding a low impedance aerial from the low power socket. After this test, re-connect R48.
- (38) Fit relay RLC2. Check that F3 is not fitted. Connect either R9 or R10 to the centre tap of T1 as a precaution. Key up.
- (39) Switch to A1. Check that the voltage at the bridge output is approximately 430 volts d.c.
- (40) Fit F3. Check that h.t. supply is now approximately 650 volts d.c.
- (41) Set METER switch to p.a. screen current. Set S2 to TRANSMIT. A reading of less than 5 mA should be obtained.
- (42) Set METER switch to p.a. anode current. A reading of approximately 20 mA should be obtained.
- (43) Connect R9/R10 across full h.t. output of T1. The d.c. output should be approximately double that obtained at step (40).
- (44) Set VR1 to give a standing p.a. anode current of 70 mA.
- (45) Connect a 75 ohm 150 watt load to the r.f. output socket.
- (46) On 80m, with key down, drive the amplifier, loading to give a p.a. screen current at resonance of 25 mA. This corresponds to approximately 150 watts input.
- (47) Set the v.f.o. to an output frequency of 3700 kc/s. With the receiver tuned to 3600 kc/s a spurious output may be heard. Adjust the series resonant circuit L6/C24 to minimize this signal. It is due to the second harmonic of the v.f.o. on 1800 kc/s.
- (48) Repeat step (46) on all bands. On the two higher frequency bands, the P.A. GRID tuning control must be adjusted for maximum drive.
- (49) Final checking of the modulator may now be carried out. Fit relay RLA/2. Set VR4 to minimum. Turn SYSTEM switch to A3. P.a. anode current should drop to about 90 mA.
- (50) Modulation can now be applied. The p.a. anode current should peak to only about 120 mA.

Operating Notes

A few notes will assist the operator in familiarising himself with the equipment. Select the band required, v.f.o. on frequency, set METER switch to anode current of V7 and SYSTEM switch to NET. Set the DRIVE control at maximum, tune C70 for a dip in anode current; check that the grid current of V7 does not exceed 1 mA, adjusting VR3 as necessary.

Switch to p.a. screen current and to A1. With the key down, tune the p.a. controls C86 and C88 for a 25 mA peak in screen current. This should approximate to an input of 150 watts as indicated by the two remaining metering positions. With the key up, the anode current should be 70 mA, to which it had been set during alignment.

For telephony operation, switch to A3; p.a. anode current should drop to around 90 mA. Adjust VR3 to obtain this reading (usually less drive is required). With VR4 set to suit the voice level, modulation peaks should cause the anode current to rise to 120 mA. Care should be taken not to overdrive the amplifier, otherwise it will flat-top and splatter and TVI will result.

Conclusion

On-the-air reports indicate that the speech quality is good and the c.w. note is pure d.c. even on the highest frequency band. No drift has been reported or noticed during monitoring. Signal strength reports are as expected for a transmitter of this power and a G5RV aerial system.

After some years of sideband operation at the writer's station, a.m. would seem to have little to commend it. In due course it is hoped to tailor an all-band s.s.b. exciter into the space available.

In conclusion, the Society is indebted to the following for material assistance with the project: Electronics (Felixstowe) Ltd., Home Radio (Mitcham) Ltd., M-O Valve Co. Ltd., Mullard Ltd., Partridge Transformers Ltd., and E. J. Philpotts Metalworks Ltd.

APPENDIX I

Method of Determining the Internal Resistance of a Meter

Using the circuit shown in Fig. 13, adjust the 2500 ohm variable resistor for full scale deflection of the meter under test and note the current flowing in the circuit as shown by the testmeter. Now connect a 1000 ohm variable resistor across the meter under test and adjust it for exactly half scale reading on this meter while at the same time adjusting

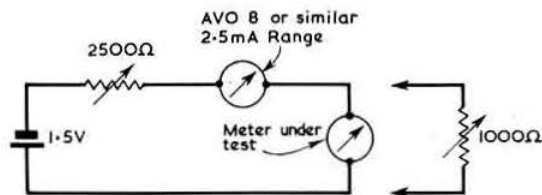


Fig. 13. Circuit for determining the internal resistance of a meter.

the 2500 ohm resistor to maintain the original value of current in the circuit as shown by the testmeter.

Disconnect the resistor from across the meter under test and carefully measure its value which will be equal to the internal resistance of this meter.

Warning: before connecting the battery, ensure that the 2500 ohm variable resistor is at maximum resistance.

A Guide to the Use of Oscar III

By P. K. BLAIR, G3LTF*

THE launching of Oscar III later this year will provide 144 Mc/s operators with the chance to make a very interesting series of contacts and experiments at ranges well in excess of those previously possible by other means of v.h.f. propagation.

Oscar III [1,2] will be a translator satellite, that is, it will receive signals transmitted in one segment of the 2m band and frequency shift them to another segment for re-transmission following amplification. Note the use of the word translator instead of repeater; a repeater usually describes a unit which demodulates the incoming signal and remodulates the repeater transmitter with it, whereas the translator is basically a frequency changer. The merit in this method from our point of view is that any type of modulation may be used: f.m., a.m., s.s.b., p.m.—all will be faithfully reproduced at the output of the translator. The input channel for Oscar III will be from 144.075 to 144.125 Mc/s, and the output channel from 145.925 to 144.875 Mc/s.

It is important to note that inversion of frequency takes place in the satellite, i.e., a signal received at the low end of the receive channel is transmitted at the high end of the transmit channel, and vice versa. This, incidentally means that s.s.b. will have its sideband reversed, i.e., if you transmit upper sideband to the satellite, it will come back lower sideband. In addition to the translator, Oscar III will also carry two beacon transmitters, one on 145.950 Mc/s which will be a continuous carrier for tracking purposes, and one on 145.850 Mc/s which will transmit telemetry as the familiar "HI" and also as variable width pulses between the HIs. The continuous beacon will have a power of 100 mW.

Doppler Shift

Anyone who heard either of the original Oscars, or who has listened to any satellite signals will be very aware of the existence of doppler shift. This must be watched carefully with Oscar III or you may find yourself outside the input band. Note that signals must fall inside the band 144.075 to 144.125 after they have been doppler shifted. This means that at times signals 4 kc/s outside the channel limits will be translated and at other times signals 4 kc/s inside channel limits will not be translated. To be certain of getting your signal through the translator at all times you can only use 144.079 to 144.121 Mc/s. As this band also includes an aircraft channel, 144.09 Mc/s, which must be avoided, it means that some careful frequency checking will need to be done. The writer suggests using 10 kc/s markers on 2m injected when required at the front of the converter. A suitable method of producing these will be described in a forthcoming issue.

This does not mean, however, that the rest of the input channel is useless; it merely needs some care in using. As the maximum doppler shift to be expected is 8 kc/s, then when the satellite is approaching the transmitter the region 144.071 to 144.121 Mc/s is usable. When the satellite is receding from the transmitter then 144.079 to 144.129 Mc/s may be used. Thus when listening to see what is being transmitted by Oscar III, the band 145.871 to 145.929 Mc/s should be tuned.

Power and Operating Techniques

When he was President of the RSGB, GM6IZ remarked that 2m is a "Gentleman's Band." It had better be so when Oscar III is around, or no-one will get anywhere. The Oscar

beacon has a power of 100 mW and the translator transmitter has an average power of 1W. To prevent overloading of the transmitter, Oscar III incorporates an automatic gain control which limits the total average power output to 1W. This operates in a similar way to normal receiver a.g.c. and means that a large signal going into the satellite will cause a reduction in signal strength of the smaller ones. At a range of 1000 miles, 100W e.r.p. is all that is required to drive the satellite to 100mW output which is the same level as the beacon signal on 145.950 Mc/s. This is 10W r.f. to a 10db gain aerial: an 8 element Yagi or similar! When the satellite is overhead, 4W e.r.p. will be sufficient. If 1 kW e.r.p. at a 1000 mile range is used then the satellite will be driven to its maximum output and beyond this point the a.g.c. starts to work. Now this is where consideration for others comes in. Do not forget that when the satellite is overhead here, and is being used for comparatively local contacts, two other stations may be trying to use it over much greater distances and your signal may be reducing the gain of the translator and hence making their contact impossible. In this part of the world activity on 144 Mc/s is very high and to accommodate the maximum number of contacts via the satellite, the following suggestions may be of some help.

Although it is very feasible to use duplex working through Oscar III it is not recommended because it unnecessarily increases the number of signals entering the satellite. If you must try it use one of the passes in the small hours of the night.

If the translator is to be used to the full then the form of transmission which takes up least bandwidth is the ideal, i.e., straight c.w. Next comes s.s.b. and lastly a.m. and n.b.f.m. This order is indisputable. If you must use a.m. be sure not to overmodulate, and also consider using a 3.4 kc/s low pass filter in the modulator. Unrestricted frequency range a.m. is a curse on 2m, and you can be sure that Oscar will not appreciate it. Another advantage of s.s.b. and c.w. is that as the signal is not present all the time, we are again increasing the effective capacity of the translator. In this respect the proper use of break-in would also help in achieving short transmissions. Above all, please do not let us hear any 50 CQs and one call-sign calls!

When and Where to Aim the Beam

On an overhead pass, Oscar III will be audible for about 12 minutes, and correspondingly less time as the passes become further away. The maximum range from each station is 1000 miles, and this means that QSOs up to 2000 miles should be possible. If you wish to make your own Oscar predictions, then you should peruse the references [3,4,5] given at the end of this article, particularly the article by Ray Flavell, GM3LTP in the April 1962 RSGB BULLETIN. Otherwise, you can use those which will be transmitted by RSGB News Bulletin service, GB2RS. These will be as for Oscars I and II, and a typical one would be of the form: December 16, Northbound, Orbit No. 33. Time of nearest approach 03.52 GMT, Longitude 10°E.

Experience with Oscar I and II will tell you to start looking about five minutes before 03.52, and eight minutes before for a nearer orbit with the beam in a south-easterly direction with the receiver tuned to the beacon frequency, but do not forget the doppler shift. As soon as the beacon is heard, then start to tune the region 145.871 to 145.929 Mc/s. At its nearest approach on this hypothetical orbit, Oscar III will be over Hanover. The furthest stations one could hope to hear on this orbit would be about 200 miles west of Moscow

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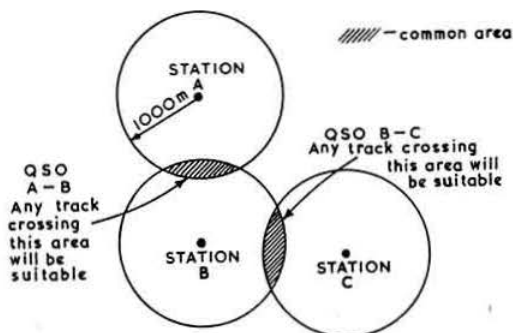


Fig. 1. Method of determining the usable portion of the satellite's path for communication between two stations.

(another good reason for c.w. becomes apparent here: language). However, this path will not be open long, and to obtain some idea of the shared time between two points, draw circles of 1000 mile radii round each one and note the area of intersection. The satellite must, of course, be in this common area for you to be able to make contact, and contact can only be maintained for the time that the satellite is in this area.

The Great Circle bearing also affects the time available for QSO, as the satellite is in a polar orbit (travelling N-S and S-N). Two stations separated in a N-S direction by, for instance 1800 miles, will have much less time for a QSO than two stations separated by 1800 miles in an E-W direction. The N-S operators also have a greater chance of a satellite track crossing their common area than do the E-W pair. See Fig. 1.

Equipment

Aerials. For the extreme ranges with the satellite at the horizon obviously a good horizontally pointing aerial with a clear take-off is required. For nearer passes, some form of aerial tilting device, used of course, in conjunction with the

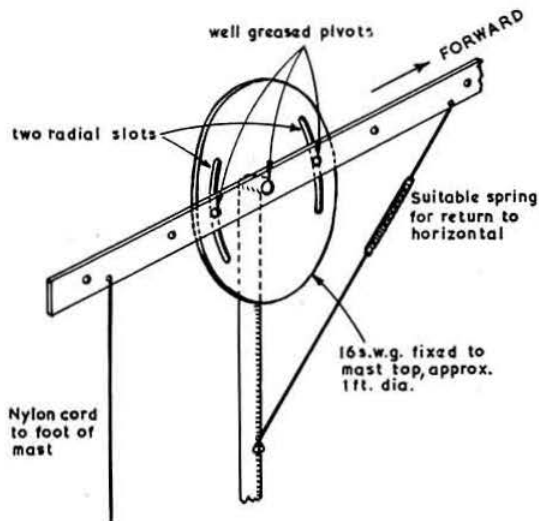


Fig. 2. Beam tilting device.

normal azimuth rotator will be useful. It is felt that with the sort of beamwidths most operators will be using, tracking should not be a real problem, especially with the knowledge gained from the first Oscars. A crude beam tilting device for up to about 80° elevation is shown in Fig. 2. It was used here for some successful experiments some years ago, but is really only applicable to light aerials. See reference [6].

Transmitters. The remarks given above on operating really cover this topic, but again it must be emphasised that for the successful use of Oscar III, power and bandwidth should be kept to a minimum. The levels of 1 kW e.r.p. at 1000 miles and 1 kW e.r.p. for overhead passes should be adhered to, particularly when the satellite is being used by large numbers of stations. Furthermore, perhaps the early morning passes which were neglected to a large extent with Oscar I and II may be of more use than the passes at more normal hours.

Frequency. Accurate frequency measuring gear will be very useful for avoiding the inevitable pile-up around the middle of the input band. A v.x.o. appears to be a very useful item for this application [7,8], or even simply a small inductor (40 turns, 36 s.w.g. wound on an Aladdin former with dust core) in series with the crystal will give you some degree of shift with a 6 or 8 Mc/s crystal.

Receivers. Frequency measurement in the receiving chain is a useful facility, but do not be put off if you cannot manage this. It does help, however, if you know precisely where you are in the band, and this will ensure the most effective use of the available 50 kc/s. The strength of the received signal, assuming 100 mW output from the satellite at 1000 miles range, will be 30db above the noise with a 1000 c/s bandwidth, assuming an aerial gain of 10db and a noise factor of 3db. For an overhead pass the signal-to-noise ratio will be about 45db.

In conclusion, by not using too much power and remembering GM6IZ's remarks some good DX will be worked by all.

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- [1] "The Oscar III Repeater Satellite," *QST*, February, 1963.
- [2] "Communicating Through Oscar III," *QST*, May, 1964.
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- [8] "A Stable but Variable Frequency Control System for the V.H.F. Bands," *QST*, July, 1963.

BATC CONVENTION 1964

Saturday, September 12, from 10 a.m. to 6 p.m.
at

ITA Headquarters, 70 Brompton Road, London,
S.W.1. (near Knightsbridge Tube Station).

The General Meeting will be held at 2.30 p.m. During the afternoon, the following lectures will be given:

- "Semiconductors at 70 cm." by D. Mann, G3OUO/T.
- "Pulse Generators," by J. Noakes.
- "Camera Tubes," by J. Tanner, G3NDT/T.
- "Video Testing Techniques for Amateur Television," by M. H. Cox.

Further details may be obtained from M. H. Cox, 135 Lower Mortlake Road, Richmond, Surrey.

Clover Leaf Mobile Aerial for 144 Mc/s

By C. J. SPACKMAN, G3GYQ *

THIS mobile aerial system consists of three leaf shaped elements positioned horizontally to form a clover leaf design of approximately 4 ft. across, and it can be conveniently mounted above the average car roof. The performance is far better than the popular "halo" and it also has other interesting features.

Theory

The three leaf elements are actually half-wave dipoles which are end-fed with quarter-wave sections. This means that the total length of material forming an element is one wavelength, i.e., 80 in. The layout of the system is shown in Fig. 1(a).

The three elements are connected in parallel (Fig. 1(a)) by joining together 1X, 2X and 3X to form one feed point, and 1Y, 2Y and 3Y to form the other feed point. The 50 ohm feeder and matching stub are connected across these two points. To obtain the required inductive reactance, the stub should have an overall length of approximately 5 in.

Each loop or leaf may be considered to consist of three component parts: a half-wave dipole (radiating portion), the

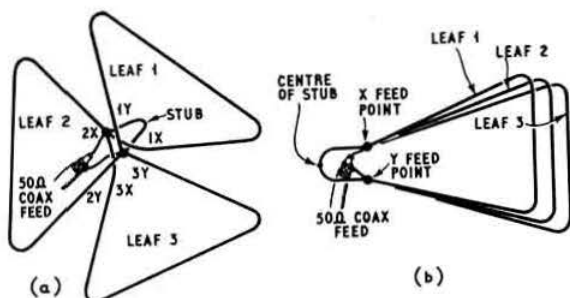


Fig. 1. General arrangement of clover leaf aerial. The feeder is connected to the two junction points shown.

end-feeding sections and a stub. These three components combine to form a resonant full-wave loop, the matching stub being common to all three loops.

To clarify its operation, the aerial system may be considered in a rearranged form as shown in Fig. 1(b). As in Fig. 1(a), each leaf forms a full-wave loop. A point of zero impedance will exist halfway along the outer edge of each element or leaf, this being the effective centre of a half-wave dipole. The length of the stub is such that it tunes the elements to resonance and its centre is also a point of zero impedance. The impedance will rise outwardly from the centre of the stub to a point where 50 ohms will exist across

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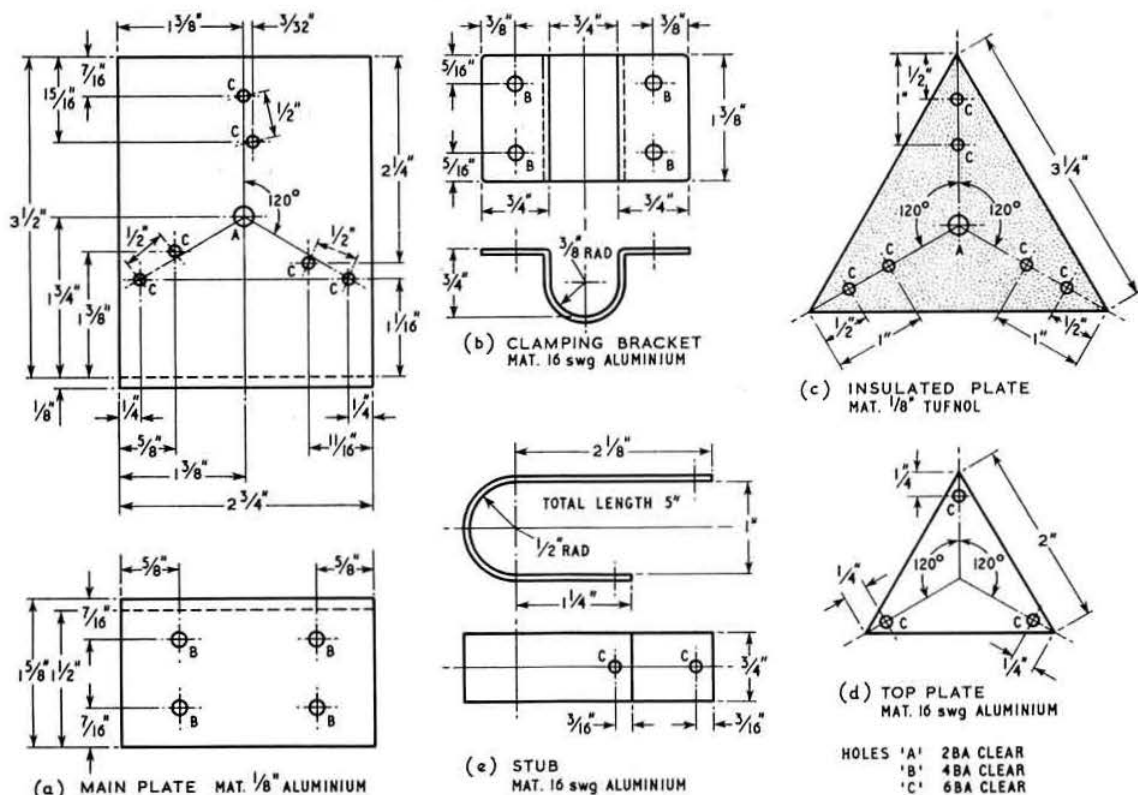


Fig. 2. Constructional details of centre assembly.

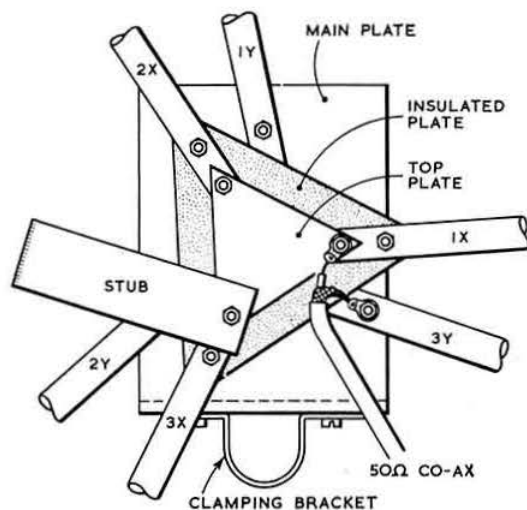


Fig. 3. General arrangement of centre assembly.

it, and this occurs where it joins the feed points and provides a reasonable match for 50 ohm co-ax.

Construction

The centre assembly consists of the main plate (Fig. 2(a)), mast clamping bracket (Fig. 2(b)), insulated plate (Fig. 2(c)), top plate (Fig. 2(d)) and the stub (Fig. 2(e)). The complete assembly, together with element ends and co-ax connection, is illustrated in Fig. 3.

The main plate should first be constructed from $\frac{1}{8}$ in. aluminium. Numerous dimensions have been given in Fig. 2(a) to facilitate drilling, the main criterion being the positioning of the holes for the element securing bolts at $\frac{1}{2}$ in. apart and at the correct angle relative to the centre of the plate.

The clamping bracket shown is intended to secure the main plate to a $\frac{3}{4}$ in. diam. mast. This can obviously be modified if necessary. The material is 16 s.w.g. aluminium and was found to be sufficiently strong.

The insulated plate could be made from a variety of different materials provided that there is sufficient strength

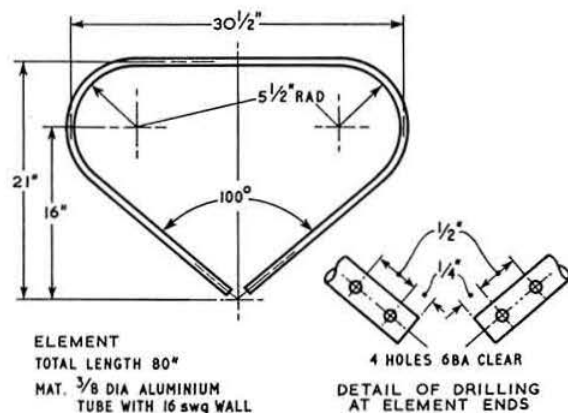


Fig. 4. Details of elements. Three identical elements are required

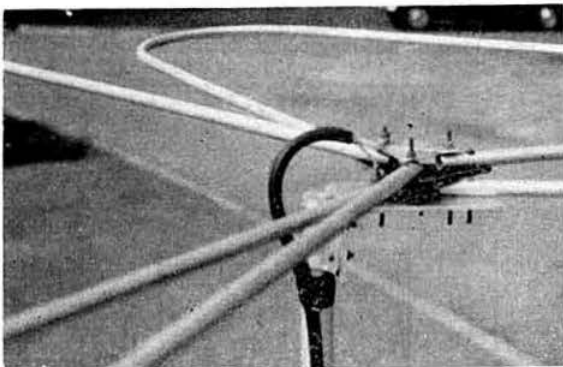
and that the material is a good insulator at 145 Mc/s. Tufnol or resin bonded paper is ideal, the former being employed for this particular aerial. The thickness is $\frac{1}{8}$ in. and it is constructed according to Fig. 2(c).

The top plate is simply a triangle of 16 s.w.g. aluminium drilled and shaped as in Fig. 2(d). This plate combines all the X ends of the elements.

The stub (Fig. 2(e)) is also made from 16 s.w.g. aluminium and should initially be shaped as shown. If it does not fit exactly, it may be slightly reshaped, provided that the length remains the same, i.e. 5 in.

The construction of the elements presents a greater problem since it is desirable that they should be of identical shape and that the ends should converge on the centre assembly at an angle of 100 degrees.

Three lengths of $\frac{3}{8}$ in. diam. tubing 80 in. long are required. It is advisable to fill each one with dry sand before any bending is attempted. If possible a full-scale drawing should be chalked on the workshop floor according to the dimensions given in Fig. 4. The centre of each element should be marked so that the tube can be placed in the correct position over the drawing. Make certain that the centre cannot move from this position during the bending operation. A substantial circular object having suitable



The completed clover-leaf centre assembly.

dimensions should be placed within the drawing so that the tube can be bent gently around it to form the correct radius.

Having formed the elements into shape, the sand should be entirely removed and then the element ends may be drilled as in Fig. 4.

Assembly may now commence by first bolting the Y ends to the main plate. Next, the X ends may be bolted to the insulated plate using the outer three bolts. A 2BA bolt passed through the two plates and tightened should bring the whole assembly to rigidity. The top plate and stub can then be fitted, remembering the soldering tags. The system should now appear as in Fig. 3.

Aerial Mounting

In the writer's case the aerial is mounted above a specially constructed roof rack and is just over 3 ft. above the car roof itself. The whole assembly can be installed or removed in a matter of seconds. The base of the $\frac{3}{4}$ in. mast is hinged to enable the assembly to tip forward or backwards relative to the direction of travel. When in use, it is held in a position leaning slightly forward so that under normal windage conditions the mast takes up an approximately vertical position. It is held upright by the use of domestic curtain spring lengths, a pair of springs to each front corner of the rack and a single spring to each rear corner. With this arrangement the aerial can be disregarded under

(Continued on page 514)

Single Sideband

By G. R. B. THORNLEY, G2DAF*

THERE has recently been considerable interest in that aspect of receiver design concerning improvement in cross-modulation and low-noise performance. This has been stimulated by a number of articles appearing in amateur publications and by a considerable amount of discussion in the 80m band s.s.b. net. It is also commonly known that a new communications receiver is being marketed in the United States which, it is claimed, has a greatly improved cross-modulation performance due to the use of 7360 beam deflection mixer valves and no r.f. stage. An article dealing with this type of circuitry appeared in the September, 1963 issue of *QST*†.

Many BULLETIN readers know that the writer has an experimental G2DAF Mk.2 receiver in use, and a number of letters have been received asking for detailed information. Typical of this type of question is the following:

Q. I understand that your Mk.2 receiver does not have an r.f. stage, and I would like to incorporate this modification in my own receiver. Will you please tell me how the aerial coils and the oscillator input should be coupled into the 7360 mixer valve?

A. The G2DAF Mk.2 receiver has been used for four months with an experimental front-end using two signal frequency tuned circuits top capacity coupled and feeding into a push-pull ECC85 mixer. The second, tunable i.f. mixer is an ECC85, also in push-pull. This unit was built in order to evaluate the results without an r.f. stage using conventional valves as low noise mixers, both under static conditions, i.e., measurement of signal-to-noise ratio, image rejection, i.f. break-through rejection and cross-modulation using a TF144G signal generator, and noise factor using a noise generator, and all under actual operating conditions on all amateur bands. Measurements were also taken of conversion oscillator radiation into the aerial circuit.

