

R S G B

FEBRUARY, 1958

BULLETIN

2/6 Monthly

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

VOL. 33, NO. 8

an unsolicited

Testimonia

to the makers of the
PANDA 'CUB'

(which fully confirms the opinion
of many users of our famous
Panda 'Cub' Transmitters)

December 21st, 1957.

Panda Radio Co. Ltd.,
16-18 Heywood Rd.,
Castleton, Rochdale, Lancs.

Dear Sir,

After some months use of one of your "Panda Cubs,"
I feel it is time to drop you a line and to let you know my opinion
of this little transmitter.

This can be summed up in the two words "COMPLETELY
SATISFIED." My only regret is that I didn't have one years ago.

Stations worked on 21 Mc/s include:—
W1 to W0 RST ranging from 559 to 599 KH6 RST 459
LU6 RST 569 ZL2 RST 559
ZC4 RST 589 PY7 RST 569
OQ5 RST 559 CX7 RST 569
KL7 RST 559 ZS6 RST 559

All the above were worked on a 138 ft. end-fed antenna, the
fed end of which is only about 12 ft. above ground.

Regarding the other bands, the usual European stations
have been worked on 3.5 Mc/s, also W1YNP from whom a
report of RST 5 6/79 was obtained; on 7.0 Mc/s a number of
W's have been worked; ditto on 14 Mc/s.

While the above does not constitute an impressive list of
DX, taking into consideration the nature of the antenna in use,
I am very well satisfied, and TVI, of course, is non-existent.

May I close by wishing you and all your staff the Season's
Greetings, and best wishes for a happy 1958.

Yours sincerely,
R. Hargreaves, G3EJV

The original
letter can be
seen at the
advertis-
ement office of
the 'Bulletin'



Cash Price £59.10.0

or £12 deposit, and 8 monthly payments
of £6.14.4. Delivery in 7 days.

PANDA RADIO Co. Ltd.

16-18 Heywood Road, Castleton, Rochdale, Lancs. Tel: Castleton 57396

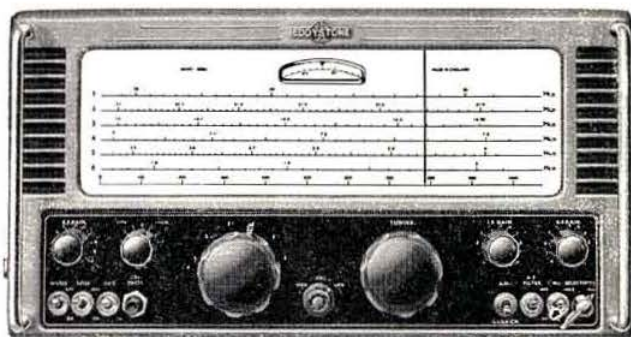
DEVOTED TO THE SCIENCE AND ADVANCEMENT OF AMATEUR RADIO

EDDYSTONE '888A' RECEIVER

AMATEURS BANDS ONLY — FULL BANDSPREAD

MAIN FEATURES

- Coverage of the six bands 1.8 Mc/s to 28 Mc/s, each spread over the full scale (12 in. long) and directly calibrated.
- Scale accuracy from 2 kc/s per division on 10 metres to 250 c/s on Top Band.
- Crystal-controlled calibration oscillator, giving 100 kc/s marker points.
- Double superhet circuit for high selectivity (IF's 1620 and 85 kc/s.)
- RF stage, mixer and separate oscillator (stabilised)—12 valves in all.
- Audio filter of advanced design, peaking at 1,000 c/s for improved CW selectivity.
- Mixer detector for SSB, simplifying adjustment of gain controls.
- International type valves throughout.
- Monitoring on stand-by: send-receive switch to control external relay circuits.
- Plus Noise Limiting; Aerial Trimmer; external "S" Meter socket; independent RF, IF and AF gain controls; variable selectivity; separate AGC switch.
- Rust-proofed and tropicalised. Grey hammer external finish.



OPERATIONAL CONTROL

Two essential features in a receiver are first-class performance and ease of control—one without the other will not produce the desired results. The "888A" possesses both. Skill, soon acquired, in handling the various controls enables the keen operator to secure maximum intelligibility, whether the signals be CW, AM telephony or SSB.

THE PERFORMANCE

SENSITIVITY better than $3\mu\text{V}$ for 20 dB signal-noise ratio to give 50 mW output at 30% modulation. CW sensitivity better than $0.5\mu\text{V}$.

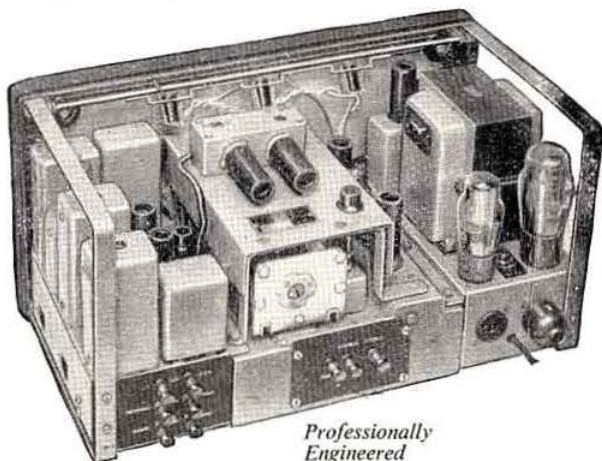
SELECTIVITY variable from 30 dB to 60 dB down, 5 kc/s off resonance. Audio filter attenuates 32 dB for signal only 250 cycles off resonance.

IMAGE RATIO better than 35 dB at 30 Mc/s, progressively higher on LF bands.

POWER OUTPUT exceeds $2\frac{1}{2}$ watts into 2.5 ohm load.

LIST PRICE £110 (in U.K.)

Matching Accessories available.



*Professionally
Engineered*

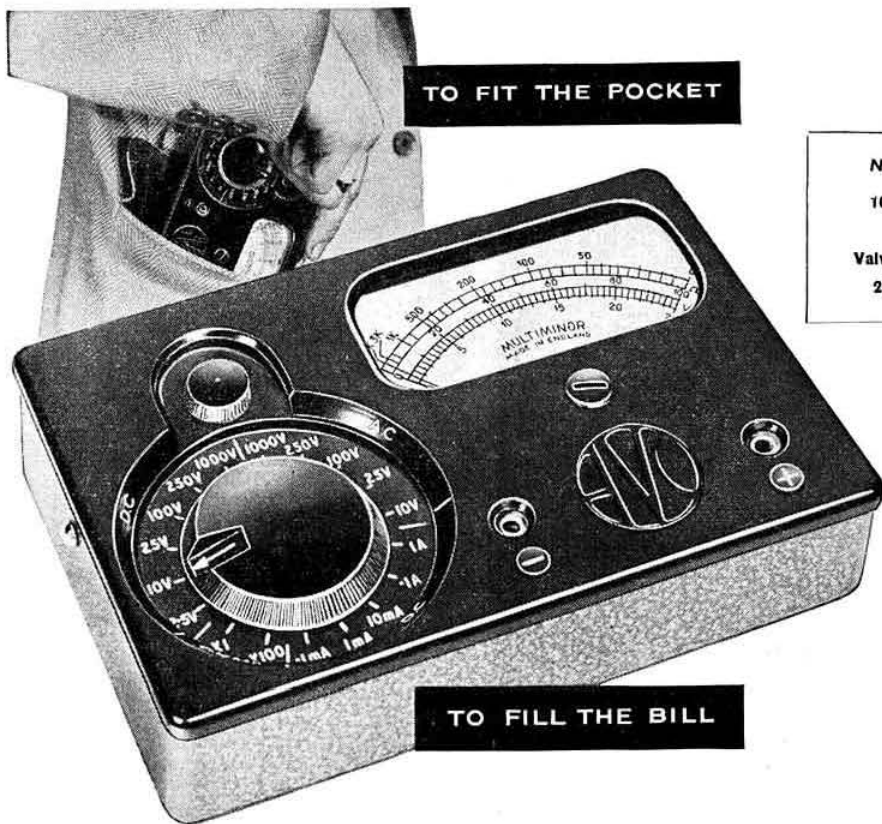
FULL DETAILS ON REQUEST FROM THE MANUFACTURERS:

STRATTON & CO. LTD.

EDDYSTONE WORKS • ALVECHURCH ROAD • BIRMINGHAM, 31

Tel: PRIORY 2231/4

Cables: STRATNOLD BIRMINGHAM



TO FIT THE POCKET

Now available
10th Edition of
AVO
Valve Data Manual
25/- post free

TO FILL THE BILL

This splendid new AVO Instrument has been developed to meet a definite demand for a sturdy pocket-size multi-range test meter at a modest price, suitable for use on modern electronic apparatus as well as for radio and television receivers, motor vehicles, and all kinds of domestic appliances and workshop equipment.

Readings are obtainable quickly and easily on a very open scale, and range selection is by means of a robust clearly marked rotary switch of the characteristic AvoMeter type. Measurements of A.C. and D.C. Voltage, D.C. Current, and Resistance are made by means of only two connection sockets.

Sensitivity:
10,000 Ω /V on D.C. voltage ranges.
1,000 " " A.C. " "

Accuracy:
3% of full scale value on D.C.
4% " " " " " A.C.

To meet special requirements, instruments can be supplied to a higher degree of accuracy for a small additional charge.

19 Ranges

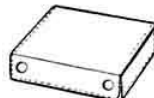
D.C. Voltage	A.C. Voltage
0—100mV.	0—10V.
0—2.5V.	0—25V.
0—10 V.	0—100V.
0—25 V.	0—250V.
0—100 V.	0—1000V.
0—250 V.	
0—1000 V.	
D.C. Current	
0—100 μ A	
0—1mA	
0—10mA	
0—100mA	
0—1 A	
Resistance	
0—20,000 Ω	
0—2M Ω	

List Price: **£9/10s.**

complete with
Test Leads and Clips.

Size: $5\frac{1}{2} \times 3\frac{1}{2} \times 1\frac{1}{2}$ inches.

Weight: 1 lb. approx.



Leather Case
if required 32/6

THE MULTIMINOR

● Write for fully descriptive leaflet.



Designed and Manufactured by

AVO Ltd. AVOCET HOUSE • 92-96 VAUXHALL BRIDGE ROAD • LONDON • S.W.1 • VICTORIA 3404 (9 lines)

BRIMAR

Valves and Teletubes

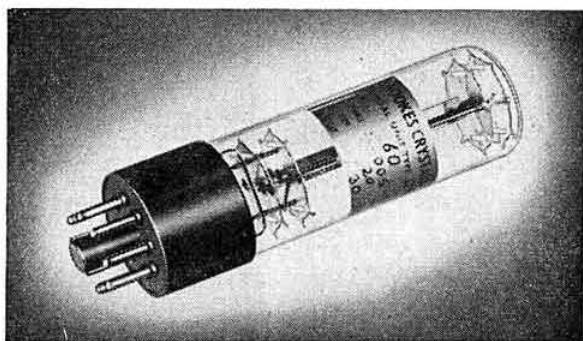


*Best
for
all
equipments*



Standard Telephones and Cables Limited
Reg. Office: Connaught House, 63 Aldwych, London, W.C.2
FOOTSCRAY, SIDCUP, KENT. FOOTSCRAY 3333

BROOKES Crystals



mean DEPENDABLE frequency control

● Illustrated above is a Type O B Crystal unit with a frequency range of 50-110 kc/s. Frequency Tolerance $\pm .005\%$ of nominal at 20° C.

ALL Brook's Crystals are made to exacting standards and close tolerances. They are available with a variety of bases and in a wide range of frequencies. There is a Brook's Crystal to suit your purpose—let us have your enquiry now.



Brook's Crystals Ltd.

Suppliers to Ministry of Supply, Home Office, B.B.C., etc.
181/3 TRAFALGAR ROAD, LONDON, S.E.10
Phone: GREENWICH 1828. Grams: Xtals, Green, London

The Mighty Midget



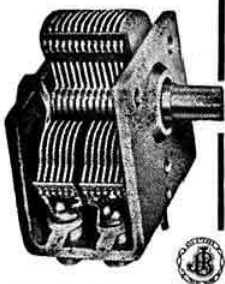
JACKSON

"00" TWIN CONDENSER

Designed for use in miniature transistor receivers. The front (aerial) section is 208pf. to provide coverage for medium waves, and the rear section is 176pf. which may be padded to match the oscillator's very robust yet light weight. Front area $1\frac{3}{8} \times 1\frac{1}{2} \times 1\frac{1}{2}$ " deep, price 9/6.

It's reliable . . . it's made by Jackson!

"A great little Condenser"

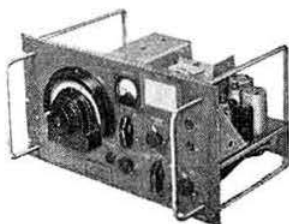


JACKSON BROS. (LONDON) LTD.
KINGSWAY, WADDON, SURREY. CROYDON Tel. 2754-5

1ST Class equipment at The Walk-around Shop

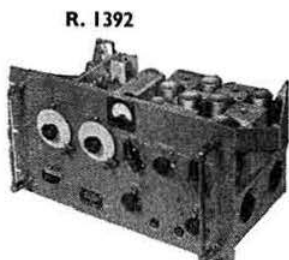
RECEIVERS R.1132A

Frequency 95-126 Mc/s. 11 Valve Superhet. RF. Amp. VR. 65, Frequency Changer VR. 65, Local Oscillator VR.66, Stabilizer VS.70, I.F. Amplifiers VR. 53's, B.F.O. VR.53, Detector VR.54, A.F. Amplifier VR. 57, Output VR. 37, Switched A.G.C., Variable B.F.O. Standard Rack Mounting, easily converted to receive Wrotham without alteration to wiring. Circuit diagram and conversion instructions supplied. Size 19 x 10 x 10".



Carriage 10/- £3. 7. 6.

95-150 Mc/s (2-3 Metres). 15 Valve Superhet. 1st and 2nd RF. EF54, 1st Local Oscillator SP61, 2 Oscillator Multipliers EF54, 3 IF's. EF.39, AGC.6Q7, Output 6J5, Muting EA.50, Noise Limiter EA.50, BFO.6J7, Mixer EF.54, Detector 6Q7. Normally Crystal Controlled, but can be tuned over 95 to 150 Mc/s. Power supply required = 240-250 volts at 80mA. 66.3 volts at 4 amps. Standard Rack Mounting, 19 x 10". Complete with valves and circuit diagram. Air Tested.



Carriage 10/- £6. 19. 6.

ARR 3

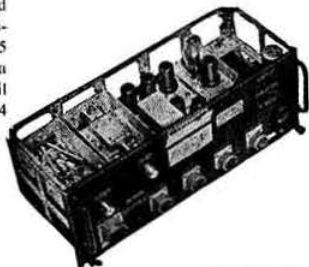
13 Valve 60 Mc/s FM receiver. Conversion to B.B.C. F.M. Transmissions simple. 1st and 2nd RF. Mixer, Osc. 1st, 2nd and 3rd IF's all 12SG7's. Limiter and Detector 12H6. 1st AF 12SQ7. O/P 12A6. AFC. 2-12SH7's. Magic Eye 12USG. With circuit diagram.

Carriage 7/6d. £6. 0. 0.

AN/APN I

14 Valve Tx/Rx. Easily converted for radio control or 70cm Transmitter. Two 955 valves at 445 Mc/s. frequency modulated over a 40 Mc/s bandwidth by moving coil transducer. Receiver. Two 9004 valves at 445 Mc/s. Audio Amplifier. Two 12SH7 and one 12SJ7.

Offered complete with valves at breakdown price.



£1. 10. 0.
Carriage 7/6d.

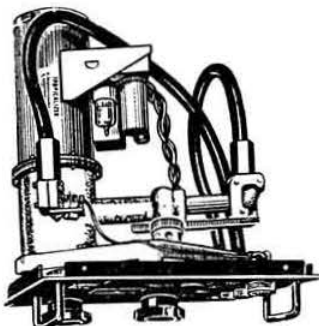
TEST GEAR TS184 A/AP

A further large release enables us to offer this precision 70cm test gear for only 57/6 carriage paid.

RESONANT CAVITY WAVEMETER calibrated 400-430 Mc/s. Tuning stops adjustable to any 30 Mc/s band within the 400 to 470 Mc/s coverage.

Calibrated scale rack and pinion drive piston attenuator and alternative fixed coupling loop input provides facilities for use as a signal generator. Plug-in "Telescopic Probe Antenna." 6J6 detector and Monitor amplifier. 2-600 ohm phone jacks for modulated signals. Panel output terminals for metering 6J6 output current. Power required = 6 volts at 300mA and 30 volts at 0.5mA.

24-page booklet supplied with each unit giving comprehensive circuit description, diagrams and suggested modifications, etc.



£2. 17. 6.
Carriage Paid

SIGNAL GENERATOR 600-1200 Mc/s.

TS.281. 230 volt 50 c/s Mains. Case 14 x 14 x 12". Fitted with 11" Dia. Parabolic Aerial and Perspex Radome. 2 x CV.90 (Mazda Osram E.1368). Wide band oscillator in Precision Cavity. EF50 modulator and 6X5 Rectifier.

Suitable for 23cm and latest BBC Television (654 Mc/s). Directly calibrated dial.

Carriage Paid Brand New. £22. 10. 0.

SIGNAL GENERATOR Type 52A

6-52 Mc/s. 230 volt 50 c/s Mains, 50μA meter. Brand new in transit case with 4 calibration charts, leads and dummy antenna.

Carriage 10/- £10. 0. 0.

'S' BAND PRECISION WAVEMETER

TS.281. Silver plated cavity, micrometer tuned, 100μA meter.

Carriage £1 £15. 0. 0.

INFRA-RED MONOCULAR

Sealed unit with push button operated Zamboni pile, focusing eyepiece. Brand new in thick leather binocular type carrying case.

Carriage Paid £1. 0. 0.

VELODYNE MOTORS TYPE 74.

Motor Armature 5A, Field 80mA. Generator Armature 56v D.C., Field 24v D.C. Size 8 x 3 1/2" Dia. 1" spindle.

Carriage Paid £1. 15. 0d.

VALVES

6K7G 3/- p.p.
6B8G 3/- p.p.

SILICON CRYSTAL

IN21A 1/6 p.p.

WOBBULATOR TRANSDUCER

7/6 p.p.

9.7 Mc/s IF STRIP

10/- p.p.

TIME SWITCH

15 minutes to 44 days
12/6 p.p.

PROOPS

BROTHERS LTD.,

DEPT. 'B', 52 TOTTENHAM COURT ROAD, LONDON, W.1

Shop hours 9 a.m. to 6 p.m.—Thurs: 9 a.m. to 1 p.m.

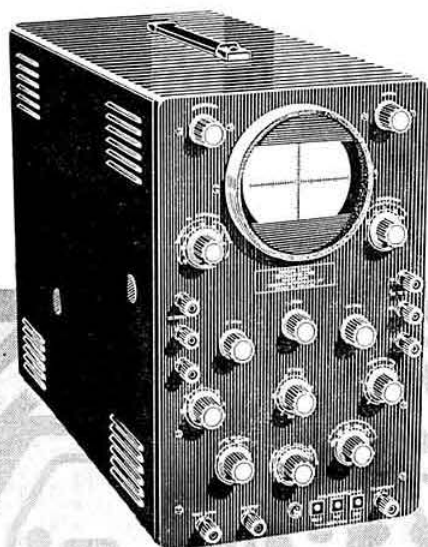
Telephone: LAngham 0141

OPEN ALL DAY SATURDAY

PERFORMANCE ASSURANCE WITH

COSSOR

PRINTED CIRCUITS



Model 1071K Double Beam Kit Oscilloscope

List Price £69 - 0 - 0

Hire Purchase Facilities. Trade terms on application.

**AN INSTRUMENT RANGE
IN KIT FORM**

- Q.** *Why has Cossor Instruments decided upon this innovation?*
- A.** To make available a range of first-class measuring instruments at a considerable saving in cost to the Buyer.
- Q.** *Are Kit instruments inferior in performance to their Factory-built equivalents?*
- A.** Certainly not. If assembled and wired exactly in accordance with the Manual of Instructions.
- Q.** *A certain skill must, surely, be required to build these instruments?*
- A.** None beyond the ability to use a small soldering iron.
- Q.** *How can a performance specification be maintained without setting up with test equipment?*
- A.** Largely by the use of PRINTED CIRCUITS which allow no interference with the layout of critical parts of the circuit.
- Q.** *How many Kit instruments are at present available?*
- A.** Three. Two Oscilloscopes, a Single-Beam and a Double-Beam, and a Valve Voltmeter. Others will follow shortly.
- Q.** *Could I have more information on these interesting instruments?*
- A.** With the greatest of pleasure. Just write to:

COSSOR INSTRUMENTS LIMITED

The Instrument Company of the Cossor Group

COSSOR HOUSE · HIGHBURY GROVE · LONDON, N.5

Telephone: CANonbury 1234 (33 lines)

Telegrams: Cossor, Norphone, London

Cables: Cossor, London

CONTENTS

EDITOR:

John Clarricoats, O.B.E., G6CL

ASSISTANT EDITOR:

John A. Rouse, G2AHL

EDITORIAL OFFICE:

*R.S.G.B. Headquarters, New Ruskin
House, Little Russell Street, London
W.C.1.*

Telephone: HOLborn 7373

ADVERTISEMENT MANAGER:

*Horace Freeman,
The National Publicity Co. Ltd.,
36-37 Upper Thames St., London, E.C.4
Telephone: CENTral 0473*

- 359 **Current Comment** (Editorial)
- 360 **A Wideband Multiplier Unit.** By G. T. Sassoon (G3JZK)
- 363 **Two Metre Mobile/Portable Transmitter-Receiver.** By G. N. Roberts (G3ENY)
- 368 **The Minimitter MR37 Communications Receiver.** Reviewed by W. H. Allen, M.B.E. (G2UJ)
- 370 **The Story of 3A2BT—Monaco.** By N. A. S. Fitch (G3FPK)
- 373 **Month on the Air.** By S. A. Herbert (G3ATU)
- 374 **Frequency Predictions.** By J. Douglas Kay (G3AAE)
- 376 **Why Amateur Radio?** Presidential Address by L. E. Newnham (G6NZ)
- 378 **Tilting Beam Aerials.** By F. W. Tyler (G3CGQ)
- 379 **Radio Amateur Emergency Network.** By E. Arnold Matthews (G3FZW)
- 380 **Modifying a Command Transmitter for use on Top Band.** By C. Collins (G8SC)
- 382 **Four Metres and Down.** By F. G. Lambeth (G2AIW)
- 385 **Society News**
- 387 **Council Proceedings**
- 388 **Letters to the Editor**
- 390 **Regional and Club News**
- 391 **Forthcoming Events**
- 392 **New Members**

The R.S.G.B. Bulletin is published on or about the 15th of each month as its official journal by the Radio Society of Great Britain and issued free to members. Closing date for copy is the 22nd of the month preceding publication. © Radio Society of Great Britain, 1958.

RADIO SOCIETY OF GREAT BRITAIN

Patron: H.R.H. THE PRINCE PHILIP, DUKE OF EDINBURGH, K.G.

COUNCIL 1958

President:
L. E. NEWNHAM, B.Sc., G6NZ
Executive Vice President and Zone A Representative:
W. R. METCALFE, G3DQ
Honorary Treasurer:
N. CAWS, A.S.A.A., G3BVG
Immediate Past President:
D. A. FINDLAY, D.F.C., A.S.A.A., G3BZG
Penultimate Past President:
R. H. HAMMANS, G2IG

Ordinary Elected Members:

W. H. ALLEN, M.B.E., G2UJ
H. A. BARTLETT, G5QA
C. H. L. EDWARDS, A.M.I.E.E., G8TL
F. HICKS-ARNOLD, G6MB
J. H. HUM, G5UM
A. O. MILNE, G2MI
W. A. SCARR, M.A., G2WS

Zonal Representatives:

W. J. GREEN, G3FBA
E. G. INGRAM, GM6IZ
H. W. MITCHELL, G2AMG
A. C. WILLIAMS, GW5VX
E. W. YEOMANSON, G3IIR

General Secretary:

JOHN CLARRICOATS, O.B.E., G6CL

Deputy General Secretary:

JOHN A. ROUSE, G2AHL

Assistant Secretary:

MAY GADSDEN

R.S.G.B. QSL Bureau:

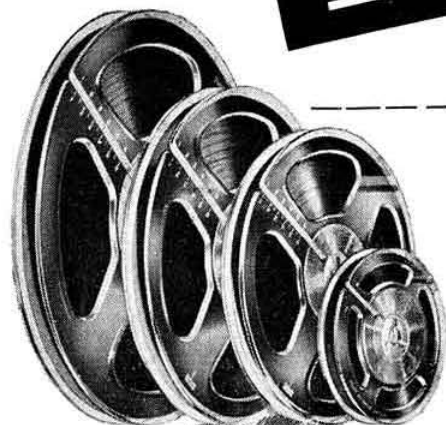
G2MI, Bromley, Kent.

The Radio Society of Great Britain is a Member Society of the International Amateur Radio Union.

Everybody wants

EMITAPE

the World's best magnetic tape!



EMITAPE
General Purposes.

88"

EMITAPE
Long Play, giving
50% increased
playing time.

99"

* 4 SPOOL SIZES

to fit all standard magnetic tape recorders

3" MESSAGE

5" JUNIOR

5 1/2" CONTINENTAL

7" STANDARD



* HIGHEST TECHNICAL STANDARDS

- High sensitivity
- Low noise level
- Low print-through factor
- Freedom from curl and stretch
- Anti-static
- Low head wear

* EMICASE

solves storage problems
protects spools from dust
allows easy identification of leader tapes

TYPE No.	TITLE	SIZE	LENGTH APPROX.	EMITAPE IN "EMICASE"	PRICE WITHOUT "EMICASE"
88/6E	"Junior"	5" dia.	600'	£1 . 3 . 6	£1 . 1 . 0
★99/9E	"	5" dia.	850'	£1 . 10 . 6	£1 . 8 . 0
88/9E	"Continental"	5 1/2" dia.	850'	£1 . 10 . 6	£1 . 8 . 0
★99/12E	"	5 1/2" dia.	1200'	£1 . 17 . 6	£1 . 15 . 0
88/12E	"Standard"	7" dia.	1200'	£1 . 17 . 6	£1 . 15 . 0
★99/18E	"	7" dia.	1800'	£2 . 12 . 6	£2 . 10 . 0
★ LONG PLAY—50% increased playing time.					

EMITAPE the magnetic recording tape
with the world-wide reputation!

E.M.I. SALES & SERVICE LTD (Recording Materials Division) HAYES . MIDDLESEX

ES159

Current Comment

How to save Money

WITH nearly 20 years experience in operating the world's largest and busiest QSL Bureau, it is abundantly clear that about 40 per cent of the cards which pass through our hands are never collected. It is safe to assume that a fair proportion of those which are collected are unwanted by the recipients.

The R.S.G.B. Bureau now handles in excess of 2,000,000 QSL cards a year and of these, probably 750,000 are thus so much waste paper.

To buy 500 cards from the printer costs, on average, about £2/10/- including purchase tax; hence, radio amateurs throw into the dustbin £3,750 annually! These approximate but nevertheless startling data set us thinking: is it not possible to devise a system of working whereby anyone who wants a QSL is reasonably certain of getting one and the man who does not want a card is not sent one?

The solution is remarkably simple. Let us use the procedure which has been ours almost since the first QSL card was printed. If a card is desired, then, at the end of the final "over" of a QSO, add "Pse QSL." If no card is wanted, "Pse QSL" is omitted. It is as easy as that! In order to cover any gaps, let it be agreed that if our contact unexpectedly sends a card, then, as a matter of courtesy, we should send one in reply. It seems so obvious that sending cards to people who do not want them is just plain silly, as is the practice of a small number of people who QSL after every contact with the same station.

We at the Bureau do not mind so much the extra work and trouble involved in handling unwanted cards but the cost to the Society is a formidable and utterly wasteful expense with postage rates at their present exorbitant level.—A. O. M.

Look to the Log

LIBERAL licence terms as enjoyed by the British radio amateur offer opportunity for a variety of interpretations—a circumstance sometimes reflected by exiguous log-keeping and the writing-down of no more than the barest details of the station's operation.

For his own protection the operator is strongly advised to make his Log as complete a document of his work as he possibly can.

Thereby he is in a strong position to answer any comments or complaints about interference should these ever be levelled at him.

Frequency in use, exact power input, time of closing the station (even if it should be half an hour after transmission has ceased), no blank space between entries, always G.M.T., never B.S.T.; these are just a few of the common sense interpretations of the licence which operators are advised to follow.

Perhaps you haven't read your licence for the last year or two. It's well worth getting out and studying again!—J. H.

Keeping up to Date

LESS than three months ago it was stated that the then new edition of the *R.S.G.B. Amateur Radio Call Book* was as near up-to-date as makes no odds. Since that time we have been taking a careful look at the correction lists and lists of new calls that have reached Headquarters each week from the G.P.O. The result has been illuminating. Up to the middle of last month (January 1958), 165 new licences had been issued, 80 old licences had been re-issued (a pleasing sign) and 107 cancelled. In the same period 306 changes of address had been recorded, 41 mobile licences had been issued and 17 cancelled to produce a grand total of 716 additions and amendments since the *Call Book* closed for press last October.

These changes concern only those who hold a transmitting licence, but Headquarters is also concerned with changes of address that affect non-transmitting members and members who live abroad, as well as with those newly elected or re-elected to membership. Altogether a very sizeable total.

Little imagination is required to appreciate that the task of keeping the *Call Book* and Headquarters records up to date is no mean task. Fortunately the number of mistakes recorded is small but when the occasional lapse occurs may we hope that it will be overlooked in the knowledge that to err is human.

R.A.E.N. was Ready

AT 7.30 p.m. on January 30, 1958, with thick fog blanketing most of England, the Essex Division of the British Red Cross Society, located in Chelmsford, telephoned the Essex County Controller (Mr. C. H. L. Edwards, G8TL) and asked him to alert all R.A.E.N. members within easy reach of Dagenham, scene that evening of a bad railway accident. Within a short time, four mobiles and several members of the Ilford and Romford groups were standing by. The network emergency frequency of 1980 kc/s was quickly cleared and remained so until midnight when the Red Cross informed Mr. Edwards that R.A.E.N. services would not be required.

Although R.A.E.N. did not go into action, all concerned are congratulated upon the speed with which they made themselves available to meet the emergency. A special word of thanks is due to Top Band operators who co-operated by keeping the emergency frequency clear throughout the alert.

A Wideband Multiplier Unit

By G. T. SASSOON (G3JZK)*

THE construction of conventional wideband couplers is not a task normally undertaken by the amateur, mainly because of the complexity of mutual inductance calculations, and the mechanical difficulty of making the coupling variable. The writer has made many couplers of this type, but none of them totally satisfactory for the above reasons. The couplers in the unit to be described, however, avoid the usual difficulties by employing capacitive coupling. Its advantages are extreme ease of construction and adjustment, the disadvantage being that two separate coils (which must be individually screened to prevent spurious inductive coupling) are needed.

The inductive type is undoubtedly the easiest and cheapest to mass-produce, but the design and construction of the prototype is a wearisome process. The slight extra expense of capacitively-coupled units justifies itself when only one is required. No values are critical and if the design values are aimed at, any small errors can be compensated for during alignment.

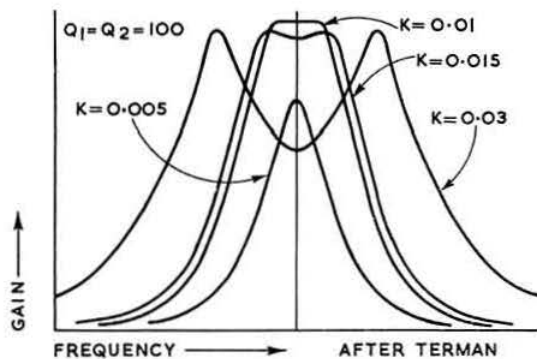


Fig. 1. Effect of varying the coupling between the coils in a wideband coupler.

Basic Considerations

Perhaps it would be in order first to consider what happens inside a wideband coupler. Most consist of two tuned circuits, individually resonant at the same frequency and coupled together. The coupling is usually inductive, but the general characteristics are the same with any type. From Fig. 1, it can be seen that as the coupling is increased from zero, the single-peaked response rises to a maximum, flattens out, then divides into two peaks. Further increase in coupling results in greater separation and sharpness of the peaks. Note that the twin peaks are not caused by detuning, but by close coupling of two circuits tuned to the same frequency. The coupling coefficient is the ratio of the mutual inductance between windings to the inductance of one winding. This is true where the primary and secondary are identical; for simplicity, this is taken to be the case throughout this article. More general data can be obtained from the references given.

When the peak of the response is flat and on the point of splitting, the coupling is at its critical value, which is given by:

$$k_c = \frac{1}{Q} \quad (Q_p = Q_s)$$

Hence, the higher the Q , the lower the coupling required. In a normal i.f. transformer, the coupling is set at the critical value; however, for use in amateur band exciters, it is convenient to have it slightly higher. The design formulae and practical values given below are based on a coupling/critical coupling ratio of 1.86, corresponding to a peak-to-trough ratio of 1.2 : 1, or a response flat within 2db over the band. Other values can be obtained from the references.

The most convenient way of introducing variable coupling between two tuned circuits is with a small trimmer between the "hot" ends of the coils (see Fig. 2). This is equivalent, except where phase relationships are concerned, to a mutual inductance of the value:

$$M = \frac{C_1}{C_1 + C} L$$

Hence the coupling coefficient is:

$$k = \frac{C_1}{C_1 + C}$$

The purpose of the damping resistors shown in Fig. 2 is to obtain correct circuit Q ; they should not be omitted, unless triodes are used. The secondary damping resistors are also the grid resistors of the next stage, and should never be omitted. In class A amplifiers, they may be simply shunted across the secondary with no blocking condenser. In wideband multipliers, R should be the same for all bands, so that the output stage grid resistor will be correct for each coupler. Primary and secondary coils should be as near identical as possible, and tuning done with trimmers only. This does not apply to the 28 Mc/s coupler in the circuit given later, as strays have necessitated the use of dissimilar Q s.

Given set values of damping resistance, passband, and centre frequency, all values may be calculated from the following formulae:

$$k = 0.84 \frac{\text{Bandwidth (kc/s)}}{\text{Centre frequency (kc/s)}}$$

$$Q = \frac{1.86}{k}$$

$$L = \frac{R}{2\pi f Q}$$

where f is the centre frequency in Mc/s, R is in ohms and L is in μH .

$$C = \frac{1}{L} \left(\frac{1}{2\pi f} \right)^2$$

where C is in μF , L is in μH and f is the centre frequency in Mc/s.

Note that C includes all strays; if the calculated value of C is less than the estimated strays on any band, a lower value of R should be used. The bandswitch can increase the strays to 20pF (0.00002 μF) or more.

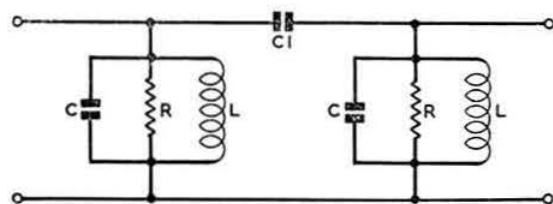


Fig. 2. Basic coupler circuit.

