

R.S.G.B.

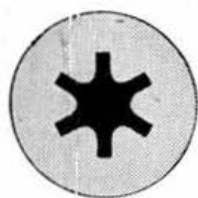


BULLETIN

June 1953

The original front cover for this edition was not available.

The original front cover for this edition was not available.



FAULTLESS FLUXING

WITH *Superspeed*



* No dry or H.R. joints — Superspeed's *stellate* core of **ACTIVATED** rosin accelerates melting and spreading giving immediate release of exactly the correct amount of flux.

* Flux residue hardens immediately to a non-corrosive non-hygroscopic film of high dielectric strength and insulation resistance.

THE INDUSTRIAL SERVICE PACK

* *Invaluable in your workshop.*

* *Ideal for the home handyman.*

Cored solder in convenient compact form. Prevents waste, protects solder, provides a useful insulating handle.

IN 2 SIZES

No. 1. 3/6 retail. No. 2. 5/6 retail. Less 33 1/3% net trade. 60% tin, 40% lead alloy. 16 s.w.g. Also in reels of 1 lb., 5 lb. or 7 lb. as required in all standard tin/lead alloys, 10-22 s.w.g.

"White Flash" for standard use, A.I.D. & G.P.O. approved; complies with M.O.S. Specification DTD 599.

Manufactured by the

ENTHOVEN Group

ENTHOVEN SOLDERS LTD. Enthoven House, 89 Upper Thames Street, London, E.C.4. Tel: MANSion House 4533

Send for comprehensive Superspeed booklet.

G2AK**This Month's Bargains****G2AK**

SPECIAL VALVE OFFER: 8012, 12/6 each; 832, 35/-; 829/3E29, 80/-; 813, 70/-; 100TH, 90/-; 866A, 17/6; 807, 12/6 each, or 22/6 pair; 931A, 45/-.

METERS: 2½" Flush Mounting, 0-100 mA, 12/6; 0-2 A Thermo, 7/6; 2" Flush, 0-4 A Thermo, 5/-; 0-5 mA, 7/6; 0-20 V, 7/6; 20-0-20 A, m.c., 5/-; 0-350 mA, Thermo, 7/6; 0-15 A Thermo Proj. 2½in, 7/6.

4,800 V MULTIPLIERS for Model 40 AVO, 5/-.

SPLIT STATOR transmitting condensers 60 µF per section, 0.068 gap, 2,000 V, r.m.s. Beautiful job. Few only, £1 2s. 6d. each

TWIN FEEDER: 300 ohm twin ribbon feeder 6d. per yard; K24, 150 ohm 9d. per yard. Co-ax. cable, ½" 50 ohm 8d. per yard; ¾" dia., 70 ohm, 11d. per yard, or 12 yards 9/6, post and packing 1/6. K35B Telcon (round) 1/6 yard. Post on above feeder and cable 1/6, any length.

Log books, 100 pages, with heavy bound cover 10/6 each, post and packing 1/-.

RACK MOUNTING PANELS, 19" x 5½", 7", 8½" or 10½", black crackle finish, 5/9, 6/6, 7/6, 9/- respectively, postage and packing 1/6.

Complete Set of 14 VALVES, new and boxed for AR88 Receiver, £5 10s. Set. Post free (limited quantity). D model, i.f.s., 12/6 each.

KNOB and Dial with engraved scale, 2in diameter. New and boxed, black finished, 1/9 each, complete with index.

R.F. CHOKES: Pie wound, 1.25 mH, 100 mA, receiver type, 9d. each, or 7/6 per doz.; 250 mA., transmitter type, 1/- each, 10/- per doz.

THIS MONTH'S SPECIAL OFFERS

STREAMLINED BUG KEYS by famous maker. Listed over £4. Our price 45/- only.

AR88 MATCHING SPEAKERS by R.C.A. in Black Crackle case, fitted with rubber feet and 6ft. of cord, 65/- . Panel escutcheons, 22/6 each.

SPLIT STATOR TRANSMITTING CONDENSERS, 50 µF: Per section. Ceramic insulation. Spacing .08. New and boxed. List over 25/- . Our price 10/- each.

Ditto: 25 µF: Per section with built-in nut. conds. New and boxed. 10/- each.

300 OHM flat twin 150 W rating, 6d. yard, minimum 20 yards, post free.

CERAMIC COIL FORMERS: 2½" x 1½". Ideal for vfo or turrets, 1/9 each.

ROTHERMEL CRYSTAL MICROPHONE Inserts. Limited quantity. 12/6 each.

EDDYSTONE, WODEN, RAYMART, AVO, &c., &c., COMPONENTS AND A GOOD RANGE OF COMMUNICATION RECEIVERS ALWAYS AVAILABLE.

PLEASE SEND 1½d. STAMP FOR NEW AND COMPREHENSIVE VALVE LIST . . . NOW AVAILABLE.

Carriage paid on all orders over £1 except where stated. Please include small amount for orders under £1.

Mail Orders to

PLEASE PRINT YOUR NAME AND ADDRESS

All Callers to

**102 Holloway Head,
Birmingham.
MIDLAND 3254**

CHAS. H. YOUNG, G2AK

**110 Dale End,
Birmingham.
CENTRAL 1635**

**A much enlarged edition of a
most valuable reference book**

RADIO DESIGNER'S HANDBOOK (4th Edition)

*Edited by F. Langford-Smith, B.Sc., B.E., Senior Member I.R.E.
(U.S.A.) A.M.I.E. (Aust.)*

A comprehensive reference book, the work of 10 authors and 23 collaborating engineers, containing a vast amount of data in a readily accessible form. The book is intended especially for those interested in the design and application of radio receivers or audio amplifiers. Television radio transmission and industrial electronics have been excluded in order to limit the work to a reasonable size.

8½in. x 5½in. 1,500 pp.

42s. net. By Post 43s. 6d.

This book must not be distributed to Australia, New Zealand, or the Americas

Published for "Wireless World"

Obtainable from all booksellers. Ask for a copy of Iliffe's list of Technical Books or write direct to:
ILIFFE & SONS LTD., DORSET HOUSE, STAMFORD STREET, LONDON, S.E.1.

BROOKES CRYSTALS

for

DEPENDABLE

FREQUENCY CONTROL



Type 'M'

Frequency range: 8 Mc/s to 17 Mc/s. Hermetically sealed metal can 0.75" high under pins, 0.75" wide, 0.375" thick, with $\frac{3}{16}$ " diameter pins at 0.49" centres. Frequency tolerance $\pm 0.01\%$ of nominal at 20°C., or better for special applications.

BROOKES CRYSTALS, LTD.

Suppliers to Ministry of Supply, Home Office, etc.

10 STOCKWELL ST., GREENWICH, LONDON,

Phone: Greenwich 1828

S.E.10

Grams: Xtals Green, London - Cables: Xtals, London.

Communication Receivers Etc.

All Receivers Sold are in Perfect Order.

| | |
|---|----------|
| HALLICRAFTER S.41, a.c./d.c. | £25 10 0 |
| ECHOPHONE, a.c./d.c. | £25 0 0 |
| HALLICRAFTERS S.38, a.c./d.c. | £25 0 0 |
| HAMMARLUND B.C.779B, with p.p. | £45 0 0 |
| EDDYSTONE 640 | £22 10 0 |
| ROTARY CONVERTORS, 220 d.c./230 a.c., BRAND NEW, 140 W. | £9 10 0 |
| D.S.T. RECEIVERS, Good Condition | £30 0 0 |
| H.R.O. RECEIVERS, SENIOR, 5 coils, complete with p.p. | £32 0 0 |

VELODYNE Units, type 73 and 74

VALVES: 6AK5, 9/6; 6J6, 9/6; 9001, 4/6; 9002, 5/-; 9006, 4/-; 884, 15/-; VR150/30, 12/6; 954, 3/6; 955, 4/6; 958A, 12/6; 723A/B, 9/6.

Carriage extra on all goods. Send S.A.E. for reply to enquiries.

Equipment of all types purchased at Top Prices.

Service Radio Spares

4 LISLE STREET, LONDON, W.C.2

GER 1734

BRAND NEW EX-GOVERNMENT VALVES

"A" means in Original Makers' Carton. "B" means Plain Carton or Unboxed.

| A | B | A | B | A | B |
|-------|------|-------|------|-------|------|
| 2C26 | 4/9 | 6K7G | 6/8 | EB34 | 2/6 |
| 6AK5 | 10/6 | 6K7GT | 5/9 | ECC31 | 9/6 |
| 6AM6 | — | 6K8G | 11/9 | EC33 | 4/6 |
| 6B8 | 5/- | 6Q7G | 10/9 | EF50 | 7/6 |
| 6P6G | 9/6 | 6Q7GT | 12/6 | KTW61 | 8/6 |
| 6H6 | 5/- | 6SH7 | 6/3 | KTZ63 | 7/- |
| 6J5 | 6/9 | 6SK7 | 7/3 | RK34 | 2/3 |
| 6J5GT | 5/9 | 6V6G | 9/6 | VP133 | 6/6 |
| 6J6 | 11/6 | 12H6 | 2/9 | VR135 | 3/6 |
| 6J7 | 7/- | 80 | 8/9 | VU111 | 3/6 |
| 6J7G | 6/8 | 954 | 2/3 | 6V6GT | 11/6 |
| 6K6GT | 8/8 | 7193 | 3/6 | | |
| 6K7 | 7/9 | EA50 | 3/- | | |

Valveholders: I.O. Amphenol 9d., B7G 11d., ditto with skirt and can 1/9. Ceramic B9G 6d., large 7-pin UX (for 1625, RK34, etc.) 1/3. Screening cans for B7G and I.O. 1/3 each.

Potentiometers: Standard size, carbon, $\frac{1}{2}$ " spindle, 5K, 6K, 100K, 2M, 1/6 each. 50K composition body, $\frac{1}{2}$ " spindle, 1/6. Miniature 500K in sealed cartons, 2/-.

Systoflex Sleeving: Black 1 mm., Yellow 1.5 mm., Red or Blue 2 mm., 2d. yard. Green 1 mm., 14d. yard.

10% Discount on orders of non-proprietary goods over £1 continued during June and July. Please allow reasonable postage on orders less than £1.

2a BURNLEY ROAD, REED & FORD AINSDALE, SOUTHPORT

B.A. SCREWS, NUTS, WASHERS, ETC.

| Prices per gross | | | |
|------------------|-----|---------------|------|
| Brass Nuts | | Brass Washers | |
| OBA Full | 6/9 | Assd. | 1/6 |
| 2BA | 5/6 | 1BA | 2/- |
| 4BA | 5/- | 2BA | 1/10 |
| 5BA | 4/- | 3BA | 1/9 |
| 6BA | 4/- | 4BA | 1/8 |
| 7BA | 4/6 | 5BA | 1/6 |
| 8BA | 4/6 | 6BA | 1/6 |

Assorted Screws, 2/6; Assorted Nuts, 2/6; Screws and Nuts ($\frac{1}{2}$ gross each), 2/6; Brass Screws, assorted, 2BA, 5/6; 4BA, 5/-; 6BA, 4/-; 8BA, 4/6.

Soldering Tags: Assorted 2/-; 2BA, 2/3; 4BA, 2/-; 6BA, 1/10; 8BA, 1/10.

Eyelets and Rivets: Assorted, 1/6; Aluminium Rivets: Assorted, 1/6.

Brass Knurled Terminal Nuts, 6BA, 8d.; 4BA, 1/-; 2BA, 1/6 dozen.

Brass Terminals, with nuts, heavy type, NP, 6d. each; 5/6 dozen.

Grub Screws: Assorted, 1/6; 6BA, 1/3; 4BA, 1/4; 2BA, 1/6 per 3 dozen.

A SELECTION FROM OUR HUGE STOCK OF SCREWS.

Prices Per HALF-GROSS

ABBREV.: Heads. CH., Cheese. RH., Round. CS., Countersunk. NP., Nickel Plated. CP., Cadmium Pl. SC., Self-Colour.

| 6BA | BRASS | STEEL |
|------------------------|-------|----------------------------|
| $\frac{1}{16}$ " CH NP | 1/6 | $\frac{1}{16}$ " RH NP 1/5 |
| $\frac{1}{8}$ " " NP | 1/7 | $\frac{1}{8}$ " RH SC 1/- |
| $\frac{1}{4}$ " " " " | 1/9 | $\frac{1}{4}$ " CS CP 1/- |
| $\frac{1}{2}$ " " " " | 1/10 | $\frac{1}{2}$ " RH SC 1/2 |
| $\frac{3}{8}$ " " " " | 1/11 | $\frac{3}{8}$ " CS CP 1/1 |
| $\frac{1}{2}$ " " " " | 2/- | $\frac{1}{2}$ " " " 1/2 |
| $\frac{3}{4}$ " " " " | 2/1 | $\frac{3}{4}$ " RH SC 1/2 |
| $\frac{1}{2}$ " SC | 1/11 | $\frac{1}{2}$ " NP 2/3 |
| $\frac{3}{4}$ " NP | 2/1 | $\frac{3}{4}$ " CS SC 1/4 |
| $\frac{1}{2}$ " " " | 2/3 | $\frac{1}{2}$ " " " 1/5 |
| $\frac{3}{4}$ " " " | 2/6 | $\frac{3}{4}$ " NP 1/6 |
| $\frac{1}{2}$ " Inst/H | 1/9 | $\frac{1}{2}$ " " " 1/7 |
| $\frac{3}{4}$ " NP | 1/9 | $\frac{3}{4}$ " " " 1/8 |
| $\frac{1}{2}$ " CS | 2/- | $\frac{1}{2}$ " " " 1/9 |
| | | $\frac{3}{4}$ " " " 2/6 |
| | | $\frac{1}{2}$ " H/H 2/9 |

| 4BA | BRASS | STEEL |
|-----------------------|-------|---------------------------|
| $\frac{1}{8}$ " CHNP | 2/- | $\frac{1}{8}$ " RHNP 1/10 |
| $\frac{1}{4}$ " " " | 2/1 | $\frac{1}{4}$ " " " 2/3 |
| $\frac{1}{2}$ " " " | 2/1 | $\frac{1}{2}$ " " " 2/9 |
| $\frac{3}{8}$ " " " | 2/2 | $\frac{3}{8}$ " " " 3/- |
| $\frac{1}{2}$ " " " | 2/6 | $\frac{1}{2}$ " " " 1/8 |
| $\frac{3}{8}$ " " " | 3/3 | $\frac{3}{8}$ " " " 2/- |
| $\frac{1}{2}$ " Hex/H | 2/6 | $\frac{1}{2}$ " " " 2/3 |
| $\frac{3}{4}$ " " " | 3/6 | $\frac{3}{4}$ " " " 1/10 |

| 2BA | BRASS | STEEL |
|------------------------|-------|---------------------------|
| $\frac{1}{8}$ " RHNP | 2/10 | $\frac{1}{8}$ " CHNP 4/6 |
| $\frac{1}{4}$ " " " | 3/- | $\frac{1}{4}$ " " SC 3/- |
| $\frac{1}{2}$ " " " | 3/3 | $\frac{1}{2}$ " " " 5/- |
| $\frac{3}{8}$ " SC | 3/3 | $\frac{3}{8}$ " RH " 4/9 |
| $\frac{1}{2}$ " NP | 4/3 | $\frac{1}{2}$ " CS NP 4/- |
| $\frac{3}{8}$ " Hx/HSC | 10/- | $\frac{3}{8}$ " " SC 4/9 |

| 8BA | BRASS | STEEL |
|------------------------|-------|----------------------------|
| $\frac{1}{16}$ " CH NP | 2/- | $\frac{1}{16}$ " CH SC 2/- |
| $\frac{1}{8}$ " " " | 2/6 | $\frac{1}{8}$ " RHNP 2/2 |
| $\frac{1}{4}$ " CS | 1/8 | $\frac{1}{4}$ " " " 2/6 |
| $\frac{1}{2}$ " CH | 2/3 | $\frac{1}{2}$ " " " 2/9 |
| $\frac{3}{8}$ " CS | 1/9 | $\frac{3}{8}$ " Hex " 2/9 |
| $\frac{1}{2}$ " " " | 2/6 | $\frac{1}{2}$ " " " 2/10 |

ALL ABOVE POSTAGE EXTRA.

Large stocks of COPPER and RESISTANCE WIRES: Paxolin type TUBING; Laminated Bakelite and Ebonite PANELS; TUFNOL and EBONITE TUBES and ROD.

POST ORDERS ONLY PLEASE.

Send stamp for comprehensive lists. - Trade supplied.

POST RADIO SUPPLIES

33 Bourne Gardens, London, E.4

Telephone: CLIssold 4688 & 2021.

G.E.C.



GERMANIUM CRYSTAL DIODES

are indicated here because...

- They are of small size, low capacitance, and high forward conductance.
- Being so small, they can be soldered directly into the part of the circuit where they are wanted.
- Heater wiring and valve holders are not required, and they can be tried with great ease in various circuit arrangements.
- The crystals are hermetically sealed in glass, making penetration by characteristic-destroying moisture impossible.
- A minimum life of 10,000 hours means that they need not be easily accessible for replacement.

The use of the Germanium Diode is now firmly established in current T/V practice—and indeed for Radio and Electronic equipment. The glass sealed type is recognised everywhere as being the most reliable and of the highest possible quality.

The design of the G.E.C. Germanium Diode was perfected over three years ago, since when no major alteration has been necessary. There is already a large range of types available, but this is continually being enlarged, and types are now obtainable that were previously restricted to essential industries.

| Type | Description | List Price |
|---------|--------------------------------|------------|
| GEX35 | T/V vision detector | 6/- |
| GEX44/1 | T/V sound detector and limiter | 7/6d. |
| GEX45/1 | General purpose diode | 10/- |
| GEX55/1 | High back resistance diode | 16/- |
| GEX54 | High back resistance diode | £1.0.0 |
| GEX54/3 | 100 V diode | £1.5.0 |
| GEX54/4 | 150 V diode | £1.10.0 |
| GEX54/5 | 200 V diode | £1.15.0 |
| GEX66 | 100-1000 Mc/Sec Mixer | 12/6d. |
| GEX64 | Telephone modulator | 12/6d. |
| GEX34 | Set makers version of GEX44/1 | — |

Data on specific types for special applications is available on request from the Osram Valve and Electronics Dept.

THE GENERAL ELECTRIC CO. LTD., MAGNET HOUSE,
KINGSWAY, LONDON, W.C.2

CLYDESDALE

Bargains in Ex-Services Radio and Electronic Equipment.

DRIVER TRANSFORMER for ET-4336 TRANSMITTER.

Ref. No. 110K/117, part XT-3202.

Centre-tapped primary. Inductance 3.4 henries. Two secondaries. Inductance 14 henries each. Ratio whole primary to one secondary 1.2 approx. Dim.: Ht. 4 1/2" x 3 1/2" x 3 1/2". Weight 6 1/2 lb. 4-hole fixing.

ASK FOR
No. R/ES62

18/6

POST
PAID

SPARES KIT

for R.C.A. Type TE149 Crystal Wavemeter.

A wood case, dim.: 11 1/2" x 10 1/2" x 4", containing crystal (in holder) 1,000 kc/s, plus and minus .005 per cent. (V cut low temp. coefficient); 2 variable air trimmers, 9 fixed capacitors, 2 rotary switches, 2-pole, 2-way, 5 fixed resistors, a.f. transformer, a.f. choke, variable inductance, 2 fixed inductances, S.C.C. jack, valveholders I.O., 4 knobs terminal, 4-pin plug, etc.

ASK FOR
No. H917

49/6 Each

CARRIAGE
PAID

NEW LIST No. 8D gives details and illustrations of ex-service and other items. Price 1/6d. (Credited on first 10/- purchase.)

TRADE ENQUIRIES INVITED.

GENEROUS DISCOUNTS.

GOOD BARGAINS.

FOR "INEXPENSIVE TELEVISION."

The "P.T." BEGINNER'S RECEIVER by B. L. Morley. All Components available, list on application. The R3170A RECEIVER UNIT.

ASK FOR
No. H492

£4/12/6 Each

CARRIAGE
PAID

Order direct from:

CLYDESDALE SUPPLY CO., LTD.

2 Bridge St., Glasgow, C.5. Phone: SOUTH 2706/9

Branches in Scotland, England and N. Ireland.

FREE

A VALUABLE BOOK

NEW!

Home Experimental Kits now form part of the following courses: Draughtsmanship, Carpentry, Chemistry, Photography, Commercial Art, Radio and Electronics, etc.

E.M.I.

INSTITUTES

associated with

MARGONIPHONE

COLUMBIA &

H.M.V.

(His Master's Voice)

which details the wide range of Engineering and Commercial courses of modern training offered by E.M.I. Institutes — the only Postal College which is part of a world-wide Industrial Organisation.

Courses include training for:

City and Guilds Grouped Certificates in Telecommunications; A.M. Brit. I.R.E. Examination, Radio Amateur's Licence, Radio & Television Servicing Certificates, General Radio and Television Courses, Radar, Sound Recording, etc. Also Courses in all other branches of Engineering.

POST NOW

Please send, without obligation the FREE book
E.M.I. Institutes, Dept. 21K
43 Grove Park Rd., Chiswick, London, W.4

Name _____

Address _____

COURSES FROM

£1

PER MONTH

IC.10EK

R.S.G.B. BULLETIN

Vol. 28

No. 12

JUNE

1953



PUBLISHED ON OR ABOUT THE 15th OF EACH MONTH AS ITS OFFICIAL JOURNAL BY THE
INCORPORATED RADIO SOCIETY OF GREAT BRITAIN AND ISSUED FREE TO MEMBERS.

Patron of the Society:

H.R.H. THE DUKE OF EDINBURGH, K.G.

COUNCIL, 1953

President:

LESLIE COOPER, G5LC

Acting Vice President:

ARTHUR O. MILNE, G2MI

Hon. Secretary:

C. H. L. EDWARDS, A.M.I.E.E., G8TL

Hon. Treasurer:

DOUGLAS A. FINDLAY, D.F.C., A.S.A.A., G3BZG

Hon. Editor:

JACK HUM, G5UM

Immediate Past-President:

FREDERICK J. CHARMAN, B.E.M., G6CJ

MEMBERS: I. D. Auchterlonie, G6OM; H. A. Bartlett, G5QA;
R. H. Hammans, G2IG; F. Hicks-Arnold, G6MB; L. E. Newnham,
G6NZ; R. Walker, G6QI; P. W. Winsford, G4DC.

GENERAL SECRETARY: John Clarricoats, G6CL.

REGIONAL REPRESENTATIVES

Region 1.—North Western

B. O'Brien (G2AMV), 1 Waterpark Road, Prenton,
Birkenhead, Cheshire.

Region 2.—North Eastern

C. A. Sharp (G6KU), 56 Moore Avenue, Wibsey, Bradford,
Yorkshire.

Region 3.—West Midlands

J. N. Walker (G5JU), 333 Rednal Road, Northfield,
Birmingham 31.

Region 4.—East Midlands

E. S. G. K. Vance, M.B. (G8SA), "Sycamores," Huthwaite,
near Mansfield, Notts.

Region 5.—Eastern

Office Vacant.

Region 6.—South Central

H. G. Hunt (G3ECV), 9 Salerno Road, Southampton, Hants.

Region 7.—London

W. H. Matthews (G2CD), 7 Beddington Road, Seven Kings,
Essex.

Region 8.—South Eastern

R. J. Donald (G3DJ), 2 Canfield Road, Brighton 7, Sussex.

Region 9.—South Western

H. A. Bartlett (G5QA), Lendorie, Birchy Barton Hill, Exeter,
Devon.

Region 10.—South Wales

J. Banner (GW3ZV), "Cartref," Neath Road, Rhigos, near
Aberdare, Glam.

Region 11.—North Wales

F. G. Southworth (GW2CCU), Samlesbury, Bagillt Road,
Holywell, Flintshire.

Region 12.—East Scotland

J. Douglas (GM2CAS), 43 Abbotswell Drive, Bridge of Dee,
Aberdeen.

Region 13.—South-East Scotland

W. Baker (G3AFL), 4 Devon Terrace, Berwick-on-Tweed.

Region 14.—West Scotland

D. R. Macadie (GM6MD), 154 Kingsacre Road, Glasgow S.4.

Region 15.—Northern Ireland

S. H. Foster (GI3GAL), 31 Belmont Park, Belfast.

R.S.G.B. BULLETIN

Editor:

JOHN CLARRICOATS

Editorial Office:

NEW RUSKIN HOUSE, LITTLE RUSSELL STREET,
LONDON, W.C.1.

