RSGB

BULLETIN

AUGUST 1967
VOL. 43, No. 8

NFD 1967

SEE PAGE 400
AND PAGE 524
FOR REPORT

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

RSGB INTERNATIONAL RADIO ENGINEERING AND COMMUNICATIONS EXHIBITION

Wednesday 27 September to Saturday 30 September, 10 a.m. to 9 p.m. daily
The Royal Horticultural Society's New Hall, Victoria, SW1

This year the Exhibition will be held at a new venue which will give improved facilities for the exhibitors and will provide larger and better catering arrangements. The Hall is only five minutes walk from the Victoria main line terminus, and about the same distance from St. James's Park Station on the District Line. There are, in addition, numerous bus services running along Victoria Street, some three or four minutes walk from the Hall.

Again this year the RSGB stand is the largest yet, and it is still not possible to have the space to display all aspects of the Society's activities.

RECEPTION AREA

Following the pattern of previous years, this section of the stand will be in the charge of the Executive Vice-President, John Graham, G3TR, assisted by Mrs. Eileen Vaughan, BRS26612, Council and Committee Members, and Headquarters Staff. Reception will attempt to answer all members' enquiries, take orders for badges, subscriptions to overseas periodicals, and accept new or renewed subscriptions for the RSGB.

A most important part of the stand staff's duties will be to welcome, and assist in any way possible, the very many overseas visitors to the Exhibition.

EXHIBITION STATION

This will operate on the h.f. and v.h.f. bands and, once again, will be manned by Ron Vaughan, G3FRV and operators from the Crawley Group.

GB3RS will operate on the bands between 1·8 and 28 Mc/s but this year, if our plans materialise, there will be no transmission from the Hall itself on these frequencies. Instead, there will be a Station operating in the 70cm band and acting as a link between the Hall and the transmitting Station in the Crawley area. The latter will have the advantage of an excellent location and the use of beam aerials which should enable many more contacts to be made.

GB2VHF will operate on the 2 or 4m bands, depending on activity, using a.m. These transmissions will be radiated through aerial systems located above the Hall.

Operating in co-operation with the RSGB Station will be the RTTY Station organised and manned by members of the British Amateur Radio Teleprinter Group. RTTY transmissions will use 850 c/s shift at a speed of 50 bauds.

A special QSL card will be despatched automatically via the RSGB QSL Bureau for each contact with either station. Alternatively, visitors to the Exhibition may claim their QSLs at the Headquarters station stand. Your own QSL should be sent via the Bureau clearly marked GB2VHF/GB3RS via G3FRV.

HOME CONSTRUCTED EQUIPMENT

Following the excellent response last year the Society's Exhibition Committee has decided that the same pattern shall be followed in 1967. Only exhibits of a high technical or constructional standard will be displayed under the following arrangements:

(i) All items submitted for exhibition will be subject to acceptance by the Exhibition Committee.

(ii) Entries will be accepted (*a*) as items which have been the subject of published articles in the RSGB BULLETIN during the period January 1966 to date. It should be made clear that only the member writing the original article will be allowed to enter; (*b*) from members who are prepared, if required, to write a constructional article for publication in the RSGB BULLETIN featuring their entry, this article to be paid for at the normal rates.

(iii) Entrants will be required to certify that their entries were constructed entirely by themselves from commonly available materials and components.

(iv) RSGB members only will be eligible.

(v) The Horace Freeman trophy will be awarded for the most original piece of equipment on show.

(vi) Additional prizes may be awarded at the discretion of the judging Committee.

(vii) Members wishing to enter should send a brief description of their proposed entry to the organizer, Mr. A. J. Gibbs, G3PHG, 6 Dairyfields, Gossops Green, Crawley, Sussex, to arrive not later than Thursday, 31 August 1967.

Prizes will be presented by the President of the Society at 6.30 p.m. on Saturday, 30 September, the last day of the Exhibition.

INTRUDER WATCH

It is hoped that there will be a display organised showing the methods used by the Intruder Watch in locating and identifying commercial stations operating in exclusive amateur bands. The Organiser of the Society's Intruder Watch, Colin Thomas, GW3PSM, will be available to answer your questions.

EDUCATION COMMITTEE EXHIBIT

Following the success of the Noviset equipment introduced last year there will be further items in this range to be seen, together with examples built by young amateurs. This exhibition is in the hands of L. Newnham, G6NZ, and Tim Hughes, G3GVV, and will also contain a colour slide display introducing Amateur Radio.

BOOK SHOP

The range of publications handled by the Society is always increasing and there will be a very large selection on sale at the Book Shop. An entirely new publication, " World At Their Fingertips " will be on sale for the first time and there will be completely new editions of the Radio Data Reference Book, possibly the Amateur Radio Circuits Book and, of course, the 1968 Edition of the RSGB *Call Book*. Unfortunately, the Fourth Edition of the *Amateur Radio Handbook* will not be available. The Stand Manager will again be Mr. F. Ruth, G2BRH.

RECEPTION FOR OVERSEAS VISITORS

The Society is organising an informal Reception for overseas visitors, on the lines of that held in previous years, for Friday, 29 September at 7.30 p.m. Between 7.30 and 8.30 p.m. entry will be restricted to overseas visitors and invited guests, but Society Members may obtain tickets for this period at a cost of 7s. 6d. The Society hopes that all visiting amateurs will make themselves known at the reception area, when arrangements will be made for them to attend the reception.

OTHER FEATURES

The Radio and Space Research Station will stage a display of their latest equipment, and all the Services will have exhibits. It is hoped that a model of the successful *OSCAR III* satellite will be on display.

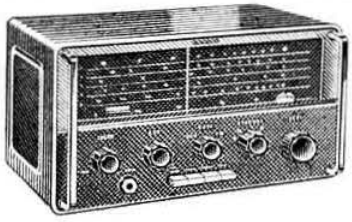
Eddystone EA 12

Amateur communication receiver

An amateur bands double-conversion superheterodyne receiver, for a.m, c.w, and s.s.b reception. For all amateur channels between 1.8 MHz and 30 MHz in nine 600 kHz bands with 28 MHz to 30 MHz in four bands.

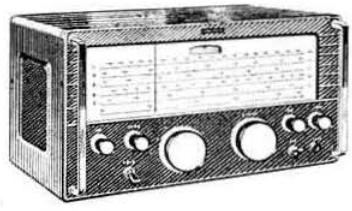
Primary features. Crystal controlled 1st oscillator, 2nd oscillator with continuously variable selectivity to 50 Hz, muting switched or by external relay, twin noise limiters, for a.m/c.w, and s.s.b, short-term drift better than 20 Hz and less than 100 Hz in any one hour, 'S' meter calibrated in nine levels of 6 dB and dB levels beyond 'S9,' two a.g.c time constants, deep slot filter, independent r.f, i.f, and audio gain controls with outputs for f.s.k and panoramic adaptor. **£185.**

OTHER RECEIVERS IN THE FAMOUS EDDYSTONE RANGE



EC10 communications receiver

The fully transistorized EC10 communications receiver, supreme in its class, covers both medium wave broadcasting and all shortwave service to 30 MHz. Incorporating the famous Eddystone tuning drive, with logging scale and auxiliary vernier, shortwave reception is particularly simple. Battery operated or from optional a.c mains unit. **£53.**



840C A.C or D.C communications receiver

An 8-valve receiver with gap free coverage from 600 to 10 metres providing excellent reception of broadcast programmes and all major s.w channels including marine and international distress frequencies. The famous Eddystone extended band spread and logging scale is an essential feature. Suitable for a wide range of a.c and d.c voltages. Fully tropicalized. **£66.**

940 13-valve high sensitivity receiver

A superb high performance receiver incorporating two r.f and two i.f stages, push-pull output and silicon diode noise limiter circuit. Gap free coverage from 480 kHz and suitable for reception of c.w, a.m, and s.s.b modes. Exceptional sensitivity and stability. Built to professional standards for the serious listener. **£133.**

Comprehensive information from your Eddystone distributor or from: Eddystone Radio Limited, Eddystone Works, Alvechurch Road, Birmingham 31. Telephone Priory 2231. Telex 33708

A MARCONI COMPANY

LTD/ED23

RSGB BULLETIN

Incorporating RADIO COMMUNICATION

ASSISTANT EDITOR
Trevor R. Preece, G3TRP

EDITORIAL ASSISTANT
John J. Adey, A4663

ADVERTISEMENT MANAGER
Mrs P. D. Harvey

EDITORIAL OFFICE
RSGB Headquarters
28 Little Russell Street,
London, WC1
01-405 7373
01-405 2444

ADVERTISING OFFICE
Sawell and Sons Ltd.,
4 Ludgate Circus,
London, EC4
FLE 4353

THE RSGB BULLETIN (INCORPORATING RADIO COMMUNICATION) IS PUBLISHED ON THE FIRST WEDNESDAY IN EACH MONTH BY THE RADIO SOCIETY OF GREAT BRITAIN AS ITS OFFICIAL JOURNAL AND SENT TO ALL MEMBERS.

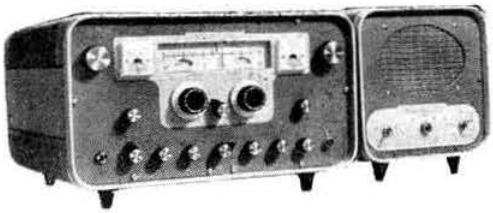
CLOSING DATES

SEPTEMBER
11 AUGUST

OCTOBER
1 SEPTEMBER

INDIVIDUAL COPIES 4/-.

AUGUST 1967
VOLUME 43 No. 8



ANGLIAN 1000

As a result of our previous advertisements, it has become apparent that there is insufficient interest in the home market to justify manufacturing the Anglian 650. However, considerable interest was shown from the Americas, for this reason the Anglian 650 has been re-engineered to accommodate a larger PA stage and now uses valves which can be directly replaced by U.S.A. equivalents. A few models remain to be sold from the first production run, which will be completed in September.

This is not just another transceiver, but a complete radio amateur station incorporating every conceivable extra not found in any other single equipment, irrespective of price, now supplied complete with microphone for £330. Send large S.A.E. for full details.

Principal Features:

Offers complete split frequency operation on any 500 kc/s amateur band allowing full use of the following combinations:

(1) Normal transceive on the top scale position;
(2) Normal transceive on the bottom scale position;
(3) Normal transmit on the top scale and receive on the bottom scale, with no limit on frequency differential;
(4) Normal receive on the top scale and transmit on the bottom scale, with no limit on frequency differential.

This gives complete monitoring of transmit frequency in either of the split transmit/receive combinations.

Other Features:

(1) 1000 watts P.E.P. input on 160, 80, 40, 20, 15 and three 10 metre sections.
(2) Covers:

1·5-2 Mc/s	14-14·5 Mc/s	28-28·5 Mc/s
3·5-4 Mc/s	21-21·5 Mc/s	28·5-29 Mc/s
7-7·5 Mc/s		29-29·5 Mc/s

(3) Full automatic grid current control of PA.
(4) No wide band couplers, reducing spurious signals to a minimum.
(5) Three high Q tuned circuits in the RX RF section in the LF bands, reducing cross modulation to a minimum. (Makes 80 sound like 15!)
(6) Single conversion superhet on all bands.
(7) Special 9 Mc/s 8-pole crystal filter (2 kc/s at 6db, 3·5 kc/s at 60db ultimate rejection better than 100db). Upper and lower side bands automatically selected and facilities for inverting the conventional side band.
(8) 1½ watts of audio into built in L/S in PSU.
(9) 100 kc/s marker.
(10) CW—full monitoring and break-in facilities on TX now incorporates a high Q audio filter centred on approximately 800 c/s.

ANGLIAN 1000L

A full-blooded 1 KW linear amplifier using two 4CX250Bs in AB1 passive grid, requiring as little as 60 watts to provide a comfortable **500 watts output** on all bands from 10-80M. Also incorporates S.W.R. and Power Indicator. Designed for areas of low T.V. signal strength.

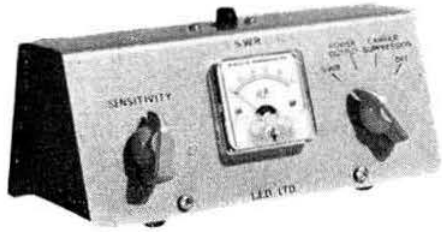
Price £135, less valves £110. Ex. equipment 4X250Bs £4 each. (A few in stock.)

ANGLIAN 20-2-2

This is a 20 metre to 2 metre transverter which converts any 20 metre transmitter output, i.e., CW, SSB, AM, MCW, etc., to 2 metres, also converts any received signal on 2 metres to 20 metres. This unit enables any 20 metre SSB, AM, CW station to be able to operate in the 2 metre band.

(1) QQVO6-40A in final at 120 watts P.E.P. input.
(2) Automatic LF to VHF aerial changeover when convertor is switched on, thus obviating a separate aerial changeover switch.
(3) Covers the whole of 2 metres in four bands of 500 kc/s.
(4) Can be driven fully by 5 watts and up to 150 watts (larger input levels can be easily handled by a small modification.
(5) RX—6BQ7A-6AK5 Mix 6AN8A crystal osc TREB.
(6) TX—6AN8A crystal osc/TREB—EF91 osc AMP QVO3/10 mixer—QQVO6-40A final amp.

Price £88—a few ex. stock. P. & P. £1.



S.W.R.'s, TWO TONE OSCILLATORS, IMPEDANCE BRIDGES (ANTENNA SCOPE) S.W.R. 75 or 50 ohm

(May be easily adjusted for either impedance), also measures power output, carrier suppression, % modulation and may be used for a lot of other measurements of RF.

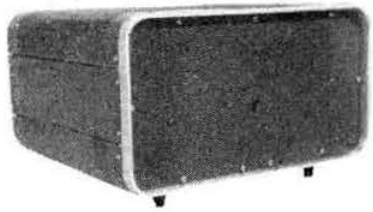
Price £6 18s. each plus 3s. 6d. P. & P. Ex. stock.

Two Tone Oscillators. Built to allow the amateur to use the alternative G.P.O. SSB method of measuring power output. Produces two non-harmonically related frequencies of approximately 800 and 1700 cps. The lower tone may be keyed to enable any SSB transmitter to be used without modification for CW.

Price £5 each plus 3s. 6d. P. & P. Ex. stock.

Impedance Bridge. Often referred to as an antenna scope. Uses a sensitive 50 micro ammeter and is principally intended to be used to measure antenna impedances from D.C. 30 Mc/s. Most G.D.O.s will drive this unit.

Price £6 each plus 3s. 6d. P. & P. Ex. stock.



ANGLIAN CASES

A wrap-round, fully ventilated case in aluminium 15" × 8" × 12½" deep, etched and primed at £6 15s. 6d. each plus 10s. P. & P. Ex. Stock. Chassis 15s. 6d. extra. Any size made to order at £2 extra on standard costing.

MISCELLANEOUS ITEMS

K.V.G. Filters. We can supply the standard 8-pole symetrical K.V.G. filters, e.g. XF9B, and the specially produced filter XF9B-01 as used in the Anglian transceiver, complete with two crystals.

Price £16 plus 2s. 6d. P. & P. Delivery 2-3 weeks.

		XF9B	XF9B-01
Bandwidth	-6db	2·4	2 kc/s
	40db	3·3	2·8 kc/s
	60db	4	3·5 kc/s
	80db	5·3	4·2 kc/s
Ultimate rejection better than		100db	105db

These filters, we believe, are the best, irrespective of price, that are obtainable at the moment.

2·5 KW Linear Amps. Using one PL172 valve, covers 10-80 metres at 1·5 KW P.E.P. output. £175 plus £1 P. & P. (Same as the 1000L in all other respects.)

Dummy Load resistors 105 ohm 200-300 watts 25s. each plus 3s. 6d. P. & P.

Used Material, etc. H.R.O. amateur band coils 80-40-20-15-10. A few at 30s. each. TCC-VISCONOL 8 mfd 600v at 2s. 6d. plus 1s. 6d. P. & P.

Transformers

Input 0-119-0-110 output, 3 off 5v 2A, 3 off 6·3v 3A, 0, 5, 10, 20v at 10 MA, 400-0-400 at 125 MA, 300-0-300 at 125 MA. £3 plus 5s. P. & P.

Input 0-200-250v, Sec. 600v at 750 MA. 35s. plus 10s. 6d. P. & P.

Input 0-200-200v, Sec. 500-0-500v at 150 MA, 6v at 4A, 5v at 3A. 30s. plus 5s. P. & P.

Valves

6H55 bases at 30s. plus 2s. 6d. P. & P.
TT21 at 30s. plus 2s. 6d. P. & P.
4CX250B at £5. Bases, including chimneys, new £6.
Heavy duty ceramic and silver plated RF, PA type switches 2-pole 8-way at £3 each.

LIGHT ELECTRO-DEVELOPMENTS LTD

TATTINGSTONE, Nr. IPSWICH, SUFFOLK

THE ANTENNA FOR YOU

ELAN

Provides outstanding performance on 10 and 15 metres, coupled with light weight (17 lb.). All Alloy and stainless steel construction, exceptional broad band tuning, exclusive trap design, single coax feed point. Power rating 300 watts AM/CW, 600 watts p.e.p. SSB input to final. Forward gain up to 8db. Maximum element length 20 ft. 3 in. Boom length 12 ft.

Price ex works £23.0.0.

Send for complete catalogue, containing full details of Antennas and other technical information, 25 pages 1/-.

SOME OTHER ANTENNAS

Tri-banders:										
TA-33 Jr.	3 Element Beam	...	...	...	...	...	...	£27	5	0
TA-33 Sr.	3 Element Beam	...	...	...	...	...	...	£47	15	0
TA-32 Jr.	2 Element Beam	...	...	...	...	...	...	£19	5	0
TA-32 Sr.	2 Element Beam	...	...	...	...	...	...	£35	0	0
TA-36	6 Element Beam	...	...	...	...	...	...	£60	0	0
TA-31 Jr.	Rotary Dipole	...	...	...	...	...	...	£11	11	0
MP-33	3 Element Beam	...	...	...	...	...	...	£32	17	0
Classic-33	3 Element Beam	...	...	...	...	...	...	£50	0	0
V-3 Jr.	Trap Vertical	...	...	...	...	...	...	£8	5	0
TD-3 Jr.	Trap Dipole	...	...	...	...	...	...	£6	15	0
Dual-banders:										
Elan	3 Element Beam	...	...	...	...	...	...	£23	0	0
TD-2	Trap Dipole	...	...	...	...	...	...	£18	0	0
V-4-8	Trap Vertical	...	...	...	...	...	...	£46	15	0
Mono-banders:										
A-310	3 Elements. 10 metres	...	...	...	...	...	...	£18	3	0
A-315	3 Elements. 15 metres	...	...	...	...	...	...	£19	16	0
A-203-C	3 Elements. 20 metres	...	...	...	...	...	...	£46	5	0
A-92-S	9 Elements. 2 metres	...	...	...	...	...	...	£8	0	0
DI-10	Ground Plane. 10 metres			...	...	...	...	£13	10	0
Four-banders:										
V-4-6	Vertical	...	...	...	...	...	...	£15	10	0
RV-4	Vertical	...	...	...	...	...	...	£16	10	0
SWL Antennas:										
RD-5	Dipole, 10, 15, 20, 40 and 80 metres			...	...	...		£7	15	0
SWL-7	Dipole, 11, 13, 16, 19, 25, 31 and 49 metres			...	...	...		£7	15	0

All accessories available. Carriage and Insurance Extra.

RV-4

Telephone: Costessey 2861, **orders only**

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

FIXED OR MOBILE . . . the TW COMMUNICATOR Mk. II

MAKES THE MOST OF YOUR POWER & LOCATION

EASY TO INSTALL

SIMPLE TO OPERATE

RECEIVER. Double conversion. All solid state. Complete with noise limiter B.F.O. and low noise V.H.V. converter. Transmitter 15 watts input.

COMING SOON THE TW PHASE II SSB TRANSVERTER 180w P.E.P.
COMPLETE WITH MATCHING MAINS P.S.U.

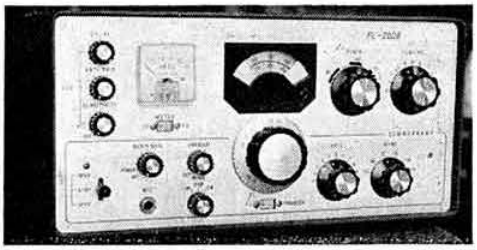
V.H.F. TW EQUIPMENT

Agents: G. W. SMITH & CO. (RADIO) LTD · ELECTRONIQUES (STC) · N W ELECTRICS
STEPHENS JAMES LTD · CHAS. H. YOUNG LTD.

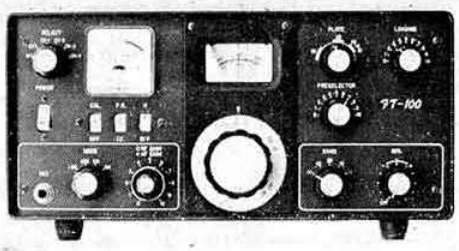
T.W. ELECTRONICS

120 Newmarket Road, Bury St. Edmunds, Suffolk. Telephone: Bury St. Edmunds 3931

SOMMERKAMP "F" LINE



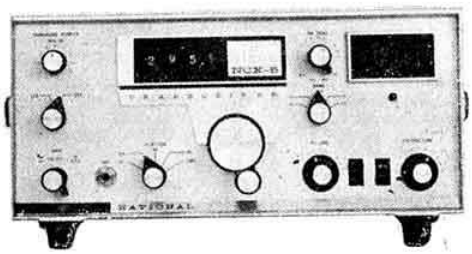
FL-200-B Tx. AM/CW/SSB. 240W p.e.p., 100W AM VOX, PTT, Break-in CW. Sidetone monitoring. Connectors for transceive with the FR-100-B supplied. Note:—The 6JS6A finals are the same electrically as the 6HF5 so the power ratings are *conservative*. **£130.**



FT-100 Transceiver. 150W p.e.p. all transistor except driver and P.A. 13" × 6" × 10" deep. **£180.**

NATIONAL

National 200. Low price transceiver 80-10; 200W p.e.p. SSB, AM, CW. **£160** less p.s.u. (p.s.u. kit £25).



NCX5 Mk.II top quality transceiver, 80-10; 200W p.e.p. SSB, AM, CW. **£225** less p.s.u. (p.s.u. kit £25).

Full details on request.

SOMMERKAMP – NATIONAL – LAFAYETTE

RECEIVERS:
NEW.—Sommerkamp (tops in my view) £112.0.0. Lafayette in stock. The new HA500 at 42 gns and HA700 at 36 gns I feel are extremely good value for money. Particularly the HA500—how the heck they produce a double conversion hambander at this price I'll never know.

SECONDHAND:

HA350—new demonstrator	£70. 0.0
Drake 2B, C/W " Q " multiplier	£85. 0.0
RGI	£35. 0.0
R.107	£12.10.0
SP600JX	£95. 0.0
Eddystone 888A	£60. 0.0
Eddystone 940	£90. 0.0
SR600	£65. 0.0
RAI	£35. 0.0
Marconi HR22	£85. 0.0
HRO, G.C. and B.S. coils	£27.10.0
Hallicrafters S.120	£10. 0.0
Eddystone 750	£45. 0.0
Green TMR5	£25. 0.0
R1475	£10. 0.0
HQ170A	£95. 0.0

TRANSMITTERS:
NEW—Sommerkamp FL-200-B, terrific value at £130.0.0

SECONDHAND: The best home brew copy of the **LG300** I have ever seen. AM/CW. A beauty, with a separate monumental power supply £40. 0.0

KW500 Linear	£45. 0.0
Vanguard	£40. 0.0
DX100U	£55. 0.0
Valiant	£20. 0.0
Miniphase	£40. 0.0
Spy Tx/Rx	£15. 0.0

Carriage on secondhand transmitters and receivers usually £1.0.0 extra.

TRANSCEIVERS:
NEW: The incomparable **NCX5,** Mk.2 at £250.0.0 complete with p.s.u. kit and the new National 200 at £185.0.0 with p.s.u. kit take an awful lot of beating. These are in stock.
Deliveries of the **FT-100** are slowly improving but still rough.

ODDS AND ENDS:

70 mc/s baluns, Marconi, post free	30/-
Bug keys	£4.10.0
Electroniques QP166...	£12.12.0
HB166T transistor type	£15.15.0
Electroniques 1.6 mc/s transistor I.F. strip with xtal filter	£8.17.6
Bird R.F. Wattmeter calibrated to 1400 mc/s	£35. 0.0
LED SWR Bridges	£6.18.0
Modulation scope A-100 imported from the States	£15. 0.0
HEADSETS: A nice German job, high or low impedance, or the Acos stethoset, high impedance. All at	£1. 1.0
1 kc/s selective amplifier. Shove it in your audio output and attach high imp. phones. Fantastic CW selectivity	£3.10.0
Scopes: R.C.A.	£15. 0.0
Cossor 1049. Mint civilian, complete with motor driven camera (the camera alone costs well over £100.0.0!)	£45. 0.0
Marconi FM deviation meter. Unused and mint with all cables	£5. 0.0
Sig. gen. type 20 calibrated 100 kc/s to 30 mc/s. Calibrated output down to 1 microvolt. A1.	£12.10.0
Wide spaced variables, resistors, capacitors, chokes, relays, knobs, vibrators (6d. brand new!), meters, tag boards (an assortment of 12 for 5/-) etc., etc.	
ANTENNAS: Just got a bunch of Gotham Quads in. Full size, all aluminium, 3 banders (10, 15 and 20) single feed line. Quick, before they all go.	£23.10.0
Also on the way, Gotham Verticals, 160 to 10.	£10. 0.0

SERVICE: For repairs and alignment etc., we take a bit of beating, as more and more lads are finding out.

POSTAGE: Please, please allow plenty for postage, we'll refund any excess. The number of clowns who order a dirty great transformer and enclose 6d. for postage amaze me!
A large s.a.e. will get you my lists.

73 de Bandit Bill,
VE8DP/G3UBO

J. B. LOWE

51 WELLINGTON STREET, MATLOCK, DERBYS.

Telephone No. MATLOCK 2817 (or 2430 after 6 p.m.)

RADIO SOCIETY OF GREAT BRITAIN

INCORPORATED 1926

MEMBER SOCIETY INTERNATIONAL AMATEUR RADIO UNION

PATRON — HRH THE PRINCE PHILIP, DUKE OF EDINBURGH, KG

COUNCIL 1967

PRESIDENT	A. D. PATTERSON, BASc, GI3KYP
EXECUTIVE VICE-PRESIDENT	J. C. Graham, G3TR
IMMEDIATE PAST PRESIDENT	R. F. Stevens, G2BVN
HONORARY TREASURER	N. Caws, FCA, G3BVG
ORDINARY ELECTED MEMBERS	B. Armstrong, G3EDD J. Etherington, G5UG E. G. Ingram, GM6IZ L. E. Newnham, BSc, G6NZ G. M. C. Stone, C Eng., MIEE, AMIERE, G3FZL J. W. Swinnerton, TD, BSc(ECON), G2YS E. W. Yeomanson, G3IIR
MEMBERS ELECTED BY ZONES	J. C. Graham, G3TR H. E. McNally, GI3SXG F. K. Parker, G3FUR J. F. Shepherd, GM3EGW G. Twist, LLM, G3LWH

GENERAL MANAGER — D. W. Robinson, M Inst. PS, G3FMT

REGIONAL REPRESENTATIVES

Region 1.—North Western.	B. O'Brien, G2AMV, 1 Waterpark Road, Prenton, Birkenhead, Cheshire.
Region 2.—North Eastern.	K. Sketheway, BRS20185, 51 Baret Road, Walkergate, Newcastle upon Tyne.
Region 3.—West Midlands.	R. W. Fisher, G3PWJ, 63 Swan Crescent, Langley, Oldbury, Birmingham, Warwickshire.
Region 4.—East Midlands.	F. C. Ward, G2CVV, 5 Uplands Avenue Littleover, Derby.
Region 5.—Eastern.	S. J. Granfield, G5BQ, St. Lukes, 47 Warren Road, Cambridge.
Region 6.—South Central.	L. W. Lewis, G8ML, 34 Clevelands Avenue, Cheltenham.
Region 7.—London.	P. A. Thorogood, G4KD, 35 Gibbs Green, Edgware, Middlesex.
Region 8.—South Eastern.	D. N. T. Williams, G3MDO, Seletar, New House Lane, Thanington, Canterbury, Kent.
Region 9.—South Western.	R. E. Griffin, G5UH, 13 Alexandra Road, Uplands, Bristol 3.
Region 10.—South Wales.	C. H. Parsons, GW8NP, 90 Maesycoed Road, Heath, Cardiff, Glam.
Region 11.—North Wales.	M. Williams, GW3LCQ, "Dwyros," 12 Penrhos Avenue West, Llandudno Junction, Caerns.
Region 12.—North-East Scotland.	J. MacIntosh,GM3IAA, Broom Park, Cradlehall, Inverness.
Region 13.—South-East Scotland.	G. P. Millar, GM3UM, 8 Plewlands Gardens, Edinburgh 10.
Region 14.—West Scotland.	A. F. Hunter, GM3LTW, 4-5 Cassillis Road, Maybole, Ayrshire.
Region 15.—Northern Ireland.	L. M. Lyske, GI3CDF, 63 Church Street, Portadown, Co. Armagh.
Region 16.—East Anglia.	P. J. Naish, G3EIX, 6 Mildmays, Danbury, Chelmsford, Essex.
Region 17.—Southern.	L. Southwell, G3JLS, 15 Hollybank Road, Hythe, Southampton, Hants.

QSL BUREAU MANAGER
A. O. Milne, G2MI, 29 Kechill Gardens, Bromley, Kent

With thanks, from Hazel Rouse

MEMBERS AND AFFILIATED SOCIETIES

Thank you for your letters and cards sent to me at the time of my husband's death.

HEADQUARTERS STAFF

Thank you for your loyalty, love and respect which you gave John. I know he relied on you all so much and without your help he could not have carried on the job as General Manager and Editor for so long. You have worked as a wonderful team. I hope and I am sure you will keep up this good work.

THE SOCIETY

While John was in hospital and convalescing at home he had time to think and plan ahead.

The Fourth Edition of the Amateur Radio Handbook was well on its way and he was working on this the night before his death.

The new headquarters building had brought many financial worries but he felt that this building was so necessary as the office in Little Russell Street had become too small. This new headquarters was to be the start of a new era for the RSGB and the members.

The Society has grown so much over the last few years, with increased membership and sales. I wish it every success.

May Amateur Radio flourish—I still believe it to be a wonderful hobby.

News from Headquarters

Reciprocal Licensing

A reciprocal amateur radio licensing agreement has been recently concluded with **Switzerland.** As soon as full particulars become available regarding the facilities obtainable by UK licensees these will appear in the BULLETIN.

International Amateur Radio Club 1967 Convention

This will be held over the weekend 22-24 September and included in the programme are a panel of speakers from several national societies who will take part in the technical discussions. This year the theme of the Convention will be " Amateur Radio in the Modern World." The social side of the event commences on the evening of Friday 22 September with a reception at the ITU building and there will be a Convention Banquet on the following evening.

Registration forms and further particulars may be obtained from the IARC, PO Box 6, CH-1211, Geneva 20, Switzerland.

QST Subscriptions

Annual membership of the ARRL, which includes a subscription to *QST*, will be increased to $7 as from 1 August, 1967. The ARRL authorizes member societies to collect subscriptions on behalf of the League and the amount payable by individuals to the RSGB is 50s. 6d. Subscriptions from institutions—schools, libraries and laboratories—can be accepted and the annual charge in these cases is 57s. 6d. It should be noted that the increase in dues for ARRL members resident in the USA is $1.50 but in the case of overseas members it is only $1.00. This action was taken by the League in the interests of international co-operation between societies.

December Radio Amateurs' Examination

The Radio Amateurs' Examination will be held on Tuesday 5 December at 6.30 p.m. at the College of Preceptors, Bloomsbury Way, London, WC1. Applications to sit the examination must be sent to the General Manager, RSGB, accompanied by the entry fee of £1 15s. for members of the Society or £2 5s. in the case of non-members. The closing date for entry to this examination is 31 October.

Intruder Watch

The Irish Radio Transmitters' Society, following the lead of the RSGB, has decided to set up an Intruder Watch to record the consistent presence in exclusive amateur bands of non-amateur stations. The EI Watch is being organized by Mr C. Coughlan, EI3BA, 14 Clonfert Avenue, Kimmage, Dublin.

Front Cover

The cover picture is a twilight view of the Verulam Club's 3·5, 14 and 21 Mc/s station G3VER/P on Field Day. The photograph was taken by Paul Fletcher.

TVI and Filters

Further to the recent correspondence concerning TVI, Robinson Rentals Limited have advised us that where interference is attributed to the design of their receiver, it is the Company policy either to purchase the recommended filter from the GPO, or supply from stock held at their Central Stores.

In any case of difficulty, assistance can be arranged by contacting the Services Director at PO Box 31, Ampthill Road, Bedford.

Woman's Hour

There will be a 12-minute item in the BBC sound programme, " Woman's Hour," on Thursday, 17 August, about Amateur Radio. This programme was compiled with the full collaboration of the Society, through its PRO, Mrs Sylvia Margolis.

Amateur Licences

The following are the total number of Amateur Radio transmitting licences in force on 30 June, 1967.

Amateur (Sound) Licence " A "	12,308
Amateur (Sound) Licence " B "	590
Amateur (Sound Mobile) Licence " B "	2302
Amateur (Sound Mobile) " B "	15
Amateur (Television) Licence	183

There were also 11,398 Model Radio Control Licences in force.

Representation 1966-1968

The following member has been appointed an Affiliated Society Representative:

STOURBRIDGE & DISTRICT AMATEUR RADIO SOCIETY:
A. J. Bills, G3KZG, 56 Austcliffe Road, Cookley, Midderminster.

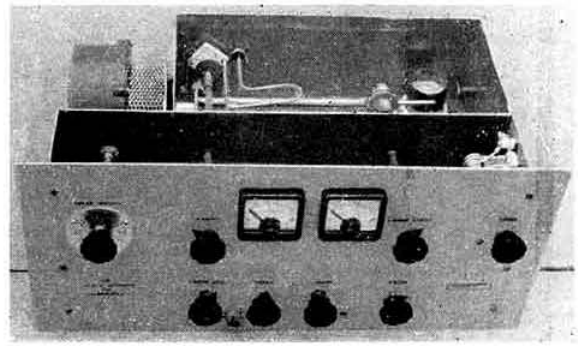
Affiliated Societies

The following society is now affiliated to RSGB:

WORCESTER & DISTRICT AMATEUR RADIO CLUB:
R. L. Avery, G3TQD, 24 Alexander Avenue, Droitwich Spa, Worcs.

C.W. and S.S.B. Transmitter for Two Metres

By D. E. DAVIES, GW3FSP*



A RETURN to 2m band operation after a break of about 15 years proved that activity justified the construction of a new transmitter for this band.

V.f.o. control was considered essential, and to this end various oscillator, mixer and multiplier arrangements were built and tried. The majority of these, though acceptable for a.m. working, just did not produce the stability or note desired for c.w. operation and these tests also showed that with five TV channels in use in the area (5, 7, 10, 13 and 51), the suppression of harmonics and the elimination of " beats " from the mixers were important factors to consider. The use of a high crystal frequency, low level mixing and several tuned stages between mixer and the final amplifier were indicated. By using only one mixer stage, " beats " were greatly reduced and a reasonably low v.f.o. frequency gave good stability.

The station v.f.o., which is built around the coil and capacitor assembly of the Collins TCS transmitter, covers 1·5 to 12 Mc/s with very good stability and, finding that the Heathkit SB10-U s.s.b. adapter has a range of over 2 Mc/s on the 40m switch position, the v.f.o. frequency was made to centre on about 7 Mc/s.

The fixed heterodyning frequency was obtained by one tripler stage following a third harmonic crystal oscillator at 45·9 Mc/s. This enabled the whole 2m band to be covered without any switching problems.

A small transmitter with a QQV03-20A in the final was constructed on these lines and the encouraging reports received on c.w., s.s.b. and a.m. led to the second version in which the final stage uses a pair of 4X150As.

With several stages on the same frequency, careful screening was necessary. Even so, with some care in the layout of the early stages and the use of screened cable with stand-off and feedthrough capacitors where needed, stability together with a symmetrical layout of the controls was achieved. The chassis is the enclosed type 17 in. × 10 in. × 3 in., and the front panel 19 in. × 8¾ in.

Metering of grid and anode currents of the driver stages

* Glanmor, Brynna Road, Pencoed, Glam.