* 55 Eltisley Avenue, Cambridge.

circuitry, the v.f.o. and output stage being a matter for individual taste. However, it is recommended that the v.f.o. operate on 1.75–1.9 Mc/s, and be followed by an untuned buffer to minimize pulling. It is emphasized that the circuit is designed for "sure-fire" operation, and no simplifications have been made. Quite a number are possible, but that is a matter for individual experiment.

No provision for keying is shown: the writer prefers to key the output stage cathode, but that again is a matter for individual choice. On the lower frequency bands, the arrangement of 30pF trimmer and padder could be replaced by a single larger trimmer; these were used simply as they were available. Compression trimmers should be suitable, but air-spaced ones are better on the three higher frequency bands.

Construction

Construction follows normal practice, and the usual precautions should be observed. Interstage screening is not as important as the screens between the coils of each coupler; in addition, the coils should be at right angles to minimize inductive coupling. The best layout is to have the band-switch running down the centre of the sub-chassis space, with valves and coils each side. The wafers should be at least 1½ in. apart, and the same wafer should not be used for grid and anode circuits of any stage. If two-pole six-way wafers are used, the spare poles could be used for h.t. switching. Most retailers will make up such switches to specification. As pointed out earlier, a separate switch is advisable for the p.a. grid circuit, or neutralization of the output stage may be necessary.

Alignment

Before alignment is commenced, the v.f.o. coverage must be checked and the grid current of V1 must be reasonably flat from 3.5 to 3.8 Mc/s. The current should be about 0.1 mA. Initially, resistor RX in the h.t. positive line may be omitted. The h.t. supply should be 250 to 300 volts at about 60 mA.

The actual alignment is perfectly straightforward and more difficult to describe than to carry out. For each coupler, the operation is divided into three steps:

- (i) Bring the primary and secondary coils into resonance at the appropriate centre frequency shown in Table I.
- (ii) Adjust the stray capacity of the next multiplier until it is the same as that of the output stage (not necessary on 21 and 28 Mc/s).
- (iii) Increase the coupling by means of the 2–8pF Philips coupling condenser until the desired coverage is obtained. (If the minimum capacity of the Philips coupling condenser is too large, a small fixed capacitor can be placed in series with it or two pieces of insulated wire twisted together substituted.)

The 3.5 Mc/s coupler (L1, L2) is aligned first. Turn the bandswitch to the 3.5 Mc/s position and check the grid current of V5 at test point E. Set the v.f.o. to the centre frequency (3.65 Mc/s) given in Table I and while keeping the coupling condenser as low capacity as possible, peak the primary and secondary Philips 3–30pF trimmers. Then swing the v.f.o. across the band to check that there are no other peaks. If there are, the coupling capacity is too high and it should be reduced. Should there be too much coupling with the 2–8pF condenser removed entirely, spurious inductive coupling is indicated and the connections to one of the coils should be reversed. When this has been done, it will be possible to "tune out" the inductive coupling by means of the coupling condenser. There should then be a small peak at 3.65 Mc/s and nowhere else. Primary and secondary are now resonant at this frequency.

Next the meter should be connected to test point B and the bandswitch set to the 7 Mc/s position. With the v.f.o. still set to 3.65 Mc/s, the 3–30pF Philips trimmer (grid

equalizing condenser) from the grid of V2 to earth should be adjusted for maximum current. The coupling may then be increased, stepwise, tuning the v.f.o. across the band each time, until there are two broad peaks just inside the band edges. The grid current should be about 1.5 mA. If the peaks are not placed symmetrically on the band, repeat the adjustments with a slightly different "centre" frequency. No further adjustment of the grid equalizing condenser should be necessary. Finally, check that the response is still correct at test point E with the bandswitch in the 3.5 Mc/s position. If it is not, the grid equalizing condenser is incorrectly set. Do not attempt to readjust it without reducing the coupling again and setting the v.f.o. to 3.65 Mc/s.

The other bands are dealt with in exactly the same manner. In the prototype it was found that the centre frequency needed to be slightly higher than the theoretical value to get correct coverage but this may not be typical. Output frequency checking with a g.d.o. or absorption wavemeter is essential on 21 and 28 Mc/s as it is possible to get good output on any harmonic of 3.5 Mc/s.

After a little experience of the unit to get the "feel" of the circuits, alignment presents no difficulties and can be done in 20 minutes.

The final operation is to insert a 10 watt resistor of suitable value (up to 10 K ohms) at RX so that output is just adequate on all bands.

For checking performance while the unit is in use, it is convenient to bring test point E out to a socket on the front panel.

Although this multiplier unit is not the simplest possible exciter, it is certainly the easiest to adjust for optimum performance. It can also provide drive remarkably free from harmonics and is easy to use.

Other Uses

Although the most obvious use of the wideband coupler described is for amateur band exciters, there are many other possible applications. The i.f. output circuits of crystal-controlled converters, s.s.b. exciters, preselectors, and the first i.f. stages of panadaptors are equally suitable. Provided that the primary and secondary Qs can be made identical, couplers for any of these applications can be designed from the formulae given.

References

- Radio Engineer's Handbook*, Terman, first edition 1943, pp. 148–172.
Radio Designer's Handbook, fourth edition 1953, p. 1031.

Forthcoming Exhibitions

THE following Exhibitions have been arranged to take place during 1958:—

- Physical Society Exhibition*—Royal Horticultural Hall, London,
 March 24–27.
International Instruments Show—Caxton Hall, London,
 March 24–29.
Electrical Engineers Exhibition—Earls Court, London,
 March 25–29.
Radio Components Show—Grosvenor House and Park Lane House, London,
 April 14–17.
Instruments, Electronics and Automation Exhibition, Olympia, London,
 April 16–25.
London Audio Fair—Waldorf Hotel, London,
 April 18–22.
National Radio Show—Earls Court, London,
 August 27–September 6. (Preview—August 26.)
Electronic Computer Exhibition—Olympia, London,
 November 28–December 4.

A Two Metre Mobile/Portable Transmitter-Receiver

By G. N. ROBERTS (G3ENY)*

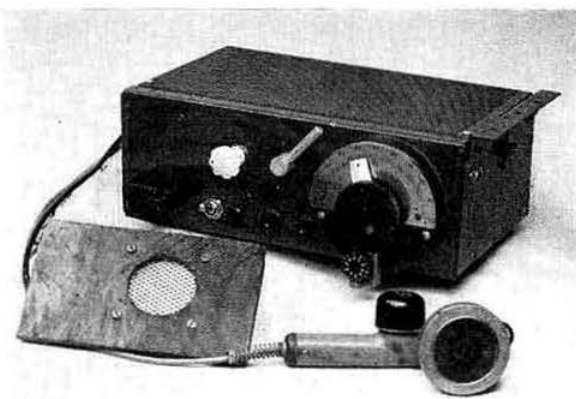
THE equipment to be described represents a simple and inexpensive approach to mobile or portable operation on the 2m band. Its small overall dimensions (11 in. long, 7 in. deep and 4 in. high) enables it to be tucked away beneath the dash or in the glove compartment of most cars, and in spite of its small size, components are not unduly crowded.

Current drain from a car battery is not excessive; in the writer's case operation is from a 6 volt accumulator using a rotary converter for the 200 volt h.t. supply. The valve heaters can be balanced in pairs and a 12 volt system used with advantage. Of course, h.t. can be from a vibrator supply if preferred.

The use of a surplus i.f. strip simplifies the construction of the receiver section and since the transformers are already aligned it is not essential to re-adjust them. The circuitry of the last three stages of this strip is modified to form the audio/modulator section. Most of the original components are re-used and the conversion can be done in an hour or so. This miniature i.f. strip is obtainable at a reasonable price from BULLETIN advertisers, complete with valves and circuit diagram.

General Description

The transmitter is crystal controlled and runs at an input



The Two Metre Mobile/Portable Transmitter-Receiver described by G3ENY and used with a "halo" type mobile aerial.

entail a d.c. relay changeover system which would be an embarrassment when the equipment is operated from a mains power pack for testing or from an alternate (/A) location. Jack sockets are provided for metering when tuning up.

As can be seen from the block diagram in Fig. 1, the equipment consists of three basic sub-assemblies—converter, receiver/modulator and transmitter. Each unit can be built and tested separately. Very few special components are used and with the exception of the variable condensers most items

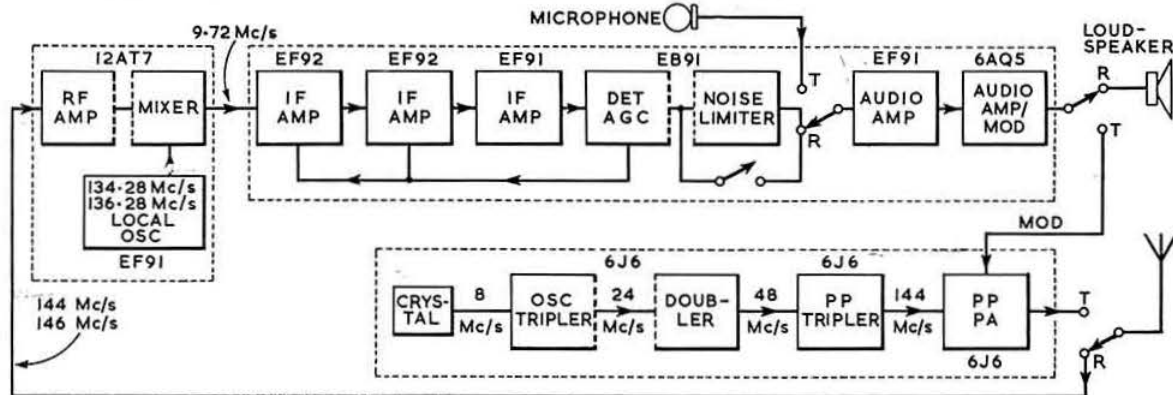


Fig. 1. Block diagram of the transmitter-receiver.

to the push-pull power amplifier of 4 watts. The modulator is capable of fully modulating the carrier using a single button carbon microphone. The receiver will deliver about one watt of audio to an external speaker and is a superhet with r.f. stage, noise limiter and automatic gain control. It is arranged so that the 2m band covers about 150° of the 180° dial. Considering the high intermediate frequency, adjacent channel selectivity is surprisingly good. No detailed information is available on the actual passband characteristic of the i.f. strip but it is obvious that whilst the skirts are very steep there is a flat top which makes tuning less critical and oscillator stability less of a problem.

In the interests of simplicity the front panel controls are kept to a minimum; send/receive, tuning, volume, noise limiter on/off and stand-by rotary. Push-to-talk facilities were considered but not included, mainly because it would

will be available in the proverbial well stocked junk box or from surplus units.

Circuit Details

The receiver front end (Fig. 2) is basically a simplified R.S.G.B. Two Metre Converter as described by W. H. Allen (G2UJ) in the BULLETIN for February 1954. Heater chokes shown in the original circuit have been omitted because they appeared to make little or no difference to the operation of the grounded grid r.f. stage in this application. The bandpass characteristic of the following i.f. strip (Fig. 3) makes the use of a two stage tunable local oscillator unnecessary and the simple oscillator shown provides adequate stability. The receiver is designed for telephony only so the problem of making a T9 c.w. note sound T9 does not exist! For 6 volt operation a 6C4 could be used as the local oscillator.

The primary winding of the first transformer in the i.f. strip is the anode load of the triode mixer, and C8 tunes the

*Flat 2, Severn Brow, Oldbury, Bridgnorth, Shropshire.

circuit to resonance and provides a bypass for signal and oscillator frequencies.

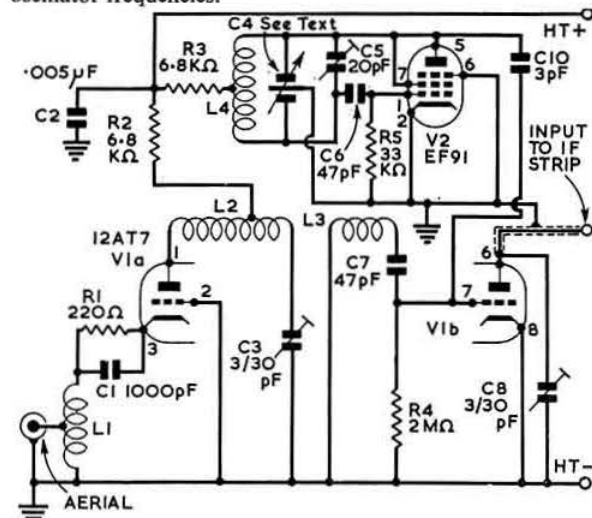


Fig. 2. Circuit diagram of the receiver "front end" based on the R.S.G.B. Two Metre Converter. L1, 6 turns 20 s.w.g. 5/16 in. inside diameter $\frac{1}{2}$ in. long, tapped at 3 turns; L2, 7 turns 18 s.w.g. $\frac{1}{2}$ in. i.d., tapped at 5 turns; L3, 3 turns 18 s.w.g. $\frac{1}{2}$ in. i.d. $\frac{1}{2}$ in. long; L4, 2 turns 14 s.w.g. $\frac{1}{2}$ in. i.d. $\frac{1}{2}$ in. long, centre tapped.

The first two stages in the i.f. strip are variable-mu pentodes controlled by the a.g.c. line and the third a straight pentode operating at fixed gain. One-half of a double diode is used as a conventional detector and a.g.c. rectifier and the other as a series noise limiter. A simple limiter of this type is capable of very good results provided the stray capacity across the diode is kept as small as possible; this of course includes the on/off switch and the wiring to it. V5 is a

voltage amplifier and V6 a power amplifier used in the double role of audio output or modulator. The a.f. gain control works only on receive, the gain of the modulator being about right for normal speech when a single button G.P.O. type carbon microphone is used in the circuit shown. The modulation/output transformer should ideally be as specified but a small centre tapped class B output transformer can be used with good results. It is advisable to try reversing the primary winding as in some cases better results will be obtained one way than the other. A five-pole two-way rotary switch is used to change from transmit to receive.

Referring to Fig. 4, it will be seen that the transmitter consists of three double triode valves in a crystal controlled oscillator p.a. line up. The first half of V1 is a 24 Mc/s oscillator using an 8 Mc/s crystal operating on its third overtone. When properly adjusted this circuit is capable of excellent results and in the writer's experience nine out of ten crystals will perform well. L1 should be wound on a good low loss former and mounted clear of the chassis and other components so that it has a high Q. Its inductance should be of such a value that C3 set to about 40pF will tune the circuit to 24 Mc/s; too low a value of capacitance at C3 will cause unstable operation. A crystal of low activity may require more feedback and an additional turn may be added to the coil at the crystal end. The tap must not be moved as this would upset the LC ratio of the anode circuit.

The second half of V1 is a doubler to 48 Mc/s which drives V2, a push-pull tripler to 144 Mc/s. The grid circuit of V3, a push-pull neutralized class C power amplifier, is untuned but self resonant with valve capacities. This stage is operated within the valve manufacturer's ratings at an input of 4 watts and has a measured anode circuit efficiency at 145 Mc/s of approximately 45 per cent. It is very important that this stage is properly neutralized and for this purpose the Wingrove and Rogers miniature trimmers type S50-01/1 are strongly recommended. They make an otherwise difficult and tricky job relatively simple and perfect "text book" neutralization should be obtainable with care.

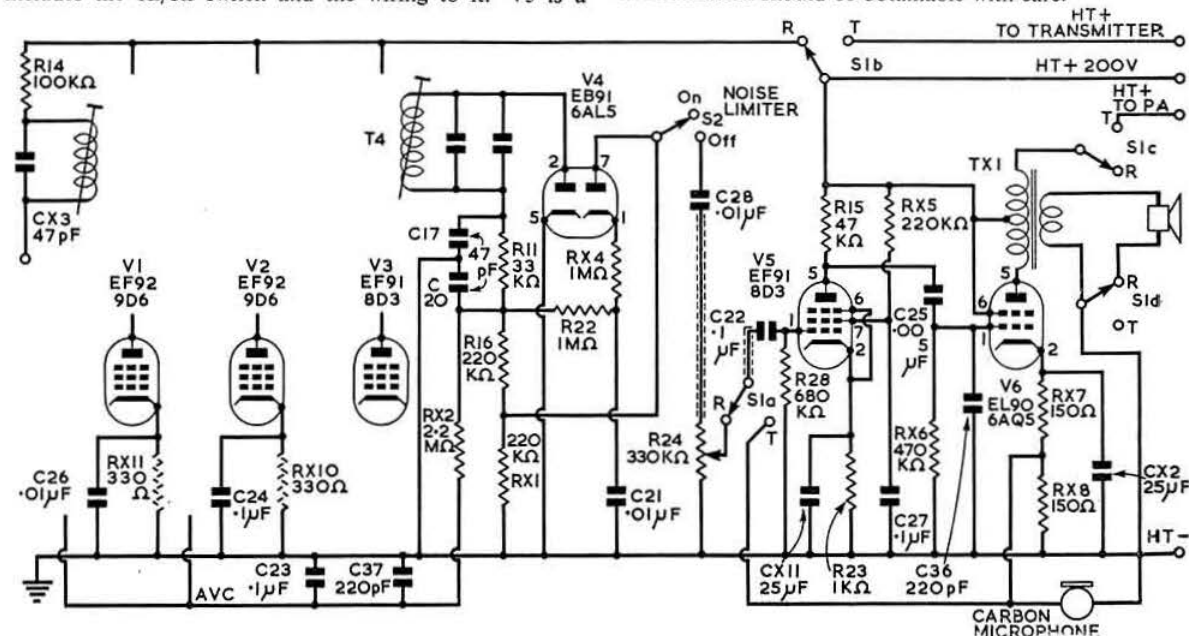


Fig. 3. Circuit of the modified i.f. strip type 273. Only those components which modify the circuit supplied with the unit are shown. References refer to the original circuit unless marked "X". CX1 (shown as CX11 above) and CX2 are both 12 volt electrolytics; RX1, RX2, RX4, RX5, RX10 and RX11 are all $\frac{1}{2}$ watt. RX7 and RX8 should be $\frac{1}{2}$ watt rating; S1, 2-way 5-pole switch; S2, single pole toggle; TX1, see text (primary 6,000 ohm, secondary 1—8,000 ohms, secondary 2—2.5/15 ohms).

Construction

The Converter sub-assembly. It is recommended that the layout shown (Fig. 5) is closely copied when building this unit and for that reason more detailed information is given than for the transmitter sub-assembly.

To ensure stability of the r.f. stage a screen is fixed across the valveholder between input and output coils. Mounting the oscillator valve upside down makes for short direct wiring in this stage but a valve-can should be fitted to stop the valve falling out. The main tuning condenser C4 is of the double bearing split-stator type and is variable from about 2pF to 4pF. This works out to be either one rotor and one stator 0.015 in. spacing or two fixed and one moving with 0.045 in. spacing per section. A Wingrove and Rogers type C18-11 is satisfactory.

but the upper end is lifted from earth and connected by screened lead to the changeover switch. R24 can be used as a volume control if a suitable knob can be found to fit the short spindle, otherwise any small $\frac{1}{2}$ or $\frac{1}{4}$ Megohm component will do. The wiring to this control must be in screened lead. The only bulky components which have to be fitted in are the two 25 μ F electrolytics CX1 and CX2. The former is positioned above the chassis and CX2 below in the region formerly occupied by R24. The rest of the small components are mounted directly on the valveholders. The tags on the remaining tag strip provide additional tie points.

Transmitter. As can be seen by the photograph the crystal is accessible from the front panel and is mounted on a bracket from the underside of the chassis. On the top side in this position is the modulation/output transformer.

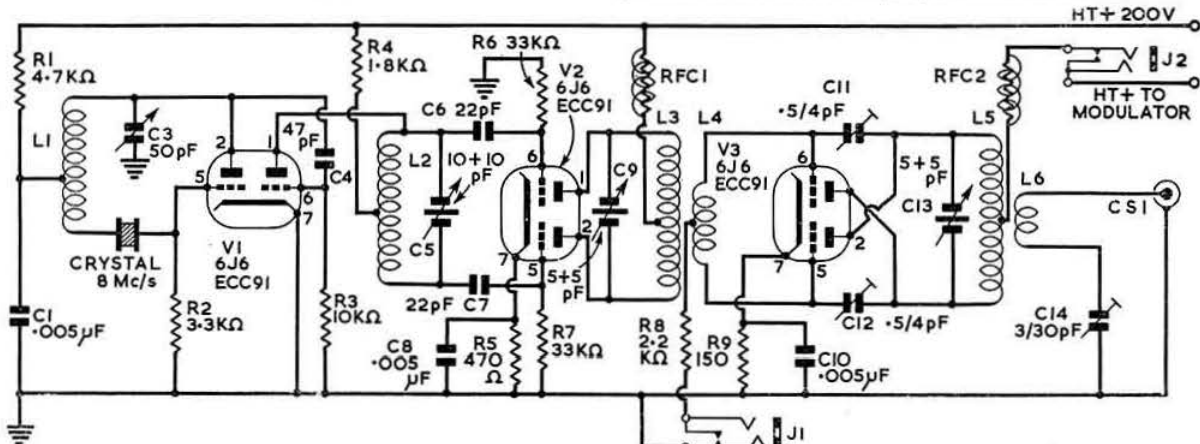


Fig. 4. The transmitter circuit. L1, 12 turns 24 s.w.g. $\frac{1}{2}$ in. i.d. spaced one wire diameter, tapped at 4 turns; L2, 12 turns 22 s.w.g. $\frac{1}{2}$ in. i.d. centre tapped; L3, 8 turns 18 s.w.g. 9/32 in. i.d. centre tapped, $\frac{1}{2}$ in. long with $\frac{1}{8}$ in. space in centre (see text); L4, 7 turns 22 s.w.g. 9/32 in. i.d. centre tapped, 5/16 in. long (see text); L5, 6 turns 18 s.w.g. $\frac{1}{2}$ in. i.d. centre tapped, 1 in. long; L6, 2 turns 18 s.w.g. $\frac{1}{2}$ in. i.d. spaced one wire diameter; RFC1, 19 in. 36 s.w.g. wound on $\frac{1}{2}$ watt 1 Megohm resistor.

The bandset condenser C5 is mounted directly on C4 and is a miniature air dielectric 2/20pF trimmer. A Wingrove and Rogers type C31-11 can be used here. C10, the coupling between mixer and oscillator, can be a $3\frac{1}{2}$ in. length of 80 ohm twin feeder cable. At one end one side is connected directly to the anode side of C4. The cable is then passed through the chassis and the opposite side connected to the grid pin of the mixer section of V1. The Philips trimmers are sub-mounted on brass brackets.

The link between the converter and i.f. section is provided by the co-ax lead with plug and chassis mounting clip supplied with the miniature i.f. strip. This plug and lead originally formed the output of the strip and the plug very conveniently fits the input socket.

Modification of the miniature i.f. strip. Only those components which modify the circuit supplied with the unit are shown in Fig. 3. Where possible redundant components have been re-used in the modified version and component numbers refer to the original circuit unless they are marked "X." If the unit is to be used on a 12 volt system it will be found advantageous to alter the heater wiring before starting the main modifications.

With the heaters correctly wired, all the components associated with V4, V5 and V6, with the exception of C17, C20 and R11 are carefully removed. Remember that if a particularly awkward joint is encountered it is often advisable to use cutters. Remove also the miniature potentiometer R24 and the tag board on that side of the chassis.

Leave the bypass condensers in their respective screening sleeves above deck as most of them are used again. Note that C22 becomes a coupling condenser; it is left in its can

C5, C9 and C13 are Wingrove and Rogers split-stator trimmer condensers type C853/1. Originally they were all 10pF per section but C9 and C13 are cut down to three fixed and four moving vanes.

L3 is mounted directly on C9 and like L4 is wound on a length of polythene insulation removed from co-ax cable. Between the two halves of the winding of L3 part of the polythene former is cut away to allow L4 to be inserted; later, when the correct coupling has been found, the two formers can be cemented together the whole forming a rigid assembly. C14 can be a Philips trimmer sub-mounted as in the converter. The output from L6 is linked to the change-over switch by a short length of co-ax cable.

Mechanical Details

The converter (Fig. 6) and transmitter (Fig. 7) chassis are made of 18 s.w.g. and the front panel from 16 s.w.g. aluminium sheet. The sub-assemblies are bolted directly to the front panel, as are the two "U" shaped bent up aluminium angle end frames which form the basis of a simple box structure. These end frames are made of 16 s.w.g. aluminium and are $\frac{1}{2}$ in. by $\frac{1}{2}$ in. angle section. The modified i.f. strip sits between the end frames and is fixed by a self tapping screw through each end. For added strength a further piece of aluminium angle ties the end frames together at the top above the i.f. strip. Self tapping screws fix the two end covers, one of which carries the aerial and power plugs, the other being drilled for microphone and loudspeaker cable grommets. Perforated sheet steel top and bottom covers complete the structure and allow good convection cooling.

Operation

The equipment is intended for use with a supply voltage of 200 volts (certainly no more than 220 volts) and will operate satisfactorily at 180 volts. Current consumption is 50 mA on receive and 80 mA on transmit.

As stated earlier the three sub-assemblies can be tested separately and it is recommended that this be done. The modified i.f. strip should present no difficulties, a short length of wire to the input co-ax plug (remembering there is

The first task after connecting the converter to the i.f. strip is to find the band by adjusting C5 on the converter until a 2m signal is heterodyned to the i.f. of 9.72 Mc/s. Make sure the oscillator is tuned to the low frequency side of the signal frequency. C3 and C8 can be adjusted for maximum signal and the turns spacing of L3 and its coupling to L2 adjusted for the required bandwidth of 2 Mc/s. The input coil L1 is not critical and unless a noise generator is available to determine the best tapping point for the aerial,

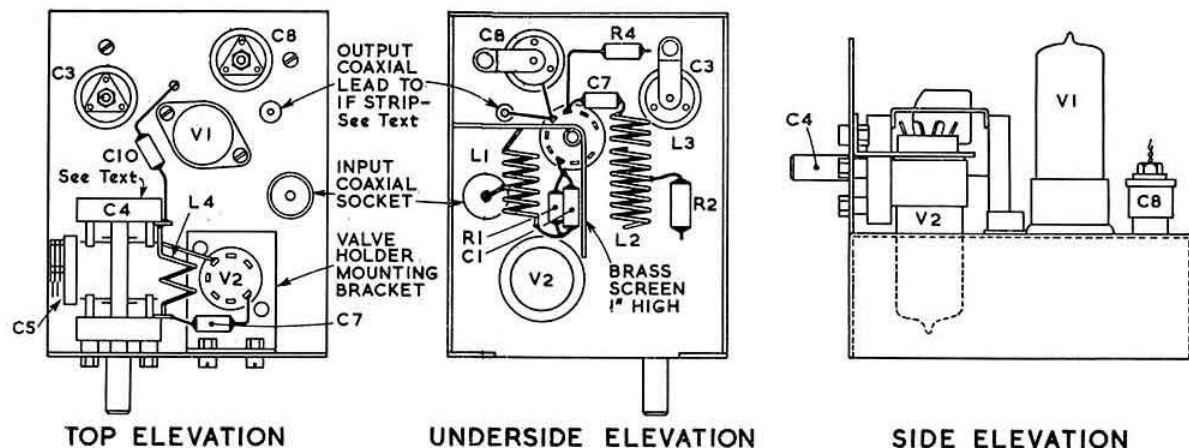


Fig. 5. Layout of the converter sub-assembly.

h.t. on this point) should produce signals, provided of course the 9 Mc/s band is not "dead" at the time. The modulation can be tested by connecting a 10K non-inductive (carbon) 2 watt resistor in place of the class C p.a. An oscilloscope or pair of headphones can then be used to check the audio quality. Getting the converter to work is a more tricky job and some 2m "know how" will save a lot of time. A calibrated g.d.o. which can also be used as a tone modulated signal generator and a crystal diode noise generator are strongly recommended as test gear, but of course they are not indispensable: the job will just take longer without them.

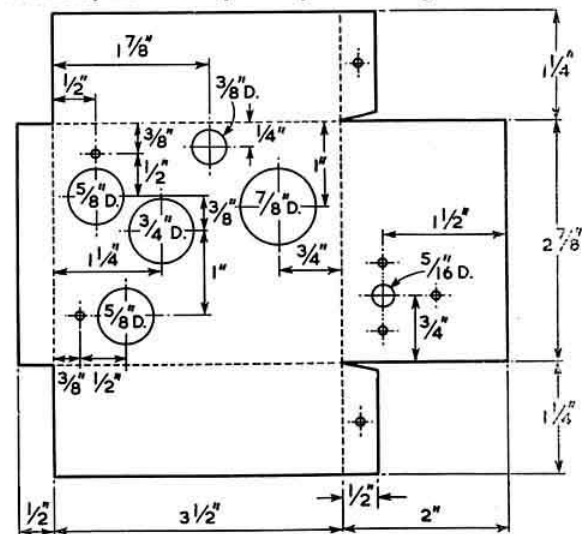


Fig. 6. Dimensions of the converter chassis. Three sides are bent down and the front bent up.

no adjustment is required. All tuning should be carried out with either an aerial or a dummy load connected to the input, the r.f. stage may become unstable if not loaded and a 60 to 80 ohm carbon resistor is ideal for this purpose. A definite peak should be found on C8 as it is tuned to resonance and this will be near full capacity. Two peaks may be found on C3; the high frequency one will be the required resonance at 145 Mc/s. L3 must be resonated to 145 Mc/s by adjusting the turns spacing. This is a tricky job because the proximity and tuning of L2 and the loading of the local oscillator will affect the result. Time spent in adjusting these two coils to have a bandpass characteristic over the required 2 Mc/s will be well spent and a calibrated g.d.o. will make this task a lot easier. Aim at getting a uniform noise output over the required band: as a guide it will probably be found that quite tight coupling will be required.

When testing the transmitter it is better to drop the h.t. supply to about 150 volts and to do the initial tuning without h.t. to the p.a. stage. If an indicating absorption wavemeter is not available a milliammeter will have to be inserted in the h.t. line. Tune C3 slowly from maximum capacity until a

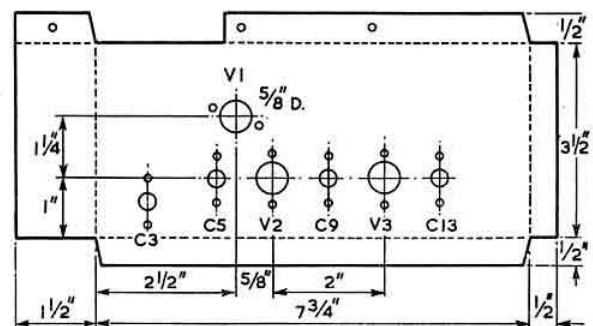


Fig. 7. Transmitter chassis dimensions. All four sides are bent down.

sharp downward kick in anode current indicates oscillation. The most stable setting will be found a fraction of a turn past this point. A check with a receiver tuned to 24 Mc/s will indicate whether the oscillator is crystal controlled at the third overtone frequency. Unsolder the earth return to R6 and R7 and connect a milliammeter to read grid current to this stage.

C5 can now be tuned for maximum grid current. Care should be taken to ensure that L2 is in fact tuned to 48 Mc/s. This will probably occur at near minimum setting of C5. Transfer the milliammeter to J1 and tune C9 for maximum grid current to V3. Rotate C13 and note the grid current dip as the final anode circuit is tuned through resonance. The neutralizing condensers C11 and C12 should next be adjusted in small increments, keeping the balance, until all indication of dip disappears. The coupling between L3 and L4 can then be adjusted to give maximum grid current and the coils finally cemented in place.

With a load connected to the output, full h.t. of 200 volts can be applied to the exciter and p.a. To check neutralization note that maximum grid current occurs at exactly the same point as minimum anode current. Slight adjustment of C11 and C12 should attain this condition. Grid current of 7 to

Results

This equipment, which grew from the writer's desire to go mobile on 2m cheaply and quickly, has proved to be very satisfactory. Used in conjunction with an omnidirectional "halo" aerial of the type described in *QST* for December 1956, the range, whilst largely determined by local terrain is surprisingly large. It should, of course, be remembered that the difference between 2 watts and 20 watts represents at the distant receiver an increase of 10db or about 1½ "S" points, so the relative disadvantage of the QRP transmitter is far outweighed by the advantage of a good site.

The receiver is easy to handle and once tuned in a station stays put however much vibration and buffeting takes place. Despite the large bandwidth which makes for easy tuning and stability, the noise factor is very good and only slightly inferior to the conventional converter and communications receiver arrangement.

The quality of the modulated signal from the transmitter is in theory limited only by the response of the carbon microphone and the modulation transformer, and reports

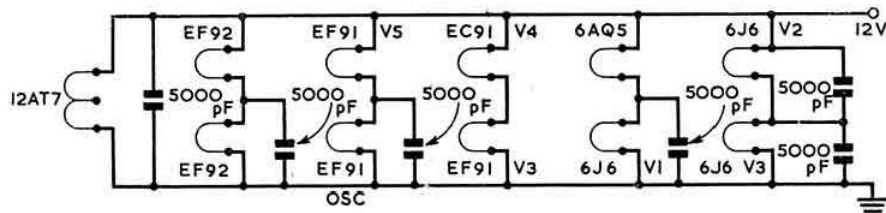


Fig. 8. Suggested wiring of the valve heaters for 12 volt operation.

8 mA should be obtainable. The p.a. may be loaded to 21 mA at 200 volts at which input the power in the load will be in the region of 1.8 watts.

A suggested heater wiring arrangement for use with a 12 volt battery is shown in Fig. 8.

of good clear communication quality speech are usually received.

Used with a halo and a three-element Yagi, the equipment enabled the writer to gain second place in the Mobile Section of the First 144 Mc/s Field Day, 1957.

Television DX

IN letters to G3AAE who prepares the *BULLETIN* frequency predictions, Hartland B. Smith (W8VVD) of Birmingham, Michigan, reports receiving B.B.C. Channel 1 vision signals on a number of occasions recently. The equipment in use comprises a converter (6AG5 r.f. and 12AT7 mixer) and a modified American TV receiver. The aerial is a two-element beam about 18 ft. above ground, in the attic, fed with 300 ohm twinlead.

On December 22, 1957, W8VVD saw the Brains Trust while on December 24, the "Andy Pandy" programme was received. Ronald Colman was seen in a film on December 25. Unfortunately the photographs taken at these times were not quite good enough for reproduction.

W8VVD first received B.B.C. pictures on December 8, the latest being seen on January 5, 1958.

Electrical Engineers Exhibition

MEMBERS may obtain tickets of admission to the Seventh Annual Electrical Engineers' Exhibition to be held at Earls Court, London, from March 25 to 29, 1958, from P. A. Thorogood, General Manager, Electrical Engineers' Exhibition (A.S.E.E.) Ltd., 6 Museum House, 24 Museum Street, London, W.C.1. Mr. Thorogood (G4KD) was the organizer of the Radio Hobbies Exhibition 1957 and is chairman of the London U.H.F. Group.

The Exhibition will be opened on March 25 by the President of the Board of Trade, the Rt. Hon. Sir David Eccles, K.C.V.O., M.P.

French R.E.F. Contest, 1958

THE Phone Section of the French Society's (R.E.F.) DX Contest will commence at 12.00 G.M.T. on March 1 and end at 24.00 G.M.T. on March 2. The C.W. Section will be held between the same hours on April 13 and 14. Contest exchanges will consist of the RST or RS report followed by the number of the contact (e.g. 579014).

Entries should be sent to R.E.F., B.P. 42-01, Paris, R.P., France, from whom further details may be obtained.