Telephone: HOLborn 7373

Advertisement Manager:

HORACE FREEMAN

Advertising Office:

THE NATIONAL PUBLICITY CO., LTD.,
36-37 UPPER THAMES STREET, LONDON, E.C.4

Telephone: CENTral 0473-6

R.S.G.B. QSL BUREAU: G2MI, BROMLEY, KENT

CONTENTS

| | Page |
|---|------|
| Forthcoming Events - - - - - | 514 |
| Current Comment (Editorial) - - - - - | 515 |
| The Coronation Relay - - - - - | 516 |
| The Loyal Address - - - - - | 517 |
| Trade Review (Panda and Labgear Filters) - - - - - | 519 |
| Receiver Design for 70 cm | |
| by C. E. Newton (G2FKZ), G. M. C. Stone (G3FZL) and S. F. Weber (B.R.S. 19317) - - - - - | 520 |
| Aerials for Restricted Spaces | |
| by A. J. Slater (G3FXB) - - - - - | 525 |
| National Emergency Amateur Radio Com- munications Service - - - - - | 526 |
| Standard Frequency Transmissions - - - - - | 527 |
| Simple Inductance Meter | |
| by R. Wallace (G3FJC) - - - - - | 528 |
| European Societies Meet in Lausanne - - - - - | 530 |
| Low Power Modulator for the B2 | |
| by A. W. Grimsdale (G3CJU) - - - - - | 532 |
| Direct Reading Low-ohms Resistance Meter | |
| by P. R. A. Dolphin, B.Sc.(Eng.), Grad.I.E.E. (G3ELH) - - - - - | 533 |
| Around the V.H.F.s | |
| by W. H. Allen, M.B.E. (G2UJ) - - - - - | 534 |
| The Month on the Air | |
| by A. O. Milne (G2MI) - - - - - | 538 |
| Slow Morse Practice Transmissions - - - - - | 539 |
| CQ Single Side-Band | |
| by H. F. Knott (G3CU) - - - - - | 540 |
| Society News - - - - - | 541 |
| It's Topical - - - - - | 542 |
| Council Proceedings - - - - - | 543 |
| Silent Keys - - - - - | 544 |
| Representation - - - - - | 544 |
| Regional and Club News - - - - - | 545 |
| Letters to the Editor - - - - - | 546 |

THE R.S.G.B. IS A MEMBER SOCIETY OF THE I.A.R.U. AND ACTS AS THE REGION 1 BUREAU OF THE I.A.R.U.

Forthcoming Events

REGION 1

Blackpool (B. & F.A.R.S.).—June 23, 7.30 p.m., 25 Abbey Road, Blackpool.
Chester (C. & D.A.R.S.).—Tuesdays, 7.30 p.m., Tarran Hut, Y.M.C.A., Chester.
Crosby.—Thursdays, 8 p.m., Scouts' Hall, East Street, South Road, Waterloo, Liverpool.
Darwen & Blackburn.—June 12, July 31, 7.30 p.m., Y.M.C.A., Limbrick, Blackburn.
Liverpool.—June 20, 3 p.m., Larkhill Mansion House, West Derby, Liverpool.
Rochdale (R.R.T.S.).—Fridays, 7.45 p.m., 1 Law Street, Sudden.
South Manchester (S.M.R.C.).—Alternate Fridays, 7.30 p.m., Ladybarn House, Mauldeth Road, Manchester 14.
Stockport (S.R.S.).—June 23, July 7, 8 p.m., Blossoms Hotel, 2 Buxton Road, Stockport.
Wirral (W.A.R.S.).—June 24, July 8, 7.45 p.m., Y.M.C.A., Whetstone Lane, Birkenhead.

REGION 2

Barnsley.—June 26, July 10, 7.30 p.m., King George Hotel, Peel Street.
Bradford.—July 7, 7.30 p.m., Cambridge House, 66 Little Horton Lane.
Catterick.—Wednesdays, 7 p.m., Loos Lines, Catterick Camp.
Darlington.—Thursdays, 7.30 p.m., 129 Woodlands Road.
Doncaster.—July 8, 7.30 p.m., Black Bull, Market Place.
Gateshead.—Mondays, 7.30 p.m., Mechanics' Institute, 7 Whitehall Road.
Hull.—June 30, July 14, 7.30 p.m., Rampant Horse, Paisley Street.
Middlesbrough.—Thursdays, 7.30 p.m., Joe Walton's Boys' Club, Feversham Street.
Newcastle (N.E.A.T.S.).—July 7, 7.30 p.m., Barras Bridge Hotel, Sandford Road.
Pontefract.—June 25, July 9, 8 p.m., Fox Inn, Knottingley Road.
Rotherham.—Wednesdays, 7 p.m., Cutlers Arms, Westgate.
Scarborough.—Thursdays, 7.30 p.m., B.R. Rifle Club, West Parade Road.
Sheffield.—June 24, 8 p.m., "Dog and Partridge," Trippet Lane; July 8, 8 p.m., Albreda Works, Lydgate Lane.
Slaitwaite.—Fridays, 7.30 p.m., 3 Dartmouth Street.
Spenborough.—June 17, July 1, 7.30 p.m., Temperance Hall, Cleekeaton.
York.—Thursdays, 7.30 p.m., Club Rooms, Y.A.R.S., Fetter Lane.

REGION 3

Birmingham (South).—July 3, 7.15 p.m., Stinchley Institute (Room 7).
Coventry.—June 26, 7.30 p.m., Priory High School, Wheatley Street.
Kenilworth, Warwick & Leamington.—June 18, 7.30 p.m., Dalehouse Lane.
Malvern.—July 6, 8 p.m., Foley Arms.
Stourbridge (S. & D.R.S.).—July 7, 8 p.m., King Edward's School.
Worcester (W. & D.A.R.C.).—Thursdays, City Library (basement), Foregate Street.
Wrekin (W.A.R.S.).—Mondays, 8 p.m., Wrekin Service Club, Roseway, Wellington.

REGION 4

Alvaston.—Tuesdays and Thursdays, 7.30 p.m., Sundays, 10.30 a.m., Nunsfield House, Boulton Lane, Alvaston, Nr. Derby.
Chesterfield.—Tuesdays, 7.30 p.m., Bradbury Hall, Chatsworth Road.
Derby (D. & D.A.R.S.).—Wednesdays, 7.30 p.m., Derby College of Arts and Crafts (sub-basement), Green Lane.
Leicester (L.R.S.).—June 15, July 6, 7.30 p.m., Hollybush Hotel, Belgrave Gate.
Lincoln (L.S.W.C.).—June 24, July 8, 7.30 p.m., Technical College, Cathedral Street.
Loughborough.—June 17, July 15, 7.30 p.m., Great Central Hotel.
Mansfield (M. & D.A.R.S.).—No meetings, July or August, New Address: Denman's Head Hotel, Market Place, Sutton-in-Ashfield.
Newark.—June 21, July 5, 7 p.m., Northgate House, Northgate.
Northampton (N.S.W.C.).—Fridays, 7 p.m., July 3, 6 p.m., Clubroom, 8 Duke Street.
Nottingham.—June 19, 7.30 p.m., Sherwood Community Centre, opposite Woodthorpe Drive, Sherwood.
Peterborough.—July 1, 7.30 p.m., New Inn, New England, Peterborough.
Worksop.—No July Meeting.
Retford.—No August Meeting.

REGION 5

Chelmsford.—July 7, 7.30 p.m., Marconi College, Arbour Lane.

Ipswich.—June 24, July 8, 7.30 p.m., T.A. Drill Hall, Woodbridge Road, Ipswich.
Lowestoft (L. & B.A.R.C.).—June 24, July 8, 7.30 p.m., Y.M.C.A., Lowestoft.
Southend (S. & D.R.S.).—June 26, July 10, 7.45 p.m., Municipal College.

REGION 6

Gloucester.—Thursdays, 7.30 p.m., The Cedars, 83 Hucclecote Road, Gloucester.
Oxford (O. & D.A.R.S.).—Alternate Wednesdays, 7.30 p.m., The Club Room, Magdalen Arms, Ilfley Road.

REGION 7

Acton, Brentford, Chiswick.—Tuesdays, 7.30 p.m., A.E.U. Rooms, Chiswick High Street, W.4.
Barnes, Putney & Richmond.—July 14, 7.30 p.m., 337 Upper Richmond Road, East Sheen.
Barnet (B. & D.R.C.).—Wednesdays, 8 p.m., "Hopedene," The Avenue.
Bexleyheath (N.K.R.S.).—June 25, July 9, 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.
Bromley (N.W.K.A.R.S.).—July 3, 8 p.m., Shortlands Tavern, Station Road, Shortlands.
Croydon (S.R.C.C.).—July 14, 7.30 p.m., "The Blacksmiths Arms," South End, Croydon.
Dorking.—Tuesdays, 7.30 p.m., 5 London Road.
Dulwich & New Cross.—July 7, 7.45 p.m., "The Walmer Castle," Peckham Road, S.E.13.
Ealing.—Sundays, 11 a.m., A.B.C. Restaurant, Ealing Broadway.
East Molesey.—July 8, 8 p.m., "T.V.I.-Proofed Transmitter Design," F. Hicks-Arnold (G6MB).
Enfield.—July 19, 3 p.m., George Spicer School, Southbury Road.
Finsbury Park.—June 23, July 21, 7.30 p.m., 164 Albion Road, N.16.
Hendon & Edgware (E. & D.R.S.).—Wednesdays, 8 p.m., 22 Goodwins Avenue, Mill Hill.
Hoddesdon.—July 2, 8 p.m., "The Radio Amateurs' part in the Dutch Floods," Salisbury Arms.
Holloway (G.R.S.).—Mondays and Fridays, 7.30 p.m., Grafton School, Ebury Road, N.7. June 20-21, Field Day, Tumulus Field, Parliament Hill, Hampstead Heath.
Ilford.—Thursdays, 8 p.m., G2BRH, 579 High Road.
Kingston (K. & D.A.R.S.).—June 17, July 1, 15, 7.45 p.m., Penrhyn House, Penrhyn Road.
Kensington & Shepherds Bush.—July 10, 8 p.m., 38 Royal Crescent, W.11.
Lewisham (R.A.R.C.).—Wednesdays, 8 p.m., Durham Hill School, Downham.
Norwood.—June 20, July 18, 7.30 p.m., Windermere House, Westow Street, Crystal Palace.
Slough.—June 18, July 16, 7.45 p.m., Labour Hall, Chandos Street.
Southgate & Finchley.—July 9, 7.30 p.m., Arnos School, Wilmer Way, N.11.
Sutton & Cheam (S. & C.R.S.).—June 16, "The Harrow," Cheam Village.
Uxbridge.—July 31, 7.30 p.m., "The Vine," Hillingdon.
Watford (W.A.R.S.).—June 16, July 7, 21, 7.30 p.m., "Cookery Nook," The Parade.
Welwyn.—Summer Recess.

REGION 8

Brighton.—T.R. at Home, Wednesdays from 7.30 p.m., 27 Warren Avenue, Woodingdean.
Chatham (M.A.R.T.S.).—Mondays, 7.30 p.m., Club H.Q., Five Bells Lane, Rochester.
Isle of Thanet (I.O.T.R.S.).—Fridays, 7.30 p.m., George Hotel, Hawley Street, Margate.
Maidstone (M.K.A.R.S.).—Fridays, 7.30 p.m., Elms School, London Road.

REGION 9

Bristol.—June 19, 7.15 p.m., Carwardine's Restaurant, Baldwin Street, Bristol 1.
Exeter.—July 3, 7 p.m., Y.M.C.A., St. David's Hill.
North Devon.—July 2, 7.30 p.m., Rose of Torridge Café, The Quay, Bideford.
Penzance.—July 2, Railway Hotel.
Plymouth.—June 20, 7 p.m., Tothill Community Centre, Tothill Park, Knighton Road, St. Jude's.
Torquay.—June 20, 7.30 p.m., Y.M.C.A., Castle Road.
West Cornwall (W.C.R.C.).—June 18, July 2, "Fifteen Balls," Penryn, near Falmouth.
Weston-super-Mare.—July 7, 7.30 p.m., Y.M.C.A.
Yeovil.—Wednesdays, 7.30 p.m., Grove House, Preston Road.

REGION 10

Cardiff.—July 13, 7.30 p.m., "The British Volunteer," The Hayes, Cardiff.

REGION 13

Edinburgh.—June 25, 7.30 p.m., Chamber of Commerce, 25 Charlotte Square.
Dunfermline.—Mondays and Thursdays, 7.30 p.m., behind 34 Viewfield Terrace, Dunfermline.

REGION 14

Falkirk.—June 26, July 10, 7.30 p.m., Temperance Cafe, High Street, Falkirk.

R · S · G · B · BULLETIN

Volume 28 No. 12

June, 1953

Current Comment . . .

Twenty Years Back

NO National Field Day event is quite like the one of the year before—or the year before that or indeed of any that preceded it.

Site, equipment, even operators, may remain unchanged from one year to the next, but if they do there are always those imponderables called conditions and weather! The ardent N.F.D. enthusiast may say—and probably rightly—that there are several other imponderables too!

The infinite variety afforded by the annual National Field Day is indeed one of its charms. Even the rules themselves do not remain static. Types of aerial permitted by them are not necessarily the same from one year to the next; but two other factors in the rules which have exerted an even greater effect are the one limiting input to 5 watts and the other—introduced this year for the first time—that allows a greater admixture of h.f. and l.f. band working.

This infinite variety, and the circumstances that contribute towards making N.F.D. a lively, dynamic event—and never a formal static one—impart to it perennial freshness. It always seems new, year after year. Which makes all the more surprising the realisation that it was just twenty years ago that the event was first launched. There have not, of course, been twenty National Field Days; the war saw to that. But since 1933 the event has gone from success to success, come wind or weather, and it is now regarded as easily the most important day in Amateur Radio's annual round.

By the practical collective effort which National Field Day evokes from so many amateurs in so many centres, it has become something more than just a contest; it has become a symbol that, however much those decided individualists, "the hams," may argue about this, that and the other among themselves, when the time comes for a concerted pull in one direction they are never found wanting.

And Forty Years Back

WRITING above on the passage of the years prompts us now to invite attention to something else where the March of Time has importance. Before the next issue of THE BULLETIN appears the Fortieth Anniversary of the foundation of the Society will have been reached and passed. The significant date is July the Fifth.

Forty years ago, on July 5, 1913, was founded the Wireless Club of London, later to expand into the Wireless Society of London and in due course into the Radio Society of Great Britain. "Expand" is indeed the operative word. Few

of the pioneer members, surely, could have foreseen that Amateur Radio, as we call it now, would develop from the status of an esoteric scientific experiment to something which, though still scientific, has attracted people in all walks of life and built up an international brotherhood using a common language.

Even so, those pioneers must have had a fair idea of how the future was likely to shape, in broad outline if not in detail. The scientific basis of the Society was firmly established at an early date by such eminent men as Campbell Swinton, Dr. W. H. Eccles, Dr. Erskine Murray, Sir Oliver Lodge (one of the greatest scientists of all time), Admiral Sir Henry Jackson and Brig.-Gen Sir Capel Holden.

But the scientific approach was not the only one. The urge to communicate—to apply the results of the experiments in the top back room—was paramount. It might have been stifled but for the foresight of the late Leslie McMichael (G2FG) and his life-long associate, Rene Klein (still happily with us) in persuading and persisting with Government authority until satisfactory recognition of the amateur wireless transmitting experimenter was achieved.

These men were founders at one and the same time of a National Society and of a great tradition. It may easily be imagined how quickly the early amateur transmitter would have lost his rights had he not shown himself worthy of the efforts made on his behalf. He was not found wanting and, as time went on, his value to the nation, actual and potential, became increasingly evident. The scientific skill and the integrity of the British radio amateur were shown to be of the highest by the two factors which count the most, namely, how the signal sounds and how the man behind it operates.

Rights and responsibilities! The old phrase suggests itself again. The responsible manner in which the British radio amateur conducted himself showed Authority that he was worthy of the rights entrusted to him, at first reluctantly and then increasingly freely as the liaison between G.P.O. and R.S.G.B., established in the early days, continued to flourish.

July the Fifth is a Sunday, and in consequence a time of high week-end activity on all of the amateur bands. When one's call is answered and contact established—that moment of supreme satisfaction which, even to the oldest hand, never stales—it is worth remembering that, if certain events had not taken place on that date Forty Years Back, life would be very different and less interesting for great numbers of us.

J. H.

The Coronation Relay

Commonwealth Amateurs send Loyal Greetings to their Queen

THE honour of participating in the Coronation Relay—the first ever attempted—was shared by radio amateurs in many parts of the world.

The organiser of the Relay was Council Member Herb. Bartlett (G5QA) of Exeter, Devon, who acknowledges his indebtedness to all those who co-operated so magnificently. A word of special thanks is due to those B.R.S. Members who checked the text of incoming messages and sent appropriate confirmations.

Messages were received from practically every part of the British Commonwealth.

Of particular interest was the message—

AUSTRALIA

Message from the Wireless Institute of Australia, via VK3FH and G3BKF, May 25, 1953. Also via VK2GJ, ZL3JA, G3AHE and G2MI. Also via VK3FH, VE8AW and G6ZO, May 27, 1953.

To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

On this occasion of Your Majesty's Coronation, we, the Members of the Wireless Institute of Australia, humbly reaffirm our unswerving loyalty and devotion. May Your Majesty's reign be long and peaceful.

(Signed) Glover,

Federal President, Wireless Institute of Australia.

CANADA

Message from the Montreal Amateur Radio Club, via VE2AGF, VE2CA, G5PP and G3IXE. Also via VE2AGF, VE2BK and G3ATU, May 28, 1953.

To Her Majesty Queen Elizabeth II,

c/o Radio Society of Great Britain.

The Montreal Amateur Radio Club begs leave to convey to Your Majesty the loyal and affectionate greetings of its Members on this historic occasion of Your Majesty's Coronation.

(Signed) T. Makepeace-Lott (VE2AGF),

President, Montreal Amateur Radio Club.

Message from the Northern Alberta Radio Club, Edmonton, Canada, via VE6HM, VE8MC, KL7AFR and GM3DHD, May 30, 1953.

To Her Majesty Queen Elizabeth II,

c/o Radio Society of Great Britain.

The Radio Amateurs of Northern Alberta wish to extend their loyal congratulations to Your Majesty on the occasion of your Coronation. May your reign be a long and happy one.

(Signed) Holmes, President.

Harris, Secretary.

Message from the Scarboro Radio Club, Canada, via VE3BXT, VE3NO, VE3HO, VE3KE, G3AAH, G6HB and G5KJ, May 22, 1953.

To Her Majesty Queen Elizabeth II,

c/o Radio Society of Great Britain.

On behalf of the Amateur Radio operators of Scarboro, Ontario, the Members of the Scarboro Radio Club desire to extend to Her Majesty Queen Elizabeth on the occasion of Her Coronation their best wishes for a long and prosperous reign.

(Signed) E. S. Michel (VE3DOT),

President, Scarboro Radio Club, Canada.

CEYLON

Message from the Radio Society of Ceylon, via VS7FG, MD5EB and G2APF, May 29, 1953.

To Her Majesty Queen Elizabeth II,

c/o Radio Society of Great Britain.

Please convey to Her Majesty Queen Elizabeth II the most loyal greetings from the Members of the Radio Society of Ceylon on the occasion of Her Coronation.

(Signed) A. W. Mailvaganam,

President, Radio Society of Ceylon.

EAST AFRICA

Message from the Radio Society of East Africa, via VQ4VL (President), VQ5AU (Uganda), VQ1RF (Zanzibar), VQ3DN (Tanganyika), VQ4ERR and G2WW, May 24, 1953.

To Her Majesty Queen Elizabeth II,

c/o Radio Society of Great Britain.

The Radio Amateurs of Kenya Colony, Uganda, Tanganyika and Zanzibar Protectorate join in sending their sincere and loyal congratulations to Her Majesty Queen Elizabeth II. We offer our humble service and duty at all times. May our Queen enjoy long life, happiness, peace and prosperity in her reign. God Bless the Queen.

(Signed) Val Lavender (VQ4VL),

President, Radio Society of East Africa.



MAY IT PLEASE YOUR MAJESTY

We the President and Council of the Incorporated Radio Society of Great Britain, beg most respectfully to tender on behalf of the Members of the Society, and of Societies and Clubs affiliated thereto, our sincere congratulations on the occasion of the :-

CORONATION OF YOUR MAJESTY.

It is our earnest hope that Your Majesty may long be spared in health and happiness to reign over Your loyal and devoted subjects. We trust and pray that under Your Majesty's wise rule Your subjects will enjoy Peace and Prosperity.

Leslie Cooper, President

Members of the Council

R. B. Borden

W. C. C. C.

S. G. G. G.

H. H. H. H.

L. L. L. L.

J. J. J. J.

M. M. M. M.

A. A. A. A.

E. E. E. E.

R. R. R. R.

Scaled by Order of the Council.

J. J. J. J., General Secretary

Dated this 8th Day of May 1953.



HONG KONG

Message from the Hong Kong Amateur Radio Transmitting Society, via VS6AE and G6QB, May 24, 1953.
To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

The Council and Members of the Hong Kong Amateur Radio Transmitting Society present their loyal and affectionate greetings to Her Majesty Queen Elizabeth on the occasion of Her Majesty's Coronation and offer their sincere felicitations for a long and happy reign.

(Signed) M. H. Duke (VS6BJ),
President, Hong Kong Amateur Radio Transmitting Society.

MALAYA

Message from the Malayan Amateur Radio Transmitting Society, via VS2CP, VS2BS, VS2LM, VS7FG, AP2R, MD5DO and G2APF, May 25, 1953.
To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

I would like to convey to Her Majesty Queen Elizabeth II the most loyal greetings on the occasion of Her Majesty's Coronation.

(Signed) Fraser,
President, Malayan Amateur Radio Transmitting Society.

MALTA

Message from the Malta Amateur Radio Society, via ZB1E and G3CHR, May 23, 1953.
To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

From our island small but ever proud of Royal honours bestowed, the President and Members of the Malta Amateur Radio Society, through their hobby, humbly offer a message of most loyal greetings on Your Majesty's Coronation as our Queen.

(Signed) President, Malta Amateur Radio Society.

NEWFOUNDLAND

Message from the Newfoundland Amateur Radio Association, St. Johns, Newfoundland, via VO1AB and G3IYG. Also via VO6B, G3EHT and G3IAM, May 22, 1953.
To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

On the occasion of Her Majesty's Coronation, please convey to Her Majesty Queen Elizabeth II the loyal devotion of the Radio Amateurs of England's oldest Colony and Canada's youngest Province.

(Signed) Harold Wells (VO1Y),
President, Newfoundland Amateur Radio Association.

NEW ZEALAND

Message from the New Zealand Association of Radio Transmitters, via ZL2NU, ZL2OU and G5QA, May 30, 1953.
To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

The New Zealand Association of Radio Transmitters representing the Radio Amateurs of New Zealand, joins with its kindred Commonwealth organisations in pledging our loyalty to the Throne and in humbly offering to Your Majesty congratulations on the occasion of Your Majesty's Coronation.

(Signed) W. J. Wainwright,
President, New Zealand Association of Radio Transmitters.