This experimental unit has now been modified and a push-pull r.f. stage using a PCC189 variable- μ triode has been fitted between the two signal frequency circuits. This valve operates without any gain, i.e., the r.f. stage gain is less than unity (about 0.9) so that the valve is always stable without requiring to be neutralized. It could well be asked, "What is the point in fitting the r.f. valve if it gives no gain; why not leave the front end unit as it was previously?" There are a number of answers to this question and they may be summarized as follows.

(i) Two signal frequency tuned circuits are necessary to obtain acceptable image rejection and i.f. break-through rejection. If these circuits are isolated by a valve the shunt loading is reduced and the coils can operate at a higher Q value giving improved image and break-through rejection. (ii) The improvement in coupling efficiency when two tuned circuits are isolated by a valve of unity gain coupled to a low impedance anode load is such that the noise figure is improved by approximately 3db. (iii) A.g.c. can be applied to the r.f. valve grids. The valve therefore behaves as an automatic attenuator to big signals, and is controlled from the bias line. Alternatively, gain can be manually controlled by the usual cathode potentiometer. (iv) The r.f. valve gives isolation to

the second tuned circuit and the mixer cannot be overdriven by inadvertent use of the wrong aerial, i.e., an aerial that does not present a load of 75 ohms to the receiver, such as a random length of wire, or an end fed aerial directly connected into the aerial terminal. (v) The r.f. valve prevents oscillator radiation reaching the aerial system; this eliminates any possibility of interference to other services. (vi) The r.f. valve prevents oscillator radiation reaching the aerial system—this eliminates any possibility of interference to other services.

The 7360 beam-deflection valve has been used experimentally in both mixer positions. This valve will handle a larger signal input than any other conventional mixer valve: as much as two volts r.m.s. on the signal grid, but still operate in a linear manner. From the point of view of cross-modulation this is a decided advantage. There are, however, offsetting disadvantages, the most important being the requirement of a balanced push-pull oscillator injection with a relatively large peak-to-peak swing. This order of injection oscillator and v.f.o. voltage increases the harmonic mixing problems in a double conversion receiver and makes the problem of keeping birdies below the threshold noise level much more exacting. Both the balance and the amplitude of the deflection electrode voltage must be maintained within fairly close limits to obtain optimum conversion conductance. This is not easy to achieve in an amateur band receiver with push-pull input from a switched crystal oscillator operating on frequencies over the wide range from 7 Mc/s to 34 Mc/s.

All receiver design is inherently a compromise and this applies particularly to the requirements for the front end. These are: (i) Adequate image and i.f. break-through rejection; (ii) a satisfactory signal-to-noise ratio; (iii) good cross-modulation performance; (iv) control of signal amplitude before the mixer; (v) low order of self-generated spurious products and birdies. Some of these requirements conflict with each other and the decision in regard to their relative priority is to some extent a personal one.

Any potential constructor of the G2DAF receiver described in *Communication Receivers* is advised to use the modified mixer circuit using an ECC85 as shown on page 371 of the June, 1964 BULLETIN. This is a very good low noise mixer, and enables the r.f. stage gain to be reduced without impairing the required signal-to-noise ratio. The r.f. stage may be the original ECC84 cascode, or the 6BZ6 valve shown; either will give a satisfactory performance. It will be noted that this valve has negative current feed-back across the unbypassed 82 ohm cathode resistor, and has a high value of screen feed resistor: this ensures that it is running at less than normal gain and improves the cross-modulation performance when weak DX signals are being received. The 6BZ6 grid resistor of 470K ohms should be taken to the a.g.c. line in the usual manner, and not to earth as shown. If required, the separate r.f. gain potentiometer may be omitted, the bottom end of the 82 ohm resistor being taken to chassis earth. If crystals have been purchased for harmonic operation as detailed in the receiver handbook, they cannot be used in the double triode overtone oscillator and the original EF80 harmonic oscillator will have to be retained.

Q. What method do you adopt for winding coils on Aladdin or Neosid formers with screening cans, as used in your Mk.2 transmitter?

A. A 3 in. length of 0 BA threaded brass rod is placed in the chuck of a hand drill supported in a horizontal position by a bench vice. The free end of the 0 BA rod is then run into the Aladdin former for a distance of about an inch and locked in position by a 0 BA nut. The required gauge of winding wire (usually purchased on 2 oz or 4 oz reels) is held in a suitable position below the winding mandrel by a thin screwdriver pushed through the hole in the reel and into the

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† "A New Approach to Receiver Front-End Design," by William K. Squires, W2PUL, *QST*, September, 1963.

‡ "Recent Trends in Receiver Front-End Design," by E. A. Andrade, W0DAN, *QST*, June, 1962.

"Trends in H.F. Receiver Front-Ends," by Pat Hawker, G3VA, RSGB BULLETIN, September, 1963.

front face of the bench top. A paxolin end spacer is pressed on to the recessed end of the Aladdin former—the set up is then ready for the winding process.

This commences by anchoring the free end of the wire to the former base by threading it through one of the eyelets, the mandrel is then rotated so that a few turns are spiralled up the former to the point at which it is intended to commence the required coil. It is then a simple matter to rotate the handle of the hand drill and count the turns while the winding wire is being guided into the correct position by the finger and thumb of the left hand. When the required number of turns is in position, the wire is spiralled off and temporarily wound round the paxolin end plate—throughout this procedure the wire tension is maintained in order to prevent any turns slackening off.

The former is then screwed off the mandrel, cut free from the remaining wire on the reel. All turns are then liberally coated with polystyrene cement, and finally allowed to dry. The free end of a reel of 18 s.w.g. tinned copper wire is gripped in the vice or fastened to a nail in the bench; 3 or 4 ft. of wire are then unwound and stretched by pulling on the bobbin until the wire is perfectly straight. This is then cut into $3\frac{1}{2}$ in. lengths to form the required lead-out wires. Each lead-out wire is fitted into position by pushing it up through the base eyelet until the end passes through the appropriate hole in the paxolin top spacer; this wire is held firmly in position by a small amount of solder run down inside the base eyelet. It is then trimmed to length by cutting it off flush with the top face of the paxolin spacer and $\frac{1}{2}$ in. below the bottom edge of the former base to form the lead-out tag. The two ends of the wound coil are then detached from their anchor points, the open spirals unwound until the true end of the coil is reached and the surplus snipped off to leave about an inch of free wire at each end of the coil. The enamel insulation is removed by scraping with a sharp knife and each bared end is then wound round the appropriate 18 s.w.g. lead out wire and carefully soldered in position with a hot iron. It is normal practice at G2DAF to connect primary windings to pins 1 and 3 and secondary windings to pins 4 and 6. If centre taps are required these go to either pin 2 or pin 5.

Finally, a quarter inch length of tight fitting systoflex or p.v.c. sleeving is slipped over each of the lead-out tags. This is a most important safety requirement, for it prevents molten solder from running down the tag and forming a blob of conducting material that could easily short across to the chassis when the apparatus is mounted in an inverted position and the other associated components are being soldered into position. The screening can is then slipped over the former and the two lips are bent inwards under the former base so that they are in line with the 6 BA threaded mounting holes. An appropriate dust core for the frequency in use is then screwed into the former using a proprietary core "cement": this prevents unwanted movement but allows the core to be turned during final alignment.

The old slotted type of dust core is unsatisfactory and should not be used. Modern types have a hexagonal hole right through: these, together with a special nylon trimming tool, may be obtained from BULLETIN advertisers such as Electronics (Felixstowe) Ltd. and Home Radio Ltd. Note: H6 Ferrite Cores (0 BA), 12.5 mm long are available in four different grades: 100 kc/s to 2.0 Mc/s; 2.0 Mc/s to 10.0 Mc/s; 5.0 Mc/s to 20 Mc/s; 10.0 to 50 Mc/s, and also 16 mm long for 100 kc/s to 2.0 Mc/s. Aladdin or Neosid miniature formers with square screening cans each require nine chassis holes and marking out on the chassis can be a considerable chore. The work can be considerably eased by using a drilling jig made from a length of 1 in. \times $\frac{1}{2}$ in. mild steel strip.

Due to circumstances beyond the writer's control it has been necessary to hold over the promised circuit using a Kokusai mechanical filter and the revised chassis lay-out for the G2DAF receiver.

Clover Leaf Mobile Aerial for 144 Mc/s

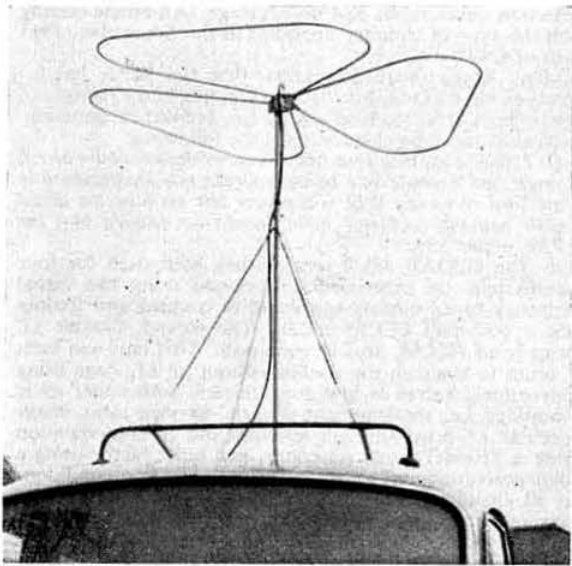
(Continued from page 512)

normal weather conditions and no restriction on speed is necessary. Driving into a gale, however, does require a little more consideration of speed.

Results

This aerial has been in use for over two years and has proved its superiority over all previous types employed. These include dipole, halo, skeleton slot, and "Abe Lincoln."

The radiation pattern is extremely uniform with the exception of slight nulls occurring opposite the 20 degrees



The clover leaf in position on the roof of the writer's car.

gaps between elements. However, during actual operation, these are not apparent and the pattern appears completely constant. Another interesting advantage over other aerials tried is the considerably reduced flutter. The bandwidth is adequate to cover the entire band and the s.w.r. measured at 145 Mc/s was 1.19 to 1.

As regards gain, it appears that the all-round figure is better than a dipole positioned in its best direction. Results would indicate an increase of approximately 3db.

Whilst mobile, contacts have been made with fixed stations under average conditions up to 100 miles.

Reference

"The Big Wheel on Two," by Robert H. Mellen, W1HJD, and Carl T. Milner, W1FVY, QST, September 1961, p. 42; October 1961, p. 60.

International Red Cross Tests

A series of test transmissions has been arranged by the International Red Cross Society. These will take place on September 21, 23, and 25, at 07.30, 13.00, 16.30 and 22.30 BST on 7210 kc/s. Reports which will be acknowledged by the IRCS direct from Geneva, should be sent to G.A. Allcock, G3ION, 71 Bassett Green Close, Southampton, Hants.

conducted by "JIX"

SO much for the art of soldering, discussed last month; but what about *unsoldering*? Thus asked a number of boys, relying as many do on stripping ex-government chassis or old television receivers for components, because the high prices of new parts are out of range of the slender resources of pocket money or paper round income. For other reasons too, unsoldering is necessary: for modifications to apparatus built already, or during experiments. The trouble is that more damage is likely to components while unsoldering them, either by wires breaking off or because of prolonged heating, than during the fairly short time when soldering them into circuit. It makes a difference whether the component leads are wrapped round the tags or not. On commercial equipment they nearly always are, although amateurs tend simply to hold the wire on the tag. For experimental work this is perhaps the best way. Taking out a component is then very easy, but for really permanent rigs, such as field day or portable equipment, which might receive mechanical shocks; the more stable wrapping round the tag produces a better joint which will not drop apart at the crucial moment.

To strip components off a tag panel or valve base, it is best to cut the leads and remove the whole section. Each tag is now heated with a soldering iron, but an important point is that flux is very necessary—recall the remarks about it last month. For this purpose a tin of flux is handy; a little can be dabbed on to the joint first. Otherwise a small amount of fresh cored solder can be run on with the hot iron. It may seem odd to add solder in order to unsolder, but the flux is the thing. With the joint thoroughly molten (watch the overheating of the components) the tag panel or unit is tapped smartly on the bench top or vice a few times. Solder is heavy and the momentum and mechanical shock carries off the liquid solder, leaving only a thin layer on the joint. The leads can now be unwrapped using pliers and wire cutters. This technique leaves the tag board with rows of clean, tinned tags ready for a new assembly, and the components have tinned, fairly long leads. Old waxy paper capacitors and electrolytics should be suspected right from the start. They are very prone to leaking and breakdown. Perhaps you have had troubles with this kind of thing (and pretty baffling they can be too!). The best policy is to throw them away.

"Fun with Transistors"

Mr Gilbert Davey has written another book for boys in the *Fun With...* series. Some of you may have seen one or more of the others, *Fun with Radio*, *Fun with Short Waves* or *Fun with Electronics*. Mr Davey writes in a chatty style and aims for beginners. *Fun with Transistors* is no exception and one or two practical designs for receivers and amplifiers have been included. The book costs 12s. 6d. and runs to 64 pages. It is a first edition and the price seems fairly high, although some beginners' books on radio subjects that have come out recently have been even more expensive than this one. Let's hope the prices fall on subsequent editions.

It is regrettable that a whole chapter is devoted in this fairly small book to commercial sets and kits, photographs of them and prices. Perhaps a few advertising pages would have served the purpose better—and enabled a reduction in price.

On page 25 the author says that the ferrite rod is metal and might short circuit parts of the circuit. I cannot agree with this and feel we must gently take him to task. Firstly ferrite is a compound of iron and the rods have a very high resistance so overcoming "eddy current" losses, and this enables the material to work at such high frequencies.

The warnings about using mains and transmitting are quite correct of course, but the transmitting licence requirements are not so difficult, especially for keen boys working together in a club. I wish Mr Davey had mentioned more about the schemes that exist. I was also sorry to see no mention of RSGB BULLETIN, *Radio Constructor*, *Short Wave Magazine* or *Hobbies Weekly*, all of which help to give beginners the feeling of belonging to a movement.

The mains, or any high voltage can be dangerous; so can motor bikes! The best policy in a fairly dangerous world is experience, good teaching and care. Sooner or later we all must learn to control the dangers; I believe the sooner the better by means of leadership, and good guidance in such books as Mr Davey's. However, Mr Davey's latest book should help to start off more "converts" to our movement and ought to be in the libraries of schools and clubs.

The Receiver

If you want to increase the volume of sound produced by such a receiver as the one we have been discussing in previous articles (May and July) then a stage of audio frequency amplification is the order of the day. This type of amplifier follows the detector and boosts the signal coming from it. The r.f. amplifier increases the sensitivity of the set, and enables more distant stations to be received, but the power output is set by the amount of a.f. amplification. One way of carrying out this operation is to include another transistor in the circuit, but a very clever dodge (although, of course, by its nature a little involved) enables the *same* transistor to be used again. This means that the transistor is operating

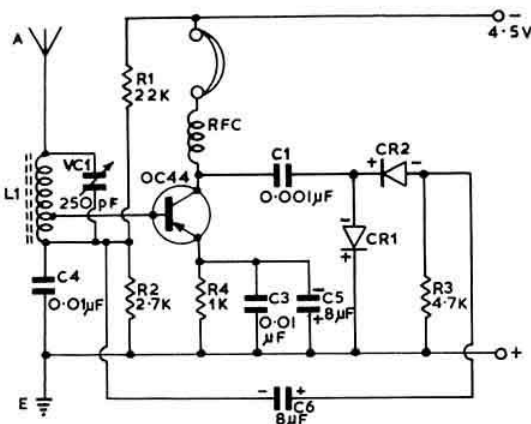


Fig. 1. This design is known as a reflex circuit, and is equivalent to a two-transistor receiver. By feeding the low frequency signal back, the transistor can be made to amplify twice.

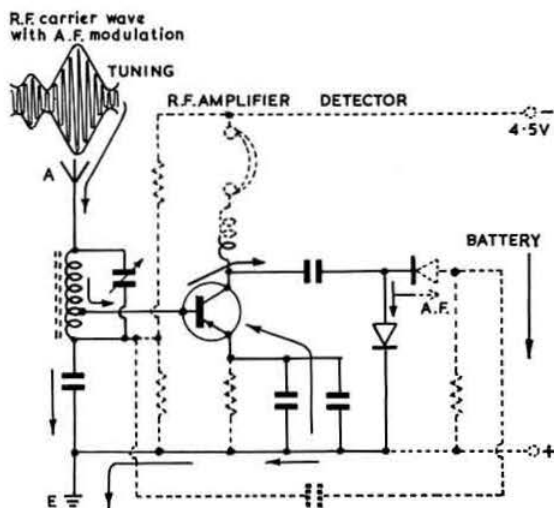


Fig. 2. The r.f. amplifier. Arrows show the paths of the high frequency signals.

as the r.f. amplifier, then follows the detector and the a.f. output from this goes back round the circuit to be amplified by the same transistor acting now as an a.f. amplifier. This is called *reflexing* the circuit.

Reflex circuits were popular with valves when they were expensive before the last war. How is it that the r.f. and a.f. signals don't mix and interfere? Well they do mix of course, but the secret lies in the large separation in frequency between the r.f. and a.f. which means that they can be guided round the separate parts of the circuit by the appropriate resistors, chokes and capacitors (condensers). It also depends on a law of physics called, in the big books, the "principle of superposition!" (look that up and see if you can get anywhere.)

The base resistors have been increased in value, to lift the input resistance. This reduces the loss of a.f. signals which would tend to occur down the original 270 ohms resistor. The emitter resistor now requires decoupling for a.f. as well

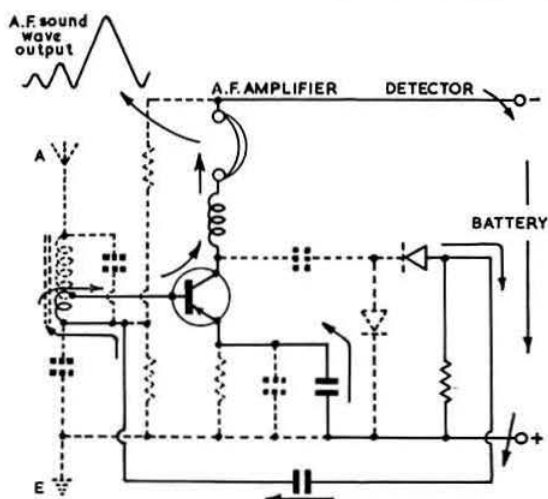


Fig. 3. The same transistor as Fig. 2 amplifying the audio frequency signal. The arrows this time indicate the low frequency signal flow.

as r.f., hence the large value ($8\mu\text{F}$) capacitor across the original. The $0.01\mu\text{F}$ capacitor can be left in place.

No detailed layout plan has been prepared this time, because if you have built the other circuits your experience should be sufficient to enable you to plan this one yourself. Of course if you are helping a younger boy to build these sets then again you can plan out the design with him.

News from Associates

The "A" Members' meeting held on Friday, July 10, in the South-West Essex/East London district resulted in quite an interesting evening. Visitors came from many distant parts, and in particular we are grateful to S. Gall, A4205 who came along from Coulsdon in Surrey, and B. A. Jarrelly, A3320 who travelled from Charing Cross, London (as we suspected, he finds the QRM and QRN level pretty high). The number of "A" Members representing the local area was rather insignificant, considering that the meeting was really a local affair. This reflects a general tendency we have noticed about this area of London (it is the area where your scribe lives), for there are quite large numbers of Amateur Radio enthusiasts here, but few manage to support the social projects. I am pleased to notice, however, that the general level of interest elsewhere appears higher than this. It is hoped that other groups of "A" Members will go ahead holding meetings, and *QUA Associates* will endeavour to report the results of these get-togethers; I hope you will write to me if this column could help you in any way. The meeting at Wanstead suggested that the next meeting should be held in the centre of London so that "A" Members from all around could come along. Please write to me if you would support a meeting such as this and whether we should have a lecture or two as well as the ragchew.

The Exhibition

The Education and Training Committee of the RSGB has requested me to ask you about equipment you have made and whether you will display it at the RSGB Radio Communications Exhibition (as I'm sure many of you will). There must be many interesting items of a simple nature made by Associates which would make a fine show, and form a focal point at the exhibition where we can meet. To encourage you to show your gear, it is proposed to have an award similar to the senior prizes for the equipment showing high merit.

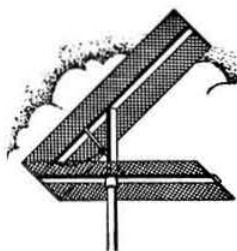
Reports for inclusion in this feature which will be most welcome, should be sent direct to Ken Smith, G3JIX, 82 Granville Road, London, E.17.

Special Events Stations

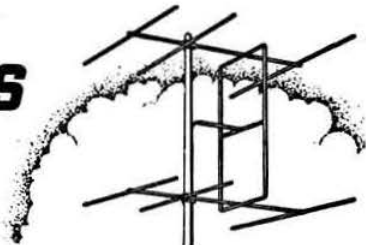
Members of the South Shields and District Amateur Radio Club will be operating GB3SFS at the South Shields Corporation Flower Show to be held on August 7, 8 and 9. An LG300 a.m. transmitter will be used on all bands from 160 to 10m.

The Southend and District Amateur Radio Society will be operating an amateur radio station at the International Boy Scout Jamboree, Belchamps, Hockley, Essex, from August 8 to 15. Activity will be on all bands from 160 to 2m. Visitors will be welcome to attend.

Until October 25, 1964, HB9RAS will be active on 80 to 10m on a.m., c.w. and s.s.b. at the Swiss National Exhibition. Amateurs are welcome to visit the station, which is located in the Leisure and Hobbies Section. Further details are available from Radio Amateurs of Switzerland, Ch. Liaudoz 9, Pully/Lausanne, Switzerland.



FOUR METRES AND DOWN



By F. G. LAMBETH, G2AIW*

It is unfortunate that the presence of sporadic *E* propagation, which appears every year around May/June, is not always noticed by operators at any given time. This situation is evidenced by the events of June 9, between 18.00/19.00 GMT, when three G stations were heard on phone by OK1GA, of Kutna Hora, about 45 miles south-east of Prague. No QSOs resulted, however, which is unfortunate. OK1DE, who sent this news, said that OK1KPR (Prague) also heard one of the G stations calling CQ over a period of 20 minutes. The stations heard were G3YH, G3IRS and a station noted as G3CTC which is possibly an error. They were all frantically called but regrettably, without result. Tape recordings were made.

It is noteworthy that OK1GA has a very poor QTH towards the west and during normal tropo openings finds it difficult to work even to DM at some 100 miles distance. This, together with a check of *E* layer recordings from this and the following days proves that it was definitely sporadic *E*. From early morning it had been apparent that a very strong layer was forming all over Europe and the bands above 40 Mc/s were full of Italian, British and Russian f.m. and TV stations at very good strengths. Frequencies used were: OK1GA 144.95 Mc/s, and OK1KPR 144.186 Mc/s. On later days, although *E* layer influence was regularly noted at 43 Mc/s, this apparently did not reach 145 Mc/s again.

Moonbounce

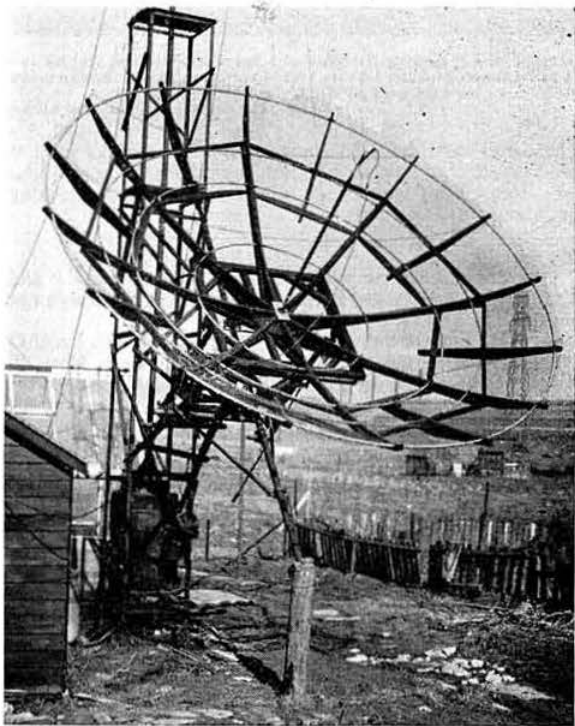
Official distance figures for the Moonbounce experiments are not yet available but unofficial records are as follows: On 2m KP4BPZ to DJ3EN approximately 4600 miles. KP4BPZ to G2HCG approximately 4200 miles. 2m record still held by W6DNG to OH1NL Moonbounce QSO made on April 11, 1964, over an unofficial distance of 5600 miles. On 432 Mc/s, or 70 cm, new record established between KP4BPZ and HB9RG over unofficial distance of 4600 miles. Follow-up record is KP4BPZ to G3LTF over unofficial distance of approximately 4200 miles. While G3LTF and G2HCG contacts with KP4BPZ do not establish new distance records, they do mark first QSOs on both bands between US and UK.

Further information has come from G3CCH about his Moonbounce experiments. A great deal of work was necessary, especially in re-siting the dish, if KP4BPZ was even to be heard. Signals on 70cm from KP4BPZ were heard for about half an hour on June 13 after which the dish could no longer track the moon. An interesting item was the reception of another station at the same time, about 200 cycles higher in frequency but much weaker and only for about two or three minutes.

The 2m effort did not even seem practical as no proper equipment was available, but KP4BPZ was heard for about

half an hour. G3CCH's equipment used on June 13/14 for 432 Mc/s was as follows: an AF139 transistor pre-amplifier and a grounded-grid A2521 into a G3BKQ converter, followed by the main receiver, a modified G2DAF. The crystal chain for the converter is buried in a waterproof can outside the shack to ensure both electrical and mechanical stability. The dish is 12½ ft. in diameter, fed by a semi-flexible cable with a continuous metal sheath (not braiding). For 144 Mc/s: a 6CW4 front-end and 2m converter, with a partly transistorized oscillator chain, followed by a G2DAF receiver. The same dish as for 432 Mc/s was used, but with a dipole reflector cut for 144 Mc/s. Frequent contacts were made with G3LTF on 144 Mc/s using s.s.b. to report progress.

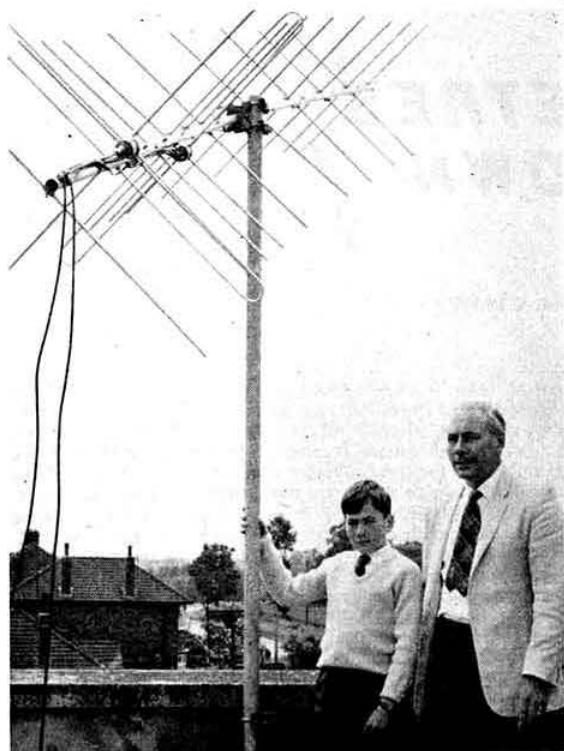
OH1NL also heard KP4BPZ on June 14 (2m), and called him at least 20 times, but regrettably there was no QSO.