Low Power Contest, 1957

IN the table of results of the Low Power Contest, 1957 published on page 337 of the January *BULLETIN*, the call-sign of the station placed 16th should have been shown as G3EUE (693 points).

Silent Key

W. C. CLARK (G3OF)

With sorrow we record the passing on Boxing Day, 1957, at the age of 58 years, of Mr. William C. Clark (G3OF) of Dunstable.

"Nobby"—as he was known to many of his friends—was a most likeable person with a keen interest in Amateur Radio. His Top Band 'phone contacts were spiced with a Northern accent that gave enchantment to his words.

In more recent years he had devoted much of his spare time to c.w. operation on 14, 21 and 28 Mc/s where his old professional touch on the key brought him much DX. His log book recorded two United States contacts only four days before his death.

Sympathies are extended to his widow and two sons.

F. W. T.

The Minimitter MR37 Communications Receiver

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



THIS receiver covers the 3.5, 7, 14, 21 and 28 Mc/s amateur bands only and offers a new approach, at least in this country, to the problem of good selectivity without the use of a large number of tuned circuits or a crystal filter. This is accomplished by employing a Q-multiplier circuit in conjunction with a single 465 kc/s i.f. stage, adequate image rejection being provided by a first i.f. of 1.5 Mc/s. The degree of selectivity obtained by this method is extraordinarily high on both c.w. and telephony signals and in many ways the receiver is more flexible and easier to operate than many others with multi-stage i.f. amplifiers and crystal filters. Particularly satisfactory is the ability to vary the degree of selectivity from wide to the point where speech is rendered almost unintelligible by reason of sideband cutting without risk of losing the signal as so frequently happens when a crystal filter is switched in or the coupling between tuned circuits in an i.f. amplifier varied.

The MR37 consists of two sections each measuring 8½ in. by 6½ in. by 7½ in. deep comprising the converter and i.f./a.f. units mounted on the top of a third section measuring 16½ in. by 4½ in. by 7½ in. deep which contains the mains operated power supply and an elliptical speaker. Sockets at the rear of the first two units receive supplies from the base section. The converter and i.f./a.f. sections may be quickly detached and operated from batteries or other external supplies for portable or mobile operation: certainly the first attempt to design a receiver to fulfil the dual role which has come to our notice.

The Circuit

The eight valves plus metal rectifier and crystal diode are arranged as follows:

- (1) R.f. (6BY7) with variable cathode bias for gain adjustment.
- (2) First mixer/oscillator (6AJ8) converting to 1.5 Mc/s.
- (3) Second mixer/oscillator (6AJ8) converting to 465 kc/s.
- (4) I.f. amplifier at 465 kc/s (6BY7).
- (5) Q-multiplier and S-meter stage (12AX7).
- (6) Detector and noise limiter (12H6).
- (7) First audio amplifier and "squelch" valve (PCL83).
- (8) Audio output stage and b.f.o. (PCL83).
- (9) A.v.c. rectifier (WG50 crystal diode).

The five bands previously mentioned occupy from 4½ to

5 in. each on the slide-rule type scale and the tuning rate is adequate even at maximum selectivity.

The Q-multiplier, brought into use by a switch centrally located on the i.f./a.f. section, is basically a regenerative circuit connected in parallel with the primary of the 465 kc/s i.f. transformer in the anode of the second frequency changer, the degree of regeneration up to and into a state of oscillation being controllable by means of a variable resistance in the cathode of the regeneration valve. Tuning over a few kilocycles either side of the nominal i.f. is accomplished by means of a small variable condenser and signals within the pass band may, by this means, be peaked as desired. The action of the Q-multiplier in offsetting the losses in the i.f. transformer results not only in a considerable increase in gain but a spectacular improvement in selectivity. By slightly detuning the Q-multiplier to one side of the passband and suitably setting the frequency of the b.f.o., c.w. may be received under real "single-signal" conditions normally associated with a good crystal filter.

Readers who have experimented with regenerative i.f. stages in receivers will know that although this can enhance the gain to a great extent, noise is seriously increased: the

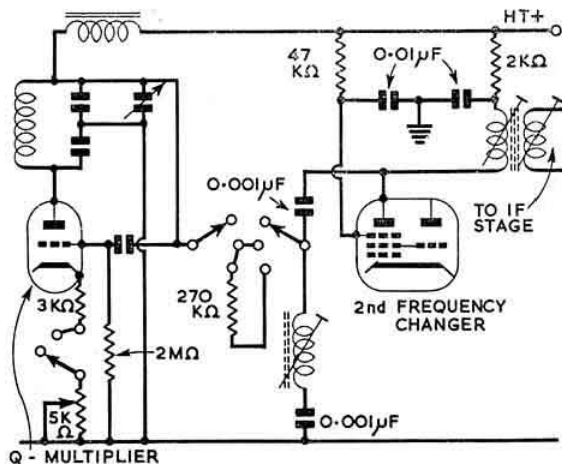


Fig.1. The Q-multiplier circuit and its connections to the i.f. amplifier.

* 32 Earls Road, Tunbridge Wells, Kent.

Q-multiplier in the MR37 not only does not introduce noise but *decreases* it by virtue of the narrowed bandwidth to the point where phone signals on the DX bands stand out from an almost silent background in a fashion that suggests that the band is sparsely populated. Switching out the Q-multiplier, however, will disabuse one of this impression on most occasions. The circuit is shown in Fig. 1.

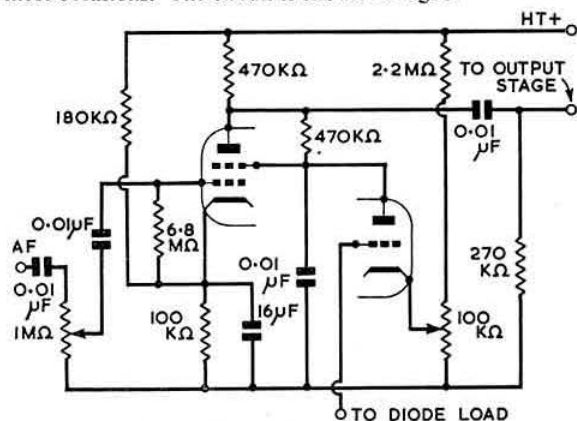


Fig. 2. The squelch control circuit.

The "squelch" valve, the triode part of a PCL83, has its anode connected to the screen grid of the tetrode section and its cathode to a potentiometer network between h.t. positive and chassis (Fig. 2). The setting of the potentiometer determines the grid bias on the triode, and if this is such that the valve takes current the screen voltage on the tetrode section will fall to a value where that valve no longer conducts, so cutting off the audio signal. The grid of the triode is taken directly to a tapping on the detector diode load resistance which (on reception of a signal) is negative-going with respect to chassis. As this negative voltage reduces the triode anode current, a point will be reached, dependent upon the setting of the potentiometer, where the tetrode screen voltage rises sufficiently to allow that valve to conduct and pass the audio signal. Due to suitable screen characteristics in the tetrode section the change from cut-off to conduction has a positive "on/off" quality which prevents distortion occurring at the point of change over. The "squelch" control enables the minimum readable signal strength in relation to local noise or interference conditions to be set so that all signals below that level will be prevented from reaching the output stage, giving a silent background between stations or during intervals in transmission.

The remainder of the circuit is conventional and consists of a further PCL83 with the tetrode section as output stage, the triode acting as b.f.o.

Other features include a calibration reset control operating on all bands and provision for remote control of the send-receive switching or, alternatively, control of the transmitter from the send-receive switch.

Performance

The receiver proved lively and stable in operation and oscillator drift on the two higher frequency bands was negligible after a short warm-up period. It was found, however, that there was some frequency shift on 21 and 28 Mc/s with operation of the r.f. gain control which could possibly be avoided by the addition of a stabilized h.t. supply to the oscillators. This is not a particular problem on 'phone reception but can prove troublesome when receiving strong c.w. The purity of note on c.w. reception was, however, excellent on all bands.

On very strong signals the a.v.c. action was insufficient to prevent some overload taking place unless the r.f. gain was reduced but this is not altogether unexpected when only two stages are available for control and does not represent a major disadvantage.

The screening of the receiver is above average and no signals could be heard without an aerial connection which, incidentally, is via a co-axial socket and arranged for 75 ohms impedance.

In all the receiver can be recommended and represents good value for money at its price of £52.

Teenage Amateurs

ALBERT DAVIS of Gillingham, Kent, who received his licence on his 14th birthday (January 5, 1958,) operates under the call-sign G3MGL and is a 25 w.p.m. c.w. lad. His mother is G3MER and his father hopes to be licensed shortly.

Another young licensee is K. J. Easty (G3LVP), also aged 14, who did duty on the Society's stand at the 1957 Schoolboys' Own Exhibition and helps to run the radio society at Aldersbrook County Secondary School, Wanstead, London, E.12. Lawrence Franklin (G3LWF) of Bath received his licence four days after his 16th birthday in August 1957. How many other teenage amateurs are there in the United Kingdom?

Jamboree-on-the-Air

AT an international gathering of radio amateurs at the Sutton Coldfield Boy Scouts Jubilee Jamboree in 1957 it was suggested that an annual event for amateurs interested in the Scout Movement should be held. The first such Jamboree-on-the-Air, as it is called, will take place on May 10 and 11, 1958. Further details may be obtained from the Honorary Organizer, The Boy Scout International Jamboree-on-the-Air, 965 Oxford Road, Tilehurst-on-Thames, Reading, Berks.

For Your Bookshelf and Shack . . . AMERICAN PUBLICATIONS

Orders for the following American publications can only be accepted from residents in the United Kingdom and British Empire. Prices quoted include cost of postage and packing.

*Radio Amateur's Handbook 1958 Edition -	34/-
(A.R.R.L.) Available March	
*Mobile Manual for Radio Amateurs -	24/6
(A.R.R.L.)	
*CQ Mobile Handbook -	24/-
(Cowan Publishing Corp.)	
*Antenna Book 8th Edition -	19/-
(A.R.R.L.)	
*Single Sideband for the Amateur -	14/-
(A.R.R.L.)	
*Hints and Kinks (Volume V) -	10/-
(A.R.R.L.)	
*Course in Radio Fundamentals -	10/-
(A.R.R.L.)	
*How to become a Radio Amateur -	4/6
(A.R.R.L.)	
*Learning the Radiotelegraph Code -	4/6
(A.R.R.L.)	
QST (A.R.R.L.) Yearly Subscription -	36/-
CQ (Cowan Publishing Corp.) Yearly	
Subscription -	44/-

*Usually available from stock. All prices for American publications are subject to alteration without notice.

R.S.G.B. Sales Dept., New Ruskin House,
Little Russell Street, London, W.C.1.

The Story of 3A2BT—Monaco

By N. A. S. FITCH (G3FPK)*



3A2BT on the air with G3FPK at the mike. Colin is nearest to the camera with John at the rear. On the far table is the transmitter and next to it the Eddystone S640 and modified BC453B receivers. The combined frequency meter and monitor, surmounted by the speech amplifier are nearest to the camera. The relay and high voltage power supplies were under the table with the mains transforming unit. The object sitting on top of the S640 is the v.f.o.

ENGLAND has one of the largest Amateur Radio populations in the world so English stations are hardly regarded as DX by many foreign amateurs. It is more difficult, therefore, for us to work the rarer countries than it is for a Swiss or Dutch amateur, for instance. The balance of power is restored somewhat if one has the space for a good aerial system and perhaps a rotary beam for one or more of the h.f. bands. Unfortunately this is not yet the case at G3FPK.

For the past few years the idea of actually being DX, even if only for a few days, had become increasingly attractive, all the more so after reading accounts of the successful exploits of other "DX-peditions." It was decided that in 1957 something would definitely have to be done to put the idea into practice.

The Choice of Country

In deciding where to go the main considerations were that:

- (i) the destination had to be easily reached by car;
- (ii) permission to operate an Amateur Radio station could easily be obtained;
- (iii) the place had good weather and reliable accommodation, and
- (iv) there were other things to do if the rig blew up!

The Principality of Monaco fulfils all these requirements although it is not an ideal radio location since it is screened immediately to the north by the Alpes Maritimes.

Getting Permission

During June 1957, whilst on a "conventional" holiday in the south of France, the opportunity was taken to see M. Passeron at the Bureau des Finances in Monaco to get the licence matter sorted out. The call-sign 3A2BT was reserved for use later in the year and no tests were necessary: no fee either—because there are no such taxes in the Principality!

This was never intended to be one of those marathon, twenty-four-hours-a-day expeditions that one sometimes reads about and neither of the other two members of the

party were licensed amateurs. One was John Norman, the other Colin Siebert (B.R.S. 21572) and we are all civil engineers working at the same office in London.

The Equipment

For years, unsightly, half-finished "lash-ups" had been adorning the shack at home much to the family's disgust; nothing ever got completed and put into a neat cabinet. It was realized that something better than this would have to be taken on the long car journey if it was to survive, so a rebuild was considered essential. Accordingly a self-contained v.f.o. was designed and built by late April. It uses a "Tesla" circuit with a reactance valve modulator for n.b.f.m. and there is provision for using an external speech amplifier if required.

It was decided to build a new, switched, broadband exciter and p.a. into one cabinet for economy of space. The circuit is similar to the popular "Elizabethan" and a standard "Elizabethan" assembly was used for the cabinet. Since there is an external v.f.o., the space saved by its omission from this unit is occupied by the power supply unit for the exciter section. By a crafty arrangement of Meccano pulleys, nylon cord and drum drives, the p.a. tuning capacitor is steered by the large central knob on the symmetrical front panel as can be seen in the photograph. The p.a. consists of a parallel pair of "the old faithfuls" and there is no prize for guessing what they are.

The speech amplifier incorporates clipping and filtering and has its own power supply as has the combined monitor and frequency meter. These two units are housed in similar, purpose-made cabinets by G4BI; in fact the gear is looking quite "Philpotted" now!

Reception was taken care of by an Eddystone S640 followed by a modified BC453B and, on the h.f. bands, a 6AK5 pre-amplifier was used. A refinement to the S640 is the addition of an outboard epicyclic drive to the bandspread shaft which gives an overall reduction of fifty to one. Pruning a plate from the b.f.o. pitch capacitor has considerably slowed the b.f.o. tuning rate resulting in easier tuning of single sideband signals. These are two worthwhile improvements to this receiver. As most of the gear only

* 79 Murchison Road, London, E.10.

works off 200 to 250 volts a.c. mains, Colin wired up a special mains transforming unit to enable the rig to be used on the nominally 127 volts in Monaco.

Customs

There were two main considerations regarding Customs. The first was getting the gear into France and the second was bringing it back to England, preferably without paying anything. Many inquiries were made by several people in an endeavour to ascertain the correct procedure for temporarily exporting about £100 worth of radio equipment but all such inquiries proved inconclusive, the usual comment being that nobody had ever done such a thing before. Discussions with the French Consulate-General's office in London were no more fruitful either. Eventually we prepared a comprehensive list of all the items, with estimated values, and took a dozen copies with us.

The Journey

It had been the intention to have a good night's sleep prior to starting the journey, but since the spares box was not packed till 01.00, only four hours under the sheets was achieved. Colin had stayed the night at the writer's house and at 06.35 on October 4 we left Leyton, picking up John on the way. There was a formidable amount of radio gear in the boot but fortunately the Sunbeam "Rapier" has a good appetite for luggage and we only had a small mountain of grips and coats on the spare seat. On arrival at Southend Airport we saw the Landing Officer and explained about the equipment. After some anxious moments he decided that it would be sufficient if a declaration of intention to bring back all the goods was made on two copies of the list. He retained one copy and we kept the other.

Half an hour later we arrived at Calais-Marck Airport after an uneventful flight on a pleasant, sunny morning. When we mentioned that we had about 100,000 francs worth of radio equipment it caused a "crise" in the Douanier's office and we began to have visions of Alcatraz or a Count of Monte Cristo type of existence for the rest of our lives. After several minutes of high speed talking, interspersed with much gesticulating, the decision was made that a "Transitaire" would have to be summoned from nearby Calais to fill up the appropriate form. Very obligingly the A.A. representative did the necessary telephoning and eventually M. Garchette arrived. He was a sort of bondsman for he made it quite clear that, in the event of our selling any of the gear, he would be liable for the full amount of duty, etc. For this service he charged a fee the calculation of which seemed to call for great mathematical wizardry. The document was called an "Aquit à Caution" and when it was completed one copy was handed to the Douanier who proudly pounded at it with a large stamp, finishing it off with a flourishing signature. One realizes that the stamp is the thing in a Douanier's life; it means as much to him as a spudnik does to Mr. Krushchev.

We finally left Calais at 11.00 and by 19.20 the following day had covered the 768 miles to Cannes. The next day, Sunday, we ambled along the pleasant stretch of coast to Monaco interspersed with lazing on beaches in the warm sunshine.

In Monaco

We checked in at the Hotel du Siecle in the late afternoon and explained that we wished to stay for a few days and install some radio apparatus in one of the rooms. After consultations between the manageress and the chambermaid this was sanctioned and we began secreting the bits into the tiny lift. The rig was installed in a single room, number 39, on the top floor, very conveniently situated for bringing in a feeder from the roof. We filched another table from the room that Colin and John were sharing and rearranged number 39 a little.

The hotel has a flat roof about 45 ft. by 55 ft. and there were still some light, wooden poles that Henk (3A2AH) had taken up there a few years previously. There was a quantity of steel wire, too, with which we later secured the poles to the corners of the parapets. This project was commenced during the evening but was abandoned when pangs of hunger overtook us. Henk came in to see us during dinner and next morning he called again, this time with some aerial insulators since they had been forgotten in the rush. Later on we completed erecting the aerials which consisted of two dipoles cut for the 20m and 40m bands respectively. These dipoles were about one inch apart and ran diagonally NW-SE over the roof. In this operation, Colin demonstrated his prowess at Boy Scout type lashing of the co-ax to the centre insulator whilst the structural engineering side of the business was brilliantly supervised by John.

Next we drove the few hundred yards to Monaco-Ville, the administrative district of the Principality where the Palace of Prince Rainier and Princess Grace is situated, and called at M. Passeron's office to get the actual licence. M. Passeron was away so we left the G3FPK licence, log book and passport with his charming secretary for collection the following day. (The licence, that is, not the secretary).

Operating

The first contact was on 7 Mc/s at 16.18 on October 7 with YU2BQR. We soon encountered one trouble when the receiver refused to receive, this apparently being due to the mains voltage dropping sharply when the street lights came on. Changing the auto transformer tapings cured this fault but not before the BC453B had been nearly disembowelled. Conditions on the three bands used were good and on 21 Mc/s a 2½ hour W.A.C. was achieved with CX2CO, UA3HI, VK2QL, W6PH, ZC4BL and ZS6AJ0 on the 8th.

Nearly all the 266 contacts were on c.w. by which mode 52 countries were worked in the 40½ hours that 3A2BT was on the air. The 21 Mc/s band was used mainly in the early evenings and 23 countries were worked, the best DX being CX2CO on phone and JA3FT, VK0AB, VS1FJ, ZP5CF and ZS7C on c.w. On 14 Mc/s operation was mainly in the late evening and before breakfast. A total of 37 countries was notched up, the plums being DU1RTL, JA0GG, K2Q00/VE8, KV4AA, SV0WQ/Crete, TI2PZ, UNIAE and VQ3GC. The ignition interference was often very heavy, especially on 21 Mc/s. 7 Mc/s was used in the wee hours and of the 23 countries worked, none was in the least exotic.

DL7AA needed a 3A2 QSO on 28 Mc/s for W.A.E. so a sked was made with him for 08.00 on the 12th. We had not put up a dipole for this band but nevertheless promised to try to put out some sort of a signal on c.w. Unfortunately disaster struck when a 3 in. length of co-ax in the pi-network final melted whilst tuning up and shorted the r.f. to earth. It could easily have been replaced but it was time for breakfast, anyway. For the record, the last QSO was on 21 Mc/s at 08.00 on October 12 with 5A5TE.

In general the standard of operating was good. Once or twice things got a bit hectic on 7 Mc/s as can be imagined when a score of S9 stations are calling at the same time. When this occurred it was best to work as many of the strong ones as possible to clear the way for the weaker signals. Apart from a few European "lids" most operators had the sense to call 3A2BT a few kc/s off the frequency. Those who persisted with long calls throughout a QSO with another station at zero beat did not get a contact. Even so, one such German offender has sent a QSL card confirming the contact he would like to have had by these tactics.

The Return Journey

After breakfast we dismantled the rig and aerials and wrapped up all the pieces in newspapers. The 3A2BT plaque,

which Colin made with hardboard and chalk, was laid to rest in the rafters of the small penthouse on the roof alongside similar nostalgic mementos of earlier expeditions. This penthouse, incidentally, has a 20 amp line specially wired up for hams for at one time it was to have been the headquarters of the local Amateur Radio club. Now, however, we understand that two rooms are to be made available for this purpose at the Government's expense in Monaco-Ville. Our last act in the hotel was to put room number 39 back to its original layout and to leave a decent tip for the chambermaid.

At 12.45 we left La Condamine on the first stage of the journey home via the Route Napoleon. Next day we nipped into Switzerland to fill up with petrol as we were running out of French petrol vouchers and did not cherish the idea of paying about 7/4 per gallon for the French brew. After an overnight stop at Chatillon-sur-Seine we reached Calais at 14.30 on Monday. As we were rather early we went along to the docks to M. Garchette's office and paid his fee before going to the airport. Customs formalities were quickly over, the Aquit à Caution being discharged without the Douanier even looking at the gear.

On arrival in England one Customs official poked his head into the car to look for contraband but he soon retreated since the aroma from our boxes of Camembert cheese and fruit was quite overpowering. The Landing Officer took possession of our copy of the equipment list and confirmed that there was no special form for it. He said that as far as he was concerned the gear was "an extension of your personal baggage." He added that such a list as had been prepared was sufficient and on return to the country, the Customs Officer "if he so desired" might check the items. In our case he chose not to.

We arrived home in Leyton at 17.30 where already several QSL cards awaited attention. All cards were despatched by November 20 either direct, if return postage was included, or via the various bureaux. A few stations have sent cards confirming contacts of which there is no record in the log. Some exchanges were pretty brief, and they probably thought they were in contact when in fact they were not.

Conclusions

This short trip proved that hams and non-hams can go on a holiday together and all enjoy themselves. We quite successfully combined operating the rig with drinking in the sunshine and the wine. In common with many other countries the line voltage in Monaco varies greatly. Jean, 3A2BF, said that although nominally 127, the voltage never rises above 120 and is often down to 90, so future expeditions would find a "Variac" very useful. We proved that the simplest aerials will give reliable, world-wide coverage with consistently good reports even from unexpected directions.

As far as equipment is concerned it would have been better had not so much been left until the last minute. Anyone else of similar temperament to the writer would do well to pretend he is going one week earlier than the actual day, should he contemplate a DX-pedition.

In conclusion, we should like to take this opportunity of expressing our grateful thanks to F9AA, G2MI, G2KU, G6CL, 3A2AH and 3A2BF for their help in one way or another and, of course, to M. Passeron who issued the licence!

This leaves the problem of where to go in 1958, for like smoking, beer and girls, once you start this sort of thing it's going to be hard to give it up. Now let's have a look at that map. . . .

The Award Hunters' Club

FULL details of the Award Hunters' Club, open to all holders of 25 or more different Amateur Radio awards or certificates, may be obtained from the Hon. Secretary, V. J. Velamo (OH2YV), Isokaari 4-B-30, Lauttasaari, Helsinki, Finland.

R.S.G.B. QSL Bureau Sub-Managers

THE following is a list of the R.S.G.B. QSL Bureau Sub-Managers showing the call-sign groups for which they are responsible:

- G2 calls:** G. Verrill (G3IEC), 64 Forton Road, Gosport, Hants.
G3, 4 and 5 two-letter calls & GC P. Jones (G3ESY), 94 Holme Lacy Road, Hereford.
G6 calls: A. J. Mathews (G6QM), 62 Ashlands Road, Hesters Way Estate, Cheltenham.
G8 calls: A. W. Gover (G4AU), 30 Amblecote Close, London, S.E.12.
G3AAA-BZZ: M. Hassall (G3EMD), 99 Shenstone Valley Road, Quinton, Birmingham.
G3CAA-DZZ: C. A. Bradbury (B.R.S. 1066), 13 Salisbury Avenue, Cheltenham.
G3EAA-HZZ: W. J. Green (G3FBA), 82 Bloomfield Avenue, Bath.
G3IAA-KZZ, B.R.S. and A numbers C. Usher (G2CCD), 24 Carlisle Road, Dartford, Kent.
G3LAA onwards: G. C. Voller (G3JUL), 13 Marlborough Road, Ashford, Middlesex.
GD calls: T. R. Moore (GD3ENK), "Glyn Moar," St. John's, Isle of Man.
GI calls: W. H. Martin (GI5HV), "Swallow Lodge," Greenisland, Co. Antrim, Northern Ireland.
GM calls: D. Macadie (GM6MD), 154 Kingsacre Road, Glasgow, S.4.
GW calls: J. L. Reid (GW3ANU), 28 Walterston Road, Gabalfa, Cardiff.

Envelopes for the collection of cards should be sent direct to the Sub-Manager concerned and not to the QSL Manager (Mr. A. O. Milne). Outgoing cards should not be sent to the Sub-Manager unless they are in the call-sign group for which he holds envelopes. For example, the holder of G3J-- call may send cards for calls in the series G3IAA-G3KZZ to his own Sub-Manager, together with envelopes for the collection of cards, but he should not send to him cards in any other call-sign series. Sending cards for general distribution to the Sub-Managers only involves the cards in delay and the Society in needless expense. Mr. Milne's address is 29 Kechill Gardens, Bromley, Kent.

Affiliated Societies' Representatives List No. 3

In addition to the names previously listed the following Corporate Members of the R.S.G.B. have been nominated and elected as Affiliated Societies' Representatives for 1958:
ARIEL RADIO GROUP (BUSH HOUSE): B. A. Toms (G3BBU), 38 Ashbourne Avenue, South Woodford, London, E.18.
ARIEL RADIO GROUP (LANGHAM HOTEL): A. H. B. Bowler (G3COJ), 206 Courthouse Road, Maidenhead, Berks.
KINGSTON AND DISTRICT AMATEUR RADIO SOCIETY: D. White (G3JKA), 31 St. James Road, Kingston upon Thames, Surrey.
NORTH KENT RADIO SOCIETY: C. J. Leal (G3ISX), 1 Deepdene Road, Welling, Kent.
NORWICH AND DISTRICT RADIO CLUB: O. F. Simkin (G3HYJ), 15 Hillside Road, Thorpe-next-Norwich, Norwich, Norfolk.
THAMES VALLEY AMATEUR RADIO TRANSMITTERS SOCIETY: Alan Mears (G8SM), 4 Broadfields, East Molesey, Surrey.
UNIT AMATEUR RADIO CLUB: C. D. Didcott (G2FHF), Elmbridge, Rectory Lane, Appleby Magna, Burton-on-Trent, Staffs.

Can You Help?

- J. Ayres (G3DQT), 7 Berrylands Road, Surbiton, Surrey, who wishes to borrow the circuit diagram of the R209 receiver?
- A. S. Bragg (B.R.S. 11262), 118 Wallace Road, Ipswich, Suffolk, who requires the manual for the R308 v.h.f. receiver covering 20 to 145 Mc/s?
- R. Selby (B.R.S. 7943), 20 Cromwell Road, Worcester Park, Surrey, who wishes to obtain information on the use of a 0-1mA meter as an "S" meter on the R.1155 receiver?

Please enclose a stamped addressed envelope when writing to Headquarters for information.

THE MONTH

THE MONTH										
DATE TIME	FREQ.	STATION CALLED	CALLED BY	STATION HEARD OR WORKED			IF QSO RESULTED			REMARKS
				R	S	T	KC/S OR DIAL	MY SIGS.	R	

ON THE AIR

Best DX Month for Ten Years—Iraq on the air Again

BY S. A. HERBERT (G3ATU)*

ONCE again a good month has passed and conditions on the bands—especially the three h.f. ones—have been just about as good as they have ever been during the last ten years or so. And so, with a goodly mail to get through, on with the month's story.

News from Far and Wide

Iraq: Brian Dare (G3JFT/ex-YI3AA) writes from Habaniya with the good news that just before Christmas negotiations with the service authorities had reached a successful conclusion. Brian and another G have applied for HN3 licences and hope their call-signs will be HN3AA (Brian) and HN3DS (Dave). HN3AA will run 15 watts to a 5763, feeding dipoles on 14 and 21 Mc/s, with a long wire to be added for use on 1.8, 7 and 28 Mc/s, while HN3DS will run some 60 watts into a 7 Mc/s dipole or into a long wire on both 1.8 and 3.5 Mc/s. Both stations have SX28 receivers, incidentally. Brian finds 28 Mc/s producing good G signals around 10.00 G.M.T. and he will be on the band for contacts at that time. A final request—and an important one—is that all QSLs for HN stations should be sent only via the R.S.G.B. Bureau. (Overseas publications, please note.)

Falkland Dependencies: Ted Ross (G3LWS, ex-ZC4FB) was awaiting his VP8 call when he wrote last December and hoped to be allotted VP8CZ. Ted has been assigned to Admiralty Bay, South Shetlands, where he relieves VP8BY as senior operator of the base control station, ZHF66. The second operator—and cook!—is VP8CT, who is staying on for another season. The gear in use is two ET4336s plus two CR100 receivers. Before going to the Shetlands, Ted spent some time on South Georgia, from where he sent this news, and reports activity from there as nil at present. VP8AY and VP8BC are on the island with VP8CS (who has probably left for home by now) but, remarks Ted, they are working long hours during the "busy" season and are too tired to have much enthusiasm for further radio efforts, even of an amateur nature. However, the winter season, April to November, is quieter and there may be some amateur activity during that time. Henry McLeod (VP8CS) has been receiving QSLs addressed to him personally, but for the call-sign VP8AM, which he has never used. The calls VP8AM, '8AL, '8AK, '8AJ and '8AE were at one time issued to the various bases, but were all withdrawn, so it seems that yet another pirate has been at work.

Antarctica: G3BGQ (Birmingham) reports that VP8CH left Halley Bay on January 7 and was due in the U.K. in five weeks from then. He will deal with all QSL cards as soon as possible after his return. G3BGQ, who worked him ninety-three times since last March, says that VP8CI remains to keep Halley Bay on the air.

Aaland Is.: G6YQ had a yarn with Nick of OH2XK after the latter's return, with OH2YV, from their trip to OH0 and he finds that the pair made 2,205 QSOs (including 902 Ws and 343 Gs) for a total of 64 countries worked. Nick

emphasizes that they were there solely to give OH0 contacts to others and not to make DXCC themselves. A sporting effort on their part. Moreover, they have filled in all the QSL cards involved, so that nobody who worked them need be anxious on that score.

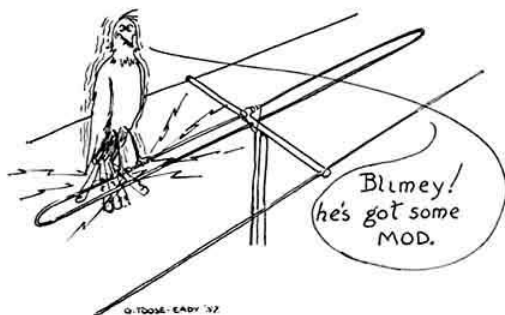
Kuwait: B.R.S.3003 passes the news that the prefix MP4 no longer applies to Kuwait, where the Posts and Telegraph Dept. have re-allocated all calls, which now carry the prefix 9K2.

Greece: SV1AE reveals that as a result of recent revision of amateur licensing, the calls SV1AA, 'IAB, 'IAC, 'IAD, 'IAE, 'IAF and 'IAG have been issued to Greek citizens. These are the only genuine Greek stations with the exception of American Military personnel, who operate with temporary licences in the series SV0WA to SV0WW. QSL cards for SV stations may be sent to G. Zarifis, QSL Manager, P.O. Box 564, Athens, Greece.

From the November 1957 N.Z.A.R.T. Journal, *Break-In*, we learn that VS4JT will be in Sarawak for another two years. ZM6AS says his QTH is very fine for DX, including Europe.

Gleanings from the W.I.A. journal, *Amateur Radio* are that CR8AB is reported active on 14 Mc/s c.w., while VP8BY and CE9AE (Antarctic) are on 21 Mc/s. ZL5AA says that absorption is so heavy in the Antarctic that he rarely hears a signal below 50 Mc/s. On 7 Mc/s, the VKs work VS1HU, DU7SV, KL7, KG6, JA, KH6, KR, HR and XE, but a fair guess is that they would gladly swap the whole lot for a GD or an OY!

Nyasaland: G6CL tells of a first contact for him with Nyasaland—ZD6FC—at 18.40 G.M.T. on January 8, 1958. He also collected a first when he worked VK0 as at Mawson on December 4, 1957.



News from Nearer Home

Last August, G3GNM (Harrow) QSOd VP2VB and duly sent him a QSL via KV4AA, who handles all VP2VB's cards. Some time later, the QSL was returned by KV4AA, who had paid 10 cents postage due on the letter and whom we quote... "I shall be happy to QSL for VP2VB upon receipt of three I.R.C.s to cover postage due, etc." We know

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

that KV4AA has been paying excess postage for years past on insufficiently stamped mail and apparently too many straws have now been laid on that particular camel's back, but G3GNM is rightly annoyed because before mailing the card, he took it to the local Post Office and was told that the correct rate was threepence, which amount was accordingly affixed to the envelope. Future correspondents with the U.S. Virgin Is. may benefit from the above by ensuring that they over- rather than under-stamp their letters!

G3DVQ (Purley) refers to the January M.O.T.A., wherein G2DHV reported working G3DVQ/DL. In fact, G3DVQ has never even been to Germany, so that one more pirate must be added to the list. G3JTC (Liverpool) reports yet another. This particular pest answers to Harold and QSLs are arriving for mobile phone QSOs. As the real G3JTC has so far been on twenty c.w. only, anyone hearing his call on phone will now know the worst.

Twenty Metres Doings

Twenty has been in excellent shape for the whole month and even the short-skip menace seems to have lessened a trifle. Rare ones continue to pop up and G6YQ (Liverpool) says he just kept his head above water with FB8XX, JT1AA (QSLs have arrived already from both), ZK2AD, CR8AC and C9XF, who *might* genuinely be in Mukden. George worked PY0ANO (Fernando Noronha), but hears the A.R.R.L. is not inclined to add that one to the DXCC List. PY0CV, if he finally makes it, will be on Trinidad Is., which is quite a different matter. VQ8AS was heard, but remains on the wanted list, which is more than can be said for the comedian who alternates between VS8AC and VQ9AC, depending upon which foot he sends with!

G3IFB (Kenton, Middx.) is up to 142C with 107 confirmed, thanks to three new ones in the shape of VP8CC (01.00), HC1JW (20.20) and CT3AB (15.00), with a possible in UPOL7, but the exact whereabouts of these Soviet Polar stations is wrapped in mystery. Some—and UPOL7 is one—give their QTH as “Nord Pol,” which covers a lot of territory. At the same time there is at least one Soviet expedition floating around northern latitudes on a massive ice-floe. So the country status of UPOLs will presumably have to await further clarification, which will in turn depend on data given on the UPOL QSL cards. As Russian stations in general can be relied upon to QSL, there should be no

undue anxiety as to the ultimate outcome, even if it turns out to be different from one's expectations!