NORTHERN RHODESIA

Message from the Northern Rhodesian Radio Society, Kitwe, via VQ2JN and G6PD, May 24, 1953. Also via VQ2HA, VQ4RF and G4ZU.
To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

The President and Members of the Northern Rhodesian Radio Society offer Your Majesty their humble duty and deepest loyalty on the occasion of Your Majesty's Coronation and hope that Your Majesty's reign will bring happiness, peace and prosperity to all Your Majesty's subjects.

(Signed) President, Northern Rhodesian Radio Society.

SINGAPORE

Message from the Singapore Amateur Radio Transmitting Society, via VS1ES, VS1EG and G2MF, May 22, 1953.
To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

All the Members of the Singapore Amateur Radio Transmitting Society wish to convey to Her Majesty the Queen their most loyal greetings on the occasion of Her Coronation.

(Signed) President,
Singapore Amateur Radio Transmitting Society.

Message from the Benghazi Amateur Radio Society, via 5A2CA and G6DL, May 24, 1953.

To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

On this most auspicious occasion of Your Majesty's Coronation, we, Your Majesty's loyal and devoted subjects, the members of the Benghazi Amateur Radio Society, send Your Majesty our most loyal greetings. It is our most heartfelt wish that Your Majesty may be granted a long, glorious and happy reign.

(Signed) John W. Bull,
Chairman, Benghazi Amateur Radio Society.

Message from the British Two-Call Club (Overseas Section) via G8DK, DL2RO, HZ1KE, MP4BBH, VS1BO, VS6BE, VR2CG, ZL1MP, ZE3JO, VQ2W, VQ4CW, ZD4BB, VP5SC, VE3BWY and G2DHW, May 24, 1953 (Empire Day).

To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

On behalf of the Members of the British Two-Call Club scattered throughout the Commonwealth, we wish you on Your Coronation Day—peace, prosperity and long may you reign.

(Signed) Major D. A. MacDonnell (Royal Signals) (G8DK),
President, British Two-Call Club (Overseas Section).
Major J. M. Drudge-Coates (Royal Signals) (DL2RO),
Vice-President, British Two-Call Club (Overseas Section).

In addition to the Commonwealth and Empire messages printed above, the following message was received from the Argentine Radio Club via LU5DZ and G2CHL, May 28, 1953.

To Her Majesty Queen Elizabeth II,
c/o Radio Society of Great Britain.

On the day when all British hearts rejoice at the glorious crowning of the young Queen, the Radio Amateurs of the Argentine, who are spiritually present on this great occasion, offer to Her Majesty Queen Elizabeth II, through the Radio Society of Great Britain, their sincerest and heartiest best wishes for a prosperous reign.

(Signed) Argentine Radio Club.

Panda Low-Pass Filter

A LOW-PASS filter has been produced by Messrs. Panda Radio, 58 School Lane, Rochdale. The purpose of the filter is to attenuate the harmonics generated in a transmitter, which would otherwise be radiated in the frequency range covered by Band 1 (Channels 1 to 5). The filter comprises a low-pass network of four sections, each section being individually tuned by variable capacitors. It is designed for insertion in a 52-ohm co-axial feeder. The components are mounted in a black crackle finished brass box having Pye type co-axial sockets for input and output at opposite ends. Although the variable capacitors are pre-adjusted at the factory, and their pointer positions indicated by white spots, they may be re-adjusted individually as desired.

The makers claim that the filter provides an attenuation of over 70 db from approximately 40 to 70 Mc/s and an insertion loss of 0.25 db below 30 Mc/s.

A sample of this filter has been tested by measuring its performance, when connected between a standard signal generator and a wide band distributed amplifier having a meter connected to its output, the impedance being suitably matched.

The attenuation in the pass band over the range 10-30 Mc/s was found to be very small and of the order quoted by Panda Radio. Above 30 Mc/s the following figures were obtained:

| | | | | | | | | | |
|------------------|----|----|----|----|----|----|----|----|-----|
| Frequency (Mc/s) | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 80 | 100 |
| Attenuation (db) | 25 | 50 | 80 | 68 | 64 | 73 | 80 | 83 | 84 |

These figures agree substantially with those shown on a curve supplied by the makers.

The filter is well made and well designed and can be recommended to members for the reduction of TVI.

D.N.C.

Labgear Anti-Swamp Filter

MESSRS. LABGEAR (Cambridge) Ltd., have recently placed on the market a filter designed for connection in the feeder to a T.V. receiver, the purpose of which is to reduce the swamping effect of signals of lower frequencies from a local amateur transmitter. The filter is of the high-pass type and is housed in a small metal case fitted with gromets at either end for direct connection in an 80-ohm co-axial feeder. Where balanced feeders are employed, two such units, bonded together, can be employed, one in each lead.

The filter is rated to have an insertion loss of less than 1 db over Band 1 (Channels 1 to 5) and an attenuation of approximately 40 db at 30 Mc/s rising to over 80 db at 3.5 Mc/s.

A sample filter was measured by connecting it between a standard signal generator and a wide band distributed amplifier having a meter connected to its output, the input and output impedance being suitably matched. Over the pass band the loss varied somewhat, the minimum loss being at 40 Mc/s and at 75 Mc/s, the maximum loss being around 45 Mc/s and 100 Mc/s. In no case did the insertion loss exceed 5 db.

Measurements were made below the pass band with the following results.

| | | | | | |
|----------------------|------|----|------|----|----|
| Frequency (Mc/s) ... | 30 | 25 | 20 | 15 | 10 |
| Loss (db) | 37.5 | 43 | 47.5 | 56 | 74 |

These figures agree substantially with those quoted by the makers and provided the filter is used as close to the receiver as possible they should be achieved in practice. It should be borne in mind, however, that direct pick-up in the receiver wiring may by-pass the filter, thus reducing its effectiveness.

The Labgear filter can be recommended to members as a contribution to the reduction of TVI.

D.N.C.

Receiver Design for 70 cm

Improving performance with the "High Q Break"

by C. E. NEWTON (G2FKZ)*, G. M. C. STONE (G3FZL)† and S. F. WEBER (B.R.S. 19317)‡

In this article, C. E. Newton and G. M. C. Stone present some up-to-date information on the theoretical and practical problems encountered in the design of high performance u.h.f. receivers. A practical design for a converter based on this information is described by S. F. Weber. It is no coincidence that almost all long distance 70 cm work has been accomplished using the reception principles outlined here.

ALTHOUGH 70 cm receivers may not be familiar to many radio amateurs, the performance of a properly designed installation can be expected to be similar to that obtained from, for example, an HRO on 14 Mc/s. Suitable valves are obtainable and excellent results may be achieved provided care is taken in the construction.

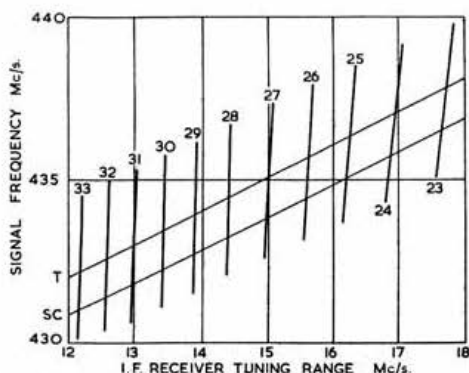


Fig. 1.—Spurious response chart for a 70 cm. receiver with a low frequency tunable i.f. (12–18 Mc/s). Line T is the main receiver normal tuning range and SC the second channel. The steep, numbered lines are the harmonics of the tunable oscillator. At the frequencies indicated by the intersection of these lines it is possible for spurious responses to occur.

Frequency Stability

As the receiver should be stable enough to accept c.w. signals the local oscillator must, accordingly, remain constant to within 20 c/s over short periods of time, i.e. during a contact. It is also desirable that the frequency drift over longer periods should be small enough to allow the dial calibration to remain reasonably accurate.

For all practical purposes it is impossible to construct a sufficiently stable fundamental oscillator in the region of 400 Mc/s which has a pure T9 note. It is necessary, therefore, to have a local oscillator at a sub-multiple of 400 Mc/s and to provide frequency multipliers. Alternatively, harmonic injection to the mixer could be used.

Mixers

The noise generated in the first mixer stage is of the utmost importance if a good signal-to-noise ratio is to be achieved, because valves suitable for use as r.f. amplifiers at 420 Mc/s are not readily available. The most suitable mixer at these frequencies is the silicon diode, the characteristics of which are very similar to those of a valve diode, with the advantages of lower capacity and no heater power requirements. Mixing may be accomplished by applying signal and local oscillator voltages at the "knee" of the characteristic

curve of the crystal. Optimum conversion is obtained with a bias of about +0.1 V, although crystals are often operated at zero bias. A crystal diode has a conversion loss of about 6 db when operated under optimum conditions.

It is essential that the local oscillator injection should be at a frequency equal to the signal input frequency, plus or minus the first i.f. Other voltages, whether harmonic or spurious, are undesirable because they increase the crystal current and, therefore, the noise, without contributing to the i.f. output. A mixer operating with harmonic injection requires more local oscillator voltage than is necessary when fundamental mixing is employed, for the same i.f. output. The higher crystal current which results causes the signal-to-noise ratio to deteriorate considerably.

The mixer tuned circuit is usually a quarter wave capacity-loaded co-axial line, the crystal being fed from a voltage point. The aerial is connected at a point on the line which corresponds to the impedance of its co-axial feeder. The local oscillator output can be injected into the circuit via a capacity probe at a voltage point, or it may be tapped-on to the inner line near the short circuited end. The i.f. output from the mixer is decoupled for 70 cm signals by a small capacitor and is then fed to the first i.f. head amplifier.

The Local Oscillator

It may now be seen that for optimum performance it is desirable to employ fundamental mixing, and to have a local oscillator with a frequency stability equal to that of a crystal controlled transmitter. As no fundamental oscillator of the required stability has been found suitable, the oscillator must be at a lower frequency. If this oscillator is to be tunable, the multipliers must also be tunable, which introduces ganging or broad band problems, since the converter has to cover at least 432 to 438 Mc/s, i.e., that part of the band in harmonic relationship with the 144 Mc/s band. It appears, therefore, that the simplest solution is to maintain the first local oscillator at a fixed

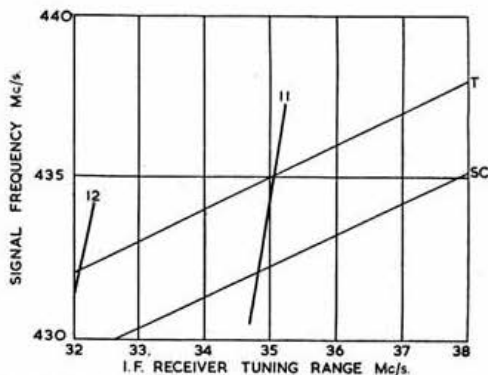


Fig. 2.—Spurious response chart for a 70 cm. receiver with a high frequency tunable i.f. (32–38 Mc/s). The lines may be interpreted in the same way as those in Fig. 1.

* 105 Underhill Road, Dulwich, London, S.E.22.

† 35 Elsie Road, East Dulwich, London, S.E.22.

‡ The Cottage, Convent Gardens, Putney Bridge Road, London, S.W.18.

frequency and to tune the first i.f. This arrangement has many advantages: the first local oscillator may be crystal controlled, so the final output frequency of the multiplier chain may be determined

Local Oscillator Injection

When a local oscillator voltage has been generated in the 400 Mc/s region, there still remains the problem of coupling it to the mixer.

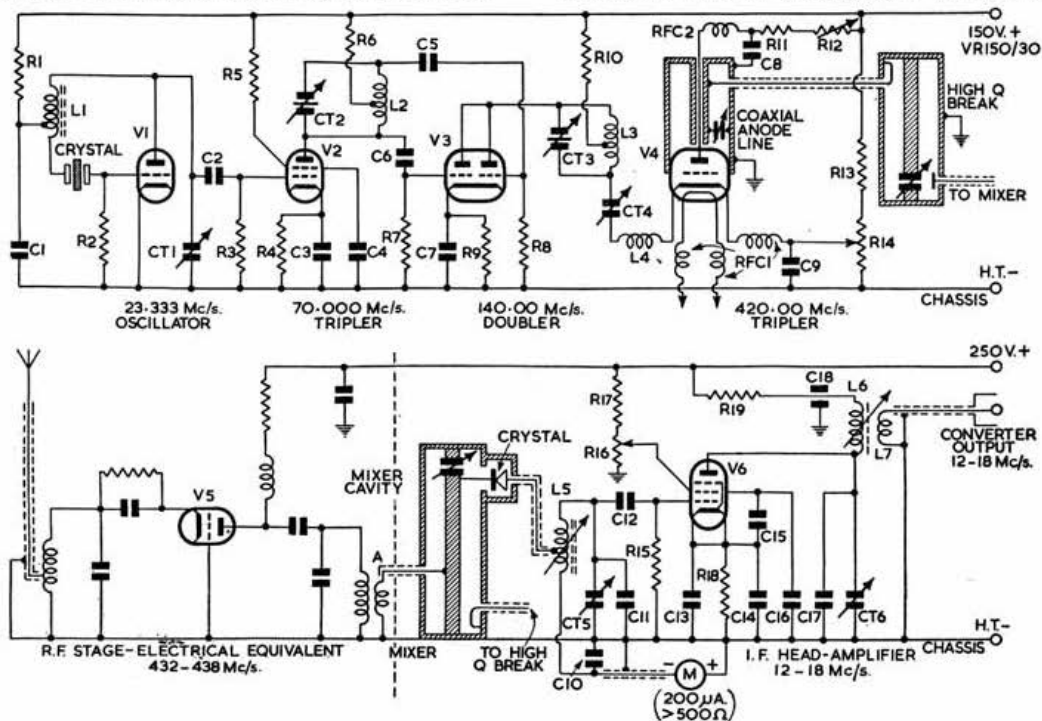


Fig. 3.—The circuit diagram of the high performance 70 cm. converter. The complete r.f. stage was obtained from an ex-Government receiver, type ASB8. The aerial should be connected at point A if an r.f. stage is not used.

accurately, enabling the over-all calibration of the receiving system to be as good as that of a lower frequency receiver. Stability is assured because the tunable i.f.—the main receiver—works at a relatively low frequency at which it is possible to construct stable tunable oscillators. A disadvantage of the system is that harmonics from the various stages of the multiplier chain, and of the tunable local oscillator, may be mixed together so causing spurious responses. With careful design, however, such harmonics can be arranged to lie outside the converter signal frequency range.

As stated earlier, the local oscillator output must contain only the desired frequency; in fact, any spurious outputs which do not help to increase the i.f. signal voltage only cause increased mixer circuit noise, owing to the increased crystal current. The local oscillator should, therefore, be impedance matched to the mixer, and *must* present a high impedance at signal frequency to prevent signal voltage loss in the oscillator circuit. This may be achieved by including a filter which fulfils these conditions between the l.o. output circuit and the mixer. Such a filter, called a "high Q break," is

Components List for Fig. 3

| | | | | | |
|--------------------|--|-----------|--|--|---|
| C1, 3, 4, 7, 9, 14 | 560 μ F mica | L3 | 5 t. centre tapped, $\frac{1}{2}$ in. diam., 14 s.w.g., spaced wire diam. | R12, 14 | 10,000 ohms, wire-wound potentiometer |
| C2 | 25 μ F ceramic | L4 | 6 t. $\frac{1}{2}$ in. diam., 18 s.w.g., spaced to $\frac{1}{2}$ in. length | R13 | 27,000 ohms, 5 W, vitreous type |
| C5, 6 | 68 μ F ceramic | L5 | 10 t. centre tapped, $\frac{1}{2}$ in. diam., 18 s.w.g., spaced to $\frac{1}{2}$ in. length on slug tuned former | R15 | 500,000 ohms |
| C8 | 20 μ F mica | L6 | 10 t. $\frac{1}{2}$ in. diam., 18 s.w.g., spaced to $\frac{1}{2}$ in. length on slug tuned former | R16 | 50,000 ohms, carbon potentiometer |
| C10, 13, 16 | 6,800 μ F mica | L7 | 4 t. wound over L6 (enam. wire) | R17 | 10,000 ohms, Erie 1 W |
| C11, 17 | 75 μ F mica | R1 | 2,200 ohms | R19 | 8,200 ohms, Erie 1 W |
| C12 | 75 μ F ceramic | R2 | 39,000 ohms | All resistors are Erie $\frac{1}{2}$ W types unless otherwise indicated. | |
| C15 | 100 μ F ceramic | R3 | 100,000 ohms | RFC 1 | 20 in. 24 s.w.g. enam. close-wound, $\frac{1}{8}$ in. diam. |
| C18 | 3,000 μ F, lead through type | R4, 6, 18 | 270 ohms | RFC 2 | 7 in. 24 s.w.g. enam. close-wound, $\frac{1}{8}$ in. diam. |
| CT1 | 30 μ F air spaced trimmer | R5 | 82,000 ohms | V1, V3 | 6J6 |
| CT2, 3 | 10+10 μ F split stator trimmer | R7, 8 | 22,000 ohms | V2 | 6AK5 |
| CT4 | 8 μ F Philips trimmer | R9 | 470 ohms | V4 | 446-A, 2C40 or 6J6 |
| CT5, 6 | 30 μ F trimmer | R10 | 820 ohms | V5 | 446-A or 2C40 |
| L1 | Crystal | R11 | 5,000 ohms, Erie 2 W | V6 | 6AC7 |
| L2 | 10 t. centre tapped, $\frac{1}{2}$ in. diam., 14 s.w.g., spaced wire diam. | | | Crystal mixer | 1N21, 1N23, CV101, or CV253 |

a capacity-tuned quarter wave co-axial line, only lightly loaded, with a "Q" of several hundreds. As its name implies, the "high Q break" breaks up the l.o. output voltage, passing only the desired frequency component. The l.o. is coupled to the filter via a length of 80 ohm co-axial cable which terminates in a loop near the short circuited end of the "high Q break." The mixer derives its local oscillator voltage from a capacity probe inserted into the filter at a voltage point. Looking from the mixer into the "high Q break," a high impedance at signal frequency is presented which can be further increased by making the co-axial cable joining the filter to the mixer circuit an odd

frequency. The spurious response charts (Figs. 1 and 2) are of the high order harmonics, originated in the tunable local oscillator, beating with the c.o. output frequency. Practically, their relative importance depends largely on the tunable i.f. and tunable local oscillator design. The higher the tunable i.f., the smaller the number of spurious responses likely to be produced. This may be seen from the charts which show that high order harmonics, resulting in spurious responses, in no way impair the performance of the converter because they are tuned through very rapidly as is indicated by the steep, numbered lines. In practice, though, only a few spurious responses occur.

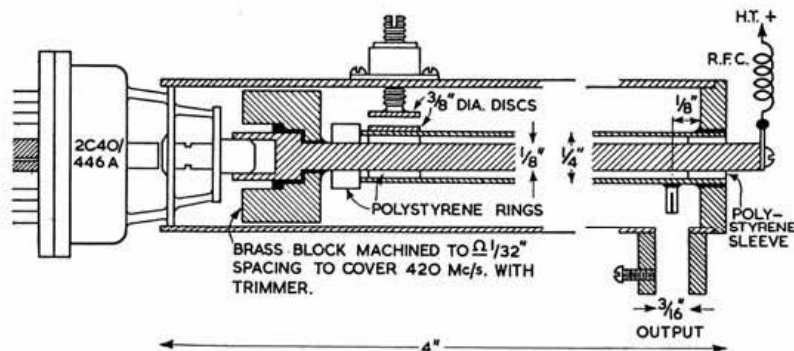


Fig. 4.
Details of the final tripler anode lines. If a 6J6 is to be employed the arrangement shown in Fig. 5 should be used.

number of quarter wavelengths long, allowance being made for the velocity factor of the cable. In this way, the signal frequency voltage will suffer very little attenuation in the local oscillator circuit. By employing a capacity probe it is easy to adjust the crystal current by simply moving the probe in or out of the filter.

Suitable valves for the final oscillator multiplier stage are the CV53, 446A and similar disc-seal triodes, operated with a capacity loaded quarter wave line. Alternatively, a 6J6 used as a push-push doubler with a half wave anode line may be used.

Unwanted responses from low order harmonics, which may be more serious, usually only arise if the tunable i.f. or crystal multiplier chain starts at a very low frequency. It is therefore essential to use the highest practicable frequencies (consistent with good stability and ease of calibration) for the crystal oscillator and tunable i.f.

Converter design is normally limited by the main receiver tuning range, but by the use of good screening and efficient filtering of power leads, etc., the spurious responses may be kept at a very low level and will not be mistaken for weak signals as their character is easily recognised. The frequen-

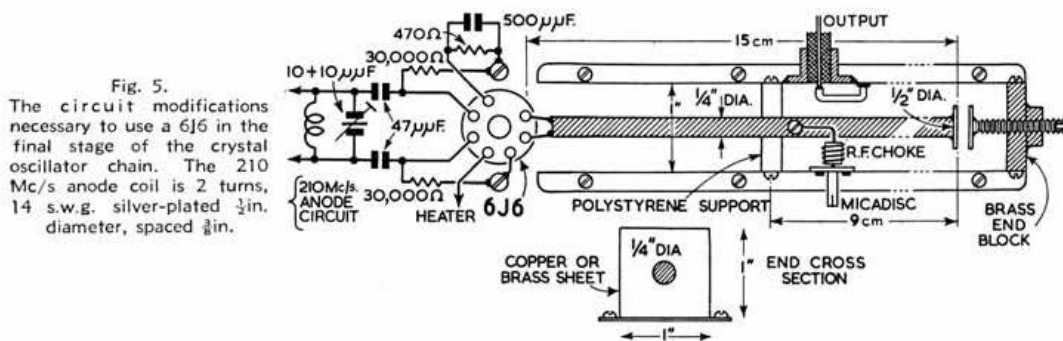


Fig. 5.
The circuit modifications necessary to use a 6J6 in the final stage of the crystal oscillator chain. The 210 Mc/s anode coil is 2 turns, 14 s.w.g. silver-plated 1/2 in. diameter, spaced 3/8 in.

I.F. Head Amplifier

As the over-all performance of a receiving system having no signal frequency amplification is largely dependent on the first i.f. stage, it is essential that the i.f. head amplifier should be a high gain, low noise type. The choice of design rests between the cascode and low noise pentode circuits, both of which give satisfactory performance at the first i.f.

Spurious Responses

The majority of spurious responses are, in practice, caused by the beating together of the harmonics of the tunable oscillator and the crystal oscillator and particularly the c.o. chain final

cies at which it is possible for such responses to appear may be predicted from the following formulæ:—

- (a) Related to the converter tuning range:

$$Fr = \frac{Fo - n \cdot F.if}{(n-1)}$$

- (b) Related to the tunable i.f. second channel:

$$Fr = \frac{Fo - (n+2) \cdot F.if}{(n-1)}$$

the difference being $\frac{2 F_{if}}{(n-1)}$

where F_o is the crystal harmonic frequency (it should be noted that F_o is most likely to be the crystal oscillator chain output frequency, i.e. in the region of 420 Mc/s); F_{if} is the tunable i.f. receiver's own intermediate frequency; F_r is the tunable i.f. receiver's dial frequency where response occurs; n is the tunable i.f. local oscillator harmonic number.

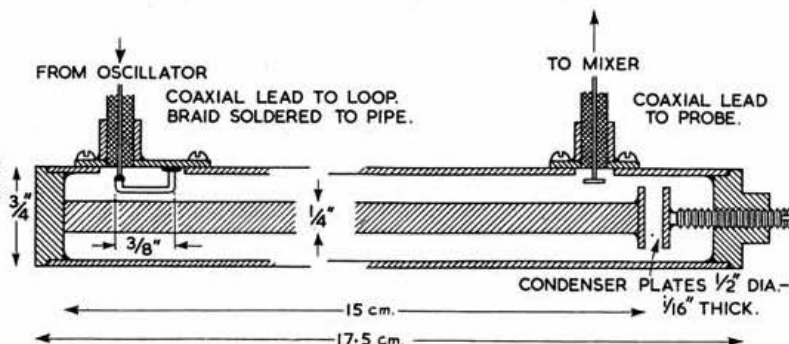
of the converter are well designed. However, an r.f. stage was included in the present design to facilitate comparative measurements, but it may be omitted if desired.