The dish aerial in use by G3CCH. This is an example of how a dish aerial of useful proportions can be comfortably fitted into a relatively small area of land.

(Photo by G2HIW)

* 21 Bridge Way, Whitton, Twickenham, Middlesex. Please send all reports for the September issue to arrive by August 7, and for the October issue by September 11.



G2HCG, the Managing Director of J-Beam Aerials Ltd. and his son Jonathan seen with the J-Beam FRB10 aerial which was used to make contact with KP4BPZ via 2m moon-bounce.
(Photo by courtesy of Chronicle and Echo)

The signal was riding 25db over noise level on peaks and has been taped. OH2HK reports that the tape is really astounding. Recordings were made whilst KP4BPZ was working USA and other stations.

Meteor Scatter

G3CCH had skeds with UA1DZ between June 1 and 8 and quite a few good bursts were exchanged, though not enough for a QSO.

ON4TQ reports that ON4FG made a QSO with EA4AO (Madrid) during the Arietids D daylight shower. This will interest other MS enthusiasts to know that daylight showers do provide results. EA4AO tells us that his equipment during this QSO was running 260 watts to push-pull 826 triodes driven by a QQE06/40 and the aerial a 10 element long Yagi.

HB9RG (Zürich) worked UA1DZ (Leningrad) on 2m during the Geminids.

G3LTF (Galleywood) worked LZ1DW (Sofia) on May 3. The QSO lasted from 09.00-13.05 GMT. The report from Sofia was S25 whilst the Bulgarian station was S23 at Galleywood.

Now that the v.h.f. ice has been broken with Spain on 2m, F3SK asks us to look out for EA1CP (Santander 144.720 Mc/s), EA2DQ and EA2DS (Bilbao, 144.03 Mc/s).

The Contests Committee reminds us that the V.H.F. NFD will take place on September 5/6, at the same time as the IARU Region I V.H.F. Open Contest. Please let us have a bumper United Kingdom entry for both!

Remember to look for GB2GC transmitting from Alderney (Channel Islands) from September 5/7 inclusive, includ-

ing V.H.F. NFD. (See page 460, July BULLETIN). Frequencies: selected channels between 144.1 and 144.2 Mc/s.

Four Metres

G2BJY (Walsall) sends a very optimistic report about the 70 Mc/s Contest on June 20/21. Activity was high and at times conditions were surprisingly good. It was very like a 2m contest except that there was more c.w. being used! The outstanding signals received at G2BJY, outside a radius of 75 miles, were G8PD/A (with 100 QSOs by 18.00 on Sunday), G3PIA/P with a similar score, G3OJE/P (Bucks.), G3BNL/P, G3OSC/P, G3NJP/P (Lincs.), G3JZN/P, G3FDW/P (Millom, Cumb.), G5FK (Ruislip), G3POI/P (Croydon), G3LMG/P (Okehampton, Devon), G3KEU/P (Romsey) and G3PHG (Crawley). All this with a home-brew three element beam 18 ft. high made out of welded steel conduit! There was a host of fairly local stations on, all doing very well, and including G3OXD/P, G3AYT/P, GW3AHD/P, G3LHA/P, G3NUE and G2WS. Weak signals were heard from G2ASL, G3KFD, G3PKO, G3OUF, G3MOT, G3EHY, G3IUD and G3OHH.

G2BJY, himself with 8 watts input and an all home-brew rig using nothing more than an EF80, 1-12AT7 and EF80 front-end receiver, had contacts of over 100 miles distance with G3KEU/P (Romsey), G3FDW/P (Millom), G8PD/A (Woodcote, Oxon), G5FK (Ruislip), G3POI/P (Croydon), G3LMG/P (Okehampton), G3NJP/P (Claxby, Lincs.), and G3PIA (Wantage). GW3AHD/P was worked at 70 miles and G3FIA/M was heard several times for the only mobile. The best operating period appeared to be Sunday at 15.00/18.00 GMT. The verdict: this is a splendid band and will no doubt become increasingly popular.

G3PLX (Liverpool 12) says there has been a great increase in local activity and that there are now more than 20 stations around Merseyside, the latest additions being G8QO, G3PPN, G3GST, G3PDC, G2DVA, G3LIU, G3KOR, G3OIW, G3PVL, G3LNG, G3AKW, G3PYU, G4BM, G3RWM, G3ERB and G3BOC, with about half a dozen mobiles.

Most of the transmitters are converted commercial surplus gear, but some are completely home built. All stations can transmit on 70.26 Mc/s, a frequency now generally adopted for net working. Recently G3FNQ (Southport) went to Northern Ireland, and was at Newton Woods (Co. Down) as G13FNQ/M, where he was worked by G3PLX, and also by GW3MDK (Colwyn Bay). During the weekend of June 20/21 some of the Liverpool Club members took part in the contest from Erdurham Mountain near Wrexham. The members of the party were G3KOR, G3PLX, G3PPN, G3SKT and his SWL brother. G3PLX's home transmitter runs 40 watts to a QQV03/20A and is v.f.o. controlled.

V.H.F./U.H.F. BEACON STATIONS

Call-sign	Location	Nominal Frequency	Emission	Aerial Direction
GB3CTC	Redruth, Cornwall	144.10 Mc/s	A1	North-East
GB3VHF	Wrotham, Kent	144.50 Mc/s	A1	North-West
GB3GEC	Hammersmith, London	431.5 Mc/s	A1	East

RSGB V.H.F. BEACON STATION GB3VHF

The frequency of the Society's v.h.f. beacon transmitter at Wrotham, Kent, when measured by the BBC Frequency Checking Station, was as follows (nominal frequency 144.50 Mc/s):

Date	Time	Error
May 26	13.40 GMT	670 c/s high
June 2	15.15 GMT	1030 c/s high
June 9	11.05 GMT	410 c/s high
June 16	11.02 GMT	540 c/s high
June 23	11.50 GMT	640 c/s high
June 30	13.45 GMT	430 c/s high
July 7	14.00 GMT	533 c/s high
July 14	09.50 GMT	990 c/s high

GM3CIX (Glasgow) put together (very rapidly for the contest) some s.s.b. equipment for which circuit diagrams have been sent to us. This equipment is very simple. The transmitter requires about 1 to 2 watts input of s.s.b. on 21 Mc/s, and runs about 90/110 watts p.e.p. input to the 6146 final amplifier. The measured output on single-tone is approximately 50 watts. Good QSOs have been had with GM3EGW and GM6XW 5 and 9 plus both ways to the north-east, the best direction being from the north side of a hill!

G3HWR (Hampstead) is now principally on this band with a new 6146 p.a. at 50 watts and an indoor cubical quad in place of the dipole. G3OCB/P was worked during the contest, and G5ZT (Plymouth) and G3YH (Bristol) on June 27. After an unsuccessful try for EI2W on June 28, weak carriers were being heard from the north, which is very pleasing.

During the contest, **G5FK**, (the GEC Club) collected six new counties among the 71 QSOs made. During the latter part of the contest only about two or three stations were heard above 70.5 Mc/s. Five stations were put on by the GEC Club this year: G5FK, G8PD/A, G3HWR, G3RPE and G3SJT with a total of eight operators.

G3RPE has moved to a new site west of Hemel Hempstead and reports much better results. G3SJT, after a week on the band recently, had worked more than 20 stations.

G3HWR says the following stations are known to be on 4m: Cornwall, G3OCB/P; Devon, G3LMG, G3LMG/P, G5ZT; Somerset, G3EHY, G3ICO, G3YH; Glos., G2AOK; Wores, G3NUE.

In order to stimulate activity and render QSOs somewhat easier to achieve, G3HWR suggests a "calling frequency" (70.26 Mc/s) analogous to the maritime system hallowed by long usage, for short CQ calls. After an initial call on that frequency, e.g., "CQ de G3HWR, I am going to operate on 70.28 Mc/s," after which the whole band is tuned. Anyone monitoring this calling frequency will then know who is on. Receivers can be left on the calling channel during interim periods or whilst work is being done. 70.26 Mc/s is the netting frequency and presumably would be satisfactory for this purpose. This method should only be used on a dead band, and when activity is brisk usual frequencies should be employed.

The 70 Mc/s Contest was very interesting in Scotland, writes **GM2CHN**, and it was surprising how many stations appeared. It seemed as though the entire 2m population had migrated to 4m.

GM2CHN himself heard 11 stations and worked 10, five of these for the first time on this band. The calls were: GM3EGW, GM6XW/P, GM3GUO, GM3OCV, GM3FYB, GM4HX, GM3OTF/M, GM3GPK, GM3JN and GM5VG and the "got away" was GM3CIX on sideband.

Unexpected interest was added by the appearance on Sunday morning of GM3OTF/M who was returning from holiday up north and passing through Glasgow on the way back to Stranraer. A B44 was putting some 3 watts of very readable r.f. into a quarter-wave whip. The frequency is 70.425 Mc/s and it will be interesting to see if Glasgow QSOs can be made from the home QTH with a better aerial. GM3OTF/M is also looking forward to working G and GI stations from high ground near the Mull of Galloway.

Reports and comments for the Four Metres and Down column should be sent direct to G2AIW at 21 Bridge Way, Whitton, Twickenham, Middlesex.

Any queries or requests for information on v.h.f. matters and awards, or on Society policy, should be sent to RSGB Headquarters for the attention of the V.H.F. Committee.

G8PD (Wembley) was portable at Woodcote (S. Oxon.) for the contest of June 20/21 and made 105 QSOs in 32 counties and three countries, which sounds more like 2m than 4m. It shows that the activity is now very good. More stations were worked on the Saturday than during the whole contest last year. The best DX was Dublin. No GMs were heard. If any GMs heard the G8PD/P signals, reports would be appreciated.

G3PMJ (Gorton, Manchester) has been active since May 26, 1962, and has accordingly gained a lot of experience on 4m. About 80 different stations have been worked, most of them on phone, but many on c.w. The p.a. is a QQV03/20 at 30 watts, modulated by a pair of 6L6s in Class AB. The receiver is an ECC89 cascode r.f. amplifier into a 12AT7 grounded grid amplifier and mixer.

G3PMJ says that the North West does not want a 4m Band Plan. If the band were split as outlined by G6NB, the "poor GMs and EIs would be out of the running." The EIs still apparently have only 70.2-70.4 Mc/s and the GMs are restricted to only part of the 600 kc/s available. It would, however, be a good thing if all mobile operation were on what is now the national mobile frequency of 70.26 Mc/s, and that possibly c.w. operation should be at the bottom of the band.

G3OCB (Truro) and his friends got a station ready in time for the contest. The first time the Cornish V.H.F. Group heard a 4m signal was just prior to the day, when G5ZT/P was worked. However, they were very pleased to get 5700 points from 29 contacts. In September they will be working on 2m and 4m with hopes of 70cm next year. Conditions on 4m were not severe. The best contacts were EI2W and several stations in Lancashire and Yorkshire. It is hoped to have 4m stations ready soon at G3OCB and possibly also at G3XC, G3NVJ and G3AET.

G3OUF (Ealing) reports generally poor conditions during the contest. New counties worked on phone were Oxford (G8PD/A), Berkshire (G3PIA/P), Cornwall (G3OCB/P), Gloucester (G2AOK) and Stafford (G3AYT/P). C.w. was exchanged with G3LMG/P (Devon), G3BNL/P (Notts.), G3KEU/P (Hants.), G3OXD/A (Staffs.) and GW3AHD/P (Denbigh.). The QRM was very heavy at times, particularly within the limits of the old band. A total of 65 stations have now been worked, the most recent being G3SGA and G3SZG.

For several days in the middle of June several Continental broadcast stations were heard by sporadic E.

G3FDW (Seascale) reports that the Cumberland and Westmorland V.H.F. Group used the call G3FDW/P for the 70 Mc/s Contest and collected 5977 points for 53 contacts. The best DX included 3 QSOs at over 250 miles. Stations called respectively without success included G2AIH, G3OUF, G3RWM, G3SKT/P, G3OCB/P, G5FK, GM3GDU/P and EI2W, a missed total of about 1,500 extra points!

G3FDW is now equipped with a four element beam and uses s.s.b. on the frequency of the station being called. The transmitter is v.f.o. controlled and operates between 70.1 and 70.45 Mc/s.

RAEN Activity on Four Metres

Included in the recent extension of the 70 Mc/s band (now 70.1 to 70.7 Mc/s) is provision for the use of 70.375 Mc/s \pm 25 kc/s for RAEN purposes. The terms of the new licences permit *only* this frequency to be used for emergency networks. Because of the availability of surplus commercial equipment, and the excellent coverage to be obtained, the 70 Mc/s band plays a very important part in RAEN activity, and in order not to prejudice and reduce the usefulness of this band for emergency communications, all members are particularly asked to avoid causing unnecessary interference to any RAEN exercises which may take place from time to time on 70.375 Mc/s \pm 25 kc/s.

Two Metres

GC2TR (Jersey) has no difficulty in keeping skeds with stations like F8VN (Chartres) and F8AT (Tours) with almost complete success. F8NL in the Pyrenees comes in most days, up to S9 when conditions are good. Sometimes he has been the only station audible to the south. Working from Jersey to England is usually difficult due to rising ground to the north which gives at least a 20db loss under normal conditions, even with a six-over-six at 60 ft. G stations recently worked include: G3JGJ, G2JF, G3KDG, G3KEQ, G6OX, G2AXI, G5TZ, G3NEL, G4AP, G3RMB, G2DSW, G2FMJ, G3JXN, G3GHO, G3IGV, G3LIS/M and G3MPS.

G2WS (Coventry) will be operating in Pembrokeshire during the period August 30 to September 10 as GW2WS/P and hopes to be on Prescelly Mountain in that county on V.H.F. National Field Day. In passing, G2WS remarks on the conduct of some /P and /M operators who think it clever to call CQ whilst carrying on conversations, sometimes with unseemly comment, with their families and parties in the background. This can be most annoying to listening stations, and is in any case the kind of exhibitionism and bad manners which tends to bring Amateur Radio into disrepute.

G3SML (Earl Shilton) has now worked 160 stations in a total of 36 counties. A recent strange happening was that three GW stations (GW8NP, GW8UH and GW5BI) were all worked within two nights, all in Cardiff. The point is that GWs are rarely heard at Earl Shilton. G13GXP was also heard (but not worked) recently—another difficult path.

G2JF (Wye, Ashford) found good propagation conditions from June 9 to 17, when F9NL, F8NS, F9BP, F8XT and F1FG, all between 300 and 600 miles distant, were worked. The period from June 26 to 29 was also very good with EI2W and GW3LJP as the outstanding QSOs to the west. The portable contest had conditions below normal at the outset, but things had improved by Sunday morning. The best signals during the period were G8SB/P, G3OBD/P, G3MDH/P, and G5ZT/P. F9NJ worked GW3RUF. G2JF worked 10 Fs, 27 Gs, 25 PAs, four DLs and 41 ONs. ON5DK, one of the star continental stations, worked 37 PAs, 38 Fs, one LX, 16 DLs, 38 Gs and GWs. PA0CML had 96 contacts. All these stations seemed to be having difficulty in defining the QTH of the G stations worked, but it is hoped that this problem will be solved ultimately.

Owing to an oversight last time, we missed recording G2JF's phone QSO with PX10X on June 16. This is of course a first for both of them (PX10X is really F2QX). Congratulations to both stations.

New stations to the 2m band in the Kent area are G3KFO (Deal), G3BHW, G3LTM and G2JC (all in Thanet). G3BHW appears to be making a name for himself on 2m with a record comparable to his fine DX achievements on the h.f. bands. However, G2DCG who is within a range of 150 yd. from G3BHW's aerial ruminates on the wisdom of encouraging ones friends and neighbours to share 2m thrills. G2DCG can now be heard much more strongly than previously, for he has recently graduated from an input of 2 watts to 60 watts to his p.a. but not before he had worked 100 different stations with the low power.

Maidstone is well represented on 2m nowadays with regular signals from G3ABZ, G3LZ, G3SDI, and G3GZJ, the latter station having a very nice s.s.b. signal. G3KMP maintains a daily schedule with F2XO (Boulogne) and they appear to provide one another with signals which leave nothing to be desired. Ashford is still represented by G3IIZ, G8RK and G8BJ, whilst Reg Denner, G8RK is now putting out a very nicely modulated signal of some quality. G8BJ is often heard mobile, and pops up at odd places whilst on business trips. The district welcomes the newest and youngest amateur, Gregory Trice, G3SXX/T, aged 16,

who is already well known for his advanced knowledge in electronic matters.

G3MTG (near Bridgwater) has found conditions poor lately, and on several occasions no stations were heard. G2UN, G3SML and G3LAY, however, have been worked.

G3OCB (Truro) says that conditions improved towards the end of June with some of the London area stations available. G2DQ was very good at times. In the 2m event of July 5 conditions were quite good and some 76 contacts were made. The points are estimated at over 15,000. Six countries were worked (G, GD, GI, GW, GC and F) and it was nice to hear the GD and GI stations coming in so well. G3BJD (Seascale) was heard weakly. The Cornish boys had a 16 element colinear array and a 24 ft. long Yagi available for comparison: each has its advantages.

G3AET is operational again on 2m from a site 600 ft. a.s.l. with a TW2 and five element Yagi. The frequency is 144.64 Mc/s. Regular activity from the area at present comes from G3XC, G3IGV, G3NVS, G2BHW, G3AET, G3EKM and G3OCB.

G3EMU (Canterbury) found no snags in the Second 144 Mc/s Portable Contest apart from very cold winds. As the PA contest ended just 2 hours after ours started, the first attack was directed there, and nine stations were worked. G3MDW/P and G3OBD/P were the best GDX. GWs were heard, but not worked. Dutch s.s.b. stations have stated that they normally call on 144.13 Mc/s.

G3PBV, having worked 14 countries, 60 counties, and 1330 QSOs at the old QTH is now at Abington Vale, Northampton. G3THC is shortly coming on to fill the gap at Wolverton.

G5MA (Gt. Bookham) has been working the Irish in a big way. During the period under review, EI2W, G13GXP and G13GXP/M (Mountains of Mourne) and G15AJ have all been worked. G3KCB/P was worked twice, while GW2HQ in rare Merioneth was worked six times on c.w. on sked.

G3IOE (Newcastle-on-Tyne) is a regular contact (c.w.) on sked also. A couple of PAs have also been worked and there was a near QSO with GM2TW who came back to a CQ call but was not heard again. G2FO (Stockton-on-Tees) has also been worked a few times.

During NFD on June 6/7 there were two Scottish stations working on 2m, GM3RCS/P (Fenwick Moor) and GM3CCV/P (Mid Lanark Group). Both confined their attention to 2m and had FB contacts with several local stations, but there seemed to be very little DX.

An ex-VE station (now GM3SKS) has settled down in his new QTH and has become active on 2m. GM2DPW is again active on 2m and 4m. GM4HX has been actively testing on 4m, whilst GM3FVB (Dunfermline) is busy arranging skeds, in an effort to get 70cm signals into GI and G.

Seventy Centimetres

G3OBD (Poole) heartily agrees with G3KEF about the duration of 70cm contests. Being badly located at home, all his v.h.f. activity is portable, and the period suggested (18.00/24.00 GMT) would be ideal. G3OBD is sure that the activity which is now spread over 24 hours would be concentrated in the six.

G3LTF (Galleywood) thinks we should certainly miss out the afternoon period, as conditions are seldom any good at this time. This would make time for odd jobs so as to be ready with a clear conscience for the evening session when conditions are always better. This does not apply so much to 2m, but certainly does to 70cm.

On June 25 G3LTF found a minor opening and worked PA0COB and PA0HRD. The next night PA0COB, ON4HN and PA0VLP were worked.

The following are the leading claimed scores for the First 420 Mc/s Contest 1964. They are subject to checking:

1. G3EGV/P .. 5881	8. G3PSA/A .. 2218
2. G3LTF .. 5463	9. G2RD .. 1822
3. ON4HN .. 3778	10. G3MEH .. 1297
4. G3NNG/P .. 3339	11. G3OBD/P .. 1274
5. G3LQR .. 3237	12. G3EDD .. 1251
6. G3KEF/P .. 2392	13. G3FIJ .. 1228
7. G2XV .. 2390	

G5FK is getting on 70cm with a DET24 p.a. at 20 watts, as is **G3RPE**. Accordingly **G3HWR** is refurbishing the 70cm home station.

BRS21476 is now 6Y5FH in Kingston, Jamaica, and it was interesting to hear from him recently. The local v.h.f. allocations are 50-54 Mc/s, 145-147 Mc/s and 420-450 Mc/s. There does not appear to be any organized activity on 2m, although this is likely to change in the near future, but 50 Mc/s is a different matter, and it is hoped to work the United States and some South American stations. Also, if propagation conditions are favourable, 6Y5FH will be transmitting on 50 Mc/s and looking for 50/28 Mc/s cross band QSOs with G stations. His address is Dr. F. W. Hattemore, 3 Circle Close, Trafalgar Park, Kingston 10, Jamaica.

With 25 watts and a 2 element indoor aerial **G3EKP** (Belthorn, Lancs.) has recently worked 32 stations in 7 counties.

Twenty-three Centimetres

On July 16, **F8MX/A**, St. Valery, worked **G3MPS**, Glastonbury, Somerset, on 23 cm to establish a new G/F record for the band. Signals were RS2/3 both ways; the contact was repeated next evening when signals peaked S6. The distance

between **G3MPS** and **F8MX/A** is 280 km. **F8MX/A** also worked **G3OBD/P** near Swanage on July 17 and **G3MPS** was contacted again on July 19. **F8MX/A** used a modulated 2C39A tripler, two stacked 15 element Yagis and an extremely simple strip line converter using a 1N23C mixer. **G3MPS**'s transmitter employs a 2C29A p.a. driven by a 2C29A tripler, the measured power output being 25 watts. His aerial is a 4 ft. paraboloid dish.

G3YH reported to **G3HWR** that **G6GN** (Bristol) was on this band during the tests of June 28.

G5FK hopes to be on the band soon. Gear is also available for 2300 and 10,000 Mc/s which can be activated if there is sufficient inducement. If there are others interested in these bands please let **G5FK**, or this column, know about it.

GM2CHN reports that tests in Scotland have been somewhat disappointing so far, although **GM5VG**, **GM3GUO** and **GM3GPK** (all local to Glasgow) and **GM3FYB** (Dunfermline) are all actively testing. QSOs however are proving surprisingly elusive, the band being a tougher nut to crack than was supposed. However, results are confidently expected soon.

During the tests on June 28 **G3OBD/P** (Bullbarrow Hill, Dorset, 900 ft. a.s.l.) worked **G3MPS** (Ashcott, Som.) at about 30 miles (589). Later, **G3EGV/P** was worked, his location being high ground near Weymouth at 20 miles (589). The equipment used was a DET24 tripler (to a design by **G3KFD**) delivering about a watt to a 4 ft. dish on a tripod. The receiver was a conventional crystal mixer trough line converter built by **G3NAE**, leading into an HRO at 24-26 Mc/s.

G3LTF (Galleywood) worked **G2CIW** 56/39 both ways on June 9. On June 26 an S2 signal was heard from **PA0VLP** and **PA0COB** was worked.

Historic Occasion

By JOHN CLARRICOATS, O.B.E., G6CL*

ON the occasion of the Fifth International Mobile Rally organized by the Amateur Radio Mobile Society, the Radio Services Department of the Post Office gave permission for the rally station **G3NMS** to be operated by licensed United States radio amateurs under the direct supervision of the licensee of that station (Mr N. A. S. Fitch) or of any of the "additional operators." The Rally took place at the RAF/USAF Air Base, Barford St. John, Oxfordshire, on Sunday, July 5, 1964.

For many years the Council of the Radio Society of Great Britain has been pressing the Post Office to allow licensed United States and other foreign radio amateurs stationed in, or visiting, the United Kingdom to operate amateur transmitting equipment under licence from the Postmaster General but it has constantly been pointed out that any use of radio in the United Kingdom must be under and in accordance with a licence granted under the Wireless Telegraphy Act, 1949. One of the conditions under which amateur transmitting licences are issued in the UK is that applicants must be British subjects.

Although the Barford St. John Rally was regarded by the Post Office as "an exceptional occasion," amateurs, generally, can now look forward to the time—not too far distant we hope—when the present restrictions, which prevent foreigners from operating amateur transmitting equipment in the United Kingdom, will be lifted.

Passage of United States Senate Bill 920 on May 28, 1964,

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amending the Communications Act of 1934 so as to permit reciprocal operating agreements between the United States and other countries, opens the way for the US State Department to enter into agreements with individual countries willing to allow US citizens to operate amateur transmitting equipment when their own citizens are permitted to operate in the United States.

The "exceptional occasion" at Barford St. John on July 5, 1964, was certainly historic because never before have licensed United States amateurs on duty in the United Kingdom been free to operate amateur transmitting equipment over here.

July 5, 1964, was also the 51st anniversary of the foundation of the London Wireless Club, from which sprang the Radio Society of Great Britain. The Society, which has represented the interests of all radio amateurs in negotiations with the Post Office and other Government bodies throughout these fifty-one years, will continue its efforts to persuade the Postmaster General to enter into reciprocal agreements with any foreign administration willing to grant amateur transmitting facilities to British subjects.

Has Barford St. John opened the way?

Krangi War Memorial

Mr I. H. Crowther, VS1ME, lives within four miles of the Krangi War Memorial, Singapore, which commemorates the death of 24,000 British and Allied soldiers in the last war. If any member had friends or relatives who are buried at Krangi and would like to obtain a colour transparency of the grave, VS1ME will be pleased to provide this for them; he may be contacted either over the air or by writing to 20 shed, 389 MU, R.A.F. Seletar, Singapore 28.

Mobile Column

By E. ARNOLD MATTHEWS, G3FZW*

RSGB Mobile Rally, Wethersfield

This popular event in the mobile calendar was held at the United States Air Force Base at RAF Wethersfield, Essex, on Sunday, June 28, 1964.

About 750 people from all over the UK attended the rally, which took place during rather indifferent weather conditions. The rally was undoubtedly a great success, with the trade stands well attended, and particularly the Government Surplus stall. It was, however, very disappointing to the organizers that three of the main attractions did not materialize owing to Service commitments, and after the local farms were scoured for bales of hay to mark the perimeter of the track, the Go-Karts broke down en route. Events that were staged included a demonstration of fire-fighting by the monster fire-fighting vehicles used at the base: it is rumoured

This meant that H. P. Dadd, G3MCG, was not able to accept an award for the safest mobile installation, as he had previously won it earlier in the year.

Visiting personalities were the President of RSGB, G3FZL, the Executive Vice-President G3IIR, Members of Council G6NZ, G3HRH, and G3FUR, the Honorary Editor of *Mobile News*, the Journal of ARMS, Members of the ARMS Committee, and the holder of the first allocated Amateur (Sound) Licence B: G8AAA.