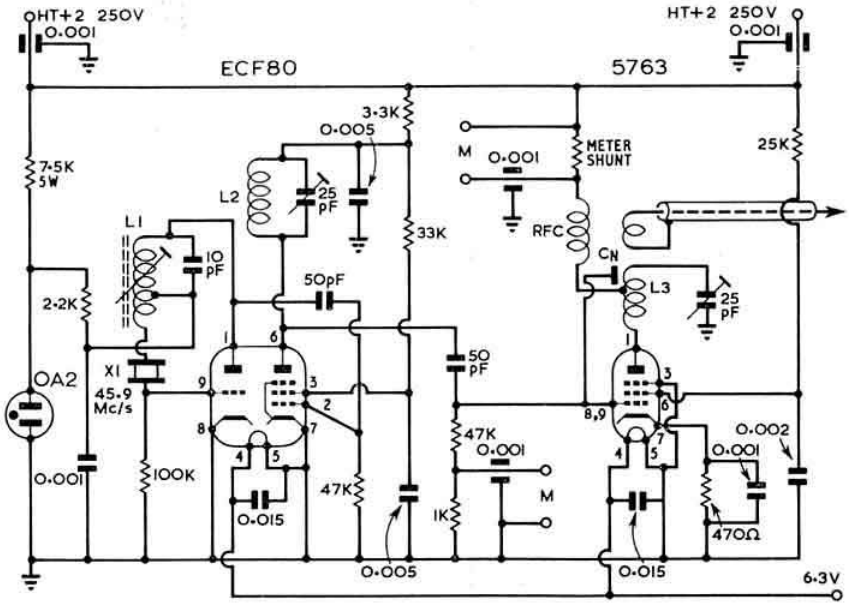
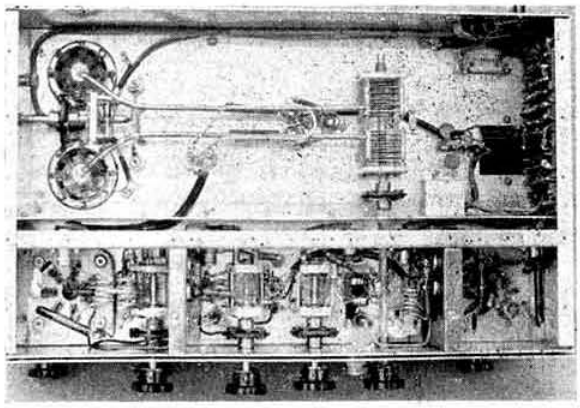


Fig. 1. Fixed frequency oscillator/multiplier chain with an output at 137·7 Mc/s. L1, 10 turns, tapped at 3 turns, 24 s.w.g., ⅜ in. i.d.; L2, 1 turn, 14 s.w.g., ½ in. i.d.; L3, 5 turns, tapped at 1½ turns, 14 s.w.g., ½ in. i.d. All decoupling capacitors are disc ceramics, and feedthrough capacitors are 0·001 μF. Other capacitors are ceramicons.



The layout of components and grid lines beneath the chassis of the GW3FSP transmitter.

together with individual grid and screen currents of the 4X150As is accomplished by a 2 pole 11 way Yaxley switch, placing a 1mA meter across suitable shunts in the appropriate circuits, the meter reading 1·0, 10, or 100 mA f.s.d. as required.

The 4X150 is very efficient on 2m but its working conditions, particularly on the screen, have to be correct. Provision is made to balance the currents on screens and grids. Forced air cooling is by a mains blower motor feeding into the enclosed underchassis grid lines compartment. The final stage is neutralized.

Circuitry

The triode section of an ECF80 is used as a Squier overtone crystal oscillator with a 45·9 Mc/s third overtone crystal. The h.t. on this triode is stabilized by an OA2.

The pentode section of this valve acts as a tripler to 137·7 Mc/s.

This frequency is fed into a 5763 buffer amplifier. The valve has a series tuned anode circuit and the stage is neutralized. A copper screen isolates grid and anode circuits.

The mixer valve is a QQV02-6 twin tetrode and the crystal controlled frequency is fed into both sections in parallel by a link in the cathode circuit placed adjacent to the anode coil of the 5763 buffer.

The low impedance v.f.o. signal is applied to both grids of the mixer in push-pull via the link on the centre tapped grid coil which is tuned to the v.f.o. frequency. A tendency for this stage to take off under no drive conditions was cured by placing a 20pF capacitor across the grid leads to the valve holder.

The push-pull anode circuit cancels out most of the 137·7 Mc/s signal and is, of course, tuned to 144 Mc/s band by a split stator capacitor. A 2 turn link couples the mixer to the untuned grid coil of a QQV03-10 buffer stage. This is a push-pull amplifier in class AB1 with 25V negative on the grids from a bias supply network. A copper screen again isolates grid and anode circuits and the anode coil is tuned.

A 2 turn link couples the buffer stage to the untuned grid coil of the QQV03-20A driver valve. The anode circuit of this valve is above the chassis.

The earlier version of this transmitter used this stage as the

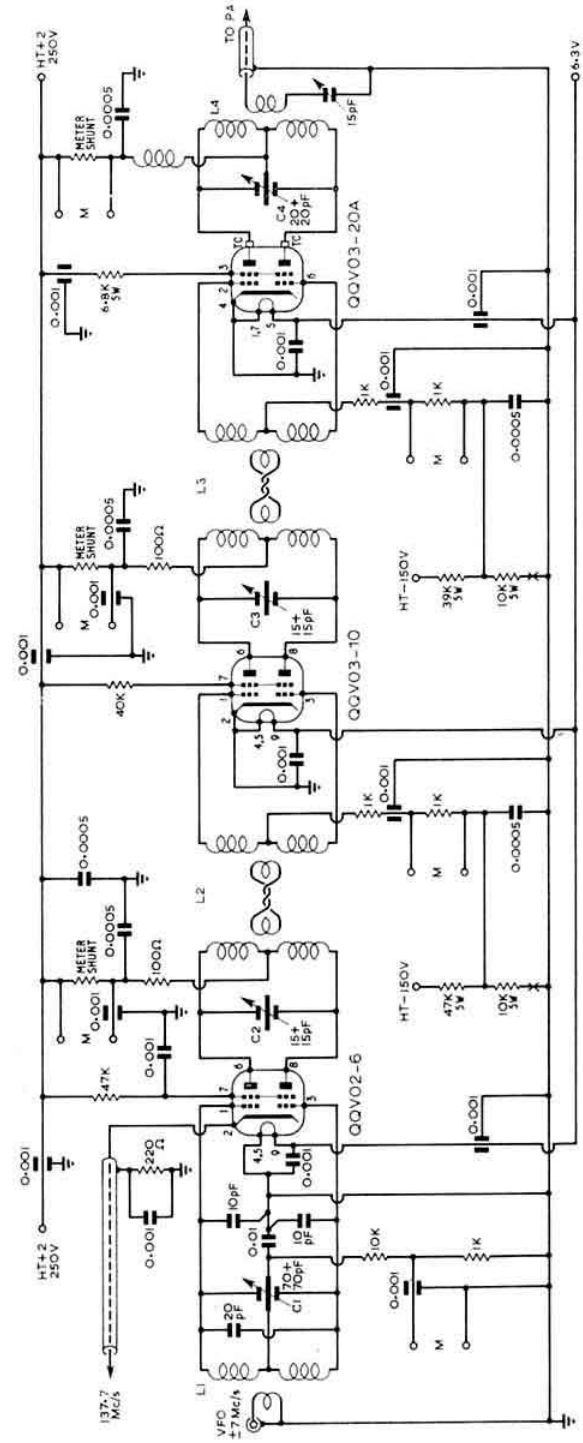


Fig. 2. Mixer and driver section. L1, 28 + 28 turns, 26 s.w.g., with a 2 turn link in centre, 18 s.w.g., ½ in. diam. All other coils are 4 turns each section, 14 s.w.g., ¼ in. diam., the length being adjusted to tune. Decoupling capacitors are disc ceramics, 0·0005 μF types are stand-offs, feedthroughs are 0·001 μF, and all others are ceramicons.

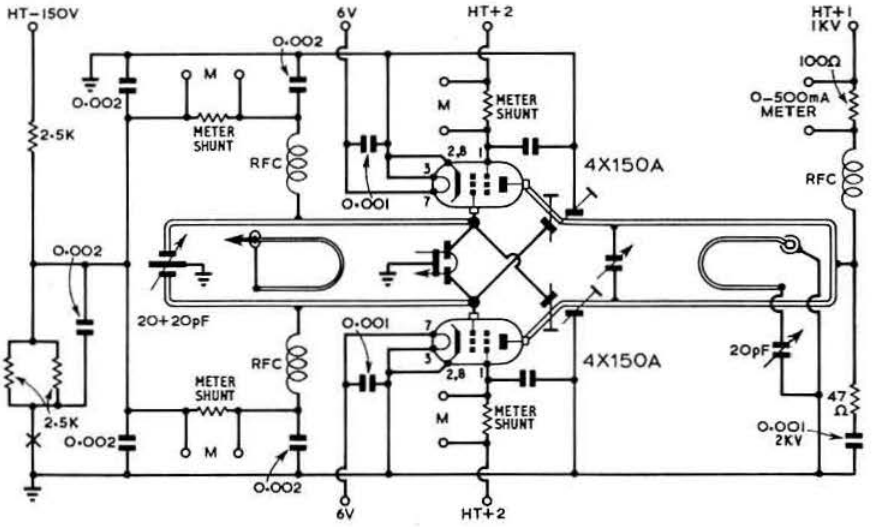


Fig. 3. The 2m transmitter p.a. section. Grid lines, $\frac{1}{4}$ in. diam. copper tube, 9 in. long, 1 in. spacing (centre to centre); link, 3 in. long, 1 in. spacing, 14 s.w.g.; anode lines, $\frac{3}{4}$ in. plated tube; 10 in. long, 1 in. spacing centre to centre; tuning discs $1\frac{3}{8}$ in. diam. 0·002 μF capacitors are stand-off button types, and the screen decoupling is built into the bases.

final amplifier running at up to 40W. The output is now taken via the link and " loading capacitor " to the grid lines of the 4X150s through a short length of coax and a hairpin loop.

A negative bias of 30V is applied to the grids of the driver stage from the bias network.

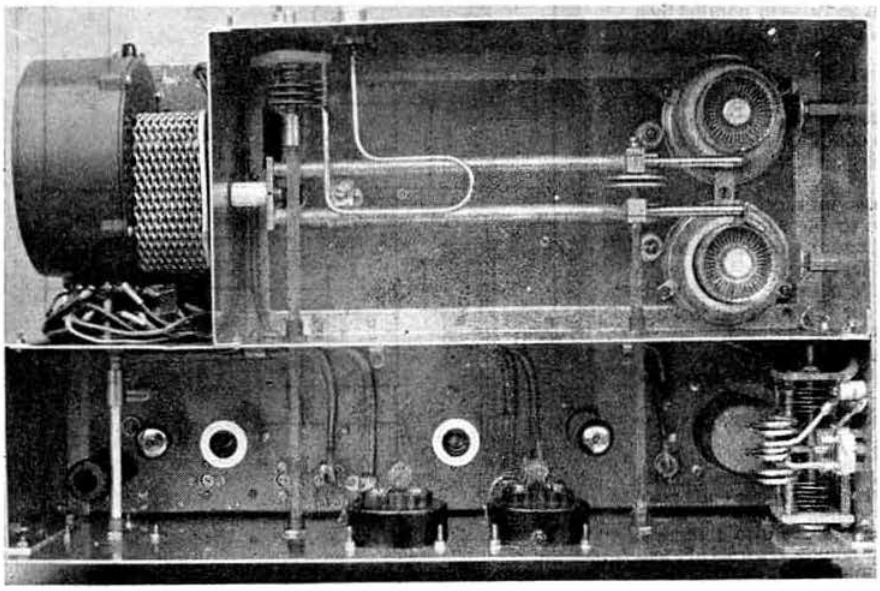
A small differential capacitor on the grid end of the half wave grid lines enables the grid currents to be balanced and a negative 50 volts is applied to the grids via the meter shunts and the r.f. chokes attached to null points on the lines. Crossed leads to the feedthrough bushes enable the valves to be neutralized by varying the protrusion of the bolts through these bushes. Very little capacitance should be needed and the correct setting is clearly indicated by monitoring grid and screen currents.

Tuned lines are used in the anode circuit of the p.a. and coupling to the aerial is via the hairpin loop and loading capacitor. Small adjustable disc capacitors near the anodes of the 4X150s are used to balance the screen currents. Heater supply for these valves is obtained from the 6·3V line through a series resistance adjusted to get the required 6V.

Bias for the various stages is obtained from a 150V supply. Potential dividers across this 150V line are arranged to give the correct values for class AB1 operation. The values of the resistors in the " earthy ends " of these networks are such that when the drive is increased to obtain the required grid currents for class C, the grid leak effect of these resistors provides the extra bias voltages for class C operating conditions.

Where the h.t. voltages are left on during receive, a relay operated by the vox or T/R switch can be used to open circuit the earth connection to these resistors thus putting the full 150 volts negative on the grids for muting.

(Continued at foot of next page)



Top view of the transmitter clearly showing the relative positions of the 4X150 anode lines, controls and coupling loop.

Iron Dust and Ferrite Cores

By B. PRIESTLEY, G3JGO*

ALTHOUGH these two types of materials are often lumped together, they are quite distinct in form and characteristics. Dust cores contain free particles of iron held together with a binder, but ferrites are magnetic ceramics. However, their magnetic properties are what concern us most, and these are similar with ceramic materials capable of giving better performance, but costing more.

The purpose of a magnetic core is to permit the same inductance to be obtained with fewer turns of wire thus reducing the coil resistance and increasing the Q. However, losses occur in the material, so that both the permeability μ, which governs the increase of inductance and the core losses are important.

The product μQ is used as an indication of the " goodness " of a material at a particular frequency. Note that the core Q is the theoretical Q of a coil wound with resistanceless wire; the actual coil Q will be less. The " loss factor " often quoted is the reciprocal of the μQ product. In a screw core there is a very considerable gap in the magnetic path, so that the effective value of permeability μ is much less than for a toroidal core, reducing the effective μQ product.

The useful frequency range of a material depends on the losses that can be tolerated, and also on the form of the core. Cores can often be used outside the recommended frequency working range, depending upon the losses that can be tolerated.

It should be noted that the temperature coefficients are calculated from the toroidal permeability μt. They require multiplication by the effective value of μc which of course depends on the relative position of core and coil.

* 43 Raymond Road, Langley, Slough, Bucks.

Table 1

Grade	100	500	900	901	910
Toroidal permeability	32	12	11	5	4·5
Temperature coefficient p.p.m./degree C.	20	12·5	33	10·5	65
Loss factors in 10^4. at 100 kc/s	400				
1 Mc/s	600	35	30		
2 Mc/s	800	40	50	130	210
10 Mc/s		65	65	135	220
50 Mc/s			115	210	230
100 Mc/s				400	240

The properties of a magnetic material are liable to change if mechanically or thermally shocked, or exposed to strong d.c. magnetising fields. Also, cores should be used with caution in transmitter r.f. circuits since the variation of permeability with current over the r.f. cycle can generate harmonics, and a strong 50 c/s magnetic field can produce hum modulation.

There are many types of r.f. magnetic materials available with no real standardization between the various makers. Tables 1 and 2 cover one manufacturer's range and demonstrate the improved μQ of ferrite materials. They also explain why designating a component simply as " ferrite " or " iron dust " is just about as explicit as a circuit diagram with no capacitor or resistor values!

Acknowledgements

Tables 1 and 2 are reproduced from data kindly supplied by Neosid Ltd.

Table 2

Grade	F8A	F8	F13	F11	F14	F15	F16	F18	F25	F21	F22	F29
Toroidal permeability	1500	1000	600	600	200	150	125	100	50	48	19	10
Temperature coefficient p.p.m./degree C.	0·5	1	1	2·5	12–30	4–7	10–30	6	10	11	11	50
Loss factors p.p.m. at 100 kc/s	12	12										
250 kc/s	35	18	40		25							
500 kc/s	120	35	50		30	55	50	35				
1 Mc/s			75	35	30	70	50	35	5			
2 Mc/s					40	80	50					
3 Mc/s					50	110	50	35		100		
5 Mc/s							65		60	110		
10 Mc/s							100	80	70	140	300	100
15 Mc/s								120		200		
20 Mc/s									100	450	330	
30 Mc/s											400	
40 Mc/s									200		600	150
100 Mc/s												200
200 Mc/s												900

(Continued from opposite page)

Extension of the controls to the p.a. section is by lengths of ¼ in. polystyrene rod. The final anode current is measured by a 0–500 mA meter.

The transmitter has now been in continuous use for around 12 months with very good results. T9X reports have been received on c.w., s.s.b. reports have been very complimentary on speech quality and stability while a.m. with some carrier inserted has also been successful. Most important, however, no TVI troubles have been experienced to date. This is with the transmitter in the same room as the television receiver.

The transmitter is being run quite " cool " with 1000V on the final and 250V feeding the early stages and screens of the 4X150s. It is, of course, capable of much higher input.

The drive needed from the v.f.o. or SB10-U is very low. In fact a Belling Lee TV receiver type of attenuator of 18dB is inserted in the input socket on the transmitter to avoid overdriving the mixer.

As the design and construction of this equipment was dictated by units and components that were at hand, it is not suggested that a chinese copy is essential to get results, but this article might suggest a method of obtaining v.f.o. and/or s.s.b. facilities working on the 2m band.

High Pass Filter Design for TV Protection Against H.F. Transmissions

By W. J. M. McKinney, Grad. IERE, GI3TZB*

THE theory and practice of filter construction is vitally important to the Amateur when a case of TVI is reported, as the fitting of a high pass filter in the TV co-ax usually offers a simple solution to the problem. Standard formulae are tabulated in several reference books, but usually in a form which is difficult to grasp by the desperate, impatient Amateur who has just been taken to task by infuriated neighbours. A step by step survey of filter practice was therefore shown to be needed and this provided the cue for this article.

A filter is a network which is designed to attenuate certain frequencies and pass others with zero loss. There are two types, high-pass and low-pass, and as the names suggest, the former passes all frequencies above the cut-off point, and the latter below. Only the high-pass filter will be considered here, as it is the type most commonly needed in cases of TVI. It is essential to remember that all filters are constructed from purely reactive elements, otherwise the attenuation would never be zero in the passband.

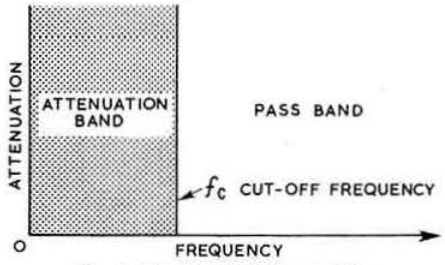


Fig. 1. The ideal high pass filter

The attenuation/frequency curve of Fig. 1 can never be obtained in practice, as in a practical filter the attenuation outside the passband is finite and in the passband there is a loss due to the resistance of the inductive components. Mismatch losses must also be considered, for although the characteristic impedance may vary with frequency, it will probably be terminated in a fixed resistance, or even an impedance which does not vary in the same way as the filter. Be warned—television receiver and aerial installations can vary widely from nominal in this respect.

A Practical High Pass Filter

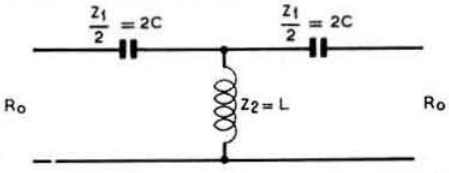


Fig. 2.

A constant K T-type section is shown in Fig. 2 above in which the series and shunt impedances $Z1$, $Z2$ are connected by the relationship: $Z1 . Z2 = R_0^2$,

*13 Belmont Church Road, Belfast 4, Northern Ireland.

where R_0 is a real constant, i.e., a resistance which is independent of frequency and is known as the " design impedance " of the filter.

$$R_0 = \sqrt{Z_1 Z_2}$$

$$\therefore \quad R_0 = \sqrt{\frac{1}{\omega C} \cdot \omega L}$$

$$\therefore \quad R_0 = \sqrt{\frac{L}{C}}$$

To find the cut-off frequency F_c we must first of all find the characteristic impedance Z_0 of the filter, i.e., the impedance seen when looking into the filter (Fig. 3).

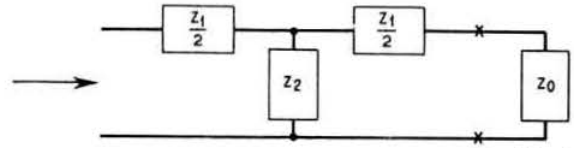


Fig. 3.

$$Z_0 = \frac{Z_1}{2} + \frac{Z_2\left(\frac{Z_1}{2} + Z_0\right)}{Z_2 + \frac{Z_1}{2} + Z_0}$$

$$\therefore \frac{Z_1 Z_2}{2} + \frac{Z_1^2}{4} + \frac{Z_1 Z_0}{2} + \frac{Z_1 Z_2}{2} + Z_2 Z_0 = Z_0 Z_2 + \frac{Z_1 Z_0}{2} + Z_0^2$$

$$\therefore Z_0^2 + Z_0\left(Z_2 + \frac{Z_1}{2} - Z_2 - \frac{Z_1}{2}\right) = Z_1 Z_2 + \frac{Z_1^2}{4}$$

$$\therefore Z_0 = \sqrt{\frac{Z_1^2}{4} + Z_1 Z_2}$$

$$\therefore Z_0 = \sqrt{Z_1\left(\frac{Z_1}{4} + Z_2\right)}$$

Let $Z_1 = -jX_1$ and $Z_2 = jX_2$, i.e., in any filter the reactances will be of opposite types.

$$\therefore Z_0 = \sqrt{-jX_1\left(\frac{-jX_1}{4} + jX_2\right)}$$

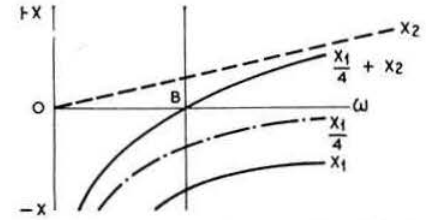


Fig. 4.

In the Fig. 4, the curves on the same side of the horizontal line up to point B give the attenuation band, while the curves

on opposite sides of the horizontal line give the passband, because Z_0 must have a real value so that power can be passed on to the load.

The point B gives the cut-off frequency.

In a high pass filter

$$Z_1 = \frac{1}{j\omega_c C} \quad \therefore \frac{Z_1}{4} + Z_2 = 0 \qquad \text{and } \therefore L = \frac{R_0}{4\pi f_c}$$

$$Z_2 = j\omega_c L \quad \therefore \frac{-j}{4\,\omega_c C} + j\,\omega_c L = 0 \qquad \text{as } R_0 = \sqrt{\frac{L}{C}}$$

$$\therefore \omega_c = \frac{1}{2\sqrt{LC}} \qquad \text{also } C = \frac{1}{4\pi R_0 f_c}$$

$$\therefore f_c = \frac{1}{4\pi\sqrt{LC}}$$

From the above equations a prototype filter can be calculated, if the design impedance R_0 and cut-off frequency F_c are known.

A prototype high pass filter has a very gradual attenuation in the stop band, and unless a few sections are used in cascade it is of very little practical use on its own. Therefore to give the filter a sharper cut-off, an M-derived section will have to be used. This is a section having the same Z_0 as the prototype section, but a much sharper attenuation curve after cut-off.

M-derived Section

Taking a T-section, let us now construct a new section from it, having a series arm of the same type but of different value; let the new Z_1 be $M\,Z_1$, where M is some constant. The new shunt arm will not be Z_2 but say Z'_2 and it is necessary to find that value of Z'_2 which will make the two sections have the same Z_0.

In the prototype section $Z_0 = \sqrt{\frac{Z_1^2}{4} + Z_1 Z_2}$.

for the M-derived section $Z_0 = \sqrt{\frac{M^2 Z_1^2}{4} + MZ_1 Z'_2}$

These will be the same if:

$$\frac{Z_1^2}{4} + Z_1 Z_2 = \frac{M^2 Z_1^2}{4} + MZ_1 Z'_2$$

$$\text{i.e.,} \qquad Z'_2 = \frac{Z_2}{M} + \left(\frac{1 - M^2}{4M}\right) Z_1$$

This means that Z'_2 must be an impedance $\frac{Z_2}{M}$ in series with an impedance $Z_1\left(\frac{1 - M^2}{4M}\right)$ and both these impedances can be obtained if $O < M < 1$.

A complete M-derived section is shown in Fig. 5.

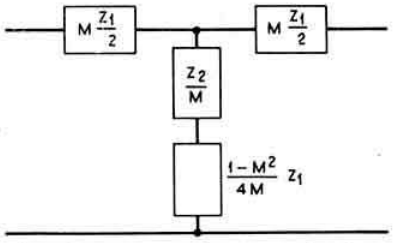
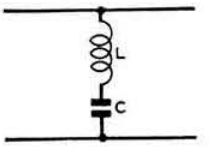


Fig. 5.

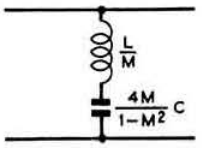
It is obvious that at some frequency the shunt arm will present a series resonance, giving a short circuit across the transmission path and therefore very high attenuation. This frequency is called F_∞ and is found by taking the shunt M-derived arm:



This is a series resonant circuit.

$$\therefore F = \frac{1}{2\pi\sqrt{LC}}$$

But we have called this the shunt arm:



which gives the frequency of maximum attenuation F_∞.

$$\therefore \text{we get } F_\infty = \frac{1}{2\pi\sqrt{\frac{L}{M} \cdot \frac{4M}{1 - M^2} C}}$$

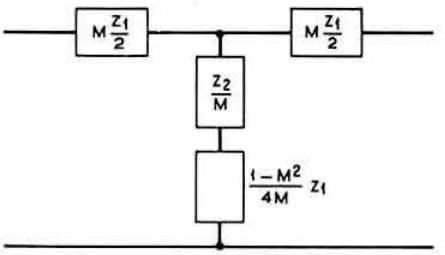
$$\therefore F_\infty = \frac{1}{4\pi\sqrt{\frac{LC}{1 - M^2}}}$$

$$\therefore F_\infty = \frac{\sqrt{1 - M^2}}{4\pi\sqrt{LC}} \text{ as } F_c = \frac{1}{4\pi\sqrt{LC}}$$

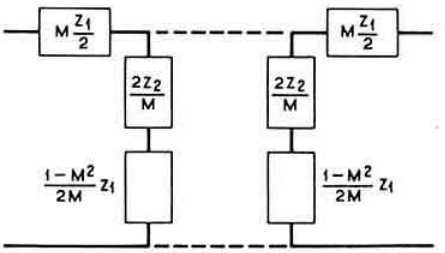
$$\therefore F_\infty = F_c\sqrt{1 - M^2} \text{ hence } M = \sqrt{1 - \left(\frac{F_\infty}{F_c}\right)^2}$$

Terminating ½ sections (M-derived)

If an M-derived T section (Fig. 6a) is split down the centre, we get an M-derived ½ section (Fig. 6b).



(a) Complete Section



(b) Half Sections

Fig. 6.

In terminating ½ sections, $M = 0{\cdot}6$, as only at this value does Z_0 lie between $0{\cdot}9\ R_0$ and $1{\cdot}1\ R_0$ over most of the passband. It can be seen that a filter can thus be terminated

accurately in a pure resistance (equal to the design impedance R_0 over the passband.

A Typical High-Pass Filter

A practical high-pass filter was built; this consisted of *M*-derived ½ sections at each end to give an accurate match to R_0 ($M = 0.6$), an *M*-derived section to give the required attenuation at a chosen frequency F_∞, and a prototype section to keep the attenuation high in the stop band.

Therefore we have:

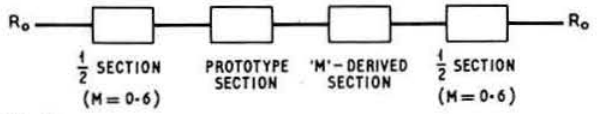


Fig. 7.

As the filter was required for insertion in the co-ax lead to a TV receiver, the design impedance R_0 is 75 ohms. The cut-off frequency f_c is 40 Mc/s and the frequency of maximum attenuation F_∞ was taken as 37·5 Mc/s. This F_∞ was chosen to give high attenuation over the i.f. passband of most TV receivers. The complete filter split into its component parts is shown in Fig. 8.

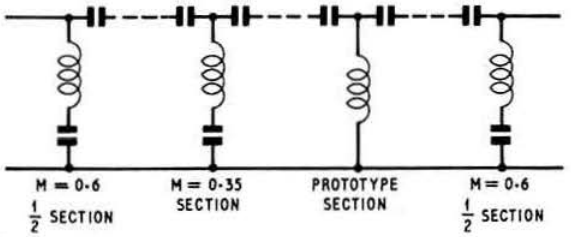


Fig. 8.

The values of L and C were calculated for each section separately and then combined in the final filter. The values of L and C for the prototype section were calculated using the formula below:

$$R_0 = \sqrt{\frac{L}{C}}$$

$$F_c = \frac{1}{4\pi\sqrt{LC}}$$

$$L = \frac{R_0}{4\pi F_c}$$

$$C = \frac{1}{4\pi R_0 F_c}$$

From the values obtained above, the *M*-derived sections were calculated, once the value of " M " had been determined from:

$$M = \sqrt{1 - \left(\frac{F_\infty}{F_c}\right)^2}$$

In the case of the filter constructed, $F_c = 40$ Mc/s and $F_\infty = 37{\cdot}5$ Mc/s.

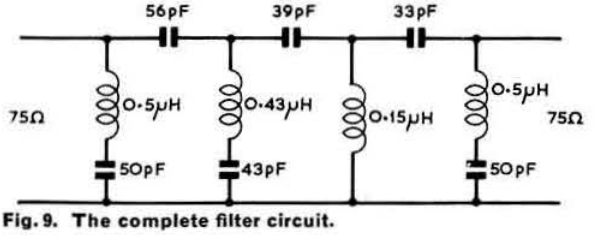


Fig. 9. The complete filter circuit.

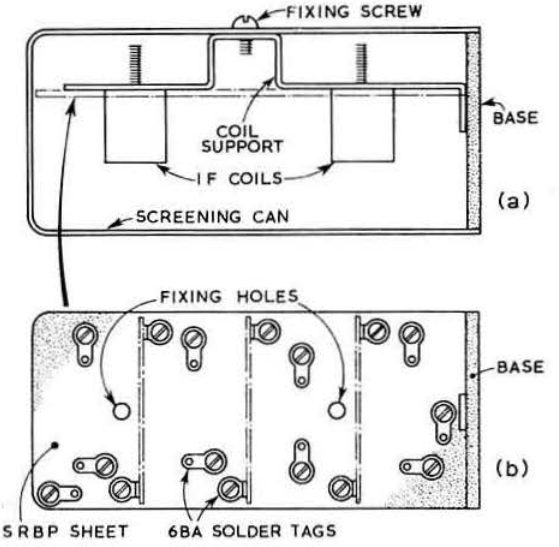


Fig. 10.

$$\therefore M = \sqrt{1 - \left(\frac{37{\cdot}5}{40}\right)^2}$$

$$\therefore M = 0.35.$$

The complete filter with the preferred capacitor values is shown in Fig. 9.

Construction

The filter was housed in an i.f. transformer can measuring about 3½ in. × 1½ in. × 1½ in. This was ex-WD and just happened to be handy. Any i.f. transformer can of similar size would be suitable, but the type used (actually from a TR 1196 RX) lent itself admirably to this use.

The i.f. transformer in its original state is shown in Fig. 10(a). The i.f. coils were removed and a piece of paxolin was cut to fit (Fig. 10(b)) inside the case and was secured to the centre support at the points where the original coils were fitted.

The filter sections were mounted on this panel, using 6 BA bolts and soldering tags.

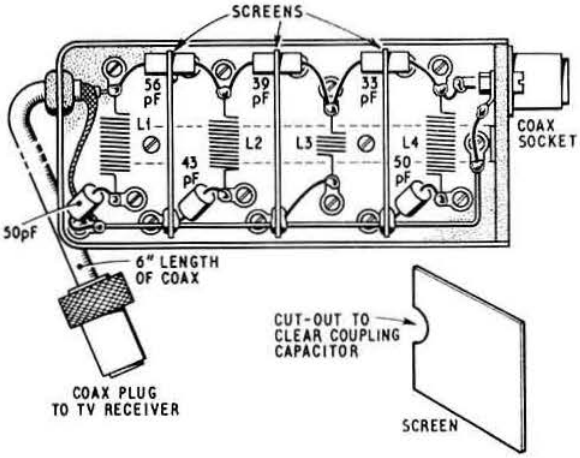


Fig. 11. The 40 Mc/s high pass filter. L1, 12 turns, 0·6 in. long, L2, 10·5 turns, 0·525 in. long; L3, 5 turns, 0·25 in. long; L4, 12 turns 0·6 in. long. It is vital to adhere rigidly to the 1/16 in. dimension for coil leads.

Holes were drilled in the panel to take 6 BA soldering tags which were used for mounting screens and components.

The base was drilled to take a coaxial socket and details of the component positions are shown in Fig. 11.

The screens were cut from tinplate and soldered to the 6 BA tags mounted on the panel. On the sides where the coupling capacitors were fitted, the screens are cut out to accommodate them (Fig. 11).

The coils are self supporting and wound with 24 s.w.g. enamelled wire. The coil diameter is 0·3 in., and $\frac{3}{16}$ in. end wires were left on each coil.

The capacitors used were 1 per cent silver mica types of preferred values.

Conclusion

Several of these filters have been constructed and tested in a case where TVI was severe, owing to the transmitter signal overloading the front end of the TV receiver. With the filters in circuit, a complete cure was achieved.

The effectiveness of the filter can be calculated with the aid of a receiver having an accurately calibrated S meter. The station receiver (G2DAF type) showed that the filters gave an attenuation of not less than 40dB on any of the amateur bands when placed in series with the aerial. To gain maximum benefit though, the filter should be inserted as close to the television as possible.

To check that the passband is roughly correct, the filter can be inserted in series with the TV receiver coaxial feeder, and there should be negligible attenuation of the TV signal. A typical curve is shown above.

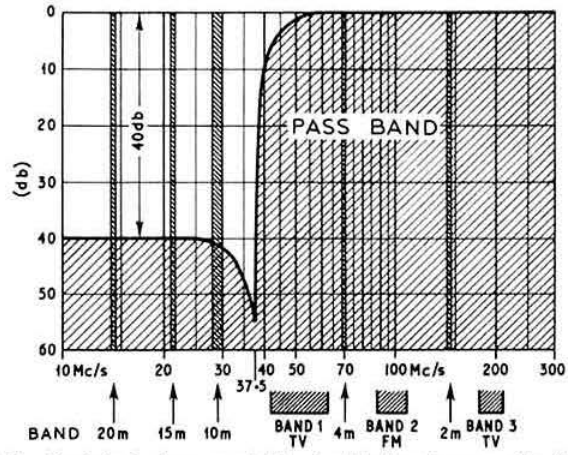


Fig. 12. A typical curve which should closely resemble the characteristics of the filter in Fig. 9.

Tenth Northern Mobile Rally

The rally began in sunshine on 21 May as visitors began to arrive and by noon the car park was beginning to fill up. This year there were more trade stands than ever before and visitors were able to see a very wide range of amateur and other radio equipment. The sale of visitors' own surplus equipment, which is a feature of this rally, was again very popular and a great deal of gear changed hands.

In addition to the free bran tub for juniors, childrens' races were arranged and enjoyed by all. While the men were trying their hands at naming odd sounds and receiving m.c.w., the ladies had the opportunity of guessing the weight of a cake and visiting Harewood House and its grounds.

Attendance at this year's rally was greater than ever and the car parkers did very well moving everyone in and out again afterwards. At about 4.15 p.m. the rain started but there was sufficient accommodation for all to get under cover.

Kent Hamfest and Mobile Rally

The Hamfest and Mobile Rally held at Mote House, Mote Park, Maidstone, Kent, on 11 June attracted a large crowd, totalling about 650. The organizer, G6NU, felt that everyone had an enjoyable time, and quite a large number of visitors went away pleased with raffle prizes. One of the most notable attractions was a skilled display of Judo by a Gillingham club, but of course considerable interest was also paid to 14 stalls, which included, apart from radio equipment, old photographs, a show of goods made by patients from Mote House (muscular dystrophy) Home, and antiques! The financial outcome of this rally was very gratifying, as it was possible to donate over £200 clear profit to the home; £1 for each patient and the balance to be spent on social benefits.

A Tunnel Diode Protected Power Supply

TR1 and TR6 were mistakenly paired in the components list published on page 439 last month. TR6 should be a 2N696.

Silent Keys

We record with sorrow the passing of the following amateurs.

J. G. Stonestreet, G2JN, of Canterbury, Kent.

F. W. Benson, G5GJ, of Great Missenden, Bucks.

F. Hill, G2FZI, of Somerton, Somerset.

A. H. Walker, G3EFB, of High Wycombe, Bucks.

Eric Fowler, G3CNS, of Leek, Staffs.

Obituary

FRANK HILL, G2FZI

It is with deepest regret that we report the sudden death of Frank Hill, G2FZI, on 18 May, 1967, aged 67.

Frank Hill was licensed before World War II, and was a member of the original CWR group formed in Reading under G5AO.

He was absorbed into the RAF reserve some months before war was declared, and then posted to No. 12 E.F.P. Kidlington until commissioned in 1940. He was ultimately posted to Cornwall as Signals Officer where he proved his extraordinary ability for organization and rose to the rank of Flight Lieutenant until the end of the War.