The i.f. head amplifier uses a 6AC7 valve in a high gain, low noise circuit which is arranged to have a bandwidth of about 1 Mc/s. This makes it necessary to retune the stage each megacycle but has not proved to be an operational disadvantage.

Construction of Co-axial Lines

The co-axial lines may be constructed from

Fig. 6. Construction of the "high Q break," the purpose of which is described in this article.



Practical Design of a High Performance 70 cm. Converter.

With the foregoing principles in mind, a crystal controlled converter (Fig. 3) was constructed for use with an R1155A receiver. It was designed to cover 432 to 438 Mc/s, corresponding to a first i.f. of 12 to 18 Mc/s.

Circuit Details

The crystal oscillator chain starts with a 23.333 Mc/s overtone crystal oscillator and is conventional up to the final tripler stage (Fig. 4) which was designed around the 446A (or 2C40) lighthouse valve. Alternatively, a 6J6 may be used as a push-push doubler (Fig. 5) in the final stage, using a half wave co-axial or trough line, provided the preceding 6J6 is used as a push-pull tripler to 210 Mc/s.

18-22 gauge seamless brass or copper pipe which must be very thoroughly cleaned, particularly on the inside. The end discs should be machined so that they make an extremely tight fit in the pipe. The mechanical details of the construction of the "high Q break" and the mixer assembly are given in Figs. 6 and 7.

All parts should be silver plated separately before being put together and any necessary soldering carried out, using *Multicore Arax*. After that, the complete unit should be thoroughly cleaned and totally replated. (Note: *Arax* solder leaves a flux residue which must be completely washed off; unless so removed, the residue, under humid conditions, will become mildly acidic. *Arax* must on no account be used for ordinary wiring.) It is essential that the "high Q break" and the other lines should all receive a good hard coat of silver (which must not be polished) on the inside. To prevent tarnishing, the parts may be lacquered with a dilute solution of clear cellulose dope in acetone. The lacquering must be done before the components are touched by hand. Silver plating is imperative if the utmost efficiency is to be attained, and is not expensive.

Layout and General Construction

Although a good idea of the general layout may be obtained from the photograph and Fig. 8, a few remarks on the construction may be helpful.

All leads must be as short and stout as possible—jigs should be used when wiring to the miniature valve bases. Great care must be taken to ensure that no grid leak or coupling condenser is near chassis level, as these components become very effective r.f. by-passes when placed close to earthed metal objects. No solid dielectric should be used in any coil except those in the crystal oscillator stage and the i.f. head amplifier. Only one earthing point per valve should be used and all heater and power supply leads must be well screened and effectively decoupled in the converter, main receiver and power supply.

Alignment Procedure

Before attempting to line-up the converter a check should be made to ensure that all valves are receiving their *correct* heater voltages; disappointing results will be obtained if this is not so.

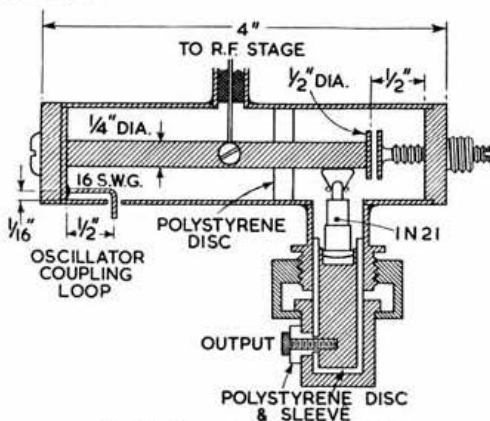


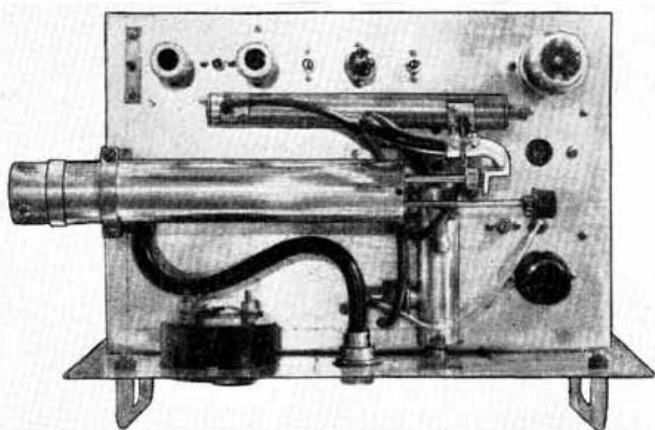
Fig. 7.—The mixer line assembly.

Output from the oscillator chain is fed into the "high Q break" via a half wavelength of 80 ohm co-axial cable; a quarter wavelength of the same cable connects the mixer to the voltage end of the filter.

An r.f. stage makes so little difference to performance on low signal levels as to be almost completely unnecessary, provided the other stages

In aligning the crystal oscillator chain, two indispensable instruments are a 0-1 milliammeter with a small loop and crystal diode attached, and an absorption wavemeter covering 50 to 200 Mc/s.

receiver. The 6AK5 tripler (V2) is adjusted to a frequency of 70 Mc/s with the aid of the absorption wavemeter and the milliammeter and detector. The 140 Mc/s tank coil and series tuned circuit are



Top view of the 70 cm. converter showing the crystal oscillator chain valves along the rear edge; the voltage regulator is at the top right of the picture. The r.f. stage line is the large cylinder projecting over the end of the chassis; just to the rear may be seen the "high Q break." The mixer line is at right angles to the front panel, with the 6AC7 i.f. head amplifier to the right.

The crystal oscillator, which uses both sections of a 6J6 in parallel in the Squier circuit, is adjusted by means of the dust iron core and trimmer CT1, which should be set so that output is just short of maximum and not on the "steep" side of the output tuning curve. The stage may oscillate weakly before being tuned to the crystal overtone frequency, but this can readily be checked with a

adjusted, simultaneously, for optimum coupling into the final tripler stage cathode; while this is being done, the "high Q break" should be disconnected from the tripler so that this stage can be aligned. It is then reconnected and tuned to the oscillator output frequency. The tripler (V4) should have a bias of about -25 volts (obtained from

(Continued on page 533)

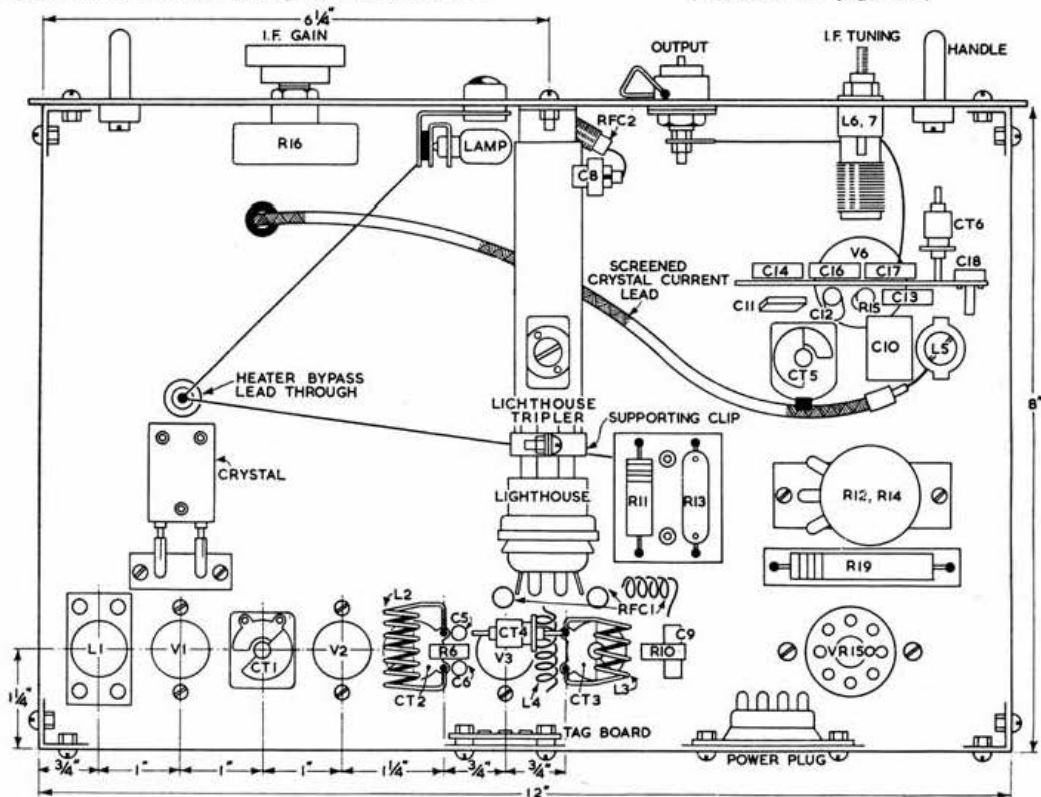


Fig. 8.—The under-chassis lay-out of the components.

Aerials for Restricted Spaces

By A. J. SLATER (G3FXB)*

How to erect an adequate aerial system in the limited area of a 20 x 16 ft. garden was one of the problems that faced G3FXB following a change of address. His experiments and experiences will interest those in similar circumstances who are keen on working DX.

AS a basis for the new aerial system at G3FXB, it was reasoned that a wire 66 ft. long was the minimum desirable length. With this thought in mind permission was sought and ultimately obtained to attach one end of the wire to the chimney stack of a house at the rear, the other end being fastened to the stack on the south side of the writer's house (Fig. 1). The feeder arrangement consisted of 33 ft. of No. 14 s.w.g. wire spaced 6 in. apart, different coupling circuits being employed for operation on the various bands (Fig. 2).

The results obtained from this aerial were satisfactory, even when used as a 99 ft. end-fed on 3.5 Mc/s where, in spite of the shorter top (as compared with a half-wave) and the possibility of absorption due to the radiating down-lead, a great deal of DX was worked, including ZL, PY, VQ4, 4X4, FA, ZC4, W and VE. Tests made on 7 Mc/s revealed a drop of about one S-point as compared with correct Zepp feed. Using the latter, more than 90 countries have been worked on that band. Performance on 14 and 28 Mc/s is equally good, confirming the fact that the Zepp is a simple and practical multi-band aerial.

The G8PO Aerial

Use was made of the second chimney stack on the writer's house and the garden space to the south, to erect a $\frac{1}{2}$ -wave aerial for the 14 Mc/s band, the object being to fill-in the blind spots of the Zepp and so obtain a virtually 360-degree coverage. As there was enough space for a 2-

element fixed beam, it was decided to try a G8PO aerial, supported between the stack and a 30 ft. pole.

This type of aerial consists of two $\frac{1}{2}$ -wave dipoles spaced $\frac{1}{2}$ -wavelength apart, each centred by 80-ohm twin feeder, with a delay section between the two and a pair of feed sockets to reverse the direction of radiation. The front-to-back ratio, which can be as high as 30 db, is largely dependent on the standing-wave ratio and the length of the delay section.

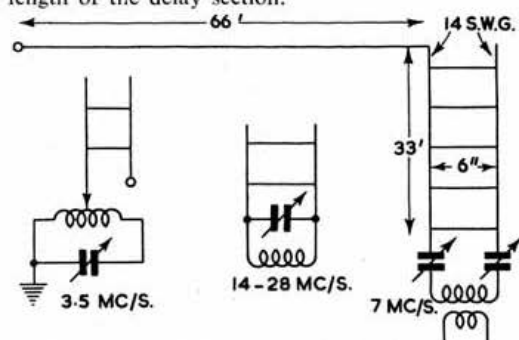


Fig. 2.—Simple Zepp aerial with feeder tuning arrangements.

Initially, a front-to-back ratio of some 20 db was obtained and, with 25 watts input, results were fair. It was felt, however, that a considerable increase in the amount of r.f. radiated could be effected by reducing the standing-wave ratio. The centre-impedance of each dipole was estimated to be in the order of 20 to 30 ohms, giving, with 80-ohm feeder, a s.w.r. of 4:1 or 3:1, which was considered excessive. Space limitations precluded any form of adjustable matching, so wire folded dipoles were substituted for the radiating elements to provide a 4:1 step-up, but for some reason (probably an incorrect estimate of the aerial impedance) the s.w.r. was no better.

The folded dipoles were removed, and the original elements replaced, this time with a corrective stub attached to each feeder about $\frac{1}{4}$ -wavelength down from the dipoles. This arrangement was more effective; DX improved, and the line down from the stubs seemed reasonably "flat," but the 20 db front-to-back ratio had now disappeared, and no amount of delay section pruning would bring it back.

Between them, the G8PO and the Zepp accounted for some 90 countries on 14 Mc/s during the first year of operation with an input of 25 watts. A change-over switch, enabling either aerial to be selected at will, ensured good all-round coverage. The aerials ran N-S; thus, the G8PO radiated E-W, while the Zepp gave the familiar four-leafed clover pattern, radiating N-NW, N-NE, S-SW and S-SE.

The W8JK Aerial

When input power was eventually changed to 150 watts, it was decided to discard the G8PO installation, and erect a straightforward centre-fed W8JK aerial using 600-ohm tuned feeder lines.

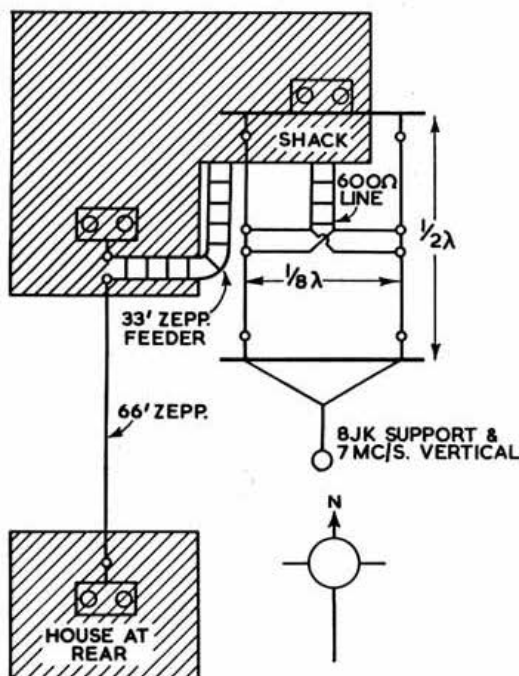


Fig. 1.—The present aerial arrangement at G3FXB.

National Emergency Amateur Radio Communications Service

THERE was an excellent response by members to the appeal made in the March issue of the BULLETIN and the letters received, together with a number of matters concerning the setting up of an emergency service were considered by a special committee, appointed by the Council, which met on March 24, under the Chairmanship of the Executive Vice-President (Mr. A. O. Milne, G2MJ). The other members of this Committee were the President (Mr. L. Cooper, G5LC), Messrs. F. Charman, G6CJ; C. H. L. Edwards, G8TL; L. E. Newnham, G6NZ; and P. W. Winsford, G4DC.

As a result of the meeting the following recommendations were made to, and subsequently approved by, the Council:—

(1) That a purely Amateur Emergency Communications Service, having no tie-up with any of the Armed Service Reserves, should be set up, with a view to co-operating with the public utility and rescue services in case of need.

(2) The Service should be organised and run by members of the Radio Society of Great Britain.

(3) The broad principles of the Service should be determined by the Council of the R.S.G.B. and would be on the basis of key stations with associated out-stations.

(4) The Service would be financially self-supporting and entirely amateur in character.

(5) Active local "nets," organised by the key stations would be established and these would make every effort to maintain interest during the necessarily long intervals between the occasions when their services in a real emergency might be needed.

(6) Proper and recognised procedure would be regarded as essential to the efficient running of the service.

(7) Regular practices and simulated emergencies would take place.

(8) Recommendations as to the types of equipment to be used would be formulated with the idea of voluntary standardisation.

The Committee felt that two types of stations would probably be necessary: firstly, mobile stations for "on-the-spot" working, for which the v.h.f.s. would be used; secondly, fixed stations, working on 1.7 or 3.5 Mc/s or possibly on 28 Mc/s.

The Committee also considered that, in due course, certain frequencies in the bands chosen should be designated as "Emergency Frequencies" and that these should be thoroughly publicised.

From an examination of the correspondence it became clear that a large number of members were willing to co-operate in forming and operating an Emergency Service. It was felt, and the Council concurred, that the Service should be organised, as far as possible by the members themselves, with a minimum of supervision from Headquarters. With that thought in mind, members are now invited to offer their services as key stations. These persons should be willing to devote some time to the job and should preferably possess or be willing to build portable equipment. Other members who are keen to assist, but are unable to devote the time required to organisation, are asked to await a further announcement.

Offers should be addressed to Mr. Milne at 29, Kechill Gardens, Hayes, Bromley, Kent.

Some improvement was obtained on 14 Mc/s, and on the rare occasions when there was an opening for c.w. on 28 Mc/s, S9 reports were received from W, KP4 and M13. With a 33 ft. feeder, series tuning was employed on 14 Mc/s, and parallel tuning on 28 Mc/s. Some idea of the high s.w.r. on 14 Mc/s can be gained from the fact that the aerial current at 150 watts input was more than 2.5 A; since, however, the feeder is of the open-wire type, with reasonably low-loss construction, it has not been the cause of any misgivings.

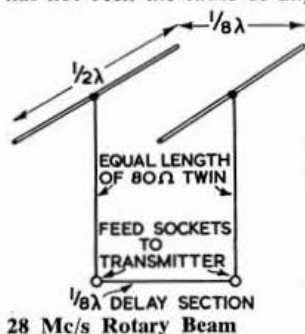


Fig. 3.
Original C8PO aerial.
Details of suitable
stubs can be obtained
from handbooks.

A 3-element close-spaced rotary beam was employed for 28 Mc/s operation for a period. Though only 14 ft. high, and closed-in by buildings on all sides, it was responsible for some good DX contacts with 25 watts input.

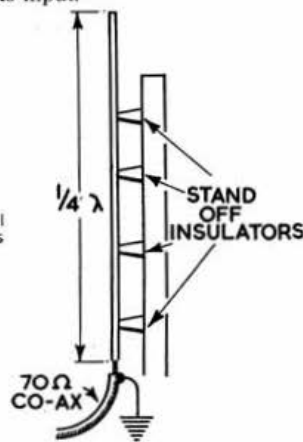


Fig. 4.
Simple 1/4-wave vertical
aerial for 7 Mc/s
operation.

7 Mc/s Vertical Aerial

A 7 Mc/s ground-plane aerial was impracticable at G3FXB, but a 1/4-wave vertical aerial for operation on that band was constructed of dural tubing lashed to the W8JK pole for support, the end of the aerial being just above ground level. Although poor conditions on 7 Mc/s have not permitted thorough tests, it is apparent that the aerial exhibits no exceptional low-angle radiation characteristics (as does the ground plane), and is, in fact, about 1 1/2 S-points down on the Zepp in the latter's favoured directions. Being omni-directional, however, it fills in the nulls of the Zepp aerial, and has enabled better reports to be obtained from South America and Africa.

A mis-match is known to exist between the 70-ohm coaxial feeder and the aerial impedance of approximately 30 ohms, but this will be corrected in the near future.

To the old-timer and more experienced DX man the above will doubtless seem self-evident, but the writer hopes that the experiences described will assist the newcomer in similar circumstances to make the most of a small garden space.

Standard Frequency Transmissions

N.P.L. Inaugurates 24 Hour Service from MSF

STANDARDS of frequency and time differ from other standards of measurement in that they can be made available continuously over wide areas by means of radio. The frequencies of 2.5, 5, 10, 15, 20 and 25 Mc/s have, by international agreement, been allocated for this purpose and a continuous service on all these frequencies has been broadcast for many years from WWV, operated by the National Bureau of Standards, situated near Washington, D.C. Unfortunately, the WWV transmissions cannot be heard throughout the world at all times and experiments on an international scale are therefore being carried out under the general direction of the International Radio Consultative Committee (C.C.I.R.) in order to discover the best means of securing world-wide coverage.

As the United Kingdom's contribution to this programme, daily transmissions, each of 31 minutes duration, on 5 and 10 Mc/s from the Post Office station at Rugby, using the call-sign MSF, have been made since February, 1950. On May 26, 1953, the schedule was extended to 24 hours per day on 2.5, 5 and 10 Mc/s, using a power of 0.5 kW. It is possible that 15 and 20 Mc/s may be used later, but only three broadcasts will be made simultaneously. The transmissions are interrupted during the interval between 15 and 20 minutes past each hour to permit measurements of other standard frequency transmissions to be made. The transmissions are modulated in accordance with the schedule shown in diagrammatic form in Fig. 1.

Accuracy of Transmissions

The carrier and modulation frequencies are derived from the same 100 kc/s standard and are maintained to within ± 2 parts in 10^6 of their nominal value. The transmitted frequencies, do not, in general, vary from day to day by more

than ± 2 parts in 10^9 , though the frequency of the received signal may vary during the day if there are ionospheric reflections in the transmission path. Variations due to this cause seldom exceed ± 2 parts in 10^7 .

Frequency and Time Adjustments

Some adjustments to the frequency of the standard, which is an Essenring oscillator constructed by the Radio Branch of the G.P.O., are necessary in order to keep within the stated tolerance. The standard has increased in frequency fairly steadily at the rate of about 2 parts in 10^9 per month since its installation in February, 1950. Nine adjustments were made between that date and February, 1953.

The seconds pulses are derived from the standard by division and consist of 5 cycles of 1000 c/s tone. The precision of the pulses is ± 1 micro-seconds, the time interval between

pulses being accurate to ± 2 parts in $10^6 \pm 2$ micro-seconds.

Experimental Low Frequency Transmissions

The frequencies allocated to standard frequency transmissions are not the most suitable for use within the United Kingdom and a special transmission on 60 kc/s using a power of 10 kW is therefore being made each day from 1429 to 1530 G.M.T. The modulation schedule is as shown in Fig. 1.

Reception Reports

The transmissions from MSF are still experimental and reports concerning reception, which should be addressed to The Director, National Physical Laboratory, Teddington, Middlesex, will

be welcomed.

At the time of going to press, MSF was being well received in South-West Surrey and Tunbridge Wells on 2.5 Mc/s. The 5 Mc/s transmission is also usable but the 10 Mc/s signal is much weaker.

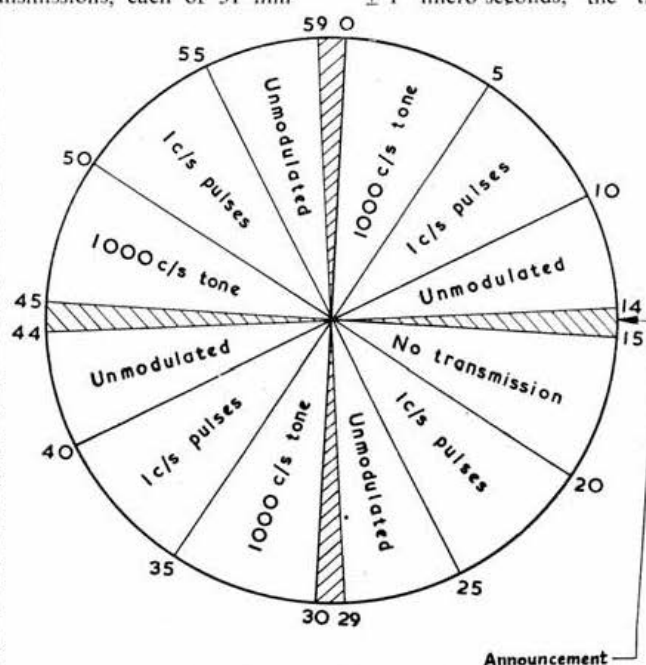


Fig. 1.—The hourly schedule of continuous standard frequency transmissions from MSF. Carrier frequencies: 2.5, 5 and 10 Mc/s. The three frequencies are broadcast simultaneously. When the 1 c/s pulses are used to modulate the carrier, the 59th pulse in each minute is omitted.