Thanks are due to Col. Baer, the Base Commander of RAF Wethersfield; Major Clark, the Project Officer for the Rally, and his staff; the USAF Police; the trade exhibitors for their support; members of the Chelmsford ARS who provided talk-in facilities on 160 and 2m, and to the many people who offered to help when needed.

Hunstanton "Bucket and Spade Party"

Amateur TV was the special attraction of this well-established event which is organized by **Peterborough ARS**, assisted by **March ARS**. This year's event was held on June 14, and visitors watched monitor screens in a tent, a cafe and



The turnout at Wethersfield. Hundreds of vehicles sporting all shapes and sizes of aerials were efficiently marshalled on a vacant runway by the US Air Police. (Photo by G5UM)

that the fuel consumption of these vehicles is 3 m.p.g.! An F100 jet was on show, and the USAF opened for inspection the control tower and associated v.h.f. and u.h.f. transmitter stations. Visitors also took full advantage of the opportunity to inspect the MARS station. The Chelmsford Police demonstrated their doppler radar apparatus which measures the speed of passing objects, and the record speed of the day was achieved by a junior op's rubber ball! A fine display by the Romford British Legion Boys' Band was much enjoyed by everyone.

The prize winners of the three classes of awards were: For the Best Home Constructed V.H.F. Installation, P. J. Seaman, G3OTN. For the Best Home Constructed H.F. Installation, R. W. Bishop, BRS24770. For the Safest Overall Mobile Installation, W. R. Stevenson, G3JEQ. The prizes were presented by the President of the RSGB, G. M. C. Stone, G3FZL.

The judges were unable to award the prizes for the commercial classes of installed apparatus, for in their opinion little had been done to fit the equipment properly. It is very strange that people are willing to spend many pounds on first class equipment, and then leave it lying on the seat, parcel shelf, or even on the floor, where it is a menace to driver and passenger in the event of an emergency stop or accident. Although a major clean-up has been going on with aerial installations, there are still far too many trailing cables and dangerous projections in many of the cars on view. It is, incidentally, a rule of the RSGB that any contestant who has won an award at an RSGB Mobile Rally is ineligible for the same award at any other RSGB Rally during the same year.

* 1 Shortbutts Lane, Lichfield, Staffs. Please send all reports for this column to arrive by August 7 for the September issue, and September 4 for the October issue.

a bar as 40 mobiles were talked into Hunstanton by G3ANM/A and directed to three cameras where drivers were interviewed by G3KPO and described their equipment. The cameras were manned by G3REH, G3RGX/T, G3PGF/T, G3KKD/T and G3OAT/T.

Prizes were presented to J. Bellamy (jnr. op. G3ARD) of Spalding, and G8QM, of Newmarket, by Mrs G. A. Whiting, YF of G3MMS. The Hunstanton host was G3JEC.



Perhaps the most spectacular aerial at the Wethersfield Rally was this enormous whip with a Minivan plugged into its base. (Photo by G5UM)



At the Hunstanton Mobile Rally, amateurs attending were interviewed on an amateur TV system. G3REH is seen here training the camera on G3KPO.

(Photo by G3KPO)

Thanet Radio Society Mobile Rally

Held on the cliff top at Pegwell Bay, Ramsgate this rally had an unsolicited attraction in the form of a practice air-sea rescue by an RAF helicopter! A total of 50 cars attended, of which 30 were equipped for operation on 160m, and six for v.h.f. (2m and 4m). The usual raffle was held, and there was a display of CD radio equipment. Competition winners were: G3OGB/M (best receiver), G3LCB/M (best transmitter), G3JEQ/M (furthest distance travelled, and furthest distance worked), G3SXX (valve identification). Talk-in stations operated on 160m, 4m and 2m.

Longleat Mobile Rally

The seventh Longleat Mobile Rally was undoubtedly a great success. It was attended by over 600 people who came in 250 vehicles, 134 of which were equipped with mobile gear.

The Top Band and 2m talk-in stations were located on the rally site and were in operation from 10 a.m. until 3.20 p.m., contacting a total of approximately 70 mobiles.

All 2000 raffle tickets were sold by 3 p.m.: there were more than 60 prizes to a total value of about £50.

The DX Balloon Race, in which 200 balloons were entered, has yielded one tag from Bruchsal, Western Germany (over



Presentation of a Certificate of Merit to G3EIX/M, the winner of the Highest Field Strength test, by the Marquess of Bath at the Longleat Mobile Rally on June 21. The Rally organizer, G3JMY (centre) and G3NOO (right) look on in approval.

(Photo by G3GMN)

500 miles in 22 hours), one from near Carenten, Manche, France, and one from Noyes Bocage, Calvados, France, as potential winners of £2 10s. in prize money.

Winners of the various events were as follows: concours d'elegance for the finest all-round mobile installation, T. Russell, G3JFH/M; highest field strength, P. Naish, G3EIX/M; most accurate frequency, T. Russell, G3JFH/M; longest double journey, R. Cutts, G3RJM/M; 160m DX mobile-control, J. Parker, G3IWW/M; 2m DX mobile-control, J. P. Wren, G3IRA/M.

Certificates were presented by Lord Bath during the afternoon.

The weather, although showery at times, turned to the typical Longleat variety in the late afternoon and everyone went home satisfied with a most enjoyable day's outing.

NARMS Rally

There was a record attendance of about 2500 at the Northern Amateur Radio Mobile Society's rally held at Harewood Park on May 24. Of over 400 cars which took part, approximately 350 were fitted for mobile operation, mostly on Top Band.

The Top Band talk-in station used the call-sign G3OGV/A and made 99 contacts while G3NAO/A talked-in a dozen mobiles on 2m.



This view over the roofs of some of the cars suggests a large gathering of active mobile operators at the Northern Mobile Rally, Harewood Park, near Leeds, on May 24. In fact, more than 300 cars conveyed well over 1,000 people to the site.

(Photo by G3MZC)

The novelty receiving competition was won by G3ESP of Ackworth, and G3JFH of Cheltenham won the prize for the longest distance travelled.

Trade stands were organized by Jack Tweedy, N.W. Electrics, Halson Mobile Whips, Green and Davis and J-Beam. The RSGB was represented by the Regional Representative, Mr J. R. Petty, G4JW, and the Zonal Representative, Mr L. N. Goldsbrough, G3ERB.

The programme also catered for the ladies and junior ops, and the fine weather helped to make this a very enjoyable event for everyone.

ARMS Mobile Rally, Barford St. John

Never having visited Barford St. John before, we began to wonder what was in store for us when we were told by a local policeman that it was "rather out in the wilds." However, we found the USAF Station without much difficulty, and were greeted by an imposing array of rhombics, log periodics and beams as we turned into the entrance to find our way to the site of the ARMS Rally, held on Sunday, July 4, 1964.

Despite a rather cold wind, the weather remained fine, and allowed all the visitors to take full advantage of the varied programme which had been arranged for them.

In addition to several mobile display units from commer-



Keen v.h.f. operators Geoff Stone, G3FZL (President of the RSGB), and Austin Forsyth, O.B.E., G6FO (Editor of The Short Wave Magazine) find time at the ARMS Mobile Rally on July 5 to discuss IQSY, Project Oscar, and recent E-M-E DX contacts.

(Photo by G6CL)

cial firms, there was a good selection of equipment and components on view inside a hangar. One of the more unusual items was a laboratory model gas laser, exhibited by G. E. Bradley Ltd.

There was also an enviable but more orthodox collection of amateur gear, including KW Electronic's Transceiver KW2000, and the Courier Communications Transceiver CTR1 with a.c. and d.c. power supplies. The RSGB had a bookstall, and exhibitors and public were treated at varying intervals throughout the day to an electronic organ recital by Mr. Geoff Rixon. The organ itself was particularly popular with the children, many of whom appeared to be aspiring Sandy MacPhersons.

During the afternoon, we were entertained by the third USAF Band, and on a slightly different plane, by a group called the "Wanderers" who had the usual formidable array



For the period July 4/5, during the ARMS Mobile Rally at Barford St. John, permission was given by the GPO to allow American licensed amateurs to operate G3NMS/A. K4RUT makes the first QSO, watched by G3FPK, Honorary Secretary of ARMS.

(Photo by G3NMR)

of amplifying equipment (do they have their own private electricians, we wonder?) The Red Cross gave an extremely informative demonstration of "do's and don'ts" of First Aid.

The high spot of the day came with the arrival of the Mayor and Mayoress of Banbury. The Mayor was to present the prizes, but before doing so, was shown round the site and expressed a very keen interest in everything he saw; we are hoping that he will be able to visit the RSGB Rally at Woburn Abbey later on this year.

However, something that marked this rally as a unique occasion in the amateur world was the never-before-heard sound of an American voice operating a British amateur station. Special permission had been obtained from the GPO for licensed US Amateurs at the base to operate the talk-in stations on 160 and 2m for the duration of the rally; an auspicious occasion if ever there was one.

South Shields Mobile Rally

This Rally, organized by the South Shields and District ARC, which took place on Sunday, July 5, was attended by some 300 people. There were 75 cars on the site, of which 28 were mobiles: of these, 27 were on Top Band, and one on 2m.

The best mobile was judged to be G3CKC of Hetton-le-Hole, who scored 86 points out of a maximum possible of 96 in a quiz covering all aspects of mobile operation. The driving competition was won by G3RFU of Washington and G3MGI of Leeds was the winner of the parking test.

In the transmitter test, competitors had to transmit on a given frequency, and were then checked against a BC221. The most accurate was G3LOM of South Shields.

The Morse test was won by G3EEQ of Sunderland who received as a prize the specially built transistor oscillator which was used for the test.

Amongst other events there was the ever popular junk sale and also an odd sounds quiz in which about 50 visitors took part.

The longest distance travelled by a mobile was G3GEJ who made the round trip from Letchworth, Herts.

Due to the generally cool weather, and some early showers, the refreshment marquee proved to be a popular attraction.

Forthcoming Rallies

G3EJA informs us that the next Mobile Picnic organized by Reading ARS will be held at the Childe Beale Trust Pavilion, Lower Basildon, Pangbourne, Berks., on September 13. Talk-in stations will operate on 160m and 2m. For the benefit of those who are unable to read these stations through QRM from Reading trolley bus wires, if the wires are followed from east to west through the town they will act as a guide to the venue. Screen stickers are available free of charge from G3EJA, and these will assist parking at the site.

Further afield, the VERON Mobile Rally to be held at Leiden during the weekend September 12/13 has a full programme. Talk-in stations will operate on the evening of September 11 and the morning of September 12. The rally proper commences at 14.00 on that day, continuing until 18.00, after which there is a reception, followed by dinner and the presentation of awards. On the Sunday, the morning is free, and there are several organized sightseeing trips around this old university town during the afternoon. Temporary /M licences will be issued to foreign licensed operators by the Dutch authorities. Cost of the rally is Hfl. 20.50 (about 2 guineas) per person for dinner, bed and breakfast, plus Hfl. 10 per mobile station. Applications for entry are to be made to P. van Weerlee, PA0YZ by August 10.

A limited-entry rally, the "Het Brugse Vrije" Rally is to



A competitor taking part in the parking test at the South Shields Mobile Rally.

be held by the West Flanders section of UBA on September 6, and the Belgian authorities will issue temporary licences to cover operation in the event, which appears to be a serious test of equipment efficiency and operator competency rather than an opportunity for a social gathering. There will be three control stations (1 on 80m and 2 on 2m) and each of these will have no more than 12 mobiles under control, so that total entries cannot exceed 36 stations. This, however does not deter the organizers from ending their information circular, "We hope to see a great number of participants!" Applications for entry should be made to ON4HQ by August 20. Participation charges, not including accommodation, etc., appear to be Bfr. 52.100 (about 8/-) plus a small amount for gratuities. Application for temporary licences must be made separately to the Director General of the Belgian RTT before August 10.

Operating Notes

G2BCX will be operating /M on the Norfolk Broads from September 19 until September 25. A 10 watt transmitter will be feeding a 20 ft. loaded vertical aerial, and contacts with East Anglian stations will be specially welcome.

G5LJ and G3DUV will be /M on 2m in Eire with call-signs EI6AT/M and EI7AT/M respectively from July 24 until August 6, and will also operate from GI.

G3PAI will be operating as ON5YB/M from August 22 to 30, on 80m, from the Province of Luxembourg.

RSGB NATIONAL MOBILE RALLY

Woburn Abbey, Bletchley, Buckinghamshire

(by permission of His Grace the Duke of Bedford)

SUNDAY, SEPTEMBER 13, 1964

- * Park opens 11 a.m.
- * State Apartments open.
- * More than 3,000 acres and 2,000 animals.
- * Children's Playground, Pets' Corner and Boating Lake.
- * Restaurants and Snack Bars.
- * Specially reserved rally car parks.

TALK-IN STATION

GB3RS on 2, 4 and 160 metres

Organized by the RSGB Mobile Committee

G3FZW is once again in operation /M, with a KW2000. So far operation has been on 80m and daylight QSOs all round the British Isles have given no trouble. Several reports have compared well with fixed stations in the vicinity and in the same net, so the "Bandspanner" mobile aerial must be quite efficient. Despite periods of static operation the battery charge holds up well. Several other mobiles have been heard using similar equipment, and the writer feels that the s.s.b. mode has much to commend it for mobile operation. Certainly, rally organizers will have to give consideration to providing talk-in stations on sideband.

MOBILE RALLIES 1964

August 9 Torbay Mobile Rally

Britannia Royal Naval College, Dartmouth

Commencing at 10 a.m.

G6VJ — 1880 kc/s } talk-in
G3LMG/P — 70-27 and 144-13 Mc/s } stations

The programme will include a mobile treasure hunt, fun and games for XYLs and junior ops, judo display, "DX" balloon race, side-shows and usual awards for attending mobiles.

Organized jointly by the Torbay Amateur Radio Society and the Britannia Royal Naval College Radio Club

August 16 Derby Mobile Rally

Rykneld Schools, Bedford Street, Derby

Commencing at 10 a.m.

G3ERD/A — 160m } talk-in stations
G3EEO/A — 2m }

The programme will include a junk sale, a prize draw, trade show, demonstrations of radio controlled aircraft, children's film show, and music. Light refreshments available. Free admission and car parking. Ample accommodation if wet. Further particulars from T. Darn, G3FGY, "Sandham Lodge," 1 Sandham Lane, Ripley, Derbyshire.

Organized by the Derby and District Amateur Radio Society

August 23 Cannock Chase Mobile Rally

Former RAF Parade Ground, Hednesford Camp, Cannock Chase, Staffs.

G3RSX/P — 1.9 Mc/s } talk-in stations
G3ABG/M — 1.9 Mc/s }

There will be a raffle and display of model aircraft in action. After a picnic tea, a mobile tour of Cannock Chase will conclude at the Park Gate Inn at Castle Ring.

Organized by C. J. Morris, G3ABG.

August 30 UBA International Mobile Rally

Ardennes, Belgium

For details see RSGB BULLETIN, May 1964, p. 307.

Organized by the Luxembourg (prov.) section of the UBA

September 12-13 VERON Mobile Rally, Holland

Province of South Holland, between Amsterdam, The Hague, Utrecht and Gouda

Talk-in station operating on September 11

Full details are available from the Central Bureau of VERON, PO Box 9, Amsterdam.

Organized by VERON

Certificates and Awards

At the present time interest in certificates is greater than ever before and during 1963 the Society's Honorary Certificates Manager, Ken Hurrell, G3NBC, issued more than 400 certificates, in addition to scrutinizing many claims for certification. A task of this order is sufficient in itself without the complication that at least three out of every ten claims were initially rejected for one reason or another. It is a sad fact that the worst offenders in this respect were UK claimants who were also the most impatient at any delay in the issue of certificates. Despite the language difficulties, claims from East European countries were invariably completely correct and easy to process. There have from time to time been long delays in the despatch of Worked All Continents certificates and there has been considerable correspondence on this subject. It is again pointed out that WAC certificates are issued by IARU Headquarters in the USA, and the RSGB is only a channel for checking and eventual despatch.

The existence of two organizations who offer membership to operators possessing a certain number of awards has undoubtedly stimulated the quest for certificates, and, in the opinion of many, has added to the pleasure of operating. The Certificate Hunters' Club founded by Clif Evans, K6BX, and the Award Hunters' Club managed by John Velamo, OH2YV, are two flourishing examples, both of whom also offer publications in the form of the *Directory of Certificates and Awards* (K6BX) and the *A.H.C. Bulletin* (OH2YV).

In order to bring the certificates offered by the RSGB into conformity with present day circumstances it has been decided by the Council of the Society that certain changes should be made the most important of which are:

- (i) The Empire DX Certificate will henceforth be known as the **Commonwealth DX Certificate**.
- (ii) The British Empire Radio Transmission Award will henceforth be known as the **British Commonwealth Radio Transmission Award**.
- (iii) The Worked British Empire Award will henceforth be known as the **Worked British Commonwealth Award**.
- (iv) The Heard British Empire Award will henceforth be known as **British Commonwealth Radio Reception Award**. This, it is hoped, will avoid the confusion sometimes experienced when dealing with the present WBE and HBE awards, which although similar in title demand different qualifications.

The full qualifications for each of the Society's h.f. operating awards are given below, and the call areas referred to are those appearing in the revised edition of the RSGB Certificates and Awards leaflet, a copy of which is obtainable free of charge from Headquarters.

COMMONWEALTH DX CERTIFICATE (CDXC)

This certificate may be claimed by any licensed radio amateur who has been a fully paid-up Corporate Member of the RSGB for at least three consecutive years at the time of the application and who can produce evidence of having made two-way communication with Amateur Radio stations located in at least 50 of the call areas listed on the 14 Mc/s band, and in addition with at least 50 of the call areas listed on other amateur frequency bands. In the case of the "other" amateur frequency bands a particular call area may be claimed only once, irrespective of the band on which the call area was worked.

BRITISH COMMONWEALTH RADIO TRANSMISSION AWARD (BCRTA)

This award may be claimed by any licensed radio amateur

who can produce evidence of having made two-way communication with Amateur Radio stations located in at least 50 of the call areas listed.

WORKED BRITISH COMMONWEALTH CERTIFICATE (WBC)

This certificate may be claimed by any licensed radio amateur who can produce evidence of having made two-way communication with at least one British Commonwealth Amateur Radio station located in each of the five recognized Continental areas as defined by the International Amateur Radio Union. (North and South America count as one Continental area).

BRITISH COMMONWEALTH RADIO RECEPTION AWARD (BCRRA)

This certificate may be claimed by any person not holding an Amateur Radio transmitting licence who submits evidence that he has received signals from Amateur Radio stations located in at least 50 of the call areas listed.

DX LISTENERS' CENTURY AWARD (DXLCA)

This award may be claimed by any person not holding an Amateur Radio transmitting licence who submits evidence that he has received signals from Amateur Radio stations located in at least 100 of the countries listed in the RSGB *Amateur Radio Call Book*. Stickers will be available for every 25 additional countries confirmed.

* * *

The effective date of the alteration in the title of the Empire DX Certificate will be **January 1, 1965**, and the alterations in the remaining certificates will come into effect on **October 1, 1964**.

Intending claimants for Society awards are urged to obtain a copy of the RSGB Certificates and Awards leaflet before sending in their applications so that the latter may be correctly completed which will help the Society's Honorary Certificates Manager to issue the required awards with as little delay as possible.

The Cambridge Certificate

The Cambridge and District Amateur Radio Club will award a certificate to anyone who has worked twelve of its members on any one band.

REGION 10 LECTURE

Saturday, September 19, 1964, at 3 p.m.

"A PHILOSOPHY OF OSCILLATORS"

by

Professor Emrys Williams, B.Eng., Ph.D.,
M.I.E.E., M.I.E.R.E.

(Professor of Electrical Engineering, University College,
Cardiff)

at

University College, Newport Road, Cardiff, in
the New Department of Electrical Engineering.

Members will be conducted around the laboratories at the
conclusion of the Lecture.

Admission will be by ticket, obtainable free of charge on
receipt of s.a.e., from the Regional Representative, Mr
C. H. Parsons, 90 Maesycoed Road, Heath, Cardiff.

Ample car parking facilities are available.

The Council will be represented by the Zonal Representative, Mr R. H.
James, GW3BFH, and by the Chairman of the Technical Committee,
Mr R. F. Stevens, G2BYN.

THE MONTH ON THE AIR

A CHRONICLE OF EVENTS ON THE HF AMATEUR BANDS

By R. F. STEVENS, G2BYN *

THERE has been a great deal of speculation recently on the possibility of a DXpedition to Rockall, which according to the ARRL DXCC criteria would form a separate country as it is separated offshore from its governing area by more than 225 miles of open water. Rockall lies approximately 57°N and 14°W and is 180 miles from St. Kilda and 290 miles from the nearest point of the Scottish mainland. Its peak lies 70 ft. above high water mark but the only flat space on the rock is 20 ft. long and varies in width between 6 and 10 ft.

During periods of extreme calm, which occur only at infrequent intervals throughout the year, the swell at the base of the rock is some 3 to 4 ft.; normally the swell is some 10 ft. The area has the unfortunate habit of developing Force 4 winds very quickly and without a great deal of prior warning, which means that a method of leaving Rockall must be always at hand; that is apart from a swift slide down one of the vertical rock faces. The writer has seen a picture taken by RAF Coastal Command during rough weather which shows seas 170 ft. high breaking over Rockall!

The last landing was made in 1955 by helicopter by a party from HMS Vidal, and which, amongst other tasks, cemented an iron ring into the flat ledge mentioned above. DXpedition operators would no doubt make good use of this, holding on with one hand and operating a transceiver with the other. Anybody who makes a successful trip to Rockall will really have given the DX chasers good value for money.

Other relatively little known spots which have recently been in the DX news are the two Neutral Zones, one lying between Kuwait and Saudi Arabia and the other between Iraq and Saudi Arabia. The Kuwait/Saudi Arabia Zone is to the East and to the South of the Iraq/Saudi Arabia Zone; the former was activated in June 1961 by a party which used the call 9K3TL. Later operation has been by Angus Murray-Stone using the call HZ2AMS/8Z5, and who, under the call HZ2AMS/8Z4, provided the first contacts from the Iraq/Saudi Arabia Zone. QSLs for the latter operations have recently been coming from Hammarlund in large numbers. DXCC credit for /8Z4 is effective from October 1, 1964.

Recent stirrings in Africa have produced the change from Nyasaland (ZD6) to Malawi (7Q) but it seems doubtful if this will produce a "new" DXCC country. Zanzibar and Tanganyika recently amalgamated under a federation and are now known as Tanzania, and it is possible that this could count separately. Northern Rhodesia will become Zambia on October 24, and retains the same territorial characteristic but with the addition of some exotic prefix, which will undoubtedly spur a section of the DX chasing fraternity to fresh efforts.

The cumulative effect of postal delays, holidays and poorish conditions on the DX bands have resulted in an abbreviated MOTA, but it is hoped that things will return to

normal next month when your co-operation will be appreciated. For those who are active on the 28 Mc/s band but find little DX to chase, it is suggested that participation in the IQSY auroral research programme of the Society could be undertaken. RSGB efforts in this field are shortly to be expanded to cover Sporadic E propagation up to December 31, 1965, and further announcements will be made shortly. A newsletter giving details of RSGB IQSY activities is available from Headquarters free of charge.

News from Overseas

9LINH is now in the UK and QSL requests should go to the RSGB or his home address (see QTH Corner). The



VOIDX, who was introduced to amateur radio in 1925 by G2QO, and has since been a regular entrant in BERU.

* Please send all items to RSGB Headquarters to arrive not later than August 14 for the September issue and September 16 for the October issue.

Sierra Leone QSL Bureau is now located at Box 907, Free-town, and activity in the country is improving. 9LIs KW and TL are to be heard on c.w., whilst 9LIs HX, JR and RO are active on s.s.b. 9LIWN (ex-9G1DW) is on 14 Mc/s a.m. with a homebuilt rig. It is believed that new licences will soon be available which will give permission for the use of Top Band with 10 watts input, and will allow a maximum power input of 150 watts instead of the existing 75 watts.

VSIME hopes to be on the air soon with a new linear constructed to G2DAF principles and using two 4X150As which will be used in conjunction with a TA22 beam. Elsewhere in this issue is a note from VSIME regarding the Kranji War Memorial, Singapore.

The Seventh Jamboree-on-the-Air will run from 00.01 on Saturday, October 17, until 23.59 on Sunday, October 18, and participating stations may operate for the whole or any part of this time and on any authorized amateur frequency.

VE3WSB will again be in operation from the National Headquarters of the Boy Scouts of Canada.

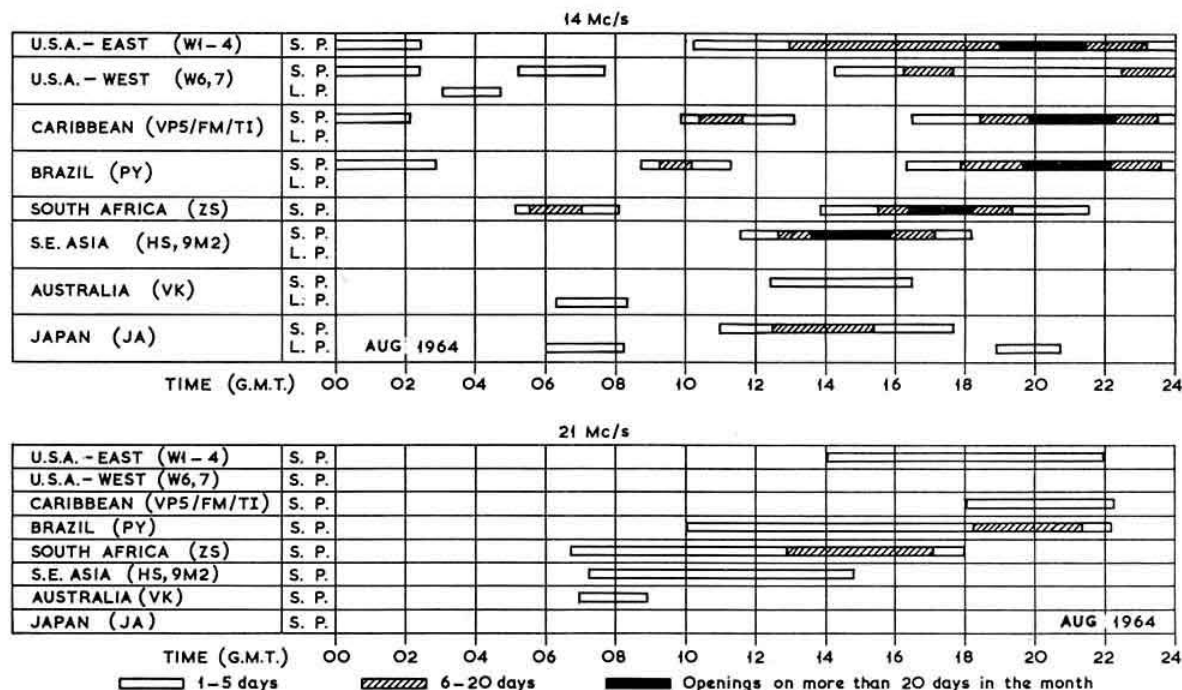
DXpeditions

A joint effort of the Award Hunters' Club and Hammarlund will be the operation of OH2AH/0 between August 16 and 22. All bands and modes will be used with the emphasis on 14 Mc/s s.s.b. If 160 metres is open there will be operation by OH2YV/0 who, with OH2XZ and OH5TM, will be the operators on this trip. QSLs should go to the Hammarlund DXpedition of the Month QTH.