Frank spent the rest of his working life with the De-Beers Diamond Corp., of which he was a highly valued and trusted employee.

Many friends on the air will miss him. His greatest activity from his extremely well-equipped shack was mostly on 80m s.s.b., although from time to time he " went out " on 10m and 2m from his retirement home in Somerset.

M.F.O.

W. DODD, G3LDD

With sorrow we record the death of " Bill " Dodd, G3LDD, on 8 May after a short illness.

Bill was a founder member of the Acton, Brentford and Chiswick Radio Club, and had been a staunch supporter of the club over many years. It is with regret that we will no longer hear " Little Donald Duck " on Top Band again.

Our sincere sympathies are extended to his widow and son in their sad loss.

W.G.D.

Single Sideband

By G. R. B. THORNLEY, G2DAF*

Alignment of a G2DAF-Type Receiver

Part 5

A SUITABLE circuit for a simple noise generator was published in Part 4 of this series in the June 1967 issue of the BULLETIN. This uses the CV172 (GEC E.1468), a valve specially developed as a noise generator and utilising a directly heated tungsten filament.

If sufficient voltage is applied to the anode of a diode to draw all available electrons away from the cathode, any further increase of anode voltage has no effect on current, no space charge is formed, and the diode is said to be temperature limited. The anode current then has a random or "noise" component. As the cathode is made hotter, more electrons become available and the anode current I increases. It is seen therefore that the diode noise output which is directly proportional to I, can be controlled by variation of the filament supply voltage, and this is the method generally used.

The noise factor $F = \frac{20\ IR}{1000}$ where I is the anode current in milliamps and R is the value of the load in ohms. The noise factor in dB is 10 times the common logarithm of F. The formula is then:

$$\text{Noise factor in dB} = 10 \log_{10} \frac{20\ IR.}{1000}$$

In practice it is not necessary to do any calculations and the indicating meter can be calibrated directly in mA and in dB. The values for a load resistance of 80 ohms are given in Table 1. It should be noted that the full scale deflection of the 5 mA meter shown in the noise generator circuit corresponds to a noise factor of 9dB. Many constructors may prefer to have a higher noise generator output and a calibration up to 12dB. If this is the case the anode meter should be changed to a 10 mA full scale deflection movement, or alternatively the 5 mA meter should be shunted to read this value.

Noise Factor Measurement

The procedure is to adjust the gain of the receiver with the noise generator connected but switched off, so that a convenient level of output noise power is indicated. If the noise generator is now switched on and adjusted so that the total receiver power output is doubled, the noise factor can be read directly from the diode anode meter.

The greatest advantage of the noise generator is its simplicity, both in design and use. It is only necessary to feed the output of the generator via a short length of 75 ohm coaxial cable to the receiver aerial input socket, connect an AVO Model 8 or similar test meter—switched to the 100-volt a.c. range—across the output transformer primary connections and fit a 5-ohm non-inductive dummy load (two 10 ohm 1 watt carbon resistors in parallel) across the loudspeaker terminals.

Receiver controls should be set as follows: R.F. GAIN at maximum; A.G.C. switch to OFF; SIDEBAND switch to L.S.B.; MAIN TUNING to mid-band position; NOISE LIMITER to OFF; Q MULTIPLIER to OFF; AUDIO GAIN to a midway position; and the BAND CHANGE set to the amateur band required.

The noise generator h.t. switch is set to ON and the filament control set to give a full scale deflection on the anode meter—this gives the maximum available noise output. While watching the AVO output meter, the receiver PRESELECTOR control is carefully adjusted to give the maximum possible deflection (if this is more than half scale the receiver audio gain control is reduced as required. This is to ensure that the audio stages are not being over-run and are operating on a linear part of the valve characteristics).

When the preselector control has been adjusted for exact resonance—maximum deflection on the output meter—the noise generator h.t. supply is switched to OFF. The receiver audio gain control is then reduced to bring the output meter to some small round figure value—10 volts is a convenient amplitude. The noise generator h.t. supply is then switched to ON and the filament rheostat adjusted until the noise power output of the receiver is doubled. This is a 3dB increase in noise output and as the measurement is in voltage, this is equal to an increase in AVO meter reading of 1·414 times—in round figures from 10 volts to 14 volts. The value of diode anode current and corresponding noise factor scale can be read directly from the noise generator meter. This reading is a direct indication of the performance of any receiver. The lower the current required to double the receiver noise output, the better the receiver works. Noise factor measurement is particularly useful as an aid to finding the optimum coupling of the primary windings on the aerial input coils, and for setting the optimum value of heterodyning oscillator input voltage to a mixer stage.

The noise generator will also give a " figure of merit " that will enable the constructor to directly compare his results with those of the circuit designer, or to compare the performance of his new home constructed " baby " with that of a comparable receiver made by a commercial manufacturer.

Noise Generator Check

As the circuit alignment of the G3OCX receiver had now been completed, this was an appropriate time to connect up the noise generator and, using the procedure just described, take a series of noise factor measurements on each of the receiver ranges. These figures are given in Table 2.

Initially the three 10m ranges showed worse noise factor figures than the 15 and 20m bands. It was noted that the noise factor was better when the 10m r.f. grid coil was resonated with the dust slug in the bottom position (embracing the aerial primary winding) and it was suspected that the coupling was insufficient. The coil was removed and the

Table 1

Anode current mA	Noise factor dB	Anode current mA	Noise factor dB
1	2	4·5	8·6
1·5	3·8	5	9
2	5·1	6	9·8
2·5	6	7	10·5
3	6·8	8	11·1
3·5	7·5	9	11·6
4	8·1	10	12

Table 2

Noise Generator Check

Band	Noise factor dB	Band	Noise factor dB
10	9	20	8
10	9	40	9
10	9	80	9
15	9	160	6·5

* 5 Janice Drive, Fulwood, Preston, Lancs.

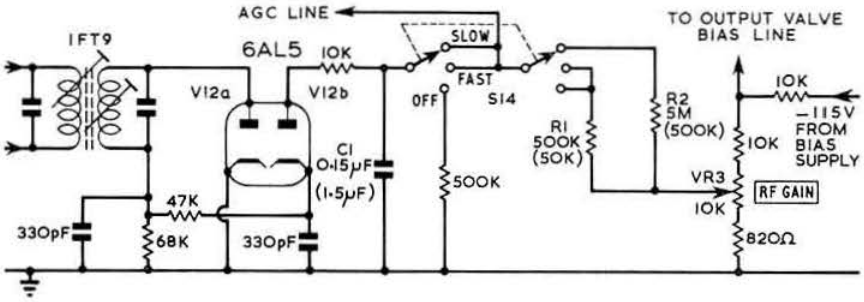


Fig. 1. Circuit diagram of the G2DAF a.g.c. system, with revised values of the delay components shown in parentheses. S14 is a 2-pole, 3 way, single wafer switch.

primary re-wound with 2·5 turns of 32 s.w.g. d.s.c. wire. This then improved the 10m figures as given in Table 2.

A.G.C. System

The S meter fitted to the receiver was of Japanese origin, already scaled in S points up to S9 and then in 10dB steps. When the panel a.g.c. switch was moved from the SLOW to the FAST position, the zero setting of the meter shifted forward by approximately two S points. Inability to zero the S meter correctly is generally caused by r.f. from the carrier oscillator getting into one or more of the 455 kc/s i.f. stages. The receiver a.g.c. system cannot differentiate between an amateur band signal that has been translated down to 455 kc/s, or a leakage signal that is also on this frequency. Either input will be accepted by the a.g.c. rectifier valve, will be converted into d.c. bias on the common grid line and will cause the S meter pointer to move. As a check the carrier crystal was removed from its holder in order to disable the injection oscillator and the a.g.c. switch was moved from the slow to the fast position and then back again. On each occasion the meter zero setting shifted as before. Further investigation including checking the valves V11 and V12 and the associated components. All appeared to be in order, so the lead connecting the junction of the 500 K and 5 M ohm load resistors to the slider of the r.f. gain control (VR3) was removed and the insulation of the common a.g.c. line to chassis earth was measured with the AVO meter, and found to be 20 megohms; it should of course have been infinity!

Fig. 1 shows the circuit diagram of the original a.g.c. system. The signal input is rectified by V12a and develops a negative going voltage across the 68 K ohms resistor and the r.f. component is filtered off by the 330 pF capacitors and the 47 K ohms resistor, leaving the audio modulation driving the cathode of the gate diode V12b. As the anode is initially at almost zero potential, each negative half cycle will cause the diode to conduct and charge up the capacitor C1 through the 10 K ohms filter resistor until both the diode anode and the reservoir capacitor almost reach the same voltage as the peak cathode excursion. At this point the gate diode will only be supplying small pulses of current sufficient to make up the slow loss of charge in C1. During any gap in the transmission the drive voltage on the gate diode cathode will be zero but as the anode is at the negative potential of the a.g.c. line the diode will not conduct and the a.g.c. bias will " hold up " for a period determined by the value of the return path to earth through the switch and the resistance in circuit. The time constant of the discharge is quite independent of the rectifier circuitry and is dependent only on C1 R1 or C1 R2. If R2 is made 10 times the value of R1 the ratio of slow speed to fast speed will be 10 : 1 (to find the time in seconds multiply the capacity in μF by the resistance value in megohms). This two-speed system with a release ratio of about 10 : 1 has been found to be the most satisfactory arrangement for s.s.b./c.w. and normal a.m. reception.

When a diode cathode is heated some of the electrons leaving the cathode will have sufficient velocity to reach the anode, and even when the anode has zero potential these electrons will flow back to the cathode through the external circuit. In the gate diode this return path is a high value resistance and the small " leakage " current through the diode will produce a voltage that will be fed to the bias line. In the SLOW position of the switch the return path is 10 times as large and the voltage produced will be greater. This is most undesirable. It means in practice that a small controlling a.g.c. bias is being developed without any signal input into the receiver and that the zero setting of the S meter will shift when the a.g.c. operating switch S14 is turned through its three positions.

The most convenient cure for this is to return the gate diode anode circuit (R1 and R2) to a small negative " bucking " voltage. This potential (negative 3 volts) is derived from the potential divider—two 10 K ohm resistors, VR3 and the 820 ohm resistor—across the negative 115 volts bias supply. As the gate diode anode and the a.g.c. line are connected together, the grids of the controlled r.f. and i.f. valves are held at negative 3 volts under zero-signal conditions. This fixed bias voltage is in addition to the bias developed across the individual cathode resistors, and the final value was chosen to maintain the overall gain of the receiver (from aerial terminal to output valve grid) at the required value of 140dB.

The a.g.c. line insulation should be perfect—so high it cannot even be measured on the normal test meter resistance range; a leakage resistance of 20 megohms will cause an appreciable change in the value of standing bias on the a.g.c. line. It is important to remember that under zero signal conditions the a.g.c. line is held at 3 volts negative and that this potential is fed through a series resistor that may be the high value of 5 megohms. A 20 megohm leakage on the output side of a 5 megohm resistor will reduce the zero signal bias to 80 per cent of the required value. In the FAST position

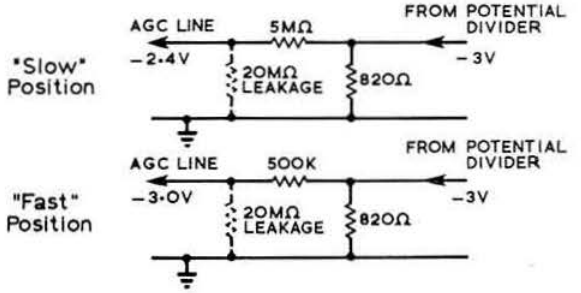


Fig. 2. Simplified circuit diagrams showing the resistor values and the effect on the zero signal bias voltage (assuming a leakage resistance of 20 megohms) as the a.g.c. switch is moved.

of the a.g.c. switch the series resistor becomes 500 K ohms and the 20 megohm leakage has negligible effect—the a.g.c. line potential therefore rises to the original value of 3 volts negative. This is shown clearly by inspection of the simplified circuit diagrams given in Fig. 2. It will be seen that if the S meter zero is correctly adjusted while the a.g.c. operational switch is in the FAST position (a.g.c. line at negative 3 volts), when changed to the SLOW position (a.g.c. line at negative 2·4 volts) the S meter will read *backwards*.

In the G3OCX receiver the a.g.c. line by-pass capacitors were of the ceramic feed-through type mounted through the cross-screens. When sections of the a.g.c. line were unsoldered and removed from these capacitors the line leakage resistance went up to infinity. Each individual feed-through capacitor was tested and appeared to be satisfactory. It was therefore reasonable to assume that the measured leakage value of 20 megohms was the cumulative effect of all the by-pass capacitors in circuit. To remove and replace these capacitors by some other make presented a major mechanical problem because the cross screens were locked in place by the band change switch assembly. In view of the fact that the receiver was now completely aligned and giving an excellent signal to noise performance, disturbance of the coils and switch banks in order to remove the cross screens was most undesirable. After giving the matter careful thought the decision was made to overcome the problem by re-arranging the a.g.c. C and R time constant values.

Three changes are necessary; the reservoir capacitor C1 must be increased in value by 10 times to 1·5 μF, and the two associated resistors R1 and R2 are reduced in value by the same ratio to 50 K ohms and 500 K ohms respectively. This maintains the a.g.c. release time constants exactly as before, but now the common a.g.c. line (in the SLOW position) is fed via a series resistor of 500 K ohms instead of the former value of 5 Megohms, and the 20 Megohm "leakage" resistance has negligible effect on the zero signal bias line voltage.

It must be admitted that this modification was undertaken with some trepidation in case the large increase in capacity value to 1·5 μF reduced the attack time and caused audio "pumping." Everyone who has ever watched a contractor removing water from a hole in the road with a ram type pump, will have observed that the water comes from the outlet pipe in a series of gushes or pulses. An a.g.c. system with an attack time that is too slow will do the same thing to the audio level from the loudspeaker. When the transmitting station starts to speak, the first word will come out of the speaker with a rapidly changing amplitude—the audio equivalent of the reciprocating water pump! This is a most unpleasant receiver characteristic to be avoided at all cost. Fortunately the modified a.g.c. system did not in practice reduce the attack time to an unacceptable value and very careful listening under a variety of input signal conditions did not show any evidence of audio pumping at all.

There is a second fault that can occur in the receiver a.g.c. system in which the S meter (having had the zero correctly set in the FAST position), despite the "bucking" voltage, reads *forward* when the operational switch is moved to the SLOW position. This can be due to (i) excessive space current in V12b and it is worthwhile trying a number of different valves and selecting the best one; or, as mentioned earlier, (ii) carrier oscillator leakage into the 455 kc/s i.f. strip. A wide-open path is via the "hot" cathode of the carrier oscillator V13 into the common 6·3 volt heater wiring. It is very necessary to by-pass the heater to earth with 0·01 μF capacitors soldered directly from each of the valveholder contacts (pins 3 and 4) to an earthing tag bolted directly to the chassis top face. The capacitor leads should be kept as short as possible. A second source of r.f. leakage is via common feed lines carrying the 150 volt stabilized and main 200 volt h.t. supplies. These should either be taken from one chassis section to the next via feed-through capacitors of not less than 0·01 μF in value, or alternatively the feed lines should be by-passed with tubular capacitors at frequent intervals.

If the forward reading of the S meter disappears when the carrier oscillator crystal is removed from its holder, this is conclusive proof that the fault is in fact carrier oscillator leakage. The leakage path may often be more readily found by watching the S meter pointer (switch in SLOW position) while a 0·01 μF capacitor is held in the hand and bridged across from the chassis frame to various tag panel points in turn. Any position of the bridging capacitor that causes the meter pointer to move back nearer to its correct zero setting indicates r.f. on the wiring and this point must be by-passed with a 0·01 μF capacitor permanently wired into position. Do not stop when you have cleared one leakage source—the same treatment may be necessary in three or four other positions!

To be continued

Alignment of G2DAF Receiver

Having followed with considerable interest Mr Thornley's excellent series of articles on the alignment of the G2DAF receiver, we feel the following additional notes will be of value.

Minimum capacity of ceramic trimmers is achieved when the soldered D shaped disc is on the right hand side when looking down on to the trimmer and with the green tag pointing to 12 o'clock.

When aligning the tunable i.f.'s, always set both trimmers to similar physical positions first, then peak cores. If tracking is not perfect, re-adjust trimmers equally, either more or less, and repeak cores. Repeat until no further improvement is possible. This procedure will avoid changing the ceramic trimmers for Philips types.

Since the introduction of the Mark II converter design we have supplied our standard range of hamband "STAB-QOILS" for the r.f. and mixer stages. As detailed on our data sheets these coils will give full coverage of each hamband when tuned by a 6/20 pF or 5/25 pF variable, and with the built-in ceramic capacity trimmer adjusted to compensate for inbalance in stray C's due to differences in layout. Removal of these trimmers will prevent obtaining full frequency coverage and achieving good tracking. The trimmers should be adjusted at the h.f. end of each range and the cores at the l.f. end of each range. Under no circumstances should cores be interchanged as each core material is specially selected to give optimum Q for that particular range.

R. A. WILSON,
TECHNICAL MANAGER,
ELECTRONIQUES.

Changing Your Address?

When notifying Headquarters of your impending change of address, please help us by printing clearly your full name, old address, new address, and if possible the renewal date of your subscription (the month No. is printed on your BULLETIN wrapper). Better still, send us the new address printed neatly on the wrapper from the latest BULLETIN.

Can You Help?

● R. V. Bowell, G3LRL, 16 Margarite Way, Wickford, Essex, who wishes to seek the advice of anyone who has had experience of servicing the CTX2 2m transmitter?

● D. J. Munro, GM3TEM, 4 Harrow Terrace, Wick, Caithness, who wishes to obtain a circuit or other information for a US Navy indicator unit type TS-34/AP (110 volts a.c.)?

TEST REPORT

The Eagle K-126B Dip Meter

by M. H. McFadden, GI3CVI*

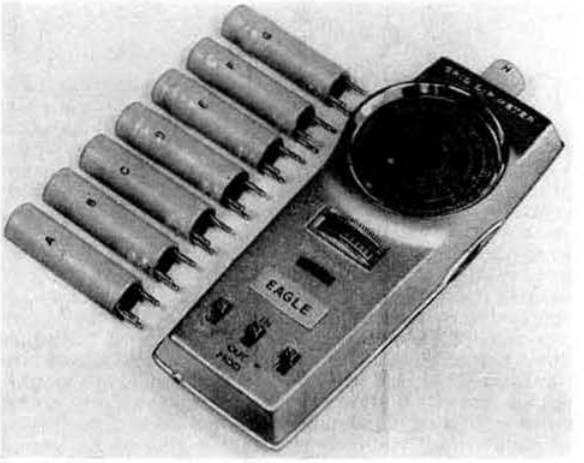
PROBABLY the most useful and versatile piece of equipment in any amateur station is a grid dip meter. This one simple instrument can be used for determining the resonant frequency of passive tuned circuits, measuring inductance and capacitance, measuring the frequency of an r.f. signal, monitoring the output of the station transmitter or generating test signals over a very wide frequency range.

The Eagle K-126B is a transistorized grid dip meter powered by an internal 9-volt battery. Two transistors are used, one as a Colpitts oscillator and the other as an emitter follower which couples the rectified output of the oscillator to the meter. The latter transistor also acts as an audio tone generator when the instrument is used as a modulated signal generator. Headphones may be plugged into a socket on the side of the grid dip meter for monitoring the modulation of the station transmitter or for listening to the beat note when the device is used as a heterodyne frequency meter. The frequency range 360 kc/s to 220 Mc/s is covered in eight ranges with well identified plug-in coils. The nominal ranges do not overlap but in fact there is a small overrun at both ends of each range on the dial.

A great deal of thought obviously went into the styling of this grid dip meter. It is housed in a light alloy diecast case of very pleasing appearance with a 2½ in. diameter frequency dial on the front. The dial is in black with white figures and is rotated under a cursor on the glass by means of a thumb-adjusted knob on the side of the instrument. The eight scales are easily identified by coloured dots corresponding to the coloured end-piece of each coil. It is light (just over 1¼ lb) and fits comfortably in the hand with the thumb-controlled frequency knob in exactly the right position. A wrist strap is provided as a safeguard.

On test it was found that this grid dip meter was not as sensitive as a more familiar mains powered valve model. Close coupling was required to obtain a significant dip when measuring the resonant frequency of a tuned circuit and the amplitude of dip decreased very rapidly as the distance between the tuned circuit and the instrument was increased.

When tuned from the high frequency end of the scale downwards the meter reading decreased in the normal manner at resonance but then " plopped " back to its normal reading as the dial was advanced through resonance towards the l.f. end. This resulted in a back-lash which made it impossible to examine the dip by rocking the dial back and forth over the resonance point. The oscillator output also dropped to about half scale on the meter at the high frequency end of each range which caused some confusion when looking for a dip in that area. The SENSITIVITY control had enough range in hand, however, to restore full scale reading and with experience this characteristic became less troublesome. As a signal generator, with or without modulation, the instrument was satisfactory, and produced a clean signal whose frequency was at the worst 2 per cent different from the dial indication, although the specification mentions a frequency accuracy of ± 1 per cent. There is provision for plugging in a crystal (½ in. pin spacing) for cases where an accurate frequency signal source is required and for testing crystals.



The Eagle dip meter with its coils for eight ranges

The instruction book contains some very strange spellings and expressions but it is sufficiently explanatory. A circuit diagram with component values is included.

This instrument, because of its attractive appearance, ease of handling and absence of mains lead should have a wide appeal despite the few adverse criticisms mentioned.

The price is £13 10s. The instrument was kindly loaned by B. Adler & Sons Ltd, and is available retail from Relda Radio Ltd and Eagle agents.

*14 Cliftonville Avenue, Belfast 14.

THE MONTH ON THE AIR

By JOHN ALLAWAY G3FKM

TWO communications received on the same day have given your scribe considerable food for thought. The first one was received from Hal, G3NMH, who spends a great deal of his operating time talking to amateurs in the VP8 area and helping them to feel that they are not completely cut off from home and friends. Some of these operators are located in places where a visit from two boats a year is the only way in which mail can be sent and received, places which have no commercial telephone service with the outside world and where during winter daylight is not seen for several months. It seems that approaches were made for permission to handle third party messages for these remote Antarctic outposts at Christmas times, but were rejected by the authorities. The second card was from ARRL and was Official Bulletin Nr. 122 announcing the fact that W3DWG/VR6, who expected to be on the air from Pitcairn Island in late July, had received permission to handle third party communications during his period of stay on Pitcairn. " This is considered to be a temporary exception to the general ITU ban on third party traffic." According to your scribe's Post Office Guide telegraph facilities are similar between the UK and both the VP8 and VR6 areas. Surely there is every reason for permitting VP8/UK third party traffic if the same facility is available to an American visitor to Pitcairn? It seems a good suggestion that relaxation of the rule should be made between the UK and those areas of the Commonwealth where there is no normal communication. This would cut out any danger of " phone patch alley " extending down on to the DX section of the DX bands to any noticeable extent.

Apologies to all readers for the numerous errors in last month's *MOTA*. Some consternation was caused by the transformation of the Countries Table into a Commonwealth Call Areas listing! As the printers were presented with a rather blurred carbon copy of G3FKM's text due to the unfortunate loss of the original things could have been even worse. Please note that due to holidays and early deadlines reports for the **September** issue should arrive **at the author's address no later than August 9.**

An attractively produced map of the British Isles (26 in. by 36 in.) clearly showing county boundaries and containing also an inset map of the London area, is now available from HQ for 5s. post free. This would be of considerable use to county hunters.

News from Overseas

G3III, who is also known as 9V1NT, 9M6LE, and 9M8II, writes from the last mentioned location with some general observations on DX from the DX's own viewpoint. He says that for stock QSOs the USA stations cannot be beaten, and one just does not have the time to exchange names, QTHs, etc., as the pressure is too great. He finds that working stations off his own frequency is an absolute must, and says that he has a black list of those who call continuously during contacts. Greg also says that the use of " BK " does not seem to be understood by most operators who will insist in giving call-signs once in contact. During the 15 days in Kuching operation took place on 15 and 20m every day, and 630 QSOs were made. Over 40 per cent of these were with Ws, and only 34 in the UK (10 of which were in NFD). He wonders where all the Gs were—those he worked were mostly G2, 4, 5, 6, and 8! The equipment was an FT 100 running 125 watts to a ground plane. 9M8II should be active again either during the first two weeks of August or the last two weeks in September. Please note Greg's correct QTH in *QTH Corner*.

BRS27752 is now in Sierra Leone, and since 15 June has been licensed as 9L1HW. He hopes that he will be on the air as the result of assistance from 9L1TL and 9L1KZ. Howard's house is 800 ft. a.s.l. overlooking Freetown harbour, and he will be there until September when he returns to his old post at Southampton University. Stations heard on the local Sunday morning net on 40m include 9L1KZ, 9L1TL, 9L1JP, and 9L1NB, and apparently 9L1MP and 9L1SR have now left the country. After 16 September correspondence should be sent to: H. L. Williams, 4 Meadowbank Road, Fareham, Hants.

A letter from W3HNK reports the fact that although he was QSL manager for 5A3TX between October 1964 and August 1966 neither he nor W3YLU (ex-5A3TX) can persuade the Libyan QSL Bureau to release over 1000 cards received for him. Joe offers to help anyone still waiting for a 5A3TX card if they will send him details and s.a.e. and IRC. See *QTH Corner* for address.

MP4MAX informs us that he opened up from Muscat on 10 May and will be leaving some time in August to return to England. He is trying to be as active as possible in the short time available to him, and has already contacted 109 countries in 35 zones with his SB 100 transceiver and groundplane. The best time for openings into the UK seems to be between 18.00 and 20.00 and 14,105 to 14,110 are the favoured frequencies. Iain says that the greatest problem is caused by those who will *insist* on calling during QSOs or who make two minute calls during a pile up. The worst of the lot is the lid who decides to call CQ on his frequency, hoping to raise him that way. All stations needing a QSL will receive one, and direct cards have been answered within three days. After early August cards should be sent to Iain's home call G3SYW (see *QTH Corner*).

6Y5JR, John Rudkin, forecasts an increase in s.s.b. activity from Jamaica in the near future. At the time he wrote his letter there were 15 stations already active on this mode, and a bulk order had been placed for enough equipment to increase the number to more than 20. The legal limit there is 500 watts and there is a marked increase in the number of beams and quads being used. 6Y5JR himself is at present using inverted vees for 20 and 15, the apices of which are only 20 ft. above ground.

10th Jamboree on the Air

This year's Jamboree on the Air will be held during the weekend of 5-6 August. Three special stations are of interest—ZS6JAM will be active from Mafeking, where the idea of Scouting was conceived by Lord Baden-Powell in 1900. GB3BPH will be located at Brownsea Island where the first experimental Scouts camp was held in 1907, and K7WSJ will be in Farragut State Park, Idaho, the site of the 12th World Jamboree. All amateurs interested in the movement are invited to take part, and reports and photographs would be appreciated by the Boy Scouts World

* 10 Knightlow Road, Birmingham 17. Please send items to arrive by **9 August** for the **September** issue, **6 September** for the **October** issue and **11 October** for the **November** issue.

Bureau, 77 Metcalfe Street, Ottawa 4, Ontario, Canada. Suggested frequencies for Scout stations are 3525, 3950, 7025, 7290, 14025, 14290, 21025, 21290, 28025 and 28590 kc/s.

Awards

The custodian of the **South East Asia Net Award** is now VK2AOK, Hebe Grouse, 17 Ivanhoe Street, Marrickville, NSW, Australia. Presumably a list of present members may be obtained by sending a s.a.e. and IRC to Hebe.

A reminder that up to date information on several hundred awards and certificates is to be found in the **Directory of Certificates and Awards,** published by K6BX and issued quarterly. Each issue is self contained and amendments are not issued. Stocks of this publication are not held by HQ to ensure that only the latest copies are supplied direct from the US. Orders for direct delivery from K6BX may be placed with G2BVN, the price being 18s. 6d. per copy, post paid. The directory is in loose leaf form and a suitable binder can also be supplied for a further 7s. 6d. if required.

DXpeditions

A group of Leeds amateurs will be making a trip to Nairn and will be there for a week starting 6 August. All bands will be used and 160m c.w. and s.s.b. will be covered during the evening and night. They will have a KW2000 and will move on to other Scottish counties if there is any demand. The party will consist of G3s DLD, VQQ, VTY, WDW, WGW and an s.w.l. who hopes to be a G8 plus 3 by then. Call-signs will be those listed /P.

Information has been received from W9WNV and WA6SBO relevant to their continuation of the 1965-1967 World-Wide Expedition. No itinerary has been published, but they left the US en-route for the Indian Ocean on 13 July via London. Their statement says that all bands 80 to 10m (and 160m also when possible) will be utilized, and there may be two stations active simultaneously. Frequencies to be used are 3501, 3795, 7001, 7095, 14045, 14105, 21045, 21245, 28045, and 28605 kc/s, listening frequencies will be announced. Announcements of plans will be made three times daily on normal operating frequencies at 15.00, 19.00 and 23.00 GMT. The ARRL Operating Codes will apply as closely as possible, and the statement says: " we will avoid working amateurs who are constant violators of the listed ethics." All QSLs should be sent to WA6SBO's home QTH, where his wife will deal with them. It is particularly requested that an addressed envelope and IRC be sent with each card so as to speed up returns, and QSO times in GMT are a must. Donations are very welcome, but are not required for a QSL. VE3GCO will look after SWL reports, and all listener reports should therefore be sent to him (G. V. Hammond, R.R.4, Main St., Atwood, Ontario, Canada). W4ECI is still in charge of QSLs for previous W9WNV operations.

G3s TOT, ULF, VNH, and VNV, of Gresham's School ARS (Holt, Norfolk), will be operating from **Andorra** from 18 August to the end of the month using the call-sign PX1NV. They will have two stations on the h.f. bands, and one on 2m, but there will be no 160m operation. Anyone wishing to arrange a 2m sked should contact G3TOT (Chris Miles, 26 Gun Lane, Knebworth, Herts) as he will be in charge of this part of the operation. PX1NV will be looking for G contacts on 40 and 80m c.w. and s.s.b. from 12.00 to 14.00 and from 17.00 to 21.00 daily. W/VE QSLs will be dealt with by W9HJM.

A group of Cuban amateurs will be operating from the **Isle of Pines** (CO4) in conjunction with a spearfishing contest from 24.00 4 September to 24.00 7 September. A contest will be held and RST plus serial number of QSO should be exchanged, up to six contacts with the CO4 station on each band may be counted provided that a different operator is worked each time. CO4 on c.w. counts 20 points, on a.m. or s.s.b. 30 points, other Cuban stations count 10 and 15 points respectively. Logs should be sent to PO Box 6996, Habana, Cuba, no later than **1 October.**

Dick Ehvhorn, W4ETO and Ernie, K4RLO operating during the recent ARRL DX Contest.

(Photo by K4IIE)

News received over the air from 4X4HW by G3PJM was that 4X8HW and 4X8TP would be on the air from Jerusalem Old City and Ramallah during the 48 hours 6-7 July, and that 4X6 (or 4X7) TP will soon be active from Sinai, the Gaza strip, and Gulf of Aquaba areas. A little later 4X8HW

David E. L'Heureux, a Foreign Service Officer of the United States, has recently been licensed to operate in the Central African Republic as TL8DL. He is the only station QRV from TL8 land at present and plans to spend his limited leisure hours at the rig working DX. David still has more than a year left of his tour in the CAR. He formerly operated from Libya as 5A4TQ. The TR-3 feeds a TH3-MK2 three element beam about 50 ft. above the ground. David operates phone and is usually found between 20.00 and 22.00 GMT on either 15 or 20m, depending on conditions. He also checks into the YL Net on 14·330 Mc/s from time to time as 4027.

David prefers to receive QSLs direct addressed to TL8DL, American Embassy, BP 924, Bangui, Central African Republic. Stamps not required for his collection will be turned over to missionaries in the country. For direct replies include an s.a.e. and two IRCs. Other cards will be distributed via bureaux in Europe and the United States.

Jamaica Amateur Radio Association during Field Day 1967.

and 4X8TP will be on again from Jericho, Nablus, and Jennin.

F9IE and F9JS expect to be on from Andorra as PX1IE and PX1JS during August. Frequencies mentioned are 3520, 3790, 7020, 7045, 7090, 14020, 14110, 14195, 21020, 21340, 28020 and 28600 kc/s.

No definite news of Iris and Lloyd Colvin has been received for several weeks. When last heard they were about to leave Gambia for Portuguese Guinea (CR3) but nothing has been heard from them so far.

DXCC News

Yet another statement (the fourth) from ARRL, dated 6 July includes the following information. " It now appears to the Awards Committee that there is little or no likelihood that Dr Miller shall be able to supply the minimal information required to give the Committee reasonable assurance that DXCC credit can be given, or continued in effect, for contacts in 1966 and early in 1967 with Dr Miller's DXpeditions to **St. Peter & Paul's Rocks (PY0XA), Chagos (VQ9AA/C),** and **Heard Is. (VK2ADY/0).** With respect to the first two, reasonable documentation concerning the manner in which the travel was accomplished has not been supplied. With respect to Heard Is. a question concerning authorization by the Australian Government continues to remain unresolved. Accordingly the Awards Committee most reluctantly announces that DXCC credits for these three operations must be withdrawn."..." Should additional information concerning these three operations be supplied the Committee again will review the operations in light of all available information."

June *QST* shows the latest UK Honor Roll listings as: G3FKM 322/338, G8KS 320/337, G4MJ 319/335, G3HCT 316/326, G2PL 315/337, G3HDA 313/324. Telephony listings are G3FKM 318/331, and G8KS 316/329.

Asser Wallenius, OH2SS with Arto OH2FS and Rick OH2MK in the Avanto (hole in the ice) after a Sauna bath.

Top Band News

The latest *W1BB Bulletin* says that ZS6AM heard W1BB/1 599 and W1AW at 569 at around 04.00 2 July. On the same date both W1BB and W0VXO were heard at 449 by PY2PA, and the same two stations plus W2IU were copied by G3UBW at RST 589, 559 and 579 respectively. Unfortunately no contacts resulted, presumably due to static at the US end. G3VYF reports that ZB2AP has been putting a very good signal into the UK lately, and that ZB2AM is occasionally on the band. ZB2AY hopes to be on again with a 400 ft. long wire in November. Your scribe would like to take this opportunity to thank Stew for supplying the Society with his excellent Bulletins and 160m news items, together with a supply of photographs of 160m personalities.

Contests

The **8th All Asian DX Contest** will take place between 10.00 26 August and 16.00 27 August, and will cover all bands 1·8 to 28 Mc/s, c.w. only. Entries may be either single or multi-band single operator. Participants should send a serial number consisting of RST report plus two figures denoting their age—YL operators send "00!" Contacts with Asian stations count one point, and a multiplier of one is given per Asian country worked on each band. Certificates are awarded to the highest scorers on each band in each country, and to the three highest scorers in the multiband category. In addition there is a special souvenir given to the continental highest multiband entry. Logs must reach JARL Contest Committee, PO Box 377, Tokyo Central, Japan, no later than 31 December. The log should contain a statement that licence and contest rules and regulations were fully observed, and should show date, time, call-sign, numbers sent and received, name of country and points claimed for all contacts. UK entrants in last year's contest were **G4CP** (3212 points), **G2DC** (2000 points), **G2AJB** (480 points)—all multiband. **G3FKM** (825 points) and **GM3KLA** (54 points) on 21 Mc/s. **G3EYN** (574 points) on 14 Mc/s, and **G3HDA** (25 points) on 7 Mc/s. All these receive certificates.