G6XL (Leeds) worked three beauties—JT1AA, CR8AC and VR6TC—and he has QSLs from all three. Other QSOs were with FB8XX ('015, 18.30, weak), VK0AB (Davis, very strong at 18.00, '070) and, on phone, VE3BQL/SU, while one evening, ZC5AL was working VQ8AS. ZM6AS was also on hand, giving the “wolf-pack” three victims to smother at one go. When the resulting chaos eventually died down, all three had gone! G3FPK (London, E.10) set himself a target when he returned to the air a year ago after a four-year “lay-off.” His aim of one new country a week was exceeded and Norman managed to work 37Z and 110C, plus one or two doubtful ones. Progress continues towards



WAS, WBE, WASM11, DUF, etc. In connection with the last, G3FPK was shattered to learn that 3W8AA is not good for DUF, being in the “naughty north” of Viet Nam. Only stations south of Lat. 17 degrees are eligible! A new one on c.w. was HK3JC, who came back to a “CQ Colorado.” And very nice, too!

G3AAE (Barnet) says that with TVI, short-skip and the bands always open to the U.S.A., life gets difficult, but he still talked to XE2WCO (23.00), FB8XX and VS9AD on the key and with HV1CN (19.00) on phone. He has cards from the HV, ZK2AD and PY7AN/0.

B.R.S.20104 (South Harrow) often hears Ws calling ZC3AC on 14116 c.w., but so far the ZC3 has not been

Frequency Predictions for March, 1958

PREPARED BY J. DOUGLAS KAY (G3AAE)

BAND	NORTH AMERICA East Coast	NORTH AMERICA West Coast	CENTRAL AMERICA	SOUTH AMERICA	SOUTH AFRICA	NEAR EAST	MIDDLE EAST	FAR EAST	AUSTRALIA	ANT-ARCTICA
M.U.F.	34 Mc/s 1730	26 Mc/s 1800	38 Mc/s 1400	40 Mc/s 1200	41 Mc/s 1600	41 Mc/s 1500	41 Mc/s 1000	40 Mc/s 1130	35 Mc/s 0900 SP	34 Mc/s 1500
28 Mc/s	1200/1930	1800	1100/2130	1030/2200	0800/2100	0700/1930	0730/1730	0800/1730	0730/1200 SP	1100/1800
21 Mc/s	1100/2230	1500/2030	0900/0000	0930/1130 1800/0200	0700/1000 1300/0000	0700/2300	0830/2300	1200/2000	0830/1100 LP 1000/1700 SP 2100/0000 LP	0900/1100 1800/2030
14 Mc/s	0830/1030 1800/0230	0600/1100 1300/1800	2200/1030	2000/0900	1800/0200	1300/0930	1500/0200	1630/0000	0400/1000 LP 1300/2200 SP	2000/2200
7 Mc/s	0000/0800	0700	0200	0200	0000	1900/0500	2000	0000	1800/2000 SP	0200
3.5 Mc/s	0400	0700	0200	0200	0000	2330/0200	2000	0000	1800 SP	0200

These predictions are based on information provided by the Engineer-in-Chief of the Post Office. All times are G.M.T.

audible. KP6AL has been worked on '003 by a G and KH6CMM/KP6 may have been on by now. CN2BD is said to be no good and that applies also to MP4KAC on c.w., while ZAIAF, Box 131, Dures, sounds like just one more. Goff's month was made by a QSL direct from JT1AA, thanks to OKIJX. He hears that one B.R.S. has 38Z and 222C confirmed and wonders if any listener can beat that. **B.R.S.21279** (Birmingham) was delighted with HK0AI (22.00) and HV1CN, both new ones, and he says there are usually 11s around who translate for HV1CN, so that seems all right. Martin heard VK9AD (Norfolk Is., 10.00) and ZD3E on phone while he logged VK0KT (19.30) on the key. **B.R.S.20317** (Bromley) wound up 1957 with a score of 40Z, 221C, of which 208C were heard on c.w. Bill started 1958 by sorting out VK0KT (Macquarrie) and W4IHW/KS4 ('210 to '237, 00.00 to 02.00), both new, then pulled in FB8CE (Fort Dauphine), KP6AL ('005, 19.00), XV5A (Saigon); QSL to Michigan State University, 137 Duong Pasteur, Saigon, Viet-Nam. He is genuine.), 9G1BQ and 9K2AN (Kuwait), and a certain ZD8LN (see later).

A.1491 (London, N.13) often hears 3A1W and thinks he may be all right, but **G3FPK/3A2BT** thinks otherwise, especially as he began... "de LA..." on one over! **B.R.S.20135** (Newport, I.O.W.) heard a great babel on the phone band and discovered AP2M (18.50) who was the cause of it all. Bert, too, logged HV1CN. **B.R.S.19107** (Beckenham) caught VK9RH (Norfolk Is.) on c.w. (07.40, RST589), but his main interest on the band is in s.s.b. DX. KA0SC, KA2 and almost a dozen KR6s are strong from 11.30 to 15.00 G.M.T. W4VE1/KC4, 3A2AH, OH0NC, SV0WE (Rhodes), VS4JT and CR9AH are active. HV1CN on 14150 kc/s gives his call as "Ahka Vay Oono Chay Ennay" and his QTH as Sgr. Domenico Petti, Stazione Radio, Citta del Vaticano. **B.R.S. 20106** (Pett's Wood) logged VK0PK (18.10), VK0KT, G3LWS/VP8 (who is probably in the South Shetlands, although he may have been operating from South Georgia for a short time), MP4YA (19.00), FL8AC and ZD3G for good ones on c.w.

G3ATU worked UM8AD (Frunze) and JT1AA, caught free of short-skip at 14.00, then raised ZD8LN, who opened with "gd, drom... tks fer fb QSO es call... ur RST569, 569, 569... hr name is Gerd." If QSLs are to be exchanged, then Gerd will have to start the ball rolling!

Fifteen Metres

G6XL worked HL9KT ('130, 11.20) and heard ZS9G (strong at 18.30), both on phone, while **G3AAE** QSO'd XE1PJ (12.30), VK9CK (11.45), CT3AV, JT1AA (12.30) on c.w. **G3BHJ** (Norwich) now has an eight-element three band curtain to play with and on phone raised ZL, PA, ZS9G, VE5, '7, '8, VP7NB, VK and much besides.

G3GSZ (Castle Eden) regards the gift of a TV receiver—with a 14 Mc/s i.f.—with mixed feelings, but QSOs with VU2MD and JT1AA (10.30) did much to restore his morale. Stan finds that his 31ft. ground-plane loads well both on 7 and on 21 Mc/s. **G3FPK** added KR6AK and VQ6LQ to his score on the band, while **B.R.S.21279** logged HL9KT's QTH as Roy Jones, 304th Signal Bttn., A.P.O. 301, San Francisco. XQ8AG can be reached at the U.S. Legation, Santiago, Chile.

A.1328 (London, W.1) still listens when on vacation from University and new ones for him were CR4AD, MP4BBC, VE3/SU, ZC4, KP4, ZP, FA and LZ, while **A.1426** (Bristol) heard FE8AH (17.00), LU and CE3. **B.R.S.20106** has logged JT1AA on c.w. as early as 09.40. **GW3AHN** (Cardiff) adds the news that JT1AA is now on 21090 and '027 kc/s and will be on 28188 kc/s too. **GW3AHN** has worked him twice on 21 Mc/s (S8 both ways). FB8ZZ is another of the 200C plus which have been accumulated on the band. **A.1491** was worried by XQ8AG, but he had no doubts about FB8BW,

4S7YL, VP5BL and HL9KT. **B.R.S.20135** logged KA7SL (10.00), HH7YL, PZ1AG, OY5S, VK and ZL on phone and he heard FK8AT (11.40) at good strength on his domestic receiver.

Ten Metre News

Ten has been full of DX too, and **G3IFB** caught JA1CO, KA2KS, F9QV/FC, VK9XK, VE6WG, VE7KL, CE3AG and VQ3GC on c.w., while new ones on A3 were CR9AK (11.30) and ZS9G. **G3AAE** worked FF8AL (10.00), UN1AA, VQ3SS and F9QV on A1, while **G3BHJ** had A3 contacts with MP4BBL, FQ8AF, PX1AE, TF2WCD, VP5BL, ZD2FNX and ZD4CH, later heard by **A.1426** with his new call, 9G1CH.

A.1380 (Stockport) mentions KG6AG (10.00), KR6BH, ZC6UNJ and OA4IGY (16.45) on A3, which mode netted W5OXK/KG6 (10.00), KR6s, HH5DS, SU1AA, YN1MAC and IS1ZDT (a rare one on the band) for **B.R.S.20106**. **B.R.S. 20135** lists PJ2CE, ET3XY, ZD3BFC, ZD6RM, KR6DI (s.s.b.), KG6, KA7, VK, VS6, ZL, VS9AD, VE8, XQ8 and 9G1—all heard on Sundays between 09.00 and 15.00 G.M.T. **B.R.S.20317** heard VS9AG/ZD3 (now ZD3G) and ET2US (14.50) on c.w. **B.R.S.19107** tuned in KW6CA at good strength on A3, but otherwise he was not impressed.

The Low Frequency Bands

Business remains far from brisk with so much competition from the h.f. spectrum, yet on 7 Mc/s **G3GSZ** worked VQ4AQ, UF6AA and SV0WR for new ones, with W4EVL (Ala.) for a new State. **G3FPK** now has 62C worked on forty metres and with the "VBT" thing less in evidence, he collected LA2JE/P (whose log is now in Norway, with LA5HE stoutly dealing with the QSLs), UM8KAA, OH2YV/0, UA0AG and VS9AG/ZD3, who was S6 to 7 from 20.00 until after 01.00. (QSL to Lee Grant, Box 285, Bathurst, Gambia).

On forty phone, **A.1830** logged W5ZHR, '5CTO, '0ZGX and W6SUP, weak but readable. A new one on eighty c.w. for **B.R.S.20317** was LU5CG ('15, 23.50 to 00.30) who runs 1kW, while on forty Bill heard Lee Grant, now signing ZD3G. **B.R.S.19107** knows YK1AT has been on eighty and he has heard LA2JE/P working Gs as well as OX3DL, TF, UN1 and FA, but John remarks on the time when he heard W6, '7, ZL, VP8, ZS and 4S7 up there all in twenty-four hours. Yes, indeed, things have changed! His best on forty were VK0AB (RST569 at 19.58, working FA8RJ), YK1AT (S8 at 23.30), hordes of UA9s and ZS6VF (03.35). The ZS would never have been logged if John had been able to get to sleep on that particular night!

Finally, to Top Band, where **B.R.S.20106** heard W1BB, '1VDB, YU3EU, HB9CM, DL7AH and DJ1BZ, so things are still moving up there. Remember, too, that two HN stations are equipped for the band. Things may yet be interesting ere winter departs.

According to *Break-In* ZL2AGX reports activity again on 160m and says "some interesting DX has been worked, including Gs and Ws!" VKs are not allowed the band but have been worked cross-band on eighty, while in ZL, the band is only 25 kc/s wide and is from 1875 to 1900 kc/s. Active stations at present are ZLs '3RB, '1SG, '3JD, '3RW, '1AKX, '2KL, '2DK, '2AGX, '2QJ, '2AIH, '2AAC, '2ALK, '1DK and '1AKY. ZL1AKY, crystal-controlled on 1890 kc/s, is on most nights at 19.00 N.Z.T. and ZL1DK is active with 100 watts to a "Viking."

* * *

So ends this month, except to thank all who keep this feature going by sending in their news and views. The deadline for the next M.O.T.A. will be February 18 and March 18 will be the date for the following month. Meantime, happy hunting and 73.

Why Amateur Radio?*

By L. E. NEWNHAM, B.Sc. (G6NZ)

THIS question when applied to the present assembly of enthusiastic radio amateurs might appear to be quite unnecessary, in fact even ridiculous. A little serious thought may reveal, however, that a quick and easy answer is difficult to form and probably the answer becomes more involved the more we think about it.

Let us consider first why we pursue a hobby at all. Our normal daily work still leaves most, if not all people, many hours which they may use as they please. The poet Wordsworth lamented "getting and spending we lay waste our powers." This should not be true today. On retirement too, our leisure hours markedly increase and time must be filled. Most of us, when our work is done still find we have mental and physical energy to spare crying out to be used. A hobby is the answer if this cry is heard.

The Basic Need for a Hobby

Often the cry is smothered and not heard and here we have the beginnings of the incomplete and usually unhappy person. A well-known writer, the late Beran Wolfe, has outlined three basic attitudes to life. First, the human vegetable. He is born, eats, drinks, sleeps, mates, grows old and dies with a calmness undisturbed by problems of any kind. He has and desires no learning, no education, but vegetates at a low level of existence and finds no fullness and happiness in life. He doesn't need a hobby; he has no interest and no hunger for one. Secondly there are those to whom the whole of life is a business, its success measured by money alone. Their attitude is: "What do I get out of it?"; "What is it worth to me?" They live in a high-pressure self-created world of intense competition which breeds dissatisfaction and worse. There is no time for happiness and certainly a hobby is never considered. The third type attitude is "How can I contribute to life?"; "What can I put into it?"; "How can I co-operate with my fellow men?" In finding the answers a full and happy life is assured. This type will discover how to supply all his needs both physical and mental through work paid and unpaid and a hobby will assuredly be part of his life. Today the first group—the vegetables—must be a very small number, and the second group is also not too large so that, in fact, most people need a hobby. It becomes a question of selecting the right one. The choice is ours but if our hobby is to stay with us there are several points to be considered.

Every human being experiences a sense of incompleteness and inadequacy. It begins in childhood and living and growing up we move towards our goal of completeness. Usually we search for some compensation for some real or supposed inadequacy—in some respects we may tend to feel inferior—even in some parts of an otherwise successful job of work. We need a field where our self esteem can be strengthened. Generally our incompleteness shows itself in hungering, after bodily requirements are met, for three main things—companionship, self enhancement and "intellectual free movement" as one writer names it. If we think a little, Amateur Radio supplies all these requirements easily. The amateur by his very communication cannot remain alone. He joins a large body of enthusiasts scattered over the world. He may attend local clubs and national shows, conventions and field days. Companionship is provided.

Self enhancement and self-esteem are provided for in several ways. Our friend may excel in various aspects of Amateur Radio—he may be a DX king; and work for the many rewards and certificates of his prowess. He may find his hunger for mastery satisfied by the feeling of the power under control of his fingers. He may strive for a fine QSL collection; to excel personally in the skill of operation of his station; in the design of new and ingenious circuits and modes of construction; in the trials and successes of aerials and arrays; in the intense self satisfaction of home made gear. The scope is wide.

Intellectual Free Movement

Thirdly, the intellectual free movement or as it may be termed an insatiable curiosity is promoted by the scientific outlook and by the wide range of experimentation provided by our hobby. Even the professional finds our hobby attractive. In fact he can experiment as an amateur in his own private room on any hunch however "wild cat" it may be and will lose no reputation if it does not come off. The amateur simply does not believe in the impossible. His doctrine is "let's try it out and see"—a most useful and practical attitude which brings results. Above all he uses full scale equipment, not mere models, and here the amateur lines up with the professional. We learn about our hobby and acquire new skills without external compulsion. We willingly undertake drudgery (both mental and physical) to achieve our purpose. We learn and do with the very best of interests and motives. Amateur Radio is unique in being so grand a hobby which is so satisfying and purposeful.

Why Amateur Radio? Because it can provide us with constructive outlets; scientific studies; social occasions and contacts; because it is instructive and amusing; because it can satisfy our competitive spirit and encourage skills. It can satisfy the acquisitiveness or jackdaw-like propensities in us through the pride of good gear and the possession of a large junk box. It can mean all things to all men. It is *Amateur Radio*. That is why.

What the Professionals Think

Let us now ask the professional engineer this same question—Why Amateur Radio? As the professionals are not here tonight, officially that is—many highly skilled professionals are also amateurs—let us quote from their writings. For example, *Short Wave Wireless Communication* by Ladner and Stoner has been a standard text for many years. The story of the amateur development of short waves is told with credit. Part of this appraisal says—"Since the earliest days of wireless there has been a band of amateur workers of very varying capabilities. Some were amateur in the sense that wireless was to them only a hobby and not a profession but their standard of knowledge was equal to that of many of the professional workers..." and so on.

Another well known text is *Radio Engineering* by Professor Terman, a standard book known to many thousands. In the section which mentions amateur transmitters we read—"... many of these transmitters represent great ingenuity in adapting available tubes to give a maximum power output in proportion to cost." "... in fact many low power commercial transmitters are essentially commercial adaptations of amateur designs."

Mr. T. E. Goldup, a Director of Mullard Ltd., when Chairman of the Radio and Communications Section of the

*Delivered to the Members present at the Ordinary Meeting of the Society held at the Institution of Electrical Engineers, London, on January 24, 1958.

Institution of Electrical Engineers (and now President of the Institution) gave a survey of radio development in his address. One whole section was devoted to the work of amateurs which all should read. It praises their work and the work of this Society. Of particular value is the following: "The resulting educational value of this hobby has proved of immense value for it is generally recognized that the keen experimenter who has constructed and operated his own station carries with him into industry enthusiasm and practical experience." Many other professionals have spoken and written similarly on the amateur movement.

Now what is the reply of the Armed Services to our question—Why Amateur Radio? Our war-time record is a statement of fact. Our members were in the forefront. So indeed was amateur equipment particularly with regard to communication receivers. We have a proud record. Encouragement is given to the Service amateur, particularly in the Royal Air Force where, as we may know from exhibition displays, equipment and facilities are gladly provided. As Lord Sandhurst said in the House of Lords on February 8, 1949: "They (radio amateurs) are a valuable asset to this country." Our question is well answered.

The Post Office

Let us now turn to our licensing authority, the Post Office, who govern our conditions of operation. What is their answer? This is surely well shown not only by our continued existence but by the additional facilities which the Post Office have granted to us since the war. In this country we have maintained this excellent relationship by good self-discipline in our ranks. Let us, however, take a glance at the official definition of the amateur. Quoting from the International Radio Regulations we find—"Amateur Service—A service of self-training, intercommunication and technical investigations carried on by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest." They are excellent terms of reference, as it were, and we should be proud to live up to them.

Let us read now from a book by Lt.-Col. Chetwode Crawley, former Inspector of W/T in the G.P.O. His book is the story of electrical communications and amateurs are mentioned often. For example, "It is a very remarkable fact, well worth the attention of young readers, that most of the pioneers of electrical communication were amateurs." Again he outlines the history of the amateur discovery of short wave communication and ends thus: "The wireless amateurs were the pioneers in this great advance and it is an inspiring precedent for all amateur workers in electrical

communication." On the question of interference in radio generally he says, "It is as old as wireless itself and the answer no doubt will be supplied, as it always has been in the past, by the most enthusiastic body of workers in the world, the wireless engineers, and their colleagues the amateur experimenters." There are many like passages. Our name is good. We must keep it so.

Public Relations

Now let us put our question to the general public—Why Amateur Radio? Here the picture is far from clear. Many people quite frankly will not know what we are talking about. Of those who think they know, some will probably think only in terms of TVI and BCI possibly coupled with expressions such as "nuisances," "ought not to be allowed." We need more publicity of the right kind. The public should be aware of us, our work and our value to the community and we are the people to make them aware. We must set out to educate the public and it must be a continuous process. The work of R.A.E.N. for example, is well known to the Red Cross and St. John organisations and its public service is increasing, but more than this is necessary. This year, for example, we might feature our work with I.G.Y. Our last exhibition too, with its broader appeal was a successful step in the right direction. Public relations certainly is the concern of every amateur.

TVI, which is presenting great problems to most of us, is the concern of all too, and I hope amateurs as a society, as local groups and individually will do their utmost to investigate the problem more fully in this country and to make the findings widely known. The problem is not only a technical one, indeed that side has already received a fair measure of attention.

Our future often seems to be mixed with a question mark. We must by our endeavours ensure that, in 1959 when the International

Telecommunications Conference is held in Geneva to discuss *inter alia* frequency allocations, the amateur movement is adequately represented, adequately briefed and adequately backed by good relations with all sections of the community. We must ensure by our own efforts that the question "Why Amateur Radio?" is never put in such a way as to threaten our existence.

Amateur Radio has no Equal

Our grand hobby has no equal; it is worth every effort to ensure not only its continuance but its future growth. Let us all be sure that individually and collectively we play our part and do not rest on the achievements of a receding past to see us through.



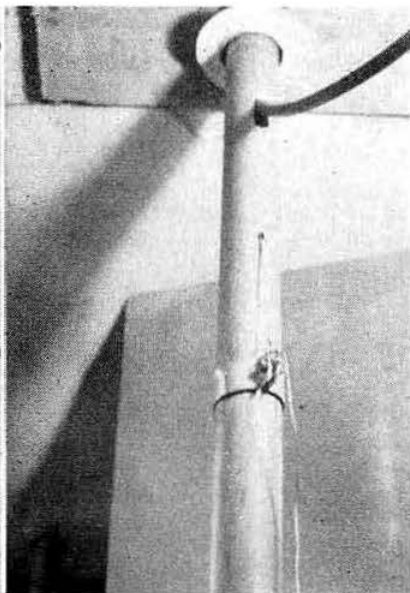
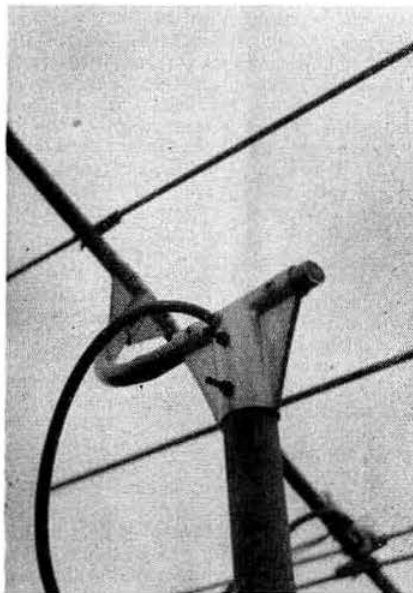
L. E. Newnham, B.Sc., G6NZ
President, 1958

from one-half to four miles. From this information it will be seen that G3CGQ does not operate from a hilltop. The beam described has been a means, not only of listening to solar noises, but also of studying how some of the signals get into the "bowl." V.h.f. enthusiasts can be assured that introducing varying tilt to v.h.f. aerials will produce some

interesting results showing the varying angles at which some signals arrive during periods of tropospheric inversion, and particularly auroral activity.

Tilted beams offer a fascinating aspect to the v.h.f. man at a time when there is world-wide activity, by being able to listen or transmit in all directions, including upwards.

Left, the method of fixing the axle on which the beam tilts. Note the use of standard 1 in. TV aerial mountings. Right, the mast inside the shack showing the co-axial cable coming out from the mast. Below this point is the Bowden cable which tilts the beam. This cable, which also goes up inside the mast, is attached to the slip ring which is self-locking at any point of the 90° tilt.



Radio Amateur Emergency Network

By E. ARNOLD MATTHEWS (G3FZW)*

NORMAL activity has been masked by requests for information about R.A.E.N. county organisations from the County Commissioners of St. John Ambulance Brigade. Methods of mutual help are being worked out as circumstances vary from county to county. For example, in Worcester it is a matter of blending in with an existing R.A.E.N./B.R.C.S. scheme, whereas in Hereford it is a question of starting from scratch and raising a whole group.

Bridlington Meeting

At the Bridlington meeting on January 19, the Mayor of Bridlington welcomed the guests, saying that it was an important occasion for local welfare services. Lt.-Col. Dunn, G2ACD, after giving a resume of R.A.E.N. history, described the problems and suggested methods of co-operation. An excellent demonstration of R.A.E.N. communications followed during which G3JBR/A called G3FKV with a message for the Chairman of Driffield U.D.C. from the Mayor of Bridlington. G3ACQ and G3JOH in Hull joined in, then G2ATS with a message from the Lincolnshire S.J.A.B. Deputy Commissioner, to the Commissioner, Air Marshal Sir John Spalding. G2FT and G3HRK (who had with him a Norfolk Staff Officer) were contacted without trouble, and finally G3ELZ/M at Spurn Point. G3GBH/A then acted as control in a local exercise involving a supposed accident at a race course. G2YS/P, G5VO/P, G3DQ/M, G3FVW/M and G3FZW/M were outstations. Normal amateur procedure was used but the

discipline was such that both demonstrations only took 40 minutes. Admiral Dick, Deputy C.-in-C., S.J.A.B., commenting on this said, "Without discipline you cannot achieve results." G3DQ in closing the meeting referred to Colonel Dunn's zeal for R.A.E.N. Many staff officers of S.J.A.B. and B.R.C.S. were among those present and much help was received from G3MCF, G3LXS and A.1360.

Around the Groups

A group is to be formed in Hereford; prospective members should contact G3ESY, 94 Holme Lacy Road, Hereford. Warwickshire B.R.C.S. wish to organize a large scale exercise in the early summer. Birmingham Group will be acting as "parent" for the formation of a separate Warwickshire Group. Prospective members should contact G3CNV, 47 Hemlingford Road, Walmley, Sutton Coldfield. Ilford Group, having held a small scale but very successful exercise, are now planning a larger one. Middlesbrough intend to use type 19 sets modified for 160m and 2m operation. Shropshire B.R.C.S. are planning a joint R.A.E.N./B.R.C.S./S.J.A.B. county meeting, at which G3FZW will be speaking.

The National HRO

E. H. TROWELL (G2HKU), 4a Clyde Avenue, Sheerness, Isle of Sheppey, author of the article *Improving the War Surplus HRO Receiver* published in the March 1957 Bulletin, offers to supply members with photostatic copies on receipt of a stamped addressed envelope. The issue of the BULLETIN concerned is now out of print. The article has been commended by the National Co.

Mr. Trowell says that HRO Manuals are no longer available from the manufacturers but he is willing to help members who are in difficulties. He also has the manuals for the HRO60 and for the NC300 and limited information on the CR100.

* 1 Shortbatts Lane, Lichfield, Staffs.

Modifying a Command Transmitter for use on Top Band

By C. COLLINS (G8SC)*

THE 2.1 to 3 Mc/s Command Transmitter can be easily modified for use on Top Band. Results are excellent, keying being particularly good. Used in conjunction with the 1.5 to 3 Mc/s Command receiver the transmitter makes a very satisfactory mobile or portable station.

General instructions for modifying such transmitters were given by H. Watson (G3HTI) in the R.S.G.B. BULLETIN for February 1957 and it is not intended to repeat them here. It should be noted however that the circuitry of this unit is as shown in Fig. 2 of that article but component references herein are to Fig. 1 of the same article.

Modifying the Transmitter

First remove the crystal, relays (relay 2 may be modified for 12 volts by joining its coils in parallel), V4, and the 1625 p.a. valve and valveholder in front of V4, and all associated components and wiring. The original power input socket should be removed and a suitable socket fitted, an international octal valveholder being suitable. The aerial loading coil is retained.

For keying purposes the transmitter should be modified as described by G. M. C. Stone (G3FZL) on page 469 of the April 1957 BULLETIN, but in order to obtain more linear modulation it is desirable to use a 50 to 68 K ohms screen resistor for the single 1625 p.a. valve. The oscillator anode supply is stabilized at 150 volts by an OA2 valve mounted on small pillars adjacent to the p.a. valve. A screen should be used to prevent interaction.

A small 650 ohms change-over relay, mounted internally

on the front panel, its coil being joined in series with the dropping resistor to the stabilizer, is used to change the aerial from transmitter to receiver. The relay should operate on approximately 20 mA.

Next, the oscillator screening should be removed and, after releasing the locking eccentric on the large trimming condenser, the condenser should be reset a little short of maximum capacity (to allow for future adjustment if required). Relock and replace the screening cover. It will be found that the 1.8 to 2 Mc/s band spreads over about half the dial.

The p.a. should now be aligned (see page 351, R.S.G.B. BULLETIN, February 1957) but unless the unit has been tampered with or otherwise damaged the slugs in the coils (the blue headed screws) should not require adjustment.

Telephony

The transmitter can be anode and screen modulated in the following manner. A small modulation transformer (such as the SCR522 type) is mounted on top of the chassis in the space previously occupied by the second p.a. valve, holder, and metal shroud. The modulator valves (12A6s) are installed in the holders originally used for the crystal and magic eye and are driven via a small push-pull parallel feed transformer (a Bulgín was used by the writer). The preamplifier, a 12AX7 double triode, is mounted on a bracket on the top deck running at an angle from the chassis edge to the modulation transformer to provide screening. A jack, with a metal surround over its top and inner side for screening, is fitted above the chassis on the front panel. An insert type of crystal microphone is used.

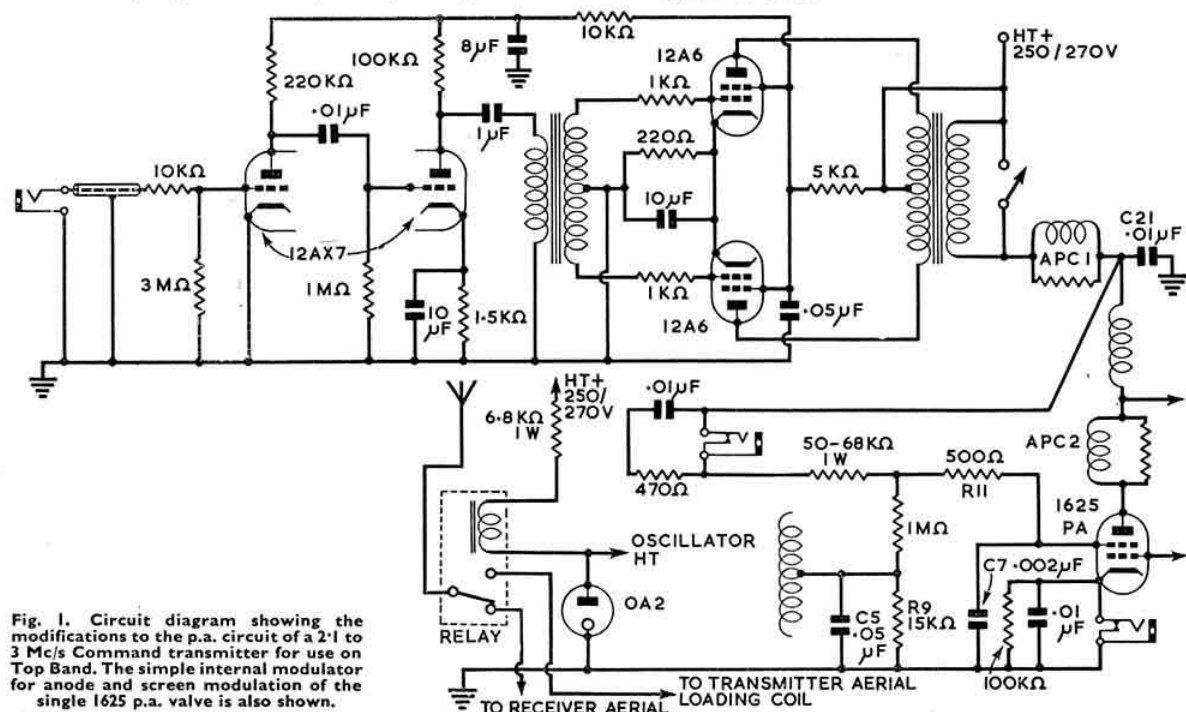


Fig. 1. Circuit diagram showing the modifications to the p.a. circuit of a 2.1 to 3 Mc/s Command transmitter for use on Top Band. The simple internal modulator for anode and screen modulation of the single 1625 p.a. valve is also shown.

There is room to fit a gain control on the rear chassis wall if thought necessary.

Metering and Keying Jacks

A closed circuit jack is fitted and wired in series with the p.a. cathode for metering. The cathode should be by-passed with a 0.01 μ F condenser. A 100 K ohm $\frac{1}{4}$ watt resistor should be joined from cathode to earth to limit the cathode potential when inserting the metering jack plug. A second closed circuit keying jack is fitted under the chassis on the front panel for keying. A toggle switch for shorting out the modulation transformer on c.w. and opening the a.f. heater circuits is also fitted below the chassis.

Results

With a 250-270 volts h.t. line the transmitter may be loaded to 10 watts with the aid of the loading coils fitted and can be fully modulated. Modulation reports have been most encouraging whilst on c.w. the transmitter is excellent.

Manchester Audio Exhibition

MANCHESTER'S first Audio Exhibition, sponsored by the British Amateur Tape Recording Society, will be held at the Midland Hotel on March 1 and 2, 1958. The exhibition will be opened at 10 a.m. on the Saturday by the Right Worshipful The Lord Mayor of Manchester, Alderman Leslie Lever, M.P. Admission will be 2/- at the door.

An exhibition station will be in operation under the call-sign G3ITY on both days.

Siemens Brothers Centenary

DR. J. N. ALDINGTON, Chairman and Managing Director of Siemens Brothers, is to give a lecture entitled "Siemens Brothers 1858-1958—100 Years of Electrical Engineering" at the Central Hall, Westminster, at 6.30 p.m. on March 5. Admission will be by ticket only, obtainable from the Centenary Organizer, Room 111, Siemens Edison Swan Ltd., Caxton House, Westminster, S.W.1.



This group of QSLs shows cards confirming contacts with G3AAE from every country within the U.S.S.R. with the exception of Wrangel Island, from whence no activity has ever been confirmed. Shown top row left to right: UD6AH Azerbaijan, UM8KAA Kirghiz, UA0KGA Asiatic Russia, UA4NE European Russia. Second row: UP2AS Lithuania, UPOL special call-sign (RAEM) issued to Ernst Krenkel, a Hero of the Soviet Union, who was operator aboard the Cheluskin smashed by ice near the North Pole in 1934, UQ2AN Latvia, UF6AA Georgia. Third row: UI8AE Uzbek, UG6AB Armenia, UH8KAA Turkoman, UN1AA Karelo-Finnish Republic. Fourth row: UL76S Kazakh, UA1KAE Soviet Antarctic Expedition at Mirny, UR2AK Estonia, UO5AC Moldavia. Bottom row: UB5WF Ukraine, UJ8AD Tadzhik, UA1KEC Franz Joseph Land, UC2CG White Russia.

FOUR METRES



AND DOWN

By F. G. LAMBETH (G2AIW)*

EI2W Hits The High Spots on Six Metres

THE first months of the year are proverbially cheerless, although v.h.f.-wise they sometimes show some interesting facets. The maintenance of interest during such periods has exercised many minds during the past, and it has long been felt that there should be some aim which could keep enthusiasm alive even if the shack is cold. This is a tall order, but should be possible of attainment given the right kind of approach. F9ND comments on this matter with respect to v.h.f. contests, and suggests the cure is possibly a contest running over a full month which would guarantee a fair amount of activity by entrants with the hope also of a few days of reasonable conditions. The aim of the contest would be to work as many stations in as many counties as possible on each (or one) band, scoring by multiplying the number of QSOs by the number of counties involved. What do members think of this idea?

International V.H.F. Committee

The Chairman of the Permanent V.H.F. Committee Region I I.A.R.U. (Karl Lickfeld, DL3FM) reports that the next meeting of the Committee will be at Bad Godesberg, Germany, in July as the Region I I.A.R.U. Conference will be held there from July 21 to 26, 1958. Accordingly agenda items are required for discussion at that time, as no business can be discussed of which advance notice has not been given. It is important that talking points are proposed and submitted with the least possible delay. The proposed new points system for v.h.f. contests (September 1957 BULLETIN) is obviously one of these, and views (pro and con) are required. So don't forget, if you have a point to raise do it now! Don't wait, otherwise it gets left and forgotten. If we do not air our points of view at the right times we cannot complain if no notice is taken of them afterwards. Do it now!