G2HFD will be making his usual summer holiday DXpedition this time to the Isle of Man as GD2HFD between August 9 and 28. A KW2000 and linear will be available for use on all bands and s.s.b. will be the predominant mode. QSLs may go direct to the home QTH or via the RSGB Bureau.

VQ8AM intends to make a trip to Rodrigues Island during

PROPAGATION PREDICTIONS



The poor DX conditions on the h.f. bands will continue through the month of August, but during the latter half of September, however, they will slowly improve to reach a certain maximum in October and November. This maximum will, unfortunately, not be as good as that for 1963, for during August, September and October of that year the monthly mean relative sunspot number lay between 35 and 40, whereas this year for the same period values of around 10 are expected. For this reason 28 Mc/s, as well as 21 Mc/s, this month will show a certain amount of activity, with sporadic E short skip conditions making European contacts possible. These contacts must not, however, be confused with others on 28 and 21 Mc/s (as well as on 14 Mc/s) taking place via reflection from aurora, which can be recognized by the rough note. In the present phase of the sunspot cycle, sporadic E short skip conditions should occur rather more frequently than those produced by aurora. The latter conditions are still likely to occur in North Germany, Scandinavia and Central and Northern parts of Great Britain. Only on days with above average F2 m.u.f.'s will it be possible to work DX on 21 Mc/s with Africa and South America, and it is unlikely that there will be any certain openings to any DX zone on this band. 14 Mc/s is, at the moment, the major carrier of DX traffic, but it can, however, experience GRM from European stations, especially during the afternoon and early evening, brought

about by the continuing summertime short skip conditions. As 14 Mc/s is noticeably lower in frequency than 21 and 28 Mc/s, the dead zone is correspondingly reduced. Far more European stations can therefore be heard on 14 Mc/s than on 21 Mc/s or even 28 Mc/s. Compared with June and July the night time DX conditions on 14 Mc/s will worsen slightly towards the end of the month, as the nights grow longer with the approach of autumn and the night time F2 m.u.f.'s fall further than during the summer. It will also become more difficult to make contacts via the long path. With the approach of spring in the Southern Hemisphere, traffic to South Africa on 14 Mc/s will be possible until later in the evening than during June and July, especially towards the end of this month.

Under favourable conditions traffic will be possible on this band via the short path to KH6 from about 06.30 to 09.00 GMT. On 7 and 3.5 Mc/s the summertime propagation conditions will be mostly unchanged (see the report for May). In the latter half of the night on 3.5 Mc/s local traffic will only occasionally be interrupted by the dead zone.

The provisional sunspot number for June 1964 was 9.3 with the period of greatest activity lying between June 11 and 20. The predicted figures for October, November and December are 7, 6 and 5 respectively.

QTH Corner

GB3MWT	via G3JTW
GB3SOU	via G3IBJ
GC31FB	via G31FB (home call)
HC8FN	via WA2WUV, Box 296, Massapequa, LI, NY, USA.
HI8MOG	P.O. Box 366, Santo Domingo, Dominican Republic.
HK0AFB	via K8VDV, R. C. Kronauge, 7607 Plainfield Pike, Cincinnati 36, Ohio, USA.
HK0RQ	via W2CTN, 159, Ketcham Avenue, Amityville, NY, USA.
HR1CM	P.O. Box 39, Tegucigalpa-DC, Honduras.
HR1SO	S. Olson, P.O. Box 176, Tegucigalpa-DC, Honduras.
IIRB/ISI	Hammarlund DXpedition, P.O. Box 7388, New York, NY, 10001, USA.
IS1CWN	A. Maggiora, Via Courmayeur 2, Turin, Italy.
K2US	P.O. Box 337, New York, NY, USA.
LX3QT	via DJ6QT (home call).
OH2BH/OH0	via W2CTN.
OH2AH/OH0	via Hammarlund DXpedition QTH.
TG9MP	P.O. Box 65, Guatemala City, Guatemala.
VK9GC	P.O. Box 55, Rabaul, Territory of New Guinea.
VP2KD	P.O. Box 293, St. Kitts, BWI.
VS1JY	N. Yatheendreen, 155-K Woodlands Rd., Singapore 23, Malaysia.
VS6AZ	via K6GMA, 13841 MC Mains St., Garden Grove, California, USA.
YS1JJG	P.O. Box 1210, San Salvador, El Salvador.
5H3JL	H. Faust, Barabai Lutheran Mission, PO Box 127, Singida, Tanganyika.
7X2VX	American Embassy, Algiers, Algeria.
9L1 Bureau	Box 907, Freetown, Sierra Leone.
9LINH	45 Westwood Lane, Leeds 16, Yorks. (home address).
9X5GG	R. Goodwin, Ngoma Hospital, BP 65, Kibuye, Rwanda.
9X5JV	Box 78, Kigali, Rwanda.

RSGB QSL Bureau: G2MI, Bromley, Kent.

phone Honor Roll are DL3LL 296/312 and G3FKM 296/310.

Contests

The following are high claimed scores in National Field Day 1964:

1-8 Mc/s		3-5 Mc/s	
GW3RNH/P	429 points	G8KW/P	519 points
GM5KF/P	427 "	G3PI/P	514 "
GW3RUA/P	402 "	G8PX/P	470 "
GM3SSB/P	356 "	G8FC/P	439 "
GW4CG/P	356 "	G6OI/P	432 "
G3PGM/P	352 "	G4VF/P	426 "

7 Mc/s		14 Mc/s	
G6VC/P	658 points	G3MXJ/P	491 points
G2DU/P	631 "	G8AB/P	474 "
G3ORH/P	571 "	G5KA/P	467 "

21 Mc/s		21 Mc/s	
GI2YR/P	761 points	GI3XS/P	258 points
G8KW/P	674 "	G3AYC/P	187 "
GW2AVV/P	577 "	G6VC/P	177 "
G8BM/P	548 "	G8GG/P	160 "
G6LX/P	548 "	G3ORH/P	159 "
G6BQ/P	544 "	GW4CG/P	155 "

The Fifth All Asian DX Contest will take place between 10.00, August 29, and 16.00, August 30. All bands between 1-8 and 28 Mc/s may be used with c.w. as the *modus operandi*. For non-Asian stations a contact will count one point and there is a multiplier of one for each Asian country worked on each band. All logs must be sent to JARL Contest Committee, PO Box 377, Tokyo Central, Japan, to arrive not later than November 30, 1964.

The LABRE Contest will take place between 00.01, September 5, and 24.00, September 6 (c.w.) and the second section (telephony) one week later. Contacts may be made on any of the bands between 3-5 and 50 Mc/s but no cross band or A1 to A3 QSOs are allowed. Contacts between stations in the same country will not score points but will count as a multiplier only; contacts between stations in different countries outside the American area shall count one point; stations in different countries of the American area shall score two points per contact and contacts between

November next and will be pleased to have any assistance towards the expenses of the trip. Any contributions may be sent to C. France Dumont, Saint Antoine Sugar Estate, Goodlands, Mauritius. The call will be VQ8AMR and operation will probably be confined to the 28, 21 and 14 Mc/s bands. It is hoped that the HB9TL portable transmitter will be available for s.s.b. operation. VQ8AM emphasizes that all QSLs will be dealt with direct as he does not have a QSL manager, contrary to rumours now circulating.

CR6CA has Annobon Island intentions for September but no definite news is yet available. Other activity from this spot is said to be taking place during the first fortnight of August.

The Navassa Island trip was apparently pure fiction and nothing further has yet been heard of the Socorro Island foray. Another trip to Lord Howe Island is due to begin on August 18 with VK2AI, VK2AAK and VK3AHO as the operators. From a description furnished by VK2AGH Lord Howe seems to be an ideal spot, both scenically and radiowise.

A rash of San Andres activity produced HK0s QA, AFB, AFC and RQ. The first named is apparently a resident and appears from time to time under the guidance of YV5BNW, whilst the other stations were of a temporary nature only.

DXCC News

Enquiries are received from time to time regarding the deleted countries, and it is believed that the following list is complete: C9, CN2, CRB-Goa; CR8 Damao/Diu; ET2, FF8, F18, FQ8; IT-Trieste, I5, JZ0, PK, UN1, VO, VQ6, VS1, VS2/9M2, VS4, ZC5, ZD4, 9S4, 9U5-Runda-Urundi.

The latest DXCC Honor Roll contained the following European stations: G2PL 306/329; G3FKM 306/323; DL3LL 306/322; HB9J 306/330; DJ1BZ 306/324; G4CP 305/329; OE1ER 303/325; G8KS 302/320; DJ2BW 300/317.

The sole representatives from Europe in the Radiotele-



VK2AGH operating on Lord Howe Island.

stations in the American area and the rest of the world shall score three points. There will be two types of multipliers: one for each American area country worked on each band, and one for each Brazilian call area (PY1 to PY9) worked on each band. Logs must arrive at the following address not later than December 30: LABRE Contest Committee, Caixa Postal 2353, Rio de Janeiro, Brazil. G2BVN has a few copies of the complete rules which may be obtained by sending a s.a.e.

The contest periods for the first **VU2/4S7 DX Contest** are: telephony, October 10, 06.00 to October 11, 06.00; c.w., October 17, 06.00 to October 18, 06.00. In addition to the sections for the transmitting stations there are short wave listener sections for both c.w. and telephony. An extract covering the vital rules will be given next month.

The **VK/ZL/Oceania Contest** will take place between October 3, 10.00 and October 4, 10.00 for telephony stations with the c.w. section a week later. Two points are scored for each contact with VK/ZL and one point for other Oceania stations. The total score is the contact points multiplied by the sum of VK/ZL call areas on all bands. Logs should be sent to arrive at the following address by January 16, 1965: NZART, Box 489, Wellington, New Zealand.

Awards

The **SP DX Club** will award an attractive certificate attesting honorary membership to any licensed amateur (other than SP stations) having two way communication with 15 (for European operators) SP DX Club members. Only contacts after October 1, 1959, will count, and a list of these should be sent together with ten IRC to SP DX Club (PZK), PO Box 424, Lodz 1, Poland. The list of SP DX club members is extensive and space does not permit reproduction. (via G3TA and SP6FZ).

The **YO DX Club** is offering a certificate to operators who, in European countries, contact five members of their Club. QSOs may be on any mode after January 1, 1963. A certified list of the contacts is required and where no reciprocal arrangement regarding certificates exists between the YO DX Club and the applicant's club or society a fee of five IRC is required, otherwise there is no charge. This certificate is also available to short wave listeners. The check list should be sent to YO DX Club, PO Box 95, Bucharest, Roumanian People's Republic.

The Central Commission of the Radio Sport of Roumania are offering the **YO-23A Award** for contacts made during the period August 5 to August 24. The conditions of this award are unusual and leaflets giving details can be obtained from G2BVN.

An announcement from the Northern Rhodesia ARS regarding the **WANR Award** establishes a second class for contacts with six VQ2 stations in three different towns. The WANR (First Class) is still available for those operators who contact ten VQ2s in five different towns. Contacts may be after World War II on any band or mode. A GCR list should be sent together with seven IRC or a postal order for 3/6d. and this award is available to short wave listeners. After October 24, 1964, this award will be replaced by a new award to be issued by the Radio Society of Zambia. The address for applications is PO Box 332, Kitwe, Northern Rhodesia.

The Swedish national society, the SSA, offer the **WASM** and **WASM II** awards, and a leaflet which should be of great assistance to intending applicants can be obtained by sending two IRC to SM5DVL, Bengt Stahl, Backvagen 93, Hagersten, Stockholm, Sweden. The leaflet includes check lists and a map.

The latest edition of the **RSGB Certificates and Awards** leaflet gives details of the Society's h.f. operating awards, a number of which have undergone alteration. Copies may be obtained free of charge from Headquarters.

Around the Bands†

As usual the holiday season causes a decline in activity and coupled with poor conditions on the l.f. bands it adds up to few reports. In brief there is little DX, if any, to be heard on the low bands, 14 and 21 Mc/s are producing plenty whilst 28 Mc/s has come into its own with short skip.

Apart from propagation conditions another factor during the last few weeks has been QRM from the thunderstorms brought on by the hot weather. In the tropics this is an all year round hazard but in the UK somewhat rare by comparison. We all grumble about interference but in the UK most should count their blessings. Your scribe recently had a spell in Canada and worked from VE6—the background of W/K was terrific and made our European QRM seem negligible. Even the Eastern Europeans have been more tolerable since then. Now to the bands.

Firstly, **A4038** sends a comprehensive report from Exeter. **1.8 Mc/s** appears to be full of mobile stations which make interesting listening in the absence of DX. On **3.5 Mc/s** the special activity stations, GB3GP, GB3NRC, GB3WYE, GW6GW/A and others have been busy but otherwise nothing to report of interest. Nothing for 7 Mc/s except one brief report from **BRS20317** (Bromley) who logged LU6FA at 589 (22.30), 3A2CD (17.45), F2CB/FC (20.15), YV6OM (22.50), VP6KL at S7/8 (22.30), VQ2BC weak at 18.36/45 and ZD3A at S7 (20.30). Even BRS20317 has had other diversions this month to keep him from the rig so there is not enough for his usual summary.

A number of usual reports for **14 Mc/s** enable an assessment of openings to be made. There seems to be little real DX in the mornings except perhaps a few Canadian west coast. Conditions improve in the afternoon when African and South American stations begin to appear with a few W6/W7 around teatime. The east coast Americans come through in force during the evening and continue well up to midnight. These conditions vary considerably from day to day and often European short-skip appears to confuse and hinder the DX contact.

G8JM (London) has worked s.s.b. with AP2MI (East Pakistan), CR7CI, CR6FA, CR6CA, CE1DD, FH8CD (Comoro Is.), HL9KG, HR1SO, LU2XL/9KS, PX1MO, OY8KR, TL8SW, VQ8BFC, VS9MB, VU2NR, OA4CV, 7X2VX, 6O6BW, 5X5IU, 9X5GG/P (Rwanda), 9L1HX and KH6, KL7, etc.

A4065 (Corbridge) reports hearing South American DX in the late evenings including YV5AST (20.20), OA4PDS on a.m. and PY2CAD (20.50) on s.s.b. A4065 uses a BC348-K with a 66 ft. end fed wire to pull in the DX.

A3699 (Renfrewshire) reports VE8RX (07.35), VE8CO (09.13), W4HQZ/MM—USS *Essex* (carrier), off French coast, HZ2AMS (14.25), PX2MO (16.45), 5H3JG (18.30), W8VRR/MM—USS *Forrest Sherman* (destroyer), LU7DX (21.28), IIRB/ISI (22.31), TG9RJ (22.59), W5HWL/VP9 (23.50), TI2EV (00.05).

A4038 (Exeter) has logged a lot this month including a.m. from 9G1DM (16.38), ET3USA (14.57) and s.s.b. from ZP5JE (20.48), YV5AIP (21.11), PY2CYK (20.43), 5N2CKH (16.16), JA1AEA (16.34), PZ1AX (20.38), FG7XT (21.03)—very active at present, VE6HM (21.19), OA4OG (21.52), YS1IM (22.10), VS9PCO (16.40), ZD6PBD (16.19), YN1ILX (21.11), PJ2AA (20.31), HV1CN (21.00), TI2VW (21.42), KP4BFF (22.29) and many others from the same areas.

G3PSY (Thorpe Bay) has found DX hard to come by but worked MP4BEQ (11.58), 4X4BT (19.45), LU8EE (21.20), HK3TH (21.45), VE4OX (21.55), 4X4NTB (18.13), SV0WPP (20.01), EI0AC (20.19)—expedition on Valentia Island off South-West Ireland manned by Bren/EI2AS and others also 4X4MH (19.05), KP4CKX (21.16), CO2JB (21.36), EA9EN (22.33), 4X4DI (19.41), YV2AH (19.55), HP1MN, HK3HY

† Compiled by J. G. Cottrell, G3PSY.

and FG7XT have also been heard active on the band but were not worked.

Of 21 Mc/s, G3RMF (Worcester) says that conditions do not seem to have been so good during June as in May. However he found most of the usual African and South American stations and worked 5H3JI (13.46), LU4HL (21.35), K3PDC (21.18), CE3YU (21.15), ZE1AV (14.23) and 5H3JL (16.03). A4038 (Exeter) listening to phone logged a.m. from ZS1BV (12.14), 9X5LR (16.50), 9G1EC (17.03), 9L1WN (16.42), TL8AC (16.41), PY5EG (a.m.), 5X5JK (17.13), ZE1BR (13.28), TN8AA (17.05), and others from the same call areas. S.s.b. was heard from 5N2JKO (16.07), 5Z4AA (16.57), VP6DB (20.46), and PX1MO (16.21). G3PSY (Thorpe Bay) worked OA4PF (19.15) and PY2SO (19.25).

G3RMF (Worcester) provides some interesting comment on 10m. He says that all those who have come on to prove that ten is not a dead band are having the upper hand. The efforts of the European stations have been immense and never before has he worked so many in a month. He gives full marks to all because despite the activity there is none of the 20m rat-race. Most other reporters agree with these views and despite the local activity there is also DX to be found. G3RMF has worked CX1AAM (17.04), VQ2DT (17.35), 5A5TE (17.20), LU1DHP (19.17), LU5DIX (19.35), 5N2JKO (19.20), 4X4DK (18.20), 5H3JJ (18.33), VQ1DT (18.20) all on a.m. G8JM (London) also heard most European countries and worked 9Q5TJ on c.w. G2FQR (Reading) using 110 watts to a ground plane worked CT1, DM3, SP9, HB9, EA4, and also heard most other areas including VQ2DT.

Finally, A2879 (Manchester) also found many Europeans with the band closing about 19.00 GMT.

DX Briefs

ON5YB/M will be the call of G3PAI between August 22 and 30, whilst operating on 3.5 Mc/s from the province of Luxembourg.

G3ERB/A will be the call of G3ERB who will be active on all bands from 1.8 to 70 Mc/s for one week beginning September 12. There may also be some /M and /P operation during this period.

GM3KEP/P will be operating from seven rare counties at 20.00-21.00 GMT during the period August 7 to 13 inclusive. The frequencies which will be used are 1815, 1835, 1875 kc/s c.w., and 1875, 1900, 1930 kc/s on phone.

HB9RAS is the call of a special activity station operating from the Swiss National Exhibition at Lausanne until October 25, 1964. QSLs should go to Radio Amateurs of Switzerland, Ch. Liaudoz 9, Pully/Lausanne, Switzerland.

ZA1FK, SP8AN/ZA and the s.s.b. activity of a joker signing BY1PK, are all calls of the Jolly Roger variety. One supposes that somewhere someone must be amused by it all.

IIAMU, well known on the DX bands, may be heard operating HV1CN, usually at weekends.

Willis Island activity will, it is said, be continued by VK4TE.

* * *

Many thanks to the correspondents who managed to penetrate the postal curtain and acknowledgement to the West Gulf DX Club Bulletin (W5IGJ), the LIDXA Bulletin (W2MES), DX'press (PA0FX) and the DX'er (W6HVN). Please send all items to RSGB Headquarters to arrive not later than August 14 for the September issue and September 16 for the October issue.

Enquiries Regarding Bulletin Articles

Members who write to the authors of BULLETIN articles are asked to enclose stamped addressed envelopes if they require replies.



During a recent visit to K2US, the World Fair's Amateur Radio Station, Gus Browning, W4BPD (left), introduced his wife, Peggy (centre), to the delights of being a rare station as Travis Marshall, K9EBE, looks on.

BBC Programme "Sound"

The BBC programme "Sound" which goes out monthly on Network 3 is to come off the air, apparently to make way for non-stop music programmes. "Sound" is, or was, a programme for all radio, hi-fi and recording enthusiasts. In fact one of the most recent to go out dealt with the subject of Amateur Radio, with a talk by F. C. Judd, G2BCX, interviews with G4GA and G3HWG as well as sound illustrations of Amateur Radio itself which featured other well known call-signs.

The last programme is scheduled for August 2, with a repeat a fortnight later, and in it, F. C. Judd, G2BCX, who is a member of the programme team, will be talking on Amateur Radio.

It is a great pity that this programme has to go, although a fresh demand might easily tip the scales in favour of a reprieve. Barely a year ago it was threatened but later retained at the request of the enthusiasts it caters for. It is hoped that the BBC will again consider the many thousands whose hobbies are either radio, recording or hi-fi and re-instate this informative and topical monthly programme.



This tailor-made mobile installation was designed and constructed by G3HRO, and has won a number of awards at mobile rallies and at the 1961 Radio Hobbies Exhibition. The receiver to the left of the picture is fully transistorized, and covers the broadcast and six amateur bands. The six band transmitter runs 60 watts input to the p.a. with only four valves and a 30 watt transistor modulator. A full description of this equipment has appeared in *Wireless World*. (Photo by G3HRO)

Society News

Mr E. G. Ingram

Mr E. G. Ingram, GM6IZ, has been co-opted to serve on the Council until December 31, 1964. The office of Penultimate Past President, held by Mr Ingram until July 4, 1964, does not exist under the new Articles of Association adopted on that date.

RSGB QSL Bureau

Mr J. W. Russell, G2ZR, 45 Shakespeare Avenue, Bath, has taken over responsibility for the G2 section of the RSGB QSL Bureau in succession to the late S. G. March, G2CZU.

The Surrey Trophy

The Council has accepted with pleasure a generous offer made by the Surrey Radio Contact Club to donate to the Society a trophy for presentation to the overall winners of the V.H.F. National Field Day each year.

Presentation to Miss A. M. Gadsden

At the meeting at the Royal Society of Arts, John Adam Street, Adelphi, London, on June 27, 1964, the President, Mr G. M. C. Stone, presented a cheque to Miss A. M. Gadsden on behalf of members who had contributed to the fund to mark Miss Gadsden's retirement from the Headquarters staff after more than 34 years service to the Society. Miss Gadsden in a brief speech thanked members for all their kindness.

Area Representative for Glasgow

Mr A. Hornby, GM3HBY, 93 Croftfoot Road, Glasgow, S.4, has been elected unopposed to the office of Area Representative for Glasgow.

Speakers on Amateur Radio

Members willing to give talks on Amateur Radio to other organizations are invited to join a panel of speakers being arranged by the Education and Training Committee. Communications for the Committee should be sent to Headquarters.

Simple Articles on Amateur Radio

Members willing to write simple articles on Amateur Radio for other publications are invited to register with the Education and Training Committee. From time to time requests are received at Headquarters for such articles, which provide a publicity medium for the Amateur Radio movement.

RSGB Tape Library—Change of Address

All Tape Library correspondence and tapes should in future be sent to the Honorary Curator, N. C. Ta'Bois, G3HWG, at 18 Monkham Drive, Woodford Green, Essex.

Insurance for Field Day Events

RSGB Groups and Affiliated Societies which require insurance for equipment and third party risks in connection with field day events may like to know that the Society's insurance brokers, Sedgwick Collins & Co. Ltd., Regis House, 43-46 King William Street, London, E.C.4, are able to offer suitable cover. Enquiries should be sent direct to the firm.

ARRL Anniversary Stamp

The USA are to issue a five cent stamp commemorating the fiftieth anniversary of the founding of the ARRL and the work of US Radio Amateurs.

RSGB International Radio Communications Exhibition

The Exhibition Committee needs your support to make this year's RSGB International Radio Communications Exhibition the best yet. There are two ways in which you can help:

- (i) Have you any unusual or ingenious pieces of equipment (home constructed, of course) to exhibit on the Society's stand? In addition to the usual prizes offered for the best equipment on display, a special prize is being offered for the best piece of home constructed equipment exhibited by a member who is not, and has not been, employed in the radio or electronics industries. It may not be the smartest (in appearance) piece of gear that gets the prize! There will be a special Junior Constructors' section.
- (ii) Have you some time to spare during the period of the Exhibition, October 28-31, to help the Society's Exhibition Committee staff the RSGB stands. There is no reward other than hard work, but you will enjoy "meeting the boys."

If you can help, please write now to R. G. B. Vaughan, G3FRV, Honorary Secretary, RSGB Exhibition Committee, 9 Hawkins Road, Tilgate, Crawley, Sussex.

Region 16 Meeting

An Official Regional Meeting was held at Great Yarmouth, Norfolk, on Sunday, June 14. More than 60 members from all parts of Region 16 attended the Business Meeting which was held in the canteen of the well-appointed Social Centre of South Denes Generating Station.

RSGB Council was represented by Eric Yeomanson, G3IIR, Jim Foster, G2JF, and John Graham, G3TR, who were able to answer the many and varied questions relating to RSGB activities and policy posed by those members present. Much was done to "clear the air" over such controversial subjects as scoring in NFD and the content of the BULLETIN, to name but two.

At the buffet tea which followed the Business Meeting, members were joined by their wives and families, and given an opportunity for making and renewing acquaintances. Prizes were awarded for the best home-made amateur radio equipment on display at the ORM, and also for the best mobile radio equipment. This was followed by the draw for the raffle.

After tea, a most interesting and well-received lecture on "Rocketry" was given by Major G. F. Webb, E.R.D., B.Sc., F.R.A.S., in which he outlined present achievements and explained the problems still to be resolved in rocket propulsion and guidance. A short film on space travel followed this lecture.

The ORM was blessed with reasonably good weather and gave members in Region 16 a chance to meet each other and representatives of Council. Various manufacturers exhibited their products and an excellent display of RAEN equipment was shown by the Norfolk RAEN Group, surmounted by the magnificent Raynet Trophy won by them last year.

That the event was a success was due to many months of effort by the Great Yarmouth Radio Club, assisted by members from Norwich and Lowestoft, plus the generosity of the CEGB in allowing use of the Social Centre at the Generating Station.

Extraordinary General Meeting called for June 27, 1964, at 2.30 p.m. at the Royal Society of Arts, John Adam St., Adelphi, London, W.C.2.

At 2.30 p.m. the Chairman of the meeting, the President, Mr G. M. C. Stone, called the meeting to order and a count was made of the Corporate members present. The President announced that the number was insufficient to constitute a quorum of 50 as required by Article 37 of the Articles of Association and accordingly the meeting must be delayed for half an hour in accordance with Article 38.

At 3 p.m. the President again called the meeting to order and a count was made. The President then announced that although 34 members were now present the number was still insufficient to constitute the quorum of 50 and therefore the meeting must stand adjourned until 2.30 p.m. on July 4, 1964, in accordance with Article 38. Arrangements had been made to hold this meeting at the Kingsley Hotel, Bloomsbury Way, London, W.C.1.

Minutes of the Adjourned Extraordinary General Meeting of the Radio Society of Great Britain held at the Kingsley Hotel, Bloomsbury Way, London, W.C.1, on July 4, 1964, at 2.30 p.m.

Present: The President (Mr G. M. C. Stone in the Chair), eight Corporate Members and the Secretary.
Apologies for Absence were submitted on behalf of 11 Corporate Members.

At 2.30 p.m. the Chairman of the Meeting, the President Mr G. M. C. Stone, called the meeting to order and a count was made of the Corporate Members. The President announced that the number was insufficient to constitute the quorum of 50 as required by Article 37 of the Articles of Association and accordingly the meeting must be delayed for half an hour in accordance with Article 38.