Fuller results of the 1966 CQ Magazine WW DX Contest (C.W. section) are as follows:

Single Operator

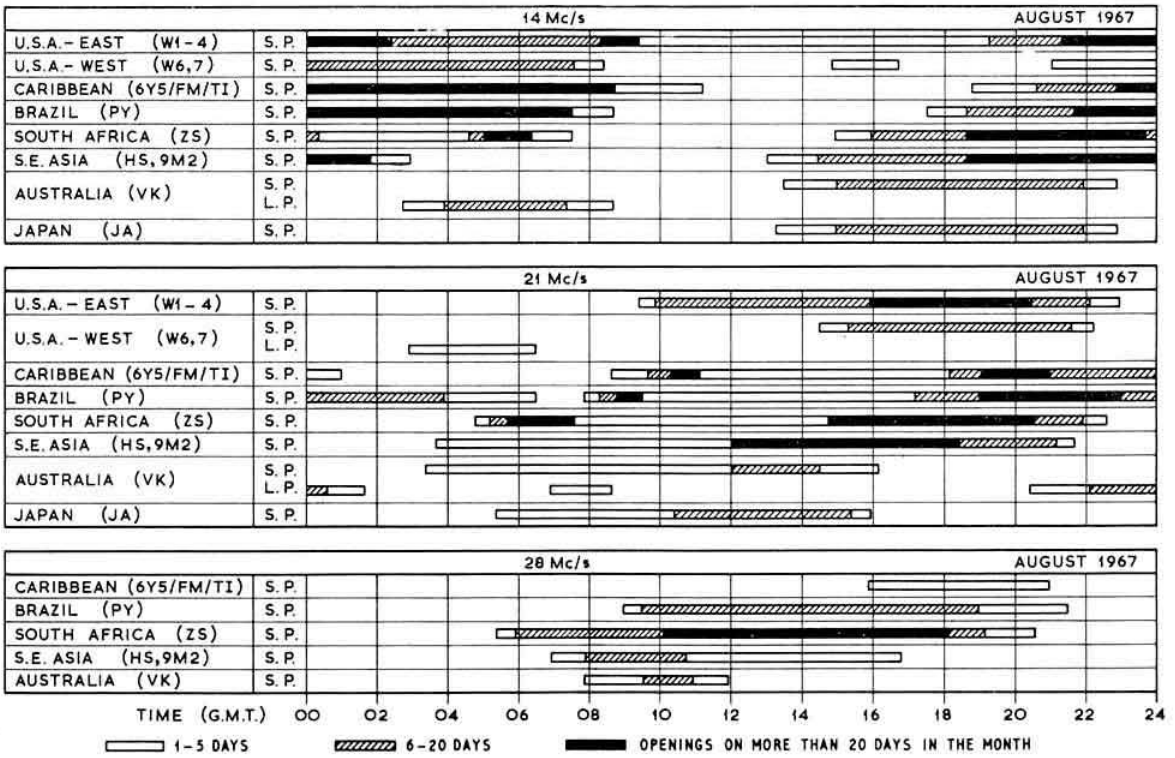
G3HDA	**A**	**683,844**	**957**	**87**	**207**
G2DC	A	224,046	433	72	171
G3DYY	A	211,718	541	72	149
GM3SVK	**A**	**138,387**	**415**	**52**	**111**
GM3JDR	**A**	**107,085**	**497**	**35**	**86**
GM3EOJ	A	104,575	302	56	109
G3TWV	A	102,951	413	42	81
G2AJB	A	88,330	293	48	98
GM3CFS	A	84,744	343	42	90
GC4LI	**A**	**62,000**	**273**	**40**	**84**
G8DI	A	58,250	267	37	88
GM6RV	A	29,548	181	21	59
G3TXF	A	29,250	241	26	50
GD3AIM	**A**	**27,838**	**280**	**19**	**43**
GM5ABN	A	26,474	163	26	36
G3NVK	A	21,528	143	27	65
G3JKY	A	19,224	169	17	37
G2BOZ	**28**	**40,860**	**250**	**22**	**38**

G4JZ	28	15,512	194	20	28
GW3GHC	**28**	**9,248**	**101**	**14**	**20**
G3EUE	28	3,500	64	9	11
G3MWZ	28	2,822	63	8	9
G3HCT	**21**	**233,988**	**821**	**30**	**81**
G3PJW	21	36,993	261	15	44
G3NSY	21	13,840	191	13	29
G3FKM	**14**	**166,344**	**569**	**34**	**82**
G3SHM	14	34,290	266	17	37
G3IOI	14	20,862	176	20	41
G2HDR	14	4,658	77	9	25
G3WP	14	380	14	5	14
G3RRJ	**7**	**117,208**	**567**	**27**	**65**
G4CP	7	65,705	437	24	61
G3ESF	7	32,292	390	11	43
GM3JZK	**7**	**16,550**	**192**	**12**	**38**
G3IGW	**3·5**	**27,384**	**362**	**11**	**45**
GM3KLA	**3·5**	**8,874**	**151**	**9**	**42**

Multi-operator entrants were as follows: **G3SSO** (G2HDU G3CNW, G3HXA, G3LCJ, G3MSV, G3PEO, G8FF, G8KG) 756,288 points. G3SBI (G3JIJ, G3KJW, G3RIK, G3RRM, SWL Brian) 323,136 points. GB2USA (G3IEW, G3KVF, G3NFJ, G3SXZ, G5AAB, G5ACP, G6VC) 276,974 points. GI3GAL (GI3's GAL, JXS) 116,964 points. G5BK (G3's CEG, CGD, HCV, LDA, OLN, UKV) 165,300 points. G3SKY (G3's SDD, UCW, VDZ) 57,065 points. **GW6GW** (GW3's PPW, RNP, TKZ, TUG, G6BK) 54,327 points. **GM3RNZ** (GM3's RNZ, SFH) 31,776 points. G3FVA/A (G3's SVW, TYK) 1,378 points. Certificate winners in bold face type. For explanation of listing see last month's *MOTA*. These figures suggest a much larger interest in the UK than on previous occasions, 75 call-signs being listed. Congratulations to all winners.

The **13th European (WAE) Contest** C.W. section will run from 00.00 12 August to 24.00 13 August, the Phone section from 00.00 9 September to 24.00 10 September. A number

PROPAGATION PREDICTIONS



August is usually the last month for the poor summertime DX conditions on the h.f. bands (especially 28 Mc/s). In the course of September these will steadily improve, and reach their best in October and November. On 28 Mc/s during August North America will only come through under exceptional conditions. South America too will not be heard every day. The most reliable will be traffic with Africa, which should show a slight improvement compared with the previous month. Similarly better conditions are to be expected for contacts with South-East Asia and Australia. On 21 Mc/s North America should again come through reliably in the early evening. This prospect improves as one moves further south in Europe. The propagation path to Western North America will also show some improvement. As the nights lengthen in the Northern hemisphere and shorten in the Southern, traffic to areas in the Northern hemisphere (North and Central America East Asia) will generally cease earlier than in the previous two months, but to areas in the Southern hemisphere (South Africa and Australia, the opposite will be the case. As compensation for the continuing poor DX conditions this month, the sporadic short skip conditions will continue on the h.f. bands. 14 Mc/s will continue as a night-time DX band. The conditions to North America in the early morning will, however, worsen slightly. In the late afternoon contacts will be possible with South Africa, South-East Asia, Japan and Australia, though badly affected by European QRM. During daytime 14 Mc/s will still be an ideal band for European traffic and maximum contact distances will increase as autumn approaches. The latter applies also to 7 and 3·5 Mc/s. In the latter half of the night on 3·5 Mc/s the dead zone will only interrupt local traffic on rare occasions.

The provisional mean sunspot number for June 1967 was 62·6 with the periods of greatest solar activity occurring at the beginning and end of the month. The predicted smoothed sunspot numbers for October, November and December are 95, 97 and 99 respectively.

QTH CORNER

CE0AE	Ham Shack, Box 915-517, Albrook A.F.B., Canal Zone, 09825.
CR6GO	(After 1/7/67) Jorge Brence, Rua Eng Carlos Amarante 209, Porto, Portugal.
FM7WD	via W3GJY, 1400 Chaplin St., Conway, Pa, 15027, USA.
FM7WO	via WB2SSK, William Steene, R.D.1, Bouchville, NY., 13310.
I6REE	via I1PEP, Paolo Pecora, via San Cipriano 50, Rome, Italy.
JW3NI	Erling Selnes, Kap Linnee, Spitzbergen, via Norway.
JX5CI	via LA5CI.
KG6SN	via W7PHO, W. Bennett, 18549 Normandy, Seattle 66, Wash, USA
KJ6BZ	Box 937, Det. 1, 1957 Command Group, A.P.O. San Francisco, Calif., 96305.
W3DWG/KS6	via K4YMQ, Ira Franklin, 5 E. Petain St., Prichard, Ala., USA
KV4EY	via W3HNK, Joseph Arcure Jr., 126 Henderson Ave, Norwood, Pa, 19074 (QSO's since March 1967)
MP4MAX	via G3SYW, Little Paddock, Arkesden Rd., Clavering, Saffron Walden, Essex.
MP4MAY	Box 35, Muscat.
PX1IE, PX1JS, PX1NV	via F9JS, Jean Sacotte, 21 Av. Jean Jaures, Cachan, Seine, France.
PX1NV	via G3VNV, J. R. Hawke, " Aingale," The Buttlands, Wells-Next-The-Sea, Norfolk.
TJ1AH/AJ	PO Box 20, Assuns, Cameroon.
TL1DL	Box 924, Bangui, Central African Republic.
VK4HG	(Willis Is.) via VK3 Bureau.
W3DWG/VR6	(see W3DWG/KS6).
WA6SBO/W9WNV	Expedition. via WA6SBO, 9418 Montemar Drive, Spring Valley, Calif.
YN1RTS	c/o U.S. Embassy, Managua, Nicaragua.
ZD8J	via W4DQS, 928 Trinidad St., Cocoa Beach, Fla, USA
ZS9F	via K7GHZ, Donald Simonsen, 3213 R Street, Vancouver, Wash, USA
9G1BF	via W3HQO, Reg Cherrill, 8005 Palmetta, Philadelphia 11, Pa, USA
9V1MT	Flt/Lt H. Pain, Officers Mess, R.A.F. Lindholme, Nr. Doncaster, Yorks.
9V1NT	Greg Lovelock, 3 Maida Vale, R.A.F. Seletar, Singapore.

RSGB QSL Bureau, G2MI, Bromley, Kent.

of leaflets setting out full details of the rather intricate scoring system are available from G3FKM.

Sincere apologies to **G3TWV** whose call was inadvertently printed as G3TWF in last month's column, and congratulations to the real winner of the multi-band G entry in the 1966 *CQ* WW DX Contest (Phone section)!

Three more QSO Parties take place in August in addition to the one listed last month. The **Maryland QSO Party** runs from 00.00 to 24.00 6 August, one contact with each station per band/mode being allowable. Each QSO counts 2 points, multiplier is the number of Md. countries worked. QRGs 3575, 3850, 7075, 14075, 14275, 21075, 21325 kc/s. Log each band separately and submit to K3JYZ, 14601 Claude Lane, Silver Spring, Md., 20904, before 1 September. The **New Jersey Party** extends from 19.00 19 August to 04.00 20 August, and from 12.00 to 23.00 again the same day. QSOs count 1 point with multiplier of counties worked. Frequencies 3530, 3900, 7030, 14075, 14275, 21200, 21300 and 28800 kc/s. Logs to Englewood ARA, 303 Tenafly Rd., Englewood, N.J. 07631, by 16 September. Lastly the **S. Carolina QSO Party** from 20.00 26 August to 05.00 27 August, and 14.00 on the 27 to 05.00 28 August. Frequencies 3550, 3950, 7040, 14070, 21070 and 21270 kc/s. Logs to PO Box 5026, North Charleston, S.C. 29406, before 15 September.

The results of the **1966 IOTA Contest** are now to hand. The world winner is **W8BQH** who managed to confirm contacts with 137 island groups in seven continents during the year to score 959 points (a record). **G8JM** is UK winner with 938 points, which is also top European score. PY2CTL (392), CR6DX (204) and JA1VZM (14) are other continental winners. In the SWL section Eskil Eriksson was world highest with 700 points, narrowly beating Eric Chilvers, BRS26222 by seven points!

DX Briefs

The United States has now concluded a reciprocal licensing agreement with New Zealand. This will also cover the Cook Islands and the island of Niue, but not the Tokelau Islands. This move should result in more plentiful activity from the ZK1 and ZK2 area.

Those who were lucky enough to contact **AC3PT** on 21 Mc/s recently will be pleased to know that at least one genuine QSL has already been received. There was some doubt whether this station was the real one.

The expedition announced by K6CAA earlier this year has now had to be cancelled. Apparently his KP6AZ callsign has produced some QSL cards but he has never used it.

ZS9F, Bechuanaland, is expecting to receive an HW 32A transceiver soon and will then be active on s.s.b. It seems that the Eastern part of Nigeria (now wishing to be known as Biafra) could well become a new DXCC " country " if and when hostilities in that part of the world cease. The only known licensed 5N2 in Biafra is 5N2ABL, who is at present on leave in Europe.

ZD9BI is reported to have a schedule with PY2PE on 14240 kc/s at 19.00 on Saturdays to pass logs. Operating hours other days are said to be 08.00 to 09.00 and 18.00 to 18.30.

TJs 1AH and **1AJ** are now on from Cameroon and favour 21300 kc/s at around 17.00 to 19.00. W2GHK has now shipped s.s.b. equipment to VP8IE (S. Georgia) and this should have arrived by the time this is read.

Contrary to previous reports **K8HVN/XV5** does not appear to be authorized to work US stations. If this is so his QSL cards will not be valid for DXCC. Those who are interested in the WAZ award will be interested to know that the whole of Sakhalin Is. (UA0E/F) is counted in Zone 19.

The Chief Engineer of Radio Communications in the New Hebrides has officially informed the Society that according to the Geneva Radio Regulations 1959 the callsign series YJA to YJZ was allocated to that area. Under Article 772 of these regulations the third letter of this series has been replaced by the numeral 8. All FU and YJ1 calls are now cancelled.

Band Reports

Although the recent fine weather has reduced the number of contributors to this section this month it is clear that there have been spells on most bands when DX could be heard and worked. Even on 160m there are reports of W1BB/1 being heard at 03.00 on the night of the contest, and Stew reports contacting G3PQA at 03.15 one morning. HA1QI was reported at 21.50 one evening, but it is not known if he is genuine. Eighty metres has not produced anything of note, but **7 Mc/s** openings although infrequent have produced CR6s HI, IS and IV, TF2WKM, PZ1CF, PYs, YA5RG, ZD8s RB and RD, ZS5JV, 4X4WD and 5Z4JW—all on s.s.b. and all between 20.30 and 22.30. There are signals from the Western Hemisphere to be heard in the early mornings. **14 Mc/s** has been remaining open throughout the entire 24 hours and some of the interesting calls reported are **(c.w.)** FM7WD (21.22), FP8CS (22.48), KL7JR (00.10), TA1s AV and SK (17.00 to 19.00), VK8HA (07.31), VQ9B (19.50), VU2DIA (Andaman Is. 01.20) and 9G1SM (18.50). On **s.s.b.** CE0AE (07.27) W3DWG/KS6 (07.15), OY9IM (14.14), PX1GM (16.25), VK0CR and VK0GT (06.48), VP8HZ (20.20 looking for G contacts on 14127), VQ8CG (16.40), VR5RZ (07.25), VS9MB (16.40), 6O1GB (22.25), 9K2AJ (16.00) and 9X5BW

(19.51). **21 Mc/s** produced a number of good openings into the Pacific during mid-June when a number of KH6 stations were in evidence around 06.00 (both c.w. and s.s.b.), and VR5RZ (06.10—07.50) on s.s.b. and FW8RC (08.15—09.00) on c.w. and s.s.b. (in the c.w. band) succeeded in bringing out the worst in a number of European amateurs who should know better! The path into Japan has been open until late evening, with VK signals at good strength at times (VK2NN 22.00 S9+). On **c.w.** CR3AD (07.45), CR5CA (18.07), KG6AAY (20.00), VP8JD (14.35), VU2DIA (11.00), 4S7NG (09.40) and 4W1LB (14.20) have been of interest. The **s.s.b.** enthusiasts have had the pleasure of hearing CE0AE (23.00) almost nightly around 21,400 but running phone patches most of the time, KL7WAH (09.13), OA5AY (21.50), VK9XI (Christmas Is. 13.50), XW8AX (13.00), ZD7DI (20.03), ZD8PMG (11.00) and others. **28 Mc/s** has not been very good, but should start to improve again as soon as the autumn approaches. On this band CE3PY (18.57), LU1BB (18.45), OY7S (19.50) and ZD7DI (16.14) have been heard on **s.s.b.** and JA3BVW (20.35)(?), VK8HA (14.00), VP8BY (14.30), ZD8CX (20.30), 4S7LB (11.30), 9L1TL (20.20), 9V1NV (19.30) and 9X5AB (20.25) on **c.w.**

Very many thanks to the following without whose help this section could not have been composed: G2BOZ, G2HKU, G2LB, GW3AX, G3HCT, G3HDA, G3KSH, G3NMH, G3OHC, G3RXO, G3SML, G3URX, G3VJG, G3VMQ, G4JZ, G4MJ, G8JM, G8VG, SM2BYD, A4038, A5126, A5135, BRS20439, and BRS27358. A number of enquiries have been made concerning the equipment used by reporters to this column, the general impression seeming to be that the rare DX is only worked by those with the ultimate in equipment. This is very definitely not the case as your scribe has found by personal experience that it is possible to raise most DX stations using a simple ground plane aerial. The most important factor for successful DX working is being able to hear what is going on on the bands and spending a fair amount of time listening for the weak signals. It would be of interest if reporters would indicate what aerials and receivers they use next time they write to G3FKM.

Sincere thanks are extended to all contributors, and special thanks and acknowledgements are due to the following: The *L.I.DX.A. Bulletin* (WB2EPG), *The DX'er* (W6PHF), *DX News Sheet* (Geoff Watts), *The DX'ers Magazine* (W4BPD), *The West Gulf DX Bulletin* (WA5LES), *Florida DX Report* (W4BRB), *CQ DX* (A.R.I.), *On The Air* (ON4AD), *DX'press* (PA0FX), and *NARS News* (5N2ABA). Please send all items to reach the author **no later than Wednesday, 9 August for the September issue,** by **6 September** for the **October** issue, and **11 October** for the **November copy.**

1967 Countries Table

	1·8 Mc/s	3·5 Mc/s	7 Mc/s	14 Mc/s	21 Mc/s	28 Mc/s	Total
G3IAR	10	48	45	138	104	57	402
G8JM	1	—	10	169	96	45	321
GM3SVK	16	15	35	130	100	24	320
G8VG	1	18	27	45	59	54	204
9V1LK	1	4	21	85	55	42	208
G3VJG	—	3	11	20	26	71	131
7Q7LZ	—	—	5	80	66	29	116
G8DI	—	21	33	71	69	23	217
G3KSH	3	30	32	52	43	46	206
9J2BC	—	—	2	29	16	43	89
G3PQF	2	23	26	23	15	37	126
SM3BYD	—	19	57	—	51	—	127
G3OJV	1	1	22	21	16	20	81
G3VWC	3	5	22	19	24	3	76
G3LNS	1	9	—	16	9	8	43
G3VOK	14	36	6	38	1	7	102
G3ING	3	11	6	4	6	1	31
G3JVJ	14	10	2	1	2	4	33
A4038	7	12	15	111	181	102	427
BRS27806	3	23	40	116	121	103	406
A4568	9	40	37	157	128	93	464
BRS25429	5	53	40	114	77	76	365
A4886	8	27	35	218	87	53	428
A3942	12	51	55	110	76	63	367
BRS28198	1	41	36	131	63	51	323
A5105	1	26	10	99	65	42	243
A4182	3	29	25	69	56	48	230
A5273	5	45	31	79	53	47	260
A5004	4	54	29	112	41	48	288
A5135	2	21	18	65	56	11	173
A5126	3	18	14	63	34	10	142
A5153	2	17	12	57	31	8	127
A4552/VK	—	1	2	80	10	2	96

This month's table is in order of 21 plus 28 Mc/s totals.

Special Events Stations

GB2TS at Tollerton (York) Horticultural Society Show and Sports Day on 19 August, 1967. Operation is scheduled for all h.f. bands throughout the day, QSLing with special cards. From 2 p.m. a special 160m talk-in station will be in operation to assist visiting mobiles in the area.

GB3HH from the Gravesend and District Scout Training and Camping site, Hope Hill, Meopham, Kent, 5-6 August, 1967. Operation will take place during the 1967 Scout Jamboree-on-the-Air, on 80m-10m s.s.b. Gravesend Radio Society is providing the equipment and arrangements for JOTA are being administered by G3WAO, 39 Portland Avenue, Gravesend, Kent.

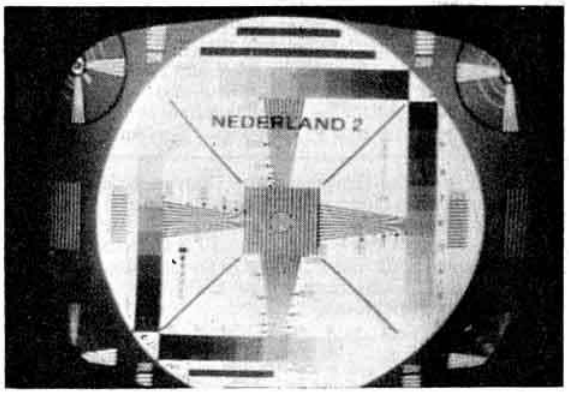
FOUR METRES AND DOWN

By JACK HUM, G5UM*

Openings

COMPLAINTS earlier in the year about lack of activity on v.h.f. and poor conditions (" wettest month of May for over 200 years " said the Man in the Box) were well and truly cancelled out by the big auroral and sporadic-*E* lifts reported here last time, and by the succession of heat waves (and tropogation) that followed. So there has been plenty to work, especially by those who wield the key: a notable increase in activity in the c.w. end of " Two " has been a feature. One would venture to say that there ought to be more of it *after* the good conditions have passed; then, with the rain beating down outside, comes the real test for the rig to sustain long distance weak signal propagation which c.w. can so consistently provide.

Back to the present . . . men who watch video performance (no, we don't mean the programmes!) will tell you that DX-TV gives advance warning of when an opening is about to break. The accompanying pictures from G8AKQ of Barnsley prove the point in a practical manner. During the evenings of 13, 16 and 17 June the Dutch television station at Lopik on u.h.f. Channel 27 gave him this picture of its test card. At the same time several Dutch amateurs were putting



exceptionally strong signals into Yorkshire on 432 Mc/s, notably PA0COB, PJV, PCR and GER. And a signal from ON4HN (still 70cm) coincided with very good pictures from Belgium's TV transmitter at Wavre.

During the same opening Steve worked two OZ stations and heard two more (we are still talking about 432 Mc/s) at a time when no fewer than five Danish television stations in Band III were lockable in Barnsley.

From a slightly more southerly bearing a total of 22 German TV transmitters, most of them on u.h.f., went into the log, suggesting that there ought to have been some 70cm activity from the DJ friends. To demonstrate the startling clarity of the Band IV pictures from Vorschau here is another screen-snap which was shot at G8AKQ (the programme content has resemblances to some of that experienced at home).

Coming back to the 70cm contacts which G8AKQ had with the Danes, Steve makes the following observations: " A pulsed short range radar signal with a rotation period of 10 seconds was annoyingly noticeable on the 70cm band. Covering the whole band, it flattened receiver noise on a north easterly beam heading. This has been heard on a previous Scandinavian opening but never before at such strength. Checking with G3ILD, Darlington, who beamed east, and OZ5AH, who beamed west, suggested that the offending signal came from somewhere in the North Sea! OZ5AH experienced considerable difficulty owing to this signal."

Complaints about the same radar QRM come from G8AJC of Canterbury . . . " it was modulated by a continuous 1 kc/s note, very bad for the ears at 12.30 a.m." It beamed from the direction of Denmark. Nevertheless, it did not prevent G8AJC from achieving some pretty notable DX during the mid-June opening, the latter conforming with the weather pattern as the anticyclone drifted south from Scandinavia into north Germany. The log shows a fine list of ON, PA, F, three DJ and one OZ worked at S9 but what was especially satisfying was hearing PA0WFO at S7 when the latter was using 750 mW input to a varactor.

Overall, the opening of June should have helped many G8-men substantially to increase their tally of three-plus-twenty for the RSGB certificate. May their QSLs not be slow in coming in!

* * *

Continuing in a DX-and-Denmark context, now on to . . .

* Houghton on the Hill, Leicester. Send reports for the September issue by 14 August and for the October issue by 4 September.

DX News

More news is to hand of the record-making " first on 23 " achieved by G3LTF and OZ7SP on 16 June. Telegraphy signals peaked at RST599 both ways, with the rapid QSB that characterized the tropo opening on 70cm and 2m at the same period.

It is specially interesting to note that OZ7SP used a driven p.a. as his final on 1296·4 Mc/s, namely, a 2C39 operating in grounded grid with 30 watts input, preceded by another 2C39 tripling from 70cm and driven by the 20 watt QQEO3/20 output stage on 432 Mc/s. The transmit aerial was a 32-element co-linear; on the receive side the OZ was fortunate enough to have a 5 ft. parabola.

All congratulations to both operators on this historic breakthrough.

* * *

At the present state of the art this OZ-to-G contact appears to be almost the ultimate in DX on " 23." Yet it is dangerous to predict: already there is a school of thought in favour of essaying 1296 Mc/s for transatlantic moonbounce, for which the band is held to have certain advantages.

Meanwhile, to read the log of the 1967 series of E-M-E tests, as is possible in the latest VERON *V.H.F. Bulletin*, is to have one's mind projected back to the pioneer days of " wireless telegraphy," when hours of searching in a blankitude that prompted doubts as to whether the receiver was working or not would be rewarded suddenly by a weak signal emerging from the background, to be brought up to readability by careful equipment adjustments . . . then success, a QSO!

As for unwanted interference, in the early days static was the problem: today it is radar pulses bounced back from the moon, a form of QRM reported by several of this year's participants in the E-M-E tests.

What does it take to achieve an E-M-E contact? The two which Peter Blair, G3LTF, made with the Crawford Hills Radio Club, W2IMU/2, in April were effected with 500 watts output on 432 Mc/s into a dipole-in-a-15 ft.-dish. The receiver: parametric amplifier into a TIXMO5 r.f. amplifier into an AF139 mixer giving 12 Mc/s i.f., double converted to 2 Mc/s i.f. into an R1475 with an output feeding a five-section filter 100 c/s wide.

* * *

Still on DX news, something else we spotted in the VERON *V.H.F. Bulletin* (received via G2AIW) will interest all who heard SP2RO of Gdansk during the mid-May auroral opening. The Polish station was using a kilowatt, a 9-element Yagi and a 6CW4 cascode converter. He made 23 auroral contacts with 11 countries between 22.57 GMT, 25 May, and 03.16 GMT, 26 May, including GW2HIY (first SP to GW on 2m), G5NU and G3BNL in that order.

* * *

Nearer home, the G3BA/G3BHT expedition or *tour d'Irland* of last month certainly came within the category of DX to most UK operators and therefore rates mention underneath this headline. Indeed, to a far easterner like G3DAH at Herne Bay in North Kent the QRB to EI2AX/P was similar to that to the couple of OK1 stations Mike worked on " Two " at much the same time: about 350 miles.

An observation made by G3DAH will be warmly " Hear hear'd " by all of us: " I think the EI2AX/P team are to be thanked and congratulated on a very fine performance. They must be feeling pretty flaked with all the travelling and operating they are doing."

Satellites Natural and Artificial

As will be known by now, a small select few European stations, where time, technical facilities, patience and above all expertise are available, have spanned the Atlantic via the Earth-Moon-Earth path. Others are planning to do so.

During a visit to France GM3EGW (Council Member

Four Metres and Down Certificates

This is an up-to-date list of members who have qualified for certificates. A leaflet giving details of the conditions of issue may be obtained from Headquarters on request. See page 523.

70 Mc/s Transmitting Section

1 G3EHY	15 G3OUF	29 G3GGL
2 G3PJK	16 G3BNL	30 G3RDQ
3 G2AIH	17 G3PMJ	31 G3NJF/P
4 G3OHH	18 G3PHG	32 G3RWN/P
5 G3KEU/P	19 GC3OBM	33 G3NUE/P
6 G3NUE	20 G3TLA/P	34 G3AZI
7 GI3IUD	21 GI3HXV	35 G3FWD
8 G6NB	22 G5UM	36 GI3HCG
9 G8PD/A	23 G3OJE	37 G3LAS
10 G5FK	24 G3SEK	38 G3HRH
11 G3NDF	25 G3RWM/P	39 GM2UU
12 G3IMV	26 G3FDW	40 GI3PGG
13 GI3HXV/P	27 G3PPG	41 G3VPK
14 G3SKR	28 G3FIJ	

70 Mc/s Senior Transmitting Section

1 G3SKR

70 Mc/s Receiving Section

1 BRS15744

144 Mc/s Transmitting Section

1 G3HBW	33 G3OSA	65 G3LAS
2 G3BLP	34 G3JLA	66 G3RMJ
3 G3MTI	35 GC2FZC	67 G2CDX
4 G5YV	36 G3BOC	68 G3ORL
5 G3BNL	37 G3MTI/M	69 G2DHV/P
6 G3MCS	38 G3OJY (New QTH)	70 G3FIJ
7 G3LAR	39 G3JWQ	71 G3CXM
8 G3CO	40 G3NOH	72 G3HRH/P
9 G3BA	41 G3PSL	73 G3BDS
10 GW3MFY	42 G3LBA	74 G3FNM
11 G3DFL	43 G3FUR	75 G3IMV
12 G3NAQ	44 G2BJY	76 G2BQ
13 G3NNG	45 G3MRA	77 G3KHA
14 G3OJY	46 G3AGN	78 G3OHC
15 G3KPT	47 G3MDH/P	79 G3SHZ
16 G3JYP	48 G3GMY	80 G3PKT
17 G3KMT	49 G3GGK	81 G3UFA
18 G3OHD	50 G3MDH	82 G3RST
19 G3BBR/A	51 G3NLR	83 G5NU
20 G3HRH	52 GM3LDU	84 G2BHN
21 GM3EGW	53 G3CKQ	85 G3OZP
22 GI3OFT	54 G5HZ	86 GW3KYT
23 G3OBD/P	55 G3NNK	87 G3ICO
24 G2HIF	56 G6GN	88 G3ETH
25 G3JDN	57 G5ZT	89 G2WS
26 G8VZ	58 G2PL	90 G3NJF/P
27 G2AXI	59 G3FZL	91 GW3CBY
28 G3JYT	60 G3SAR	92 G3TLA/P
29 G5UM	61 G3NUE	93 G3JFO
30 G3EJO	62 PA0EZ	94 G3TDR
31 G3PBV	63 G3AHB	95 G5UM/P
32 G3FDG	64 G3PTM	96 GM2UU

144 Mc/s Senior Transmitting Section

1 G3CCH	6 G3BA	10 G8GP
2 G3FAN	7 G6NB	11 G3LAS
3 G5MA	8 G3EDD	12 G3IMV
4 G3BLP	9 G3HRH	13 G3PTM
5 G3CO		

144 Mc/s Receiving Section

1 BRS22550	5 NL687	8 A4048
2 BRS22322	6 BRS20108	9 BRS21667
3 BRS15822	7 A3470	10 A4871
4 BRS15744		

144 Mc/s Senior Receiving Section

1 BRS15744

432 Mc/s Transmitting Section

1 G3NNG	8 G3AHB	15 G8AGG
2 G3KPT	9 G5UM	16 G8AGU/P
3 G3LHA	10 G8ACQ	17 G3PTM
4 G3BNL	11 GW8ACG	18 G8AAY/A
5 G3MCS	12 GW8ACG/P	19 G8AGQ/A
6 G8AAZ	13 G8AHQ	20 G3HRH
7 G8ABP	14 G8AEJ	21 G8AJU

432 Mc/s Receiving Section

1 BRS15744

Fraser Shepherd) was able to see what is going on there, notably by F8DO of Gracé in Burgundy, who was glad to show him a pen recording of a contact with The States *on 2m*. Valuable technical help was rendered by F1BF in making this feat possible.

Dominating the scene, Fraser noticed, was an array of 16 9-element Yagis. Only by the use of advanced techniques, particularly in respect of aerial gain, is there any hope of success with E-M-E.

From the natural satellite to one of the more recent artificial ones, namely UK3. This was strongly received on 136·56 Mc/s by BRS15744 of Sussex on Orbit 18 on 6 May, and a daily check was kept subsequently. Ron Ham reports: " Each evening on the nearest pass I would set the 8-element 2m beam due north, and bang on time the signals would be there, starting at S2, rising to S9 plus, decaying to S2, then out. This took about 10 minutes."

Still apropos artificial satellites, let's consider the possibility of . . .

Brit-Oscar?

The Americans, the Germans and the Australians have been successful in designing *Oscar*-type packages for transportation into inner space, but not so far the British. It is therefore important to repeat the President's statement made at the London V.H.F. Convention that if any group or club anywhere in the country are prepared to design one the Society would be glad indeed to have their proposals.

Like moonbounce, such a project is not one to be undertaken lightly. But as existing precedents have shown, it is not by any means outside the capabilities of the Amateur Radio movement. And judging from the high quality of much of the v.h.f. development work going on in this country, as the pages of the BULLETIN regularly testify, a British Oscar should be well within *our* capabilities.

The Society's V.H.F. Manager would therefore like to hear from a group inclined to accept the challenge; the design is up to the individuals, and may be a translator or specialized research project. IARU sponsored the work, and are prepared to make a financial contribution towards the cost of an approved project.

Contest News

The additional 70cm contest added to the annual canon and advertised on page 474 last month will have been greeted with great satisfaction by all who operate on that band. Most conveniently, being divided into " indoor " and " outdoor " sections, it will give to those who want it a chance to limber up the 432 Mc/s gear prior to V.H.F./NFD. Note that, this once, entries should go to G2JF and not to RSGB HQ.

And for the increasing number of sideband men on " Two " the Society's first-ever 144 Mc/s S.S.B. contest during two hours of Monday 14 August will promote some swift operating in what is a unique event. Study the rules carefully: they're on another page this month.

A reminder about the North West Regional V.H.F. Contest on 13 August. Yes, it coincides with the RSGB's new 70cm contest that same day, so offers special attractions to the G8 men as well as to those who operate 2m and 4m. Rules on page 474 last time.

As for that greatest v.h.f. contest of all, V.H.F./NFD, those groups and clubs which have not by now got their equipment on the top line will find that time is not on their side: there's only a month to go. Dress rehearsals should include a re-reading of the rules on page 108 last February: there have been major changes, of which the three-station one is probably the most significant.

On the Day (both of them) look specially for the out-on-a-limb stations, *e.g.*, the Cornish Group (they will have G3XC, G2BHW and G3OCB on 4, 2 and 70cm) and for the various DX-peditions that will be around, *e.g.*, GD3NUE/P (see below) and of course GB2GC (see page 459 last time).

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

Call-sign	Location	Nominal Frequency	Emission	Aerial Direction
GB3ANG	Craigowl Hill, Dundee*	145·985 Mc/s	A1	
GB3CTC	Redruth, Cornwall	144·10 Mc/s	A1	North-East
GB3GI	Strabane, N.I.	145·990 Mc/s	A1	N/SE
GB3GW	Swansea	144·250 Mc/s	A1	E.N.E.
GB3LER	Lerwick*	145·995 Mc/s	A1	S
GB3LER	Lerwick*	70·305 Mc/s	A1	N/S
GB3LER	Lerwick*	29·005 Mc/s	A1	N/S
GB3VHF	Wrotham, Kent	144·50 Mc/s	F1	North-West

* Not operational.

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
13 June	10.08 GMT	320 c/s low
20 June	15.00 GMT	320 c/s low
27 June	09.13 GMT	750 c/s low
4 July	10.07 GMT	260 c/s low

Gibsigs

Adverting to the point (above) about indications of mminent openings at v.h.f., Don Hayter, G3JHM, draws attention to the presence of an RTTY signal on 70·19 and an a.m. one on 70·295 Mc/s, both probably emanating from North Africa. When these emerge they serve as a warning that ionization is beginning to build up, with the possibility that ZB2VHF at Gibraltar will become audible.

Don says that ZB2VHF appears to hold up for about ten minutes longer in the North of England than in the south, and makes its appearance there ten minutes earlier. " This is to be expected," he adds, " as the skip will shorten as the ionization builds up, *i.e.*, the north will get a signal almost as soon as the MUF is reached."

During the past month many more reports have come in that ZB2VHF has been heard/worked on " Four." For the record, G3JHM states that the first ZB2 to GW contact on 4m was made when GW4CG, was worked on 18 June at 11.02 GMT, and the first ZB2 to EI contact on 16 June at 18.26 GMT, when " Ossie " worked EI6AK of Cork.

Sunny Sunday in Staffs.

Sunday afternoons on " Two " can be a bit soporific. That of 9 July wasn't. G3WEI/P was in operation atop Merryton Low with a TW Communicator, and queues were forming to work him during his (or rather their) 11 hours of operation. In turn, G3WEI/P formed a queue for EI2AX/P but report him as a gotaway.

Covering the country from Tynemouth (G3OZP) to Poole (G3ABH), the lads logged 35 contacts before they unhitched the 15 ft. mast from its convenient signpost support and made for home.

Says Kris, G3TZW: "May I echo ' Four Metres and Down ' and ask: Why oh why don't some of those owners of S3-5 undermodulated carriers plug a key in? We heard plenty all day, especially from a southerly beam heading, and we even asked for c.w. replies to our phone CQs. . . . "

On the YU Front

Far away though Yugoslavia may seem to be in a v.h.f. context it is brought very much nearer when sporadic-*E* phenomena enable UK operators to hear what goes on there, *vide* the now-historical YU opening during the British 2m

portable event of July, 1965 (the folklore has it that some of those in the field that morning were rarin' to dash home to operate their own rigs).

A flashback to that memorable event is provided by BRS23140 (J. J. Sowerby of Stafford) who has just received a rare award from the SJR, Yugoslavia's national society. It is the " H-YU-R-VHF Diploma " (short for Heard Yugoslavia Republics on V.H.F.), with three stickers for Serbia, Croatia and Slovenia, endorsed to the effect that BRS23140 is the first British receiving station to receive this award. Verifications were submitted by Mr. Sowerby for the reception of the following, all on Sunday, 4 July, 1965:

YU1OP/P, Rudnick, Serbia; YU1NPW, Belgrade, Serbia; YU1NDL of Losnica, Serbia; YU2BOP, Osijik, Croatia; YU2JH of Zagreb, also in Croatia; and YU3OV of Maribor in Slovenia.