"Scientific Film Review"

THE first issue of a new quarterly magazine entitled *Scientific Film Review* contains critical appraisals of 17 new films, ranging from the purely scientific type on electricity to films on engineering, textiles and medicine. A specimen copy may be obtained from the General Secretary, Scientific Film Association, 164, Shaftesbury Avenue, London, W.C.2.

R.S.G.B. BULLETIN, June, 1953.

Clitheroe Hobbies' Exhibition

AN Amateur Radio Station (G2FOL/A) was successfully operated from the Amateur Radio stand organised by G3HKF at the Rotary Club Hobbies Exhibition in Clitheroe from April 23-25, 1953. Contacts were made with stations in Eire, France, Germany and the Orkneys and will be confirmed by special QSL cards upon receipt of cards bearing postal addresses.

Simple Inductance Meter

By R. WALLACE (G3FJC)*

The majority of amateurs have a collection of surplus chokes, coils and i.f. transformers, the frequency range and inductance values of which it is impossible to judge accurately by appearance alone. In order to make use of what was a questionable amount of junk, the author devised the measuring instrument described in this article.

THE instrument to be described is capable of measuring the inductance of coils and chokes from approximately $2\mu\text{H}$ to 1mH , and the resonant frequency of i.f. transformers and tuned circuits between the frequency limits of 200 kc/s and 150 Mc/s. The circuit, shown in Fig. 1, comprises a variable-frequency oscillator followed by a tuned-anode stage of r.f. amplification. The resonant frequency of the coil to be measured is indicated by a dip in the anode-current meter.

Construction

The prototype was made in two sections using two 6J6 valves, the first section tuning from 200 kc/s to 30 Mc/s, and the second from 30 Mc/s to 150 Mc/s. In this way continuous h.f. and v.h.f. coverage was obtained. Any type of triode valve should work satisfactorily, provided that it is capable of oscillating up to the highest frequency required.

The wiring of the v.h.f. section should be as short as possible if reasonable accuracy is to be obtained in this range. The use of a small coil turret is recommended, a suitable arrangement being illustrated in Fig. 2. The h.f. section can then be constructed to fit-in with the v.h.f. section.

The complete frequency range is covered by nine switched coils, details of which are given in the components list. A switch is used to connect either the h.f. or v.h.f. section in circuit as required, and the oscillator tuning condensers C1 and C2 are mounted on the same spindle so that one dial is sufficient for the calibration of all nine ranges. C3 and C4 are mounted in the same manner.

Calibration

The oscillator tuning condenser scale requires calibrating in kc/s and Mc/s over all nine bands.

* 45 Norton Park Road, Sheffield 8.

| COMPONENTS LIST | | | |
|-----------------|-------------------------------|-------------|-----------------------|
| C1 | 500 μF per section | C11, 13 | 0.001 μF |
| C2 | 50 μF per section | C12, 14 | 0.01 μF |
| C3 | 50 μF | R1, 2 | 22,000 ohms |
| C4 | 500 μF | R3, 4, 5, 6 | 47,000 ohms |
| C5, 6 | 50 μF ceramic | CH 1 | 250 μH |
| C7, 8, 10 | 200 μF mica | CH 2 | 1.5 mH |
| C9 | 100 μF ceramic | M | 0-5 mA.c. meter |
| | | VR7 | 100,000 ohms variable |

| | | |
|----------------|--------------|------------------|
| Coils: Range 1 | Wearite PA 1 | The two windings |
| " | " | " |
| " | " | " |
| " | " | " |
| " | " | " |
| " | " | " |
| " | " | " |
| " | " | " |
| " | " | " |
| " | " | " |

The h.f. section can be easily calibrated with the aid of a communications receiver, the output of the oscillator being located on the receiver scale. The same procedure can be used in the case of the v.h.f. section if an accurately calibrated v.h.f. receiver, having a range of 30-150 Mc/s is available; if not, Lecher wires may be employed, the appropriate formula being:

$$\text{Frequency (Mc/s)} = \frac{5905}{\text{Length (inches)}}$$

The anode tuning condenser should be calibrated in μF , and this is most easily done by substitution. A coil (of any reasonable size) and a fixed condenser (of capacity up to $500\mu\text{F}$) should be connected in parallel across the "X" terminals of the instrument. With the switch S4 in the "i.f." position (i.e., C3 and C4 disconnected), the oscillator tuning condenser C1 should be rotated until resonance is indicated by a dip in the anode-current meter. The fixed condenser is then removed, leaving the coil still connected to the terminals. Switch S4 should

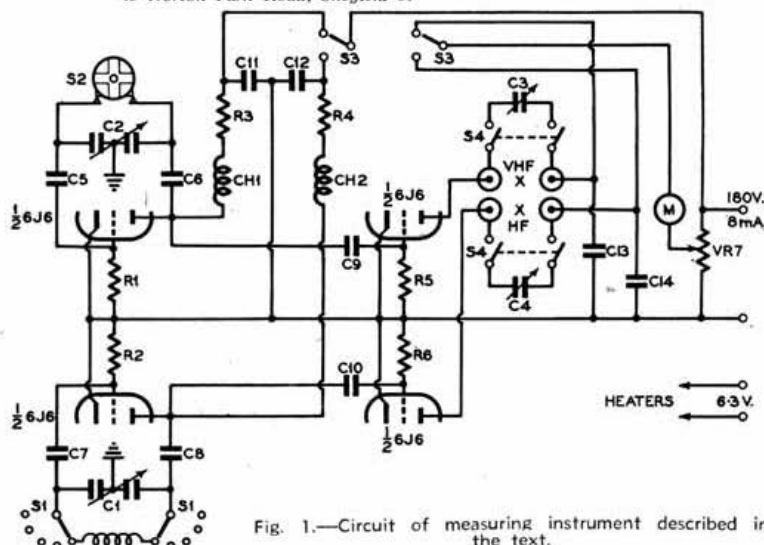


Fig. 1.—Circuit of measuring instrument described in the text.

be turned to the "h.f." position, and the anode tuning condenser C4 rotated until a dip in the meter reading again indicates resonance. At this point, the capacity of the variable condenser is equal to the value of the fixed condenser originally used. By repeating the process several times with different values of fixed condenser, a calibration curve showing capacity against condenser setting can be plotted.

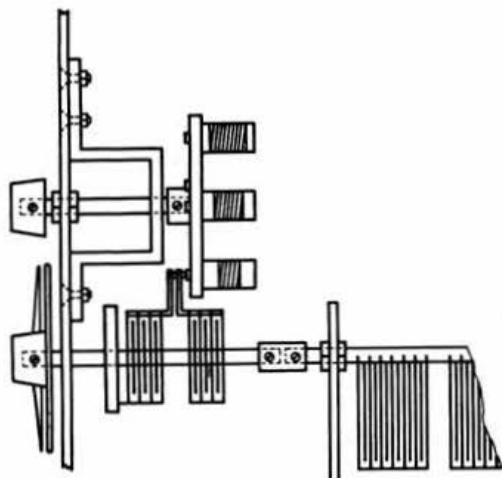


Fig. 2.—Diagram of suggested coil turret assembly. The actual layout will depend on the type of components available.

The inductance scale is calibrated in μH on the oscillator tuning dial by the use of an Abac (inductance, capacity and frequency scale). The anode tuning condenser should be set to $500\mu\text{F}$ for range 1, $200\mu\text{F}$ for range 2, and $50\mu\text{F}$ for ranges 3, 4 and 5. It is advisable to mark these values as fixed check points on the dial of C3.

The v.h.f. inductances can be calibrated in the same way if any Abac covering these frequencies is available otherwise the formula $L = 25181/Cf^2$ (where L is in μH , C in μF , and f in Mc/s) can be used to plot the various points.

Operation

To use the instrument for measuring i.f. transformers, turn switch S4 to the "i.f." position, thus disconnecting anode tuning condenser C3 and C4, and turn switch S1 to the appropriate

ate range. Rotate the oscillator condenser until the resonant frequency is indicated by a dip in the meter reading. The frequency can now be read off the calibrated dial. Parallel-tuned circuits can be measured in the same way.

For r.f. coils and chokes, switches S1 and S4 are set to the appropriate range, the anode tuning condenser being set to the specified check point for that range. The oscillator tuning condenser is again rotated until resonance is indicated by a dip in the meter reading, and the inductance value read directly off the oscillator scale.

It is possible to calibrate all nine frequency ranges and the inductance scale on to one 4-inch dial by using one half of the scale for the h.f. section, and the other half for the v.h.f. section (Fig. 3). The accuracy obtained is more than sufficient for the purpose for which the instrument was designed.

The power supplies are 6.3V for the heaters, and 180V h.t.; total current drain being about 10mA. The anode current of the amplifier valve (V2) is about 3mA, and on all ranges a pronounced dip in the meter reading should be observed at resonance.

The instrument can be made with reduced frequency coverage, using one section only, but it is worth while including the v.h.f. section, as the device can then be used as a variable frequency oscillator of very wide range, and has numerous applications. Good stability can be obtained, if desired, by connecting a small stabilising valve across the oscillator circuit.

LONDON U.H.F. GROUP

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road, at 7.30 p.m., on July 2, 1953. All u.h.f. enthusiasts welcome.

West German National Convention

AN ambitious four-day programme has been arranged for the D.A.R.C. National Convention, to be held this year in the buildings and grounds of the Alexanderhoehe in the forest town of Iserlohn, South Eastern Ruhr, from August 6 to 9. In addition to accommodation in hotels and private houses, a large tented camp is to be erected near the Alexanderhoehe for use during the period July 25 to August 15.

A 144 Mc/s station, at a site nearly 1,200 ft. above sea level, will be in operation during the Convention.

For a party of 15 or more members and friends travelling to Iserlohn together, CIT (England), Ltd. offer a special rate covering travelling and hotel accommodation. Members interested in this proposal are asked to write, without delay, to the General Secretary for further particulars.

Medway Coronation Hamfest

THIS year's Medway Hamfest will be held at 207, Luton Road, Chatham, on July 12, commencing at 2.30 p.m. Single tickets (price 1/6) and "All-in Family" tickets (price 2/6)—both including tea and drinks—may be obtained from either W. E. Nutton, G6NU, 42, Richmond Road, Gillingham, or the Hon. Secretary of M.A.R.T.S., 14, Connaught Road, Chatham. A full and varied programme has been arranged.

Borough Councillor

OLD-TIMER G. R. Silverthorne (GW2BG) has joined that little group of radio amateurs who devote a part of their life to Local Government work. He was a successful candidate in the recent municipal election at Abergavenny, South Wales.

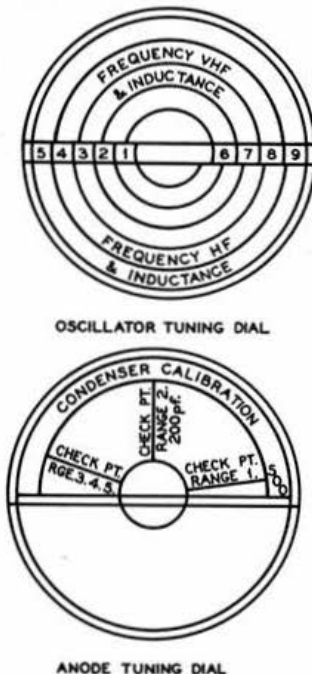


Fig. 3. Method of calibrating the oscillator and anode tuning dials.

European Societies meet in Lausanne

A REPORT of the proceedings at the I.A.R.U. Region I Conference at Lausanne will be published next month, when the material available has been correlated, by the R.S.G.B. Delegation. The purpose of this short article is to give a few impressions as a background to the Conference as a whole.

Whether one approaches Switzerland by air or train, the first sight of the serried ranks of Alpine peaks cannot fail to impress the traveller with their majesty and a sense of humility in the presence of so mighty a company.

The writer made his approach to Lausanne by train and as it leaves Vallorbe, the frontier station, there is soon a feeling of something different; a trim and tidy countryside, an absence of rubbish and litter in the factory yards, farmsteads and fields as they flash by, an orderly land where beauty and efficiency have wed to produce an effect quite strange to foreign eyes.

The City of Lausanne itself is spotless; one is moved to remark that a speck of dust would be regarded as a civic disgrace! The Hotel de la Paix, where the Congress was held, was no exception to this general impression and the arrangements made by the special committee of U.S.K.A., under the able leadership of Pierre Maeder, HB9CA, were a triumph of organisation.

Getting Together

During the afternoon and evening of Wednesday, May 13, the delegates were arriving; old friends like Capt. Per-Anders Kinnman, SM5ZD, the President of S.S.A.; Dr. Roberto Seisal, IIFA; Otfreid Luhrs, DL1KV (who visited the Festival of Britain Year Convention in London); Joe Musseche, ON4BK (whose work as an interpreter on the Technical Committee at the Paris Congress made such an impression), PA0DD and PA0LR; Johnny Oesterlund, OH2QM, recently a guest at the R.S.G.B. London Members' Luncheon Club; Archduke Anton von Habsburg, well known on the DX bands before the war; Willy Blaschek from Austria; Marcel de Marchville, F8NH, from

France, and so many others. Soon the terrace of the Hotel, with its wonderful view across Lac Lemman, was filled with radio amateurs from a dozen different lands, creating a babel of English, French, German and Italian comparable with short skip on 14 Mc/s!

We all realised that if we were to get through the business of the Congress in the three clear days available, some preliminary work was essential, so that evening was spent in discussions on procedure. Few of us got to bed before 1 a.m. with, however, the satisfaction of having saved valuable hours on the following day.

I.A.R.U. Region I (Lausanne) Conference

Countries Represented

| | |
|-------------------|-------------------------|
| Austria, O.V.S.V. | Italy, A.R.I. |
| Belgium, U.B.A. | Luxembourg, R.L. |
| Denmark, E.D.R. | Netherlands, V.E.R.O.N. |
| Finland, S.R.A.L. | Sweden, S.S.A. |
| France, R.E.F. | Switzerland, U.S.K.A. |
| Germany, D.A.R.C. | U.K., R.S.G.B. |
| | Yugoslavia, S.R.J. |

Belgian Congo (U.C.A.R.) was represented by U.B.A.; Iceland (I.R.A.) by E.D.R. and S.S.A.; Ireland (I.R.T.S.) by R.S.G.B.; Morocco (A.A.E.M.) by R.E.F.; Norway (N.R.R.L.) by E.D.R. and S.S.A.; Portugal (R.E.P.) by U.S.K.A.; South Africa (S.A.R.L.) by R.S.G.B.

Mozambique (L.R.E.M.), Southern Rhodesia (R.S.S.R.) and Spain (U.R.E.) were not represented.

The Conference Opens

Promptly at 9.30 a.m. on Thursday, May 14, the Conference was officially opened with several excellent speeches by representatives of the Swiss Government, the Swiss Army, the P.T.T. and of the City of Lausanne—and so to the first plenary session.

By unanimous choice, Capt. Kinnman, SM5ZD, was elected President of the Conference, PA0DD headed the Administrative Committee and HB9GA the Technical Committee. It is not the purpose of this article to deal with the deliberations of the Congress but we must pay tribute again to the excellent organisation.

The Committee Rooms were fitted with headphones and microphones for the use of delegates and, by the turn of a switch, an English, French or German simultaneous translation service was available—provided by interpreters from the I.T.U. Secretariat at Geneva. This alone saved hours of time. Secretarial and typing services were also to hand and again Swiss efficiency made itself felt throughout.

The three days were occupied by solid hard work from early morning until late evening, but there had to be some relaxation and this too, had been taken care of. On Thursday evening, delegates were conducted on a motor-coach tour



Getting Together

OZ7DR, G2IG, DL1KV, with HB9CA (Chairman, Technical Committee).

of Lausanne, winding back and forth along the terraced streets up to "The Signal," an eminence 1,000 ft. above the City where a splendid view of the lake and its mountain background was spread before us. On the following evening about twenty delegates were invited to the home of HB9MZ where they inspected his very fine station (two 813s in push-pull) but it was the house itself which captured the hearts of everyone. Set on a ledge of rock in the hillside about three miles east of Lausanne, this chalet-type building commands a view which beggars description. It is surrounded by stately pine trees and even the QRM from some of our Italian colleagues working one of their countrymen on 14 Mc/s, plus the polyglot background noise provided by the assembled company, failed to disturb the utter calm and peacefulness of the setting; not even a visit to the massive wine cellar succeeded in doing so either!

At the conclusion of the business meetings on Saturday, May 16, the delegates were transported to Lausanne station where a special train, drawn by one of the Swiss Federal Railways' enormous electric locomotives, stood waiting to take them to Chillon Castle. How they do manage things in HB-land! The driver of the train was HB9MW

Much better to spend the money on our own members!" In attending the Congress, that is precisely what has been done, money has been spent in our members' interests. In recent years, determined attacks have been made on our rights and privileges from many directions. At Atlantic City, amateurs suffered a setback due almost entirely to the fact that few European countries had an effective liaison with their licensing authorities. The main purpose and achievement of the Paris and Lausanne meetings has been to strengthen the ties between the I.A.R.U. Societies in Region I, to exchange information and help one another in the fight to retain our bands; for remember that however good our own relations may be with the G.P.O., a few European delegations at an I.T.U. Conference, without the right ideas on Amateur Radio, can wreck everything.

Our friends abroad are determined to see that this will not happen. They are also prepared to back the Region I Bureau not only with information but also financially. We foresee the not far distant day when Europe and Africa will speak with a united voice on Amateur Radio matters, just as the American countries do to-day.

Quite apart from the formal business transacted at meetings such as that at Lausanne, are



International Rag-chew.

A lunch-hour picture at the Hotel de la Paix, ITAXD, G2MI, PA0LR in the foreground, with F8NH, PA0DD, DL3DC and OH2QM at the back (left to right).

and one of the train staff was also an amateur. HB9LA gave a running commentary over the p.a. equipment as we sped at 75 m.p.h. (the standard speed for all trains on this remarkable system!) along the lakeside. At Chillon station the party was met by the local choir in costume and greeted with songs.

After being conducted round the Castle—a grim old place in a sylvan setting—we were regaled with the local wine and further songs by the choir. Later, as the train pulled away, we listened to "Auld Lang Syne" being sung in French!

After arriving back in Lausanne, we changed for the banquet and hamfest arranged in our honour by U.S.K.A.

On the following day a party of us travelled to Berne in company with Harry Laett, HB9GA, who escorted us on a scenic motor trip to Thun and Thunasee, from where we glimpsed the mighty Jungfrau. Back in Berne we were shown over the P.T.T. Television Laboratories, of which HB9GA has charge.

Again the extraordinary neatness of everything and the beautifully made equipment deeply impressed everyone, as did the demonstration of film transmission on 625 lines.

The Value of the Conference

Well, as someone recently remarked to us: "What is the good of all this International stuff?"

The many informal discussions which take place. A hundred and one difficulties can be ironed out by personal contact, things can be said to individuals over a glass of beer or a cup of tea which would give grave offence if said in open meeting. Thus problems can be settled to mutual advantage.

A chat on over-modulation with some of our other European colleagues did much to put our point of view on this matter and will, we feel, do quite a lot of good.

Matters of detail on the working of the various QSL services and many other exchanges of ideas took up much of the "off-duty" time, all of which will combine to make Amateur Radio just that bit easier for everyone.

This record would not be complete without reference to a most interesting and well arranged exhibition of Amateur Radio gear which was presented by the U.S.K.A. in the Hotel. Swiss amateurs are fortunate in that a great amount of historical apparatus has been preserved, some of which was on show and created much interest.

And now the work begins. The newly-elected Region I International Committee have a big job ahead to preserve and develop the unity which was achieved at this remarkable meeting.

Oh, that all international meetings could dispose of their business in such an atmosphere of goodwill and friendship!

A. O. M.

Low-Power Modulator for the B2

By A. W. GRIMSDALE (G3CJU)*

Portable equipment should be light, compact, and economical in current consumption: the B2—well-known as a war-surplus transmitter-receiver for c.w. working—fulfils most of these requirements. The simple modulator described in the following article, although originally intended for the main 1.7 Mc/s transmitter at G3CJU, was designed to provide 'phone facilities for use with the B2 equipment, or any other low-power transmitter.

THE modulator consists of a 6SJ7 valve acting as microphone amplifier, resistance-capacity coupled to a 6C5 driver stage, transformer-coupled to the grids of a 6N7 double-triode operating as a zero-bias class-B push-pull modulator. The driver and modulator transformers are those used in the BC625 (the transmitter section of the SCR522); they were chosen for their small size and power-handling capacity. For identification purposes, the circuit and component reference numbers for the driver and modulator transformers are T159 and A103016 and T160 and A103018 respectively.

No value is given in the components list for R1 (the 6SJ7 grid resistor), as this component is incorporated in the Cosmocord Mic-6 insert microphone used at G3CJU. It will, therefore, be necessary to choose a resistor of suitable value for the microphone in use, or to modify the input circuit of the modulator if a different type of microphone is employed.

intended as a guide to chassis construction, and may need some alteration to suit the dimensions of the "spares" box in question, as slight variations in size may occur.

Power Supply

At the author's station power supplies are derived from a small general purpose power pack, used also for a BC221 frequency meter and other small pieces of equipment. The requirements are: 250-300 V at about 70 mA for h.t., and 6.3 V at 1.4 A for l.t. In the original circuit (designed by VU2CS), however, the 6N7 valve was provided with auto-bias resistors, the anode h.t. supply being obtained from the 500-volt line in the B2 power pack. The 6SJ7 and 6C5 h.t. requirements (via dropping resistors) and l.t. supplies can also be derived from this unit if required, but the transmitter should be run at a lower power to prevent overloading the power pack; r.f.c.4 in the 500-volt line should preferably be replaced by a

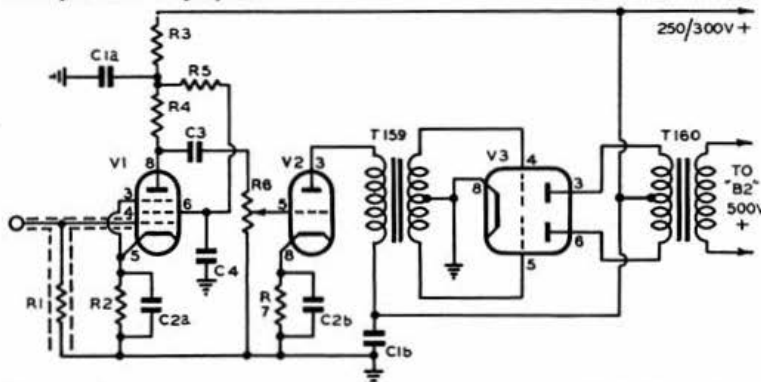


Fig. 1.
Circuit of the simple low-power modulator.

C1a, 1b, 8+8 μ F, 450 V wkg.; C2a, 2b, 25+25 μ F, 25 V wkg.; C3, 0.01 μ F; C4, 0.005 μ F; R1 (See Text), 4.7 megohms with Mic-6; R2, 1,000 ohms; R3, 22,000 ohms; R4, 240,000 ohms; R5, 1 megohm; R6, 500,000 ohms; R7, 1,500 ohms; (All resistors 1/2W); V1, 6SJ7; V2, 6C5; V3, 6N7; T159, driver transformer, ratio 1:2; T160, modulation transformer, ratio 2:1.

Construction

The modulator (the circuit of which is shown in Fig. 1) was built on conventional lines. Most of the space on the upper side of the chassis is occupied by the two transformers and the valves. All-metal valves are preferable, since, if the height of the valves exceeds that of the transformers, it may be necessary to reduce the depth of the chassis in order to house the modulator in the B2 spares box.