At 3 p.m. the President again called the meeting to order and announced that in accordance with Article 38 the members present constituted a quorum. He then declared the meeting open and explained why it had been necessary to adjourn the meeting for a week. He then called on the Secretary to read the notice convening the meeting.

Mr Yeomanson proposed and Mr Caws seconded the following Special Resolution:

That the Articles of Association set out on pages (ii)-(viii) be and are hereby adopted as the Articles of Association of the Radio Society of Great Britain in substitution for the present Articles of Association.

(A copy of the new Articles of Association was sent to every Corporate Member in May, 1964, and a copy is appended to the Official Minutes).

The President explained the reasons for the proposed new Articles of Association and stated that he would be pleased to answer any questions. As there was no discussion, the President called for a show of hands on the Special Resolution and eight members voted in favour and none against.

The President then demanded a poll in accordance with Article 40 and, after the count had been taken, announced that the Special Resolution had been carried by 418 votes to 11 (of which 410 were proxies in favour and 11 against) which constituted a majority in excess of the three-fourths required by Section 141 (2) of the Companies Act 1948. The President then declared the meeting closed.

Obituaries

Sidney H. Chapple, G6SC

It is our sad duty to have to record the sudden death of Sidney Chapple, G6SC, on June 13, 1964, at the age of 57.

Sid had been an active amateur from the early 1920's, and as a schoolboy, was a member of the old Peckham Radio Society. Prewar, he took an active part in the running of the South London and District Radio Society ("Sliders") and at the time of his death was an active member of TVARTS. He attended the briefing meeting for this year's NFD, and indeed it was his proud boast that he had assisted in the running of an NFD station from the very first NFD up until last year, in the early days with the old No. 7 District, and latterly with the Molesey Group. He was a founder member of RAOTA, and was currently secretary of the London U.H.F. Group.

A prewar DX man on the low frequency bands, since 1948 his main activities had been concentrated on the five and two metre bands. He had been connected with the radio industry all his working life, and served with the electronics branch of REME during the War. Latterly he was a Technical Officer with the Ministry of Aviation, and had only recently returned from a flying visit to Woomera. A brilliant technician, his advice on technical matters was often asked and equally freely given. His tall figure will be sadly missed at the London amateur meetings.

We extend our deepest sympathy to his widow, Doris, and his two sons, Stuart, G3OSC, and Christopher.

The funeral at Leatherhead Crematorium was attended by Geoff Stone, G3FZL, Bob Munday, G5MA, Bill Thompson, G2MR, Eric Rawlings, G5RS, Eric Russell, G5WP, and Ernie Dedman, G2NH, representing collectively the Society, RAOTA, the London U.H.F. Group, and the Thames Valley Amateur Radio Society.

E.A.D.

Sid Marsh, G2CZU

It is with very deep regret that we record the passing of Sid Marsh, G2CZU, of Bath, after several months' ill health.

Sid, who was a very forthright character, will be remembered by many who operate on Top Band and 80m. He was a founder member of the Bath Spa Radio Club and did much to foster Amateur Radio among the members of a local boys' club. He was also a QSL Bureau Sub-manager for several years.

The Society was represented at the last rites by the Area Representative for Bath, G2ZR, together with G2ZG, G3LYW, G3NXU and G3OYQ.

Our sincere sympathy goes to all his family.

J. W. R.

Robert Forsyth, GM3JCY, and Peter Cleland, GM3ITC

It is with great regret that we have to record the passing of Robert (Bob) Forsyth, GM3JCY, and Peter Cleland, GM3ITC, two of the most active amateurs in the Lanarkshire area. Close friends for many years, they died quite unexpectedly within a few days of each other. Their absence from the air will be felt for a long time, not only at home but in many parts of the world where their friends were numerous. The funerals, Bob on Thursday, February 6, and Peter on Saturday, February 8, were attended by amateurs from a wide area.

In mourning our loss we are mindful of the wives and families of our friends, and offer to them our most sincere sympathy.

D. W.

Duplicator for Sale

Offers are invited for an Ellams hand operated duplicator which is now surplus to Headquarters' requirements. Offers should be addressed to the General Manager, Radio Society of Great Britain, 28 Little Russell Street, London, W.C.1.

Society Affairs

A digest of the business discussed at the May, 1964, meeting of the Council

THE May meeting of the Council was held on May 15, 1964, and was attended by Messrs. G. M. C. Stone (President), H. A. Bartlett, N. Caws, J. C. Foster, L. N. Goldsbrough, J. C. Graham, R. C. Hills, E. G. Ingram, R. H. James, A. O. Milne, L. E. Newnham, A. D. Patterson, R. F. Stevens, J. W. Swinerton (Members of the Council), John A. Rouse (General Manager and Secretary), and P. C. M. Smee (Minuting Secretary). Apologies for absence were submitted on behalf of Mr F. K. Parker.

National Field Day

The Council considered a preliminary report from Mr L. N. Goldsbrough giving the first results of an objective analysis of the entries received for National Field Day, 1963. Mr Goldsbrough said that he would submit a more detailed analysis, which he thought might be helpful in drawing up rules for future NFD events, in due course. (Mr Goldsbrough's report was published in the July issue of the RSGB BULLETIN in the form of a letter.—Editor).

Membership

The Council approved 186 applications for membership (143 Corporate and 43 Associate). In addition 15 applications for transfer from Associate to Corporate grade were also approved.

Applications for Life Membership from Messrs. B. H. Green, BRS3716, J. C. Pershouse, 9M2DQ, and P. Cheung, VS6EQ, were accepted subject to payment of the appropriate subscription.

Affiliation was granted to

- Amateur Radio Society of Barbados
- Caithness and Downreay Amateur Radio Club
- Garendon Secondary School Radio Society
- Leicester University Radio and Electronics Society
- Luton and District Amateur Radio Society
- 255 Signal Squadron Amateur Radio Club

Visit of President to Brussels

The President reported on his visit to Brussels to attend the annual general meeting and luncheon of the Belgian National Society, UBA. Among the matters discussed were reciprocal licensing and arrangements for a projected visit by Belgian amateurs to London in August. The problem of interference to GB2RS transmissions on 3600 kc/s was also mentioned.

Committee Correspondence

It was decided that in future correspondence on behalf of the Society's various committees would be typed on appropriate official notepaper. Letters will generally be signed by the Chairman of the Committee concerned although Council Members and the General Manager may also do so if necessary.

RSGB Amateur Radio Call Book 1965

The General Manager was authorized to place the contract for the printing of the 1965 edition of the *Call Book*, to be published in late October, with Bentley & Co. (Printers) Limited.

IARU Region I Bulletin

It was reported that Mr John Clarricoats had become editor of the *Region I Bulletin* which would in future be published at regular intervals. Mr R. F. Stevens was appointed Region I IARU Correspondent to ensure that reports on RSGB activities are regularly made available for publication in the *Region I Bulletin*.

Presentation Fund for Miss A. M. Gadsden

The President reported on the results of the Presentation Fund for Miss Gadsden who resigned from the Society's staff at the end of 1963 after more than 34 years' service.

Merseyside Lecture

Mr Goldsbrough, Zone A Representative on the Council, reported on the excellent lecture arranged by the Region I Representative, Mr Basil O'Brien, for the RSGB Merseyside

Lecture 1964. (A report on the event was published in the July issue of the BULLETIN—Editor).

Reports of Committees

Much of the work of the Society is carried out by Committees which report to the Council. At this meeting the Council considered reports from eight committees.

The TVI/BCI Committee met on March 18 and on April 22 and dealt particularly with problems connected with interference to and from television relay systems which are proving a source of difficulty in several parts of England and Scotland. The Committee also dealt with individual members' TVI problems relating to planning permission for aerial masts.

On April 6, the V.H.F. Committee considered the production of a paper for presentation at the New York International V.H.F. Convention in August, plans for a European Amateur Radio Satellite (an international committee has been set up under the auspices of the Region I IARU Permanent V.H.F. Committee to co-ordinate the project) and arrangements for the London International V.H.F. Convention. Applications for v.h.f. operating awards were considered. The Committee also discussed problems connected with present and projected v.h.f. beacon stations.

The Finance and Staff Committee at its meeting on April 11, 1964, dealt with the publication of the draft of the revised Articles of Association, various staff matters, the selection of a new addressing machine for BULLETIN wrappers and subscription reminders.

The Membership and Representation Committee held its first meeting of 1964 on April 13 and considered the operation of the RSGB News Bulletin Service, the duties of Society representatives, the organization of Regional Meetings and the benefits and conditions of affiliation to the Society.

The Contests Committee met on April 16 and dealt with the results of the First 1.8 Mc/s Contest, the 144 Mc/s Open and Listeners' V.H.F. Contests, and the rules for a number of forthcoming events. Preliminary consideration was also given to the programme for 1965.

On April 17 the Mobile Committee discussed the National Mobile Rally held at Texas Instruments Ltd. on April 5, 1964, and gave further consideration to plans for the Wethersfield and Woburn Abbey rallies. The Committee also discussed the relative merits of vertical and horizontal polarization of aerials for use on 70 Mc/s, deciding in favour of vertical.

The meeting of the Exhibition Committee held on April 24 was devoted to arrangements for the RSGB International Radio Communications Exhibition to be held on October 28-31, 1964.

The Scientific Studies Committee met on April 27 and gave further consideration to the current tropospheric propagation programme, the IQSY, the experimental station GB3LER on 10m and 2m, the distribution of Solar Activity warnings and the launch of *Oscar III*, now expected in September 1964.

* * *

The Council was in session for 4½ hours.

Vacancy on RSGB Bulletin

There is a vacancy on the editorial staff of the RSGB BULLETIN and associated publications.

A good command of English, the ability to write quickly and lucidly on a wide variety of subjects, and enthusiasm are essential. A knowledge of Amateur Radio, preferably as a licensed amateur, would be an advantage.

Applications for this interesting post on the Society's Headquarters staff should be addressed to the General Manager, Radio Society of Great Britain, 28 Little Russell Street, London, W.C.1.

Basil's Outing

The Wirral Amateur Radio Society, working in conjunction with members of the Ainsdale Radio Society, held a rather unusual event on the weekend of May 9/10.

An outstation using the call sign GW2AMV/A was set up in Bwldr Gwyn, North Wales and proceeded to contact the control station, G3IGG, in Hooton, Wirral at 9.30 on the morning of Saturday, May 9. From then on 17 car loads of amateurs, many accompanied by their wives and families, were despatched at five minute intervals in order to compete in a form of amateur radio treasure hunt.

There were forty clues on the route which had to be spotted, and the correct answers put on the entry forms. To make the event more interesting many cars also entered for a mobile radio event and received key words over the air. These key words enabled them to decipher a code which was provided at the start, and this gave them several of the necessary clues.

A further class was for D/F enthusiasts who were instructed to take bearings on the outstation from three different locations. These bearings were compared with the actual locations and the winner was chosen from the most accurate results.

The outstation, whose location was, of course, not divulged to the participants was provided by G3CSG and manned by himself and G2AMV. The whole event was

expertly organized by G2AMV, with able assistance from his wife and children. G3CSG looked after most of the technical details involved in organizing the outstation.

The overall winner of the event was G3EGX, Len Roberts and party, who also won the D/F competition. Second in the ordinary class was Harry Schroeder. Winners in the radio class were George Kimber, G3HAC, Dennis Bagshaw, G3FNQ and Norman Horrocks, G2CUZ.

For the outstation crew there was a pleasant weekend's camping combined with some interesting amateur radio activity of a rather unusual nature. It is hoped that G2AMV will put on another such event next year.

GPO Morse Tests

Morse Tests will be held at the Head Post Offices in Birmingham, Cambridge, Derby, Leeds and Manchester during the week commencing September 14, 1964, provided there are sufficient candidates. Application forms may be obtained from the Radio Services Dept., Radio Branch, GPO Headquarters Building, St. Martin's-le-Grand, London, E.C.1. Completed application forms, to which the entrance fee of 10s. must be affixed in stamps, must be posted to the Wireless Telegraphy Section, Union House, St. Martin's-le-Grand, London, E.C.1, to arrive not later than August 31, 1964.

RAE Courses

Courses in preparation for the Radio Amateurs' Examination will be held at the following centres during the coming session:

Beckenham, Kent: Evening Education Centre, 28 Beckenham Road. Thursdays, 7-9 p.m., commencing September 24. Details from M. D. Bass, B.Sc., G3OJE, 42 Clevedon Road, London, S.E.20.

Birkenhead. Provided sufficient support is forthcoming, a course will be held next year at the Birkenhead Technical College.

Birmingham: King's Heath Further Education Institute (Brandwood Road Centre). Details may be obtained from the Principal, or from the Instructor, W. V. Shepard, BRS19176, at the Bournville Radio and Tape Recording Society, c/o Cadbury Bros. Ltd., Bournville.

Derby and District College of Technology, Kedleston Road. A course lasting for three terms will be conducted by F. C. Ward, G2CVV. Theory classes will be held on Tuesdays, from 7-9 p.m., and Laboratory and Practical on Fridays at the same time. Classes commence on Tuesday, September 22. Enrolment will take place on September 14, 15 and 16. Fees: students over 21 years of age, one evening per week, 40s.; two evenings, 50s.; 18-21 years, one evening, 20s.; two evenings, 30s.; under 18, one shilling.

East Ham Technical College, High Street South, East Ham, E.6. Enrolment will take place on September 14, 15 and 16 from 6.30 till 9 p.m. The course will commence with Morse classes on Monday, September 21, and theory classes on Wednesday, September 23, from 7-9.30 p.m. Fees: 51s., or 31s. either part for students over 21, and 41s., or 26s. for students under 21.

Erith Technical College, Erith Road, Belvedere, Kent. Course commences in September. Details from the Principal or from E. C. Hasted, G3BHF, 54 Plaxtol Road, Erith, Kent.

Halifax: Percival Whitley College of Further Education, Francis Street. Courses during the session 1964/65 on Monday evenings, 7-9 p.m. Enrolment will take place from September 7 to 10. Further details from A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax, Yorks.

Huddersfield. A course will begin in September at the Huddersfield College of Technology. Radio theory classes and Morse practice will be held on two nights per week. Enrolment dates will be announced in the local press.

Ilford Literary Institute (County High School for Girls), Cranbrook Road, (adjacent to Gants Hill Station, Central Line). The following classes have been arranged by the East London

RSGB Group: (i) An eight-month course for those intending to take the RAE in May, 1965 (Wednesdays, 7.15-9.15 p.m.). An overflow class may be held on Thursdays, 7.15-9.15 p.m. This class has run each year since 1948 with great success under the same instructor, W. G. Hall, G8JM, 48 Hawkdene, N. Chingford, London, E.4, to whom application should be made to reserve a place; please send s.a.e.; (ii) Morse and Codes of Practice: a six-month course in preparation for the GPO Morse Test for an Amateur (Sound) Licence. It is hoped that arrangements may be made for those who, in the opinion of the instructors, have reached the required speed to be tested at the College by a Post Office representative.

Enrolment will take place on September 7-10 from 7-8.30 p.m. Classes commence on September 21. Fees: Morse only, 27s.; RAE only, 40s.; combined course, 50s.

Leicester College of Technology. Enrolment commences on September 14. Classes will be held on Wednesdays, 6.30-7.15 p.m., Morse, and 7.15-9.15 p.m., Theory. The instructors are H. Booth, G2DSF, and G. N. Harvey, G3PSL, respectively.

London: North London Institute, Lordship Lane, Tottenham, N.18. The course commences in September, and the lecturer will be Mr A. Gregory. Details may be obtained from the Principal.

Northwood Evening Institute, Potter Street School, Northwood Hills, Middlesex. Courses are being held in RAE Theory, Morse and Practical Radio. Fees: 30s. for first subject, 7s. 6d. for each additional subject. Enrolment will take place on September 14-16 from 6.30-8.30 p.m. Classes begin the following week. Instructors: G. P. Anderson, G2QY, and A. G. Goddard, G3NQR.

Manchester: Openshaw Technical College, Whitworth Street, Openshaw, Manchester, 11. Enrolment will take place at the end of September. Further details may be obtained by sending s.a.e. to H. Barnsley, G3HZM, 11 Cemetery Road, Denton, Manchester.

Reading Technical College. Enrolment will take place on September 9-11. Further details may be obtained from the Principal.

Wembley: Wembley Evening Institute, Copland School, Wembley High Road. Enrolment will take place on September 14-17, from 7.15-9.15 p.m. The classes, which are on Mondays, from 7-10 p.m., begin on September 21. Morse instruction is from 7-8 p.m., and Radio from 8-10 p.m. The session runs for 30 weeks, ending just before Whitsun, 1965, and the fee is 30s. Arrangements are made for students to take the May RAE at the Institute.

A further list of RAE Courses will be published next month.

RSGB Slow Morse Practice Transmissions

The following Slow Morse Practice transmissions are sponsored by the RSGB. Alterations and additions to this list should be sent to the Honorary Organiser, M. McBrayne, G3KGU, 25 Purlieu Way, Theydon Bois, Essex.

Time	Call-sign	kc/s	Town	Time	Call-sign	kc/s	Town
Sundays				Wednesdays			
08.00 ...	G3KLT	1827	Birmingham	19.00 ...	G3RBP	1860	Oxford
09.30 ...	G3KZZ	1920	South Shields, Co. Durham	20.00 ...	G3RQX	1840	Wolverhampton, Staffs.
10.15 ...	G3CGD	1875	Cheltenham	20.00 ...	G3KFE	1980	Stevenage, Herts.
10.30 ...	G1JEX	1860	Belfast	20.30 ...	G3SAD/A	1920	Theydon Bois, Essex
11.00 ...	G2FXA	1900	Stockton-on-Tees	20.30 ...	G3KGU	1875	Felixstowe
12.00 ...	GM3HBY	1903	Glasgow	21.00 ...	G3AGN	1890	Stoke-on-Trent
12.00 ...	G3HVI	1890	Stoke-on-Trent	21.00 ...	G3HVI	1892	Salisbury, Wilts.
12.00 ...	G3OGD	1840	Margate, Kent	21.00 ...	G3LKT	1892	Salisbury, Wilts.
13.00 ...	G3SQU	1920	Blackburn, Lancs.	21.00 ...	G3PLQ	1850	Doncaster, Yorks.
18.00 ...	G3NCZ	1980	Gt. Yarmouth	21.00 ...	G3POU	1850	Doncaster, Yorks.
19.00 ...	G3SEP	1875	Hexham, Northumberland	21.00 ...	G3KAD	1850	Doncaster, Yorks.
19.00 ...	G3NPB	1875	Salisbury, Wilts.	21.00 ...	G3SFO	1850	Doncaster, Yorks.
21.00 ...	G3LKT	1892	Salisbury, Wilts.	Thursdays			
21.30 ...	G3PLQ	1875	Harrow Weald, Middx.	18.30 ...	G3NC	1968	Swindon
Monday				19.00 ...	G3NUT	1875	Wallasey
18.30 ...	G3NC	1968	Swindon	19.00 ...	G3NPB	1875	Hexham, Northumberland
19.00 ...	G3NCZ	1920	Blackburn, Lancs.	19.30 ...	G3LZV	1910	Canterbury, Kent
19.30 ...	G3MXS	1875	Birkenhead	20.00 ...	G3NHR	1900	Hounslow
19.00 ...	G3NPB	1875	Hexham, Northumberland	20.30 ...	G3RSF	1925	Harlow, Essex
19.30 ...	G3LZV	1910	Canterbury, Kent	21.00 ...	G3IRM	1981	Bury St. Edmunds
19.30 ...	G3SRY	1920	Cheam, Surrey	21.00 ...	G3MWO	1892	Salisbury, Wilts
20.00 ...	G3HJG	1825	Manchester	21.00 ...	G3LKT	1892	Salisbury, Wilts
20.00 ...	G3IBJ	1910	Southampton, Hants.	21.00 ...	G3PLQ	1892	Salisbury, Wilts
20.00 ...	G3PKZ	1930	London N.22	21.00 ...	G3ADQ	1990	Bradford, Yorks.
21.00 ...	G3IRM	1981	Bury St. Edmunds	21.30 ...	G3EVT	1865	Redditch, Worcs.
21.00 ...	G3MWO	1892	Salisbury, Wilts.	22.00 ...	G3AWL	1980	Wingate, Co. Durham
21.00 ...	G3LKT	1892	Salisbury, Wilts.	Fridays			
21.15 ...	G3ADQ	1990	Bradford, Yorks.	18.30 ...	G3NCZ	1920	Blackburn, Lancs.
21.30 ...	G2BSW	1865	Studley, Warks.	19.00 ...	G3LLM	1820	Bath
Tuesdays				19.00 ...	G3RBP	1860	Oxford
19.00 ...	G3NPB	1875	Hexham, Northumberland	19.00 ...	G3NPB	1875	Hexham, Northumberland
19.00 ...	G3NUE	144.26 Mc/s	Worcester	19.30 ...	G3PWU	1850	Reading, Berks.
20.00 ...	G3RZO	1865	Redditch, Worcs.	20.00 ...	G3LLM	1820	Bath
20.00 ...	G3PJI	1910	Southampton	20.30 ...	G3PED	1920	Goodmayes, Essex
20.00 ...	G3AYJ	1925	Birmingham	21.00 ...	G3LKT	1892	Salisbury, Wilts.
20.30 ...	G3NXX	1915	Loughon	21.00 ...	G3PLQ	1920	Dorking, Surrey
21.00 ...	G3LKT	1892	Salisbury, Wilts.	21.30 ...	G3PKE	1865	Redditch, Worcs.
21.30 ...	G3HZG	1865	Redditch, Worcs.	21.30 ...	G3RZI	1900	Pudsey, Yorks.
22.00 ...	G3LLM	1820	Bath	21.30 ...	G3RPV	1900	Bradford
22.00 ...	G3AWL	1980	Wingate, Co. Durham	22.00 ...	G3KSS	1820	Bath
22.00 ...	G3HJM	1925	Manchester	23.00 ...	G3LLM	1903	Glasgow
Wednesdays				Saturdays			
18.30 ...	G2FXA	1900	Stockton-on-Tees	10.00 ...	G3SQU	1840	Margate, Kent
19.00 ...	G3GBS	1865	Moseley	13.00 ...	G2FXA	1900	Stockton-on-Tees
19.00 ...	G3GBJ	1870	Redditch, Worcs.	14.00 ...	G1JEX	1860	Belfast
19.00 ...	GW3CJR	1930	Newbridge, Mon.	19.00 ...	G3NPB	1875	Hexham, Northumberland
				20.00 ...	G3KPO	1980	Peterborough
				21.00 ...	G3LKT	1892	Salisbury, Wilts.
				21.00 ...	G3PLQ	1892	Salisbury, Wilts.

† Alternately

Can You Help?

● D. J. Bean, BRS24632, 51 Heathfield Square, London, S.W.18, who requires information on the conversion of the RT-7/APNI Radio Altimeter for use on 420 Mc/s?

Closing date for the September issue
August 7

Closing date for the October issue
September 11

Copy received after these dates may be held over to the following issue if still topical

Silent Keys

We record with sorrow the passing of the following amateurs:

- P. M. Cleland, GM3ITC, of Motherwell, Lanarks.
- R. C. Edwards, BRS22992, of Ewell, Surrey.
- R. Forsyth, GM3JCY, of Shotts, Lanarks.
- S. M. Jones, VE7XX, of Victoria, British Columbia.
- H. R. Morey, G3GUA, of Newbury, Berks.
- J. A. Partridge, G2KF, of Totnes, Devon.

The 1965 V.H.F./U.H.F. Listeners' Championship

THIS contest breaks new ground in RSGB events. There are ten RSGB v.h.f./u.h.f. contests each year and entrants for the Championship may submit logs for as many of these events as they wish. These logs will be checked at the same time as the corresponding transmitting logs and scores will be published with the appropriate transmitting event. The scores of the best six logs from each entrant will be totalled over the year and the final result should appear early in 1966. Logs submitted for the 144 Mc/s and 70 Mc/s Listener Contests and for the 1250 Mc/s Tests will be automatically credited to the Championship.

There will be a large bonus for listeners who can cover the u.h.f. bands (there are three 70 cm and two 23 cm events each year) but otherwise the scoring is based on the established March 144 Mc/s Listeners' Contest. Though transmitting members may take part in the 70 Mc/s and 144 Mc/s Listener Contests it has been decided that their participation in the Championship is inappropriate.

Looking ahead to 1966, once the Championship is established there are at least two ideas that the Contests Committee are considering. The first is to score listener events on the "points for distance" basis (see the IARU Region I rules). The second is to allow co-operation between listeners in providing each other with equipment and sharing operating time, i.e., a section for multi-operator listener stations. Comments on these and any other ideas for encouraging listener interest in v.h.f./u.h.f. contests will be gratefully received. Please note that the rules for the 1966 event will be finalized during the summer of 1965, so do not delay making any comments.

Rules

1. **Eligible Entrants.** The Championship is open to all non-licensed fully paid-up members of the RSGB resident in Europe. Only the entrant may operate his receiving station which must remain at one site for the duration of each contest, and holders of amateur transmitting licences are not eligible to take part.

2. **Duration.** The Championship will run from January to December 1965, on those days and times when RSGB v.h.f. and/or u.h.f. contests occur.

3. **Scoring.** Points are to be scored for each complete log entry, with bonus points for each new county received, for c.w. reception and for reception on the higher frequency bands.

For each station logged in the entrant's own county or an adjacent county—10 points (see list in January BULLETIN).

For each station logged in other counties in the entrant's own country—20 points.

For each station logged outside the entrant's own country—30 points.

For a log entry of any station not taking part in the contest—five points.

Bonus points: for an entry of a telegraphy transmission double points are to be claimed. For each British Isles County received an additional 20 points may be claimed. The whole score of a log for the 420-450 Mc/s band is to be multiplied by three and the whole score for any frequencies above 1215 Mc/s is to be multiplied by ten.

4. **Entries.** Entrants may submit logs for any or all of the following RSGB Events:

144 Mc/s C.W. Contest—January 1965.

144 Mc/s Listener Contest—March 1965.

First 144 Mc/s Portable Contest—May 1965.

First 420 Mc/s Contest—May 1965.

70 Mc/s Listener Contest—June 1965.

1250 Mc/s Test—July 1965.

Second 144 Mc/s Portable Contest—July 1965.

V.H.F. National Field Day—September 1965.

Second 420 Mc/s Contest—October 1965.

70 Mc/s C.W. Contest—December 1965.

The scores of the best six logs from each entrant will be added at the end of the year and will be the basis of the awards. Not more than four of these six logs will be for v.h.f. (i.e. 4m or 2m bands).

5. **Logs.** Entrants submitting logs for V.H.F. National Field Day must enter each band on a separate sheet.

Logs must show in columns: (i) date/time (GMT); (ii) Call-sign of station heard; (iii) my report on signal heard; (iv) report and serial number sent by station heard; (v) call-sign of station being worked; (vi) county of station heard (British Isles stations); (vii) points claimed. Stations not sending a serial number may be logged as non-contestants (at five points, see above).

6. Entries must be set out on RSGB Contest log sheets available from RSGB Headquarters on request, or, on one side only of foolscap paper, and posted within the period allowed for the appropriate transmitting contest.