All who participated in that opening will be interested to check how many of these stations they themselves heard or worked.

BRS23140 provides the following information about the SJR v.h.f. certificates:

The W-YU-R-VHF (Worked YU republics on v.h.f.) Diploma is obtainable by licensed amateurs anywhere in the world who can produce evidence that they made contact with YU amateur stations on v.h.f. under the following conditions:

(1) Operators in countries bordering Yugoslavia should make contact with stations in three different YU republics, and be able to show the QSLs for them;

(2) Operators in all other countries are required to show QSL-proof of contacts with stations in two YU republics.

(3) Contacts need not be from the same QTH but must be from the same country.

(4) Any amateur bands and modes will count.

(5) No contacts before February, 1950, are valid.

(6) QSLs submitted must carry reports not worse than R3 and T8.

Under much the same rules a " Heard " diploma is available to receiving stations.

The neat array of v.h.f./u.h.f. receiving aerials adorning BRS 15744's rooftop in Storrington, Sussex.

Vertical Aerial Farm at Storrington

Readers of " Four Metres and Down "—and of results in v.h.f. reception contests—must have wondered how BRS15744 (Ron Ham of Storrington in Sussex) manages to achieve the superb results that characterize his operations. Part of the answer is provided by the picture herewith, but only part: the other two chapters of the story are the possession of some fine equipment at the end of those co-ax feeders and a wealth of listening experience matched into a pair of crystal-filter ears.

In the picture the beams on the tower are pointing due west, whence an S5 signal from GB3GW was being received at the time. The " crossed-10 " is pointing north at an angle of 39 degrees. All feeder runs are conveniently short into that upstairs dormer room.

The CDR rotator is housed in the third bay above the lower gutter. Just visible as a white spot at the side of this bay is a 6 watt lamp which illuminates the motor bay at night to enable Ron to see markers painted on the rotor.

The long wire aerial can be switched either to a 10m receiver or to an audio amplifier. " You would be surprised at the noise produced by the latter in various weather conditions," says Ron.

The QTH of BRS15744 being on the corner of a lane leading to the South Downs inevitably provokes some amusing comment from walkers-by. " That's colour TV, dear," or " Some b—— wireless contraption," or " I saw that turn round once . . . " (he did). Or the self appointed TV expert: " Owing to the South Downs television reception is very poor and he has to have that lot to get a picture."

The Television Serial

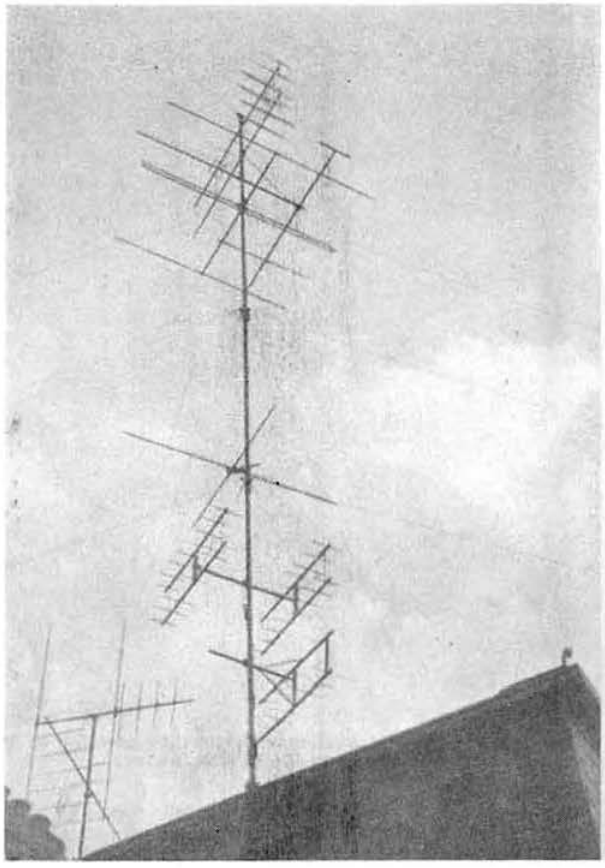
2. QRX on Eight Bands

Last month Steve Birkill, G8AKQ, told the story of his induction into the specialized branch of amateur v.h.f. reception that is represented by DX television, and dwelt particularly on the formation of the Europa DX-TV Club. This time he continues the narrative on a more personal plane. Steve writes:

" My own interest, in late 1962 and early 1963, was turning more to Band III and Bands IV/V tropospheric propagation rather than Band I sporadic-*E*, and in July '63 having received a total of 58 stations in 18 countries I erected a 60 ft. rotatable mast with a selection of aerials to replace the 60 Mc/s dipole, the 8-element Band III Yagi and the domestic H plus five.

" With a Mullard u.h.f. tuner and a Bush 21 in. TV99B export model for CCIR standards I began concentrating on u.h.f. reception, and 24 German as well as French and Dutch (and Crystal Palace on Channel 33) were added to the log.

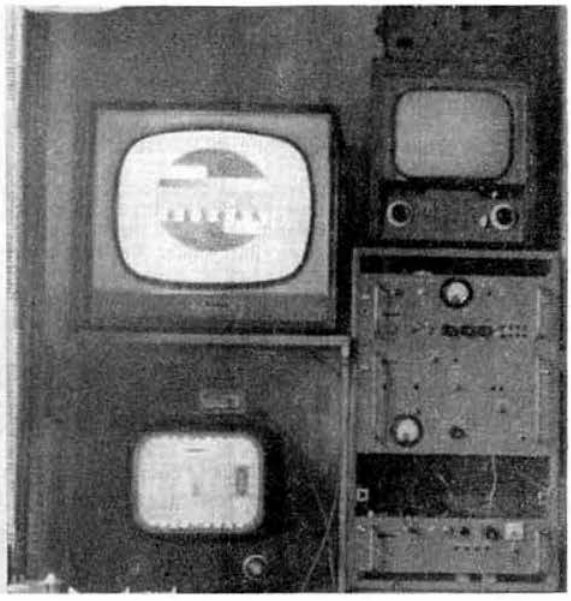
" At the beginning of 1964 I realized there were such people as TV amateurs in the 70cm band. A u.h.f. tuner was modified to tune down to 420 Mc/s and a 70cm home built 9-over-9 slot added to the mast at the 40 ft level. Pictures from G6ILD/T, Darlington, were received at my Barnsley QTH, and the next tropospheric opening brought G3NOX/T, G6KKD/T and G6PGF/T, all in East Anglia, in at good strength. A Bush TV53 was now in use modified for all

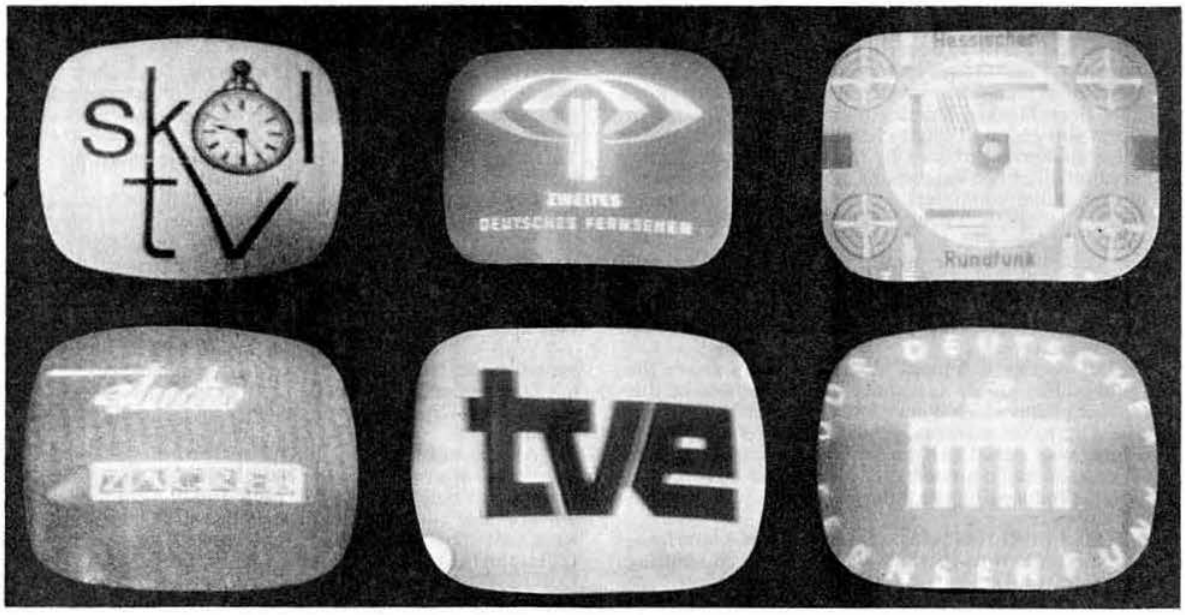


Besides operating on the 70cm band Steve Birkill, G8AKQ/G6ABKK, of Barnsley, is a keen DX TV-hunter. In this picture of his " vertical aerial farm " are included a 14-over-14 horizontally polarized aerial for Band 3; a 14-element vertically polarized aerial for Band 3; a 15-element horizontal for Band 4; a 4-element for Band 1; crossed dipoles for v.h.f. sound radio band 2; three 9-over-9 slots for 432 Mc/s.

Below: The operating position at G8AKQ, Barnsley, with the test card of the West German television service visible on the screen of the upper receiver.

At the bottom of the page is a selection of the DX television pictures resolved by G8AKQ.





standards and all eight bands from 4m, 2m and 70cm to Bands One to Five.

" Having become interested in amateur radio from the DX-TV side rather than the usual l.f.-band short wave listener method, I obtained my transmitting licence in 1965. Continuing my DX television reception, I found Band III and Band V conditions an invaluable guide to 70cm openings and conditions over various paths, both inter-G and continental.

" Total of DX-TV stations received to date is 208 positively identified in 23 countries. Furthest DX on Band I is Moscow (not an easy identification owing to the proximity of several other USSR stations), and on Band III the best so far is Gdansk (Danzig), with Hohbeck in Germany as the best on u.h.f. Band IV."

* * *

Certificate Holders

The list of holders of the various " Four Metres and Down " Certificates makes its twice yearly appearance once again. 'Tis a pity that space forbids its more frequent appearance, but like OSCAR and its rocket, it can be packed in only on rare occasions.

Steadily the 2m section creeps towards the hundred mark: it'll have topped it upon the next appearance. And the 4m section should have reached its half hundred by then.

Still no claimants for the 23cm honour roll. Many users of 1296 Mc/s are very close to securing the required 20 cards; but getting three countries *worked*, much less the cards back, on " 23 " takes some doing.

We have been asked if the counties of the Irish Republic may be included for RSGB " Four Metres and Down " certificates. We reaffirm that EI as a whole counts as a separate country but that only G-prefixed countries may be included in the county tally. As a man once said: " If you start counting EI counties why not extend it to the *départements* of France? "

We might as well add that several of the UK off-islands offer the temptation to some folk to pretend they are separate countries when in fact they are firmly parts of their administrative counties.

Beaconry

One of many feats of reception made possible by the big mid-June tropo opening reminds us once again that there is a 2m beacon in the Faeroe Islands, namely, OY3VHF, operating on 145·26 Mc/s. It was heard by PA0LB on 14 June, we learn from the latest Veron *V.H.F. Bulletin*. The path distance comes out at about 800 miles.

In the temporary absence of the GB3LER, Shetlands, beacon operators will find it well worth while checking the Faeroese frequency from time to time. It might produce some interesting auroral " bounce."

From G3JHM, Worthing, comes support for the GW3LQE suggestion last month for a 4m beacon at the GB3VHF site. " It would indeed be very useful if pointing west " says Don.

And from G3DAH a word of gratitude for the *international* value which beacons on the v.h.f.'s possess: " During the Scandinavian opening in mid-June I heard six beacons within about one hour . . . LA3VHF, LA4VHF, GB3VHF, GB3GW, GB3LER and GB3CTC."

Expeditionaries

If you want Devon on 4m, 2m or 70cm (or all of them) there is just about time to drop a line requesting a sked to John Mulye, G8ALM, 83 Forest Drive East, London, E11. A party of four will be operating for a week from 14 August at Uplowman, near Tiverton as follows: G8ALM/P and G8APJ/P on 432·4 and 433·01 Mc/s, G3VUE/P on 2m and G3OKK/P on 4m.

If you are lucky you might just catch the tail end of the 70 centimetric tour of Ireland being made by Bill Jarvis, G8APX. He is on 433·1 Mc/s with a 6 watt a.m. transmitter nightly as follows: 3 August, Waterford; 4 August, Cork/Kerry boundary; 5 August, Limerick/Cork boundary; 6 August, Co. Clare; 7 August, Emlaghdanroe, Co. Clare; 8-9 August, Co. Sligo; 10 August, Portstewart, Co. Antrim; 11 August, sailing from Belfast. Call-signs in use: EI2BN/M or GI8APX/M as appropriate.

* * *

" A GD entry for V.H.F./NFD at last! " exclaims Geoff Tibbetts, G3NUE. He, G3TQZ and support crew intend to operate on 2m and 4m, with possibly 70cm added, from the Isle of Man during Field Day and for a few days afterwards. The broad plan is to operate 4m during non-TV hours and 2m for the rest of the time, well into the small hours and making full use of the key. Confirmation of contact will be by special QSL, sent direct if required. (We have observed that the G3NUE/P team have been meticulous in this respect on previous expeditions.)

Group Activities

When G6CJ gave his now famous aerial lecture before the South East V.H.F. Group at Canterbury it was his hundredth performance—and this is the 21st year since he first delivered the talk. Over 80 members of the South East Group went along, which was sure proof of the pulling power and reputation of the Charman Evening—yes, and of the corporate enthusiasm of the members as well.

The Group's sessions, planned right up to the end of the year, are shown on a fixture card which may be had from G3DAH. " We have a bit of a break now," he says " and open up again in October."

Way out west, the South Wales V.H.F. Group are also in recess for the summer, but hope to resume operations in September. Keep in touch with GW4CG, 20 Austin Avenue, Porthcawl.

Plans to inaugurate a V.H.F. Group in the East Midlands in response to a widely expressed wish are finalized, and an inaugural meeting will be held in Leicester on Thursday, 21 September. Full info next month: book the date *now!*

Tech Corner

From G8ARV (David J. Taylor, Dudley, Worcester):

Here are brief details about a few transistors which do not seem to have had much mention in the amateur radio magazines:

BF115 (obtainable for as little as 3s. 8d.) is an NPN silicon transistor similar to but much better than the OC170 and OC171 series when used in v.h.f. applications.

BF167 (Mullard at 4s. 4d.) or BF225 (Texas 3s. 8d.) are NPN silicon devices giving circuit gains of better than 30dB at 35 Mc/s and a forward a.g.c. range of 60dB. These transistors are very stable devices and vastly superior to the much older OC170 series.

BF173 (Mullard 5s. 4d.) or BF224 (Texas 3s. 8d.) are similar to the foregoing device but without guaranteed a.g.c. With an *ft* of 550 Mc/s (the BF173) and 800 Mc/s (the BF224), these transistors should be very useful general purpose v.h.f. devices.

TIXM12 (Texas 7s. 11d.) is a germanium FET with a noise figure of 2dB at 100 Mc/s and showing a better mutual conductance than the widely used 2N3819.

AF239 (Siemens & Halske, 11s.) is a germanium mesa transistor with a noise figure of 3·5dB at 432 Mc/s, showing a useful improvement over the AF139. From reports I have heard it seems to be more stable and less subject to r.f. damage.

(Continued on page 531)

NFD '67

NFD TROPHY

Surrey Radio Contact Club (Croydon RSGB Group) .. .. 2061 points

Gravesend Trophy

South Birmingham Radio Society .. .. 2032 points

Bristol Trophy

Norfolk Amateur Radio Club .. .. 1208 points

Frank Hoosen (G3YF) Memorial Trophy

Cannock Chase Amateur Radio Society .. .. 687 points

Scottish NFD Trophy

Ayrshire Amateur Radio Group .. .. 1025 points

Leading Scores on Individual Bands

1·8 Mc/s Cheltenham Group—G3CGD/P .. .. 264 points
3·5 Mc/s Loughton & District Radio Society—G8AB/P .. .. 532 points
7·0 Mc/s Guildford & District—G3TLM/P .. .. 613 points
14·0 Mc/s Cannock Chase Amateur Radio Society—G3KNB/P .. .. 703 points
21·0 Mc/s South Birmingham Radio Society—G3OHM/P .. .. 653 points
28·0 Mc/s Surrey Radio Contact Club (Croydon RSGB Group)—G6LX/P .. .. 164 points

Overseas Station giving most points to NFD entrants

Cyprus (Famagusta) RSGB Group—ZC4SS/P .. .. 1240 points

NFD 1967 brought slightly fewer entrants than previous years, together with a complete redistribution of the various trophies and awards. From last year's fifth place Surrey Radio Contact Club came up to win the *NFD Shield* with 2061 points; closely followed by South Birmingham with 2032 points giving them the *Gravesend Trophy*. In third place, with a score of 2029 points, were Cannock Chase. As you may imagine, the H.F. Contests Committee had some very careful counting to do to resolve the first three places, and it is worthy of record that Croydon owe the NFD shield to their very high standard of logkeeping accuracy. We should also record that, although G6LX is a member of the H.F. Contests Committee, he played no part in the checking of this year's event due to his absence abroad on business.

The Bristol Trophy for the leading single station goes to the Norfolk Amateur Radio Club for a score of 1208 points, largely accumulated on the DX bands. Great Yarmouth were the runners-up with 1023 points scored mainly on 3·5 and 7·0 Mc/s.

The Scottish NFD Trophy goes, after a close fight, to the Ayrshire Amateur Radio Group who, with 1025 points, narrowly beat Dundee with 1007.

1·8 Mc/s

The scores made this year on 1·8 Mc/s are down on those obtained in recent years; this was not only due to the removal of bonus points for contacts between the British Isles prefix zones, but also because of reduced activity on the band. Ninety logs were received for 1·8 Mc/s compared with 105 in 1966. Conditions were reasonable and most groups appeared to have had little trouble in working into all parts of the UK.

For the first time in many years the band leader this year is an English group, Cheltenham (G3CGD/P), who scored 264 points from 113 contacts to narrowly beat the Sheffield Group (G8NN/P) with 259 points from 116 QSOs. In third place is the Surrey Radio Contact Club/Croydon RSGB Group (G3BFP/P) who made 108 contacts worth 248 points. Cheltenham spent nearly seven hours on the band, and 80 of their contacts were with competing portable stations. They used a half wave folded dipole, an HRO, and a home built transmitter with a 5763 p.a. stage.

3·5 Mc/s

The band this year produced a total of 110 entries with the leader Loughton & District RS (G8AB/P) having a score of 532 points. The runners-up were Verulam ARC (G3VER/P) with 468 points and Chelmsford ARS (G4VF/P) with 459 points. G8AB/P made a total of 199 QSOs. The scores this year were down somewhat on last year when the winner scored 621 points, although several stations commented that conditions were good. Several interesting aerials were in use including a rotatable inverted-V ½ wave (G3VER/P) and rhombics (G3NMH/P and G3IOR/P).

7 Mc/s

Leaders on 7 Mc/s for this year were Guildford (G3TLM/P) who amassed a total of 613 points using an inverted-V and a KW2000 modified with a 2E26 p.a. All their 203 7 Mc/s contacts were made by G3IAF in two operating sessions between 21.17 and 01.59, and 05.08 to the end of the contest.

The Great Yarmouth Club operating as G3VLK/P scored 560 points with their E-W dipole; the rig was also a KW2000. The Yarmouth boys, using three operators, had three sessions on the band: 17.00-21.38; 02.20-08.46; 12.14-15.40.

Harrow (third in line) scored 558 points with their remarkable all-transistorised transceiver and dipole aerial. The transmitter p.a. operated with a pair of BUY11s running at 12 volts 0·8 amp.

Activity was extremely high during the whole contest, although predominantly European in character. G3TLM/P worked two East coast Ws for their only contacts outside Europe.

G3VLK/P QSOd ZC4SS, two East coast Ws, and one VE; but most stations had to be content with large numbers of continental /P stations.

14 Mc/s

The top scoring group on 14 Mc/s, and winners of the Frank Hoosen (G3YF) Memorial Trophy, were the Cannock Chase ARS who made 217 contacts with a corrected score of 679 points. The equipment used; Drake 2B receiver, Quad aerial and a home-brew transmitter with 2E26 p.a.

The next highest scorers were the Dundee Group with 575 points from 172 contacts; their equipment was an AR88 Receiver, a dipole aerial and a home made transmitter using a QVO4-7 in the p.a.

In third place were the Norfolk ARC who used G3IOR's home built transceiver and a Rhombic aerial with 2 wavelengths in each leg.

Band conditions were generally quite good with an excellent opening to W and VE from 23.00 to 07.00 hours. All W and most VE call areas were worked. Other interesting countries logged were 9M8, VK, VP9, OX, YV, 9V1, 9H1, ZC4, FO8, EP2, ZE. The usual ZC4 portables contributed many valuable points.

During daytime it was mostly the European stations which provided the points and at times the going was quite hard.

During the peak time of the opening to W/VE the leading stations were scoring at the rate of 25-30 contacts per hour; not bad going with only 10 watts input!

Of the 84 logs received it is interesting to note the types of transmitters used:

52 home made transmitters
2 home made transceivers
12 modified KW2000 transceivers
16 modified commercial transmitters

By far the most popular aerial was the Quad, with Vee beams the next favourite. Other types in use included dipoles, W8JK, ZL special, long wires and G5RV.

21 Mc/s

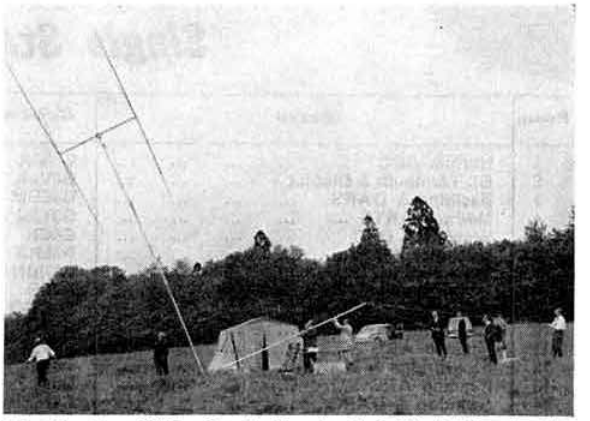
Conditions on 21 Mc/s were rather patchy for this year's NFD but nevertheless the band leader's score of 653 points is the highest since Stamford's score of 950 points in 1960. A good opening to North America late on Saturday evening rewarded those groups who had either persevered or checked the band later after the poor conditions at the start. On the Sunday the band was open to Asia and New Zealand in the morning, and again to North America in the afternoon. Throughout the weekend the skip was fairly long, and hence only the northern stations were able to work the European portables in any great number.

The band leader, South Birmingham RS (G3OHM/P), scored 653 points which gave them a clear lead over the runner-up, Norfolk ARC (G3IOR/P), with 426 points. G3OHM/P was on 21 Mc/s from the start until 01.00 GMT —apart from a 30 minute spell on 14 Mc/s at around 19.00 GMT—and this session produced 470 points from 136 contacts. A large proportion of their score came from contacts with stations in North America, while only 22 QSOs were made with stations in Europe out of a total of 196 contacts on the band. Norfolk's score of 426 points came from 122 contacts of which 101 (worth 376 points) were made between the hours of 17.00 and 23.20 GMT during a period of continuous operation on 21 Mc/s. On the equipment side G3OHM/P used a modified KW2000 and a two element quad, while G3IOR/P had a three wavelengths-per-leg rhombic and a home built transceiver. Ten out of the leading 12 stations on this band used cubical quads.

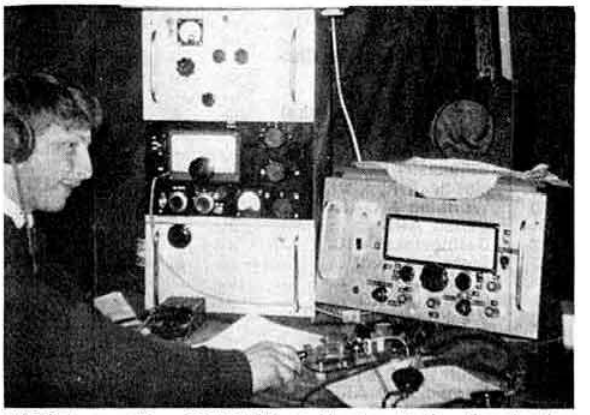
28 Mc/s

Conditions on 10m were generally poor, but there were one or two bright spots for those who paid sufficient attention to the band. Croydon certainly kept their ears open, and were rewarded with 35 QSOs resulting in 164 points. Calls worked included ZC4, 5H3, 9L1, ZB2, ZD8, 5N2, 5Z4, 9H1, ZE3, 9J2, VS9, LU, PY. Aerials in use were a cubical quad backed by a dipole. Operating periods were 17.00-18.00, 08.50-10.24, 12.48-14.00.

Next highest scorers were Chiltern ARC (G3BXS/P) with



The Verulam 20/15m Quad rising to its full height under the skilled handling of the VARC aerial crew during NFD 1967. *(Photo by Paul Fletcher)*



G3RTU operating G3HOX/P at Heaton Park, Manchester. Transmitter 10W to TT11 p.a. Receiver, double conversion, all home built. Aerial ground plane for 14 Mc/s. *(Photo by G3CAG)*

Having suffered all weathers during NFD over the years, the Loughton and District Group G8AB/P decided to be prepared for all eventualities. G3TUM on left with G3JBS central and G8AB/D—Rusty to his friends—in charge of the necessary life-giving stimulants. *(Photo by G8AB)*

Single Station Entries

Posn.	Group	Call-sign	1·8 Mc/s	3·5 Mc/s	7 Mc/s	14 Mc/s	21 Mc/s	28 Mc/s	Total
1	Norfolk ARC	G3IOR	—	268	—	514	426	—	1208
2	Gt. Yarmouth & District	G3VLK	—	399	560	64	—	—	1023
3	Basildon & DARS	G3EDM	—	357	448	192	—	—	997
4	Medway ARTS	G3TXJ	—	414	—	489	—	58	961
5	Wolverton DRC	G4CK	—	369	330	255	—	—	954
6	Leicester RS	G3LRS	183	323	441	—	—	—	947
7	Stockport RS	G3NBN	186	347	—	382	—	—	915
8	Royal Signals ARS	G4RS	—	437	445	—	—	—	882
9	Cheltenham	G3CGD	264	270	346	—	—	—	880
10	Maidstone YMCA	G3TRF	—	224	385	260	—	—	869
11	Midland ARS	G3MAR	211	456	173	—	—	—	840
12	Stourbridge & DARS	G6OI	199	346	294	—	—	—	839
13	Reading ARC	G3ULT	157	264	377	—	—	—	798
14	Swindon & DARC	G3NMH	—	346	—	244	203	—	793
15	Chingford	G4GA	—	323	353	92	—	—	768
16	Cray Valley RS	G3RCV	78	303	369	—	—	—	750
17	Caterham School	G2AJS	—	264	315	168	—	—	747
18	Cambridge & DARC	G3IIT	—	441	303	—	—	—	744
19	Blackpool	G8GG	75	—	—	403	264	—	742
20	Southgate RC	G5FA	182	325	231	—	—	—	738
21	Stroud & District	G3SDR	177	271	281	—	—	—	729
22	Newark Shortwave Club	G3UEB	—	275	285	—	153	—	713
23	Lichfield ARS	G3WAS	—	346	—	289	71	—	706
24	Cheltenham ARS	G5BK	—	300	227	173	—	—	700
25	Surrey RCC (Coulsdon)	G3DVQ	—	376	288	12	—	—	676
26	Worcester & DARC	G3GJL	—	323	263	—	88	—	674
27	Emley Moor	G6LD	136	255	—	279	—	—	670
28	Gloucester	G3MA	167	288	212	—	—	—	668
29	Macclesfield & DRS	G3LDT	218	140	—	300	—	—	658
30	Worthing & DARC	G3LQI	27	242	377	—	—	—	646
31	Clifton ARS	G3GHN	186	242	205	—	—	—	633
32	Basingstoke ARC	G3TCR	—	238	294	97	—	—	629
33	Stoke on Trent	G3GBU	185	227	208	—	—	—	620
34	Bradford RS	G3NN	194	134	271	—	—	—	599
35	Harlow & DRS	G6UT	187	—	340	63	—	—	590
36	West Kent ARS	G3THN	—	152	430	—	—	—	582
37	Burnham Beeches	G3WIR	218	345	—	—	—	—	563
38	Conway Valley ARC	GW3RUA	151	—	261	135	—	—	547
39	Southend & DRS	G5QK	207	211	124	—	—	—	542
40	Durham City ARS	G3TAK	—	338	—	195	3	—	536
41	Southport RS	G3NKL	168	178	—	189	—	—	535
42	Loughton & DRS	G8AB	—	532	—	—	—	—	532
43	Cornish RAC	G3UCQ	—	105	—	365	56	—	526
44	Bury St. Edmunds	G3IRM	141	378	—	—	—	—	519
45	Crystal Palace & DRC	G3VCP	—	235	165	117	—	—	517
46	Ilford	G3ULB	57	283	166	—	—	—	506
47	Liverpool & DARS	G3AHD	138	259	—	105	—	—	502
48	Hull & DARS	G3AMW	76	351	—	65	—	—	492
49	Magnus Grammar School RS	G3PAW	—	243	—	179	58	—	480
	Racal ARC	G3RAC	208	—	176	96	—	—	480
	Skegness & District	G2FT	—	425	—	55	—	—	480
52	Manchester & DARS	G3HOX	129	209	—	129	—	—	467
53	Salisbury	G3FKF	134	314	—	—	—	—	448
54	South Dorset RS	G3SDS	97	293	—	56	—	—	446
55	Henley in Arden & District	G3SIA	190	229	3	—	—	—	422
56	Ashford ARC	G2QT	121	—	181	—	117	—	419
57	Mid-Herts. ARS	G3WGC	29	340	—	48	—	—	417
58	Barnsley & DARC	G5IV	—	261	—	122	19	—	401
59	Balleymena RC	GI3FFF	179	13	—	195	—	—	387
60	East Lancs. ARS	G3NTJ	160	127	—	91	—	—	378
61	York ARS	G3HWW	187	104	81	—	—	—	372
62	St. Helens R & E Society	G3INW	—	—	224	54	93	—	371
63	Havering & DARC	G3TTB	101	255	—	—	—	—	356
64	Ainsdale RC	G2CUZ	—	—	—	143	129	—	272
65	Glasgow	GM3VAP	74	—	—	131	12	—	217
66	Basingstoke RSGB	G2UM	215	—	—	—	—	—	215
	Slough RSGB	G3HRG	107	108	—	—	—	—	215
68	Northern Heights ARS	G2SU	100	68	—	—	42	—	210
69	East Ham RSGB	G3THY	209	—	—	—	—	—	209
70	Stratford on Avon & DRC	G3OOQ	170	34	—	—	—	—	204
71	EMI (Wells) ARC	G3ORA	—	118	—	79	—	3	200
72	Bromsgrove	G3VGG	88	—	92	13	—	—	193
73	Norwood & South London	G2LW	72	42	24	—	—	—	138
74	Ariel (BBC TV Section)	G3NTS	11	41	—	—	—	30	82

Two Station Entries

Posn.	Group	A Stn.	B Stn.	Band Group	1·8 Mc/s	3·5 Mc/s	7·0 Mc/s	14·0 Mc/s	21·0 Mc/s	28·0 Mc/s	Total
1	Surrey Radio Contact Club (Croydon RSGB Group)	G3BFP	G6LX	a	248	422	507	520	200	164	2061
2	South Birmingham RS	G3OHM	G3NKI	b	121	420	273	509	653	56	2032
3	Cannock Chase ARS	G3VCC	G3KNB	a	165	314	492	679	357	22	2029
4	Oxford & DARS	G2DU	G8PX	a	204	434	372	504	335	30	1879
5	Reigate ATS	G3REI	G3FM	a	225	417	447	247	319	33	1688
6	Verulam ARC	G2AIA	G3VER	f	207	468	455	344	154	47	1675
7	Guildford & DRS	G3TLM	G3OXI	a	127	270	613	470	150	23	1653
8	Belfast & District	GI3PGD	GI3OIC	a	141	263	332	494	337	—	1567
9	Radio Soc. of Harrow	G3EFX	G3HBR	a	208	316	558	324	81	18	1505
10	Bristol ARC and RSGB Group	G6GN	G4UZ	b	245	370	435	267	163	15	1495
11	Crawley ARC	G2DP	G3TR	a	209	408	349	313	77	12	1368
12	Wirral ARS	G3NWR	G8BM	a	212	261	304	474	63	1	1315
	Luton & DARS	G3VAZ	G3KAA	b	172	339	395	278	131	—	1315
14	Weston-super-Mare RS and RAF Locking	G5DV	G8FC	a	183	441	365	251	27	3	1270
15	Torbay ARS	G3GDW	G3NJA	a	210	261	321	314	144	—	1250
16	Edgware	G3VW	G4KD	a	148	374	282	217	189	27	1237
17	Ariel Radio Group	G3AYC	G3GDT	b	141	328	369	278	87	10	1213
18	Chelmsford ARS	G6ZC	G4VF	a	206	459	440	50	2	53	1210
19	Lymington & DARS	G2DC	G3JAF	g	159	166	285	382	209	—	1201
20	East Molesey	G5LC	G8SM	e	197	308	174	225	277	18	1199
21	Sutton & Cheam RS	G2XP	G8DF	a	195	406	200	209	43	38	1095
22	Chiltern ARC	G5WW	G3BXS	a	124	276	342	216	33	102	1093
23	Chorley & The Leyland Hundred Group	G3VAL	G3GGS	a	188	363	179	279	63	—	1072
24	Pontypool	GW3RNH	GW3CDH	a	236	319	351	62	99	—	1067
25	Ayrshire ARG	GM3LTW	GM3NPR	a	139	226	210	410	40	—	1025
26	Dundee	GM2HFV	GM4HR	a	69	166	72	575	125	—	1007
27	Grimsby ARS	G4XC	G2AJB	a	247	402	194	82	44	—	969
28	Purley & DRC	G3FTQ	G3TWJ	d	135	383	262	58	48	57	943
29	Caithness ARS	GM3JUD	GM3GUJ	d	—	102	294	363	123	24	906
30	Scarborough ARS	G4BP	G3KS	a	122	390	121	263	0	—	896
31	Chester & DARS	G3GIZ	G3DRB	a	173	122	174	407	18	—	894
32	Portsmouth & DRS	G6NZ	G3TVI	a	216	449	181	20	7	—	873
33	Bury & Rossendale RS	G3BRS	G3IVG	a	178	303	233	117	—	—	831
34	North Kent RS	G6HD	G3OFM	a	229	333	161	29	55	—	807
35	Lothians RS	GM3HAM	GM3UM	a	105	196	218	172	37	—	728
36	University of Kent & East Kent RS	G3UKC	G3LTY	g	141	152	—	212	116	24	645
37	Aberdeen ARS	GM3VEY	GM3BSQ	d	—	25	306	254	41	—	626
38	Mid-Lanarks RSGB	GM3GDX	GM3TLR	a	10	42	190	215	30	—	487
39	ARC of Nottingham	G3MP	G6CW	a	151	187	68	45	35	—	486
40	Greenock & District	GM3DOD	GM3LRG	a	86	67	186	56	—	—	395
41	Sheffield	G8NN	G8KB	a	259	18	11	—	—	20	308
42	Addiscombe ARC	G3VLJ	G3VYI	h	49	86	42	59	5	20	261

Band grouping (A station): *a*, 1·8, 7 and 21 Mc/s; *b*, 1·8, 14 and 21 Mc/s; *c*, 1·8, 3·5 and 21 Mc/s; *d*, 1·8, 3·5 and 14 Mc/s; *e*, 1·8, 3·5 and 28 Mc/s; *f*, 1·8, 7 and 28 Mc/s; *g*, 1·3, 3·5 and 7 Mc/s; *h*, 1·8 14 and 28 Mc/s.

ENTRIES DISALLOWED

The following entries have been disallowed for the reasons stated. The scores are *claimed* figures only.

TWO STATION ENTRIES

Rule	Group	Call-sign	Call-sign	1·8 Mc/s	3·5 Mc/s	7·0 Mc/s	14·0 Mc/s	21·0 Mc/s	28·0 Mc/s	Total
6	Glenrothes Amateur Radio Club	GM3FXM	GM3OLK	233	187	352	300	27	—	1099
20	Stevenage & District ARS	G3SAD	G3NRB	306	337	249	135	—	20	1047
19	Southampton	G3SOU	G3AMO	166	84	165	113	124	24	676

Rule 6—Late application. Rule 19—No operators' call-signs against each contact. Rule 20—Late entry.