V.h.f. Conditions

Two metre conditions during the period appear to have been almost uniformly poor. There were, however, one or two bright spots. Around January 14 things started to get better because of an anti-cyclone, and stations in Yorkshire and the Midlands were good signals in the Home Counties and vice-versa but that is about all. Not very inspiring. Reports received all echo the emptiness of things—in fact the only really hard news refers to 50 Mc/s!

Six Metres

B.R.S. 17448 (Bournemouth) using an R.F. unit into an Eddystone 740 at 7.5 Mc/s has heard most of the United States and Canada, France and Sweden. The aerial is a long wire, which makes this performance quite a creditable one. A resonant dipole did not seem to work out as well. B.R.S. 21476 (Penarth, Glam.) who reports the m.u.f. as 52 Mc/s during the latter part of December at around 14.30/16.30 G.M.T., has sent an interesting list of stations heard. December 29 was the best day with the band open as late as 17.00 G.M.T. (an hour later than the previous few days). Nothing was heard before 14.00 with short bursts of

phone (not enough to identify) after that. Then more or less suddenly the band "sprang to life" after 14.30 with deep and rapid fading for the first hour. On December 29 the east to west m.u.f. was noticeably higher than the reverse with WIHDQ mentioning during one contact that B.B.C. sound on 53.25 Mc/s was being received as well as a European TV signal on 49.75 Mc/s. The latter was heard for a short period by '21476, but no American transmissions above 52 Mc/s were audible. The aerial first in use was a random length of about 30 ft., but a hastily erected indoor dipole brought all signals up considerably. All the calls noted were on phone. Much c.w. was heard at the l.f. end, but the receiver has no b.f.o. A daily listening check is kept on 50-70 Mc/s and the m.u.f. recorded. In 25 years of Amateur Radio '21476 has never known it to be so high as in recent weeks.

G2BVN (Romford) found conditions excellent for the first few days of January with all W call areas and VE1 heard at good strength. W7RUX was worked crossband, thus completing contacts with all W areas. Among the states heard on January 4 were Mississippi, Alabama and Arkansas who were unfortunately not listening on 28 Mc/s. The period between January 5 and 14 was dull, but conditions improved on January 15 and a number of W1, 2, 4 and 8 stations were heard and worked crossband. W6ANB passes on information that the Bureau of Standards Propagation Laboratory forecasts a drop in the m.u.f. to below 50 Mc/s during February across the north auroral zone but that it may be expected to rise during March and April on the north/south path, especially on the path to South Africa. G2BVN makes the old plea that stations operating on 50 Mc/s should please sign on c.w. when conditions are not good. The Radio Society of East Africa reports increasing activity on 6m with a first QSO between VQ4EV and VQ4CH. Only 5 miles, but someone had to do it! Many other VQ4s are on the band.

LA7Y (Oslo) writes that he has heard quite regularly a station on approximately 50.25 Mc/s (± 50 kc/s) as early as 09.00 G.M.T. continuously until late at night. Until 16.00 G.M.T. it has the usual characteristic fading of F2 signals. Later at night the character changes. The carrier is weak with a trace of ripple, but with frequent pronounced bursts and whistles. From an S1 carrier the bursts often rise to S9. The signal is sometimes modulated by a broadcast programme of music with English announcements. The signal comes from either the N.N.W. or S.S.E. of Oslo. Can anyone identify this station? If so we should be glad to pass on news to LA7Y, who wishes to arrange 6m skeds.

EI2W (Foxrock, Co. Dublin) who is an I.G.Y. Co-ordinator in Ireland for the A.R.R.L. and R.S.G.B. projects, has been making extensive tests on the 50 Mc/s band since the latter part of October 1957. His results are impressive, and he expresses his thanks to the Irish Post Office Engineering Dept. in Dublin for their help and courtesy, without which most of the observations would have been impossible. The transmitter used is a home-built one (6AQ5, 6AM5, 832, 829B) running 50 watts input, originally used

*21 Bridge Way, Whiston, Twickenham, Middlesex.

for 2m. Telephony was used throughout. The converter was a modified version of the R.S.G.B. 2m Converter designed by G2UJ. Many aeriels have been used but principally a three-element Yagi at 50 to 65 ft. and a ground plane at 20 ft. The best all-round aerial under test was a five-element wide-spaced Yagi with split dipole driven element. One of the most interesting phenomena was the strong "double hop" signal sometimes experienced at times of high m.u.f. For instance, strong signals were received from the W1 area (Massachusetts and Connecticut) at the same time as equally strong signals from California, but no signals at all were heard from stations in the 2,800 miles "skip" between these two areas. The best days were January 3-5 and on the 5th strong signals were heard from W7 (Arizona). The highly elevated stations in this state were then dominating the band. On the same evening, the band appeared to close at 17.00 G.M.T. with the usual increasing noise level, but a peculiar flutter was noticed about an hour later on the 45 Mc/s TV (video) signal which did not appear to be due to aurora. Accordingly, the 50 Mc/s channel was again checked. On pointing the aerial north, four stations were heard: W5JFW (Texas), K0KWS, W0IXF and W5NSJ (all in New Mexico). W5NSJ was called and signal reports were exchanged.

During the whole period stations in 34 states and two Canadian Provinces (VE1 and 3) were worked, in some cases several times. All U.S.A. call districts are represented by the 156 different stations worked, and 206 QSOs made. The first EI/W (October 27) and EI/VE (November 2) were also among the fruits of these observations. The most consistent signal was W8CMS who was heard almost every day when activity was possible. The earliest time of band opening in Dublin was 13.35 G.M.T. on December 25, 1957 and the latest 18.28 G.M.T. on January 5.

The amount of work evidenced by EI2W's report is staggering, and is deserving of the greatest praise.

G4LX (Newcastle-on-Tyne) has sent a good list of Ws, Ks and VEs worked during the period December 15 to January 14. W8HXT was worked on January 4 and W3OJU on January 12. On December 29 W1HDQ reported that he was getting solar noise on 28 Mc/s and that European signals were very weak. At that time 50 Mc/s signals were peaking to S9 and quite steady in Newcastle. On January 5 there was a contest in U.S.A. on 50 Mc/s and W2 stations were received as late as 20.10 G.M.T. with rapid fading. On January 12 from 23.00 to 23.59 G.M.T. bursts of signals were received on 50 Mc/s apparently by meteor reflection. The duration of these bursts was less than one second each. This phenomenon was confirmed by G2BDQ, 15 miles west of G4LX.

A different angle, in that contacts have been made many times to Japan, is reported in *Amateur Radio* for December 1957. VK4NG made a total of 151 JA contacts between October 9 and 25 while VK4LK had many contacts during the period October 20 to 26 when all JA call districts were worked using a 2m aerial! VK2WH worked JA4HM, the signal strength being S4/5.

Two Metres

B.R.S. 17448 (Bournemouth) is a keen listener on 2m, with Labgear and G2IQ-type converters. The band has been monitored regularly since 1948, and the interest has not waned yet! B.R.S. 19162 (Dewsbury) found December 15 quite good, but otherwise things have just about been at rock-bottom; with only an occasional call from the Midlands getting through. On January 15 conditions around 22.00 G.M.T. were a bit better, and a few London stations were logged, although there was little else. These were the first London stations heard for a month. '19162 has built a new converter comprising a 6AM4/6AM4 cascade, 6AM4 mixer and 6AF4 tunable oscillator but otherwise progress is slow. B.R.S. 20133 (Melton Mowbray) has installed a

five-element Yagi; at about 15 ft. results are poor compared with the slot beam, but he has been enabled to hear all the locals again. We should be glad to get reports from some of these same locals including G2FNW, G2FMO, G3JWQ, G3JXN and G6XM. How about it?

G3LHA (Coventry) reports working a few new stations in the last month or so. Stations worked on 2m now total 300. G5DW (Ashcott, Som.) is quite definite that it was a very poor month, with only the I.G.Y. watches to keep him on the band. Apropos this situation G5DW again raises the plea for clear signing. For instance, on January 12 the band showed signs of opening and signals from the Midlands were about S5, but could not be logged as they were not identifiable. G5DW thinks clear phonetics would suffice, but we still think a little c.w. would completely meet the case. Among the signals heard on January 12 from the Midlands G3GTN was the only one fully R5. By the evening of January 16 the band became very interesting, signals from the Midlands being S9 to S0 with very deep fading early in the evening, changing to fairly rapid and less deep later on. Signals from the east however were fairly steady, with some fading, but of an erratic nature. Such conditions have often been noticed when working into a "front" and across it.

G8VZ (Princes Risborough) is another who reports activity and conditions very poor, with signals at 50 miles and over on January 10 and 11 subject to long deep fading to zero. On January 12-13 things began to improve, and on January 14 signals from the north and north-west were coming in very strongly and steadily from 19.00 to 20.30. Stations were worked in Derbyshire, Warwickshire and Staffordshire. G8VZ had to close down at 20.30 when signals were still quite good, but fading was setting in then. When the band was checked again between 22.30 and 23.00 G3BA and G2AUD were the only signals heard. It was noticeable that as barometric pressure fell so did the signal strengths, until on the 11th, with the barometer below 29 in. (982 mb), the G3JWQ sked at 13.30 had to be made on c.w. and took 19 minutes to get the report over owing to very low signal strengths and long deep fades to zero. By January 13 the pressure had climbed back to around 30 in. (1016 mb) and contact was made with signals at S9 but still with long fades to S5. On January 14 signals were steady at S9. It was a pleasant surprise on January 9 to work G3NR (Bracknell), the latter's first QSO for about seven years—the previous one with G8VZ was on 7 Mc/s in 1938! The present G3NR station is for 2m only with a dipole at 10 ft. A Yagi will be ready soon at 30 ft. G8VZ made 891 QSOs in 1957 (including 200 for the G3JWQ sked, which never failed). A pretty good record for consistency.

G3GRA (Plymouth) reports re-awakened v.h.f. activity in the locality and says that he and G3KFN are both on 144-35 Mc/s using modified S440C transmitters and four-element wide-spaced Yagis. It is hoped that there will soon be at least three more local stations on the band. A nightly sked at 19.15 G.M.T. is kept regularly and calls and/or reports would be appreciated. G3JGJ unfortunately lost his 16-element stack during a recent gale, but he hopes soon to be active again.

When G3GOZ (Enfield) worked G6XM (Tollerton) on Boxing Day evening, in an otherwise empty band, there was no consequent burst of activity, although G6NB was heard calling CQ.

From the Radio Society of East Africa *Newsletter* it is learnt that interest in 2m is increasing with many stations active. VQ4AA has had two QSOs with VQ4CH and VQ4EV, both 63 miles from Nairobi.

Four Metres

G5MR (Hythe) says his activity has been almost entirely confined to this band during the period under review. The Anglo-French sked periods announced last month are

getting into their stride, and several stations on both sides of the Channel are taking part. Conditions on the whole have only been fair, but an exception was January 15 when F8MW, F9IW and F9QE, all in Calvados Department, were received at excellent strength calling "CQG." They were all worked in quick succession! G5MR thinks that British stations further inland would have no difficulty in working these stations during the sked periods.

EI2W (Foxrock) has been carrying out extensive tests with WIHDQ, W8SSD (Ohio) and WIQCC/Fixed Portable VE1 (Nova Scotia) on 4m when the m.u.f. has been high. Despite the splendid co-operation and example of WIHDQ, the number of American stations equipped for 4m is disappointingly low and no success has yet been reported. The tests are continuing.

Stations in Kenya Colony are now licensed for 4m and it is understood that VQ4EV will soon be equipped and operating.

From G2MI, it is learnt that Austrian amateurs are permitted to use 70.3 to 70.4 Mc/s until December 31, 1958. So far 29 have been licensed for the band. This facility should prove interesting during the coming months, offering as it does the possibility of some real European DX.

German amateurs have permission to operate between 70.3 and 70.4 Mc/s. DL6FX (70.39 Mc/s.) and DL6SV (70.36 Mc/s.), both in Hamburg, are anxious to make skeds with U.K. stations.

Seventy Centimetres

G3LHA (Coventry) recommenced operations at the end of November after a 12 months break and started from scratch with the exception of a recently acquired G3BKQ-type converter. The transmitter, which is completely separate from the 2m equipment, comprises a 12AT7 (over-tone oscillator on 18 Mc/s and doubler), EL91 (72 Mc/s), QVQ03/10 (144 Mc/s), QVQ03/20 (434 Mc/s) and QVQ06/40 p.a. on 434.67 Mc/s. Many contacts have been made with some fair to good DX. G3LHA is active on 70cm most evenings and generally beams south-east at 19.00 G.M.T. He is in full agreement with G5KG that 70cm QSOs should be sought on that band and *not* on 2m.

Methods of Coupling at 70cm

Since most 435 Mc/s output stages are in the push-pull mode it would seem desirable to preserve this mode when coupling into the aerial. If co-ax feeder is used, how is this to be done? Some operators insert a balun between the coupling loop and the feeder. Others "just slap the co-ax on"—and presumably hope. These were the thoughts in the mind of G5UM when he engaged that 70cm specialist, G5DT, in conversation on this point during a recent contact on the band.

After a great deal of experiment with numerous different methods of coupling, G5DT has settled for the system shown in Fig. 1. The coupling loop consists of $5\frac{1}{2}$ in. of stout wire, tube or strip, bent into a "U" shape, with low-loss co-ax feeder tapped on at a $\frac{1}{4}$ in. from the remote ends. Across the remote ends themselves a miniature 8pF variable capacitor is connected, the effect of which is to allow precise tuning of the system. The coupling loop is suitably supported so that its distance from the output tank lines may be varied.

G5DT reports this arrangement to be preferable on both mechanical and electrical counts to the more complicated—and possibly lossy—balun arrangements. Optimum coupling is indicated on a 1 mA meter with a 5 in. scale at the

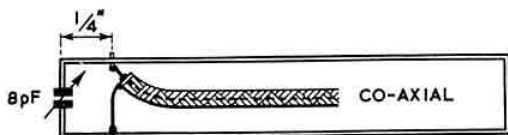


Fig. 1. G5DT's method of aerial coupling at 70cm.

operating position, connected (as it happens, through a length of twin feeder) to a probe-and-diode inserted high up in the feeder—an extremely useful indicator of performance.

Eight Metres

Every now and then something comes to this column which does not appear to belong. However, as everything above 30 Mc/s is classified as v.h.f., G3FZL and G3IIR report that UB5FG (Odessa) is on 38.5 Mc/s, Soviet amateurs having the band 38-40 Mc/s. UB5FG would like to work Gs crossband to 28 Mc/s. He also operates on 28 Mc/s himself. During the last two months he has been receiving the 41.5 Mc/s signals from Crystal Palace very strongly.

The pattern of this contribution is rather different from the usual but, it is hoped, interesting. Deadline for next month, February 18. Please don't be late. Good hunting.

Worked and Heard on V.H.F.

Six Metres

B.R.S. 21476 (Penarth, Glam.) December 22-December 29.
Heard: K1AFT, 1BWV, 1DHR, 2CBA, 2CGH, 2CRX, 2IPP, 2TDB, VE1BB, 1OD, W1BWW, 1BY, 1CE, 1CRC, 1FCP, 1FOS, 1GKE, 1HDN, 1WDO, 1HFN, 1LBF, 1LGE, 1QCC, 1QIG, 1UVD, 1VNO, 1WI, 1YOH, 1ZAW, 2MGF, 2HSV, 2UTH, 3GXL, 3KKF, 3ZY, 4AZD, 4DVM, 4UCH, 55FW, 8CMS, 8HXT, 8VXP, W0ZJB.

G4LX (Newcastle upon Tyne) December 15-January 14.
Worked: K1BWX, 2CEH, 2HPN, 8BDK, VE1BB, 1BB, 1OD, W1BFT, 1FCP, 1FOS, 1HDQ, 1JZR, 1QXX, 1UVB, 1TAM, 2JTE, 2LPH, 3OJU, 3VAM, 3ZUS, 7RT, 8CMS, 8HXT.

Two Metres

G3LHA (Coventry) November 12-January 16.
Worked: G2AIH, 2CIW, 2XV, 3APY/M, 3BEX, 3BGO, 3EVV, 3EYV, 3FD, 3FEF, 3FKO, 3FP, 3GOZ, 3GZM, 3HBW, 3HCW, 3HZK, 3IBI, 3IOO, 3IRA, 3JON, 3KEQ, 3LTF, 3LTF/A, 3MAX, 3PV, 5BD, 5CP/A, 5DW, 6JK, 6LL, 6NB, 6NF, 6OX/M, 6SC, 8AL, 8SK, 8VZ, GW8UH.

G8VZ (Princes Risborough) December 16-January 15.
Worked: G2ATK, 3EJO, 3ENY, 3IOO, 3IRS, 3JWQ, 3JZG, 3KHA, 3KUH, 3LHA, 3LKA, 6XM, GW8UH.

Seventy Centimetres

G3LHA (Coventry) November 26-January 17.
Worked: G2ANS, 2CIW, 2FNW, 2XV, 3DFL, 3EJO, 3FAN, 3HAZ, 3HBW, 3IRA, 3JZG, 3KEQ, 3LGI, 5DT, 6NB, 6NF, 8AL. Heard: G2BVW, 2DCI, 2DD, 2FCA, 2HCG, 2HDI, 2RD, 3FP, 3GZM, 3HRH, 3IOO, 3KBA, 5BD, 5KG, 5UM.

Mobile Rallies

ARRANGEMENTS are being made for mobile rallies to be held on the following dates during 1958:

April 13. Northern Mobile Rally at Harewood House, near Harrogate, Yorkshire (organized by Spen Valley and District Radio and Television Society).

April 20. Midland Mobile Rally at Trentham Gardens, five miles south of Stoke-on-Trent. (Organized by the Midland Amateur Radio Society.)

May 18. Lincolnshire Mobile Rally and Hamfest at The George Hotel, Spilsby (organized by G2ABK).

June 15. Longleat Mobile Rally at Longleat House, near Warminster, Wiltshire (organized by Bristol R.S.G.B. Group).

Further details of these rallies will appear in *Mobile Column* in due course. In order to avoid clashes of dates, organizers of rallies are asked to send details for publication as far in advance as possible.

GLASGOW V.H.F. CONVENTION

Brablock Hotel, Renfrew Road, Paisley
(5 minutes from Renfrew Airport)

MARCH 15, 1958

2 p.m. to 11 p.m.

Lectures — Exhibition — Dinner

Council will be represented by W. H. Allen, M.B.E., G2UJ, (Chairman, V.H.F. Committee) and F. G. Lambeth, G2AIW (R.S.G.B. V.H.F. Manager).

Tickets (21s. each) and full details from W. C. Bradford, GM3DIQ, 6 Langside Park, Kilbarchan, Renfrewshire.

Society News

Our New President

MR. LEN NEWNHAM (G6NZ) who took office on January 1, 1958, as 24th President of the Society, was licensed in July 1926, but for several years prior to that date he had been interested in the experimental side of wireless work.

Mr. Newnham graduated from London University in 1925, since when he has been closely associated with scientific education in many fields.

He was loaned by the Portsmouth Education Committee to the Air Ministry in 1938 to undertake important work in connection with the pre-war training of R.A.F. personnel and was attached to No. 1 Signal School (later No. 1 Radio School), Cranwell. He served throughout the war with the R.A.F.V.R. rising to the rank of Squadron Leader.

In 1946 he was associated with Norman Davis (G6TV) and others in resuscitating the R.A.F. Amateur Radio Society and was its first post-war chairman. During his chairmanship G8FC was re-started, the station providing a first-class training ground for many of those who today are among the best known amateurs in the United Kingdom and abroad.

Mr. Newnham is at present headmaster of Eastney Secondary School, Portsmouth, where his great interest in scientific matters is a continuing source of inspiration to the pupils.

His library includes first editions of many historic texts on wireless communication and allied subjects. He helped to form the historical collection of R.F.C.-R.A.F. equipment which was a feature of war-time Cranwell.

Mr. Newnham has been an active amateur since he was licensed nearly 32 years ago; his chief interests at the moment centre around Top Band and the v.h.f.s.

His many friends in the Society will join with Headquarters staff in wishing him a very happy and successful year in office.

The Society's Patron

THE Council has been pleased to accept from Mr. Arthur Milne, G2MI (Past President) a framed print of Pietro Annigoni's portrait of the Society's Patron, H.R.H. The Prince Philip, Duke of Edinburgh, K.G.

The portrait is now displayed in the Council Room at Headquarters.

East Midlands O.R.M.

THE East Midlands (Region 4) Official Regional Meeting will be held at the Mechanics Institution, Nottingham, opposite Victoria Station, on Sunday, April 20. The Nottinghamshire C.R., Mr. Alan Walmsley, G2HIO, Park House, Cinderhill Road, Cinderhill, Nottingham, will be glad to answer inquiries about this meeting.

R.S.G.B. Amateur Radio Call Book Correction List No. 3

THE following are corrections or amendments to the 1957-58 Edition of the R.S.G.B. Amateur Radio Call Book:

G3AIM L. S. Wright, 29 Level Road, Liverpool 19.
(Details Omitted.)

G3KKL P. M. Ryland, 18 Melbeck Road, Liverpool 18.
(Details Omitted.)

G50X C. H. F. Hubbard, 111 (not 14), Barbary Avenue,
Chatham, Kent.

Corrections or amendments to the current edition of the Call Book should be sent direct to the Call Book Registrar, Mr. W. J. H. Kempton (G8LN), 24, Edison Grove, Plumstead, London, S.E.18.

Technical Articles Wanted

THE Editor will be pleased to consider for publication articles on the following subjects:—

Ferrite materials and their application to Amateur Radio circuits.

Practical designs of ground plane aerial systems.

Miniaturized and transistorized equipment for the amateur bands.

Simple equipment for the newcomer to Amateur Radio.

Wobbulator for communications receiver alignment.

Consideration will also be given to offers of articles on other aspects of Amateur Radio, including descriptions of gadgets or circuits for improving the efficiency of equipment.

Members who are in a position to submit contributions are reminded that the Society purchases the copyright of published articles at the rate of £2 2s. per 1,000 words with appropriate additional amounts for drawings and photographs.

A useful pamphlet entitled *Hints to Contributors* is available on request from R.S.G.B. Headquarters.

Forthcoming Events

THE Council has decided that in future the *Forthcoming Events* column shall be restricted to the dates of specific meetings, demonstrations and special functions.

In the past, because of the practice of some representatives and club secretaries of sending in to Headquarters standing dates of meetings for months ahead, details have sometimes been published of meetings which it subsequently transpired had either not taken place or had taken place on a different date or at a different venue.

Local representatives and club secretaries are requested to send the following information to their Regional Representative, to arrive not later than the 18th of the month preceding publication: Date; Time; Venue of meeting; Subject of lecture; Name of lecturer (or details of any other special feature being arranged).

To avoid errors and possible duplication, lists of Forthcoming Events will, in future, be accepted only from Regional Representatives or their appointed scribes.

Affiliated Societies' Representatives

SOCIETIES affiliated to the R.S.G.B. are again reminded that they are entitled to nominate one of their members to serve as Affiliated Societies' Representative for the current year.

Societies who wish to take advantage of this arrangement are requested to forward a nomination paper, duly signed by five Corporate Members of the R.S.G.B., to the General Secretary without delay. Nominees must be Corporate Members of the R.S.G.B.

Societies who have appointed an A.S.R. prior to April 1, 1958 will be allowed to enter for the R.S.G.B. N.F.D. event in June.

A.S.R.s will enjoy the same privileges and have the same status as T.R.s.

Exemption System to be Abolished

NON-TRANSMITTING members who aspire to obtain a licence in the near future are advised that the present exemption system which enables certain qualified applicants to be exempted from taking the Post Office Morse Test and/or the Radio Amateurs' Examination, will be abolished on May 8, 1958. (See announcement on page 336, January 1958 issue.)

London Meeting

ABOUT 75 members were present in the Lecture Theatre of the Institution of Electrical Engineers, London, W.C.2 on Friday, January 24, 1958 when Mr. D. A. Findlay, D.F.C., G3BZG (Immediate Past President) installed Mr. L. E. Newnham, B.Sc., G6NZ into the chair as 24th President of the Society, and invested him with the President's Chain of Office.

Mr. Newnham thanked the members for electing him to the high office of President and pledged himself to further, to the best of his ability, the cause of Amateur Radio in general and that of the Society in particular.

Mr. Newnham then displayed to the meeting a framed copy of the portrait of the Society's patron (H.R.H. The Prince Philip, Duke of Edinburgh, K.G.) which has been donated to the Society by Mr. Arthur Milne, G2MI (Past President).

The Presidential Address (reproduced elsewhere in this issue) followed, after which Mr. F. J. H. Charman, B.E.M., G6CJ, lectured on "The Radio Operator as a Human Machine." (A précis of Mr. Charman's paper will appear in a future issue of the R.S.G.B. BULLETIN.—EDITOR.)

A vote of thanks to Mr. Charman was proposed by Mr. Milne.

Frequency Allocation Committee

SIR LAWRENCE BRAGG, O.B.E., M.C., F.R.S., has been appointed Chairman of the new committee which is to advise the Postmaster-General on frequency planning matters. Sir Lawrence is the Resident Professor and Director of the Davy Faraday Laboratory of the Royal Institution. He was Director of The National Physical Laboratory from 1937 to 1938 and Cavendish Professor of Experimental Physics, Cambridge, from 1938 to 1953.

The full terms of reference of the new Committee are:

"To advise the Postmaster-General on the broad aspects of radio frequency planning with a view to the efficient use of the radio frequency spectrum and the economic development of equipment for that purpose by the radio industry."

The P.M.G. has appointed to the committee members representative of the radio industry, user organizations and Government Departments.

The following is the composition of the committee:

Mr. Granville Berry, City Engineer and Surveyor, Coventry (nominated by the Association of Municipal Corporations). Commander K. B. Best, M.V.O., R.N. (Retd.), Home Office. Sir Harold Bishop, C.B.E., British Broadcasting Corporation. Captain C. F. Booth, C.B.E., Post Office. Mr. J. R. Brinkley, Pye Telecommunications Limited. Mr. John Clarricoats, O.B.E., Radio Society of Great Britain. Mr. W. G. Downey, Ministry of Supply. Sir Robert Fraser, O.B.E., Independent Television Authority. Superintendent F. Gee, B.E.M., The Lancashire Constabulary (nominated by the County Councils Association). Mr. R. W. N. B. Gilling, Ministry of Transport and Civil Aviation (Marine and Inland Transport). *Mr. T. E. Goldup, C.B.E., Mullard Limited. Colonel E. J. C. Harrison, O.B.E., British Joint Communications Electronics Board. Mr. M. van Hasselt, Standard Telephones and Cables Limited (nominated by the Telecommunication Engineering and Manufacturing Association). Captain C. A. James, R.N., Admiralty. *Mr. K. I. Jones, Cossor Radio and Television Limited. *Mr. R. J. Kemp, Marconi's Wireless Telegraphy Company Ltd. Air Commodore H. G. Leonard-Williams, C.B.E., Air Ministry. Captain L. P. S. Orr, M.P., Mobile Radio Users Association. Mr. G. F. Peirson, Midlands Electricity Board (nominated by the Nationalised Fuel and Power Industries). Mr. C. G. Phillips, O.B.E., Ministry of Transport and Civil Aviation (Civil Aviation). Dr. R. L. Smith-Rose, C.B.E., Department of Scientific and Industrial Research. Major-General L. de M. Thuillier, C.B., O.B.E., War Office. Mr. W. A. Wolferson, C.B., Post Office. Captain F. J. Wylie, R.N. (Retd.), Chamber of Shipping and the Liverpool Steamship Owners' Association. Secretary: Mr. E. Sharp, M.B.E., Post Office.

*Nominated by the Radio Industry Council.

Committees of the Council 1958

THE following members have been appointed to serve on the Committees of the Council for the year 1958:

Contests. Council Member: D. A. Findlay (G3BZG). Non-Council Members: R. S. Biggs (G2FLG), S. E. Fryer (G3ERO), T. L. Herdman (G6HD), W. H. Matthews (G2CD), A. W. W. Timme (G3CWW), F. E. Woodhouse (G3DC).

Exhibition. Council Members: W. H. Allen (G2UJ), C. H. L. Edwards (G8TL), E. W. Yeomanson (G3IIR). Non-Council Members: G. W. Norris (G3ICI), F. F. Ruth (G2BRH).

Finance and Staff. Council Members: H. A. Bartlett (G5QA), N. Caws (G3BVG), C. H. L. Edwards (G8TL), J. H. Hum (G5UM), W. A. Scarr (G2WS).

G.P.O. Liaison. Council Members: R. H. Hammans (G2IG), W. R. Metcalfe, (G3DQ), A. O. Milne (G2MI). Non-Council Member: H. A. M. Clark (G6OT).

Membership and Representation. Council Members: H. A. Bartlett (G5QA), W. J. Green (G3FBA), E. G. Ingram, (G6MIZ), W. R. Metcalfe, (G3DQ), H. W. Mitchell (G2AMG), A. C. Williams (GW5VX), E. W. Yeomanson (G3IIR).

Publications. Council Members: W. H. Allen (G2UJ), D. A. Findlay (G3BZG), J. H. Hum (G5UM). Non-Council Member: J. P. Hawker (G3VA).

R.A.E.N. Council Members: C. H. L. Edwards (G8TL), E. W. Yeomanson (G3IIR). Non-Council Members: A. C. Dunn (G2ACD), C. L. Fenton (G3ABB), A. C. Gee (G2UK), E. A. Matthews (G3FZW), F. R. Peterson, (G3ELZ).

Technical. Council Members: W. H. Allen (G2UJ), C. H. L. Edwards (G8TL), F. Hicks-Arnold (G6MB). Non-Council Members: H. A. M. Clark (G6OT), D. N. Corfield (G5CD), D. Deacon (G3BCM), A. H. Koster (G3ECA), J. W. Mathews (G6LL), B. J. Rogers (G3ILI), G. M. C. Stone (G3FZL).

V.H.F. Council Members: W. H. Allen (G2UJ), N. Caws (G3BVG), J. H. Hum (G5UM). Non-Council Members: N. G. Hyde (G2AIH), F. G. Lambeth (G2AIW), C. E. Newton (G2FKZ), G. M. C. Stone (G3FZL).

The President is an *ex-officio* member of all committees.

R.S.G.B. Recorded Lecture Library

MEMBERS are asked to note that the recorded lecture "World Wide Commercial Communications" by L. Parnell (G8PP) has been withdrawn.

A leaflet giving details of lectures currently available may be obtained on request by sending a stamped, addressed envelope to Headquarters.

Annual General Meeting

THE informal report on the proceedings at the Annual and Extraordinary General Meetings held on December 13, 1957, has been held over to the March issue.

London Meeting
Friday, March 21, 1958

"The Junction Type Transistor and its application to Short-Wave Radio"
by E. Wolfendale, B.Sc., A.M.I.E.E. and
L. E. Jansson (Mullard Radio Valve Co. Ltd.)

at the
Institution of Electrical Engineers
Savoy Place, Victoria Embankment

Buffet Tea 6 p.m.

Lecture 6.30 p.m.

Council Proceedings

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Radio Society of Great Britain, held at New Ruskin House, Little Russell Street, London, W.C.1, on Thursday, December 12, 1957, at 6 p.m.

Present: The President (Mr. D. A. Findlay in the Chair), Messrs. W. H. Allen, H. A. Bartlett, C. H. L. Edwards, K. E. S. Ellis, W. J. Green, J. H. Hum, E. G. Ingram, W. H. Matthews, W. R. Metcalfe, A. O. Milne, L. E. Newnham, W. A. Scarr, John Clarricoats (General Secretary) and John A. Rouse (Deputy General Secretary).

Apology: An apology for absence was submitted on behalf of Mr. Hicks-Arnold.

Absent: Messrs. R. H. Hammans and H. W. Mitchell.

* * *

Financial Matters

The Honorary Treasurer submitted an estimated Income and Expenditure Account for the five months to November 30, 1957. This showed that expenditure had exceeded income by about £304.

Bulletin Matters

Consideration was given to a number of recommendations put forward by the BULLETIN *ad hoc* Committee.

Resolved (i) to defer consideration of a recommendation that *Council Proceedings* should be superseded by Reports of the Proceedings at meetings of the Council, in order to consider what safeguards should be introduced to ensure that the proposed Reports would contain only such information as may properly be published; (ii) to request the Contests Committee to keep the space required for Contest rules to an absolute minimum; (iii) that the *Forthcoming Events* column shall in future be restricted to dates of specified lectures, demonstrations and special features; (iv) that the *Regional and Club News* feature shall in future not exceed one page per issue; (v) to consider at the January 1958 meeting a recommendation that a Publications Committee be set up to examine all current Society publications and to put forward proposals for new ones.

During discussions on the Report in general a restyled form of Contents page was submitted for examination, together with a restyled editorial page and modified form of contents layout.

The Committee reported that they had considered at length ways and means for improving the presentation of BULLETIN material and of offering a greater amount of technical material per issue.

Membership

Resolved (i) to elect 73 Corporate Members and 9 Associates; (ii) to grant Corporate Membership to four Associates who had applied for transfer; (iii) to grant Life Membership to Mr. Jack Hargreaves (G5VO).

It was reported that 102 of the 753 members whose subscription became due on September 1, 1957, became three months overdue on November 30, 1957, and that 27 of the members concerned had written to resign.

Resolved to grant affiliation to the following Radio Clubs: Ariel Radio Group (Langham) B.B.C.

International Aeradio Social Club (Amateur Radio Section).

Fort Churchill Amateur Radio Club (Manitoba, Canada).

Supplementary Report of the Council

Resolved to accept and adopt the Supplementary Report of the Council as prepared by the General Secretary and to publish the Report in the January 1958 issue of the R.S.G.B. BULLETIN.

Region 3 Meeting

Resolved to authorize the Region 3 Representative to hold an O.R.M. in Birmingham on Sunday, May 11, 1958.

QSL Bureau

Resolved to award honoraria totalling £73/4/- to 10 sub-managers in appreciation of their services to the Society during the year.

Council Membership

A letter was submitted from a member in which he suggested that when opportunity presents itself the Society's Articles of Association should be amended to preclude any member from serving on the Council "who is directly engaged as a director or owner or part owner having management control or any business trading for gain in the sale of radio equipment or other requisites—or publications for the radio amateur market."

Resolved that the letter be kept on file until such time as consideration is again given to proposals to amend the Society's Articles of Association.

I.A.R.U. Region I Conference

It was reported that the next I.A.R.U. Region I Conference would be held in Bad Godesburg, Germany, from July 21 to 26, 1958.

Expression of Thanks

The President was thanked by his colleagues for his services to the Society during the year and congratulated on the able manner in which he had conducted meetings of the Council.

Mr. Ellis thanked the President and his colleagues for the many kindnesses shown to him during his period of service on the Council.

The meeting terminated at 9.15 p.m.

Photographs Wanted

OFFERS of photographs of amateur stations are invited for reproduction in the new edition of *The Amateur Radio Handbook* now in preparation.

Prints should show complete working stations and the majority of the equipment should be home-constructed. Compact living-room installations and large operating consoles are equally suitable, but preferably the operator should not appear in the picture.

High contrast and sharp focusing are essential and the prints must be on glossy paper.