7. At the discretion of Council, certificates of merit will be awarded to the leader and runner-up in the Championship. Certificates may also be awarded for particularly meritorious logs for individual events. (These awards are in addition to the awards for the 144 Mc/s and 70 Mc/s Listener Contests and the 1250 Mc/s Tests).

BERU Contests 1964

In the table of results of the BERU Contests on page 469 of the July issue of the BULLETIN, the call-sign G2FYZ listed in position 55 should read G2FYT.

R.S.G.B. CONTEST LOG SHEET

Contest V.H.F. NED.		430 Mhz		Sheet No. 1/5		Call-sign G2FYZ	
Date & Time (G.M.T.)	Call-sign of Station Worked	My report on his signal (v.f. or u.f.)	His report on my signal (v.f. or u.f.)	STATION WORKED	COUNTY	Points Claimed	
4.9.65					Total from previous sheet		
1803	G4XYZ	58	59001	G4ABC/P	SUSSEX	10	
1810	G4ABC/P	56	58004	G4EFG/P	BERKS	20	
1825	G4HIS	449	449001	G4ABC/P	GUERNSEY	60	
1840	G4EFG/P	58	59010	G4XYZ	HANTS	10	
1859	G4MNO	59	—	G4XYZ	SUSSEX	5	
1930	F9CQD	449	559007	G4XYZ	—	60	
1951	F8ZYX	56	57019	G4XYZ	—	30	
					TOTAL	195	
		ADD 4 COUNTIES AT 20 PTS.				80	
						275	
		MULTIPLY BY BAND BONUS X 3				825	
Claimed score on 430 Mhz 825 pts							
Logs also entered for 70 and 144 Mhz.							

A typical contest log sheet.

CONTEST NEWS

— RESULTS — REPORTS — RULES —



High Wycombe D/F Qualifying Event

Fifteen teams assembled at Winter Hill, a well-known beauty spot overlooking the Thames and a short distance from Marlow, for the start of this event on Sunday, June 14, 1964. Torrential rain during the morning made the task of organization very difficult, and the site of one transmitter became flooded to within a few inches of the equipment, but the weather cleared in the late morning and the rest of the day was bright and sunny.

Transmitter A was some eight miles to the east of the start on Stoke Common, about half a mile from the road and only accessible by crossing the heavily overgrown common or by a narrow, flooded footpath. Transmitter B was 12 miles to the west of the start hidden in dense undergrowth on Kingswood Common, the two sites being separated by nearly 20 miles. Despite the distance good signals were present at the start and competitors soon dispersed in roughly equal numbers to the east and west.

The final result was probably the most unexpected in the history of D/F competitions. Only two competitors succeeded in locating both transmitters before the close-down and these two competitors tied for first place; arriving at each transmitter only one minute before the end of the contest. G. Nicholson of Slade reached Station A at 14.54, but took one hour, 35 minutes to find the B station at 16.29, forcing his way through the dense undergrowth to literally arrive at the last minute. E. Mollart of the Oxford Society found his two stations in the reverse order, arriving at Station B at 15.21, and reaching Station A in an exhausted condition at 16.29, having run the last half mile through a swamp. Three other competitors successfully located both transmitters shortly after closedown, three more were successful in locating Station A and another four in locating Station B; full results are appended below.

A party of 50 sat down to tea at Burgers Restaurant, Marlow. Mr Burger, himself a D/F enthusiast, provided a wonderful repast served by lady members of the party. Although this proved to be a very difficult contest, all competitors had good signals, good weather and a very interesting and pleasant day. At the conclusion of the tea a new High Wycombe Challenge Cup, provided by G. T. Peck, was presented jointly to E. Mollart and G. Nicholson together with first and second prizes generously donated by G4NT. The first Wycombe Cup has already been won outright by E. Mollart with three successive wins.

RESULTS

Name	Club	Time of Arrival at	
		A Station	B Station
E. L. Mollart†	Oxford	16.29	15.21
G. Nicholson†	Slade	14.54	16.29
M. P. Hawkins	Oxford	16.34	15.14
E. W. Bristow	Oxford	16.35	15.28
D. H. Collier	Slade	14.52	16.38
G. H. Taylor	AEI	14.48	—
W. North	Chilterns	14.53	—
A. C. A. Newman	Salisbury	15.17	—
J. Mordant	Oxford	—	15.24
T. J. Hayward	Slade	—	15.27
O. L. Harding	AEI	—	15.28
J. J. Grant	AEI	—	16.35
A. Bristow	Oxford	—	—
I. Butson	Oxford	—	—
J. Laurence	Salisbury	—	—

† Tie for first place.

The event was organized by G. T. Peck on behalf of the High Wycombe Group, and stations G8VZ and G3OUV were operated by P. Perkins and J. Redrup respectively.

Derby D/F Qualifying Event

In contrast to last year's event, the function this year was held in excellent weather.

Fifteen teams from various parts of the country started from a pleasant spot by the side of the river Trent at Swarkestone just south of Derby.

There were two transmitters to find, the A station operated by G3RTG/P was in a ditch approximately 1½ miles NNE of the start and the B transmitter was in dense fern on Beacon Hill in Charnwood Forest approximately 12 miles SE of the start.

The first person to find his second transmitter was M. Hawkins, who was very jubilant in the knowledge that he had subdued his Oxford club rival, E. Mollart, who came in second. Third to arrive was E. Bristow, and G. Taylor

Position	Name	Club	Arrival at Transmitter "A"	Arrival at Transmitter "B"
			"A"	"B"
1	M. Hawkins	Oxford	2.34	3.37
2	E. Mollart	Oxford	2.33	3.47
3	E. W. Bristow	Oxford	4.13	3.05.30
4	G. Taylor	Rugby	2.38	4.21.30
5	L. Harding	Rugby	2.45	4.23
6	Mr. North	Oxford	2.50	4.29.30
7	S. Smith	Derby	2.31	—
8	M. Shardlow	Derby	2.31	—
9	Mr. Collier	Slade	—	3.04
10	A. D. Bristow	Oxford	3.09	—
11	D. Roome	Derby	—	3.15
12	J. Grant	Rugby	—	3.50
13	Mr. Butson	Oxford	—	4.21

was fourth. Mr O. L. Harding was fifth, and the last to find both stations was Mr North who almost collapsed after running in from approximately two miles.

One competitor from Rugby, Roger Hoffman, attempting to uphold the prestige of the Land Rover managed to overcook it to such a degree that a local farmer had to be bribed into producing a tractor to drag it out. Fortunately one of the organizers was on hand with a camera to prove that this really did happen.

An excellent tea, at which prizes were presented to the winners, was enjoyed by 37 competitors and friends.

The very successful proceedings which were watched over by the always welcome Doug Findlay, of the RSGB Contests Committee, broke up around 7 p.m.



The Derby D/F Qualifying Event being started from the side of the River Trent at Swarkestone on June 28.

(Photo by Martin Shardlow)

The organizers from Derby and District Amateur Radio Society, A. Hitchcock, G3ESB and F. Allsop, G3IFA, would also like to thank their colleagues L. Hazlehurst and R. Chambers, G3RTG, for the work they put in to make the event the success that it was.

D/F National Final

Details of the D/F National Final to be held on September 13, 1964, will be sent by post to all those qualified to take part.

Second 1-8 Mc/s Contest 1964

The rules for this year's Second Top Band Contest are as follows:

1. When: 22.00 GMT on Saturday, November 28, 1964, to 08.00 GMT on Sunday, November 29, 1964.
2. Eligible Entrants: All fully paid-up members of the RSGB resident in G, GC, GD, GI, GM and GW.
3. The General Rules published in the January, 1964 issue of the RSGB BULLETIN relating to RSGB Contests will apply.
4. Contacts: C.W. (A1) only in the 1-8 Mc/s band.
5. Scoring: Three points for contacts with stations in the entrant's own county and those counties having a common boundary with that of the entrant and five points for all other contacts.
6. Contest Exchanges: RST reports followed by the contact number starting with 001 and the county code letters given on page 52 of the January, 1964, issue of the BULLETIN, e.g. for a contact from Surrey 579005SY. All reports must be acknowledged with "R".
7. Logs: (a) Must be tabulated in columns headed (in this order): "Date/Time GMT", "Call-sign of station worked", "My report on his signals and serial number sent", "His report on my signals and serial number received", "County code letters received", "Points claimed." The county code letters as sent must be entered at the top of each log sheet.

(b) The cover sheet must be made out in accordance with RSGB Contest Rule 4. The declaration must be signed.

(c) Entries must be postmarked not later than December 14, 1964.

8. Power Input: The d.c. input to any stage of the transmitter shall not exceed 10 watts.
9. Awards: At the discretion of the Council, the Victor Desmond Trophy will be awarded to the winning station and certificates of merit to the stations placed second and third. In addition, the Maitland Trophy will be awarded to the Scottish member with the highest aggregate number of points in this contest combined with the First 1-8 Mc/s Contest 1965.

A certificate of merit will also be awarded to the non-transmitting member submitting the best check log. Check logs submitted by non-transmitting members for consideration for the award of a certificate of merit should give in this order the following details: Date/Time (GMT); Band; Call-sign of station heard; Report and serial number sent by station heard; Call-sign of station being worked; any other information required by the above rules.

The following are corrections to the United Kingdom Counties list published in the January, 1964 issue of the RSGB BULLETIN:
BR Brecknock CA, CR, GN, HD, MH, RN.
GR Gloucester, BE, HD, OX, WK, WR, MH, ST, WE.
SE Shropshire, CH, DB, FT, HD, MG, RN, SD, WR.
LD London (postal districts), EX, KT, HF, MX, SY.

70 Mc/s C.W. Contest

The rules for this popular contest are as follows:

1. When: 10.00 GMT to 22.00 GMT on Sunday, December 13, 1964.
2. Eligible Entrants: All fully paid-up members of the RSGB resident in IARU Region 1. Only single operator stations may enter.
3. The General Rules relating to RSGB Contests published in the January 1964 issue of the BULLETIN will apply except as superseded by the rules of this Contest.
4. Contacts may be made on A1 only.
5. Scoring will be on the basis of 1 point per mile.
6. Contest Exchanges: RST reports followed by the contact number (starting with 001) and the location (e.g. RST579015 5 NE Oxford). The location of stations in the UK must be given as a distance and bearing from a place shown on the Ordnance Survey 10 miles to the inch map of Great Britain or actually at such a place.
7. It is the responsibility of the receiving operator to obtain sufficient information to enable him to calculate his score.
8. Entries: (a) Logs must be tabulated in columns headed in this order: (i) Date/Time (GMT); (ii) Call-sign of station worked; (iii) My report on his signals and serial number sent; (iv) His report on my signals and serial number received; (v) Location of station as received; (vi) Points claimed.
9. (b) The cover sheet must be made out in accordance with RSGB General Contests Rule 5 and the declaration signed. The location as transmitted, the NGR in the case of stations in G, GC, GD, GM and GW, and latitude and longitude in the case of other stations, must be included on the cover sheet.
10. (c) Entries must be postmarked not later than Monday, December 28, 1964.
11. Awards: At the discretion of the Council of the RSGB certificates of merit will be awarded to the leading station and to the runner-up. A

certificate of merit may also be awarded to the non-transmitting member submitting the best check log in the opinion of the Contests Committee.

Affiliated Societies' Contest 1965

The rules for the Affiliated Societies' Contest to be held on January 23-24, 1965 are as set out below. The attention of non-contestants is called to Rule 6.

1. The contest is open to all Societies in fully paid-up affiliation with RSGB at the time of the Contest.
2. The General Rules to be published in the January 1965 issue of the RSGB BULLETIN relating to RSGB Contests will apply except as superseded by the rules of this Contest. For the purpose of this Contest all entries are classed as multi-operator stations.
3. The Contest will be in two periods:
19.00 to 23.00 GMT January 23, 1965 and
19.00 to 23.00 GMT January 24, 1965.
4. Entrants must operate in the 1-8 Mc/s band on c.w. only, and operate in such a way as to minimize interference with other band users. Contacts with telephony stations are not permitted.
5. Ten points will be scored for contacts with Affiliated Society stations, and five points for all other contacts. Contacts may be made once only with a station during each operating period. The contest score will be the sum of the points obtained in both periods, and the combined log will be prefaced by a cover sheet made out in accordance with RSGB General Rule 4.
6. Affiliated Society stations only must send AFS to identify themselves as contestants, after the report serial number groups, e.g. 559004AFS. Serial numbers will advance throughout the entire contest.
7. Call-signs which have been issued to Societies must be used, but their use at an alternative address is not debarred. If no Society call-sign is held the call-sign of a member may be used.
8. Entries must be postmarked not later than February 8, 1965, and must be submitted in the following form:

Date/Time GMT	Call-sign of station worked	Our report on his signals and serial no. sent	His report on our signals and serial no. received	Enter AFS if received	Call-sign of Operator	Points Claimed

Cover sheets and log forms are available from RSGB Headquarters on request.

9. The declaration must be signed by an officer of the Affiliated Society, who will be held responsible for the conduct of the station.
10. At the discretion of the Council of the RSGB, the Edgware Trophy will be awarded to the Affiliated Society submitting the highest total checked score.

CONTESTS DIARY

- August 1-2 - YO Contest.
- August 1-2 - CR7 Contest.
- August 8-9 - WAE DX (c.w.).
- August 15-16 - WAE DX (phone).
- August 29-30 - All Asia Contest.
- September 5-6 - V.H.F. National Field Day.
- September 5-6 - Labre (c.w.) Contest (see page 529).
- September 5-6 - Region I IARU V.H.F. Contest (see page 471, July, 1964).
- September 12-13 - Labre (phone) Contest.
- September 13 - D/F National Final.
- September 20 - Low Power Field Day (see page 471, July, 1964).

- October 3-4 - RAEN Rally.
- October 3-4 - VK/ZL/Oceania Contest (phone).
- October 10-11 - VK/ZL/Oceania Contest (c.w.).
- October 10-11 - VU2/457 Contest (phone).
- October 17-18 - Second 420 Mc/s Contest (see page 471, July, 1964).
- October 17-18 - VU2/457 Contest (c.w.).
- October 31 -
- November 1 - RSGB 7 Mc/s DX Contest (phone).
- November 21-22 - RSGB 7 Mc/s DX Contest (c.w.).
- November 28-29 - Second 1-8 Mc/s Contest.
- December 5-6 - RSGB 21/28 Mc/s Telephony/Receiving Contests.
- December 13 - 70 Mc/s C.W. Contest.

CLUBROOM

A Monthly Survey of Group and Club Activities

News from the Newsletters

The Harwell QAV reports forcefully on the various unfortunate happenings during NFD together with some equally forceful, but constructively critical, suggestions for the future. Reigate also had their troubles during NFD as reported in *Feedback*: a mast collapsed with the result that the 20m quad had to be scrapped. The Royal Signals *Mercury* gives details of a simple transistorized electronic keyer and also prints the circuit diagram and detailed information on the B44 Mk II transmitter-receiver. The South Birmingham QSP prints an interesting and eye-opening report on a commercial transmitter, and Southampton's QUA reviews one of the cheaper commercial receivers. Echford's well produced *Newsletter* describes an ingenious portable mast made up from five broomsticks and also gives the circuit of a useful d.c. multimeter. The summer edition of the Norwich NARC *Challenge* describes a cheap high-gain beam for v.h.f., and a simple transceiver. There is also an article on the design and construction of transistorized d.c. to d.c. converters. The South London Mobile Club's *G3SLM Newsletter* describes a simple and effective car thief alarm. The Midway *MARTS Newsletter* gives details of a simple 4m converter. Midland's *MARS Newsletter* gives some useful notes on workshop practice.

Club Reports

Bristol Group. Approximately 40 members and visitors attended the meeting on June 26 to hear a talk by Mr F. Wallington, of the GPO Interference Suppression Department. The work of the Department was outlined, and Mr Wallington dealt at some length with the changes embodied in the new Amateur Licence.



G3JFD operating G3ERD/A at a Drumbugue held on May 30 at the Boy Scouts Camp site at Drum Hill.

(Photo by G3SZJ/T)

Cambridge & District ARC. June was a busy month with participation in NFD, a visit to Luton & District Club, the picnic rally at Houghton Mill, St Ives, and planning for the Amateur Radio and Amateur Television Demonstrations at the Bottisham Fete. It has been decided to suspend activities during the peak of the holiday season, but a comprehensive programme is being arranged for the autumn.

Chester & District ARS. A Net Night will be held on August 4 with operation on 1985 kc/s and 2m. A discussion meeting will be held on August 11 and an open night on August 18. Visitors and new members are always welcome.

Conway Valley ARC. On June 11 members visited the GPO Anglesey Radio station. There will be no meeting during August. The AGM will be held on September 10 at 7.30 p.m. at the Albert Hotel, Madoc Street, Llandudno.

Cheshunt & District RC. At the July meeting there was a very interesting lecture and demonstration by representatives of Cosmocord Ltd. On September 5 the club will be operating a low power phone station under the call-sign GB3CRC on 160m and 80m from the Goffs Lane Playing Field, Cheshunt, Herts. The event has been arranged to provide field day experience for this comparatively new club and to give members of the public an opportunity of seeing their local radio amateurs at work. Meetings are held on the first Friday of each month at 7.30 p.m. at the Civil Defence Centre, Cheshunt. There will be a tape lecture at the next meeting on August 7, and visitors will be most welcome.

Crawley ARC. The main meeting for August will be the ever popular Junk Sale, when G3FRV will attempt to dispose of all the unrepeatable bargains. Visitors are always welcome. Full details of meetings may be obtained from the Honorary Secretary, R. G. B. Vaughan, G3FRV, 9 Hawkins Road, Tilgate, Crawley, Sussex.

Derby & District ARS. Activity during August will be centred around the Society's Mobile Rally to be held at Rykneld Schools, Bedford Street, Derby, on Sunday, August 16. On Saturday, August 29, members will be staging two live exhibits and a static display at the Derby Railway Show at the Loco Works, Midland Station, Derby.

Flintshire RS. The first of a series of lecture discussions on the RAE was held on June 30. No meeting is planned for August. Details of the autumn programme may be obtained from the Honorary Secretary, A. Antley, Fairholm, Fairfield Avenue, Rhyl.

Hounslow & District RS. At the AGM held in May, the following were elected: Chairman, H. T. Rogers, G3NHR; Honorary Secretary, D. F. J. Walmsley, G3HZL; Honorary Treasurer, W. Moncrieff. Committee: R. Hews, G3TDR, I. Rae, and S. Percival. The society's own call-sign is G3TDD. Details of meetings may be obtained from the Honorary Secretary at 153 Worpole Road, Isleworth, Middlesex.

Leicester RS. Meetings are held twice weekly: Monday evenings at 7.30 and Sunday mornings at 10.30 in the Club Rooms at Old Hall Farm, Braunstone Lane, Leicester. The autumn programme is being planned, and visitors will be welcome to any meeting. Honorary Secretary: N. J. Harrison-Grassby, 30 West Street, Enderby Road, Blaby, Leicester.

Lothians RS. At the AGM the following were elected: President, O. McCusker, GM2FCU, and Honorary Secretary, T. Spears, GM3OWI, 24 Priestfield Road, Edinburgh, 9.

Luton & District ARC. The club acted as hosts to the visiting Cambridge Club on June 16. A quiz programme has been arranged, and some of the more junior members showed a surprisingly wide knowledge of radio matters. A return visit to Cambridge is planned for September.

March & District ARS. The society is particularly interested in television transmission, and was responsible for the TV link at the Hunstanton Bucket and Spade party recently. Visitors from other clubs commented most favourably on the way this was carried out.

Northern Heights ARS. During June there were visits to the Moorside Edge BBC transmitting station, the Wharfedale Loudspeaker factory and Bradford Fire Station. Demonstration stations will be operated at the Halifax Agricultural Show on August 8 and at Crossleys Carpets Gala on August 15. A visit to the Jodrell Bank Radio Telescope has been arranged for August 16. Honorary Secretary: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax, Yorks.

Reading ARC. The meeting on August 29 will be devoted to descriptions of home-built equipment and on September 26 Messrs. Green and Davis will demonstrate and discuss equipment they offer to the radio amateur. Meetings are held at 7.30 p.m. at the Palmer Hall, West Street, Reading. Honorary Secretary: R. G. Nash, G3EJA, 9 Holybrook Road, Reading, Berks.

Reigate Amateur Transmitting Society. The Chairman, C. Cowan, is now G3TFJ, D. O'Brien is G3TGI and P. Hovenden is G8ABC, making a total of 26 calls out of a membership of 36. The club's newsletter, *Feedback*, reached its 50th edition with the July issue and has been edited by G3NKS since its inception five years ago. There will be an informal meeting at the "George and Dragon," Cromwell Road, Redhill, at 7.30 p.m. on August 15. Honorary Secretary: F. D. Thom, G3NKT, 12 Willow Road, Redhill, Surrey.

Salop ARS. In May there was a visit to the Shrewsbury Telephone Exchange and in June a visit to the Criggon GPO Transmitting Station. DX enthusiasts were impressed by the exclusive use of rhombics at a height of 100 ft., while those whose interest lies in the i.f. end of the spectrum were captivated by the v.l.f. aerial radiating on 19 kc/s. On July 9 there was a visit to the County Police Headquarters and on August 3 the club call was on the air for the first time on Top Band and 80m at the Church Stretton Traction Engine Rally. Honorary Secretary: K. E. Jones, G3RRN, Greystones, Shrewsbury Road, Church Stretton, Shropshire.

Scarborough ARS. Meetings are held every Thursday at 8 p.m. in the new club rooms which are in a prefabricated building at the rear of 7 Trinity Road, Scarborough. Visitors are welcome.

South Birmingham RS. An exhibition station will be in operation at Marston Green on August 22 and it is hoped that Top Band and 80m will both be in use. Three Mullard films were shown at the June meeting. Acting Honorary Secretary: A. E. Bishop, Jnr., 40 Cecil Road, Birmingham, 29.

South Dorset RS. On June 26, members visited the Bournemouth Automatic Telephone Exchange. The July meeting was held at Hardy's Monument, one of Dorset's highest points, when a 2m station operated by M. Box, G3RZG, and a 70cm and 23cm station operated by R. Staniforth, G3EGV, were demonstrated to a good gathering. Contacts were made on all three bands. A bring-and-buy sale has been arranged for the September meeting. Honorary Secretary: C. E. Biggs, G2TZ, 54 Prince of Wales Road, Dorchester, Dorset.

Southgate, Finchley & District Group. On June 11 there was a talk and live demonstration by G3NDT/T and other members of BATC when pictures were received from G3OUO/T in Wembley. On June 25 a start was made on constructing a large loaded whip for the club station. The next meeting will be on September 10. Meetings are at 7.30 for 8 p.m. at Atlasia Lodge, Tottenham Road, Palmers Green, London, N.13. Honorary Secretary: R. Wilkinson, 33 Amberley Road, London, N.13.

South Manchester RC. At the AGM the following were elected: Chairman, J. R. Knight, G3JRK; Vice-Chairman, F. Nicholls, G3MAX; Honorary Treasurer, D. Hyde; Honorary Secretary, M. Barnsley, G3HJM. Committee Members: J. Elliot, G3KIQ; T. Arden, G3LJF; P. Torry, G3SMT; Junior Representative, M. Cooper. Recent lectures have included "Simple Receiver Servicing" by G3MAX and G3SMI accompanied by demonstrations, and "How my Mobile Rig works" by G3KIQ. A visit was made to the Monks Hall Museum, Eccles, Lancs., to inspect the historical collection of transistors. Morse classes and RAE lectures will begin in September. The Honorary Secretary's address is: "Greenways," 11 Cemetery Road, Denton, Manchester, Lancs.

Surrey Radio Contact Club. The Treasure Hunt was a great success and was won by J. Kennedy, G3MCX, and M. Bass, G3OJE, who were equal first. "African Travelogue" aptly describes the talk and slide show to be given by Nell Corry, G2YL, at the meeting on August 11. Honorary Secretary: S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon, Surrey.

Torbay ARS. The June meeting was held at the Club Headquarters when a welcome was given to G3SSA/M from



The June meeting of the Welwyn Garden City Group took the form of a visit to the BBC TV transmitting station at Crystal Palace, South London. Eight receiving members, and seven with call-signs are seen gathered outside one of the buildings beneath the 710 ft. lattice landmark.

(Photo by G5UM)

Hull and to G3SGQ from the Britannia Royal Naval College Radio Club. Members took part in a "Three Minute Potted Talk" session. Honorary Secretary: Mrs. Gee Western, G3NQD, 118 Salisbury Avenue, Barton, Torquay, Devon.

Wimbledon & District RS. At a meeting in June, G. F. Gearing, G3JJG, gave a most interesting and instructive talk on s.s.b. On July 10, J. Tinkler, G3LRO, gave a lecture on the "Joystick" aerial. On August 14, K. Bailey, G3EPU, will talk about receivers. The club, which will be one year old in August, meets on the second Friday of each month at the Community Centre, 28 St. George's Road, Wimbledon, London, S.W.19. New members and visitors are always welcome.

Yeovil ARC. The club took part in NFD using the call-sign G3CMH/P. A tape lecture on "Basic Valve Circuits" was heard on June 10; the slides accompanying the tape were shown. The club was visited by eight Russian visitors to Yeovil, and a demonstration of amateur radio was put on for them by members. As usual, a number of members visited the Mobile Rally at Longleat, and for the first time, four members undertook the 200 miles journey to RAF Wethersfield for the Mobile Rally held there.

GB2RS SCHEDULE

RSGB News Bulletins are transmitted on Sundays in accordance with the following schedule:

Frequency 3600 kc/s	Time	Location of Station
	9.30 a.m.	South East England
	10 a.m.	Severn Area
	10.15 a.m.	Belfast
	10.30 a.m.	North Midlands
	11 a.m.	North West England
	11.30 a.m.	South West Scotland
	12 noon	North East Scotland
145-30 Mc/s	10.30 a.m.	Beaming north west from Sutton Coldfield
	10.45 a.m.	Beaming south west from Sutton Coldfield
145-50 Mc/s	11.00 a.m.	Beaming north from Leeds
	11.15 a.m.	Beaming east from Leeds
145-8 Mc/s	11.30 a.m.	Beaming west from Belfast
	11.45 a.m.	Beaming north east from Belfast
145-10 Mc/s	12 noon	Beaming north from London area
	12.15 p.m.	Beaming west from London area

News items for inclusion in the bulletins should reach Headquarters not later than first post on the Thursday preceding transmission. Reports from Affiliated Societies and from non-affiliated societies in process of formation will be welcome.

Forthcoming Events

Details for inclusion in this feature should be sent to the appropriate Regional Representatives by the first of the month preceding publication. A.R.s and club secretaries are reminded that the information submitted must include the date, time and venue of the meeting and, whenever possible, details of the lecture or other event being arranged. Regional Representatives are requested to set out the copy, preferably typed double spaced, in the style used below. Standing instructions for more than three months ahead cannot be accepted.