The smaller components (i.e. resistors, condensers, gain control and microphone jack) are housed beneath the chassis. To avoid congestion of the available space, miniature components should be used where possible. Since the setting of the gain control is not likely to require frequent readjustment, a pre-set potentiometer for screw-driver manipulation can be used. Care should be taken when fixing clips for decoupling condensers to ensure that no screw-heads protrude from the sides of the chassis, as it may not then fit easily into the "spares" box.

The measurements specified in Fig. 2 are

* 164 London Road, Newbury, Berks.

miniature iron-cored choke capable of carrying a current of 120 mA, the r.f. choke itself being connected in series with the 250-volt line.

Operation

The secondary of the modulation transformer should be connected in series with the h.t. feed to

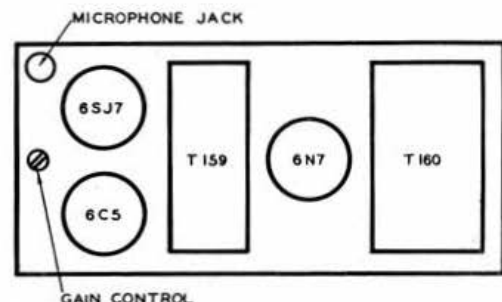


Fig. 2.—Component layout diagram (not to scale). With the transformers specified, a chassis, size 3 1/2 in x 7 1/2 x 2 1/2 in, will fit most B2 spares boxes. The actual layout adopted will depend on chassis dimensions.

the B2 p.a. stage. A convenient arrangement is to break the h.t. line at a closed-circuit jack mounted on the front panel of the transmitter, the modulation transformer secondary being connected to the corresponding plug, so that the B2 can, if desired, be restored to c.w. operating conditions by simply removing the plug from the jack.

This method is only suitable for anode modulation; if anode and screen modulation is required, it will be necessary to disconnect the screen of the 6L6 from the 250-volt line and feed it, via a suitable resistor, from the 500-volt supply.

Results

Using only a 40 ft. end-fed aerial some 30 ft. high, consistently good results have been obtained on both 3.5 Mc/s and 7 Mc/s. In the near future, the writer intends to carry out comparative tests with the main high power transmitter on 14 Mc/s. Anode modulation only has been used to date.

Although the modulator described was designed for use with the B2, it is capable of good results with the majority of transmitters up to 25-watts input.

RECEIVER DESIGN FOR 70 cm.—(Continued from p. 524)

a voltage divider network) when operating normally. The mixer stage is aligned by using a fundamental oscillator or transmitter set to about 435 Mc/s. After this has been done, the bias on the tripler may be adjusted until optimum crystal current (80 to 120 μ A) is flowing. The meter used for this measurement should have a resistance of 500 to 1,000 ohms in order to bias the crystal; it should be either permanently wired into the circuit or replaced by an equivalent resistance.

Results

Provided reasonable care is taken in the construction of the converter, it will be possible to hear a signal well below the 1 μ V level. Using the converter described with an R1155 as tunable i.f., it is possible to find the output of a signal generator set at 100 db below 30 mV without difficulty.

* * *

One final point: a well designed, properly matched aerial, high and in the clear, can make all the difference between hearing or missing a signal, no matter how good the converter may be.

References

- Electronic Engineering*, February and March, 1953.
- V.H.F. Techniques, Volume II*, Radio Research Laboratories.
- Radio Receiver Design*, K. R. Sturley.
- R.C.A. Review* 332, 1942.
- R.S.G.B. BULLETIN, August, 1949.

Continental Interference to Television

ON the evening of May 27 there were widespread complaints from viewers receiving their television programme from the B.B.C. stations at Alexandra Palace and Holme Moss that the pictures and the accompanying sound were spoilt at times by heavy interference. Similar, though generally weaker interference has occurred on other occasions recently. This was caused by stations on the Continent which are not receivable in this country except on occasions when natural conditions favour long-distance propagation at television wavelengths. Such conditions, which are caused by an unusual degree of electrification in the upper atmosphere, are liable to occur at this time of the year.

Direct-reading Low-ohms Resistance Meter

by P. R. A. Dolphin,
B.Sc. [Eng.], Grad. I.E.E. (G3ELH)*

IT is sometimes necessary to be able to differentiate between low resistance and a short circuit. To do this in a simple manner, the instrument here described was evolved. It measures resistance up to 5 ohms by comparing the voltage drop across a standard resistor and an unknown resistor when the same current flows through both. By selecting a 5 ohm resistor as the standard and using a 0-500 microammeter as a 0-0.5 voltmeter, it is possible to use the calibrated scale to read resistance, each 100 microamp (0.1 V) division representing 1 ohm.

The instrument may be constructed in any convenient form, provided short, heavy leads are used in that part of the circuit (Fig. 1) which includes the battery and the resistors R1, R2 and R3.

The method of operation is as follows. With the meter switch at "set" and the variable resistor R1 at maximum, the resistance (R3) which it is desired to measure, is connected across the terminals A and B. R1 is then adjusted so that the meter reads exactly full scale. The meter switch is then moved to the "read" position, the deflection of the meter then indicating the resistance of R3 directly.

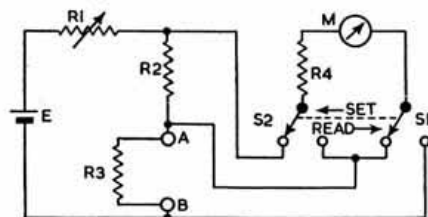


Fig. 1.—Circuit of the direct reading resistance meter.
R1 10 ohms, variable
R2 5 ohms, $\frac{1}{2}$ W 1% high stability
R3 Unknown resistance
R4 1,000 ohms, less meter internal resistance
M 500 μ A m.c. meter
S1, S2 D.P.D.T. switch
E 1.5 V cell, type U.2
A, B Insulated terminals with large contact area

Absolute accuracy is not, of course, possible as the meter passes a finite current, but as the current through the circuit to be measured is never less than 75 mA and the meter current is only 500 μ A, this is not of great importance. It is imperative however, that the standard resistor R2 should be accurate. A $\frac{1}{2}$ watt, 1 per cent. high stability type is recommended.

Care must be taken in order to obtain accurate results. If the circuit to be measured cannot be connected by short, heavy leads, the resistance of the leads should be measured separately and the value subtracted from the reading actually obtained. When making low resistance measurements, contact resistance is also important. For this reason, the terminals should be clean and tight while the test leads should make really good contact with the circuit to be measured.

* 78 Wodeland Avenue, Guildford, Surrey.



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

AT a recent meeting of the R.S.G.B. Technical Committee consideration was given to the question of V.H.F. Policy in view of the considerable increase in popularity of our higher frequency bands. As a preliminary step it was decided to arrange a meeting between representatives of the R.S.G.B., The Television Society, The British Amateur Television Club, *The Short Wave Magazine*, *The Radio Amateur*, and other interested parties to discuss the planning of the 2 m and 70 cm bands and other points of mutual interest. In addition, three sub-committees were set up to give early consideration to the following problems:—(a) V.F.O. design for 2 m. (Messrs. Allen and Hammans); (b) Utility Frequency Modulation for 2 m. (Messrs. Corfield and Mathews); (c) V.H.F. and U.H.F. Aerial Design (Messrs. Charman and Mathews).

The Regional Ladders.

The present series of Regional V.H.F. Ladders has all but run its twelve months' course and readers are reminded that final claims for stations worked between July 1, 1952, and June 30 this year should reach the V.H.F. Editor as soon after the end of the period as possible to allow ample time for checking and publication of the final positions in the August issue of the BULLETIN.

As both criticism and approval have been expressed on the question of these "Ladders," members' views are invited as to whether they should be continued in their present—or some other—form during the next twelve months.

Several enquiries have been made in regard to the Regional status of the Channel Islands. The islands do not form part of any R.S.G.B. Region but they count as a separate country.

The R.S.G.B. Open Two Metre Contest.

Although somewhat patchy, conditions were sufficiently good on the whole to make the event really interesting; one never knew when some station normally out of range was going to show up. During the late evening of May 2 and the early hours of the following morning signals from the north and north-east improved considerably, G3MY/P (6 m. S.W. of Sheffield), G4JJ/P (6 m. S. of Barnsley, high up in the hills) and G3CCH (Scunthorpe, Lincs.)—all good signals—were heard for the first time at G2UJ. GW5MA/P, operating from a mountain top near Blaenavon, Monmouth, was an excellent signal for the distance. (Thanks, Bob, for your fine co-operation.—W.H.A.). Very little fading marred his S8 transmission and he was still coming in at S7, with rather more tendency to fade, at 11.30 B.S.T. on the Sunday morning.

Many of the well-known stations were conspicuous by their absence, while others had made

unexpected changes in frequency, evidently with the object of hooking those who started searching from the I.f. end of the band.

As the contest drew to a close a Continental "opening" occurred but only the most easterly British stations were able to add in this way to their score. One of the lucky few was G6LI who managed to contact DL1LB just before "time."

Moonshine.

The leg of the v.h.f. world has been well and truly pulled by our contemporary *DL-QTC*. In their April issue appeared a story—complete with photograph of a somewhat eccentric-looking beam aerial and a "character" peering at it with a theodolite—telling how DL3QA and W1RFU "made it" across the Atlantic on 2 m. by using the moon as a reflector.

Coming so soon after the moon-shooting story in *QST* last March, mention of which will be found in our issue of the same month, it did at first sight look feasible, particularly with all the circumstantial evidence which embellished the *DL-QTC* article. Some doubts arose, however, on reading the description more carefully. For one thing the reports of T9 did not seem to fit in very well with the extremely weak and rough reflected signals reported on the American tests with far more refined apparatus. Headquarters therefore decided to check things up with A.R.R.L. before rushing in where—for some unknown reason—the more sensation-loving elements of the daily press had failed—or feared—to tread.

Ed. Tilton, V.H.F. Editor of *QST*, left Headquarters in no doubt whatever that, far from being an accomplished fact, nothing was known of the feat at his end and that the most surprised amateur in America was W1RFU when informed of his European fame!

It was a good effort, *DL-QTC*—next April try pulling the other leg, it's got bells on!

(D.A.R.C. have now advised Headquarters that the moon story was indeed moonshine. It was all part of an April Fools' Day joke.—Ed.).

Two Metre News.

Following up the suggestion made last month by G3BHS that there should be a north and south session on 2 m. on Friday evenings, G5MR (Hythe, Kent) states that he will be active from 1900 to 1930 and from 2200 to 2300 B.S.T. on Fridays for contacts with Northern and Midland stations. His frequency is 145.152 Mc/s and N.G.R. 61/153352.

G3AEP (Whittlesey, Cambs.), since his return to the band six weeks ago, has worked 38 stations and makes his first appearance on the Regional Ladder. He operated on 2 m. during 1950/51 so that he is not, strictly speaking, a newcomer to 2 m. as was implied last month.

* 32 Earls Road, Tunbridge Wells, Kent.

G3FIJ (Colchester, Essex) worked ON4HC, ON4IW, PA0LDG and PA0WO on 'phone and F3LQ on c.w. on April 23. After the contest ended on May 3, DL3VJ/P and PA0VLM were contacted on 'phone and PA0RK on c.w. In all, 16 new stations were raised during the month. Others active on 2 m. in mid- and north-Essex include G2BCB, CZS, 3ANB, WS, 4AC and 4OT.

G3GBO (Denham, Bucks.) would be interested to hear from anyone in the N.W. of England—Cheshire, Lancashire, etc.—willing to run skeds., preferably in the morning.

G3EMU, ploughing a rather solitary 2 m. furrow in Canterbury, obtained an RST 579 report from DL1LB (Emden), on the first test of a new transmitter running at 40 watts to a pair of push-pull 8012s.

GC3EBK (Guernsey), having made a successful appearance on the band during the spell of good conditions in March, has changed his location and is now re-assembling his gear, which includes a modified SCR522 transmitter (input of 25 watts), and a G2IQ-type converter into a *Hallicrafters* SX23. The aerial is a 4-element Yagi fed with 75 ohm balanced line.

G2DHV (Lewisham, S.E.13) operates on 144.72, 144.99, 145.206 and 145.314 Mc/s with a 4-element indoor Yagi. A 5-over-5 and an 8-element colinear array are under construction and transmitter input will shortly be increased to 50 watts.

During March, **G5YV** (Morley, Leeds) worked 90 stations outside the British Isles.

G3WW (Wimblington, Cambs.) worked 135 stations and heard another 11 between April 12 and May 6. This fine total includes 100 worked during the R.S.G.B. Contest. As the bag included 4-GWs, 1-F, 4-ONs and 3-PAs, activity can hardly be said to be low these days. During the Contest 'WW' noted that G3BEX/P (Devils Dyke, nr. Brighton) was a strong and consistent signal, as did many other people, judging by the number of contacts 'BEX' effected.

G3WW and **G2HOP** operated portable 3 miles N.W. of Oakham, Rutland, on May 10. The site was 637 ft. a.s.l. and 17 stations were worked (including G8AO/MM), between 1715 and 2025 B.S.T. when, nearly frozen, the operators decided to call it a day. G2AVQ, 3ABH, 4SA and 6RH were all called without avail.

G4FB (Tonbridge, Kent) noticed a curious effect on signals from G3BEX/P on May 3. At about midday, when London stations were reporting him S9, his signal with 4FB was only S3/4 with the 6-element stack in any position, which seemed to indicate that the signal was arriving vertically. Towards 1800 B.S.T. 3BEX/P came up to a good S6 and the beam became normally directive. DL1LB was a steady RST 579 signal from 2100 to at least 2230 B.S.T. and PA0FC and PA0JOB were also heard at good strength.

G3GHO (Rode, Northants) worked G2FO (Durham) and PA0FP on April 23 and found May 4 to be an even better day than those in March although not many operators appeared to be taking advantage of it. Six DL stations were heard, including DL9SY who worked G6NB with an input of only 5 watts. 'GHO' has replaced his 4-element Yagi with a 6-element stack with a noticeable improvement in the strength of signals. He is listening each evening for GM3EGW at 2300 B.S.T. when the latter has a sked. with G2FO, but so far the Scottish station has not been heard.

New Form of TVI

Following the opening of the Brighton TV booster station in Channel 3, severe interference is being caused on the 2 m. band by, presumably, the second harmonic of the oscillators in certain

Regional V.H.F. Ladder

TWO METRE BAND

| Psn. | Call & Location | Worked | | |
|------|---|---------|----------|-----------|
| | | Regions | Stations | Countries |
| 1. | G3BW <i>Whitehaven, Cumb.</i> | 15 | 63 | 5 |
| 2. | G5YV <i>Leeds, Yorks.</i> | 14 | 374 | 12 |
| 3. | G3WW <i>Wimblington, Cambs.</i> | 13 | 283 | 11 |
| 4. | G2HIF <i>Wantage, Berks.</i> | 13 | 115 | 9 |
| 5. | G3GHO <i>Reade, Northants.</i> | 12 | 194 | 8 |
| 6. | G6XX <i>Goole, Yorks.</i> | 12 | 108 | 10 |
| 7. | G6LI <i>Ludborough, Lincs.</i> | 12 | 80 | 7 |
| 8. | G5DS <i>Surbiton, Sy.</i> | 11 | 248 | 7 |
| 9. | G2YB <i>Caversham, Berks.</i> | 11 | 235 | 7 |
| 10. | G6RH <i>Bexley, Kent.</i> | 11 | 233 | 9 |
| 11. | G6TA <i>London, S.W.12</i> | 11 | 179 | 4 |
| 12. | G3FD <i>London, N.14</i> | 11 | 140 | 7 |
| 13. | G4RO <i>St. Albans, Herts.</i> | 11 | 136 | 4 |
| 14. | G3FAN <i>Ryde, I.O.W.</i> | 11 | 115 | 4 |
| 15. | G6YU <i>Coventry, Warks.</i> | 11 | 81 | 7 |
| 16. | G2DKH/P <i>Stanley, Co. Durham.</i> | 11 | 81 | 6 |
| 17. | G2FNW <i>Melton Mowbray, Leics.</i> | 11 | 78 | 3 |
| 18. | G3CBO <i>Denham, Bucks.</i> | 10 | 224 | 7 |
| 19. | G2FJR <i>Sutton Bridge, Lincs.</i> | 10 | 141 | 6 |
| 20. | G3HBW <i>Wembley, Middx.</i> | 10 | 113 | 4 |
| 21. | G3BHS <i>Eastleigh, Hants.</i> | 10 | 103 | 4 |
| 22. | G5MR <i>Hythe, Kent.</i> | 10 | 92 | 6 |
| 23. | G3DO <i>Sutton Coldfield, Warks.</i> | 10 | 91 | 4 |
| 24. | G5BM <i>Cheltenham, Glos.</i> | 10 | 86 | 4 |
| 25. | G3GOP <i>Southampton, Hants.</i> | 10 | 81 | 2 |
| 26. | G3BNC <i>Southsea, Hants.</i> | 10 | 75 | 8 |
| 27. | G2AHP <i>Perivale, Middx.</i> | 9 | 107 | 2 |
| 28. | G3FIJ <i>Colchester, Essex.</i> | 9 | 78 | 7 |
| 29. | G8PX <i>Oxford.</i> | 9 | 78 | 2 |
| 30. | G3BVU <i>Witney, Oxon.</i> | 9 | 70 | 3 |
| 31. | GW8UH <i>Cardiff, Glam.</i> | 9 | 65 | 3 |
| 32. | G3ACS <i>Manchester 8.</i> | 9 | 36 | 3 |
| 33. | G2DDD <i>Littlehampton, Sx.</i> | 8 | 81 | 5 |
| 34. | G3AEP <i>Whitlesey, Cambs.</i> | 8 | 38 | 1 |
| 35. | G5UM <i>Bulls Green, Herts.</i> | 7 | 122 | 4 |

SEVENTY CENTIMETRE BAND

| Psn. | Call & Location | Worked | | |
|------|---|---------|----------|-----------|
| | | Regions | Stations | Countries |
| 1. | G2FKZ <i>London, S.E.22.</i> | 6 | 20 | 2 |
| 2. | CW2ADZ <i>Llanymynech, Mont.</i> | 6 | 13 | 2 |

TV receivers. These are generally T6 in quality and are daily becoming more numerous. This information comes from **G3FRG** (Worthing). (A similar trouble has been reported from the Glasgow area.—Ed.)

G8VN (Rugby) appeared on 2 m. on April 28 with very low power and a wire dipole slung across the room. Working **G6NB** (Brill, Bucks.) at the first attempt and receiving a report of RST 579 so encouraged him that he installed a 3-element Yagi in the roof-space and with 12 watts input to an 832 succeeded in contacting 15 stations in eight counties. Activity is normally between 2000 and 2100 B.S.T. and occasionally from 2330 to 0030 B.S.T. on 144.486 Mc/s. Reports of reception at over 100 miles are requested.

Two Metre News from Scotland.

GM3EGW (Dunfermline, Fife) attempts to answer the query in the April BULLETIN "Where were the GMs during the March openings." 'EGW has a sked with **G2FO** (Stockton-on-Tees, Co. Durham) and seldom has a failure over the 140-mile path. He is much better situated from a v.h.f. point of view than are the majority of GMs. The Pentland, Lammermuir and Cheviot ranges of hills probably have a secondary effect in causing the break-up of temperature inversions. The fact remains that although **GM3EGW** was on the band for 7½ hours on March 1 he only heard **G5YV** and **G8GL** and a station calling **PA0NL**. On March 8, **G2FO** was readable off the Aurora and the best DX on the following day was **G3COJ** (Hull). **G6XX** appeared on the 11th. The next day **G5QU** (Redcar, Yorks.) and **G8GL** (Northallerton, Yorks.) were worked; **G2FCL** (Shipley) and **G5YV** were heard, the latter at S9.

A path to Northern Ireland developed on the 13th, with **G12FHN**, **G13BIL** and **G13FJX** all coming in at great strength.

Conditions in Dunfermline were good again towards the end of April. **G5BD** (Mablethorpe, Lincs.), with a new beam, was worked several times on the 21st. **DL1LB** was just audible. A contact was made with **PE1PL** on April 22 at 2252 B.S.T.—believed to be the first GM/Continental 2 m. QSO—the Dutch station maintaining an average S5 signal with sudden peaks to S7. After a contact with **G6LI** on April 23 conditions deteriorated and the daily sked, with **G2FO** rarely yielded signals above S3.

From this account it would appear that conditions are the main cause for the lack of Scottish signals on 2 m. south of the border. The story also shows how one amateur keeps the v.h.f. flag flying for what must seem scant reward. For this reason

full reports of any reception of Scottish v.h.f. stations in the Midlands or south of England are requested.

Full Power 2m. P.A.

G6LI (Ludborough, Lincs.) is very satisfied with the performance of his new all-brass p.a. stage with enclosed lines. This uses a pair of 826s and is the result of much experiment and mechanical ingenuity in getting the shortest possible r.f. connections combined with the necessity for adequate ventilation of the valves when running at an input of 150 watts. The twin anode lines are mounted in a brass box 9 in. long, 6 in. wide and 4½ in. deep, the 826s being mounted vertically at one end. The grid lines are also boxed and mounted adjacent to the grid tags on the valve holders, allowing sufficient room between the two boxes for the neutralising condensers below the valves. In a previous "open" design, these condensers had been placed in the r.f. field of the anode lines and thus became very hot. Tuning is effected in each box by screwing circular plates nearer to or farther away from tabs sweated to the lines at their "hot" ends. Aerial coupling is variable by means of a hairpin loop mounted on a shaft which is attached at one end to the centre contact of the coaxial aerial socket; the other end is connected to the side of the brass box.

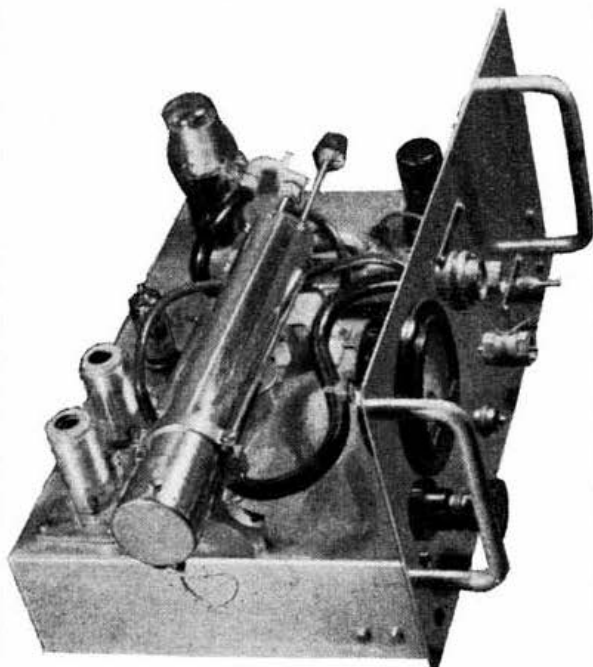
Seventy Centimetre Topics.

G5UM raises the question of the best type of feeder for use on the 70 cm. band. Widespread popularity of 300 ohm ribbon and tubular feeders is evident which seems a little strange bearing in mind that the spacing is such that rain and, in urban districts, dirt on the web between the wires can cause quite serious losses due to alteration of impedance and a consequent increase in the s.w.r. In addition, the spacing of the wires tends to cause increased radiation losses at the higher frequencies. Readers' views on the pros and cons of coaxial line (with or without a balun transformer) and 75, 100, 150 and 300 ohm balanced feeders would be interesting to newcomers and to the old hands alike.

Over the Pennines

G5YV has at last succeeded in pushing his 70 cm. signals over the Pennines, having been heard by **G3DA** (Liverpool) at 60 miles and **G3AOO** (Manchester) 37 miles distant. Solid contacts would be impossible under normal conditions as signals are broken up by "scintillation" fading into a series of short bursts. 2 m. signals, on the other hand, are always reported S9 by these two stations.

G3FIJ has a transmitter with an 832 tripler on 435.18 Mc/s and a 5-element Yagi at 40 ft. The converter employs Lecher lines in a circuit designed by



A general view of the high performance 70 cm converter described in this issue.