Please send all offers and photographs (which will be returned if not used) to the Editor of the *Handbook*—Mr. S. K. Lewer (G6LJ), 50 Chaldon Common Road, Chaldon, Caterham, Surrey.

NEXT MONTH...

"Trends in Aerial Design for the Amateur"

"Heterodyne Frequency Converter for S.S.B."

"Curing TVI with Co-ax Stubs"

and many other technical and topical features

...IN THE BULLETIN

Letters to the Editor...

Neither the Editor nor the Council of the Radio Society of Great Britain can accept responsibility for views expressed by correspondents.

The Case Against QRO

DEAR SIR,—I should like to add some thoughts on the vexed question, "To QRO or not to QRO," upon which comments have appeared in recent issues of the BULLETIN. My thoughts are created from first-hand experience over an extended period in the fore-front of the "Battle of the kilowatts." (California is reputed to have more "kilowatts to the square mile" than any other area of the United States.) If my comments seem verbose please bear with me; it is necessary to expand somewhat in order to bring main factors involved into their correct focus. It is vitally necessary that those who are fortunate enough to still operate in an area of reasonably controlled power should have some idea of what conditions are like where power runs high and controls are lax. These conditions could well be duplicated over a period of time in the British sphere of activity were the present wise controls to be set aside in favour of QRO facilities. Let us consider a few major factors that are integral to this situation.

(1) Chaos created by the use (and misuse) of QRO facilities; high earth surges from inconsiderate operation will block even the most modern and selective receiving equipment at local or semi-local distances. This condition cannot arise where moderate yet adequate input power is used.

(2) Conditions created where numbers of power-happy operators, using very QRO, strive for supremacy in carving brute-force channels to DX points on the higher frequency bands, often with no successful achievement effected for their gratification. Users of adjacent channels are victims of this practice which can block wide areas of our restricted allotments in the spectrum. In the final analysis it would appear that the individual operator in these circumstances may only succeed if he is in a position to match power with power thus fomenting a bad situation into an ever worsening spiral of confusion. More and more is the individual forced into this vain effort to find an outlet to the growing detriment of all.

(3) The fantastic bedlam of confusion resultant from allowing teenage ops. to have QRO privileges. Because increase of power must apply to all holders of general class licences there can be no differentiation between age groups. Terminal results of this factor have been observed on numerous occasions and on various bands. It is impossible to realize, unless experienced, the chaos a group of teenage ops. can cause even with QRP; with QRO they do a masterful job of making confusion more chaotic.

(4) Misuse of QRO by those sufficiently experienced to adopt more correct procedures; cross town rag chewing upon subjects unallied to Amateur Radio, subjects in poor taste and often quite detrimental to our objects bringing the group into disrepute. Those who endure kilowatt-plus phone stations operating for long periods, rag chewing inanely over a distance of maybe three city blocks or so (as I have to do here on 20m) soon realize the major disadvantages of QRO operation.

The foregoing is only a very sketchy presentation of the many disadvantages opened up by allowing QRO procedure. There are many others too numerous to include herein such as the use of teletype transmission. Human nature being what it is, and with much the same characteristics the world over, the desire to grab facilities without regard to the welfare of others is often the uppermost consideration. If the case were otherwise then Amateur Radio, like so many other fields of human endeavour, would be a happier sphere of activity and the problem of QRO would not be so major a factor. Remember, to the unethical it's only a step from 1 kW to 2; to 5; even to 10 kW. Believe me 10 kW finals are by no means unusual in shacks hereabouts. Strangely enough it is accepted by some disordered mentalities as permissible procedure so long as they can get away with it. What is more disturbing is that the group though aware of these procedures does nothing to correct an ever worsening situation. It is accepted as a *fait accompli* to be endured but not altered, a frightening *exposé* of warped thought-processes and inadequate reactions.

On many occasions I have heard amateurs in good standing and of long practical experience express openly the wish for rigid controls, with a maximum input not exceeding 250 watts to the final stage for all spheres of Amateur Radio activities, giving each and every amateur a reasonable opportunity of sharing the facilities of the various bands at our disposal. This is significant coming as it does from those well-versed in the use of high power and well aware of the many factors involved.

With every good wish for the future success and stability of the Society in its climb to ever greater realms of accomplishment.

Sincerely yours,

Los Altos, Calif.

WILFRED L. HILL (ex-G5WI).

(Mr. Hill who was an active amateur in Bristol prior to the war, helped to organize the band occupancy checks which proved so valuable in preparation for the Cairo Radio Conference.—EDITOR.)

In Support of W3FIU

DEAR SIR,—Reading through the January BULLETIN I came upon the letter written by N. Shires (G3BTM) criticizing the s.s.b. exciter design of Captain Jordan (W3FIU). Having read Captain Jordan's excellent article in the November 1957 issue, I feel compelled to protest against the comments levelled by Mr. Shires. It was refreshing to read an article from a United States amateur in the BULLETIN even if only to obtain some fresh ideas on the subject, and I would like to put on record that I, at least, do not receive the article in quite the same way as does Mr. Shires.

The statement that too much audio gain will degrade the emitted signal, due to the resulting intermodulation products falling within the filter pass band, is true enough, but I do not consider the other criticisms justified except when made by someone looking for an excuse to pick holes in the article. For example, nowhere in the text is the equipment described as being suitable for beginners. What it does mean to convey, in my opinion, is that it is a simple design, capable of producing satisfactory results without complex circuitry and test equipment.

No doubt Captain Jordan can, if he so desires, provide a suitable answer to the points raised, but I am quite prepared to do so if called upon.

Yours sincerely,

Bromley, Kent.

GEOFF FOX, A.M.I.E.E. (G3AEX).

DEAR SIR,—I heartily disagree with the opinions expressed by Mr. N. Shires in his letter (January issue) criticizing the W3FIU single sideband exciter design. As a novice in s.s.b. techniques who has followed Captain F. C. B. Jordan's circuit I would disagree with the sentence in Mr. Shires' letter beginning, "It would be hard luck for any beginner . . ." etc., for these reasons:

I found no difficulty in aligning the filter in accordance with Captain Jordan's directions and with no other equipment than the carrier frequency oscillator and r.f. indicator described I obtained a very like filter characteristic.

Mr. Shires is "straining at a gnat" when he complains that no warning is given as to the crystal frequencies and the appropriate i.f. transformers. Surely, a licensed amateur would appreciate that the crystal frequencies must be within the range of the tunable i.f. transformers used.

In regard to stability I found in practice that my station receiver was adequately able to determine the suitability of the oscillator, and, again in practice, it was not difficult to make a reasonable assessment of the carrier frequency.

When testing my equipment with full audio gain I had no reports of a degraded signal.

From these observations it would seem that criticism of a circuit design should be based not on hypothesis, but on practical experience of said design.

To any potential s.s.b. operator I should like to pass on the fact that this complete transmitter with p.a. took me only ten hours to build and align and that I obtained a QSO after a few moments on the air. From the many replies, I gained very quickly, information (which would have taken me many hours to have culled from the host of magazines and books on the subject) which enabled me to make final adjustments. Let me here add a word of gratitude to the more experienced s.s.b. operators for their willingness to help a newcomer to this mode of communication.

Yours faithfully,

Ipswich, Suffolk.

J. BAYS (G3KFX).

Commercial Equipment

DEAR SIR,—As one contemplating the purchase of a commercial transmitter, I have been somewhat alarmed by the letters of G5UH and GC2CNC regarding the shortcomings of certain manufacturers' products. In fairness to the makers of satisfactory equipment, could not the transmitters in question be identified? I feel sure that no amateur would wish to purchase anything from the firm whose representative made the remark quoted by GC2CNC.

Whether or not this course is possible, I am certain many readers of the BULLETIN would be interested to see a series of comprehensive and honest test reports on present and future commercially-produced transmitters, written by amateurs (as defined in another letter from G3BID) having no connection with any manufacturer, and giving due prominence to any of the faults such as poor note, drift, and so on which have given rise to this correspondence.

I have never used a commercially-built transmitter in the past, and so do not propose to join in the correspondence regarding the relative merits of commercial and amateur-built equipment.

Yours faithfully,
WILLIAM H. BORLAND (GM3EFS).

London, S.W.19.

DEAR SIR,—Dissatisfied customers have two courses of action open to them:

- (a) to assert their rights under s. 14 of the Sale of Goods Act, 1893 (which, broadly speaking, makes it an implied term of a contract of sale that the goods are warranted fit for the purpose for which they are sold);
- (b) if not physically handicapped, to build their own gear.

Yours faithfully,
HAROLD CHORLEY (G5YH).

Chiswick, London, W.4.

Goods by Post

DEAR SIR,—Recent correspondence has concerned the shortcomings of some traders associated with Amateur Radio. May I draw attention to what appears to be a fairly common practice? On numerous occasions I have answered advertisements for goods by post and found that I had to guess at the postage required. Not wishing to have to pay surcharges, I naturally erred on the generous side, but I have only once had the surplus postage returned. What usually happens is that a "packing charge" appears on the bill. By a series of remarkable coincidences (?) these charges seem always to be exactly equal to the amount of surplus postage sent. In my experience the amounts have varied from 1d. to 1/3d., a range of "charges" that does not seem to be in keeping with the types of packages received.

Are certain traders taking advantage of the fact that most of us hate to be seen apparently quibbling over odd halfpence? If not, let them be honest and make the packing charges consistent.

A complaint of a different kind concerns useless correspondence. A few weeks ago I bought a 10/6d. item from an extremely well-known firm. It duly arrived, with invoice enclosed. A few days later the receipted bill came. A few days later still another receipt arrived. Since the correct money had been sent with the order why couldn't a receipt have been included with the goods?

If this sort of thing is at all typical it is no wonder some firms charge what they do!

Yours faithfully,
D. W. WOODERSON (G3HKX).

Bexleyheath, Kent.

Voting Enthusiasm

DEAR SIR,—I was interested but regret to say not surprised to read the comment in the January editorial columns regarding the small numbers who voted on the recent Special Resolution.

Correspondence reaching me indicates the need to enclose with the appropriate BULLETIN suitable proxy forms allowing the member to cast his vote specifically either way or to give his nominee an open authority. This is, of course, the standard practice of institutions which are governed by the same Companies Act as that which relates to our Society.

If this were to be done, and I feel strongly that it should be,

the result might well surprise the Council. I am sure that it would at least bring the numbers participating up to the strength of those who return votes for Council elections.

Yours sincerely,

Prenton, Birkenhead,
Wirral, Cheshire.

BASIL O'BRIEN (G2AMV).
(Region 1 Representative.)

(A few years ago proxy forms were sent to all home corporate members inviting them to vote on an earlier special resolution concerning subscription rates. The result was little better than was recorded last month.—EDITOR).

An Old Timer Looks Ahead

DEAR SIR,—Although it is now more than 50 years since I first became interested in the application of wireless for navigational purposes (I was in the Royal Navy at the time and was privileged to work with some of the very early magnetic detectors, coherers and spark gaps), I have lost none of my initial keenness and am currently active on most of the present amateur bands.

Prior to 1926 when the old Transmitter and Relay Section joined forces with the Radio Society of Great Britain, the number of transmitting amateurs in the country was considerably less than 1,000 but there existed then a comradeship which could not be surpassed by any other group of hobby enthusiasts. Whether the same comradeship exists today, now that the number of licence holders has increased seven or eight fold, I cannot say, but what I can say is that our Society requires great numerical strength if it is to undertake effectively the many tasks that lie ahead.

We must seek to increase our membership by every means at our command and we can do it most effectively by inducing our young friends and acquaintances to join the Society and become interested in Amateur Radio.

Where local meetings are held I suggest that reports should be sent to the local press or on special occasions the editor of the local newspaper should be invited to send a representative. Reports, if contributed by the local groups, should be informative and not too technical. They should always include an invitation to interested readers to attend future meetings or visit local amateurs.

It is my fervent hope that the Society will continue to grow in strength during the coming years.

Yours faithfully,

Wallington, Surrey. CLEM TUCKER (G5DT).
(2KK in 1921).

Editorial Note. Mr. Tucker was awarded the Courtenay Price Trophy for 1957 in recognition of his outstanding v.h.f. work over many years.

Suppression of Interference to Broadcast Reception Caused by Overhead Power Lines

DEAR SIR,—I am collecting data on the subject of suppression of interference caused by the corona effect from overhead power lines. I should be pleased to receive the help of your readers in this matter, as I feel sure that some of them may have met this problem and indeed may have found a suitable cure for the trouble.

Any information on the aspect of suppression of interference, particularly in respect to the design of aerials, would be welcome.

Yours faithfully,

59 Upland Road, MARGARET MILLS (G3ACC).
Dulwich, London, S.E.22.

Points from Letters . . .

The correspondence in the BULLETIN concerning amateurs who earn part of their living by selling Amateur Radio equipment is taking a nasty turn. . . . Squabbles as to who are amateurs seem mainly to be confined to this country and this hobby. Let us all live in peace to play our part and to enjoy our hobby.

—C. A. Hartley (G2ACC).

After the R.S.G.B. News Bulletin on January 19, 1958 on 3600 kc/s and 7100 kc/s several amateurs called me to say that there was quite deliberate jamming on both frequencies. . . . It seems to me that amateurs who deliberately spoil reception of GB2RS must have exceedingly small minds.

—Cliffe Metcalfe (G3DQ).

Held Over

Due to pressure on space several Letters to the Editor have been held over.

Regional and Club News

Aldershot and District Amateur Radio Society.—Meetings are now held on alternate Wednesdays at "The Cannon," Victoria Road, Aldershot, commencing at 7.30 p.m. The next is on February 19. Visitors are always welcome. *Hon. Secretary:* S. E. Hume, 25 Kingsway, Aldershot.

Barnsley and District Amateur Radio Club.—There was an attendance of 70 at the club's Annual Dinner on January 18 when George Wigglesworth (G2BH) reminded those present that the club is now in its 45th year. Earlier in the month G4JJ gave an illustrated lecture on v.h.f. transmitters. Meetings are held on the second and fourth Fridays of each month at The King George Hotel, Peel Street, Barnsley. *Hon. Secretary:* P. Carbutt (G2AFV), 19 Warner Road, Pogmoor, Barnsley.

Bath.—A Hamfest is to be held on March 8 from 2.30 to 8 p.m. at the Angel Hotel, Westgate Street. The programme will include tea, competitions for all, a film show, and a draw for gifts. It is also hoped to have an exhibition, with prizes for the best home constructed equipment. Tickets, price 5/6 for adults and 3/- for children, are available from the *Town Representative:* J. W. Russell (G2ZR), 45 Shakespeare Avenue, Bath.

Bristol.—At the January meeting, 75 members and visitors heard a lecture by A. F. Collins, F.R.A.S., on "Radio Astronomy and the I.G.Y." The G5FS Memorial Challenge Trophy has been awarded to H. J. Gratton (G6GN) who was judged to have given the best lecture by a local member at the Group's meetings during 1957. Details of the February meeting are given in *Forthcoming Events*. *Hon. Secretary:* D. F. Davies (G3RG), 51 Theresa Avenue, Bishopston, Bristol 7.

Cheltenham Amateur Radio Society.—At the A.G.M., the following officers were elected for 1958: *Chairman*—Dr. H. Bannister; *Vice-Chairman*—J. Yeend (G3CGD); *Hon. Treasurer*—A. Fletcher (G3LDA); *Hon. Secretary*—C. Wallis (G3CWV), 147 Hales Road, Cheltenham; *Station Organizer*—J. Moxey. Weekly Morse classes are held and the society's transmitter is active under the call-sign G3GPW. Visitors and prospective members are always welcome at meetings which are held on Wednesdays at 8 p.m. in St. Mark's Community Centre, Brooklyn Road, Cheltenham.

Cornish Radio and Television Club.—At the January meeting members heard an R.S.G.B. Recorded Lecture on "Aerials" by F. Charman, B.E.M. (G6CJ). There will be another recorded lecture, this time on "Receivers," on March 5. *Hon. Secretary:* J. Brown (G3LPB), Waterworks, Penryn, Cornwall.

Edgware and District Radio Society.—The A.G.M. on January 1 marked the 21st anniversary of the foundation of the society. Ten of the original members still take an active part, one being the President, Phil Thorogood (G4KD). The "Enthusiasts Cup" was presented to Harold Keeble for his good work on behalf of the society during 1957.

Flintshire Radio Society.—The following were elected at the A.G.M.: *Chairman*—F. G. Southworth (GW2CCU); *Hon. Treasurer*—P. F. Jones (GW3PFF); *Hon. Secretary*—J. Thornton Lawrence (GW3JGA), "Perranporth," East Avenue, Bryn Newydd, Prestatyn; *Committee Members*—D. C. Morris (GW2FVZ), W. Davies and G. Chambers. Meetings continue to be held at 7.30 p.m. on the first Monday in each month at the Railway Hotel, Prestatyn.

Grafton Radio Society.—The society station G3AFT/A was again in operation on 14, 21 and 28 Mc/s at the Islington Handicrafts Exhibition. Recent lectures have included "The Selectoject" by S. H. Iles (G3BWQ). Meetings are held on Mondays, Wednesdays and Fridays at 7 p.m. at Montem School, Upper Hornsey Road, Holloway, N.7—see *Forthcoming Events* for details of special events. *Hon. Secretary:* A. W. H. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex.

Medway Amateur Receiving and Transmitting Society.—Meetings are held fortnightly at the Viscount Hardinge Hotel, Gillingham, on Mondays, commencing at 7.30 p.m., the next being on February 24.

North-West of Ireland Amateur Radio Society.—Continued progress during the society's 21st year was reported at the A.G.M., at which the following were elected: *President*—Fred C. Towers; *Vice-Presidents*—G. H. Greep, Daniel Gallagher and Major Beresford-Ash; *Chairman*—Niel McKenna; *Vice-Chairman and Field Day Organizer*—Tony McGahey; *Hon. Treasurer*—Dr. J. J. Cosgrove; *Hon. Secretary and Publicity Officer*—John G. Logue, 42 Clooney Terrace, Waterside, Londonderry; *Club Leader*—J. A. Porter (G13GGY); *Executive Members*—

B. Dunne, J. E. Williamson (G13JOZ), Edmund McCauley, G. McCloskey and E. McCourt.

Northampton Short Wave Radio Club.—Meetings will continue to be held on Fridays at Allen's Pram Works, Duke Street, until April 4. On February 28 there will be a film show and on March 7 the R.S.G.B. Recorded Lecture "Amateur Radio in the Antarctic" will be given. Prospective members are invited to communicate with the *Hon. Secretary:* S. F. Berridge (G3ITW), 20 Ethel Street, Northampton.

Nottingham Amateur Radio Club.—Meetings are held every Tuesday and Thursday evening at Woodthorpe House, Mansfield Road, and visitors are always welcome. Good facilities for constructional work are available as well as Morse classes. The club is active on Top Band. *Hon. Secretary:* F. V. Farnsworth, 32 Harrow Road, West Bridgford, Nottingham.

Nottingham and District Amateur Radio Society and Nottingham R.S.G.B. Group.—Arrangements are proceeding for the O.R.M. to be held in Nottingham during April and the support of all members in the district is invited. The next meeting will be held in Room 2, The Albert Hall Institute, Derby Road, on February 21 at 7.30 p.m. *Hon. Secretary:* H. H. Pickering (G3DUL), 43 Plains Road, Mapperley, Nottingham.

Plymouth Radio Club.—Meetings are now held on Tuesdays at the Virginia House Settlement, St. Andrews Cross, commencing at 7.30 p.m. *Hon. Secretary:* Cyril Teale (G3JYB), 3 Berrow Park Road, Peverell, Plymouth.

Queen Mary College Electronics and Amateur Radio Society.—The society is endeavouring to start an inter-collegiate net operating between 7.1 and 7.15 Mc/s on Wednesday afternoons, and similar societies are invited to join in. The society's own station G4RG is active on 7 Mc/s and will shortly be on 3.5 Mc/s. *Hon. Secretary:* A. B. McClelland, Queen Mary College (University of London), Mile End Road, London, E.1.

Scarborough Amateur Radio Society.—At the A.G.M., Harry Jones (G3GBH) was elected *President*, and P. B. Briscoe (G8KU) was again re-elected *Hon. Secretary*. Recent events included a showing of the film *Race for Life* which was attended by 70 people. A novel fund-raising idea is to have a number of tea chests into which members put surplus copper, brass and aluminium. Meetings are held at Chapmans Yard, North Street, commencing at 7.30 p.m. on Thursdays. Visitors are sure of a warm welcome.

Stockport Radio Society.—Recent lectures have included "Feeder Termination," by R. H. Hammans (G2IG), "The Leak F.M. Tuner," by Bert Smith (G3AYT) and "The Manufacture of Accumulators," by R. Hobson (G3JRK) of Park Batteries. Details of future lectures are given in *Forthcoming Events*. *Hon. Secretary:* G. R. Phillips, 7 Germans Buildings, Buxton Road, Stockport.

Thames Valley Amateur Radio Transmitters Society.—As part of its Silver Jubilee celebrations a special meeting is to be held at the Carnarvon Castle Hotel, Hampton Court, on Wednesday, March 5, 1958, at 7.30 p.m. when the General Secretary of the R.S.G.B. will review Amateur Radio over the past 25 years with special reference to the contributions made by T.V.A.R.T.S. Mr. Clarricoats has been a Vice-President of the society since 1933. At the A.G.M. the following officers were elected: *President*—Leslie Cooper (G5LC); *Executive Vice-President*—Alan Mears (G8SM); *Hon. Treasurer*—Graham Leicester (G3IKC); *Hon. Secretary*—Ken Rogers (G3AIU). J. Hill (G3JIP) was elected a *Committee Member* in addition to G6GB and G6MB. Meetings are held at the Carnarvon Castle Hotel on the first Wednesday in each month and any radio amateur will be welcome.

Worthing.—All local R.S.G.B. members are invited to attend the joint meeting with the Worthing and District Amateur Radio Club at the Adult Education Centre, Union Place, on March 10 at 8 p.m., when plans for N.F.D. will be discussed. *Town Representative:* R. B. Forge (G3FRG), 14 Poulterers Lane, Worthing.

Worthing and District Amateur Radio Club.—The club's Annual Dinner will take place on February 22 and the Construction Contest on April 14. Details of the meeting on March 10 are given above and in *Forthcoming Events*. *Hon. Secretary:* J. R. Toothill, 113 Kings Road, Lancing.

LONDON MEMBERS' LUNCHEON CLUB

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

at 12.30 p.m. on Fridays, February 21 and March 21, 1958

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

Forthcoming Events

Details for inclusion in this feature should reach the appropriate Regional Representatives not later than the 18th of the month preceding publication.

REGION 1

Bury (B.R.S.).—March 11, 8 p.m., George Hotel, Kay Gardens ("TVI Prevention," G. Openshaw, G2BTO).
Manchester (M. & D.R.S.).—March 3, 7.30 p.m., Brunswick Hotel, Piccadilly. (Junk Sale).
Stockport (S.R.S.).—February 26 ("The Neon and its uses," W. P. Green); March 12 ("N.F.D. Arrangements"), March 26 (Annual General Meeting), 8 p.m., The Blossoms Hotel, Buxton Road.
Wirral (W.A.R.S.).—February 21 (Junk Sale); March 7 (Discussion on Aerials); 7.45 p.m., No. 4 Hamilton Square, Birkenhead. March 28, Provisional date for Annual Dinner. (Venue to be announced.)

REGION 2

South Shields (S.S. & D.A.R.C.).—February 26, 7.30 p.m., Trinity House Social Centre, Laygate ("Aerials—Fixed and Mobile," by J. R. Tyack, G3ELP, and K. Sketheway, B.R.S. 20185).

REGION 3

Birmingham (M.A.R.S.).—February 18 ("Radio and TV suppression in Cars"), March 18 ("2m Mobile"), 7 p.m., Midland Institute (Slade).
February 28 ("Design of Audio Frequency Amplifier Stages," by J. E. Smith, G3JZF); March 14 ("Modern Trends in Oscilloscope Design," by G. J. Williams, B.Sc. (Hons.), 7.45 p.m., The Church House, High Street, Erdington. (South Birmingham).
March 7, 7.30 p.m., Committee Room No. 4, Cadbury Bros., Bournville. (Bournville).—Tuesdays, 7.30 p.m., Committee Room No. 4, Cadbury Bros., Bournville.
Coventry.—February 21, 7.30 p.m., Vine Street Schools. (C.A.R.S.).
February 24, March 10, 7.30 p.m., 9 Queen Road, Courtaulds.—Wednesdays, Courtaulds Ltd.
Cannock Chase.—March 6, 7.30 p.m., Castle Inn, North Street, Bridgton, Cannock.
Solihull.—February 17, March 3, 7.30 p.m., Civil Defence H.Q., Sutton Lodge, Blossomfield Road.
Stourbridge and District.—February 21, 8 p.m., White Horse, Ambleside; March 4 (A.G.M.), 8 p.m., Brotherhood Hall, Scotts Road.
Wolverhampton.—Mondays, 8 p.m., Nechells Cottage, Stockwell End, Tettenhall.

REGION 4

Alvaston (D.S.W.E.C.).—Tuesdays, Thursdays, 7.30 p.m., Sundays, 10.30 a.m., Nunsfield House, Boulton Lane, Alvaston, Derby.
Chesterfield.—Tuesdays, 7.30 p.m., Bradbury Hall, Chatsworth Road.
Derby (D. & D.A.R.S.).—Meetings, 7.30 p.m., Room 4, 119 Green Lane; Wednesday, February 12, Lecture, J. N. Walker (G5JU); February 19, Film Show—Electronics and Plastics; February 26, Open Evening; March 5, Junk Sale, Surplus Items; Friday, March 7, Annual Dinner; March 12, Open Evening.
Ilkeston (I. & D.A.R.S.).—Thursdays, 7 p.m., Room 5, Ilkeston College of Further Education, Field Road.
Leicester (L.R.S.).—Mondays, 7.30 p.m., Old Hall Farm, Braunstone Lane, Leicester.
Lincoln (L.S.W.C.).—March 5, 7.30 p.m., Technical College, Cathedral Street.
Newark (N. & D.A.R.S.).—March 2, 7 p.m., North Gate House, North Gate, Newark.
Northampton (N.S.W.C.).—Fridays, 7 p.m., Club Room, Allen's Pram Works, 8 Duke Street, Northampton.
Nottingham.—February 21, March 21, 7.30 p.m., Room No. 2, Albert Hall Institute, Derby Road, Nottingham.
Retford and Worksop.—February 17, 7.45 p.m., Lincolnshire Road Car Social Club, Grove Street, Retford; March 17, 7.45 p.m., King Edward VII Hotel, Ryton Street, Worksop.
Scunthorpe (S.A.R.S.).—February 27, March 11, 7.30 p.m., Talbot Hotel, Earl Street.

REGION 6

Newbury (N. & D.R.S.).—February 28, 7.30 p.m., Elliotts Canteen, West Street ("Radio Astronomy and Cosmology," by John Heywood, F.R.A.S.).

REGION 7

London.—March 21, 6.30 p.m., I.E.E., Victoria Embankment ("The Junction Transistor and its application to Short-Wave Radio," by E. W. Wolfendale and L. W. Jansson).
London (L.M.L.C.).—February 21, March 21, 12.30 p.m., Bedford Corner Hotel, Bayley Street, Tottenham Court Road, W.C.1.
London (U.H.F. Group).—March 6, 7.30 p.m., Bedford Corner Hotel.
East London.—March 16, 2.30 p.m., Town Hall, Ilford ("The Organization and Administration of the R.S.G.B.," D. A. Findlay, D.F.C., G3BZG).
Acton, Brentford & Chiswick.—February 18, March 18, 7.30 p.m., A.E.U. Club, 66 High Road, Chiswick W.4.

Bexleyheath (N.K.R.S.).—February 27 ("Tape Recorders," Grundig Ltd.), March 13 (Junk Sale), 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.
Croydon (S.R.C.C.).—March 7, "The Greyhound" (Annual Dinner).
Ealing.—Sundays, 11.30 a.m., ABC Restaurant, Ealing Broadway.
Enfield & District.—February 16, 3 p.m., George Spicer School, Southbury Road, Enfield (R.S.G.B. Film Show).
Harlow & District.—Tuesdays, 7.30 p.m., rear of G. E. Read (G3ERN).
Holloway (G.R.S.).—February 21, 7 p.m., Montem (ex-Isledon) School, Upper Hornsey Road, N.7 ("International Aspects of Amateur Radio," by A. O. Milne).
Ilford.—Thursdays, 8 p.m., G2BRH, 579 High Road, Ilford.
Norwood and South London.—February 15, Wandsworth House, Westow Street, Crystal Palace (A.G.M.).
Science Museum.—March 11, The Science Museum, South Kensington, S.W.7. (Film Show).
Slough.—March 3, "Cynon House," 12 Quaves Road, Slough.
Welwyn Garden City.—March 13, I.C.I. Recreation Club, Black Fan Road, Welwyn Garden City. (Constructors' Competition).

REGION 8

Worthing.—March 10, 8 p.m., Adult Education Centre, Union Place (N.F.D. Discussion).
(W. & D.A.R.C.).—February 20, March 6, 20, 8 p.m., Beach House.

REGION 9

Bath.—March 10, 7.30 p.m., 12 James Street West, (Receiver Servicing, G3BNF).
Bristol.—February 21, 7.15 p.m., Carwardine's Restaurant, Baldwin Street, ("K.W. Vanguard Kit Transmitter," R. G. Shears).
Exeter.—March 13, 7.30 p.m., Heavitree Social Centre.
Falmouth.—March 5, 7.30 p.m., Y.M.C.A., Bar Road, Falmouth.
North Devon.—March 6, 7.30 p.m., G2FKO, 38 Clovelly Road, Bideford.
Plymouth.—March 6, 13, 20, 27, Virginia House Settlement.
Torquay (T.A.R.S.).—February 22, 7.30 p.m., Oswalds Hotel, Torquay, (Annual Dinner, G. Western, G3LFL).
Weston-super-Mare.—March 12, 7.30 p.m., Albert Hotel.
Yeovil.—March 5, 12, 19, 26, 7.30 p.m., Grove House, Preston.

Representation

THE following are additions to the list of Town Representatives published in the December 1957 issue:—

Region	Town or Area	Name, Call-sign (or B.R.S.) and address
2	YORKSHIRE WEST	
	Rotherham	R. Palmer (G4BD), 39 Fraser Road.
	Sheffield	P. A. Wilson (G3HTE), 7 Wolstenholme Road, Sheffield 7.
3	WARWICKSHIRE	
	Coventry	J. R. Tuck (G6TD), 121 Graywood Avenue.
7	LONDON NORTH	
	Finsbury Park Group	A. J. Mouton (G8QU), 18 Baalbec Road, Highbury, N.5.
	LONDON—SOUTH—WEST	
	East Molesey	Alan Mears (G8SM), 4 Broadfields.
	LONDON—SOUTH	
	Mitcham	D. Johnstone (B.R.S. 20684), 23 Woodland Way.
	LONDON—WEST	
	Slough	F. J. T. Tuckfield (G2HOX), 13 Quaves Road.
8	KENT	
	Medway Area	W. B. N. Althorp (G2CBA), 85 Copperfield Road, Rochester.

SUSSEX

Brighton Area F. R. Jupp (G2FAD), 35 Brading Road, Brighton 7.

9	DEVONSHIRE	
	Exeter	John D. Forward (G3HTA), 12 Clevedon Close, Pennsylvania.
11	FLINTSHIRE	
	Prestatyn	W. Davies (B.R.S. 20284), The Flat, Bradford Buildings, Fern Avenue, Prestatyn.
16	ESSEX	
	Danbury	A. W. Butcher (G3KPJ), Rectory Cottage, West Hanningfield, Nr. Chelmsford, Essex.

Change of Address.

The address of Mr. P. D. Lucas (G3JDN), Town Representative for Reigate and Redhill, is now 14 Rushetts Road, Woodhatch, Reigate.

The Enfield T.R. is now known as the Enfield A.R. His area comprises the Boroughs of Edmonton, Enfield and Tottenham, and Waltham Cross.

Increased Postage Rates

NOW that postage rates have increased steeply, members are asked, when writing to Headquarters, to enclose a 3d. stamp if a reply is required.

New Members

THE following were elected to Membership at the January 1958 meeting of the Council:

Corporate Members, Home (Licensed)

- G2AG †T. MOOR, Westray, De Maulley Road, Canford Cliffs, Bournemouth W.
 G2LZ †F. A. MAYER, Yacht "Rona," c/o Harbour Office, Weymouth, Dorset.
 G2ADC †W. S. V. BEVAN, 71 Baker Street, Potters Bar, Middlesex.
 G2AGK †T. PARTON, 718A Alum Rock Road, Ward End, Birmingham 8.
 G2BHR †P. L. STILES, 23 Tipton House Road, Sheffield 10.
 G2FFN †S. C. FISHER, 54 Beaufort Road, Billericay, Essex.
 G2HCA †L. SANDERS, 14 Air Ministry House, Upper Stoke-Holy-Cross, near Norwich.
 G3AGT †D. A. CORRIK, 20 Weacombe Road, Taunton, Somerset.
 G3DAV †J. D. WALLER, 20 Colham Villas, West Drayton Road, Hillingdon, Middlesex.
 G3DBN †G. H. DIMOND, Kimberley, Nacton, Ipswich, Suffolk.
 G3GCD †B. E. BOWYER, The Elms, Bright Street, North Wingfield, near Chesterfield, Derbyshire.
 G3GNA †D. MACMILLAN, Springfield, Raddens Road, Quinton, Birmingham 32.
 G3GOG †R. MALLINSON, 38 Ingleton Avenue, Welling, Kent.
 G3HJX †W. G. F. WEDDERSPOON, 38-C, Eaton Rise, London, W.5.
 G3JYA †W/O E. A. SMITH, 245 A.M.Q., R.A.F., Marham, near Kings Lynn, Norfolk.
 G3LHQ B. CRISP, 5 Granny Hall Park, Lightcliffe Road, Brighouse, Yorks.
 G3LIP J. L. HOWLETT, 484 Southport Road, Bootle, Liverpool 20.
 G3LWG Capt. P. GILHAM, 8 Ranelagh Gardens, Mackworth, Derbyshire.
 G3LXR V. HICKMAN, 143 Main Street, Stonnall, Walsall Wood, near Walsall, Staffs.
 G3LYB F. E. HOWELL, 24 Dawlish Crescent, Wyke Regis, near Weymouth, Dorset.
 G3LZW P. J. BAROWITZ, 9 Sherwood Grove, Nab Wood, Shipley, Yorks.
 G3MBF D. PLACE, 29 Ford Street, Moreton-hampstead, near Newton Abbot, Devon.
 G3MBX M. G. STOOT, 9 Aerial Road, Love-dene, Portsmouth, Hants.
 G3MCY †F/O G. C. MOORE, Officers' Mess, R.A.F., Tangmere, Sussex.
 G3MDJ C. H. PROWSE, Broadway Buildings, 5 Station Road, New Milton, Hants.
 G3MDR M. H. HALLETT, 5 Chestnut Avenue, Southborough, Tunbridge Wells, Kent.
 G3MEJ P. J. TEW, 223 Brixton Hill, London, S.W.2.
 G3MFR C. P. GAY, 27 Junction Road, Oldfield Park, Bath, Somerset.
 G3MGB D. B. SMART, 16 Waldegrave Gardens, Umpinster, Essex.
 G3MGH P. J. CLEGG, 19 The Crescent, Totteridge, High Wycombe, Bucks.
 G3MGV *G. GORDON, 19 Moredown House, Hackney, London, E.8.
 G4HZ †E. C. W. BEALE, 3 Orchard Road, Altrincham, Cheshire.
 G6XT †F. TILLOTSON, "Rose Crest," Healey Road, Ossett, Yorks.
 GD3LXT †W. N. BASON, 24 Stanley Road, Peel, Isle of Man.
 G13FJA †W. E. D. SLEAT, 18A Braeside Grove, Braniel, Castlereagh, Co. Down, Northern Ireland.
 GM3MCH N. STEWART, 16 Kings Road, Forfar, Angus.
 GM3MEX Sgt. A. CUNNANE, c/o Sgts. Mess, R.A.F., Kinloss, near Forres, Morayshire.
 GM3LYI N. C. HENDERSON, 84 Old Inverkip Road, Greenock, Renfrewshire.
 GW3CBA J. KELLAWAY, 79 Hinchliff Avenue, Colcot, Barry, Glam.
 GW3MFZ C. DONNELLY, Ivy Bank, Cilgerran, Pembrokeshire.