SINGLE STATION ENTRIES

Rule	Group	Call-sign	1·8 Mc/s	3·5 Mc/s	7·0 Mc/s	14·0 Mc/s	21·0 Mc/s	28·0 Mc/s	Total
11	East Worcestershire ARG	G3RZI	218	438	—	382	—	—	1040
19	Bagshot & District RS	G2BB	—	378	233	287	—	—	898
12	Eccles & District RC	G3GXI	—	232	290	293	—	—	815
12, 20	South Shields & DARC	G3DDI	—	148	169	51	—	—	368
19, 20	Shefford & DARS	G2DPQ	67	195	66	—	—	—	329

Rule 11—Excess power declaration. Rule 12—Operation on mains supply declared. Rule 19—No operators' call-signs against each contact. Rule 20—No separate logs for each band. Rule 20—Late entry.

102 points from 28 contacts; they worked many of the stations contacted by the Croydon Group, using a Quad driven by a home-built transmitter.

The Disallowed Ones

Once again it has been necessary to disallow a number of entries for reasons stated in the table. Two stations had generator failures, and had to operate from mains supplies; a great disappointment after a lot of work in preparation for the Contest. With the rest, however, we can only commiserate, and suggest they read the rules! Brief comments follow:

Late entries: This year we had until the 14 July, after the closing date, to prepare the results. Checking was already under way when the two late entries arrived! Sorry chaps!

No Operators' call-signs against each contact: We *must* have this information in a multi-operator contest, to prevent unfair deduction of points due to persistent bad sending by a particular operator. One of the top three stations had trouble of this sort, and a major part of the points deducted from their score was due to one operator who had 60 per cent of the few contacts he made disallowed. We obviously cannot penalise other stations for the misdeeds of this gentleman!

No separate logs for each band: We also seem to get one or two logs with two/three bands mixed. These are completely *uncheckable* in a multi-band contest where entries are split up by bands for adjudication.

Logkeeping: Logs submitted for NFD are, as for all contests, of very diverse standards. It is, however, fair comment to say that many logs are submitted which *should* be rejected as uncheckable due to poor writing etc. One or two groups persist in sending original sheets complete with crossings out, pencilled alterations, blots, tea stains, etc., but the majority of the logs were a pleasure to check.

One Scottish station will be surprised to see his score docked by over 200 points on one band; explanation is that the log had been added up wrongly! One or two others also had their scores altered for this same reason.

Station Inspections

In previous years, the months following NFD have been rife with charges of over-power operation and similar evils; and in an attempt to refute some of these, the Committee re-introduced station inspection. By and large, our inspectors met with friendly welcomes, but one member of the Committee was surprised to meet up with a Past President of the Society who apparently felt that we didn't need to look at *his* entry! No offence Sir, but justice must be *seen* to be done!

The following Groups were checked by representatives of the H.F. Contests Committee:

Two Station Entries

Surrey Radio Contact Club, Cannock Chase, Oxford DARS, Reigate ATS, Guildford DRS, Belfast & District, Bristol ARC, Crawley ARC, Wirral ARS, Luton DARS, Lymington DARS, East Molesey, Sutton & Cheam, Chorley & The Leyland Hundred, Pontypool, Chester DARS, Aberdeen ARS, Mid. Lanarks, Greenock, Addiscombe.

Single Station Entries

Basildon DARS, Cheltenham (G3CGD/P), Maidstone, Midland ARS, Stourbridge, Caterham School, Cambridge DARC, Cheltenham ARS, Surrey RCC Coulsdon, Gloucester, Bury St. Edmunds, Racal ARC, Ballymena RC, Ariel (BBC TV Section).

We should point out that the choice of groups inspected was more or less random, and that inspection did not in any way imply suspicion of rule breaking on the part of the groups concerned.

We are glad to record that only one minor infringement of the rules came to light as a result of these inspections. In view of this we feel we achieved our object; after all no rule-abiding station should have any qualms whatever about an inspection.

Northern Heights ARS with (seated) Roy G3VDS, Gerry G3TFF, Richard G3UGF and (standing at the back) SWL Howard Bottomley.

We have to thank the large number of people who willingly undertook to assist the Committee with station inspections.

Comments

" One or two stations still too loud to be true, but these seemed a lot fewer than previous years "—Clifton.

" Does using a gasholder as a reflector infringe the Contest Rules? "—Ariel.

" Is it about time we had a realistic rule about power? "—Lichfield.

" Why not two classes of power if we must stick to 10 watts "—Swindon.

" Was it our imagination, or were signals down in strength this year? "—Leicester.

" Noticeably reduced blocking of receiver on 3·5 Mc/s and 1·8 Mc/s by stations in the south "—Wirral.

" We welcome the new rules, reference limiting of p.a. valve dissipation and station inspections; long overdue. Don't change for 1968 "—Lymington.

" Which group had a uniformed policeman operating with a Noddy Bike on listening watch outside the tent? "—(H.F. Contests Committee).

" The rules are fine now; please don't change them."—Reading.

" We welcomed the visit (the first ever!) of the Regional Representative to the site "—Medway.

" We think the new rule with a 13·5 watt dissipation limit is an excellent idea."—Scarborough.

"Surprised to work so many famous call-signs operating from home when they usually support the leading stations! "—Cheltenham.

" Congrats to Contests Committee for fine organisation of inspection and new regulations. Should give great fillip to many stations."—Cheltenham.

" Contacts between stations in the same country should not count "—Caithness.

" We had a visit from the inspectors at 5 a.m. Sunday morning but were too sleepy to celebrate."—Greenock.

" Lymington were particularly pleased to see me—in the knowledge that justice is being seen to be done! "—Region 8 RR.

" We were glad to have a visit from the RSGB representative."—Guildford.

" 10 watt limit is now outdated, most groups have access to transceivers running over 100 watts."—Cambridge.

Check Logs

Some overseas stations, apparently not knowing the rules, appeared to be under the impression that they could enter

NFD; these logs have been used for checking purposes.

The station giving the most points to competitors was once again the Famagusta (Cyprus) RSGB Group operating as ZC4SS/P. The Famagusta boys came out specially to work the " G " portables in NFD, and this year made a total of 110 contacts on 7, 14, 21 and 28 Mc/s. They suggest tabulation of scores from overseas stations; sorry lads, this is impracticable, as very few of the check logs are correctly scored and the amount of work involved in tabulation would be enormous.

Many thanks to all the following whose check logs are gratefully acknowledged: EI2BB/P, 9H1N/P, SM0CHH/P, 9V1NV, VP9BT/P, ZE3JO/P, W8GNS/3, 9M8II, SP8HR, YU1SF, WA0KDI, SM2RI, W7BTH, SM0CXM, SM2ALU, 9J2MX, ZD3G, VE1AE, G2DHV/P, G3TFS, G3BY, G3GMK, G3IVL/P, G5FK, GM3FXM/P, GM3OLK/P.

Rhodesian amateurs ZE1BF, ZE1AE, ZE2ID, ZE3JO and ZE4JS during NFD.

Finally

The H.F. Contests Committee would like to thank all entrants for their support and comments. Once again we have succeeded in publishing the results in the August issue of the BULLETIN, which meant that we had to check upwards of 550 separate logs in about 20 days to clear the " copy " for publication; all voluntary work for which we do not ask, or get, any reward. We have had many comments about the rules, both favourable and otherwise, and all of these will be carefully considered before the 1968 event.

If your group feels strongly about any point, please let us know, but remember that another group probably has a completely opposing view. The Committee is in the middle, and all we can hope to do is to make rules which are fair to the majority. CU in 1968?

REGION 10

OFFICIAL REGIONAL MEETING

Saturday 16 September

University College, Park Place, Cardiff

Opening of meeting 1 p.m.

Business Meeting 2.30 p.m.

Buffet 4.30 p.m.

Lecture 6 p.m.

The meeting will include trade displays, competitions for best home constructed equipment and for the best mobile installations.

The lecture in the evening is entitled " Images " and will be given by Professor C. A. Taylor, Ph.D., D.Sc., F.Inst.P., Professor of Physics, University College, Cardiff.

Tickets, price 12s. 6d. each, including buffet, may be obtained from C. H. Parsons, 90 Maesycoed Road, Heath, Cardiff. The last date for receipt of applications for tickets is 11 September.

Scottish Mobile Rally and Official Regional Meeting
23—24 September, 1967

CULZEAN CASTLE AYRSHIRE

All bookings and remittances should be sent to

R. Harkess, GM3THI, 55 Woodend Road, Alloway, Ayrshire.

Bookings for lunch, high tea and social must be made firm before 18 September. Hotel or boarding house accommodation can also be arranged if required.

GB3CC: 2m, 4m, 80m

Exhibition of commercial and home built equipment—special exhibition prize—ladies' exhibition—junk sale—special rally prizes—social evening and grand draw—numerous estate amenities including a caravan and tenting site, organized tours of the castle, booklet tours of the estate, a private beach and caves, pony rides for the children, extensive semi-tropical gardens, a swan lake and aviary, children's sports and a variety of sideshows.

Entrance to estate	3/- (adults) 1/6 (children)
Car park	1/-
Morning coffee	1/6
Lunch	8/6 (adults) 5/- (children)
High tea and social	8/6 (adults) 5/- (children)
Exhibition	1/- (adults) children free

QUA Associates

conducted by "JIX"

HERE we are, past the point of mid-summer. No doubt some of you have already been to one or two of the mobile rallies and perhaps also have had your holidays.

It is quite a while since "QUA" appeared, mainly because of my "putting off" owing to pressure of work and so on. However, many thanks to all of you who wrote to me since the last time, and here is a selection of your comments.

Stephen Hazard, A5017, writes from Norfolk. He has an R109 receiver but believes it to be very limited. I am glad to hear of the radio club at your college, Stephen.

Robert Gilchrist, A5094, writes again from Manchester. Since last writing he has made some successful modifications to his Eddystone S640. Robert says that he would advise A5103 to sell his present Pye receiver and get something better second-hand. He would also like any s.w.l. in his area to write to him at 117 Egerton Road North, Whalley Range, Manchester 16.

S. Austin, A5505, writes from Ashford in Kent. He intends to construct the b.f.o. described in "QUA ..." to use with a slightly modified Domestic receiver.

New Bands from Old

So many readers have written to me and mentioned the R1155 that there must be quite a vast number still falling into the hands of beginners and young people of limited means. They are still available on the market for a few pounds.

They don't cover Top Band, at least not the cheap plentiful type A's, and so a number of SWLs ask the question, "How can I make it cover Top Band?" whenever discussion on this receiver comes up.

There is a modification that can be carried out by an experimenter who has some experience with circuitry. But care must always be exercised when adjusting fairly complex superhet circuits. Here is a description of the modification to bring Top Band on to the h.f. end of Band 3, which is the medium wave position. Of course, the calibration no longer applies, but the majority of the MW stations will still be on the dial, and the tracking does not suffer much it seems.

If the coil pack cover is carefully removed, the trimmers and coils as well as the wavechange switch become visible.

It is vital not to interfere with trimmers and coil cores of ranges not affected. Now there *are* differences in coil and trimmer positions, but this only applies to marks L and N which cover Top Band anyway. There is a check you can do on any receiver to find the coils for a particular band and that is to touch all the tags with a large screwdriver while holding it in the hand, similarly with the live tag on the trimmers. The set is on and working, of course, and when a station goes off or is greatly reduced in volume, the appropriate coils have been found. *WARNING:* don't touch anything else when doing this, *live tags* are likely! Try the coils and trimmers as shown in Fig. 2.

The modification consists of three mechanical operations, followed by a little trimming.

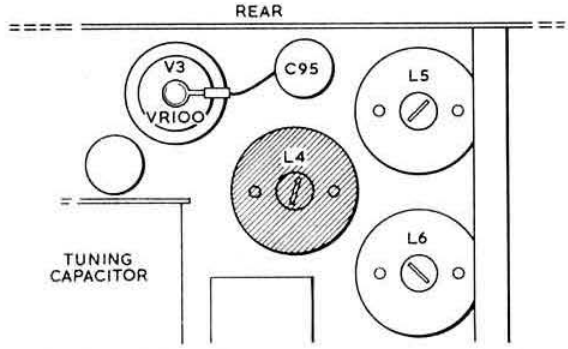


Fig. 1. View of the coil section above the chassis of the R1155.

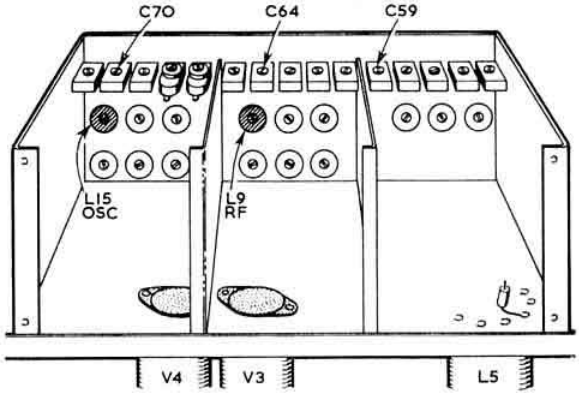


Fig. 2. The under-chassis coil pack.

(i) Completely remove the outer iron dust ring and upper core part from L4 (Fig. 1). To do this, you will have to remove the screening can and the moulded clamping ring. Be very careful not to strain the leads coming from the coil former when moving the iron dust core. Replace the screening can.

(ii) Completely remove the core of L9 in the coil pack.

(iii) Remove the core of the oscillator coil L15, *nearly* from the former, by screwing it out to the back of the coil towards the front of the set).

Now tune a strong station somewhere in Top Band, adjust the trimmer C64 for maximum, then try for a weaker station and with a.v.c. off trim C64 for maximum again. Peak up C59 and the job is done. If Top Band is not positioned at the end where you want it, then adjustment of C70 will move it quite a way.

There may be a number of readers with a basic R1155

* Ken Smith 82 Granville Road, Walthamstow, London, E.17.

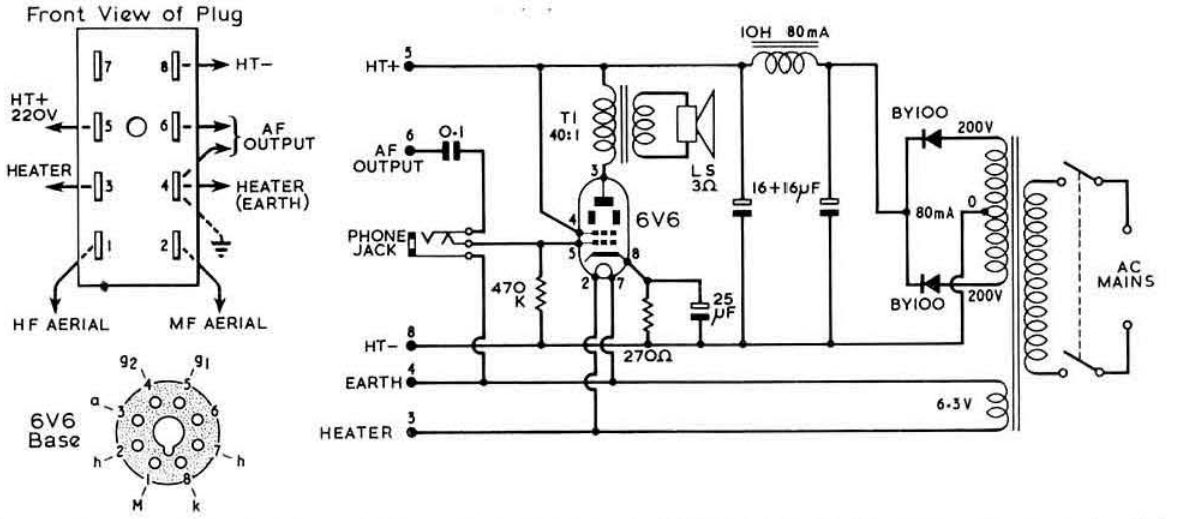


Fig. 3 (a) Connections to the chassis power plug as seen from the front. (b) The additional output stage and power pack, which replaces the D/F circuitry.

which needs a power pack and output stage. It is very easy to build these in, especially if most of the direction finding circuits on the left hand side of the chassis are removed. It is then possible to wire direct to the power plug, details of which are shown in Fig. 3. The h.t. negative line is at a different potential from chassis (earth), which is an important point if using an external power pack. The amplifier circuit is standard and the phone jack silences the speaker when phones are plugged in.

John Rouse

It is now quite a while since the shock of hearing about John Rouse, and much has been said concerning his great work in Amateur Radio circles. Let us just add our record of grief about an Editor who helped the whole way, and a man who had always a cheering word for those concerning themselves in Youth Amateur Radio work.

* * *

73 to you all for this time. JIX.

Four Metres and Down

(Continued from page 523)

And what can be done with small transistors on the transmit side? I have just worked G8AXV who was using 48 mW input, collector modulated. His estimated 4 mW (yes, four) output gave me a signal reading RS58. He was situated half way up the Malvern Hills, using a 9-element aerial. The transmitter was built by G8AZI. Path distance 30 miles.

From G3SEK (Ian White, Oxford):

The several members who obtained computer boards in the raffle at the London V.H.F. Convention in May will perhaps be interested to know that the 1N3862, which seems to be on most of the boards, is not a true tunnel diode as was at first thought but a " back diode " with a higher value of negative slope resistance. When triggered at 100 kc/s in the circuit (Fig. 1) similar to that described by G2HIF in the BULLETIN for July, 1966, it will produce harmonics which are easily detectable in the 2m band.

Having set the oscillator to zero-beat with MSF the operator will be able to find where the band and zone edges really are (especially important to those who work c.w. at the low end). Lower order harmonics entering the tunable i.f. can be eliminated by a high-pass filter on the calibrator output.

In a different application I understand that G3UMF has successfully used a 1N3862 in a Band III pre-amp.

Xtal Xchange

By G3JKX, M. J. Street, 8 Devon Close, RAF Benson, Oxford: crystals from BCC69D TX and RX for 70·23, 70·26 and 70·29 Mc/s plus one FT243 for 8105 kc/s. Will exchange for any frequency between 8000 and 8035 kc/s.

Skeds Operative

By G8AJC of Canterbury daily with the following: ON4HN 1910-1920, ON4HC 1950-2000, F3JN 2000-2015 and F9FT 2030-2045, all GMT—and all of course on 70cm.

Here and There

" From my home QTH at Blackpool 2m seems to be much less thickly populated than is 4m. . . . Incidentally, on 2m I can hear the GB3VHF beacon most of the time at around S2 "—G3SEK (writing from Oxford).

* * *

Expect G4JJ/M to show up in your district on 2m at any time. " Johnny's Jaunts " take him over much of the country in his car. His halo and 12 watter brought him 43 continental contacts in three days during the mid-June opening. " It was the site and nothing else that contributed . . . " he says modestly. He was 800 ft. up on the South Pennines at the time. Even so, 12 watts and a halo . . . !

* * *

" Why can't the V.H.F. Committee dream up some ' L.F. bands weather ' for our 24 hour event in September? "—G3JKX.

* * *

" Like living in a pit shaft " is how G3PTO describes his Wolverhampton QTH, with 600 ft. hills all round and 100 ft. blocks of flats in the foreground. So when he put up a new 10-element Skybeam he gave it a few degrees angle of tilt. The result? " During the June opening it was the first time I have heard the continent on tropo in eight years " says John. And both GB3GW and GB3CTC are now consistently audible.

Society Affairs

THE meeting was held on Friday, 2 June, 1967 and was attended by Mr A. D. Patterson (President), Messrs. B. Armstrong, N. Caws, J. Etherington, J. C. Graham, E. G. Ingram, H. E. McNally, L. E. Newnham, J. F. Shepherd, R. F. Stevens, J. W. Swinnerton, G. Twist, E. W. Yeomanson (Members of the Council), Mr D. W. Robinson (Assistant General Manager) and H. J. Hallen and T. R. Preece (Headquarters Staff).

Apologies for absence were submitted by Messrs. J. C. Foster and G. M. C. Stone.

The President and members of the Council stood in silence in memory of the late John A. Rouse, G2AHL.

Membership and Affiliation

The Council approved the election of 107 members (87 Corporate and 30 Associate) and accepted 10 transfers from Associate to Corporate membership.

Affiliation was granted to:

(*a*) Staffordshire College of Technology Amateur Radio Society;

(*b*) Stamford School Radio and Electrical Society.

London S.S.B. Dinner

The organizing committee had presented the President with a cheque for £20 as a donation to the Headquarters Building Fund.

Purchase of new Headquarters Building

The contract had been signed and completion was due on 26 June, 1967. Mr Caws, the Honorary Treasurer, gave details of the financial matters affecting the purchase of the property. The sale of certain Society securities was approved and Mr Caws gave details of the proposal to raise capital by means of an issue of 6 per cent debentures in units of £25.

(Full information on this and other matters connected with the new Headquarters building would be given in a letter sent to all Members.)

Class B Licences

Council approved a recommendation of the V.H.F. Committee proposing that the Society should negotiate with the GPO for an extension of the terms of the Class B licence.

Wireless Telegraphy Bill, 1967

Publicity for the remarks made by the PMG and others during the passage of the Bill through the House of Commons would be discussed at the July meeting of Council.

Visits to Affiliated Societies

Following the circular sent out by the Membership and Representation Committee arrangements will be made to fulfil the requests from Affiliated Societies for visits from Council members.

Minutes of Committee Meetings

Minutes of the following Committee meetings were accepted as reports: RAEN Committee (18.2.67), Mobile Committee (20.3.67), Exhibition Committee (22.3.67), V.H.F./U.H.F. Contests Committee (30.3.67), Mobile Committee (10.4.67), Technical Committee (11.4.67), H.F. Contests Committee (13.4.67), GPO Liaison/TVI Committee (14.4.67), Education Committee (15.4.67), V.H.F. Committee (17.4.67), Finance and Staff Committee (21.4.67), Scientific Studies Committee (28.4.67), Exhibition Committee (28.4.67), V.H.F. Contests Committee (1.5.67), Mobile Committee (2.5.67).

Headquarters Staff

Some reorganization was necessary on both a long term and a short term basis and the Council accepted recommendations from the Finance and Staff Committee for the future administration of the Society and the production of its publications. Mr D. W. Robinson, G3FMT, was appointed General Manager as from 1 June, 1967. Mr N. Caws, the Honorary Treasurer, was appointed Secretary and it was recognized that this appointment was on a short term basis only.

The Council was in session for 4 hours.

A Brief Report on a Special Meeting of the Council held on 23 May, 1967

THE meeting was held on Tuesday, 23 May, 1967 and was attended by Messrs. A. D. Patterson (President—in the Chair), B. Armstrong, N. Caws, J. C. Graham, E. G. Ingram, H. E. McNally, L. E. Newnham, R. F. Stevens, G. M. C. Stone, J. W. Swinnerton, E. W. Yeomanson, John A. Rouse (General Manager) and D. W. Robinson (Assistant General Manager).

Apologies for absence were submitted on behalf of Messrs. J. Etherington, J. C. Foster and J. F. Shepherd.

Proposed purchase of a building for a new Headquarters at 35 Doughty Street, London, WC1

This meeting had been called to consider only the proposed purchase of this freehold property at a price of £32,500. Mr Caws, the Honorary Treasurer, reported at length on the financial aspects of the purchase and Mr Stevens gave information on points connected with the structure of the building, development and renovation work that would be required.

At the conclusion of a lengthy discussion it was agreed by 10 votes to nil with one abstention that the purchase of the property should be authorized. The acquisition of the Doughty Street premises should be regarded as a first step in establishing a Headquarters worthy of the Society and it is hoped that the ensuing expansion of the Society's activities would require even larger premises in the not too distant future.

It was further agreed that in the event of the negotiations reaching a successful conclusion all Members of the Society would be informed by letter as soon as possible. This will contain information regarding the financing of the purchase together with details of the building.

The Council was in session for 2¼ hours.

Can You Help?

● R. P. Neave, 34 Mayfield Road, Writtle, Chelmsford, Essex, who wishes to borrow the manual or circuit of the Panda Explorer transmitter? Photo-copying can be arranged and any expenses incurred will be refunded.

● I. G. Mant, G8AVJ, 28 Welbourne Road, Childwall, Liverpool 16 who requires the circuit diagram and any information on the RAF Modulation unit. type 76 ref. no. 10D/1311?

Radio Amateur Emergency Network News

By S. W. LAW, G3PAZ*

Wish You Were Hear?

As the holiday season gets well under way we may expect the usual batch of cards, scenic and otherwise, from absent friends. Very nice too. Imagine the chagrin of a Controller who has vainly called several of his members for an exercise or, worse still, a genuine spot of bother when he gets a couple of " Wish you were here " cards the next morning from the offending absentees. Nothing is more time wasting nor exasperating than a dead phone line, except perhaps a dead Call-out Net. A card sent *before* the holiday would be far more appreciated by the hard-working Controller, and might easily make a considerable difference to the time delay on a genuine emergency call-out. So don't give your Controller the chance to spit out the horrible pun with which we head this item, but pay him the courtesy of telling him when and for how long you will be away.

Stockport Air Crash

Last month we quickly mentioned that the Manchester Group had a call-out once again recently soon after the cloudburst which disrupted telephonic communications in the City. The story is as follows: At 12.15 on Sunday, 4 June, a call was received by the IAC John Scarborough, G3MBQ from the Stockport Borough Police requesting as many mobiles as possible to report to the Police HQ in Stockport. A civil aircraft had crashed only 100 yd. from the Police station. Due to the close proximity, GPO telephone lines had been run out from the station, but communications were soon over-loaded and additional facilities were found to be necessary. Links were requested between the scene of the crash, the temporary mortuary and the Police HQ. The mobiles were in position by 12.35 and a " shift " system was set up with the nine mobiles which turned out. At about 3 p.m. four of the cars were " stood down," but continued to call in every hour on the hour for any instructions. The net was finally discontinued at 19.00. Fortunately things turned out better than might have been expected by the nature of the incident, and traffic on the net was not heavy. Nevertheless the efforts of the RAEN Group were greatly appreciated, and their flexibility was amply demonstrated—although no doubt the members would have rather had happier circumstances.

Those taking part as mobiles were G3s NUQ, NOA, KIQ, FYE, VOU, RZJ, NLR, lady member G3VDQ/M and G3MBQ/M, the IAC. Two non-licensed members, Fred Barlow and Frank Cooper also assisted. It is of interest to note that, owing to a decision of the Watch Committee, the Group do not have a permanent station installation at Stockport Police HQ—we feel that comment is superfluous. On a more optimistic note, we hear that the Manchester Group is now officially mentioned in the " Procedure to be adopted when dealing with a Major Incident " in the system of the North Manchester Hospital Management Committee. The new Police Liaison Officer is Chief Inspector G. Chadwick, who is well acquainted with the possibilities and capabilities of the RAEN service, with whom he already has the most amicable relations.

Clever Stuff

It is a sobering thought that there is still a body of opinion —some of it, alas, official—which is of the opinion that present day professional communications are so " sophisticated " that a voluntary service of amateurs (a dirty word to them?) is superfluous and out-moded. Well, a duck on a pond looks pretty useless until you realize that there is a h . . . of a lot of work going on underneath! Moreover have *you* ever taken one unawares?

*11 Chisholm Road, Croydon, Surrey, CRO 6UQ.

Hard Luck

We were sorry to hear that our Registrations Secretary, Ron Ledgerton, G2ABC, has been involved in a car accident and suffered a couple of broken ribs. Needless to say, we expect some delay in getting out new registrations owing to this misfortune, but we are sure that Ron will not let the grass grow under his feet once he is fully recovered. In fact, by the time this is in print he should be well on the way. So may we take this opportunity, not only to give our best wishes to G2ABC, but to again repeat the address for the benefit of those who have *yet* to get their registration cards stamped up to date! R. A. Ledgerton, 1 Latchingdon Gardens, Woodford Bridge, Essex.

Fruitful?

Those who know and love Kent for its profuse blossom and healthy fruit will be delighted to hear that the recent RAEN interest shown in the county bids fair to blossom forth. An inaugural meeting was held not so long ago between the interested parties under the benign chairmanship of Peter Balestrini, G3BPT to discuss the formation of a group or groups in the county. Already a move has been made to participate in a certain County event in which the prospective user services will be involved, and to utilize this as a try-out exercise.

Woburn

It has been suggested that a RAEN get-together at the Woburn Rally might be a popular thing, so if you have any feelings about this the RAEN Committee would be delighted to hear from you. Drop a line to the Hon. Secretary, E. R. L. Bassett, 57 Upper St. Helens Road, Hedge End, Southampton. Offers to man a RAEN talk-in station would be particularly appreciated.

Thanks

May we take this opportunity to thank those who have written in connection with the sightless member G3VRI and his difficulty in obtaining suitable 4m gear. No need to say that we have not been disappointed—we knew we could rely upon the RAEN types.

Co-ordination

This is an age of specialization—but emergency operations are no place for " Parish Pump Politics." It is felt in many quarters that there is a definite need for some form of National Emergency Service which would co-ordinate all those who are geared to the provision of this immediate assistance anywhere, anytime and to anyone in danger. Please let us forestall the " atom bomb " squealers. We are only too aware of the utterly shocking hazards of total war—in such a hideous event we trust that each and every one of us would do the duty that was his or hers under the direction of the appropriate authority. What we would like to see, however, would be the creation of an overall system which could, at short notice, get the right people to the right place quickly. We think that RAEN would be honoured to be a small cog in the wheels.

CONTEST NEWS

RESULTS—REPORTS—RULES

144 Mc/s S.S.B. Contest, 1967

For the ever increasing s.s.b. population on the 2m band a new experimental contest is being introduced. Those who do not transmit s.s.b. are invited to take part.

The contest is experimental because a new scoring system is to be tried out, one which will (it is hoped) encourage some " slick " operating! As can be seen from the rules the final score will be a function of both distance and the number of different stations contacted. Any number of repeat contacts will be allowed with a given station (provided that there are no contacts with the same station in succession). This will mean that to achieve a winning score the correct balance between distance score and the number of different stations contacted will have to be made. Obviously some pre-contest thoughts on tactics will be required!

As always entrants are urged to comment briefly on any aspect of these experimental rules with particular reference to (a) timing, (b) scoring system, (c) allowing repeat contacts. This is so that more 2m s.s.b. contests can be arranged to meet demand.

While it is appreciated that there are only a limited number of s.s.b. operators, it is hoped that as many as possible will take part and send in entries, and check logs and comments from A3 operators will also be appreciated.

1. **Date and Time:** Monday, 14 August from 19.00 to 21.00 GMT.
2. **Eligible Entrants:** (a) Any fully paid up corporate member of the RSGB resident in Europe capable of transmitting the Mode A3j on the 144-146 Mc/s band.
   (b) Single operator fixed stations only. Log keepers do not count as operators.
3. **Contacts:** A station may be contacted more than once (any number of contacts may be made), but no station may be contacted twice in succession.
4. **Mode:** Entrants may only transmit on the mode A3j (s.s.b.).
5. **Scoring:** (a) Contacts under 150 km score 2 points. Contacts between 150 and 300 km score 4 points. All contacts over 300 km score 6 points.
   (b) Contacts with stations not transmitting A3j count half points.
   (c) The FINAL SCORE is derived by multiplying the total distance score by the number of DIFFERENT stations worked (any mode).
6. **Contest Exchanges:** (a) First contact—RS report followed by serial number and QTH or QRA. The QTH should be a distance in km and a bearing from a town identifiable on the Ordnance Survey " Ten mile " map.
   (b) ALL REPEAT contacts—RS report and serial number only.
7. **Logs:** Should be submitted on RSGB contest log sheets. Column 6—Mode of station contacted, S.S.B./NOT S.S.B. Column 7—Enter F for first contact and R for repeat contacts. Points claimed.
8. **Entries:** (a) Must be postmarked not later than two weeks following the contest.
   (b) Entries should be sent to:
   V.H.F. Contest Committee,
   Radio Society of Great Britain,
   28-30 Little Russell Street,
   London, WC1.
   (c) The TOP LEFT HAND CORNER of the envelope MUST be clearly marked TWO METRE S.S.B. CONTEST.
   (d) If acknowledgement of reception of entry is required a stamped addressed post-card must be enclosed.
   (e) The cover sheet should be made out and signed.
9. **Awards:** At the discretion of Council awards will be made to the winner and runner up and to any stations (probably in outlying areas) for a notable performance.

Rugby D/F Qualifying Event, 18 June, 1967

Bright sunny weather greeted the 14 teams who took part in the Rugby D/F Qualifying event, which started this year from Mantles Heath near Daventry.

The competitors had to locate two transmitters, G3OPZ/P, in bushes along a canal towpath near Crick, and G3BXF/P, using a 100 mW collector modulated transistor oscillator, hidden in dense undergrowth in a wood, one mile from the start.

Posn	Name	Club	Time of arrival G3OPZ/P	Time of arrival G3BXF/P
1	*M. P. Hawkins	Oxford	14.22	14.56
2	*E. L. Mollart	Oxford	14.14	14.56½
3	†W. North	Chiltern	15.23	14.56½
4	†E. Bristow	Oxford	15.35	14.57
5	†J. R. Vickers	Stratford	15.40	14.59
6	G. T. Peck	High Wycombe	14.44	15.56
7	T. Gage	Oxford	16.09	14.58
8	D. Newman	Rugby	15.06	16.10
9	P. Tyler	Oxford	14.58	16.12
10	J. J. Grant	Rugby	15.03	16.29½
11	R. Burdett	Rugby	15.20	16.30
12	O. L. Harding	Rugby	16.13	—
13	A. Simmions	High Wycombe	16.23	—
14	E. Trelogan	Oxford	—	—

* Previously Qualified
† Qualify for National Final.

Several teams had trouble with this low power station which was using as an aerial a thin wire threaded through undergrowth, connected to a barbed wire fence running around an adjacent field. This aerial produced sharp lobes and nulls in its radiation pattern, and while it could be clearly heard by the other station 9 miles away, in other directions it could hardly be heard at all.

Eric Mollart, with the assistance of his well known guardian angel, astonished G3OPZ/P, by arriving only 10 minutes after the second transmission, followed 8 minutes later by Mike Hawkins. Youth triumphed however, and Mike made up just enough time to beat Eric back to G3BXF/P by ½ minute.

Almost 50, members, families, and friends, sat down to tea afterwards where Mrs J. J. Grant presented the Rugby Cup for the second year running to Mike Hawkins.

Thanks to, G3IKL, G3LYU, G3MDC, G3NDM, G3OPZ, and G3OXV for helping organize the event, and to Mr D. A. Findlay, who came along on behalf of the H.F. Contest Committee to see fair play.

Listeners' 70 Mc/s Contest, 1967

Posn	Name	BRS/A	Score	Stns Hrd	QRAs Hrd	Cty	Converter RF	RX	Aerial
1	R. Ham	BRS15744	905	97	9	SX	AF114	680X	3ele
2	R. Thomas	BRS15822	758	64	9	LD	6CW4	HRO	3ele
3	R. Whitbread	A4674	623	69	7	SY		AR88E	Ground-plane & Dipole
4	T. Cooper	BRS28005	618	47	9	SX	TSTR	TSTR	3ele
5	P. Briggs	A4752	606	49	9	LE	6CW4	PCR2	4ele
6	C. Baker	A5032	417	37	6	HF	"A4388"	AR88	Dipole

The entry for this contest was rather disappointing especially in view of the excellent conditions. Two regular entrants in listeners' contests, R. Ham BRS15744 and R. Thomas BRS15822, took first and second positions respectively. The latter again made good use of the bonus points for c.w. with 18 stations logged " on the key."

Few comments were received with the logs but BRS15744 reports hearing f.m. broadcast stations during the event. He also mentions that no QRA locators were received, which complicated the calculation of the points. Scoring has been based on the locator to allow for easy calculation in those contests where exchange of locators is obligatory. Next year, however, a return to county bonus points may be possible.

No points have been deducted for contacts logged with incomplete locations. In future such entries will score half points.

In addition to the entries shown in the table, a log with no claimed score was received from R. Adair A5323 of Holywood Co. Down. In three hours he heard ten GI stations, one GM and one EI.

Subject to Council approval, Certificates of Merit will be awarded to the winner and runner-up.

IARU Contest, 2-3 September, 1967

Contestants are reminded that the IARU September Contests run concurrently with the RSGB V.H.F./NFD Contest on 2-3 September. There are six sections in this contest, as follows:

1. 144 Mc/s fixed station.
2. 144 Mc/s portable station.
3. 432 Mc/s fixed station.
4. 432 Mc/s portable station.
5. 1296 Mc/s fixed station.
6. 1296 Mc/s portable station.

September is probably one of the three months in the year when propagation at u.h.f./v.h.f. extends into the extended tropospheric range, i.e. 300 miles upwards. If such conditions do exist at this time it always enhances the pleasure of the event; in any case it is desirable that the RSGB should have as much representation as possible in this contest. In recent years the entries from the United Kingdom have been very sparse, although the few that have entered have indeed been very prominently to the fore in the results table.

The rules for the contest appeared in the February 1967 issue of the BULLETIN.

J.C.F

Third 144 Mc/s Contest (Portable), 1967

Thunderstorms, heavy rain and high winds, coupled with rather poor propagation set the scene for the 144 Mc/s (Portable) contest held on 7 May, 1967; not really ideal conditions for portable operating, but despite this 39 entries were received.