G3EJL, and a tunable oscillator. The first report on the 70 cm transmission was received from PE1PL during a daily lunchtime sked. on 2 m.

At the Lincolnshire Hamfest on May 10, G8TL spoke on the subject of portable gear with particular reference to the s.e.o. 70 cm transmitter and superregen. receiver designed by G3ECA which are proving so popular in the London area. Considerable interest was shown in this simple apparatus and a number of circuits and instruction leaflets were distributed among those present. We shall be interested to hear how these newcomers fare on the band. (A description of the 70 cm gear developed by G3ECA will appear shortly.—Ed.).

In the East London area G2BRH, 3DNL, ECA, HWG, IRR, JCF, 6AH, HU and 8TL, all using G3ECA gear, are active between 420 and 432 Mc/s, usually around 1900 B.S.T. on weekdays and 1100 B.S.T. on Sundays.

B.R.S. 19283 reports that G2DDD (Littlehampton, Sx.) recently worked G3FAN (Ryde, I.O.W.) crossband from 2 m. and that the latter station has contacted G3ARL (Sandown, I.O.W.) and G3GOP (Southampton) on 70 cm.

G3FRG, who has a tripler in operation, would welcome reports and crossband contacts from 2 m. along the south coast. His frequency is 434.38 Mc/s.

GC3EBK has completed a 70 cm. converter using the cavities from a glide-path receiver and a crystal mixer and hopes to be active shortly.

GW2ADZ (Llanymynech, Mont.) has worked G2FNW (Melton Mowbray, Leics.) at 100 miles and G3GZM (Tenbury Wells, Worcs.) and has had a crossband contact with G2BFT (Solihull, Birmingham). The regular sked. with G3BKQ (Leicester) at 85 miles continues. On May 4 conditions were excellent for about one hour around sunset and QSOs were obtained with G2FNW, FKZ, 3BKQ, GZM and IOO. The latter operates on 432.54 Mc/s and has a 16-element stack.

The call-sign of **G3BKQ** is rapidly becoming well known on 70 cm. but he is no newcomer to the band, having taken part in the first of the R.S.G.B. Tests in 1949. His activities were then cut short by an attack of rheumatoid arthritis, but he was sufficiently recovered from this distressing complaint to appear again on the band last September with completely rebuilt 2 m. and 70 cm. gear. Contacts have been made with 28 different stations on 70 cm. since January 1 this year and it is clear from the large number of times certain stations have been worked that systematic skeds. are a feature of this station's operation. Apart from regular tests with GW2ADZ, ON4UV (250 miles) has been worked twice on 'phone and several contacts made with stations in Greater London, at distances of 80 to 100 miles.

G2RD's report of activity in the London area for the month ending May 20 reads:—G2DD, FKZ, HDJ, MV, RD, WJ, G3ECA, EOH, FP, GDR, 4KD, 5AA, CD, DT, RD, TP, 6NF, YP, 8KZ, SK, VR.

10,000 Mc/s.

It is hoped that the recent series of articles in the R.S.G.B. BULLETIN on *Amateur Microwave Experiments*, will lead to an increase in interest in this, our highest frequency band. The author, G3BAK, proposes to start a *Microwave News Letter*, the main object of which will be to bring

interested parties into contact and to exchange both information and apparatus. Dr. A. H. Koster (G3ECA), 195, Woodford Avenue, Ilford, will be looking after the project in the London area and those interested are cordially invited to get in touch with either him or G3BAK.

"The Upper Spectrum"

The Summer issue of the official journal of the International V.H.F. Society contains several articles of considerable interest to 2 m. enthusiasts. G6UH describes a pre-amplifier employing three Mullard EC91 triodes in which special attention has been paid to the problem of interstage matching. The first valve is connected as a cathode follower and caters for coaxial input of between 50 and 100 ohms impedance. The second and third stages operate as e.g.t., and output to the mixer and oscillator stages is via a coaxial line. A noise factor slightly better than 4 db and a gain of 40 db is claimed for the pre-amplifier which is obviously the result of much painstaking experimental work.

A contribution on v.h.f. receiver design by EI2L contains much practical commonsense. ON4BZ contributes a full description of a 2 m. converter which, with a claimed noise factor of 3 db, is becoming deservedly popular at the better equipped Continental stations.

A full technical review is also given of what is, to our knowledge, the only commercial 2 m. converter available in the United Kingdom. This follows the well-tried design of p.p. neutralised 6J6 r.f. stage and p.p. 6J6 mixer with a 6C4 cathode follower output and 9002 tunable oscillator, and is manufactured by *Electrad Radio* of Belfast.

Other features of this issue include a simple explanation of noise factor and descriptions of a number of British and American v.h.f. stations.

70 cm. Skeds. and Frequencies.

GW2ADZ (Llanymynech) and **PE1PL** (The Hague) have the following sked. on Saturday mornings:—0830-0835 B.S.T. GW2ADZ transmits on 432.85 Mc/s; 0835-0845 B.S.T. PE1PL transmits on 435.0 Mc/s. GW2ADZ and G2FKZ (London, S.E.22) run a sked. at 2000 B.S.T. on Monday evenings.

G2DD urges the running of early morning skeds. on 70 cm. and suggests 0800 B.S.T. as conditions are often good at that time. Most London stations are active daily around 1900 B.S.T.

Other frequencies in use include G3CSC (Prescot, Lancs.) 433.08 Mc/s, G3GZM (Tenbury Wells, Worcs.) 433 Mc/s approximately, G3IOO (Oswestry, Salop.) 432.54 Mc/s, EI2W (Dublin) 432.50 Mc/s. The latter station is active regularly on Sundays and Mondays at 2200 B.S.T.

V.H.F. Listeners.

W. Burton, A.1240 (Sunderland) is now active on 2 m. and wishes to record his thanks to G8AO who rendered much assistance in getting his converter working.

During the 2 m. Open Contest **B.R.S. 19283** (Worthing, Sx.) heard, among others, G5YV, 8QY/P, GW2ADZ, GW5MA/P and F8NW and, on May 6, G4SA, 5YK, YV, F3JN, 8EC, and 8GH. Other stations received on 2 m. during the month include G2BMZ, 3AUS, HWF, WW and 5MA/P (Walbury Hill, Berks.). The converter consists of a EF54 r.f., EF54 mixer, 9002 tun-

(Continued on page 540)

THE MONTH ON THE AIR

by A.O. Milne
G2MI

DURING the recent I.A.R.U. Congress in Lausanne, the D.A.R.C. representatives expressed the hope that some arrangement could be made whereby German amateurs would have access to the whole of the DL series.

It would certainly seem to be desirable if DL2, 4 and 5 call signs could be made available to German nationals. At present, the series is by no means fully taken up and is, to a great extent, wasted. The Germans could make use of the entire block of calls. The prefix MD2 might be issued to British service personnel and perhaps the other two users of the DL prefix could be persuaded to follow suit.

Iraq.

Ralph Gabbittas says the R.A.F. Club station YI2AM at Habbaniya is now well established and results have been most encouraging. The Club awaits QSLs from a number of DX stations for its DXCC. Cards should be sent via the R.S.G.B. QSL Bureau. Membership of the Club is growing and the station operates on 14, 21 and 28 Mc/s. The outstanding British stations heard there on 14 Mc/s are G4ZU, 3HLS, 6BS, 2MF, 3MK, 2CCD, 3CSP, 2AMG, 5WB, 3HSN, and from the north, GM3DHD. The only YI calls active in Habbaniya are YI2AM and YI3WH. The location of YI1TR, who is very active, is not known.

Notes and News.

G3FAS has been doing well with 15 watts and a long wire. Since April 29 he has worked W1, 2, 3, 4, 5, 8, 9, VE1, VO, VQ2W, ZS2BC, LZ1KAB, CT2BO, OE and ZC4.

B.R.S. 1711 (Topsham, near Exeter) has logged SV0WP (Crete) on 14 Mc/s 'phone. On Sunday, May 17, 28 Mc/s was open for short skip to Europe from 1100 to 1900 B.S.T.

G3IRU overhauled his transmitter and just to show how successful it had been, raised a couple of PYs! VP8AU, now on leave in the U.K., says that neither he nor VP8AT have ever used 'phone. Those who have sent cards, claiming 'phone contacts with these two stations are, therefore, unlucky.

G3IBR also has a number of cards for contacts which he has not made. The operator for whom the cards are intended is named John and he wonders if there is some confusion with a similar call. The cards come from DJ1AK, SL6AM, DJ1JX, DL9VR, DL4SI, GW3INO, G3HET, G3IKA, G3IYG, G3IKO, G3JAC, GM3ITN, G8DI/A. If anyone recognises them from his log, he should contact G3IBR, 19, Osborne Road, Farnborough, Hants.

Last month, VS6AC's other call was given incorrectly; it should have read VS6AE. PA0GN

* 29 Kechill Gardens, Hayes, Bromley, Kent.

says that HB7AG/HE (DL9PR) has been active; his address is P.O. Box 97, Schaan-Liechtenstein. On May 3 KM6AA, 14210 and KB6AW, 14290 came through well. VS9AP was on for a short time from VQ6-land and worked F8BS and ON4AU. He told FA8IH that he plans to go to Comoro Is. (VQ7) in June or July.

HH2FL, 14056, 1035; JA6AD, 14020, 1130; KC6PX, 14025, 1640; KR6IG, 14032, 1110; EL9A, 14250, 1720; VS9AS, 14025, 1525, and VS9AP, 14025, 1525 are the highlights of DX worked at G8FC.

The European Band Plan

ALL amateurs are urged to operate their stations in accordance with the following Band Plan, which has been agreed to by the I.A.R.U. Societies in Europe. Universal adoption of the plan would do much to make Amateur Radio communication more effective.

| Frequency | Type of Transmission |
|-------------------------------|-----------------------------|
| 3500- 3600 kc/s | Telegraphy only |
| 3600- 3800 kc/s ¹ | Telephony only |
| 7000- 7050 kc/s | Telegraphy only |
| 7050- 7150 kc/s ² | Telegraphy and telephony |
| 14000-14125 kc/s | Telegraphy only |
| 14125-14350 kc/s | Telegraphy and telephony |
| 21000-21150 kc/s | Telegraphy only |
| 21150-21450 kc/s | Telegraphy and telephony |
| 28000-28200 kc/s | Telegraphy only |
| 28200-29700 kc/s ³ | Telegraphy and telephony |

¹ 3635-3685 kc/s not yet available to U.K. amateurs.

² 7150-7300 kc/s also available to U.K. amateurs.

³ 29700-30000 kc/s also available to U.K. amateurs.

We hear from VS7XG, via G8VG that the new prefix for Ceylon is likely to be 4F7.

G8ML, using a G5RV-type 75 watt transmitter and a 3-element beam, has worked CR9AF, VS2DS (phone), C3WW, CR6AI, KL7ATO, JA2BJ, FQ8AP, ZSSV, ZE5JU, ZE4JD, W6BID, W6CGQ, KB6AY (Canton Is.) and VE8PD, Fort Simpson, N.W.T.

B.R.S. 7594 (Yeovil) sends notes from his log and some news of contacts made by the local club station. CP5AB, 14180, 2152; CR6CB, G3AAT/OX, 0722; H16EC; HP1HO, 14234, 2217; HP3FL, 14100, 2255; OA4B; OQ0DZ (Ruanda-Urundi); PJ2AA, 14170, 2232; 2AK, 14150, 2238; 2CA, 14110, 2140; SV0WG (Rhodes), operated

by W3CHV; VP5AK; ZP5DC; ZS9G, 14104, 1813; and 3A2AM, 14145, 1757, are all referred to in his interesting letter. 7594 says the 21 Mc/s band seems to open about 0830, when VQ2s and VQ4s come in, joined by OD5 about 1000. All can be heard during the afternoon when the South African signals also break through. At about 1830, when the Africans fade out, the South Americans start to come in, beginning with PY. The skip then moves westwards and northwards, bringing in the HK, YV and HC signals, followed by the West Indies; after that, the band goes out altogether. The most consistent station is VQ4RF, who is often the only station to be heard on an otherwise dead band.

B.R.S. 7594 recently had a card from KW6BD (Jerry Cowles, Wake Is.) who told him that he lost all his gear, cards and logs in a typhoon but hopes to be back on the air in August.

DX worked by club station G3CMH, includes SU1SS and SU1TQ on 14 Mc/s c.w. and KV4AQ, OD5AJ, 5LC, PJ2AA, SU1MR and YV5AB on 'phone. On 21 Mc/s c.w. KZ5IL and LU3DAB have been raised. The LUs are not allowed to use 'phone on this band yet. 'Phone contacts were made with CE3CZ, CN2AP, HC1FS, KG4AJ, KP4UD, MD5EB, OD5AD, 5AJ, PY1AC, 3BW, 6CN, 6DU, 7EZ, 9AT, VQ2DT, 4ERR, 4HJP, 4RF, 5CB, ZB1BJ, ZD2S, ZP5BY, 5DC, 4X4BO and 5A2CA as well as with North Africa and Europe.

G2DPY (Shoreham-by-Sea) says VE6, W7 and KH have been heard in the early morning on

14 Mc/s. On May 26, 21 Mc/s was open all day and Ws were still coming in at 1300. At 0500 G.M.T. short skip was still S7 on this band. He says ZS7D has QSL'd all his contacts but it has been a formidable task.

M13TM is now VQ4EG and G3GGQ is now VQ4DR. They want contacts with Croydon and Potters Bar respectively.

Eastern Germany.

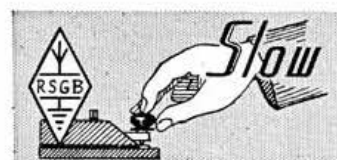
A number of selected persons in the Soviet Zone of Germany may soon be on the air with the prefix DM. No information is available as to whether they will be allowed to work amateur stations outside the Soviet bloc.

More Reports Wanted

Reports of DX worked and items of unusual interest, together with topical photographs, are invited. Closing date for copy is the 20th of the month preceding publication.

Top Band Reception in Iceland

FROM G5BC we learn that the following stations were logged on Top Band by TF5TP during the late hours of May 2, 1953: G3UG (579), 3ARX (579), 3BNW (459), 3ETP (559), 3FPC (469), 3IHM (479), 3ILN (569), 3ISU (559), G4NS (469), 5JM (589), G13IOS (479), 5UR (569), 6WG (469). TF3TP reports that QRM was very bad at the time. Several Gs were heard on phone but conditions were not good enough for the call signs to be copied.



Slow Morse Practice Transmissions

The following slow Morse transmissions, sponsored by the Society, are intended to assist those who aspire to obtain an amateur transmitting licence. More volunteers are still required for parts of the British Isles not already covered, particularly in the London Area. Stations listed who find themselves unable to continue transmissions should immediately notify the organiser, Mr. C. H. L. Edwards, A.M.I.E.E. (G8TL), 10 Chepstow Crescent, Newbury Park, Ilford, Essex.

* Each station will operate in turn.

| B.S.T. | Call | kc/s | Town | B.S.T. | Call | kc/s | Town |
|-----------------|-------|--------|-------------------|-------------------------|--------|--------|------------------|
| Sundays | | | | Tuesdays (cont.) | | | |
| 09.00 | G3LP | 1850 | Cheltenham | 22.00 | G2BND | 1890 | Dalston, E. |
| 09.30 | G3BKE | 1900 | Newcastle-on-Tyne | 22.00 | G3GIO | 1915 | Guildford |
| 09.30 | G3ICX | 1925 | Sutton Coldfield | Wednesdays | | | |
| 10.00 | G6MH | 1990 | Southend-on-Sea | 14.00 | G3ADZ | 1910 | Southsea |
| 10.30 | G3GIO | 1915 | Guildford | 19.00 | G3ADZ | 1910 | Southsea |
| | G3CYS | 1990 | Pontefract | 19.00 | G3GZA | 1837.5 | Bristol |
| | G3ESP | | | 22.00 | G3DLC | 1800 | Grays, Essex |
| 10.30 * | G3HCX | | | 22.00 | G3HYN | 1850 | Cambridge, Glos. |
| | G3HNC | | | 22.00 | G3GIO | 1915 | Guildford |
| | G3IDT | | | 22.00 | G2BND | 1918 | Dalston |
| | G3US | | | 22.45 | GM3GUS | 1800 | Dunfermline |
| 11.00 | G2FXA | 1900 | Stockton-on-Tees | Thursdays | | | |
| 11.00 | G3GZA | 1837.5 | Bristol | 19.00 | G3NC | 1825 | Swindon |
| 12.00 | G1SUR | 1860 | Belfast | 20.00 | G3FVH | 1920 | Hull, Yorks |
| 14.00 | G5AM | 1900 | Witnesham, | 21.30 | G3ICX | 1918 | Sutton Coldfield |
| | | | Ipswich | 22.00 | G3GIO | 1915 | Guildford |
| 21.00 | G2FIX | 1812 | Nr. Salisbury | 22.00 | G3IFX | 1910 | Derby |
| Mondays | | | | 22.30 | G3OB | 1803 | Manchester |
| 19.00 | G3NC | 1825 | Swindon | 23.00 * | G3LA | 1915 | Brentwood |
| | G3BFP | 1875 | Croydon | | G4AK | | |
| 20.30 * | G3BLP | | | Fridays | | | |
| | G6LX | | | 19.00 | G3BLN | 1900 | Bournemouth |
| 21.00 | G3BLN | 1900 | Bournemouth | 20.00 | G3CSG | 1870 | Wirral |
| 22.00 | G3GIO | 1915 | Guildford | 22.00 | G3GIO | 1915 | Guildford |
| 22.15 | G2BRH | 1900 | Ilford | Saturdays | | | |
| 22.30 | G8TL | 1900 | Ilford | 13.00 | G2FXA | 1900 | Stockton-on-Tees |
| Tuesdays | | | | 14.00 | G3ADZ | 1910 | Southsea |
| 18.30 | G2FXA | 1900 | Stockton-on-Tees | 22.00 | G3GIO | 1915 | Guildford |
| 19.00 | G3IBL | 1883 | Derby | | | | |
| 21.00 | G3EFA | 1855 | Southport | | | | |

MEMBERS USING THIS SERVICE ARE REQUESTED TO SEND LISTENER REPORTS TO THE STATIONS CONCERNED

CQ Single Side-band

By H. F. Knott, (G3CU)*

SINCE its first appearance in October, 1951, this column has as its policy maintained a semi-technical outlook on single sideband; at the same time it has included news items and other matters of interest. Over this period a step-by-step analysis of the subject has been made, covering various theoretical aspects in circuit design and their capabilities. Although it will not be possible to present complete details of drive units in the space available, it is now hoped to include the latest circuits and technical ideas. These may help the newcomer or even those at present using the system, to improve their equipment.

Balanced Modulator and Mixer Ideas.

Ernie Dedman (G2NH) contributes the balanced modulator circuit shown in Fig. 1. In addition to its usual application it is also effective as a mixer between the filter and the signal frequency. The advantage of this arrangement is that it is single-ended, from the feed point of view, and does not require a balanced input transformer. The operation is simple, but when using it before the filter a further improvement in balance may be gained by addition of some capacity (20 μ F at V1 and 50 μ F variable at V2) from the anode of each valve to earth to tune-out the reactive component. A pair of these balanced modulators could conveniently replace the crystal diodes and their respective 10:1 transformers in the "S.S.B.Jr.", in which case balancing would be taken care of by adjustment of the cathode circuit. The latter arrangement has been used by G3CWC for more than a year with very satisfactory results.

DL6WL, who sends some interesting information regarding mixer circuits, says the 6AC7 works extremely well. The s.s.b. signal is fed to grid 1 and the v.f.o. to grid 3, requiring about 2 volts peak input. This type of mixer (single-ended) should only be used when the input signal and oscillator frequencies are removed from each other by at least 1 Mc/s.

Activity

The appearance of new stations on the bands is becoming so widespread that it is not always possible to keep check on them all. This is the case with G3AUB (Reddish) who, although having been active for several months, is mentioned here for the first time. Another s.s.b. enthusiast is

G8SC, who has been running a W1JEO filter rig. Newcomers to the 80 metre band include G3AYJ (Aston) and G800 (Dorchester), both of whom are using W2UN-type phase-shift exciters. G800 uses four 6L6s in the b.m. circuit feeding the aerial, while G3AYJ winds up with a push-pull 807 p.a. G3BY, who was active on Top Band with a W1JEO rig, now makes an occasional appearance on 80. His final amplifier is an RK34 peaking to 25 watts.

The arrival of four more OZ s.s.b. stations makes Denmark the country with the highest percentage of amateurs using the system. The new calls are OZ7BR, 5AL, 5IN and 5BS all with OZ7T phase-shift transmitters. OZ5OL is building a filter exciter and hopes to be operating shortly.

Recently ON4CC and OE7FA established two way s.s.b. contacts with W4YCN/VO2 on 80. These QSOs took place in the early evening on what appeared to be a dead band.

7 Mc/s Activity.

G2NH and OE7FA made the first two-way s.s.b. contact in Europe. OE7FA was surprised to find a sudden opening on the band during May, for after working DL4FA he was called by ZS3E on a.m. This contact was repeated the following day, but it was then necessary for the South West African station to use c.w. Previously OE7FA had contacted VQ4AQ (Nairobi). These contacts, incidentally, were made between 2000 and 2100 G.M.T.

The 14 Mc/s Band.

By the lack of reports from operators using this band it is obvious that they are better at holding a microphone than a pen! SU1GG suggests that this dearth of reports has caused some misgivings and has created the opinion in some quarters that the system is unworkable at this frequency. This is not so, as it is being used with great success up to 50 Mc/s. GM3GHF (Glasgow), who confines most of his operating to 14 Mc/s, has recently rebuilt his station to include a well modified "S.S.B. Jr." His sideband is generated at 5.2 Mc/s and fed to a 6BE6 mixer which is placed between the b.m.s and the 6AG7. The v.f.o. is at 8.9 Mc/s, so that outputs may be selected for either 3.7 or 14 Mc/s. His diodes are GEX45/1 and work out similarly to the GEX44.

Reports and circuit information should reach the author by the 18th of the month preceding publication.

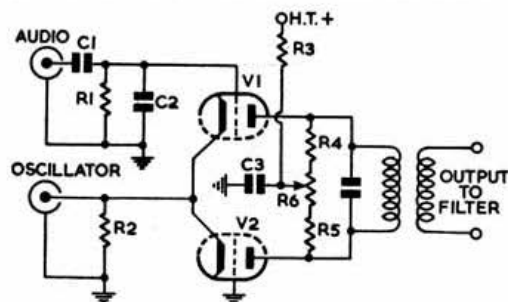


Fig. 1.—The simple balanced modulator used by G2NH. Balance of the circuit by R6 is all that is necessary for good carrier suppression. C1, 0.02 μ F; C2, 470 μ F; C3, 0.1 μ F; R1, 1 Megohm; R2, 22,000 ohms; R3, 4,700 ohms; R4, 5, 39,000 ohms; R5, 10,000 ohms variable; T1, i.f. transformer tuned to filter frequency; V1, 2, 12AT7 or 6SN7.

* 5 Kevington Drive, St. Pauls Cray, Orpington, Kent.

AROUND THE V.H.F.'s (Continued from page 537) able oscillator into a Bendix RA.10 at 10 Mc/s. The aerial is a 4-element Yagi at 30 ft.

As v.h.f. reports from listeners have been rather few and far between this opportunity is taken of assuring them that their contributions are always welcome.

Readers are thanked for the many reports and letters received this month; only pressure on space has necessitated some being held over until the next issue, for which copy should arrive by June 20.

TECHNICAL ARTICLES ARE WANTED.
WRITE TO HEADQUARTERS FOR A COPY
OF "HINTS TO CONTRIBUTORS."

Society News

Bulletin Deliveries

FOLLOWING complaints of uneven distribution, the Society's printers (South London Press Ltd.) have made arrangements to ensure that, in future, irrespective of the times of receipt by them, the G.P.O. will despatch all copies of the BULLETIN for London and the Provinces at the same time. South London Press Ltd. will endeavour to obtain a certificate from the Post Office stating the date of despatch of each issue.