Corporate Members, Overseas (Licensed)

- DLIIB E. G. W. BUSSLER, Ravensburg, Bannegstr. 119, Germany.
 DL4VB Capt. W. J. HORD, H.Q. Co., 320th U.S.A.S.A. Bn. (Fld.), A.P.O. 108, New York, U.S.A.
 K1DYA B. F. CUSHMAN, Box 7, H.Q. 47th Support Group, R.A.F. Station, Sculthorpe, Norfolk.
 KL7APV P. B. Forsmo, P.O. Box 4-1264, Spenard, Alaska.
 K0BIB S. B. PAKULA, 5225 Charlotte Street, Kansas City 10, Miss, U.S.A.
 LA7PA RAGNAR GUSTAVSEN, Tjernerget, Risør, Norway.
 OD5AY R. CHEBAB, P.O. Box 3647, Beirut, Lebanon.
 VE3DMU Dr. C. M. SPOONER, 194 Sandringham Drive, Downsview, Ontario, Canada.
 VE3DQL W. GERALD SPOONER, P.O. Drawer 130, Timmins, Ontario, Canada.
 VOICO D. T. KING, 18 Forestside Street, Corner Brook, Newfoundland.
 VQ2AC A. G. CARTER, K111, Mufulira, Northern Rhodesia.
 VQ4CW †M. C. PAVELY, c/o The Standard Bank of South Africa Ltd., P.O. Box 30,000, Nairobi, Kenya.
 VS6CL J. E. JEWACK, c/o Hong Kong Electric Co. Ltd., P. & O. Building, Hong Kong.
 VS6DK D. LAUKWAI, 60 Castle Peak Road, Kowloon, Hong Kong.
 W2LWX J. F. MCCORMICK, 588 Pinewoods Ave. Ext., Troy, New York, U.S.A.
 W4FGM J. C. THORNWALL, 334 Jean Street, Fairfax, Virginia, U.S.A.
 W5JGI J. M. HYDE, Motel Louisiane, Natchitoches, Louisiana, U.S.A.
 W7HNY R. E. DUNBAR, 1242 N. Farragut Street, Portland 17, Oregon, U.S.A.
 W8IJZ J. H. BRICKER, 3893 Glenwood Road, Cleveland Hts. 21, Ohio, U.S.A.
 W9EAM/DL4GF D. B. OLSON, Madigan Tech. Rep. Tuslog Det. 3, A.P.O. 324, U.S. Air Force.
 W9PGW R. A. CARLSON, 3702 Clinton Avenue, Berwyn, Ill., U.S.A.
 WQVQ S. D. THACHER, 2207 W. 7th Street, Topeka, Kansas, U.S.A.
 YV5BS F. E. PEREZ, Miracielos A. Hospital No. 93, Caracas, Venezuela.
 ZD2NWW N. W. WILLIS, Shell Co. of West Africa Ltd., G.M. Bag 2052, Lagos, Nigeria.
 ZE2JA W. G. LEYLAND, P.O. Borrowdale, Southern Rhodesia.
 ZE5JJ W. S. CAREY, Electricity Dept., P.O. Box 73, Salisbury, Southern Rhodesia.

Corporate Members (British Receiving Stations)

- 8973 †L. D. MOSELEY, 89 Cross Road, Southwick, Sussex.
 12123 †P. L. HOVENDEN, Inchfield, The Way, Reigate, Surrey.
 18006 †M. I. MCNELL, 42 Thorndale, Waterloo, Liverpool 22.
 19445 †J. W. EGERTON, 40 Fishers Lane, Pensby, Wirral, Cheshire.
 21675 F. C. A. COBBETT, 71 Pulborough Road, London, S.W.18.
 21710 *K. D. HARRIS, 29 Pines Road, Chelmsford, Essex.
 21711 F. G. DAVENPORT, 1 Cotman Gardens, Edgware, Middx.
 21712 A. M. KERR, 1 Adam Street, Gourrock, Renfrewshire.
 21713 D. R. PAICE, 55 Uplands Road, Hornsey, London, N.8.
 21714 A. G. MURPHY, 22 Springwater Road, Eastwood, North Leigh, Essex.
 21715 F. A. MAY, 166 Rock Avenue, Gillingham, Kent.
 21716 B. G. THOMPSON, 107 Cleveland Avenue, Darlington, Co. Durham.
 21717 Mrs. B. F. M. JACKSON, 3 Boundary Road, Scarthorpe, Grimsby, Lincs.
 21718 R. JONES, 43 Tillanburn Road, Newarthill, Motherwell, Lanarks.
 21719 D. C. TASKER, 1 Police House, Maldon Road, Wickham Bishops, Witham, Essex.
 21720 W. BURNS, Blairpark, Drummond Place, Grangemouth, Stirlingshire.

- 21721 P. GADBURY, 1 Lower Camden, Chislehurst, Kent.
 21722 M. B. COX, 138 The Downs, Harlow, Essex.
 21723 F. T. S. TAYLOR, 83 East Hill, Dartford, Kent.
 21724 L. BRAITHWAITE, Police Station, Alfrick, near Worcester.
 21725 P. J. VOADEN, 204 Monks Road, Exeter, Devon.
 21726 P. HARRIS, 42 Bolton Road, St. John's Wood, London, N.W.8.
 21727 D. A. BEMISTER, 69 Woodfield Drive, Gidea Park, Romford, Essex.
 21728 E. SMITH, 39 Claude Road, Plaistow, London, E.13.
 21729 R. H. DUNLOP, 19 Glasgow Vennel, Irvine, Ayrshire.
 21730 A. F. ADAMS, 56 Mostyn Road, Merton Park, London, S.W.19.
 21731 E. WILSON, 8 Crombie Road, Sidcup, Kent.
 21732 B. SINGH, c/o 6 St. Martins Terrace, Bradley, Bilston, Staffs.
 21733 T. NICHOLSON, High Green, Dennis Lane, Stanmore, Middx.
 21734 G. SCHNAPP, 18 Northfields, Letchworth, Herts.
 21735 N. H. CLARK, 4 Clifton Drive, Penworth, Preston, Lancs.
 21736 W. ABRAHAM, 1 Duke Street, Margam, Port Talbot, Glam.
 21737 S. P. SALTNER, 20 Sealby Avenue, Newby, Scarborough.
 21738 C. H. JONES, 77 Margam Road, Margam, Port Talbot.
 21739 B. W. HENDERSON, Cedar Lodge, Tilburston Hill Road, South Godstone, Surrey.
 21740 A. TAYLOR, 24 Emroch Street, Goytre, Port Talbot, South Wales.
 21741 F. MULLIS, 40 Denewood Avenue, Handsworth Wood, Birmingham 20.
 21742 J. E. O. HUGHES, 102 Midhope Buildings, Kings Cross, London, W.C.1.
 21743 G. PATRICK, 86 Newton Nottage Road, Portcawl, Glam.
 21744 T. A. NEWTON, 15 Hillside Street, Totterdown, Bristol 4.
 21745 D. T. HAMMOND, 15 Briar Road, Kenton, Harrow, Middx.
 21746 R. H. H. NUNN, 33 Oakland Avenue, West Hartlepool, Co. Durham.
 21747 S. A. THOMPSON, 19 Clarissa House, Clarissa Street, Haggerston, London, E.8.
 21748 L. T. MISKIN, Glanafon Hotel, Gwberton-on-Sea, Cardigan.
 21749 S/Ldr. H. CHANT, 3 The Ryde, Laleham, Middx.
 21750 S. C. CLARKE, 29 Leighimmohr Avenue, Ballymena, Co. Antrim, Northern Ireland.
 21751 L. G. CRAWFORD, 68 Galforg Road, Ballymena, Co. Antrim, Northern Ireland.
 21752 Miss I. M. KNUITON, 44 Stockbrook Street, Derby.

Associates

- 1551 C. GREEN, 29 Manor Park, Redland, Bristol 6.
 1552 H. M. HOGG, 124 Stenson Road, Derby.
 1553 J. MCCALL, 16 East Park Drive, Kilmaurs, Ayrshire.
 1554 P. J. S. JACOBS, 48 Sturminster Road, Bristlington, Bristol 4.
 1555 J. H. WILLIAMS, 37 Alphonson Road, Exeter.
 1556 G. F. DEACON, 20 Thackeray Road, Whipton, Exeter.
 1557 R. V. CHEESEMAN, Seacombe, Top Dartford Road, Hextable, Swanley, Kent.
 1558 C. F. CROXFORD, 9 Dudley Road, Bedford, Middx.
 1559 D. P. COOK, 27 Mill Lane, Chadwell Heath, Romford, Essex.
 1560 E. P. WALKER, 3 Mannicotts, Welwyn Garden City, Herts.
 1561 B. R. THOMPSON, Wyck-Elm, Atwick Road, Hornsea, East Yorks.

* Denotes transfer to Corporate Grade.
 † Denotes previously a Member.

B.R.S. 21639 T. C. WYLIE, Riverside, Taw View Estate, Fremington, Barnstaple, Devon (as listed in January issue) now holds call-sign G3MEF.

HENRY'S

(RADIO LTD)

5 Harrow Road, Paddington, W.2

Opposite Edgware Road Station

PADDINGTON 1008/9

OPEN MONDAY to SAT. 9-6. THURS. 1 o'clock

Send 6d. for 28-page Catalogue.



QUARTZ CRYSTALS

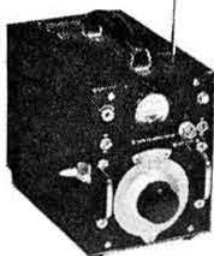


MARCONI, S.T.C., Q.C.C. & U.S.A. CRYSTALS

From 100 kc/s—18,000 kc/s.

LARGE SELECTION IN STOCK FROM 5/- to 15/- EACH

SEND FOR COMPLETE LISTS



BC906D FREQUENCY METER

Range 150-235 Mc/s.
45/-

U.S.A. R.F. WATTMETER TS-87/AP

3 position 0-10/15/30
watts

Complete with photo-
cell, 2 spare lamps and
leads, with transit case
BRAND NEW.

£10 10 0



TRIPLETT A.C./D.C. POCKET TEST-METER, TYPE 666H

15 ranges 1000 ohm p. volt.

A.C./D.C. 10/50/250/1000/5000 volts

Milliamps 0-10/100/500 m/a.

OHMS 0-300/250,000 ohms.

In new condition with Prods and
Internal Battery. £5 10 0

EVERSHED WEE-MEGGERS

500v. new condition, with
leather case

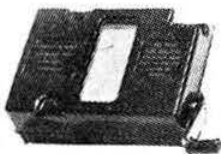
£8 19 6

500v. brand new, with leather
case

£12 10 0

100v. new condition, with
leather case

£6 0 0



"373" MINIATURE 9-72 Mc/s I.F. STRIP.

The ideal FM Conversion Unit

as described in P.W. April/May

1957. Complete with 6 valves:

3-EF91, 2-EF92 and EB91.

I.F.T.s, etc., in absolutely new

condition. With circuit and

conversion data.

12/6 (less valves)

42/6 (with valves)

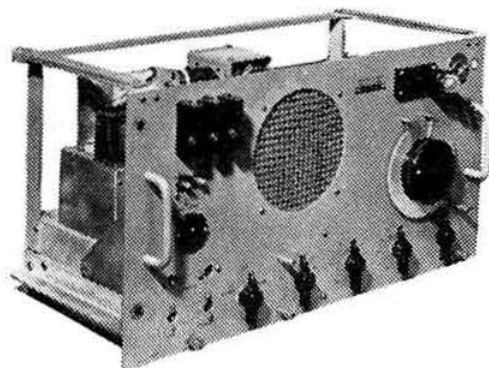
Postage 2/6 on either type.



SPUTNIK SPECIAL

SHORT WAVE COMMUNICATION RECEIVER 10-60 Mc/s

(5-30 Metres) Reception Set Type 208



Complete with 6 valves, 2-6K8G, 2-EF39, 6Q7G and 6V6G. Internal mains power pack and 6v. vibrator pack. Built-in 6 1/2 in. speaker. Muirhead slow-motion drive. I.F. frequency, 2 mc/s. B.F.O. and R.F. stage. Provision for 'Phones and Muting and 600 ohm. Combined input 100/250 volts A.C. and 6 volts D.C. Size 24 x 18 x 12. Weight 80 lbs. In metal transit case. All sets in new condition and air tested.

£6 · 19 · 6

Carriage 15/6

BE PREPARED FOR THE SATELLITES



CRYSTAL CALIBRA- TOR No. 7 Mark II

10 kc/s—100 kc/s—1 Mc/s

£5 19 6

Battery operated. input
60 volts and 2 volts. Com-
plete with 6 valves: 5-IT4
and IR5 and Xtal and
Phones. Brand New in
Transit Case.

U.S.A. TESTMETER TYPE "834-5" A.C./D.C. 15—RANGES F.S.D. 1000 O.P.V.

A.C./D.C. Volts 12/60/300/600v./1200/6000v.

Milliamps 1-2/12/60/600 m/a.

OHMS 0-5000/5 meg.



£6 19 6



INDICATOR UNIT TYPE "247"

Power Watt-Meter comprising 4 1/2 in. rectangular
1 m/a Meter, Magic Eye, 2-EF50 Diode and Recti-
fiers. Input 12 volts D.C. 80 volts and 100/230
volts A.C. 50 cy.

£4 19 6

TRANSMITTER/RECEIVER Army Type 17 Mk. II

Complete with valves, high resistance headphones,
hand-mike and instruction book and circuit.

● Frequency range 44-0 to 61 Mc/s

● Range approximately 3 to 8 miles

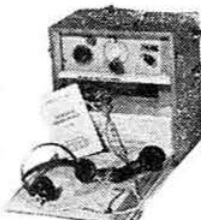
● Power requirements: Standard 120 volts h.t.

and 2 volts l.t.

Ideal for Civil Defence and communications.

BRAND NEW 59/6

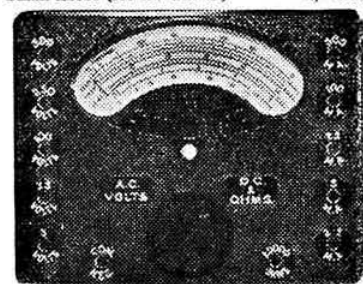
Calibrated Wavemeter for same, 10/- extra.



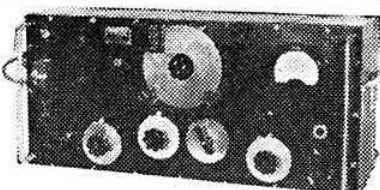
BRAND NEW ORIGINAL SPARE PARTS FOR AR88 RECEIVERS
I.F. TRANSFORMERS 1st, 2nd, 3rd, 4th (for type D) 12/6 each or complete set of 4, 40/-
I.F. Transformers Crystal Load. 12/6 each.
Plates escutcheons (for D and LF) 15/- each.



Dials (for type D) 10/- each.
Filter Chokes (for D and LF) 22/6 each.
Output Transformers (for LF) 30/- each.
Crystal phasing (D) 2/6 each.
Antenna trimmers (LF and D) 2/6 each.
Condensers 3 x .25 FF (D and LF) 2/6 each.
3 x .01 FF (D and LF) 2/6 each.
HF Antenna inductors (D and LF) 7/6 each.
Mains transformers (LF) £3 each.
Small knobs (for LF and D) 4/- each.



AVOMINORS in leather case, with leads, fully tested £5. 10. 0. Packing & Carriage 2/6d.



MARCONI SIGNAL GENERATOR.
T.F. 144 G. covering 85 kc/s to 25 Mc/s. Calibrated and fully guaranteed £70. Postage and packing 20/-.

2 K.V.A. TRANSFORMERS, 230/50v. output, adjustable by rotary switch. Can be easily adapted as a welding transformer £15. Postage and Packing 30/-.

R.109A RECEIVERS, covering 2-12 Mc/s, 6v. d.c. £4. 5. 0. Carriage paid.

HIGH RESISTANCE HEADPHONES 2,000 ohms. Brand New, Ex W.D. boxed, Type D.H.R., 11/- per pair, post 1/6.

LOW RESISTANCE HEADPHONES. Brand new, Ex W.D. boxed, Type C.L.R. and D.L.R. 5/6 per pair, postage 1/6.

P.C. RADIO LTD.
170 GOLDHAWK RD.,
W.12

SHEpherds Bush 4946

PERSONAL CALLERS WELCOME

813 (R.C.A.) VALVE. New, originally boxed, with guarantee £4 each, post paid.

MODULATION TRANSFORMERS (U.S.A. Collins) primary imp. 6,000 ohms. C.T. Secondary 6,000 ohms. 20w., 9/6 each

SPARES for AR77E. Bandsread Dial 8/-
 Clean dial window sheet 3/-
 Terminal boards 3/- each. 10in. shaft for switch, 1/-
 Band indicator shutter plate, 3/6. Each item 1/- postage.

AMERICAN VALVE TESTER, Model 314. Individual lever switches for each tube element. Roll Chart for American type valves. 220/30v. a.c. Brand new in nice wooden case with leather handles. Full instruction booklet, £10. Carriage 10/-.

JOHNSON'S American transmitting variable condensers, 1020 pF, 3,500 V, air gap 0-080. 17/6d, postage 2/6d. 500 pF, 2,000 V, 10/-, postage 2/-.

CONDENSERS. RESISTORS. COILS. TRANSFORMERS. Very large selection in stock.

S.C.R. 552 (BC625) including all valves 45/-, post free.



AMERICAN HANDY TALKIE
 Type B.C. 611, including two operating crystals (5-6 Mc/s band), £19. 10. 0.

Postage and packing, 10/-.

H. WHITAKER G3SJ

COURT ROAD, NEWTON FERRERS, SOUTH DEVON

Precision Crystals of all Types

—AMATEUR BANDS—

We can give immediate delivery from stock of practically any frequency covering the entire amateur bands and model control band. 100 and 1000 kc/s for frequency standards from stock.

SPECIAL OFFER:

400 crystals in the range 7090 kc/s to 7150 kc/s, all frequencies available. Post-war production. Zero temp. BT cuts, gold plated electrodes, 1/2 in. pin space holders. Unrepeatable, 18/- each, post free. This price applies only to the above range.

As above, 8050 kc/s to 8110 kc/s inclusive, same specification, 18/- each, post free. All frequencies available throughout the range.

H. WHITAKER G3SJ

Contractors to the War Office, Air Ministry, Post Office and Government Departments the world over.

A.R.B. Approved.

Tel.: NEWTON FERRERS 320

sound technique

Come to SMITH'S for all the books that you need to increase your technical knowledge and keep up with the latest radio developments.

Volumes not in stock can be obtained for you, and we shall be pleased to supply a list of standard works on any subject.

Our local branch can also supply your business and personal stationery.

W. H. SMITH & SON

HEAD OFFICE: STRAND HOUSE, LONDON, W.C.2



BRANCHES THROUGHOUT ENGLAND AND WALES

HOLIDAYS *at home or abroad*

CLIFFE METCALFE, G3DQ

owns

**THE NORTH EASTERN
TRAVEL AGENCY**
12 Cliff Street, Bridlington

Telephones: 4872 and 5614

and would like to quote you for your vacation. Agents for Cook's Tours, Frames, Lunns, Blue Cars, Skyways, Friendship etc., and all tickets for travel by LAND, SEA, AIR OR COACH.

A list of Hams in the area you are visiting is part of the service. Brochures sent by return. No extra charges. Immediate replies.

73, Cliffe

THE MINIMITTER Co. Ltd.

By popular request, we give full details of our complete range of:—

TRANSMITTING EQUIPMENT

"Mercury" Transmitter **99 gns.** complete

The Famous Foundation Units:

★ "Miniciter" ...	£18. 0. 0
★ "Minipa" ...	£14. 0. 0
★ "Minimod" ...	£15.10. 0
★ "Minipower" ...	£30. 0. 0
★ Low Pass Filter Unit ...	£3. 5. 0

RECEIVING EQUIPMENT

M.R.37 Receiver ... complete	£52. 0. 0
Amateur Band Converter, for fixed or mobile operation	£17. 0. 0
Multi-Q Unit ...	£7.15. 0

Our aim is always to give the amateur the finest equipment at the most competitive prices.

H.P. FACILITIES are available on all equipment. Write for full technical details, enclosing S.A.E.

THE MINIMITTER Co. Ltd.

37 DOLLIS HILL AVENUE, LONDON, N.W.2.

Tel.: PAD 2160

THE SPOT 26 OSMASTON ROAD

EDDYSTONE

680X. Crystal filter. Variable selectivity. "S" meter. Push/pull O/P. Stabilized pack. Superb and built to a wonderful standard. £120.

888A. Latest one just released.

Double superhet. 6 ranges. 6 Ham bands right across scale giving excellent bandspread. Crystal calibrator. S.s.b. switch, etc., £110.

750, 840A, 870 (820 F.M. Unit), RXs stocked.

Components by Eddystone. Full vision dials (F.B. for v.f.o.s), 24/6 each. Small R.F. Chokes, 2/3. Glass insulators for your antenna, 1/6 each. Pot stand-offs, 7d. and 1/6 each. Condensers, coils, handles, formers, etc. Send for Price List.

GELOSO

RX. Double super. G207 Dr. 14 valves. Complete dial spread on Ham bands, 3.5 to 30 Mc/s, 6 ranges. Receives F.M. Xtal filter. Noise lim. Very attractive and only £78, complete. Matching 35 watt TX type 210, £68. Less valves. V.f.o.s with dials, £7 12s. 6d. RX front

ends, £12 10s. with condenser and dial. P1-Tanks, 18/6.

JASON F.M. EQUIPMENT

Tunable F.M., 5 gns. Extra 38/- for valves. Mercury switched kit (with 2 valves in front end built), £9 inc. tax. Prefect switched tuner ready built, £15 12s. 9d. Argonaut kits. A.M./F.M., less valves, £11 10s.

W.B.-1012 10 in. Speakers, 99/9. 1214, £9 15s. 6d. Goodmans Axiote, 150 Mk. II, Axiom 22 Mk. II, etc., etc. W.B. Cabinets, full range in stock. Wharedale FSB/3. BSR Changers UA8, £8 19s. 6d. Collaro 456, conquest, £10. Goldring lenco, transcription, £23 7s. (Separate 500 and 600 cartridges available.) Agents for Philips Hi-Fi, etc. Mullard 5-10 amp. kits. Book available on Amps. and F.M., by Mullard, 4/- P.O. Transistors, Repanco, Teletron kits. Miniature range always in stock.

Mikes by Acos, Geloso, etc., from 25/-. Alloy Tubing 3/4 in., 8d. 1/2 in., 11d. 3/8 in., 1/1d. 1 in., 1/6 per ft. 14 ft. 2 in. o/d Masts, 63/9. Cast couplers for joining two masts, 8/6 each, p. & p. 1/6d. 1 in

to 3/4 in. director and ref. Cast holders, 2/- each. Guy support clamps 1 in. to 2 in. adjustable, 4/9 each. Rubber dipole centres, 6/-, 3/4 in., 7/6. 1/2 in. Elements T-pieces for slots 3/4 in. to 1/2 in., 1/3. 3/4 in. to 1/2 in., 1/3 each. ASPDEN Tape Deck kit, £9 5s., 5/- p. and p. Amplifier, £5 18s. less valves. Power pack, £2 18s. 6d. In stock for despatch by return of post.

2 METRES

Five-element wide-spaced. High gain beam. Rigid construction. Best buy in the country. Complete with masthead coupler, (fits 1 in. to 2 1/2 in. o/d. Masts only.) 49/- plus 3/6 p. & p.; by return of post. QV0-640A, £10 each. EF91, 9/6 each. QV06-20 (6146 equivalent), 43/- each, p. & p. extra.

FULL RANGE of high stability T.S.L. 1/2 w/w resistors, 6d. and 9d. each. Disc ceramics, .001, .002, .003, .005, 470 pf. 10d. each. .01 capacitors, 1/- each. 2-8pf Trimmers, Philips type concentric, 1/3 each. 3-30pf (Philips), 1/6 each. 5 watt and 10 watt w/w Resistors, 1/3 and 1/8 each (up to 3.5 K), etc., etc.

Please send S.A.E. with enquiries, etc., and sufficient P. & P. on all goods. Open 9 a.m. to 6 p.m. weekdays and Saturdays. Wednesdays (half-day), close 1 o'clock.

When in town just ask for The Spot. We are next to Lloyds Bank on the spot.

NORMAN BIRKETT LTD.,
Dept. DX, "THE SPOT",
26 Osmaston Road, Derby.

TRANSMITTER NAVY MODEL TCK-7

**Yours for only £10 deposit
and 12 monthly payments
of £5, or cash price £65.**

American transmitters still in original packing cases. Designed for the Navy, these are really beautifully made and most impressive, standing 5 ft. high by 2 ft. wide and finished in instrument crackle. All meters and controls are on the front panel. The transmitter tunes over the range of 2 megacycles to 18 megacycles and it is designed for high speed precision communication without preliminary calling. Frequency control and stability is particularly good, being better than .005% under the worst conditions. Power output is 400 watts on c.w. and 100 watts on phone.

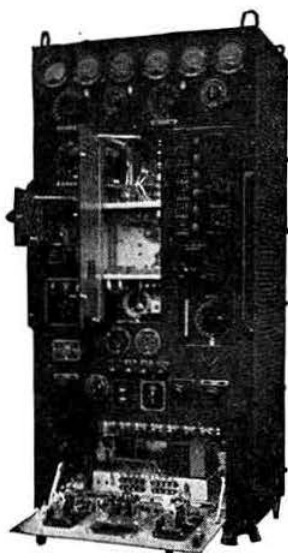
Tuning is very simple—a unit control mechanism gives a direct reading in frequency.

Complete with valves and instruction manual. Price £65 cash or £10 deposit and 12 monthly payments of £5—carriage extra at cost.

NOTE: Power packs are not supplied with these but full details of power requirements are given in the instruction manual.

View by appointment only.

ELECTRONIC PRECISION EQUIPMENT LIMITED
(Dept. R) 66 Grove Road, Eastbourne



Communications Receivers, etc. IN FIRST CLASS CONDITION

G.E.C., BRT.400	£95
EDDYSTONE 680X	£85
R.C.A. AR88D, 540 kc/s-32 Mc/s	£65
R.C.A. AR88LF, 75-550 kc/s and 1-5-30 Mc/s	£60
EDDYSTONE 750, listed at £78	£58
HALLICRAFTERS S.36, U.H.F. AM/FM, 28-143 Mc/s	£50
HALLICRAFTERS SX28, 550 kc/s-42 Mc/s	£45
HALLICRAFTERS S.27, U.H.F. AM/FM, 28-143 Mc/s	£40
HAMMARLUND Super Pro, with power unit	£35
NATIONAL NC. 100.XA, 500 kc/s-30 Mc/s	£35
NATIONAL NC. 120, 540 kc/s-30 Mc/s	£35
EDDYSTONE 840, 540 kc/s-30 Mc/s	£35
R.C.A. AR77E, 540 kc/s-31 Mc/s	£32
HALLICRAFTERS S.38C, 550 kc/s-30 Mc/s	£25
HALLICRAFTERS SX.16, 550 kc/s-61 Mc/s	£25
MARCONI CR. 100, 60-420 kc/s and 500 kc/s-30 Mc/s	£25
HALLICRAFTERS Skyriver 23, 540 kc/s-34 Mc/s	£25
EDDYSTONE 640, 1-8 to 30 Mc/s	£25
HALLICRAFTERS S.38, 550 kc/s-30 Mc/s	£20
EDDYSTONE 358X with 9 coils, 90 kc/s-30 Mc/s	£18
HEATHKIT Receiver, type AR3. Frequency 550 kc/s to 32 Mc/s	£17
R107 Receiver	£13 10.
MINIMETER Preselector Unit. Tuning 10, 15, 20, 40 and 80 metres into 1-6 Mc/s	£12. 10.
LM.7 frequency meter	£25
BC221 frequency meter	£50
AVO Model 8 Multimeter, as new	£10
TRIPLETT Signal Generator, Model 1632. Frequency 100 kc/s to 120 Mc/s	£18
AVO Electronic Testmeter (with 10 and 25 kV. multipliers)	£35
TRANSMITTER, Type No. 12	£12
All National H.R.O. coils, receivers, power units in stock. Send for list today. Carriage is extra on all items.	

RADIO TELEVISION & INSTRUMENT SERVICE

CORRESPONDENCE: CALLERS AND GOODS:
254 Grove Green Road, Ashville Old Hall,
Leytonstone, London, E.11 Ashville Road, London, E.11
Telephone: LEYtonstone 4986.

BENTLEY ACOUSTIC CORPORATION LTD.

EXPRESS SERVICE !!
C.O.D. ORDERS RECEIVED BY 3.30 P.M. EITHER BY
LETTER, PHONE OR WIRE, DESPATCHED SAME
AFTERNOON.

THE VALVE SPECIALISTS
38 CHALCOT RD., LONDON, N.W.1
PRImrose 9090

FOR ONLY 6d. EXTRA PER ORDER WE WILL
INSURE YOUR VALVES AGAINST DAMAGE IN
TRANSIT. ALL UNINSURED PARCELS AT
CUSTOMER'S RISK.

1A3 3/-	6AB7 8/-	6F17 12/6	6V9G 7/-	12J5GT 4/6	35A5 11/-	CV428 30/-	ROCC1 15/-	EV51(Large) 12/6	LN152 14/-	QV04/7 15/-	UF89 10/6
1A5 6/-	6AB8 14/-	6F22 10/6	6V6GT 8/-	12J7GT 10/6	35L6GT10/-	D1 3/-	ROCC2 10/6	EV51(Small) 12/6	LZ319 14/-	R12 12/6	UL41 11/-
1A7 15/-	6AC7 6/6	6F23 7/6	6X4 7/-	12K7GT 7/6	35W4 8/6	D42 10/6	ROCC3 8/6	MH4 7/6	MH4 7/6	SD6 12/7	UL46 15/-
1D6 10/6	6AG5 6/6	6G6 6/6	6X5GT 6/6	12K8GT 8/6	35Z3 10/6	D63 5/-	ROCC4 8/6	MH4 7/6	SP27 10/6	SP27 10/6	UL54 11/6
1H5 11/-	6AK5 8/-	6H6 6/6	6Z4 8/6	12L8GT 14/-	624 8/6	D77 6/6	ROCC5 8/6	MH4 7/6	SP47 15/-	SP47 15/-	U9 10/6
1H4 6/6	6AL5 6/6	6H6GT 6/6	6Z5 12/6	12Q7GT 7/6	625 12/6	DAC32 11/-	ROCC6 7/6	MH4 7/6	SP47 15/-	SP47 15/-	UY4 8/6
1LD5 5/-	6AM6 9/-	6H6GT 6/6	630L2 12/6	12S7GT 8/6	630L2 12/6	DAP91 8/-	ROCC7 9/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
1LN5 5/-	6AQ5 7/6	6J5G 5/-	630L2 12/6	12S8GT 8/6	630L2 12/6	DAP91 8/-	ROCC8 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
1N5 11/-	6AT6 8/6	6J5GT 5/6	630L2 12/6	12S9GT 8/6	630L2 12/6	DAP91 8/-	ROCC9 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
1R3 8/6	6AU6 10/6	6J5GT 5/6	630L2 12/6	12SH7 8/6	630L2 12/6	DAP91 8/-	ROCC10 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
1R5 8/6	6B4G 6/6	6J6 5/6	630L2 12/6	12SJ7 8/6	630L2 12/6	DAP91 8/-	ROCC11 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
1T4 7/-	6B7 10/6	6J7G 6/6	630L2 12/6	12SK7 8/6	630L2 12/6	DAP91 8/-	ROCC12 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
1U5 10/-	6B8G 4/6	6J7GT 10/6	630L2 12/6	12SL7 8/6	630L2 12/6	DAP91 8/-	ROCC13 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
2A3 12/6	6B8M 5/-	6K7G 5/-	630L2 12/6	12SR7 8/6	630L2 12/6	DAP91 8/-	ROCC14 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
2A7 10/6	6BA6 7/6	6K7GT 6/6	630L2 12/6	12V4 10/6	630L2 12/6	DAP91 8/-	ROCC15 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
2C26 4/-	6B6 7/6	6K8G 8/-	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC16 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
2D10 7/6	6B6 8/-	6K8GT 8/-	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC17 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
2X2 4/6	6BR7 11/-	6K8GT 8/-	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC18 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
3A4 7/-	6BW6 6/6	6L6G 9/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC19 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
3A5 12/6	6BW7 12/6	6L18 13/-	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC20 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
3B7 12/6	6BX6 12/6	6N7 8/-	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC21 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
3D6 5/-	6C4 7/-	6Q7G 10/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC22 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
3Q4 9/-	6C5 6/6	6Q7GT 11/-	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC23 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
3Q5GT 9/6	6C6 6/6	6R7G 10/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC24 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
3R4 8/-	6C8 12/6	6SA7GT 8/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC25 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
3V4 9/-	6C9 12/6	6SCT 10/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC26 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
5U4 8/6	6C10 12/6	6SG7GT 8/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC27 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
5V4 12/6	6C16 12/6	6SH7 8/-	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC28 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
5X4 12/6	6D6 6/6	6S7 8/-	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC29 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
5Y3G 8/-	6E5 12/6	6SK7GT 8/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC30 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
5Y3GT 8/6	6P6G 7/-	6SL7GT 8/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC31 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
5Y4 12/6	6F6GT 8/6	6SN7GT 7/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC32 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
5Z3 12/6	6F8 12/6	6S87 8/-	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC33 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
5Z4G 10/6	6F12 9/-	6U4GT 14/-	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC34 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
5Z6G 10/6	6F13 13/-	6V6 7/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC35 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6
6A8 10/-	6F16 9/6	6U7G 8/6	630L2 12/6	14R7 10/6	630L2 12/6	DAP91 8/-	ROCC36 10/-	MH4 7/6	SP47 15/-	SP47 15/-	UY8 10/6

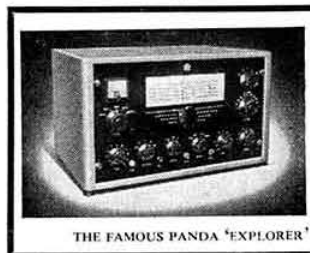
Terms of business:—Cash with order or C.O.D. only.
Orders value £3 or more sent post/packing free. Orders
below £3, please add 6d. per valve. C.O.D. orders:—
Minimum fee, including post and packing, 3/- We are
open for personal shoppers, Mon-Fri, 8.30-5.30, Sat.,
8.30-1 p.m.