REGION 1

Ainsdale (ARS).—August 12, 26, 8 p.m., 77 Clifton Road, Southport.
Blackburn.—Fridays, 8 p.m., West View Hotel, Revide Road.
Blackpool (B & FARS).—Mondays, 8 p.m., Pontins Holiday Camp, Squires Gate, August 10 ("Questions and Answers"), August 12 (Visit to Police Headquarters at Hutton, Preston), August 17 ("My experience with Mobile Gear," by H. Fenton, G8GG), August 24 (Open Night), August 31 ("Batteries," by D. Taylor, G3OPT).
Bury (BRS).—August 11 ("Direction Finding," by M. Niman, G3LGN), 8 p.m., Knowsley Hotel, Kay Gardens.
Chester.—Tuesdays, 8 p.m., YMCA.
Eccles (E & DAC).—Tuesdays, 8 p.m., The Congregational Mission Church, King Street.
Liverpool (L & DARS).—Tuesdays, 8 p.m., Conservative Association Rooms, Church Road, Wavertree.
Macclesfield.—August 18, September 1, 42 Jordongate.
Manchester (M & DARS).—Wednesdays, 7.30 p.m., 203 Dryolsden Road, Newton Heath, Manchester 10.
Manchester (SMRC).—Fridays, 7.45 p.m., Rackhouse Community Centre, Daine Avenue, Northenden.
Morecambe.—August 5, September 2, 125 Regent Road.
Preston.—August 11, 25, September 8 (all meetings start with a Morse practice at 7.30 p.m.), St. Paul's School, Pole Street.
Southport (SRS).—Wednesdays, 8.30 p.m., Sea Cadets Camp, The Esplanade.
Stockport.—August 12, 26, September 9, The Blossoms Hotel, Buxton Road, Stockport.
Wirral.—August 5 ("Radio Mathematics," by L. Roberts, G3EGX), August 19 ("Evening D/F Contest"), 7.45 p.m., Harding House, Park Road West, Cloughton, Birkenhead.

REGION 2

Bradford.—August 18 ("Civil Defence and RAEN", by M. T. G. Powell, G3NNO), September 1 (Informal Meeting), 7.30 p.m., 66 Little Horton Lane.
Catterick.—Tuesdays and Thursdays, 7.30 p.m., Clubroom, Vimy Road.
Halifax.—August 25 ("Introduction to the RAE," by G3JML), Beehive and Crosskeys Hotel.
Northern Heights (ARS).—August 5 (Question Night), August 8 (Demonstration at Halifax Agricultural Show), August 15 (Demonstration Station at Crossleys Carpets Gala), August 19 (Ragchew), August 16 (Visit to Jodrell Bank, Contact G3MDW), meetings at 7.30 p.m., Sportsman Inn, Ogden.
Scarborough.—Every Thursday, 7.30 p.m., Chapman's Yard, North Street.
York.—Thursdays, 8 p.m., British Legion Club, Micklegate.

REGION 3

Birmingham (MARS).—August 18 ("Aerials," by H. V. Simms of the BBC), 7.30 p.m., Midland Institute, Paradise Street. (MRCC).—August 7, 7.30 p.m., Windmill House, Weatheroak, Wythall, Birmingham. (Slade).—August 21 (Visit from Wolverhampton ARS for Inter-Club Quiz), September 18 ("Television Spectacular"—Closed Circuit TV), 7.45 p.m., The Church House, High Street, Erdington.
Mid-Warwickshire (MWARS).—August 17, 31, 7.30 p.m., Civil Defence Training School, Harrington House, Newbold Terrace, Leamington Spa.
Stourbridge (S & DARS).—August 21 (Informal), 8 p.m., Bell Hotel, Stourbridge.
Stratford-upon-Avon (S-U-A & DARS).—Fridays, 7.30 p.m., Flat 1, Birds Commercial Motors, Stratford-upon-Avon.
Wolverhampton (WARS).—August 21 (Inter-Club Quiz with Slade ARS), 7.45 p.m., The Church House, High Street, Erdington.

REGION 4

Burton-on-Trent (B-o-TARS).—Wednesdays, 7.30 p.m., Club Rooms, Stapenhill Institute, Burton-on-Trent.
Chesterfield (C & DARS).—August 5, 7.30 p.m., Newbold Observatory, Newbold Road, Chesterfield.
Derby (D & DARS).—August 5 (Surplus Sale), August 12 (Rally preparations at Rykneld Schools), August 16 (Mobile Rally), August 19 D/F Practice Run, August 26 (Juniors' Night), August 29 (Exhibition at Derby Railway Show), September 2 (Surplus Sale), 7.30 p.m., Room No. 4, 119 Green Lane, Derby. (DSW Exp Soc.).—Fridays, 7.30 p.m., Sundays, 10.30 a.m., Club Rooms, Nunsfield House, Boulton Lane, Alvaston, Derby.
Grimsby (GARS).—August 13, 27, 8 p.m., Grimsby Model Engineers Club Rooms, Fletchers Yard, Wellowgate, Grimsby.
Leicester (LRS).—Mondays, 7.30 p.m., Sundays 10.30 a.m., Club Rooms, Old Hall Farm, Braunstone Lane, Leicester. The Hon. Secretary is now N. J. Harrison Grassby, 30 West Street, Enderby Road, Blaby, Leicestershire.
Lincoln (LSWC).—First Wednesday in each month, 7.30 p.m., Lincoln Technical College, Cathedral Street, Lincoln.
Loughborough (RCL).—Fridays, 7.30 p.m., Corporation Hotel, Wharnclyffe Road, Loughborough.
Mansfield (MRS).—Fridays, 7.30 p.m., ATC Headquarters, Sutton Road, Mansfield.
Nottingham (ARNC).—Tuesdays, Thursdays, Room No. 3, Sherwood Community Centre, Woodthorpe House, Mansfield Road, Nottingham.
Northampton (NSWC).—Thursdays, 7 p.m., Allen's Pram Works, 8 Duke Street, Northampton.

REGION 5

Cambridge (C & DARC).—The Club Headquarters will be closed during August. Fridays, 7.30 p.m., Corporation Yard, Victoria Road, Cambridge.
Luton (L & DARC).—No meeting during August. Tuesdays, 8 p.m., ATC Headquarters, Crescent Road, Luton.
March (M & DRAS).—Tuesdays, 7.30 p.m., rear of Police Headquarters, High Street, March, Cambs.
Haverhill (H & DARC).—Mondays, 7.30 p.m., Haverhill Secondary Modern School, Haverhill Suffolk.
Royston (R & DARC).—Wednesdays, 8 p.m., Manor House Social Club, Melbourn Street, Royston, Herts.
Sheffield (S & DARC).—Thursdays, August 6 (no meeting), August 13 ("Any Questions?"), August 20 ("Pre-Converters", by G3RXW or

G3RST), August 27 ("Mobile Gear," by I. Taylor, G3ORG), September 3 (Mullard Film Strip Lecture), 7.45 p.m., Town Recreation Centre, Hitchin Road, Sheffield, Beds.

REGION 6

Cheltenham.—First Thursday in each month, 8 p.m., Great Western Hotel, Clarence Street, Cheltenham.

REGION 7

Acton, Brentford & Chiswick (ABCRC).—August 18, 7.30 p.m., AEU Club, 66 High Road, Chiswick.
Bexley Heath (NKRS).—August 13, 27, 7.30 p.m., Congregational Hall, Chapel Road, Bexley Heath.
Barnet (BRC).—August 25, 8 p.m., Red Lion Hotel, Barnet.
Chingford (Group).—August 14, contact the Hon. Secretary, Loughton 2397. (SRC).—Fridays (except first), 8 p.m., Friday Hill House, Simmons Lane.
Croydon (SRCC).—August 11, 7.30 p.m., Blacksmiths Arms, South End, Croydon.
Dorking (D & DRS).—August 11, 8 p.m., "Wheatheaf," Dorking. August 25 (V.H.F. Portable Discussion), 8 p.m., "Star & Garter," Dorking.
East Ham.—Tuesdays fortnightly, 7.30 p.m., 12 Leigh Road, East Ham.
East Molesey (TVARTS).—August 5, Carnarvon Castle Hotel, Hampton Court.
Edgware & Hendon (EARDS).—August 10, 24, 8 p.m., John Keble Hall, Church Close, Deans Lane, Edgware.

LONDON MEMBERS' LUNCHEON CLUB

will now meet at the White Hall Hotel, Bloomsbury Square, London, W.C.1 at 12.30 p.m. on Fridays, August 21 and September 18, 1964
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Enfield.—August 20, 7.30 p.m., George Spicer School, Southbury Road, Enfield.
Gravesend (GRS).—August 19, 7.30 p.m., RAFA Club, 17 Overcliffe, Gravesend.
Guildford (G & DRS).—August 14 (Holiday Ragchew), 8 p.m., Stoke Park, Guildford. August 28, 8 p.m., Club Station Plan.
Harlow.—Tuesdays, 7.30 p.m., rear of G3ERN (G. E. Read), High Street, Harlow. (SRC).—Wednesdays, 7 p.m., Edinburgh Way, Harlow.
Harrow (RSH).—Fridays, 8 p.m., Roxeth Manor County School, Eastcote Lane, Harrow.
Holloway (GRS).—Mondays and Wednesdays (RAE and Morse), 7 p.m., Fridays (Club), 7.30 p.m., Montem School, Hornsey, N.7.
Hounslow (HADRS).—August 10, (Brains Trust), August 24 (Talk on G.D.O.), August 31 (Club Station), Canteen, Mogden Main Drainage Dept., Mogden Works, Isleworth.
Ilford.—Thursdays, 8 p.m., 579 High Road, Ilford (Nr. Seven Kings Station).
Kingston.—August 13, 8 p.m., YMCA, Eden Street, Kingston. Fridays (Morse Classes), 2 Sunray Avenue, Tolworth.
Leyton & Walthamstow.—August 25, 7.30 p.m., Leyton Senior Institute, Essex Road, E.10.
Loughton.—August 14, 28, 7.30 p.m., Loughton Hall (Nr. Deben Station).
Mitcham (M & DRS).—August 14, 7 p.m., "The Canons," Madeira Road, Mitcham.
New Cross (CARS).—Wednesdays and Fridays, 8 p.m., 225 New Cross Road, S.E.14.
Norwood & South London (CP & DRS).—August 15, CD Training Centre, Bromley Road, Catford, S.E.6.

LOOKING AHEAD

August 30.—G6UT's Ham Party.
September 20.—Surrey Radio Contact Club 2m D/F Hunt.
October 28-31.—RSGB Radio Communications Exhibition.
December 18.—RSGB Annual General Meeting.
May 30, 1965.—RNARS Mobile Rally at RN Signal School, HMS Mercury.

Paddington (P & DARS).—Wednesday, 7.30 p.m., Beauchamp Lodge, 2 Warwick Crescent, W.2.

Purley (P & DRC).—August 21, 8 p.m., Railwaymen's Hall (Side Entrance), Whytecliffe Road, Purley.

Reigate (RATS).—August 18, 7.30 p.m., Club Night, George & Dragon, Cromwell Road, Redhill.

Romford (R & DRS).—Tuesdays, 8.15 p.m., RAFTA House, 18 Carlton Road, Romford.

Science Museum (CSRS).—August 17, 6.30 p.m., Science Museum, South Kensington.

Sidcup (CVRS).—August 6, 7.30 p.m., Congregational Church Hall, Court Road, Eltham.

Slough (SARS).—First Wednesday in each month, 8 p.m., United Services Club, Wellington Street, Slough.

Southgate & District.—No meeting in August. September 10 (Film Show), Atlanta Lodge, Tottenham Road, London, N.13.

St. Albans (Verulam ARC).—August 19, 8 p.m., Hedley Road.

Sutton & Cheam (SCRS).—August 18, 7.30 p.m., The Harrow, High Street, Cheam.

Uxbridge.—August 17, 8 p.m., St. Andrews Church Scout Hut, Uxbridge Road.

Welwyn Garden City.—August 13, 8 p.m., Conference Hall, Murphy Radio, Bessemer Road.

Wimbledon (W & DRS).—August 14, 8 p.m., Community Centre, St. Georges Road, Wimbledon, S.W.19.

REGION 8
Crawley (CARC).—August 12 (Informal), for details contact G3FRV. August 26 (Sale of Surplus Equipment), 8 p.m., Trinity Congregational Church, Ifield.

REGION 9
Bristol.—August 28 ("160m Equipment and Mobile Working," by B. Palmer, G5PP) 7.15 p.m., Small Physics Theatre, Royal Fort, Bristol University, Woodland Road, Bristol 8.

Burnham-on-Sea (B-o-SARS).—Second Tuesday in each month, 8 p.m., Crown Hotel, Oxford Street, Burnham-on-Sea.

Camborne (CR & TC).—First Thursday in each month, Staff Recreation Hall, SWEB Headquarters, Pool, nr. Camborne.

Exeter.—First Tuesday in each month, 7.30 p.m., George and Dragon Inn, Blackboy Road, Exeter.

Plymouth (PRC).—Tuesdays, 7.30 p.m., Virginia House, Bretonside, Plymouth.

South Dorset (SDRS).—First Friday in each month, 7.30 p.m., Labour Rooms, West Walks, Dorchester.

Torquay (TARS).—Last Saturday in each month, Club HQ, Belgrave Road, Torquay.

Weston-super-Mare.—First Tuesday in each month, 7.15 p.m., Technical College, Lower Church Road.

Yeovil (YARC).—Wednesdays, 7.30 p.m., Park Lodge, The Park, Yeovil.

REGION 10
Cardiff.—August 10 ("Mobile Radio," by J. M. Copson), 7.30 p.m., TA Centre, Park Street, Cardiff.

REGION 11
Bangor (UCNWAR).—No meetings during August.

Llandudno (CVARC).—No meetings during August. September 10 (AGM).

Prestatyn (FRS).—August 25 (V.H.F. Field Day Organization), 8 p.m., Railway Hotel, Prestatyn.

REGION 13
Edinburgh (LRS).—September 8 or 10. Date will be announced in GB2RS News Bulletin and "Today's Events" column in the Scotsman.

REGION 16
Basilston (BDARS).—August 26 (Visit to GPO Station at Ongar), September 1 (Social Evening at the "Van Gogh"), details from G3JIB, Milestone Cottage, London Road, Wickford.

Chelmsford (CCARS).—No meeting in August. September 1 ("Moonbounce," by G3LTF), 7.30 p.m., Marconi College, Arbour Lane, Chelmsford.

Great Yarmouth (GYRC).—Fridays, 7.30 p.m., the Manager's Office, The Old Power Station, South Quay, Swanston's Road, Great Yarmouth. Details from G3HPR.

Southend (SDARS).—No meetings during August.

Can You Help?

- Ibrahim Abubakar, A4001, NB 11 Muri Road, Kaduna, Nigeria, who requires the circuit of a transistorized 160m linear amplifier with a power output of about 1 watt and using miniature coils?
- B. Catchpoole, A3920, 45 Balmoral Drive, Boreham Wood,

Herts., who would like to buy or borrow a manual for the R107 (ZA3050)?

- M. McLeman, BRS25411, c/o 24 Beverley Terrace, Cullercoats, Northumberland and, who requires a manual, or any available information, for the R107?

FOR YOUR BOOKSHELF

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The Amateur Radio Handbook	—	—	—	36/6
Radio Data Reference Book	—	—	—	14/—
Radio Amateurs' Examination Manual (Third Edition)	—	—	—	5/6
A Guide to Amateur Radio (Tenth Edition)	—	—	—	4/—
Service Valve Equivalents (Fifth Edition)	—	—	—	3/6
Communication Receivers	—	—	—	3/—
The Morse Code for Radio Amateurs	—	—	—	1/9
RSGB Morse Instruction Tape (900 ft., 3½ i.p.s.)	—	—	—	35/—
RSGB Morse Practice Tape (450 ft., 3½ i.p.s.)	—	—	—	17/6

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Transistor Radio Handbook (Editors and Engineers Ltd.)	—	—	—	41/6
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Understanding Amateur Radio (ARRL)	—	—	—	18/—
CQ New Sideband Handbook (Cowan)	—	—	—	24/6
Mobile Manual for Radio Amateurs (ARRL)	—	—	—	23/6
CQ Mobile Handbook (Cowan)	—	—	—	23/6
Diode Source Book	—	—	—	20/6
Antenna Book, 9th Edition (ARRL)	—	—	—	19/6
Antenna Roundup (CQ)	—	—	—	22/6
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Hints and Kinks, Volume 6 (ARRL)	—	—	—	10/6
A Course in Radio Fundamentals (ARRL)	—	—	—	10/6
How to Become a Radio Amateur (ARRL)	—	—	—	5/—
Learning the Radiotelegraph Code (ARRL)	—	—	—	4/6
RTTY Handbook (Cowan)	—	—	—	30/—
Surplus Schematics (Cowan)	—	—	—	19/6
Television Interference (Rand)	—	—	—	14/6
Electronic Circuits Handbook (CQ)	—	—	—	22/6

AMERICAN MAGAZINE SUBSCRIPTIONS

CQ (Cowan) Monthly	—	(p.a.)	—	44/—
QST (ARRL) Monthly	—	(p.a.)	—	43/6
73 Magazine (73 Inc.) Monthly	—	(p.a.)	—	28/6

BRITISH PUBLICATIONS

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Wireless World Radio Valve Data (Hilffe)	—	—	—	7/—
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K. W. Corner No. 3

(a monthly review of news, views and advice)
TOKAI "Walkie Talkies". We have just received a large consignment of the latest model manufactured by this well-known Japanese company enabling us to sell at a very competitive price. This is the only type available in this country today with the output power increased to 200 mW. Receiver performance has been improved by the addition of an R.F. stage (so far as we know, all other models have no R.F. stage and maximum output power is 100 mW). The equipment was, of course, originally designed for Citizens Band use but for the Amateur market we replace the crystal in the TX and RX sections, and re-align for operation on 28.5 mc/s. This particular model is one of the few models approved by most European countries for use on the Citizens Band (27 mc/s). It has also passed most stringent tests for performance, harmonic radiation, reliability, etc. applied by the Bundespost of W. Germany. Already many radio amateurs have found these units invaluable for Beam adjustments, Functions, Rallies, Exhibitions, etc. and we have heard of a "G3" who has worked six countries using a Tokai "walkie talkie" with his Beam during sporadic-E conditions.

KW2000 SSB Transceiver. Many of our customers write to let us know what DX they have been working on their new K.W. equipment and we have very many unsolicited testimonials. Our congratulations this month go to G3NPZ/M, Terry Griffiths of Oxford, who, with his KW2000, worked mobile from the car W0PI/KM6 (Midway Island). General comment from customers is that it is surprising what can be done with 90 watts p.e.p. We were recently proud to overhear ZS1JA of Cape Town using a KW2000 "barefoot" in q.s.o. on 14 mc/s with a JA, exchanging very convincing reports.

KW Sales Office. Newest call-sign to join the KW staff is G3JSA, Don Wilcox, who comes from VE3, will be handling many of your enquiries by letter and phone. In Canada his experience has been with a large Communications organisation on the technical sales. Address letters directly to Don if you wish.

KW Holidays. There will not be a complete shutdown of our Works for the holiday period. During the first two weeks of August a skeleton staff will keep Sales and despatches moving at the fastest rate possible and perhaps you would allow an extra 24 hours delivery period for your urgent requirements.

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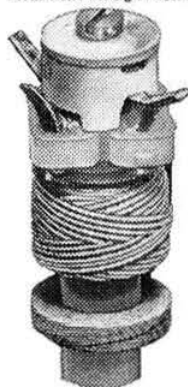
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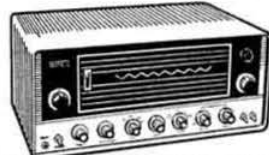
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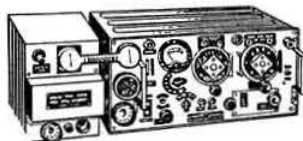
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12 "	18 "	1 19 6	3/6	" "	2 1/2 "	" "	8/6 + 1/6
12 "	36 "	3 19 6	7/6	" "	4 "	" "	12/6 + 1/6
12 "	54 "	5 17 6	"	" "	8 "	" "	19/6 + 2/-
24 "	18 "	3 19 6	"	New and guaranteed transformers suitable for use in conjunction with above, tapped at following voltages: 3, 4, 5, 6, 8, 9, 10, 12, 15, 18, 20, 24, 30.			
24 "	36 "	5 19 6	"				
24 "	54 "	11 15 0	"				
36 "	18 "	5 17 6	"				
36 "	36 "	11 15 0	"	2 amps D.C. £1 5 6 p. & p. 3/6			
12 V.D.C.	8 amps	1 19 6	2/6				
24 "	8 "	1 19 6	3/6				
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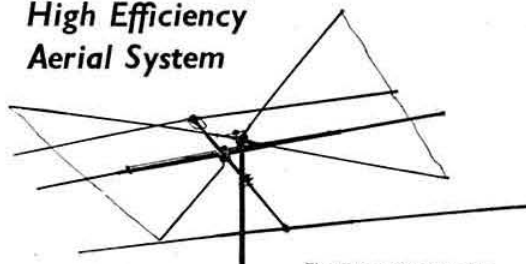
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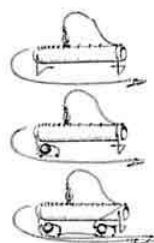
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Required by the GOVERNMENT OF NORTHERN RHODESIA, Civil Aviation Department, on contract for 1 tour of 36 months in the first instance. Commencing salary according to age and experience in scale rising to £1,580. Gratuity £450 approx. on completion of 3 years contract. Free passages. Liberal leave on full salary. Accommodation provided at low rental. Children's Education Allowances.

Candidates, under 45 years of age, should possess a services trade certificate or M.O.A. certificate of competency and have had sound training in theoretical principles in at least 2 of the following communication, navigational and surveillance systems:

- (1) Medium powered H.F. shift keying; S.S.B. and D.S.B. equipment.
- (2) Low and high powered V.H.F.D.S.B. and FM equipment.
- (3) Medium and V.H.F. non-directional radio beacons visual omni-range, instrument landing systems, V.H.F. direction finders, distance measuring equipment.
- (4) Radar L. and S. band terminal PPI talk down equipment.
- (5) Telephony: Audio and remote control equipment consisting of public address, airport magnetic tape recorder and inter-office telecom. equipment, underground and control cable, Impulse and DC switching systems.
- (6) Teleprinter telegraphy (torn tape); radio and local circuits consisting of printers autoheads, perforators and line terminating systems.

Apply to CROWN AGENTS, 4 Millbank, London, S.W.1, for further particulars, stating age, name, brief details of qualifications and experience, and quoting reference M2E/52209/R.C.

TECHNICAL OFFICERS (TELECOMMUNICATIONS)

Required by the Government of Northern Rhodesia on contract for one tour of 36 months in the first instance. Commencing salary according to age and experience in scale rising to £1,580 a year. Gratuity £450 approximately on completion of 3 year contract. Free passages. Liberal leave on full salary. Accommodation provided at low rental. Children's education allowances.

Candidates, 22-45 years of age, should possess at least one City and Guilds Certificate and have had a minimum of 2 years training with at least 2 years subsequent practical experience in the installation and maintenance of one of the following branches of telecommunications engineering:

- (i) Carrier Equipment, telegraph and telephones.
- (ii) V.H.F. radio equipment.
- (iii) H.F. Radio transmitters and receivers.

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OFFICIAL APPOINTMENTS

TELECOMMUNICATIONS ENGINEERS

Required by the EAST AFRICAN POSTS AND TELECOMMUNICATIONS ADMINISTRATION, in the following categories, on contract for one tour of 24 months in the first instance. Salaries (including overseas addition) range at present from £1,725 to £1,956 a year, but the rates of overseas addition are currently under review. Gratuity payable at rate of 25% of total salary drawn. Disturbance allowance—£200 for a married man, £100 if single—payable in most cases. Children's educational allowances, free passages, liberal leave on full salary.

ASSISTANT ENGINEERS, GRADE 1.

Candidates aged between 28 and 45 years should possess a City & Guilds Intermediate group course certificate, and in addition a pass in either Radio Grade 2, Telegraphy Grade 2 or Line Transmission Grade 2. They must also have had sound experience in one of the following fields:

Radio—A thorough knowledge of the installation and maintenance of H.F. and V.H.F. radio communication equipment. A knowledge of carrier and telegraph equipment would be an advantage.

V.H.F. Specialist—As for Radio category, but it is essential that candidates should have had practical field experience in the installation of multi-channel V.H.F. equipment and associated carrier and telegraph equipment.

Carrier and Telegraph—A thorough knowledge of the installation, lining up and maintenance of carrier telephone systems, voice frequency repeaters and H.F. and V.F. telegraph systems. A knowledge of 2 V.F. signalling equipment and multi-channel V.H.F. radio technique would be an advantage.

External General—A sound experience of underground cable construction and maintenance works and ability to apply the principles of cable balancing. A knowledge of open wire construction and route survey would be an advantage. Selected candidates should be capable of undertaking underground cable construction works, supervising local subordinate staff and training them by example and demonstration.

Power—Candidates must have a thorough knowledge of the installation, operation and maintenance of:

- Duplicate engine/alternator (mutual stand-by) control cubicles and stand-by to mains automatic start engine/alternator control cubicles in the range 1 KVA-40 KVA.
- Isenthal Voltage Regulators.
- Generators and alternators, including self-regulating, in the range $\frac{1}{2}$ -60 KVA.

Candidates should be capable of undertaking simple electrical installation work, e.g. wiring and conduit work and should have a working knowledge of the 13th edition of the "Wiring Regulations for Buildings" issued by the Institution of Electrical Engineers. Preference will be given to single men who have had experience as an engine fitter on well known makes of British diesel engines, e.g.—Lister.

ENGINEERING INSTRUCTORS, GRADE I.

Transmission—Candidates aged between 28 and 45 years should possess a thorough knowledge of the installation and maintenance of H.F. and V.H.F. carrier and telegraph equipment. Possession of the relevant City and Guilds Certificate or equivalent qualification is essential.

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Required to train African engineering staff in a wide variety of duties. Travelling involved.

Candidates aged between 28 and 45 years must have had 10 years experience in telecommunications engineering, and a thorough knowledge in one or more of the following fields:

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Transmission—3-channel and 12-channel carrier systems; 24-channel V.F. telegraph systems and radio group combining equipment; V.H.F. radio equipment and Telex working.

General Area Maintenance—subscribers' apparatus; overhead and underground line plant; P.A.B.X. systems; U.A.X. 12 and 13; and maintenance control duties.

Apply to CROWN AGENTS, M. Dept., 4, Millbank, London, S.W.1, for application form and further particulars, stating age, name, brief details of qualifications and experience, and quoting reference M2E/52098/RC.

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WANTED.—All types of communications receivers, test equipment, tape recorders, amplifiers, etc. Prompt cash payment.—Details to R. T. & I. Electronics Ltd., Ashville Old Hall, Ashville Road, London E.11 (LEYton 4986).

WANTED: K.W. Viceroy and K.W. Linear Amplifier. Prices and particulars to G3NRZ, 20 Sunbury Avenue, Mill Hill, London, N.W.7.

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WANTED. AR88, damaged, smashed or new, any condition, also spares and base workshops manual. HRO with bandspread coils. R. Field, 106 Greyhound Road, Hammer-smith, London, W.6.

SCANDINAVIAN amateurs require most types of receivers, transmitters, etc. Collected 200 miles London. Brian J. Ayres, 2 Fairfield Road, Kingston, Surrey. (KINGston 8433 or LOWEr Hook 2000).

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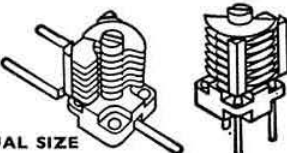
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