The Midlands Contest Club GW3RUF/P operated entirely by G3KXA again takes top place, with strong competition from GW3OXD/P as runner-up. Subject to Council approval an award will be made to G3MAX/P as the leading G station. Scoring rates amongst the leaders were very high at times, with several stations making good use of two receivers.

Some QRA locators went amiss but this was not serious, although it may well account for an otherwise inexplicable loss of points.

Very few comments were received on the rules, and the timing of the contest appears to be popular. One plea from G2WS is that stations should refrain from using phone in the c.w. section of the band. An interesting comment from G2BQ referring to the RSGB Contest Log Sheets—" I have plenty of these sheets, do not send more," which seems to be a complete reversal of the normal trend. At present the quickest and best way to obtain RSGB contest log sheets is to send a large s.a.e. to HQ. However this system will gradually be superseded, so that, in future log sheets and contest cover sheets may be obtained directly from the adjudicator of a particular contest. This new system whereby one sends contest entries direct to the adjudicator and not to HQ will gradually be introduced into almost all v.h.f. and u.h.f. contests.

Check logs were gratefully received from, G2BQ, G3MWZ, ON8IR (G2DHV), BRS15744, BRS28005, A3942, A4672, A4871 and A5032.

Call-sign	Position	Points	Contacts	Operators	TX Power (Watts)	Aerial
GW3RUF	1	19807	104	1	25	10
GW3OXD	2	18774	95	3	25	10
G3MAX	3	18423	107	3	25	4/4 + 8 ele
G3GWB	4	18130	93	4	24	*
G3EJO	5	15008	92	2	12	10
G3NJF	6	13688	54	2	24	6/6
G3LEE	7	13323	77	2	25	6/6
G3ERD	8	11763	72	4	14	10
G3RAL	9	10838	76	3	12	8
G2CZM	10	10821	76	1	16	10
G3TEK	11	10656	68	3	10	6/6
G3JEQ	12	10612	85	1	10	6/6
G4JJ	13	10423	63	1	—	4
G3RCV	14	8479	81	3	21	5
G6SC	15	8441	66	4	25	6/6
GW3LEW	16	8330	55	1	10	7
GW3ITZ	17	8029	61	3	10	8/8
G3PMH	18	7304	62	1	25	6/6
G3EFX	19	7256	77	2	25	10
G3CGQ	20	7130	49	1	20	10
G3AHB	21	6895	66	4	24	6/6
G3TND	22	6658	40	3	15	5/5
GW3RXK	23	6601	46	3	25	10
G3VPF	24	6248	34	2	12	4
G2CZU	25	5196	60	5	25	6/6
G3UCS	26	5945	44	3	15	6
G3JCZ	27	5714	48	1	10	6
GW3ULU	28	5690	42	2	10	6/6
G3TXT	29	5238	35	2	5	4
G3SLJ	30	5191	53	2	25	8/8
G3PUO	31	5023	47	3	25	8
G3JBF	32	3915	33	1	10	4/4
G3NN	33	3282	26	4	20	4
G3JDM	34	3050	26	1	15	5
G3DTB	35	2679	23	1	0.6 †	5
GW5HZ	36	2525	33	2	15	6/6
G3VFD	37	2283	27	3	5	6/6
G2WS	38	2184	19	1	8	5
G3CHM	39	1847	24	3	25	8

* No aerial stated
† Station all transistorized of German origin

MOBILE RALLIES

AUGUST

Sunday, 13 August, 1967

Derby Mobile Rally

Ryknеld Schools, St. Albans Road, Derby.
Talk-in stations: G3ERD/A on 160m and G2DJ/A on 2m.
There will be trade stands of radio equipment, static displays, a concert, demonstrations of radio controlled model aircraft, a treasure hunt, field events, a mobile contest and the famous junk sale. Admission and car park are free, and refreshments will be available. Further information from G3FGY.

Sunday, 20 August, 1967

Plymouth Mobile Picnic

Scenic Car Park, the old airfield, Harrowbeer, near Yelverton.
Talk-in stations on 160, 4 and 2m.
This is an informal picnic organized by Plymouth RC, and visiting mobiles will be welcome. Further information from C. G. Clark, 19 Beverston Way, Widewell, Plymouth.

Uncle's Southend Do

Pier Entrance, Southend Pier, 12 noon or 3.30 p.m.
An annual party for amateurs, their wives, friends and children, organized by G6NU.

SEPTEMBER

Sunday, 3 September, 1967

Swindon Mobile Rally

Lydiard Park and Mansion, 3 miles west of Swindon, Wilts. (just north of the A420 Swindon to Chippenham road).
Talk-in stations: from 11.00, G3PRR/A on 1925 kc/s, G3LLZ/A on 3735 kc/s s.s.b., and also 2m and 4m stations.
Raffles, children's lucky dip, trade exhibits, competitions, children's games, steam model railway rides, and Lydiard Mansion will be open to view. Ample car parking and light refreshments will be available. Further details from G3PRR.

Sunday, 10 September, 1967

RSGB Woburn Abbey Rally
Woburn Abbey, Beds.

23-24 September, 1967

Scottish Mobile Rally and Region 14 ORM

Culzean Castle, Ayrshire.
See page 529 for details.

Sunday, 24 September, 1967

Harlow Mobile Rally

Organized by the Harlow and District ARS

CLUBROOM

A Monthly Survey of Club and Group Activities

For further information on membership or the activities of a particular club, application should be made to the person whose call-sign is indicated at the end of the item. Full addresses may be obtained from the RSGB Amateur Radio Call Book.

AGAIN we have received some overseas contributions, and by far the most ambitious was from the Aeronautical Centre Amateur Radio Club, Oklahoma City. We extract a section from their *Collector and Emitter:*

" On Tuesday, 16 May, Don Miller, W9WNV appeared on the NBC ' Today ' show and gave Amateur Radio a very big plug. Don is a veteran DXpeditioner of over 25 countries and a half million QSOs in two years (how many of us do that in a lifetime?—Ed. K5LIL). He spoke of the value of Amateur Radio in bringing the peoples of the world closer together. Don is an M.D. and made surveys in the various locations as to the medical needs there. He showed a few slides of the different places, one piece of transistorized amateur gear, some of the more exotic QSL cards, and dropped a hint of his future plans."

We in the UK are striving for better press coverage, and Amateur Radio has time on one forthcoming radio programme, BBC's Woman's Hour, on 17 August. Some 12 minutes have been granted to the subject. Perhaps something could be arranged for television shortly. On this point excellent publicity was given on BBC's Panorama on 10 July to an NCX5 and G3WKT, although this was not directly connected with Amateur Radio.

Acknowledgement is made to the Radio Society of Rhodesia and to the Hong Kong Amateur Radio Transmitting Society for contributions.

Addiscombe ARC has held a couple of meetings since entering NFD, one when Mike Bass, G3OJE talked on NFD and the second, a Natter Nite. A membership drive is under way and for further details, contact *G3ULT*.

Basingstoke ARC meet in July when Douglas Willis presented an interesting talk on Marconi Test Instruments. As there is no meeting in August the next will be the AGM on 16 September. Also during September the club will be participating in the town's Art and Craft Festival. *G3CBU*.

Chippenham and District ARC. For the summer period, the Chippenham club has held a high number of activities, from a talk on Solid State Devices to a social evening with the Bristol ARC and the Bath ARC. The Bristol club retained the QSD cup by beating Chippenham at darts during the evening. *G3PQG*.

Clifton ARS recently visited the Research Department of Muirhead Ltd. During the visit some of the modern facsimile equipment was in operation and a cloud formation picture was received from a weather satellite over Poland. Poor conditions on Top Band have prompted a move in frequency to 70 Mc/s. *G3JKY*.

Cornish RAC met as usual during July to hear the second part of a talk on Maritime Communications by Mr Dennis Smith of Land's End Radio. During the evening six visitors to Cornwall were made welcome to the club. Visitors on holiday are reminded that the club members wish to help them enjoy themselves. Therefore for advice or help, before or during holidays, contact members of the Cornwall group. *G3NKE*.

Dorking ARS. We have not received a report this month. Perhaps the group is stranded somewhere with the van!

Edgware and District RS meetings are not held during August but the club net continues every Wednesday at 9 p.m. on 1875 kc/s. On 3 June the Society installed a demonstration station at the Colindale Hospital Fete. A further demonstration was given to fifth year pupils at Lyndhurst Secondary Modern School, Boreham Wood, which, after their recent exams, gave much interest.

Fylingdales RC is at present emerging from a period of relative inactivity for which shift work takes part of the blame, although it is gratifying to find that the interest of the junior members, ever avid for knowledge, has been maintained. Between 19-21 August it is hoped to install an exhibition station in the Spa, West Cliff, Whitby, in connection with the local Regatta, when it is thought two stations will be active using the call GB3FRC. *G3VGN*.

Glenrothes ARC held its AGM on 2 July when the following officers were elected: Chairman—W. Stephen, GM3IVZ, Secretary—E. H. Ross, GM3LWS, Assistant Secretary/Treasurer —S. Gibson—SWL and two committee members, J. Balfour, GM3PFQ and J. Shields, SWL. Of the present 12 members, eight are licensed and it is hoped to launch a recruiting campaign during next season. *GM3LWS*.

Grafton RS has now taken delivery of its new transceiver—a KW2000A. Unfortunately it arrived at a time when the entire club aerial system had been dismantled for maintenance. However it was used on 24 June at the Society's exhibition stand at the London Borough of Hackney Annual Field Day at Clissold Park, North London and eight days later it was used throughout Grafton's annual Field Day on Hampstead Heath. Grafton closed for its summer recess on 21 July and will re-open on Friday, 15 September. *G3SIL*.

Hemel Hempstead and District ARS. After a very successful AGM on 30 June, J. Butcher, G3LAS presented his second lecture on v.h.f./u.h.f. techniques. The Society now meets on the first and third Fridays of each month at 7.30 p.m. in Ruckers Lane Hall, off the A41, by the Red Lion, King's Langley. Membership now stands at 83 and continues to grow. *G3UZF*.

Mansfield ARS continue to meet on the first and third Fridays of each month at the New Inn Mansfield. Owing to lack of support the proposed visit to Jodrell Bank has had to be cancelled. During June a visit was made to the manual Mansfield telephone exchange. A further visit may be arranged in a few months when the exchange goes automatic. *G8HX*.

Medway ARTS enjoyed a lecture by KW Electronics Ltd. on 19 June when apart from demonstrations, a brief history of the company was given. Also on show was the range of both amateur and commercial KW equipment. *G3UXH*.

Newbury and District ARS decided at its AGM on 2 June to continue its existence as principally a contest society. As a result the club will be participating in most of the forthcoming v.h.f. contests from its nearby Warbury Hill site. *G3KJC*.

From **Norfolk ARC's** *Challenge:*

Pat, G3IOR/JP was fined for speeding at Ipswich in a 30 m.p.h. limit. It is rumoured that he said in his defence that the pressures of field day were so great that his visit to G3KFX for transceiver modifications for the occasion warranted the rate of travel—i.e. Ipswich in under the hour! It is not yet known whether the club is willing to financially support him in this particular venture, albeit in the club's interest. *G3PNR*.

Northern Heights ARS is yet another group who have installed a demonstration station at city events. This time at the Halifax Charity Gala. On the following day a visit was made to the BBC Short Wave Transmitting station at Skelton Pastures, Cumberland, when a disused valve was presented to the club. This brute will be presented annually to the winner of its D/F hunt. *G3MDW*.

Plymouth RC report flourishing activity constructing 2m gear following a v.h.f./u.h.f. talk by G5ZT. It is hoped to soon move the local net from Top Band to 2m. The annual picnic will be held this year on 20 August when it is hoped mobiles in the area will attend. *G3SGV*.

Purley and District RC held a natter nite on 2 June. What appeared at first to be an ordinary get together was made into a memorable evening with the arrival of Frances Smith, G3VKI together with news of his 4m contact with ZB2VHF, Gibraltar. Purley participated in NFD on 3-4 June and gained a few extra points this year. At the AGM on 16 June, the Club Chairman, Secretary and Treasurer were all re-elected. *G3FTQ*.

And so a new club is born. In these days of amalgamations and receivers (not the r.f. type) it is gratifying to see fresh new enterprise. A group of East Sussex radio amateurs has formed the **South Downs Radio Amateur Society** under the sponsorship of Sir Eric Truscott. At a General Meeting on 12 June the Society was born and 12 committee members elected from a total attendance of 37. Such is the enthusiasm. For further details write to Leslie E. Tagliaferro, 9 Tugwell Road, Hampden Park, Eastbourne, Sussex. (Telephone EA 54244).

Surrey RCC is one of the first to report constructional

contests this month. The standard of the contest says the club secretary was extremely high, but classed the winner S. Weber, G8ACC's entry as outstanding. The secretary looks forward to seeing Sven's name on the Coronation Cup. The winner of the class II section was M. Emmerson, G3OQD with a piece of equipment well up to his usual standard. On 18 July, W. H. Allen lectured on *OSCAR* Satellites—Past, Present and Future, and illustrated his talk with a number of slides. *G3KGA.*

Mid-Sussex ARS celebrated its first anniversary on 21 June with its first mobile/portable evening. Between 30 and 40 people turned up at this event with some travelling from as far afield as the West Kent ARS and Brighton Tech. Club. Talk-in stations were provided by G3VAB on 160m and G3RXJ on 4m. G3RXJ had two notable QSOs, one into Sutton Coldfield at 138 miles and one with a mobile near Swindon 81 miles.

Verulam ARC met in June when some 45 club members enjoyed an excellent lecture and demonstration by D. Simmonds. G3JKD on the principles and applications of the oscilloscope. It is hoped Dave will be able to prepare a return lecture some time in the future. *G3PAO.*

Mid-Warwickshire ARS are in the process of re-wiring the club shack following its reconstruction (no details are given of why it had to be reconstructed!). It is hoped that shortly the club station will again be active on 160m and 2m a.m. and 80m s.s.b. when the Top Band net will be started. No programme has as yet been arranged although the club rooms will still open as usual at 8 p.m. on Monday and Thursday evenings. *G3UOD.*

We make no apology for reprinting the following editorial in its entirety from *QUA* published jointly by the **Wessex ARS** and **Royal Navy ARS.**

More now than ever before the ranks of Amateur Radio contain a large percentage of persons gainfully employed in the Radio Industry and carry the label of professionals. This, of course, has always been so, although not to the same extent.

Occasions do arise when the professional is at some advantage over the Amateur with no comparable experience or connections.

Mindfull of Exhibition equipment there is little doubt that much gear quite correctly described as Amateur built could with equal correctness be designated professionally built.

The forthcoming rally season will again produce many instances of the pro. influence, notably in the prizewinning lists; every season an increase in vehicles equipped from stem to stern with commercial gear, bundles of beauty, yes, Amateur Radio? Yes or no according to one's view.

The modern u.h.f. enthusiast will progress very little should he be dependent solely on Amateur resources for information or materials.

Insurmountable obstacles are met should one attempt to impress the u.h.f.'s with even a comparatively modern junk box and one is forced to look for the " never before heard of " types of semiconductors etc.; fortunately most clubs have within their ranks the professional who invariably helps in this direction. The increasing tendency to use commercial gear often gives the impression that the " All Home-built station " is on the way out, an assumption not strictly true in detail thank goodness. It is gratifying to know the thirsts of many Pro-Hams are slaked by home construction.

Much of the literature we read is sponsored or written by the group under discussion and this invaluable and informative service must be of great value to our hobby.

Could the Amateur movement exist without the Professional within its ranks?

Perhaps, but I doubt it. *G2DSW.*

Westmorland RS report the closing of the clubroom until 8 September when its college meeting place reopens. The strength of the club is continuing to increase in spite of the present holiday season. *G3UEC.*

Wolverhampton ARS held its direction finding contest on 1 July when seven teams entered. It took 66 minutes for the hidden location to be found although many competitors could be heard beating the bushes 15 minutes earlier. This event was preceded on 19 June by a discussion on D/F techniques given by Mr Simmonds of the Slade Radio Society. On 5 June G3RWR described a new home-built receiver designed for optimum performance on s.s.b. and showed himself to be a perfectionist of a high order. *G3UBX.*

Yeovil ARC have members engaged in constructional projects for the forthcoming V.H.F. NFD. Visits are also being made to various mobile rallies. In addition to these various external events a film from W1QCO was recently shown at the club. *G3NOF.*

King's Lynn and District YMCA ARC staged a successful exhibition station at a local two day traction engine rally. Stations were in operation on 160m to 2m excluding 4m with the furthest contact being with Boston, USA.

Ken Michaelson, G3RDG with an SWL assisting at the operating position of the Edgware and District RS exhibition station at Colindale Hospital Fete, 3 June

Newsletters were also gratefully received from the **IRTS, Midland ARS, North Kent RS, RAIBC, Saltash and District ARC, Southgate RC,** and **WAMRAC.**

Deadline for the **September** issue is **10 August** and for the **October issue, 1 September.**

Subscriptions or Changes of Address

In order to assist Headquarters, all members are requested to enclose an RSGB BULLETIN wrapper when writing to the Society regarding changes of address or renewal of subscriptions. The latter does not apply if the reminder card is included.

Currency Conversion

Overseas members may like to make a note of their subscription dues in their own currency, shown in the list below, in case the reminder card goes astray.

Approximate equivalents to £2. 10s. (Sterling)

Austria	180 Schillings
*Australia	$ 6.50
Belgium	350 Francs
*Canada	$ 7.70
Denmark	50 Kroner
France	34 Francs
Greece	210 Drachmas
Holland	25 Guilders
Italy	4375 Lire
†New Zealand	£2.10.0
Norway	50 Kroner
Portugal	200 Escudos
†South Africa	5.60 Rand
Spain	425 Pesetas
Sweden	36 Kronor
Switzerland	30 Francs
USA	$ 7.00
West Germany	28 Deutsche Mark

* Money Order service available.
† British Postal Orders available.
(In all other cases International Money Orders are available.

But please forward payments in Sterling through your bank if possible.

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. Standing instructions cannot be accepted.

REGION 1

Ainsdale (ARS).—9, 23 August, 6 September, 8 p.m., 77 Clifton Road, Southport.

Allerton (Liverpool) (SRHS).—Thursdays, 8 p.m., 3rd Allerton Scout Group Headquarters, Church Road, Woolton, Liverpool.

Ashton under Lyne (AUL & DARS).—Fridays, 7 p.m., Rooms F52 and F53, Ashton College, Beaufort Road.

Blackburn (ELARC).—3 August (WIBB Top Band DX Tape Lecture with Slides). 7 September ("Technical Topics" by G3JZO), 7.30 p.m. YMCA, Limbrick.

Blackpool (B & FARS).—Mondays, 8 p.m., Pontins Holiday Camp, Squires Gate. Morse tuition from 7.30 p.m.

Bury (B & RRS).—8 August, 12 September, 8 p.m., Old Boars Head Hotel, Crompton Street (private room).

Chester (C & DARS).—Tuesdays, 8 p.m., YMCA.

Crewe & District.—7 August, 4 September, 8 p.m., 80 Albert Street.

Eccles (E & DRS).—Tuesdays, 8 p.m., Patricroft Congregational Schools, Shakespeare Crescent, Patricroft. Every Thursday, club Top Band net 20.30 hours.

Liverpool (L & DARS).—Tuesdays, 8 p.m., Conservative Association Rooms, Church Road, Wavertree.

Liverpool (NLRC).—4 August (Discussion "Future of the Shack"). 18 August ("Transistors" by G3TXR). 1 September ("Mathematics in Amateur Radio," by R. Mount), 8 p.m., Sea Cadets Hall, Cinder Lane, Litherland.

(UoLARS).—No more meetings until October owing to examinations.

Macclesfield (M & DRS).—15, 29 August, 12 September, 8 p.m., The George Hotel, Jordangate.

Manchester (M & DARS).—Wednesdays, 7.30 p.m., 203 Droylsden Road, Newton Heath, Manchester 10.

(SMRC).—Fridays, 7.45 p.m., Rackhouse Community Centre, Daine Avenue, Northenden.

Morecambe.—2 August, 6 September, 125 Regent Road.

North West V.H.F. Group.—Tuesdays, 8 p.m., Club Headquarters, Chapeltown Street, Manchester 4.

Preston (PARS).—10, 24 August, 7 September, 7.30 p.m., "Windsor Castle" (private room), St. Paul's Square.

St. Helens (SES).—No Meetings during August. 5 September, 7.30 p.m., I.V.S. Centre, 55 College Street.

Southport (SRS).—Wednesdays, 8 p.m., and Sundays, 2.30 p.m., The Esplanade. 2 August ("Rectification," by G3OYC), Tuesday, 19 September (Visit to Southport Telephone Exchange at 8 p.m.).

(73 S.S.B. Society).—Tuesdays, 8 p.m. (all commencing with a talk on part of the RAE Syllabus), 73 Avondale Road North, Southport.

Stockport.—9, 23 August, 6 September, Royal Oak Hotel, Castle Street, Edgeley.

Warrington—Culcheth (CARC).—Fridays, 7.30 p.m., The Harrow Inn, Culcheth.

Wirral (WARS).—2, 16 August, 6 September, 8 p.m., Harding House, Park Road West, Claughton, Birkenhead.

REGION 2

Bradford (BRS).—5 September (Informal meeting), 7.30 p.m. Bradford Technical College, Great Horton Road, Bradford.

Northern Heights.—5-6 August (Jamboree on the air), 12 August (Demonstration Station at Halifax Agricultural Show), 16 August (Visit to Wharfedale Wireless at Idle), 6.30 p.m. prompt, 26 August (Demonstration Station at Warley Fete), 30 August (Pea & Pie Supper), 7.45 p.m., Sportman Inn, Ogden, Halifax.

Scarborough (SARS).—Thursdays, 7.30 p.m., rear of 3 Trinity Road, Scarborough.

REGION 3

Birmingham (Bournville).—Every Friday evening at 8 p.m.

(MARS).—Third Tuesday in the month, 7.45 p.m., Midland Institute.

(South).—Third Wednesday in the month, 8 p.m., Scout Hut, Pershore Road.

Bromsgrove (B & DARC).—Second Friday in the month, 8 p.m., Co-op Hall.

Cannock (CCARS).—First Thursday in the month, Bridgtown Social Club, Walsall Road, Cannock.

Dudley (DARC).—11 August, 25 August, 8 p.m., Art Gallery Dudley.

Mid-Warwickshire (MWARS).—Mondays, 7 Regent Grove, Leamington Spa.

Nuneaton (NARS).—Fortnightly, Anchor Inn, Hartshill.

Salop (SARS).—28 August, Church Stretton Traction Engine Rally.

Stourbridge (STARS).—15 August, 8 p.m., Visit MEB Control Centre, Ocker Hill, Tipton. The Library, Longlands School, Stourbridge.

Stratford (S-u-A & DRC).—Every Thursday 8 p.m., Halls Croft, Old Town.

Wolverhampton (WARS).—7 August (Demonstration Sommerkamp F-Line) by G3SOE. 21 August Film Show. Nechells Cottage. 8 p.m.

Worcester (W & DARC). — Informal meeting each Saturday 8 p.m., 35 Perdiswell Park, Droitwich Road, Worcester.

REGION 6

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

REGION 7

Acton, Brentford and Chiswick (ABCRC).—15 August, 7.30 p.m., (General Discussion), Chiswick Trades and Social Club, 66 High Road, Chiswick.

Addiscombe (AARC).—8, 22 August, 7.30 p.m., 158 Lower Addiscombe Road (Toc H. Hall).

Ashford (Middlesex) Echelford (ARS).—10, 24 August, 7.30 p.m., St. Martin's Court, Kingston Crescent, Ashford.

Bexleyheath (NKRS).—10, 24 August (Junk Sale), 8 p.m., Congregational Church Hall, Chapel Road, Bexleyheath.

Chingford (SRC).—Fridays except first in month, 8 p.m., Friday Hill House, Simmons Lane, Chingford, E4.

Chingford.—Alternate Fridays. Ring SIL 5642.

Croydon (SRCC).—17 August, 7.30 p.m., Blue Anchor, South End.

Dorking (DR & DRS).—8 August, 8 p.m., Wheatsheaf, 22 August, 8 p.m., Star & Garter, Dorking.

Ealing (E & DARS).—Tuesdays, 7.30 p.m., Northfields Community Centre, Northcroft Road, Ealing, W13.

East Ham.—First and last Thursdays, 7.30 p.m., 12 Leigh High Road, East Ham.

East Molesey (TVARTS).—First Wednesday, 7.30 p.m., Prince of Wales, Bridge Road, East Molesey.

Edgware & Hendon (EADRS).—11, 25 September, 8 p.m., John Keble Hall, Church Close, Deans Lane, Edgware.

Gravesend (GRS).—Third Wednesday each month, 8 p.m., RAFTA Club, Overcliff Road.

Guildford (G & DRS).—11, 25 August, 8 p.m., Guildford Engineering Society in Stoke Park.

Harlow (DRS).—Tuesdays and Thursdays, 7.30 p.m., Mark Hall Barn, First Avenue.

Harrow (RSH).—Fridays, 8 p.m., Roxeth Manor School, Eastcote Lane.

Havering (H & DARC).—9, 23 August, 7.30 p.m., Romford.

Holloway (GRS).—Wednesdays and Fridays, 7.30 p.m., Monten School, Hornsey Road.

Hounslow (HADRS).—11, 25 August, Canteen, Mogden Main Drainage Department, Mogden Works, Isleworth.

Ilford.—Thursdays, 8 p.m., 103 Heath Road, Chadwell Heath, Romford.

Kingston (K & DARS).—Second Wednesday each month, 8 p.m., YMCA, Eden Street.

Leyton and Walthamstow.—Tuesdays, 7.30 p.m., Leyton Senior Institute, Essex Road, London, E10.

London U.H.F. Group.—First Thursday in each month, 7.30 p.m., White Hall Hotel, Bloomsbury Square, Holborn.

Loughton.—11, 25 August, 7.30 p.m., Loughton Hall (nr. Debden Station).

Maidenhead (N & DARC).—15 August, 7.30 p.m., Victoria Hall, Cox Green, Maidenhead.

New Cross.—Wednesday and Friday, 8 p.m., 225 New Cross Road, London, SE14.

Norwood & South London (CP & DRS).—19 August ("Digitual Frequency Meters," by Bob Burns, G3OOU), 8 p.m., CD Centre, Woodgates Road, SW12.

Paddington (P & DARS).—Wednesdays, 7.30 p.m., Beauchamp Lodge, 2a Warwick Crescent, W2.

Purley (P & DRC).—4, 18 August, 8 p.m., Railwaymen's Hall, Side Entrance, 58 Whytecliffe Road, Purley.

Reigate (RATS).—9 August (Slides and Photos), 7.30 p.m., George and Dragon, Cromwell Road, Redhill.

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

Science Museum (CSRS).—15 August, 6 p.m., Science Museum, South Kensington.

Scouts (SARS).—5/6 August (Jamboree on the Air, GB3BPH), 17 August (Club Meeting and Junk Sale) 7.30 p.m., Baden Powell House, Queensgate, South Kensington, SW7.

Sidcup (CVRS).—3 August, 8 p.m., Church Hall, Court Road, New Eltham.
Slough (SDR Group).—First Wednesday every month, 8 p.m., United Services Club, Wellington Street.
South London Mobile Club.—12, 26 August, 7.30 p.m., Clapham Manor Baths, SW4.
Southgate & District.—11 August, 7.30 p.m., Parkwood Girls' School (behind Wood Green Town Hall).
St. Albans (Verulam ARC).—21 August, 7.30 p.m., Cavalier Hall, Watford Road, St. Albans.
Sutton & Cheam (SCRS).—15 August, 8 p.m., The Harrow Inn, High Street, Cheam.
Welwyn (Mid Herts. ARS).—10 August (Pedestrian D/F Hunt in Sherards Wood, Welwyn Garden City).
Wimbledon (W & DRS).—25 August (Lasers and Masers by E. R. Honeywood, G3GKF). St. Johns Ambulance Hall, Kingston Road, Merton.
Wembley (GECARS).—Every Thursday, 7 p.m. This Club is open to non-GEC Employees by invitation.. Telephone ARNold 1262 first. Sports Club, St. Augustin Avenue, North Wembley.

REGION 8

Haywards Heath (MSARS): — No meeting during August.

REGION 9

Bristol RSGB Group.—18 August, 7.15 p.m., Transport House, Victoria Street, Bristol 1.
(BARC).—Mondays and Thursdays, 7.30 p.m., 43 Ducie Road, Barton Hill, Bristol 5.
Burnham-on-Sea (B-o-SARS).—Second Tuesday in each month, 8 p.m., Crown Hotel, Oxford Street, Burnham-on-Sea.
Camborne (CRAC).—First Thursday in each month, Staff Recreation Hall, SWEB Headquarters, Pool, Nr. Camborne.
(CRAC V.H.F. Group).—Third Thursday in each month, 7.30 p.m., The Coach and Horses, Ryder Street, Truro.
Exeter.—First Tuesday in each month, 7.30 p.m., George & Dragon Inn, Blackboy Road, Exeter.
Plymouth (PRC).—Tuesdays, 7.30 p.m., Virginia House, Bretonside, Plymouth.
Saltash (S & DRAC).—Alternate Tuesdays, 7.30 p.m., Burraton Toc H Hall, Warraton Road, Saltash.
South Dorset (SDRS).—First Friday in each month, 7.30 p.m., Labour Rooms, West Walks, Dorchester.
Taunton.—Alternate Thursdays, 7 p.m., Lecture Theatre, Taunton Technical College.
Torquay (TARS).—Last Saturday in each month, 7.30 p.m., Club HQ, Belgrave Road, Torquay.
Wells (WARS).—Mondays from 8 p.m., EMIE (Wells) Sports and Social Club, Chamberlain Street, Wells, Somerset.
Weston-super-Mare.—First Friday in each month, 7.30 p.m., Technical College.
Yeovil (YARC).—Wednesdays, 7.30 p.m., Park Lodge, The Park, Yeovil.

REGION 10

Blackwood (ARC).—Fridays (Lecture Programme with section devoted to RAE), 7.30 p.m., Blanche Cottage, off High Street, Blackwood, Mon.
Cardiff (RSGB Group).—14 August. (Discussion on VHF Field Day), 7.30 p.m., TA Centre, Park Street, Cardiff.

REGION 14

Ayrshire (AARG).—9, 23 August, 7.30 p.m., Seaforth House, Seaforth Road, Ayr.
Auchenharvie (A & DARS).—3, 8, 10, 15, 17, 22, 24, 29, 31 August, 7.30 p.m. Auchenharvie Community Centre, Stevenston.
North Ayrshire (NAARC ATC).—6 August, 7.30 p.m., Ardrossan ATC, The Academy, Ardrossan.
Glasgow University (GURC).—11 August, (Club Night), 25 August (Workshop Night) 7.30 p.m., Engineering North Building, University of Glasgow.
Lowland Royal Signals ARC.—Tuesdays August, 7.30 p.m., 21 Jardine Street, Glasgow.
Greenock (G & DARC).— 11, 25 August, 7.30 p.m., Arts' Guild, Campbell Street, Greenock.
Mid-Lanark RSGB Group.—18 August (Components and how to get the best from them), 7.30 p.m., YMCA, Brandon Street, Motherwell.

REGION 15

Belfast and District RSGB Group.—Third Wednesday in each month 8 p.m., War Memorial Building, Waring Street, Belfast.

REGION 16

Basildon (BDARS).—Details from W. Borlase,BRS 27519, 24 Clavering Gardens, West Horndon, Brentwood, Essex.
Chelmsford (CARS).—5 September, 7.30 p.m., Marconi College, Arbour Lane, Chelmsford.
Colchester (CARC).—Meetings each Wednesday during term. 7 p.m. Room 40, Colchester Technical College, Sheepen Road, Colchester. Details from G3SJO.
Great Yarmouth (GYRC).—Fridays, 7.30 p.m. 98 Market Road South, Great Yarmouth.
Ipswich (IRC).—17 August. Visit "Tolly-Cobbold Brewery." 30 August—"Workshop practice"—J. Rutherford. Red Cross HQ, Gippeswyh Hall, Ipswich.
Norwich (NARC).—Mondays, 7.30 p.m. Old Lakenham Hall, Mansfield Lane, Norwich.

REGION 17

Basingstoke (BARC).—Third Saturday in the month (except August), 7 p.m., Immanuel Hall, Wate Street.
Harwell AERE (ARC).—Third Tuesday in the month, 7.30 p.m. Social Club, AERE Harewell.
Portsmouth (P & DRS).—Wednesdays, 7.30 p.m., Room 5, Twyford Avenue Community Centre, Portsmouth.
Southampton (RSGB Group).—Second Saturday in the month, 7 p.m., Engineering Lecture Theatre, Lanchester Building, The University, Southampton.

LOOKING AHEAD

13 August.—Region 1 (NW) V.H.F. Field Day.

26 September.—Electronics, Instruments, Controls and Components Exhibition and Convention, Belle Vue, Manchester.

27-30 September.—RSGB International Radio Engineering and Communications Exhibition, New Horticultural Hall, Vincent Square, SW1.

Amateur Radio Call Book

The following are corrections to the 1967 edition of the *RSGB Amateur Radio Call Book*:

G2HNU, D. W. Byrne, 89 Ferry Street, Stapenhill, Burton-on-Trent, Staffs.

G3DNC, C. C. Bradwin, 11 Meath Close, St. Mary Cray, Orpington, Kent.

CONTESTS DIARY

12-13 August	—Second 432 Mc/s Contest (Open)* (see page 474)
12-13 August	—WAEDC (C.W.)
14 August	—144 Mc/s S.S,B. Contest (see page 534)
26-27 August	—All Asian DX Contest (C.W.)
2-3 September	—V.H.F. NFD/IARU Contest (see page 108, February, 1967)
9-10 September	—WAEDC (phone)
10 September	—80 Metre Field Day (see page 259, April)
16-17 September	—Scandinavian Activity Contest (C.W.)
23-24 September	—Scandinavian Activity Contest (Phone)
30 Sept.—1 Oct.	—VK/ZL/Oceania Contest (Phone)
7-8 October	—Second 1296 Mc/s Contest (Open)*
7-8 October	—RAEN Contest (see page 465)
7-8 October	—VK/ZL Oceania DX (Phone) Contest 1967
7-8 October	—VK/ZL/Oceania Contest (C.W.)
7-8 October	—WADM (C.W.)
14-15 October	—RSGB 21-28 Mc/s Telephony Contest (see page 257, April)
14-15 October	—Third 432 Mc/s Contest (Open)*
14-15 October	—VK/ZL Oceania DX (C.W.) Contest 1967
15 October	—D/F National Final
21-22 October	—CQ WW DX Contest (Phone)
28-29 October	—RSGB 7 Mc/s DX Contest (Phone) D/F National Final
11-12 November	—RSGB 7 Mc/s DX Contest (C.W.)
12 November	—International OK DX Contest (C.W.)
18-19 November	—Second Top Band Contest
25-26 November	—CQ WW DX Contest (C. W.)
3 December	—Fourth 70 Mc/s Contest (C.W.)

*Qualifying contests for V.H.F./U.H.F. Listeners' Championship.

MEMBERS' ADS

These advertisements are published free of charge for the benefit of the Society's members. The number of words is limited to 30 (not including the address), and we cannot give any guarantee that an advert will appear in any specific issue. It is essential that we receive the advertisement at RSGB Headquarters by the first of the month for the following issue, and it must be accompanied by the wrapper from the previous month's BULLETIN. The address on the wrapper must, of course, agree with that in the advertisement. We cannot accept any responsibility for mistakes, but please print or type the advertisement to minimise the chances of errors being introduced.

No trade announcements can be used, but these can be submitted in the usual way for Classified Advertisements.

FOR SALE

Vertical Aerial Mk 1, 32 ft. plus whip, £3 3s. Transformer, 240V primary, 115V secondary, rated at 1·5kW, £6, carriage extra. H. Tonks, G3JFL, 11 St. Edwards Road, Bournbrook, Birmingham 29, Warwickshire.

HRO with coils and p.s.u. £7. Wanted QQV03-20A valve. J. C. Foster, G2JF, Wye College (University of London), Nr. Ashford, Kent.

G2DAF receiver, transmitter 160, 80 and 20m, Kokusai filter, vox, c.w., 120W p.e.p., p.s.u., microphone, offers. B. C. Poole, G3MLP, Roberts Street, Rushden, Northants.

Minimitter MC8 h.f. converter, three g.c. bands, with bandspread over five amateur bands, i.f. output 1·5 Mc/s. Mains p.s.u. built in with provision for 12V p.s.u. £8. A. Hart, BRS14181, 117 Windermere Avenue, Kirk Hallam, Ilkeston, Derbyshire.

1R5, 1T4, 1X2B, 3AU6, 5AN8, 5J6, 5U8, 5Y3GT, 6AB8, 6AK5, 6BQ7A, 6BR7, 6BX6, 6C4, 6FI5, EF80, ECL80, 12AT7, 12AU7. 10s. for six, many others, state needs with s.a.e. G. A. Jeapes, G2XV, 165 Cambridge Road, Great Shelford, Cambridge.