Please enquire for any valve, germanium diode, or
transistor not listed. 3d. stamp please, or phone.

All valves new, boxed, tax paid, and subject to makers'
guarantee. First grade goods only, no seconds or rejects.
All orders received by first post despatched same day.
S.A.E. for free complete list, with full terms of business.

HOME RADIO OF MITCHAM

are official stockists for the



THE FAMOUS PANDA 'EXPLORER'

PANDA

TRANSMITTERS

Early delivery can be made on the new PANDA 'EXPLORER,' and the PANDA 'CUB' is available from stock.

MINIBEAMS The new, improved Minibeam is now available from stock. Price £21 plus carriage. Send 3d. stamp for details.

EDDYSTONE RECEIVERS

Prices from £34.16.0

For full details and detailed specification, please send 3d. stamp.



THE EDDYSTONE '870'

HOME RADIO (MITCHAM) LTD

187 LONDON ROAD, MITCHAM, SURREY MIT. 3282

CALLING S.W. ENTHUSIASTS

HOME STUDY COURSES

for radio amateurs examinations and P.M.G. 1st and 2nd Class certificates (Theory) also courses in all branches of Radio & T/V engineering. Special Practical Kits are available as part of our Radio Courses. A typical course for beginners covers the design, construction and operation of a short wave 2-valve receiver. Equipment supplied upon enrolment, remains your property.

The only Home Study College which is part of a World-wide Industrial organization

EMI INSTITUTES

POST THIS COUPON TODAY

To E.M.I. Institutes, Dept. 21R, London, W.4.

Subject(s) of interest.....

Name

Address

IC97

(Feb./58)

Associated with "H.M.V.", Marconi, etc. etc.

SIGNAL GENERATOR TYPE 52A

Frequency 6-52 Mc/s, in four ranges. Internal mains pack, extensively filtered. 50µamp. R.F. Meter. Internal or external modulation. Calibrated coarse and fine (in µvolt) attenuator, output impedance 70 or 100 ohms., minimum output 0.5µvolts maximum output 100 mV. Complete with all leads, calibration charts and circuit. Brand new in original manufacturer's cases. £8. 10. 0, carr. 10/-.

WESTON 1 AMP. H.F. METERS. 2 in. circular. Brand new 5/6. P. & P. 1/-.

CONVERTERS. Easily the most useful units released by the Ministry. Within minutes you can extend the frequency of any receiver to cover the following:

R.F. 26, 50-65 Mc/s. 20/- R.F. 25, 40-50 Mc/s. 8/6.
R.F. 24, 20-30 Mc/s. 12/6. R.F. 24. Shop soiled. 7/6.

All Brand New with Circuit. 3/6 postage on each.

MUIRHEAD SLOW MOTION VERNIER DRIVES. Scaled 0-180 deg. Ratio 25 to 1. 3 in. dia. 10/6. P. & P. 1/6.

VIBRATOR PACKS. 12 v. input, 300 v. output, at 150 mA. As a bridge rectifier will handle 450 v. RMS at 120 mA. Pack consists of 12 v. vibrator, 4 metal rectifiers, chokes and smoothing condensers. ONLY 30/-, carr. 5/-.

ALSO 6 v. input, 230 v. output at 100 mA, complete 4-pin vibrator, OZ4 rectifier. Fully smoothed, 25/6 each. P. & P. 2/6.

500 MICROAMPS METER. 2 in. circular calibrated 0-15 and 0-600 v., resistance 500 ohms. 12/6. P. & P. 2/6.

WIRELESS SET No. 19 Mk. II. Two transmitter-receivers and an intercom. amplifier in one case. "A" set covers 2-8 Mc/s RT and CW, and "B" set 240 Mc/s RT only. Complete with 15 valves and 500 micro amp. check and Tuning Meter. Only 60/-, plus 10/- carr.

LEAD ACID ACCUMULATORS. 2 volts, 16 A.H., ideal for 6 volts and 12 volts supply. Brand new original cartons. Size 4 in. x 7 in. x 2 in., 5/6 each, P. & P. 2/6. 3 for 15/-, P. & P. 3/6. 6 for 27/6, P. & P. 5/-.

OSCILLOSCOPE!! Latest Ministry release of Test Set Type 43. Employs 3½ in. CRT type VCR 138A, 4-6J7, 4-VR54, 1-5Z4, 1-VU120. Panel controls: X shift, Y shift. Focus, Brilliance, External or internal sync. Four speed time base. Internal H.T. and E.H.T. Mains power pack. Size 12 in. x 9 in. x 18 in. Complete with leads. Brand new and unused. £8. 10. 0, carr. 15/-.

COMMAND RECEIVERS. 1-5.3 Mc/s. Fully valved including circuit, 65/-, P. & P. 3/6.

MAINS R.C.A. TRANSFORMERS. Input 110-240 volts, output 345-0-345 at 150 mA. 6.4 volts at 4.5 amps. 5 volts at 2 amps. Brand new, fully shrouded. Limited quantity. Write now. Only 35/-, P. & P. 3/-.

BENDIX RECEIVER MN26C. Covering 150-1500 kc/s in 3 bands. Valves used: 5-6K7, 2-6N7, 2-6J5, 1-6F6, 1-6L7, complete with switching motor and dynamotor. This superb unit has been modified for 12 v. operation. With circuit. Only 80/-, Carr. 8/6. Also 28 v. model, suitable for mains conversion. £3. 10. 0.

DIPLOLE AERIAL No. 4A. 52 ft. hard drawn 7/22 copper wire with centre insulator, fitted with feeder sockets. Both ends have 3 link insulators and slotted wire adaptors. Brand new. Price 9/-, P. & P. 2/-.

AMERICAN ROTARY CONVERTER. With detachable cooling fan 12 volt input, 250 volt output at 90 mA. Completely suppressed, 19/-, P. & P. 4/-.

NEW ORIGINAL CARTONED AMERICAN VALVES

5U4G	7/6	6SN7GT	6/6	6V6GT	7/6	9004	1/9
6AC7	5/-	6SL7GT	7/-	807	6/-	9006	1/9
6AG5	5/6	6H6	2/6	6X5GT	8/6	830-B	40/-
6AG7	9/6	446B	25/-	955	1/9	1215GT	6/-
6SH7	5/-	464A	25/-	956	1/9	2C26	3/6
		2X2	2/6	3B24	7/6	1625	5/-

Please add postage.

Relda Radio Ltd

(Dept. "B"), 32A Coptic Street, London, W.C.1.
Phone: MUSEum 9607

Tottenham Court Road Underground. Fourth turning on left down New Oxford Street.

Turn your hobby into a well-paid job

with prospects of early promotion

We are seeking conscientious electronic engineers and technicians for the following posts:

DEVELOPMENT ENGINEERS

to join a section engaged on circuit design in one of the following fields: Pulse, V.H.F. or microwave. Salaries up to £1,000 p.a. and excellent prospects of promotion to Senior Engineer.

TEST ENGINEERS

for calibration of precision electronic equipment. Salary according to ability. Prospects of promotion to Development Engineer are good, and dependent entirely on achievement and diligence.

TEST ASSISTANTS

men or women, with G.C.E. (Ordinary or Advanced Level) and a flair for electrical work. They will be trained and encouraged to learn the techniques of the growing electronic industry.

APPLICATIONS, giving full personal details and past experience, to G. and E. Bradley Ltd., Electral House, Neasden Lane, N.W.10. marked for the personal attention of Mr. D. P. Thurnell, Assistant Chief Engineer.

NOW
AVAILABLE

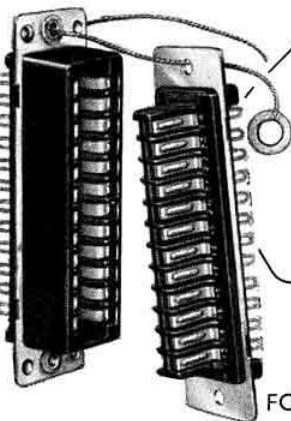
8 WAY

16 WAY

24 WAY

32 WAY

24 WAY
CONNECTOR



McMURDO
Red Range
Connectors

FOR BACK RACK MOUNTING

GOLD PLATED CONTACTS
POSITIVE POLARISATION
SELF ALIGNING
EXCEPTIONALLY LOW INSERTION
AND WITHDRAWAL FORCE

- WORKING VOLTAGE—750V D.C.
- CONTACT RESISTANCE—LESS THAN .005 OHM
- CURRENT RATING—5 AMPS PER CONTACT
- MOULDINGS—RED NYLON LOADED PF
- FLOATING BUSHES ON SOCKET MOUNTING PLATES ASSIST SELF ALIGNMENT

Send for FULL TECHNICAL INFORMATION to:

THE McMURDO INSTRUMENT CO. LTD., ASHTEAD, SURREY.

Telephone: ASHTEAD 3401
RRC.18.

MORSE CODE on RECORDS

and

YOUR SENDING MONITORED by telephone, on our Morse inker, and printed tape returned with criticism and advice.

Home-study courses for Amateur exam., P.M.G. 2nd Class, also Brit. I.R.E. and City and Guilds Courses:

Write to the Principal, **BRITISH NATIONAL RADIO SCHOOL**, 66, Addiscombe Rd., Croydon.

Phone: Add. 3341.

Britain's Premier Radio Correspondence School.
Est. 1940.

A brand new

300 Watt TRANSMITTER for only £15 down and 8 monthly payments of £15. Delivery after first payment. Cash price £120

LOOK AT THE SPECIFICATION—

- Power output—300 watts all services
- Power input—180/250 volts, 50 c/s, a.c. mains.
- Hand or high speed keying.
- Crystal or m.o. control with temperature compensated m.o. circuit.
- Types of wave—c.w., m.c.w. and r.t.
- Frequency range—1.5 Mc/s to 20 Mc/s.
- Modulation—100 per cent.
- Output impedance—50 ohms co-axial feeder.
- Audio input impedance—600 ohms.
- Remote control facilities if required.

also—

Halliercrafters S-27 Communications Receivers.
Wireless Sets 62—14 to 10 Mc/s, send and receive.
Wireless Sets 88 Walkie Talkies—40 to 42 Mc/s.
Wireless Sets 19 with all operating equipment.
Collins T.C.S. Sets complete, 14 to 12 Mc/s with power supply units for 12 volt, 24 volt or mains supply.

H.P. or credit facilities on all goods.

R. GILFILLAN & CO. 7 High Street, Worthing, Sussex.
LTD. Tel.: Worthing 8719 or 30181.

G2ACC offers you . . .

ILLUSTRATED CATALOGUE

No. 11, 9d. POST FREE
(British Isles and Forces only)

56 pages; 108 photographic illustrations; over 2,000 new guaranteed items by the leading radio manufacturers. Our offer for "Prizes for Ideas" (see last month's advertisement) is open until Feb. 28th, 1958.

Southern Radio & Electrical Supplies

SO-RAD WORKS, REDLYNCH, SALISBURY, WILTS.

Telephone: Downton 207

WANTED

RECEIVERS

BC342 and BC312

WITH OR WITHOUT ORIGINAL POWER PACKS

Altham Radio Co. Ltd.

Jersey House, Jersey Street,
Manchester, 4.

Telephone: Central 7834/5/6

EXCHANGE AND MART SECTION

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 and remittance to National Publicity Co. Ltd., 36-37 Upper Thames Street, London, E.C.4, by 22nd of month preceding date of issue.

ALL types of Valves required for cash. State quantity and condition.—Radio Facilities Ltd., 38 Chalcot Road, N.W.1. (PR1mrose 9090.) (241)

AR88D clean and original condition, £45. Also various Woden Transformers. S.a.e. please.—G2HJV, 39 Northumberland Road, Leamington Spa, Warwickshire. (573)

BC348, new TCS13 transmitter, with power pack. Sell for £15. Buyer collects.—GM2HFV, 23 Noran Avenue, Dundee. (582)

BC348, inbuilt mains unit, noise limiter, crystal calibrator (requires crystal), all circuitry, and 30 Mc/s converter, £13; valves, unused, boxed, 35Ts, 832s, 20/-; T20s, 10/6.—G2QY, 16 Warrender Way, Ruislip, Middx. (590)

BC348F incorporating HRO 50 circuits, r.f.s. 6BA6s, mixer EF86, osc. 6C4, NL 6H6 with threshold control, two audio stages, VR105/30 stabilized S-meter, separate r.f. and a.f. gains, separate a.v.c. switch, two-tone control, crystal phasing control. Separate cabinet houses 8 in. speaker, S-meter, p/p with muting relay. Accurately aligned, peaked ham bands, £15. All mains Class D Wavemeter, £4. Prefer buyer collects, possibly arrange delivery 30 miles. Bolton.—G3EGC, 96 Ashworth Lane, Bolton, Lancs. Eagley 1502. (583)

BOUND to satisfy.—BULLETINS bound 7/3 per volume. Post free. Attractive low-priced QSL cards supplied. Sample.—H. W. Robinson, G2BBT, 35 Forty Acres Road, Canterbury.

COMPLETE LG300 transmitter with power unit/modulator, fully valued and as brand new, £110. Delivered 50 miles. Wanted, AR88D. Lancs.—Box 576, The National Publicity Co. Ltd., 36/37 Upper Thames Street, London, E.C.4. (576)

EDDYSTONE 750 for quick sale in fair working order, but needs slight attention, £35 o.n.o.—E. M. Dyson (G3LOT), 15 Brockhall Road, Flore, Northampton. (575)

ENCLOSED cabinet, 6 ft. high, 19 in. wide, 17 in. deep, American manufacturer, £4. Wanted: AR88 cabinet.—G3GVV, 24 Campden Road, Gloucester. (580)

FOR SALE National "HR060T" with coils and extra coil for 21 Mc/s crystal calibration unit fitted; National NC183D, both with manual and in factory-new condition, used only few hours, cash offers invited. These should not be confused with used receivers; both are immaculate. Labgear LG300 with modulator, etc., fitted mod. meter, offers. Panda Tower 32 ft. complete with pitch motor, selsyns, desk indicator. Power unit also Minibeam. Offers. Labgear E5029 standing wave meter. Panda Antenna Matching Unit. Two Halliercrafters speakers in cabinets, BC221AJ in crackle cabinet with charts and power unit as brand new, latest Labgear ES039/A Antenna changeover relay unit unused, signal strength and frequency meter with coils, Labgear Bi-Square for 10m, unused, 0/240 Variac, meters, valves, switches, relays, etc. Many brand new, unused manuals, etc. Direction compass new. Eddystone Mains Filter 732. Acos table microphone on stand, type MIC22-2, Labgear filter E5034, unused v.h.f. 152A, brand new condition. Offers invited for above; only outright purchases considered.—Box 570, The National Publicity Co. Ltd., 36/37 Upper Thames Street, London, E.C.4. (570)

G3CGD QSLs. Fixed and mobile samples on request. Printing inquiries welcomed.—30 St. Luke's Road, Cheltenham. (443)

HALLICRAFTER S36, a.m./f.m., 27/143 Mc/s, £35. Adana No. 2 printer complete, type, accessories, instructions, £12/10/-, Ideal Clubs, QSLs, etc.—G3BBU, 38 Ashbourne Avenue, London, E.18. (588)

METALWORK.—All types cabinets, chassis, racks, etc., to your own specifications.—Philpott's Metalworks Ltd. (G4BI), Chapman Street, Loughborough. (99)

MINIMITTER for sale, 1957 model as new, TVI proof, £75 including filter. Grayshaw signal generator, £5. Other gear for disposal. S.a.e., lists.—28 Tettenbury Road, Besford, Nottingham. (572)

(Continued on page 400)

MINI-MITTER transmitter mint condition, late 1956 model, also receiver type AR88LF and Transmitter Army type 12 for sale.—Offers to W. J. Mason, 39 Victory Road, Clacton-on-sea, Essex. (581)

MO UNIT 123, 12/6; Thordarson choke, 7/6; 6AK5, 6AG5, 6C6, 6D6, 807, 5/-; 6J6, 9002, 9004, 4/-; 954, 2/6; meters 100, 150, 200, 500 mA, 100 volt, 0.5, 6A TC, 5/-. Add postage. BC221, internal power pack. Offers.—Box 571, The National Publicity Co. Ltd., 36/37 Upper Thames Street, London, E.C.4.

PETROL/Electric Generator Set, 700 watts, 230 volts, a.c. Plus 300 watts d.c., will run two n.f.d. Stations, £25. Buyer collects. Further details.—G3GNR, 177 Upper Shoreham Road, Shoreham Sussex. (585)

QSL cards and all types of printing, reasonable, samples from: McTaggart, printer, 40 Valeview Terrace, Dumbarton. (577)

QSL cards, G.P.O. approved. Log books, cheapest, best, prompt delivery. Samples—Atkinson Bros., Printers, Looe, Cornwall. (206)

R.107; Wavemeter "D"; Radiocraft v.f.o.; 30 watt c.w. transmitter; all working. Offers.—G3CEW, 58 Bourne View, Greenford, Wembley 1831. (589)

SALE, Labgear L.G.300 Mk. II as new. Complete with power supplies, modulator and remote control unit, £60. Panda Cub or similar Q.R.P. Table Topper considered in part exchange.—Box 578, The National Publicity Co. Ltd., 36/37 Upper Thames Street, London, E.C.4. (578)

SALE or exchange, Army 22 Set transmitter/receiver, 2 to 8 Mc/s phone/c.w. very good condition (less power supply). Wanted good power pack, 750 volts, 300 mills or near. Bug key.—Details to G3LPA, 17 Halton Road, R.A.F. Watton, Norfolk. (586)

S.S.B. equipment.—80m exciter, £12/10/-, 40/20m mixer, £9, 15/10m mixer, £8/10/-. All aligned and air-tested. S.a.e. for details.—G3AOO, 106 Nasmyth Street, Denton, Manchester. (598)

TA12D modified Pi-output, T/R relay modulator p-pack, £10. Britannia receiver and p-pack; design BULLETIN, October/November 1955. F.b. receiver in Philpotts Cabinet but needs re-aligning, 15/10m, £25, offers.—G3LOD, Rodona, St. George's Hill, Weybridge, Cobham 2762. (587)

TEST equipment for sale. Practically new. Advance Sig. Gen. Q.1., £35. Advance Sig. Gen. E.2., £25. Radar 405 Sig. Patt. Gen. £55. Radar Kilovolt Tester, £2. Cossor Model 1039M Oscillograph, £22. Hunts Bridge, £18. Evershed Vignoles 500 volt Wee Meggers (2), £12 each. Quantity L.O.P. various transformers plus approx. 200 various useful size condensers. Would consider offer for whole.—Box 579, The National Publicity Co. Ltd., 36/37 Upper Thames Street, London, E.C.4.

WANTED: All types of communications receivers, test equipment, tape recorders, amplifiers, etc. Prompt cash payment.—Details to R. T. & I. Service, 254 Grove Green Road, Leytonstone, London, E.11. (LEYTON 4986). (241)

WANTED BC610 Hallicrafters, E.T.4336 transmitters, BC312 Receivers, BC221 Frequency Meters and spare parts for all above. Best cash prices.—P.C.A. Radio, Beaver Lane, Hammersmith, W.6. (266)

WANTED transmitter T.59, transceivers TR.1520, 1934, 1935, 1936, 1987; receivers BC.312 and type 100, P.S.U. type 381; dynamotors DM.21 and DM.28.—Gilfillan, 7 High Street, Worthing. Tel. 8719. (584)

1 000 volts, 250 mA power pack, American manufacture, 866As relay, etc., £10; class D, £4/10/-; 6 1/2 in. speaker, metal cabinet, 30/-; CVTD RF26 for 21/28 Mc/s, £2; valves, etc.—G3JJG, 127 Lamas Avenue, Mitcham, Surrey. (590)

IMPORTANT NOTICE

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

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

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

APPOINTMENTS SECTION (Situations Vacant)

SENIOR ASSISTANT ENGINEER required by Tanganyika Government Police Force for one tour of 30/36 months in first instance. Salary scale (including inducement pay), £1,383 rising to £1,566 a year. Gratuity at rate of 13 1/2 per cent of total substantive salary drawn. Free passages. Liberal leave on full salary. Candidates, preferably not over 40 years of age, must have a wide knowledge of installation, running and maintenance of fixed and mobile radio communications equipment in the M.F., H.F. and V.H.F. categories, the erection and maintenance of lattice steel masts and towers, generating equipment and a good knowledge of line equipment with teleprinter installation and associated practices. Candidates should have several years experience and training up to degree or H.N.C. standard.—Write to the Crown Agents, 4 Millbank, London, S.W.1. State age, name in block letters, full qualifications and experience and quote M2C/41982/RC. (599)

FOUR-SIDED BLANK CHASSIS

Made in our own works from Commercial Quality half-hard Aluminium of 16 s.w.g. thickness (approx. 1/16 in.) these chassis will carry components of considerable weight and normally require no corner strengthening.

THOUSANDS OF SIZES TO CHOOSE FROM!

We can now supply on the SAME DAY as your order is received the exact size to the nearest half-inch and in depths of 1 in., 1 1/2 in., 1 3/4 in., 1 7/8 in., 2 in., 2 1/2 in., 2 3/4 in. and 3 in., that you require—AT NO EXTRA CHARGE. Maximum length 17 in.

To arrive at the cost of any chassis, you need only add twice the depth to the length and the width, multiply the two and refer to the table below.

Sq. in.	Price	Post	Sq. in.	Price	Post	Sq. in.	Price	Post
18	3/-	1/3	176	8/-	1/6	356	13/-	1/9
48	4/-	..	208	9/-	..	368	14/-	..
80	5/-	..	240	10/-	..	400	15/-	..
112	6/-	..	272	11/-	..	432	16/-	..
144	7/-	..	304	12/-	..	464	17/-	..

Pull particulars on request.

PANELS.—Cut to any size up to 3 ft. x 3 ft. at 4/6 per square foot. Postage should be added at the rate of 1 oz. for each 9 sq. ins.

H. L. SMITH & CO. LTD.

287-289, EDGWARE ROAD, LONDON, W.2.

PAD 6891

INDEX TO ADVERTISERS

	Page
Altham Radio Co. Ltd.	399
Avo Ltd.	353
Bentley Acoustic Corporation Ltd.	396
Birkett, N. Ltd.	395
Bradley, G. & E. Ltd.	398
British National Radio School	399
Brookes Crystals Ltd.	354
Candler System Co.	Cover iii
Cossor Instruments Ltd.	356
Electric Precision Equipment Ltd.	396
E.M.I. Institutes	397
E.M.I. Sales and Service Ltd.	358
Forth Motor Co.	Cover iii
Gilfillan & Co. Ltd.	399
Harris, P.	Cover iii
Henry's (Radio Ltd.)	393
Home Radio (Mitcham) Ltd.	397
Jackson Bros. (London) Ltd.	354
K.W. Electronics Ltd.	Cover iii
McMurdo Instrument Co. Ltd.	398
Metcalfe, Cliffe	395
Minimitter Co. Ltd.	395
Padgett, Alfred	Cover iii
Panda Radio Co. Ltd.	Front Cover and Cover iv
P.C. Radio Ltd.	394
Proops Bros. Ltd.	355
Radio, Television & Instrument Service	396
Relda Radio Ltd.	397
Smith, H. L. & Co. Ltd.	400
Smith, W. H. & Son	394
Southern Radio & Electrical Supplies	399
Standard Telephones & Cables Ltd.	354
Stratton & Co. Ltd.	Cover ii
Whitaker, H.	394
Young, Chas. H., Ltd.	Cover iv

RADIO AMATEURS . . .



You must be a good MORSE Operator to possess an Amateur Radio Transmitting Licence. A "slap-dash" 12 w.p.m. neither satisfies the authorities, yourself nor your operator friends.

Morse operating is an exacting art unless your training is made simple and is based on sound fundamentals. For this reason, the Candler System was invented to take the "grind" out of Code tuition and to turn a "tricky" subject into a pleasurable pursuit.

Send 3d. stamp for full details.

CANDLER SYSTEM CO.

(Dept. 55) 52b ABINGDON ROAD · LONDON · W.8

Candler System Company, Denver, Colorado, U.S.A.

MORSE CODE HIGH SPEED RECORDERS, McElroy 110V a.c./d.c., £6 (10/-). TAPE PULLERS, McElroy 110V a.c./d.c. £6 (10/-). MORSE LEARNING COURSE, 15 tapes in case, £6 (10/-). TG-10 AUTOMATIC ELECTRONIC KEYS, variable speed, £25 (20/-). BENDIX 800V SUPER POWER SUPPLIES in rack mount 400 mA out, 230V a.c. in with 4-5Z3 valves, £8 (20/-). BENDIX TRANSMITTER CABINETS, totally enclosed, 6ft. high x 22in. x 20in. standard rack width, £6 (20/-). 30ft. ONE-PIECE WOOD POLES, 4in. dia. throughout, perfectly round, straight and smooth. Hollow, lightweight yet very strong, made for radio use, 35/- (special cheap rate). 12V INPUT POWER UNITS, 300V, 250 mA smoothed out, 35/- (7/6). 6V INPUT POWER UNITS, 250V, 80 mA smoothed out, 50/- (7/6). INSTRUCTION MANUALS (not photographs) HRO, AR-88, AR-77, MI-11220 Amplifier, MI-19468 Crystal Oscillator, All 27/6; T-50 ELECTROVOICE MOVING COIL MICROPHONES, £4 (3/6). TRANSFORMERS by Marconi. All 190/260V input 1000-0-1000V, 500 mA, 75/- (10/-). 1000-0-1000V, 400 mA, 65/- (10/-). CHOKES, Woden 20H, 400 mA, 20/- (7/6). DOOR SAFETY SWITCHES, enclosed D.P., 3/6 (2/-). MILLIAMMETERS, 2 1/2in. flush 0/100 or 0/30, 12/6 (2/6). MODULATION TRANSFORMERS, 85 watts Audio, 40/- (7/6). VOLTMETERS, 2 1/2in. flush, 0/15, a.c./d.c., 15/- (2/6).

Forty-page descriptive list available.

Amount in brackets is carriage England and Wales. Please cross remittance.

P. HARRIS, ORGANFORD, DORSET

GM3BQA

CUBICAL QUAD KITS

Pat. Applied For.

Announcing The New 10 METRE CUBICAL QUAD KIT

- Performance equal to 4-element beam.
- Pretuned—very compact—simple to erect.
- Today's finest antenna value.

GET YOUR NOW

enjoy 10 metres at its best.
SINGLE 10 metres £8 0 0
DUAL 10/15 metres £15 0 0
TRIPLE 10/15/20 metres £17 0 0
Carriage Extra.

BUILD YOUR OWN CUBICAL QUAD—

Cast Alloy "X" Brackets
LARGE—Suit 1 1/2" x 16 g. boom
£2 5 0 per pair post paid.
SMALL—Suit 1" x 16 g. boom
£1 7 6 per pair, post paid.

S.A.E. for Particulars

Forth Motor Co.

19 EDINBURGH ROAD, COCKENZIE, EAST LOTHIAN, 800TLAND.

GELOSO EQUIPMENT JUST ARRIVED!

Delivery ex-stock

Geloso Receiver G209 for SINGLE SIDEBAND, A.M. and C.W.

- Excellent Signal/Noise figures.
- Built-in crystal Band edge marker.
- Switch for selection of Upper or Lower sideband (SSB).
- Very efficient noise limiter.
- Band spreads 10, 11, 15, 20, 40 and 80 metres.
- 5 position selectivity switch.

Price including 14 valves, plus Rectifier and 4 crystals, 83 guineas.

Receiver Front End Unit c/w dial, escutcheon and drive, £12/12/6.
Signal Shifter 4/101, £5/12/6; 4/102, £5/17/6.

Easy terms available

Dial and escutcheon for use with 4/101 and 4/102, 35/-. Pi Coil Assembly for 50 watts, 18/6, R.F. choke, 8/6. Microphones from 3 gns.

Miniature Tape Recorder, 38 gns. Vibrator Unit for Recorder 6 or 12v., £14.

THE K.W. "VANGUARD" KIT TRANSMITTER

A modern Table-top 50 watt rig for 'phone and C.W. Basic Kit, 30 gns. Complete Kit with valves and Cabinet, 48 gns. Parts available separately.

G8KW

Multi-band Aerial with Traps, £6/15/-. c/w 100 ft. semi-airspaced co-axial cable.

K.W.

Low Pass Filters, £3/17/6. High Pass, 18/6. 100 WATT Pi Coil Assembly, £2/10/-.
Send for S.A.E. for details.

THE K.W. RECEIVER CONVERTER KIT

Bandspreads all Bands. 10-80 metres. 4-6 Mc/s output. All parts supplied including Geloso Receiver. Front End Unit 2617, Gang Condenser, Dial, Escutcheon, dial drive, I.F. transformer, Valves, Resistors, Condensers, wire, etc. Chassis and Panel ready drilled.

Make your old Receiver into a double conversion superhet. PRICE: 17 guineas.

Send for S.A.E. for details.

K. W. ELECTRONICS LTD.

136 Birchwood Road, Wilmington, Dartford, Kent

Tel.: Swanley Junction 2137

alfred padgett

40 MEADOW LANE
LEEDS II

Tel: Cleckheaton 99

TX 1154.

Model M, four-wave band, complete with all valves and meters, good condition, £1. 5. 0., carriage 12/6. Model N., 17/6.

MIXED RADIO PANELS.

Full of Resistors and condensers. 5/- per doz. post free.

BRAND NEW RECEIVERS.

Type 3645. The cleaned-up 1355. Metal Mite Condensers and Potted Transformers, etc., less valves, 6/6, carriage 8/-.
Send for S.A.E. for details.

NEW MAINS TRANSFORMERS.

Ex. equipment. 230 volts, 50 cycles, 345 volts, 0345 volts, 5 volts, 2 amp., 6-3 volts, 5 amp., 6-3 volts, 2-5 amp., 10/-, carr. 5/-.

6-WAY JONES PLUG AND SOCKET.

1/-, post 1/3.

BRAND NEW EF50 VALVES.

Four on a strip with valveholders and locking rings, 10/-, with Red Sylvanian Valves, 12/6, post 2/-.

NEW METAL RECTIFIERS.

250 volts at 60 milliamps, 2/6, post 1/3. 150 volts at 40 milliamps, 1/-, post 1/3.

BRAND NEW POT METERS.

250 K., 1 inch spindle length, 6d. each, post 9d.

250 OHMS WIRE WOUND POT.

1/-, post 9d

NEW RADIO VALVES.

Ex. equipment. Special offer for one month only. All at 1/- each, post 9d. VR65, VR116, DLS10, VR137, VR66, 954, QP220, VS110, 12SH7 (metal), 12SJ7 (metal).

NEW FUSE HOLDERS.

With clip-on cover, for two fuses, 1/3, post 9d.

GERMANIUM DIODES.

10d. each, post 3d.

8 MFD. CONDENSERS

450 working small tube type, ex. equip., 1/- each, post 9d.

BRAND NEW TX TYPE 440B.

Frequency 85-95 Mc/s. Complete with 3-DET19, 1-6G6, 2-6N7, 17/6. Carr. 7/6.

G2AK**QUALITY and SERVICE****G2AK****QRG ... QRG ... CRYSTAL CALIBRATORS**

1000 kc/s crystal controlled with switched 100 kc/s and 10 kc/s. Locked Multi-vibrators.

These excellent units are as new and contained in a polished bakelite case with carrying handle.

The circuit uses 6 valves and operates from 2 volt l.t. and 120 volt h.t. Price only **£3. 10. 0** complete with crystal and valves, post free. Or with suitable a.c. power unit **£6. 10. 0** *Very limited quantity available.*

... plus these fine offers

AMERICAN PRECISION HETERODYNE FREQUENCY METERS. Type LM14. 125 kc/s to 20 Mc/s. Crystal checked. Complete with calibration book, plug, lead, etc. Waterproof cover. **£25. 0. 0.** As new—very limited quantity.

TWIN FEEDER: 300 ohm twin ribbon feeder, similar K25, 6d. per yard. K35B Telcon (round), 1/6 per yard. Post on above feeder and cable 1/6 any length.

HEADPHONES H.R. Type 4000 ohms, very sensitive. Only 12/6 pair. P. & P. 1/6 C.L.R. (low res.) 8/6. P. & P. 1/6.

AMERICAN OCTAL BASED 1,000 kc/s PRECISION XTALS. 30/- each, post free.

The New GELOSO V.F.O. Unit. Output on 80, 40, 20, 15 and 10 metres sufficient for fully driving, pair of 807 or QV06/20 (6146) tubes. Complete with 8½" by 5" calibrated dial and escutcheon. Price less Tubes, **£7. 12. 6.** Set of 3 Tubes, **24/-**.

COPPER WIRE: 14G H/D 140 ft., 17/-; 70 ft., 8/6. Post and packing 2/-. Other lengths pro rata. Stranded 7/25, 140 ft., 10/-, 70 ft., 5/-, postage and packing 2/-.

RIBBED GLASS, 3" aerial insulators, 1/6 each or 6 for 7/6. P. & P. 1/6.

CONDENSER. T.C.C. Type 111, 8μF 1000V. List over £3. Only 10/6 each. Post 1/9. 8μF 750V. 5/6 each. Post 1/6.

BRITISH BREAST MIKES. New, ex-W.D. stock, ideal for mobiles. Only 7/6. P. & P. 2/-.

MULTI-WAY CABLE, 3" diameter. 7 colour coded wires. Ideal for mobile or inter-chassis connection. Any length cut, 1/3 per yard. P. & P. 1/6 min.

10-WAY CABLE (5 pairs). Screened and plastic covered. Ideal for mobile or beam control, etc. Any length cut, 2/- per yard. P. & P. 1/6 min.

RACK MOUNTING PANELS: 19 in. x 5½ in., 7 in., 8½ in., or 10½ in., black crackle finish, 5/9, 6/6, 7/6, 9/- respectively, postage and packing 2/-.

ABSORPTION WAVEMETERS: 3:00 to 35:00 Mc/s in 3 Switched Bands. 3:5, 7, 14, 21 and 28 Mc/s Ham Bands, marked on scale. Complete with indicator bulb. **A MUST** for any Ham shack. Only 17/6 POST FREE.

A good range of Components and Communication Receivers always available

PLEASE PRINT YOUR NAME AND ADDRESS

CHAS. H. YOUNG, LTD.

Dept 'B' • 110 DALE END • BIRMINGHAM 4

Telephone (all depts.): Central 1635



THE FAMOUS PANDA 'EXPLORER' TRANSMITTER

CASH PRICE — £97. 10. 0.

Terms: £19. 10. 0. deposit, and 8 monthly payments of £10. 19. 10.

Panda Radio Co. Ltd.

16-18 HEYWOOD ROAD • CASTLETON • ROCHDALE • LANCs.

Phone: Castleton (Rochdale) 57396

Grams: Panda, Rochdale

without doubt

... the Panda 'Explorer' is the finest transmitter in the world in its class, and superior to many higher-priced units. It is entirely self-contained and complete in every way, and we guarantee complete satisfaction.

At the moment, the demand far exceeds the supply, but every effort is being made to increase production facilities as quickly as possible.

Delivery is approximately six weeks from receipt of order.

IF UNDELIVERED

Return to:—
R.S.G.B., NEW RUSKIN HOUSE,
LITTLE RUSSELL STREET, W.C.1

IF UNDELIVERED

Return to:—
R.S.G.B., NEW RUSKIN HOUSE,
LITTLE RUSSELL STREET, W.C.1