9R-59 communications receiver, only nine months old, as new, cost 33 gns., accept £25 o.n.o., carriage paid UK. J. H. Clark, A5495, "Greengates," Tytherington Park Road, Macclesfield, Cheshire.

Hour meter, 250V 50c/s, 25s. Wanted, crystals for 8273, 8275, 15,000 and 30,000 kc/s. G. Jones, 24 Walters Road, Llanelly, Carmarthenshire.

Panda Cub transmitter, 160 to 10 m, 25W phone, 40W c.w. (10W on 160m). Good condition, £25. Panda a.t.u. will handle 150W, Good condition, £3. M. J. Humphries, G3LRQ, 42 Plume Avenue, Maldon Essex.

Pye Transmitter, mains, Cathodeon crystal, on 70·36 Mc/s, Philpotts case, fully metered, £12 10s., UM3 Modulation transformer 25s., 829B, 832A, U82, 10s. each post free. Wanted. Alaz Adaptor. D. E. Knowles, G3UVA, 92 Dicksons Drive, Chester, Cheshire.

Sphinx s.s.b. transmitter with Silplug Rectifier and Delta control unit, both unmarked and in very good condition. Professionally overhauled 12 months ago. No TVI-BCI complaints. Offers. J. S. Cushing, G3KHC, 48 Kinfauns Road, Goodmayes, Ilford, Essex.

Eddystone EC10 receiver, £35, Panda Cub transmitter, 160-10m, £25, Codar AT5 transmitter with d.c. and a.c. p.s.u., £25, TW 2m Nuvistor converter, a.c. p.s.u., £15, B44 Mk 2, £6. G. R. Lambert, G3TUO, 24 Newnham Close, Loughton, Essex.

Rack mounted 19 in. chassis, stripped, 12s. 6d. Geloso 2m v.f.o. brand new, £4. Cadenza ribbon microphone, £3 10s., Walter tape recorder, 3¾-7½ i.p.s., £10. Wanted, two 6CL6s. G. N. Dale, G3PZF, 18 Lezayre Road, Green Street Green, Orpington, Kent.

Hallicrafters HT41 linear amplifier, brand new with unused valves. Original price over £150, accept £70. E. J. Allaway, G3FKM, 10 Knightlow Road, Birmingham 17.

Advance Volstat, constant voltage transformer, CV1000, input 190-260V 50 c/s output 240V 500W and 0-60-70V at 7 amps, £15 o.n.o. Wanted, McCoy 9 Mc/s Crystal filter. M. A. Trundle, G3TCG, 16 Stephens Crescent, Horndon-on-the-Hill, Essex.

Top Band Command receiver, £4, Q5'er Command receiver (less one valve), £3 10s. Buyer collects. C. Wallis, G3CWV, 28 Larkway, Brickhill, Bedford.

Transistor Tester. Beulah D-909 mint, tests p.n.p. and n.p.n. transistors, checks a.c. gain, d.c. gain and leakage, also provides centre tapped d.c. p.s. 0-25V at 25mA. G. P. Watts, A3129, 62 Belmore Road, Norwich, Norfolk. NOR 72T.

R107, £8, SCR522 incomplete 10s., r.f. unit, 100-156 Mc/s 10s., BC788 420 Mc/s incomplete, 10s. Buyer collects or carriage extra. J. W. Thompson, BRS27874, White House, Tollerton, York.

BC221 with charts £13 10s., Hallicrafters S20, 28-143 Mc/s a.m./f.m./c.w. £20. TW 2m converter with p.s.u., i.f. 28-30 Mc/s, £7 10s. Another without p.s.u., i.f. 3-4 Mc/s £5. All carriage paid. H. Jones, Burnbank, Goosewell Hill, Eggbuckland, Nr. Plymouth, Devon.

R107 with PR30X codar preselector (few spare valves) £17. Buyer collects or carriage extra. J. A. Hazelton, BRS26599, 18 Knox Gardens, Clacton-on-Sea, Essex.

Collins KWM1 transceiver, with a.c. and d.c. p.s.u., noise blanker, DX and Novice adaptor, many extra crystals. Bargain £160. J. F. Mortimer, G2MF, 51 Townhead Road, Dore, Sheffield.

19 Set, £3, p.s.u. 10s., 46 Set 10s., 28 Mc/s Walkie Talkies £4, Crystal Calibrator 20s., 70cm 14 element beam 20s. Wanted. s.s.b. exciter driver, any frequency, send details and price. D. Woodall, G8ANY-G6ABY/T, 67 Belvere Avenue, Blackpool, Lancs.

Codar Preselector, PR30X, £4 18s. Wanted. s.s.b. transceiver. R. V. Beeker, G3WY, 18 Lincoln Close, Church Road, Tupsley, Hereford.

Trio 9R-59 communications receiver, as new, £28. C. G. Munday, A4749, 119 Constance Crescent, Hayes, Bromley, Kent.

Labgear 300 and matching p.s.u.-modulator, in very good condition, £50 o.n.o. Might deliver reasonable distance. L. F. Ivin, G5IC, "Oakville," Longden Common Lane, Longden, Shrewsbury, Salop

12 off 4X150A in exchange for v.h.f. gear. P. I. Park, GM3PIP, 23 South Street, Mintlaw, Aberdeenshire.

S.s.b. package-kit less chassis, cabinet and p.s.u. £17. BC453 perfect £4. Oscilloscope, Lab. built, spare VCR97, £5. Mains transformers, chokes, large and small, cheap, state requirements. C. C. Olley, G3AIZ, 157 Wanstead Park Road, Ilford, Essex.

Geloso G209R receiver. As new. Full manufacturer's handbook, £36. S. N. Andrews, BRS21861, 34 Rawcliffe Lane, Clifton, York.

Cossor 339 scope with manual £10. v.h.f. lecher line TX127 17s. 6d. Command transmitter 4-5·3 Mc/s £2. Solartron Stabilized p.s.u. AS516 unused 250V 50mA, £2 10s., 19 Set variometer 7s. 6d. All carriage paid. G. R. Steele, G3SIY, 39 Kerriebank Avenue, Grangemouth, Stirlingshire.

Complete 150W station of the late G2JN. Minimitter Mercury transmitter with l.p. filter, Eddystone 888 with matching l.s. and plinth, BC221, bug key, microphone and earphones. One lot £99 for quick sale. Mrs. J. G. Stonestreet, 1 Chafy Crescent, Sturry, Canterbury, Kent.

Series stabilized valve p.s.u. 300V, 150 mA, 28V, 150V, 6·3V, metered, 6 in. × 10 in. × 12 in., professionally styled cabinet, cream and red, £12 o.n.o. Heathkit stereo pre-amp £4. Excellent condition. S. F. Weber, 65 Combemartin Road, Southfields, London, SW18.

Collins 75A4, 160m-10m. £200. Collins 75A3, 160m-10m. £165. Heathkit transceiver HW32E with HP23 p.s.u., HRA101 Calibrator, GH12 microphone, five hours use £60. Heathkit SB401E transmitter, little used £135 o.n.o. (phone 65132), R. A. McCarty, G3OEM, 1 Baden Road, Brighton 7, Sussex.

Commercial v.h.f. units, transmitter, i.f., 10·7 Mc/s crystal filter-a.f., Mod., 12V p.s.u. all transistor except transmitter, £8 with circuit. Split £10 10s. Two FET 2N3819, £1 each. Heathkit OS1 £15. (Tele: WG23676 after 6 p.m.), R. A. Butterworth, G8BI, 20 Ravenfield Road, Welwyn Garden City, Herts.

Must clear surplus gear including valves, transformers, coils, all very cheap—space wanted! s.a.e. for lists. Wanted Shure 444 microphone. E. H. Trowell, G2HKU, "Hamlyn," Saxon Avenue, Minster, Sheppy, Kent.

Eddystone 840A receiver, 480 kc/s-30 Mc/s in four bands, fitted mounting blocks, mint. £25. G. Cooper, G3HJP, 73 Easterly Crescent Leeds 8, Yorkshire.

Codar RQ10 Q Multiplier, used a few hours only. £5. P. C. Howie, A4694, 26 Cheviot Road, Mount Estate, Rock Ferry, Cheshire.

Brand new, Green and Davis 2m transmitter, CTX2 complete with crystal. Unused and in original wrapping. Best offer over £2. S. R. R. Kharbanda, 39 London Road, Harston, Cambs.

Geloso v.f.o. 4/102 on part built chassis £6. Transmitter chassis containing v.f.o., Labgear wide-band coupler unit, £4. Wilcox-Gay v.f.o. £3 or exchange for 2m gear, hi-fi or w.h.y. C. J. M. Wozencroft, GW3GIN, 50 Romilly Road, Cardiff, South Wales.

HRO Senior, professionally re-aligned, resprayed hammer grey on black l/s plinth, coils in black case. GC 1·7 Mc/s-30 Mc/s BS 10m, 20m, 40, p.s.u. Perfect at £30. W. M. Miller, BRS28052, Old Brewery, Cooksbridge, Lewes, Sussex.

Two auto transformers, Woden 350W and 550W, 110V-200V to 250V, £2 10s. and £3 10s. Buyer collects. R. H. Lloyd, BRS8048, 52 Lees Terrace, Bradley, Bilston, Staffs.

AR88LF receiver in case v.g.c. £36, will deliver 50 miles. AVO signal Generator 95 kc/s to 80 Mc/s turret switch £6. Minimitter Miniciter, £6. S. B. Lord, G3PHN, Newfield House, Moira, Nr. Burton-on-Trent.

R109A, 6V, mint spare valves, vibrator, ideal for mobile etc, £5 10s., Johnson Caliband 2 speed dial drive 10s., six new HC-6/U crystals, 10s., three 6CW4 nuvistor valves, 5s. 6d. each, two 2N3819 FET new 10s. 6d. D. Bowers, BRS26760, 95 Grenfell Avenue, Saltash, Cornwall.

Table Top transmitter, compact, 60W, a.m./c.w. 6146 p.a., modulator, built-in p.s.u. Labgear wide band coupler, Labgear switched tank coil, 80m-10m, £25. Compact Top-Band a.m./c.w. transmitter, Built Modulator and p.s.u. £10. R. J. Robson, G3RYJ, 99 Balmoral Road, Fairfield Park, Hensingham, Whitehaven, Cumberland.

Eddystone B34 (358) receiver, unmodified, complete, with five coils and p.s.u., £11 including carriage. Wanted—GDO. R. T. Trull, G3RAD, 1 Approach Road, Broadstairs, Kent.

Crystal Calibrator No. 10, manual, spare valves, 15s. Buyer collects, H. Worsley, G2BCO, 9 Norwood Road, Gatley, Cheadle, Cheshire.

SX28 receiver, Mec. Filter modernized i.f., a.v.c., product detector, Q Multiplier, Calibrator, £35 or part exchange AR88D/1. 4E27A valve exchange for 5B/254M8s or PL500s. C. T. Stagg, G3KPW, 62 Prospect Place, Grays, Essex.

Two SCR 522 transmitters, both for £1, nine vols of Radio Constructor £2. Radio parts, suitable for SWL, mostly free to callers, L. Arnold, G8AHE, 24 Albert Road, Stechford, Birmingham 33.

KW2000 and a.c. p.s.u. DX-40U. Labgear 160 twin transmitter with d.c. p.s.u. Offers. A. E. Peake, GW3SRG, "Winley," 70 Higher Lane, Mumbles, Swansea.

CR100, working but needs attention, £8. D. Thom, G3NKS, 12 Willow Road, Redhill, Surrey.

Two 4CX250B's almost new £5 each, also two bases and chimneys 50s. each. Co-ax relay, 50V d.c. fitted BNC sockets, new, with three BNC plugs, handle 150W at 70cm, new £2. R. E. Fenn, G3RTF, The Cot, Victory Road, West Mersea, Essex.

CSE 2A10 transmitter and CSE 2ATMA mobile aerial, mint £45. Labgear LG50 transmitter £30. Buyer collects. D. N. Hall, G3THR, 27 Ravencroft Park, Barnet, Herts.

Exchange or Sell Green and Davis 2m converter, i.f. 28 Mc/s-30 Mc/s. J. Beam 4 over 4 slot beam. Offers. Wanted 4m converter. W. Moorwood, G3CAQ, 4 Grafton Palce Mountford Estate, Bilston, Staffs.

Peak Power Meter with leads, manual £4. CR100 FB £16, 70cm base transmitter £11, Command receiver 80m 12V £5. 70cm Wavemeter £4. Wanted KW2000. E. Haydock, G3VKC, "Two Four," The Comyns, Bushey Heath, Herts. (Telephone 01-950 3387).

Johnson Air System valveholders for 4X150A and 4CX250B, silver plated contacts, new, less chimneys, £2 each, post paid. F. B. Jones, G2AKQ, Heathlands, Ashley Heath, Ringwood, Hants.

TW 2m Nuvistor converter, i.f. 24-26 Mc/s, Brand New in original wrapping, £10 10s. including postage. J-Beam 70cm 6 over 6 complete with mast clamps, 55s. including postage. R. B. Porter, G8AHQ, 11 Cranmore Avenue, Crosby, Liverpool 23, Lancs.

Meters. 200mA, 300mA and 500mA, 7s. 6d. each plus 2s. 6d. p.p. H. Beadle, G8UO, 12 Cartmel Road, Keighley, Yorks.

Marconi Valve Voltmeter TF428B/1, £15. AVO RC Bridge No. 2, £10. ATM AP66862 TU with brand new p.s.u., £9. Electrosil 50 ohm H39 dummy load, £3. Marconi TF144G signal generator, £17. T. R. Preece, G3TRP, 28 Stoneyfield Road, Old Coulsdon, Surrey.

KW Vanguard, 80m-10m v.g.c. £28. Olympic Z-Match 25W or suit SWL, factory made in mint condition, £3. M. Harrison, G3USF, 20 Church Plantation, University of Keele, Staffs.

BC221 with p.s.u., £25. Heathkit O-12U scope £20. V7U-VTVM £10. RTTY. FSR11/12 TU-CRM-1 £20. Blue Box 4m transmitter £8. El-Bug £6. Home Built s.s.b. unit £50 o.n.o. s.a.e. for list. R. J. Cooke, G3LDI, 163 Norwich Road, Wymondham, Norfolk.

CE44, 100-150 v.h.f. ground receiver. Miniature valves, b.f.o., r.f. and a.f. gain, rack mounting, circuit diagram, £4. E. C. F. Perry, BRS27313, 97 Southview Drive, Westcliff on Sea, Essex.

Offers. 19 Set, modified p.a., new modulator, crystal microphone, input, speaker output, mains p.s.u. (750V 120mA, 400V 160mA, 12V 5A and other voltages), Commercial rig quality. Also R1155. J. R. McKellar, G3VIZ, 18 Cheney Street, Eastcote, Pinner, Middlesex.

Top Band transmitter, complete with v.f.o. p.s.u. and modulator. 75 ohms aerial impedance. £9. s.a.e. for details. J. L. Colebrook, G3BJD, 45 Lingmell Crescent, Seascale, Cumberland.

Linear Amplifier, full legal power 4 x 6HF5 in two compact matching units, built in low pass filter, superb appearance, professionally built, first £50 accepted. R. J. Toby, G2CDN, 13 Wood Lane, Isleworth, Middlesex.

DX100U transmitter, £45. Mint condition, no mods. Factory checked. Free delivery 50 miles. P. A. Bubb, G3UWJ, 58 Greenacres, Upper Weston, Bath, Somerset.

R1155 with p.s.u. and output valve, £6. Two Bendix RA10DB receivers, two Command transmitters—modified—£1 each. Q 5er £2 10s. Buyer collects. (Telephone 4700) D. R. Doughty, G3FLS, 36 Spinney Hill Drive, Loughborough.

450 ft. morse practice tape, 15s. W. H. Davis, G3WMO, 23 Hillside Crescent, Enfield, Middlesex.

WANTED

RTTY—Urgently required, auto-transmitter in any working condition. A. J. Masson, GM3PSP, 20 Merchiston Park, Edinburgh 10.

Two cheap receivers for SWLs. Repairable suit. Under £4. Collect reasonable distance. F. G. Rayer, G3OGR, Reddings, Longdon Heath, Upton on Severn, Worcs.

Carrier Crystal for 456·4 kc/s. FT243 channel 329 if possible. D. S. Buller, G3LQT, 10 Gauntlet Crescent, Hayes Lane, Kenley, Surrey.

HRO coils except ranges 1·7-4 Mc/s, 3·5-7·3 Mc/s, 7·0-14·4 Mc/s and 14-30 Mc/s. Exchange these ranges or buy. Flt.-Lt. N. F. Cutter, 1 Fosseway Close, Colerne, Chippenham, Wilts.

Transmitter, Receiver or Test Equipment. Will exchange Polaroid 103 instant colour camera, cost £40 new. All letters answered. J. H. Stacey, BRS27993, 3 West Park, South Molton, Devon.

VK and ZL volunteers to locate certain old copies of *Amateur Radio* and *Break-In* magazines, dated 1928-1944, to complete files. Detailed lists supplied, all expenses re-imbursed. F. A. Herridge, G3IDG, 96 George Street, Basingstoke, Hants.

Amateur Bands receiver, 160-10m, price up to £50, also s.s.b. transmitter or transceiver. For Sale. W1649 wavemeter, with crystal and handbook 140-240 Mc/s 25s. G. H. Kaye, G3VFG, 29 Bainbridge Road, Leeds 6.

Transistor receiver-converter, QRP transmitters, 160-4m, petrol charger, portable aerial mast (urgent for August expedition). Also required, AR77, CR150, 209 Mk1, 1475, Minimitter or Codar Mobile Equipment. C. Verrinder, G2BAM, Woolland, Blandford, Dorset.

FT241 crystals 440-480 kc/s or set of Filter crystals for G2DAF receiver. State channel numbers for FT241. M. G. Rimmer, G3KDA, 98 The Leys, Bidford on Avon, Alcester, Warks.

"S" meter for an AR88D receiver. M.K. Vanden-Busken, A5517. The Chalet, 33 Whaley Road, Potters Bar, Herts.

70cm converter—state price and describe. H. Mercer, G8AQF, "Holmelea," 11 Beech Grove, Darwen.

Crystals—9 Mc/s, 8·375 Mc/s, 8·5 Mc/s and 6·625 Mc/s or within grinding range. Advise type and price. A. F. Dennis, G3CNV, 36 Coleshill Street, Sutton Coldfield, Warwickshire.

QST for 1966, CQ for 1965-1966. W. E. Gates, G3ENB, 1 Stonecross Road, Castle Park, Whitby, Yorks.

Two 4X150 valve bases, complete with chimneys. Please state price and condition. A. T. James, G3RUV, 18 Lonsdale Road, Heavitree, Exeter, Devon.

Valveholder for 4X150/4X250 series, air system type. Also 250 + 250 pF split-stator or two gang transmitting variable capacitor. D. J. Farman, A3636, 6 Ash Grove, Bush Hill Park, Enfield, Middlesex.

TA31 dipole, also G8KW or W3DZZ trapped dipole. E. V. Neal, G8GP, 34 Manor Avenue, Brockley, London, SE4.

Class D No. 2 wavemeter. No. ZA17174/1 (different from Class D Wavemeter). D. F. Stechman, BRS26083, 41 Ravensbourne Gardens, Barkingside, Ilford, Essex.

S.s.b. transceiver, AR88 cabinet, CT53 signal generator, AN/APA/38, IP/69/ALA/2, Hartley-Turner speaker, stereo pickup. D. Byrne, G3KPO, Jersey House, Eye, Peterborough.

Exchange BCC69, high band, p.s.u. and microphone, for fixed station v.h.f. c.w. transmitter. R. F. Stevens, G2BVN, 51 Pettits Lane, Romford, Essex.

Set of coils for G2DAF Mk111 receiver including i.f.'s. Also set of oscillator crystals and mechanical filter. J. I. Boyle, G3EXV, 18 Hollow Head Lane, Wiltshire, Lancs.

Klystron Type 723A/B and Waveguide Type WG16 (RG-52/U) details to, K. R. Punshon, 47 Essex Road, Lwyton, London, E10.

Prop Pitch motor, length 11 in. x mainfield body 11¼ in. round and 5 in. long, ⅜ in. shaft diameter and splined. E. G. Bright, G3JW, 8 Webley Road, St. Thomas, Exeter, Devon.

RSGB Annual 1928, Bulletin, July 1933 with cover, pre-war Eddystone manuals, "Short Wave Handbook," Robinson (Cassell, 1927), Call Books before 1937, "Television—SW World," 1935-1939, Any "SW Craft," F. A. Herridge, G3IDG, 96 George Street, Basingstoke, Hants.

MEMBERS' ADS MUST BE SENT TO RSGB, NOT SAWELL AND SONS LTD.

CLASSIFIED ADVERTISEMENTS

ADVERTISEMENT RATES. Members' Private Advertisements 3d. per word, minimum charge **5s. Trade Advertisements 9d. per word,** minimum charge **12s.** All capitals **1s.** per word, minimum charge **18s.** Write clearly. No responsibility accepted for errors. Use of Box number **1s. 6d.** extra. Send copy to **Sawell & Sons Ltd., 4 Ludgate Circus, London, E.C.4.** Remittances should be made payable to Sawell and Sons Ltd.

FOR SALE

ELECTRICAL magazines and equipment in excellent condition for sale. Apply for details enclosing s.a.e. to Box M7350, c/o RSGB BULLETIN, 4 Ludgate Circus, London E.C.4.

COLLINS TCS 12 receiver, two RF24 converters, 160-10 metres, power supply unit, plus many useful components and magazines, £14 o.n.o. Carriage available. J. P. Adkin, 31 Sherard Road, Eltham, London, S.E.9.

SALE OF SURPLUS SECOND HAND EQUIPMENT A Sale of Surplus Second Hand Test Equipment, Signal Generators, Test Sets, Various Units and Chassis, Components, Relays, Certain Valves and Tubes, will take place at 44A, Westbourne Grove, London, W.2 on Saturday, 30 September from 9 a.m. to 6 p.m. Nearest tube stations Bayswater and Royal Oak.

AERIAL MAST SECTIONS. Set of 10 × 3 ft. long × $\frac{7}{8}$ in. diameter tubular steel rods, screwed and socketed ends. Price 50/- set.—Bradfords, Ramsey, Harwich, Essex.

QSL CARDS: Two-colour, variable design, attractive from only £3 3s. per 1000 (inclusive). Send foolscap s.a.e. for samples to ARA Press, 68 Banks Road, Coventry.

XTALS, HC6U Holders, 39 to 41 Mc/s (Overtones), three different, our choice, 8/6d., p. & p. paid. Glasgow Electronic Services, 21 Old Dumbarton Road, Glasgow, C.3.

EDDYSTONE "358" Communications Receiver (1,250-22,000 kc/s). Separate power pack. Completely reconditioned. With circuits, £18. Many other accessories and components. 01.902.8775.

S.B.E.33 TRANSCEIVER—European coverage, perfect working, internal A.C. and external D.C. power supplies (Positive or Negative Chasis) V.O.X. Unit, Shure Mike, £110. **K.W. VICEROY M.K.111** with extra $\frac{1}{4}$ lattice filter, £110. **K.W. 77 RECEIVER** with matching speaker, £80. **BEAUTIFULLY BUILT LINEAR AMPLIFIER** 4 × 811's, 2000V, H.T., three meters on engraved panel, £70. **T.W. 2M CONVERTER** nuvister, self powered, £10. G3OGB, 41 Queenborough Gardens, Ilford, Essex. CREscent 1697.

KW2000 G Line with A.C. power supply, as new condition, £155, with spare 6146B.—G13SCM, 78 Mourne Road, Lurgan, Co. Armagh, N.1.

KW VICEROY MK2 for sale, s.s.b./a.m./c.w. 200 watts, p.e.p. output, MOX, VOX, BK keying separate power unit, complete with handbook and re-valved—£75, o.n.o. AR88D—Good condition, no mods.—£35, o.n.o. Will deliver up to 100 miles.—G4BD, 4 Grendon Villas, Oxford Street, Rotherham. 'phone 77325.

EDDYSTONE E.C.10, plus STC earphones, as new, £40, o.n.o. Box M7349, c/o RSGB BULLETIN, 4 Ludgate Circus, London, E.C.4.

CRYSTAL FILTER. Complete set of crystals for three half lattice filters for G2DAF receiver complete with pair of oscillator crystals (8 crystals in all). FT241 type, centre frequency 453·7 kc/s, 60/-.—G3DJQ, Little Orchard, St. Lawrence, I.o.W.

QSL CARDS, not fancy, just useful, 15/- per 100, plus 1/- p. & p. Send your requirements to 15a Midmoor Road, London, SW12.

GOOD DX100U no TVI: excellent CW note: handbook and some spares: £50. G2RO, Bob Roberts, 61 Lowbrook Lane, Tidbury Green, Solihull, Warks. (Wythall 2099).

QSL CARDS. Attractive designs, 22/6 per 100, post free. S.a.e., samples, G3OYI, "Cotswold," Banks, Honley, Huddersfield.

METALWORK.—All types of cabinets, chassis, racks, etc., to your own specifications.—Philpott's Metalworks Ltd. (G4BI), Chapman Street, Loughborough.

QSL CARDS. G.P.O. approved log books, cheapest, best, prompt delivery. Samples.—Atkinson Bros., Printers, Looe, Cornwall.

QSL CARDS. One economical design, 15/- per 100 plus postage. S.A.E. sample.—GW3LXI QTHR.

100 PAGE illustrated catalogue No. 17 of Government and manufacturers electronic and mechanical surplus, also a complete new section of the latest semi-conductors and miniature components, includes a credit voucher for 2/6. Send for your copy now. Price 3/- Post Free. Arthur Sallis (Radio Control) Ltd., 93 North Road, Brighton.

50 ISSUES Journal BRIT.I.R.E. (I.E.R.E.), 1961/7. 12 issues proceedings I.E.R.E. What offers? Box No. M7348, c/o RSGB BULLETIN, 4 Ludgate Circus, London, E.C.4.

WG 16 X-BAND crystal Holders with two unmarked diodes similar to SIM 2, CS3B, 20/- each. Mullard Diodes OA 85, OA 95, 8/- dozen. Texas Diodes 1S132 200 PIV 200MA, 1/- each. GEX Diodes SX643 180 PIV 200MA, 5/- dozen. FT 241A 200 Mc/s Crystals, 6/6 each. 10X 500 Kc/s 6/6 each. Aircraft Transmitter Receiver type 1520 144 Mc/s 24 volt input with 1 x TT15 1 x QV04-7, 8 x EF91 5 x EL91, 3 x EF92, 2 x 6C4 and 1 x 6AL5, £6 19s. 6d., carriage paid. Fairchild Transistors P346A, 3/6, 2N915, 3/6, Mullard Transistors BCY33, 34, 38, 4/- each. BFY 50, 51, 52, 53, 4/6 each, AFZ12, 4/6. Untested Transistors NPN, PNP, AF, RF, marked, unmarked, 25/- per 200. Black Moulded B9A Valveholders with skirt, 3/- dozen. J. Birkett, 25 The Strait, Lincoln. Phone 20767.

SCR522 Transmitter receiver with valves in original case £3. Practical Electronics no. 1 to present issue, offers. No. 3 P.U. 5/-, callers only. G3VYU, 40 Elmfield Road, Peterborough.

H.R.O. MANUAL INFORMATION. Theoretical circuit and pictorial diagram, adjustment points all stages, with complete realignment procedure, components lists, values etc. Installation, operation, special features, notes etc. 15s. 6d. Send S.A.E. for indexed details. G3ANK, 145A, Station Road, Sidcup, Kent.

K.N. VANGUARD MK II 10-160 Metres. BC.348. RX Joystick 4 R.F. Tuner and Wavemeter. Complete Station, £50. G3DWS. Phone PRIory 6267.

SITUATIONS VACANT

DAYSTROM LIMITED

SERVICE ENGINEER. Excellent opportunity offered enthusiast to join our team at Gloucester servicing our wide range of Heathkit Amateur equipment. A practising amateur essential. Ideal opening for suitable young man since training will be given. Please write giving details of qualifications, experience and salary required to Personnel Officer, Daystrom Limited, Gloucester.

INTERESTING OPENING for 'Ham' exists as Assistant R.F. Heating Engineer. Job requires some ability in general engineering workshop practice, including welding and silver soldering, in addition to a knowledge of the construction of amateur transmitters. Associated with this work is a growing amount of transister servicing. Training in any of the above skills, will be given. Please write, giving full details of experience, etc., to :

R. A. Moir,
Personnel Manager,
Weyburn Engineering Co. Ltd.,
Elstead, Godalming,
Surrey

EDUCATIONAL

RADIO, City & Guilds, R.T.E.B. Certs., etc., on " Satisfaction or Refund of Fee terms. Thousands of passes. For full details of exams and home training Courses (including practical equipment) in all branches of Radio, Electronics, etc., write for 132-page Handbook—*Free*. Please state subject. British Institute of Engineering Technology (Dept. 200K), Aldermaston Court, Aldermaston, Berks.

WANTED

WANTED FOR CASH. Certain types of scrap relays and contact springs from G.P.O. type relays. S.a.e. to " Lanco " 76 Sedgemoor Road, Willenhall, Coventry, Warks.

MISCELLANEOUS

HOLIDAYS, 17 comfortable rooms, full pension 12½-16 gns. week. Bed, breakfast, 35/-, licensed. Operational 10-15-20-80 metres, s.s.b. Overlooking sea at the famous Leas. Brochures, G3NVA, Rhodesia Hotel, Folkestone. Phone 53712.

PATENTS and TRADE MARKS.—Booklet on request. Kings Patent Agency Ltd. (B. T. King, G5TA, Mem. RSGB, Reg. Pat. Agent).—146a Queen Victoria Street, London, E.C.4. Tel. 01-248 6161. 60 years' refs.

4M or 2M. Considering building Transistorised Portable gear. Co-operation or information welcome. G3IDD, 17 Queens Road, Leytonstone, London, E.11.

TO LET. Rural Bungalow. Garage, Kitchen, Bathroom and four other rooms. Telephone. Two half rate storage circuits, ample space outdoors. Rayer, Reddings, Longdon Heath, Upton-on-Severn, Worcester.

G3WGU. Parents of radio ham have holiday flats with facilities for repairs, evenings, vacancies most dates. Williamson, 3 Beaufort Avenue, Bispham. Tel.: 53126.

assistant telecommunications engineers

Required by the EAST AFRICAN POSTS AND TELECOMMUNICATIONS ADMINISTRATION on contract for one tour of 24 months in the first instance. Commencing annual salary £1,994 in scale rising to £2,262 (including allowances). Gratuity 25% of total basic salary and overseas addition. Generous overseas installation grant. Free passages. Liberal leave on full salary. Accommodation provided at low rental. Education allowances.

Candidates between 28 and 45 years of age, must have a wide telecommunications engineering background and possess sound experience and a thorough knowledge of one or more of the following:—(i) Automatic telephony; (ii) Carrier and transmission; (iii) Power plant; (iv) Telegraph equipment; (v) Overhead trunk routes; (vi) Engineering construction (Internal); (vii) General area maintenance including Subscribers apparatus, underground cables and overhead lines; (viii) V.H.F. Radio. A City and Guilds Intermediate Certificate and a pass in one of the following is also required:—(a) Telephone Exchange Systems grade 2; (b) Radio Grade 2; (c) Telegraphy Grade 2; (d) Line Transmission Grade 2. Selected officers will be required to train African staff and some duties may involve spending long periods on safari in training areas.

Apply to CROWN AGENTS, M. Dept., 4, Millbank, London, S.W.1., for application form and further particulars, stating name, age, brief details of qualifications and experience, and quoting reference M3D/62721/63005/RC.

INDEX TO ADVERTISERS

Amateur Radio Call Book (1967 ed., RSGB)	6/6
Antenna Book (10th ed., ARRL)	18/6
Antenna Handbook (Vol. I, *CQ*)	28/–
Antenna Roundup (Vol. I, *CQ*)	23/6
Antenna Roundup (Vol. 2, *CQ*)	30/–
Basic Electricity *(Dover)*	25/6
Basic Electronics *(Dover)*	23/6
Basic Theory and Application of Transistors *(Dover)*	11/6
Beam Antenna Handbook *(Radio Pubs.)*	28/–
Better Short Wave Reception *(Radio Pubs.)*	25/3
Care and Feeding of a Ham Club *(73)*	8/–
Communications Receivers (2nd. ed., RSGB)	3/–
Course in Radio Fundamentals (ARRL)	10/–
CQ Anthology, 1945–52 (*CQ*)	16/–
CQ Anthology, 1952–59, (*CQ*)	23/6
Cubical Quad Antennas *(Radio Pubs.)*	22/–
Dictionary of Electronics (*Penquin*)	8/–
Dictionary of Radio and Television (*Newnes*)	38/–
Electronic Construction Handbook (*Radio Pubs.*)	22/6
Electrons, Atoms, Metals and Alloys (*Dover*)	19/6
Foundations of Wireless (*Iliffe*)	22/6
Guide to Amateur Radio (12th ed., RSGB)	5/9
Guide to Broadcasting Stations (*Iliffe*)	6/6
Ham's Interpreter (5th ed.)	8/6
Hints and Kinks (Vol. 7, ARRL)	10/–
How to Listen to the World	26/–
Matter and Light — The New Physics (*Dover*)	16/3
Mobile Handbook (*CQ*)	23/–
Mobile Manual for Radio Amateurs (ARRL)	23/6
Morse Code for Radio Amateurs (4th ed., RSGB)	2/–
New Sideband Handbook (*CQ*)	24/–
Outline of Radio and Television (*Newnes*)	34/6
Parametric Amplifiers *(73)*	15/–
Radio Amateur Operator's Handbook (*Data*)	5/6
Radio Amateurs' Examination Manual (5th. ed., RSGB)	5/9
Radio Amateur's Handbook (ARRL) Soft-bound	44/–
Hardbound	52/–
Radio Amateur's Operating Manual (ARRL)	7/9
Radio Amateur's V.H.F. Manual (ARRL)	18/6
Radio Amateur's Vocabulary (German/English)	9/3
Radio Handbook (Ed. & Eng.)	86/6
RCA Linear Integrated Circuit Fundamentals (RCA)	22/6
RTTY Handbook (*CQ*)	30/–
Semaphore to Satellite (ITU)	75/–
Service Valve and Semiconductor Equivalents	5/6
Shop and Shack Shortcuts (*CQ*)	29/6
Short Wave Listening (*Iliffe*)	13/3
Short Wave Radio and the Ionosphere *(Iliffe)*	12/-
Short Wave Receivers for the Beginner *(Data)*	6/6
Simplified Maths for the Hamshack *(73)*	4/6
Single Sideband for the Amateur (4th ed., ARRL)	22/6
S.S.B. Equipment (RSGB)	3/–
S-9 Signals (*Radio Pubs.*)	8/6
Technical Topics for the Radio Amateur (RSGB)	10/9
Test Equipment Handbook *(73)*	4/6
Transistor Radio Handbook *(Ed. & Eng.)*	42/6
Understanding Amateur Radio (ARRL)	18/6
USA Licence Manual (ARRL)	5/–
Understanding Television (*Data*)	40/–
V.H.F. Antenna Handbook *(73)*	15/–
Wireless World Radio Valve Data	10/6
World Radio-TV Handbook (1967)	33/9

Prices include postage. Stamps and book tokens cannot be accepted.

RSGB PUBLICATIONS

LOG BOOKS

Listener's and Observer's Log	7/3
Martin's Log	22/6
Mobile Mini-Log	3/10
RSGB Standard Log	7/3
RSGB V.H.F. Contest Log	7/3
Radio Station Log	7/3

MORSE TUITION

G3HSC Rhythm Method of Morse Tuition	
Complete course: two 3-speed L.P. records and one E.P. record + books	84/–
Beginner's course: one 3-speed L.P. and one E.P. + books	60/6
Beginner's L.P. (0–15 w.p.m.) + book	50/–
Advanced L.P. (9–42 w.p.m.) + book	50/–
Three speed simulated GPO test, 7 in. d.s. E.P. record	15/–
RSGB Morse Instruction Tape (900 ft.)	35/–
RSGB Morse Practice Tape (450 ft.)	20/–

MISCELLANEOUS

Easibinders, round backed, gold blocked, for RSGB Bulletin	16/6
Easibinder Year Stickers (1965, 1966 or 1967)	1/6
Great Circle Maps (Admiralty) (in postal tube)	8/–
RSGB Countries List	1/–
Transfers, Panel Signs (*Data*)	
Set 3: white wording	4/9
Set 4: black wording	4/9
Set 5: dials (clear background)	4/9
Set 6: dials (black background)	4/9
Blick Dry Print Lettering (letters and numerals, black)	2/6

28 LITTLE RUSSELL STREET, LONDON, WC1

Printed in Great Britain for the RADIO SOCIETY OF GREAT BRITAIN, New Ruskin House, Little Russell Street, London, WC1
by The Garden City Press Limited, Letchworth, Hertfordshire.

IF UNDELIVERED Return to:— RSGB, NEW RUSKIN HOUSE, LITTLE RUSSELL STREET, WCI