Hitherto, although all copies of a particular issue have been delivered to the Post Office on the same day, it would appear that on some occasions batches handed-in during the late afternoon have been held up until the following day. The BULLETIN is treated as 2nd Class mail.

It is hoped that the new arrangements will ensure simultaneous delivery of the BULLETIN to all London and Provincial members.

40th Anniversary Dinner

THE Dinner which was to have been held in London on Saturday, July 4, 1953, to mark the occasion of the 40th Anniversary of the Foundation of the Society, has been cancelled.

Up to June 3, only 20 reservations had been received. An attendance of 150 was required in order that the event should be self-supporting.

Technical Committee

MR. Louis Varney, A.M.I.E.E., G5RV, of Mchelsford, Essex, has accepted an invitation to join the Technical Committee. Mr. Varney's contributions to the "R.S.G.B. BULLETIN" have earned for him high commendation from Government Departments as well as from the membership.

Technical Service Manuals

THE following technical service manuals are available on loan from Headquarters for limited periods to members who wish to abstract information on specific units of equipment.

R.A.F. Equipment: Radio Altimeter Equipment AYF; Valve Tester Type 4; Valve Tester Type 4A; Signal Generator Type 9A; Test Oscillator Type 12A; Oscillator Unit Type 25; Monitor Type 28; Test Set Type 37; Signal Generator Type 106; Test Set Type 209; Test Sets Type 218, 218A, 237 and 237A; Test Set Type 219; Test Set Type 240; Test Set Type 241; Test Set Type 242; Transmitter T.1190A; Wavemeter Type W.1191A; Wavemeter Type W.1432; Wavemeter Type W.1433 and Transmitter-Receiver TR.1464.

U.S. Equipment: Loran Handbook for Aircraft; Radio Tube Tester I-177; Radio Set AN/APN-4; HRO Senior.

Diagrams: AN/APN-4 oscilloscope patterns; I-194-A pulse signal generator schematic; ID/APN-4 indicator schematic.

Bendix Equipment: Dynamotor data; Radio Compass MN26; Receiver RA-10-C, D, CD, DD; Receiver RA-10CA, CB, DA, DB; Receiver RA-10FA, B; Transmitter-Receiver RTA-1B; Transmitter TA-2 series; Transmitter TA2G and Transmitter TA-2G-24 series; Transmitter TA-6A and TA-6B.

U.S.A.A.F. Equipment: Radio Compass SCR-

269-F; Radio Set SCR-522A, T2 and SCR-542-A, T2.

Members in possession of similar manuals which they no longer require are invited to donate them to the Society. In particular, information on British Army and Navy equipment would be most welcome.

Direction Finding Field Day

DETAILS of the Qualifying Event to be held on Sunday, June 28, 1953, are as follows:

Organiser: J. Hickling, 47 Banbury Road, Oxford.

Call Sign: G8PX/P.

Frequency: 1875 kc/s.

Assembly Point: "Three Pigeons," on A40, High Wycombe/Oxford road, N.G.R. 654033.

Map: Ordnance Survey, New Popular Edition, Sheet 159.

Assembly Time: 1330 B.S.T.

Intending competitors should notify the organiser by Monday, June 22, stating the number in their party requiring tea. The location of the restaurant will be notified to competitors when their entries are acknowledged.

LONDON MEMBERS' LUNCHEON CLUB

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road, at 12.30 p.m., on June 19, 1953. Visiting amateurs especially welcome. Telephone table reservations to HOL 7373 prior to day of luncheon.

Scottish N.F.D. Trophy

IT is regretted that no reference was made to the Scottish N.F.D. Trophy when the National Field Day rules were published last November.

It will be remembered that this Trophy (together with miniatures) was presented to the Society by the Falkirk Group for annual award to the Scottish Town or Area Group scoring the highest number of points in N.F.D.

Side Slips

THE following errors crept into Part III of "Television Transmission for the Amateur" (April issue):—

Para. 2 (p. 428). For 1000 μ F read 1000 μ F.

Fig. 1 (p. 428). Caption to read:—

R2, 3 4700 ohms

R4 500,000 ohms

variable

Fig. 2 (p. 429). Caption to read:—

R10, 19 50,000 ohms

R6, 26 are not variable.

We are indebted to Mr. F. R. Ellory (G3CUI) and Mr. I. Wilson (G3BHH) for pointing out these mistakes which are regretted by the author (Mr. M. Barlow, G3CVO).

Coronation Year Activities

Hastings Hobbies Exhibition: July 4-11. Hastings and District Amateur Radio Club will be exhibiting.

Chingford Show: July 11. An Amateur radio station will be in operation.

Southampton Show: July 17-18. Three complete Amateur Radio stations will be in operation.

It's Topical

ADMIRAL the **Earl Mountbatten of Burma**, Commander-in-Chief, Mediterranean, who is Vice-Patron of the British Institution of Radio Engineers, has accepted an invitation to become an Honorary Member of the Amateur Radio Club of India.

The entire transmission facilities of the B.B.C.'s External Services were used to carry **Coronation broadcasts** to all parts of the world. In addition to the Corporation's own commentators, more than 85 from overseas were employed. **Television's day-long broadcast** was seen throughout the U.K. and reception was excellent in France, Holland and Western Germany where seven TV stations relayed the programme. **Canadian and American viewers** saw complete television recordings, which were flown across the Atlantic in R.A.F. Canberra jet bombers, during the evening of Coronation Day. In addition, "still" pictures were broadcast within a few minutes of the event taking place. A special **colour TV broadcast** for children in a London hospital was successfully carried out by Pye Radio, who also made the radio equipment used by the British Expedition which conquered Mount Everest.

The Seventh Congress of the **International Scientific Film Association** will be held in the National Film Theatre and Royal Festival Hall, London, from September 18 to 27, 1953.

Two new **portable f.m. transmitters** of advanced design have recently been supplied to the B.B.C. by the General Electric Co. Ltd. The transmitters have a power output of 12-15 watts and operate in the 88-108 Mc/s band. The p.a. valves are TT15s and *Osram* Z77s are used in all other stages. The frequency response is flat to within ± 1 db from 100 c/s to 10 kc/s and within ± 3 db from 50 c/s to 15 kc/s.

In connection with the **new marine frequency arrangements** which came into force on May 1, 1953, British ships have been divided into two classes, (a) fishing vessels, (b) coasters and deep-sea vessels. The second category includes such vessels as tugs, yachts, pilot boats, cross-Channel boats and other miscellaneous craft. Fishing vessel frequencies are confined to use by that class. On May 1, the telephony distress frequency was changed to 2182 kc/s, which is also the calling frequency for small craft. The marine telegraphy distress frequency remains 500 kc/s.

Of the **12,912,786 broadcast receiving licences** in force at the end of April, more than 2,203,000 were for television.

The first British commercial equipment incorporating a **transistor** was demonstrated recently by Multitone Electric Co. Ltd. The new device is a simple attachment which can be used with most hearing aids to provide much greater amplification and power output. The transistor used is a point contact type manufactured by G.E.C.

The **West German Radio, Gramophone and Television Exhibition** will be held in Dusseldorf from August 29 to September 6, 1953. Particular emphasis this year will be on f.m. and television, both of which are expanding rapidly in the Federal Republic.

The manufacture of **Mullard** cathode ray tubes is to be transferred to a new factory to be built in the North-West Lancashire Development Area.

The factory will be one of the world's **largest and most modern tube plants** and will provide employment for many hundreds of workers.

Entries for the **International Radio Controlled Models** Contests, which are to be held at Southchurch Park, Southend-on-Sea, on July 25 and 26, 1953, should be sent to C. H. Lindsey, Hon. Secretary, I.R.C.M.S., 292, Bramhall Lane South, Bramhall, Stockport, Cheshire, to arrive by July 5, although entries may be accepted up to the date of the contests, subject to payment of late fees and provided the maximum number of entries has not already been made. The aircraft contests are being held in conjunction with the S.M.A.E. and with the sanction of the Federation Aeronautique Internationale and of the Royal Aero Club.

Birthday Honours

CONGRATULATIONS are offered to Past President Lt.-Col. Sir Ian Fraser, C.B.E., M.P., who has been made a Companion of Honour by the Queen in recognition of his great public services to St. Dunstan's and the British Legion. Sir Ian, who was President of the Society in 1926, opened the Sixth Amateur Radio Exhibition last November.

Congratulations are also extended to Major A. N. Braude, VS6AN, who has been made a Member of the Order of the British Empire in recognition of his services with the Royal Hong Kong Defence Force.

John Kyle Again Honoured

THOSE who served during the war with John Kyle, GM6WL, will be glad to learn that he has just been awarded the British Empire Medal for outstanding work in connection with the Scottish divisional telecommunications maintenance organisation. Sgt. Kyle, as he then was, was awarded the D.F.M. and A.F.M. during the war when, at the age of 53, he was one of the oldest persons on operational flying duties in connection with radio counter-measures. He is now with the Ministry of Civil Aviation at Renfrew.

Amateur Aid

AT 2200 G.M.T. on May 6, G3HYU (Solihull, Warks.) answered a "CQ England" call from DL4DM (Frankfurt) who asked him to contact the nearest hospital in an endeavour to obtain a supply of triaethylen melania (TEM)—a rare drug used in the treatment of leukaemia. G3HYU located a supply at the Selly Oak Hospital and then passed on the information to DL4DM who had a plane standing by ready to fly over. However, at this point a station in Heidelberg called DL4DM and G3HYU to say that a small quantity had been found in that city.

Although the Selly Oak supply was not required, G3HYU deserves high praise for his swift action in dealing with the request for help.

Rhodes Centenary Exhibition

QUEEN ELIZABETH, the Queen Mother, will officially open the Rhodes Centenary Exhibition in Bulawayo on July 2.

A special Amateur Radio station is already in operation from the Centenary City grounds and is on the air on all bands every day (except Sundays) from 0600-1600 G.M.T. The Exhibition closes on August 29, 1953.

Council Proceedings

Résumé of the Minutes of the Proceedings at a Meeting of the Council of the Society held at New Ruskin House, Little Russell Street, London, W.C.1, on Tuesday, April 14, 1953, at 6 p.m.

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

Membership.

Resolved:—

- (a) to elect 60 Corporate Members and 13 Associates;
- (b) to grant Corporate Membership to 9 Associates who had applied for transfer.

It was reported that 9 of the 16 Members who had applied for Life Membership between April, 1952, and March, 1953, had now forwarded their Life Composition Fee.

Applications for Affiliation.

Resolved to grant affiliation to R.A.F. Fazakerley Amateur Radio Society and Acton, Brentford & Chiswick Radio Club.

Affiliation Fees

Resolved:—

- (a) to rescind an earlier resolution that the fee to be paid by affiliated societies shall be 21/- per annum;
- (b) that the fee to be paid by affiliated societies shall be 21/- per annum if a copy of the BULLETIN is required and 10/6 per annum if a copy of the BULLETIN is not required.

Provincial Meetings.

It was reported that arrangements were being made to hold an Official Regional Meeting in Edinburgh on September 27, 1953.

After considering correspondence from the Region 15 Representative it was resolved to defer for the time being the holding of an Official Regional Meeting in Belfast.

Mr. R. F. G. Thurlow

A letter was submitted from Mr. Thurlow tendering his resignation from the office of Region 5 Representative.

Resolved:—

- (a) to accept, with regret, Mr. Thurlow's resignation from the office of Regional Representative;
- (b) to defer for the time being the holding of an Official Regional Meeting in Cambridge.

Two-Metre Open Contest, 1952.

Consideration was given to a Report prepared by the Contests Committee in regard to the Two-Metre Open Contest, 1952.

Resolved:—

- (a) that the entry submitted by Mr. W. R. Joss, G2AJ, be disqualified;
- (b) that the results as submitted by the Contests Committee be published in the BULLETIN;
- (c) that the Report be received.

It was agreed to thank the Contests Committee for the work which that Committee had undertaken in connection with the judging of the Contest.

R.S.G.B. Bulletin, Volume 29.

Resolved to accept an Estimate, submitted by South London Press Ltd., for printing Volume 29 of the R.S.G.B. BULLETIN on paper similar to that approved at the previous meeting.

R.S.G.B. Stand—National Radio Show, 1953.

After consideration had been given to correspondence which had passed between representatives of the Society and the Radio Industry Council, it was resolved:—

- (a) to negotiate for the allocation of 200-400 square feet of floor space;
- (b) to inform the R.I.C. that if space is available at a suitable price the Society would display amateur-built equipment and technical publications and that the stand would be used as a meeting place for members.

(The Council decided at a subsequent meeting not to reserve space at the 1953 National Radio Show.—Ed.)

Bedfordshire Group.

The following resolution, passed at a meeting of Bedfordshire members was considered:—

"The meeting supported the Hon. Treasurer and 1953 Council in the Main Opinion that the annual subscription be increased to £1.10.0. But that the meeting felt that in the past the administration of H.Q. had been too costly and requested the Finance Committee to investigate in detail with a view to some reduction in the revised rate of Sub., at the earliest possible time."

It was agreed to advise the Group that the Council is constantly watching for opportunities to effect economies in the administration of the Society.

Duties of the Honorary Editor.

Consideration was given to a memorandum from Mr. Hum dealing with the duties of the Honorary Editor. After

discussion it was agreed that all editorials should be submitted to the President, prior to publication, for information. Mr. Hum explained that he was anxious that his job should not be regarded as a sinecure.

V.H.F. Policy and "Around the V.H.F.s."

Consideration was given to a memorandum from Mr. Hum dealing with v.h.f. policy and the monthly feature "Around the V.H.F.s."

Resolved to advise the Technical Committee that the Council is of the opinion that a more active v.h.f. policy should be pursued by the Society.

"Bulletin" Inserts.

Resolved to approve, in principle, a proposal that suitable advertisers' inserts be included in the BULLETIN.

The Calcutta Key.

Resolved:—

- (a) to accept a suggestion put forward by Mr. Scarr that the trophy which he proposes to present to the Society shall take the form of a silver-plated key and that it shall be known as "The Calcutta Key";
- (b) to accept the terms and conditions governing the award of "The Calcutta Key" as proposed by Mr. Scarr.

Council By-Election

The result of the recent Council by-election is as follows:

| | |
|--|-------------------|
| I. D. Auchterlonie (G6OM) .. | 488 Votes Elected |
| D. Deacon (G3BCM) | 339 Votes |
| F. G. Lambeth (G2AIW) | 271 Votes |
| R. Walker (G6QI) | 464 Votes Elected |
| Total number of Ballot Papers accepted, 781; | |
| total number of Ballot Papers rejected, 20. | |

Cash Account.

Resolved to approve and adopt the Cash Account for March, 1953, as submitted by the Hon. Treasurer.

Special General Meeting.

Consideration was given to correspondence from the Society's legal advisers in regard to the proposal to hold a further Special General Meeting on June 19. The view was expressed that it would be unwise to fix the date finally until the Board of Trade has made a decision in regard to the Articles of Association. It was explained that the new Articles should be approved by the Board before being submitted to the membership.

During subsequent discussion several Members expressed the view that the new Articles should contain no reference to an Entrance Fee.

Resolved to instruct the Society's legal advisers to take such steps as they deem to be necessary to ensure that:—

- (a) the words "Corporate Members shall pay an Entrance Fee of 10/- upon admission" are omitted from Article 19;
- (b) such other Articles as may be affected by that amendment are altered.

Having been advised that amendments to the Articles might delay matters, the view was expressed that, as more revenue is essential, every effort should be made to ensure that Article 19 is approved at the Special General Meeting. It was agreed to enquire from the Society's legal advisers whether it would be possible, at the S.G.M., to deal with Article 19 first and then with the remainder of the Articles. It was also agreed to enquire whether it would be possible to submit to the membership on June 19, Article 19 in its amended form, if for any reason the Board of Trade delays giving approval to the full set of Articles.

Views were expressed in regard to the Home Corporate subscription rate to be charged for the year 1953/4, but no motion came before the meeting.

In view of the lateness of the hour the President moved and it was resolved that this meeting now stands adjourned until 6 p.m. on Monday, April 27, 1953.

The meeting terminated at 10.10 p.m.

The Council re-assembled at 6 p.m. on Monday, April 27, 1953, when the following were present:—

The President (Mr. L. Cooper in the Chair), Messrs. H. A. Bartlett, F. Charman, C. H. L. Edwards, D. A. Findlay, R. H. Hammans, F. Hicks-Arnold, J. H. Hum, A. O. Milne, L. E. Newnham, P. W. Winsford and John Clarricoats (General Secretary).

Matters relating to next Special General Meeting.

The Society's legal adviser (who was in attendance at the meeting) agreed that the draft Articles of Association may not be returned from the Board of Trade in time for a Special General Meeting to be convened for June 19, 1953. He confirmed that all amendments made at a Special General

Meeting to an accepted draft must be submitted to the Board of Trade.

Resolved to hold a Special General Meeting at some date after June 19, 1953, for the purpose of giving consideration to (a) new Articles 17 and 19, and (b) the remainder of the new Articles. (The motion was carried by 7 votes to none opposed. Three Members abstained.)

A motion to hold a Special General Meeting on June 19, 1953, to consider a simple amendment to the present Article 19 (the effect of which would be to fix higher figures for the various subscription rates than those at present laid down) was not seconded.

It was suggested that it might be desirable to postpone the S.G.M. until September. This later date would enable the Hon. Treasurer to submit a financial statement covering the year to June 30, 1953. It was further suggested that every effort should be made to give the membership the fullest factual information prior to the meeting.

Resolved to hold a Special General Meeting late in September, 1953, provided all legal requirements have, by that time, been met.

Report from London Regional Representative.

Consideration was given to a Report from the London Regional Representative containing the following Resolutions passed at a recent meeting of London Representatives.

(1) Resolved that Council be requested to publish more details of the controversial issues in its Resumes and the result of voting on such proposals or resolutions before it

(a) if unanimous.

(b) With names—For

Against

Abstentions!!

(2) Resolved to request Council that the June 19 meeting be of an exploratory nature and that the Special General Meeting be put back to a date—such date to be decided on June 19—and that complete publicity be given, prior to the June 19 meeting, so that interested parties shall have an opportunity of expressing their point of view and that the Minutes of June 19 shall be distributed *in extenso*.

After discussion it was resolved in reference to Resolution (1) of the Report, to advise Mr. Matthews that it is the view of the Council that it is unfair to publish the names of Members who vote for or against a particular motion or who abstain from voting, without giving a full verbatim report, which is impracticable.

Resolved in reference to Resolution (2) to advise Mr. Matthews that:—

(a) prior to considering his Report the Council had already decided not to hold a Special General Meeting on June 19, 1953;

(b) on receiving the approval of the Board of Trade the Council will submit the whole of the new Articles of Association to the membership later in the year;

(c) for a period of about nine months, i.e. up to the time the Articles were sent to the Board of Trade, in March, 1953, the membership had every opportunity of considering the draft and if a substantial proposition had been put forward full consideration would have been given to it before the draft was finalised.

"Letters to the Editor."

Three lengthy "Letters to the Editor," bearing on the recent Special General Meeting and related subjects, were submitted.

Resolved to publish one letter *in extenso* and to invite the writers of the other two letters to submit condensed versions.

National Emergency Amateur Radio Service.

Resolved to receive, and adopt as a Report, the Minutes of a meeting of the Ad Hoc Committee held on March 24, 1953, and the Recommendations contained therein.

[A Statement, based on the Recommendations of the Committee, appears elsewhere in this issue.—ED.]

The Top Band.

The Secretary reported upon correspondence which had taken place between the Society and the Post Office in regard to the implementation of the Atlantic City Radio Regulations insofar as they affect frequencies between 1,715 and 2,000 kc/s. As the result of discussions between representatives of the Post Office and the R.S.G.B., the G.P.O. had that day announced that the band to be assigned to U.K. amateurs would be 1,800-2,000 kc/s. The Secretary reported that he had advised all Regional and County Representatives of the position and had sent a copy of his circular letter to the editors of other Amateur Radio journals. [A copy of the statement set out in the circular appeared in the May issue of the BULLETIN.—ED.]

Technical Committee.

Resolved to receive, and adopt as a Report, the Minutes of a meeting of the Technical Committee which met on April 23, 1953, and the Recommendation contained therein. The Recommendation was to authorise the Technical Committee to arrange a meeting between representatives of "The Short Wave Magazine," "The Radio Amateur," "The Television Society," "The British Amateur Television Club," and other interested parties to discuss the planning of the 2 metre and 70 cm. amateur bands.

It was also reported to the Council that:—

(a) the Committee is giving careful consideration to matters of v.h.f. technical policy;

(b) Mr. R. L. Varney, G5RV, had been invited to join the Committee as a co-opted member.

"Bulletin" Deliveries.

Correspondence was submitted from Dr. G. F. Bloomfield, G2NR, in which he complained that BULLETIN deliveries are frequently spread over several days.

The Secretary read replies which he had addressed to Dr. Bloomfield and to another member who had made a complaint. He also read a letter from South London Press in which they confirmed that all copies of the BULLETIN (except those sent earlier to Members of Council and the Regional Representatives) are put into the post the same day.

The Secretary explained that, as the BULLETIN is carried as 2nd Class Mail, no guarantee can be given that the whole of one particular issue will be cleared on the day it is delivered to the Post Office. This point had been explained in the December, 1952, BULLETIN.

The Secretary was instructed to send Dr. Bloomfield a copy of the letter from South London Press.

The meeting terminated at 9.45 p.m.

Contests Diary

1953

| | |
|--------------|---------------------------------------|
| June 21 | 144 Mc/s Field Day (No. 1) |
| June 28 | D.F. Qualifying (High Wycombe/Oxford) |
| August 16 | D.F. Qualifying (Rugby/Slade) |
| August 30 | 144 Mc/s Field Day (No. 2) |
| September 6 | Low Power Field Day |
| September 6 | D.F. Qualifying (Romford/Southend) |
| September 13 | 420 Mc/s Tests |
| September 27 | D.F. National Final |
| October 3-4 | Low Power |
| November 7-8 | "Top Band" (No. 2) |

Representation

The following are amendments to the list of Town Representatives published in the February, 1952, issue:—

Region 1—Lancashire West

Warrington

G. Richards (B.R.S. 19352), 30 Queens Avenue.

Region 5—Essex

Southend-on-Sea

T. Hudson (G2BHA), 22 Park Road.

* * *

Vacancy

Mr. C. S. Bradley (G5BS) has resigned as representative for the town of Maidstone. Nominations for his successor should be made in the prescribed form and sent to reach the General Secretary by July 31, 1953.

* * *

Change of Address

Region 7—London North (District Representative)

The address of Mr. D. C. Jardine (G5DJ) is now 14 Oakwood Crescent, Winchmore Hill, London, N.21.

Silent Keys

It is with deep regret that we record the sudden death of Robert Lauderdale, G2DL, of Sydenham, S.E.26.

First licensed in 1927, G2DL was active on most bands. He was always willing to help his fellow amateurs, particularly beginners. His passing will leave a gap difficult to fill in the ranks of the Amateur Radio movement.

Our sympathies are extended to his mother and close relatives. E.Y.

The death is announced of Ernie Scammell, holder of the original call G2RG. His clear thinking on technical matters was always refreshing and stimulating. Eight members of the "Radio Dozen" paid their last respects at the cremation at Yardley Cemetery, Birmingham. B.A.M.

Regional and Club News

BRISTOL.—At the May meeting G3IFV described and demonstrated his tape recording equipment. F. J. Walters (B.R.S. 9864) has been elected to the local committee to fill the vacancy caused by the resignation, for business reasons, of B.R.S. 18798. *Hon. Secretary:* D. F. Davies (G3RQ), 51 Theresa Avenue, Bristol 7.

BRITISH TWO CALL CLUB.—New members include G3EDW (VQ2W/DL2DW), G3EBA (DL2BA), G3IDR (DL2SR), MP4BBH (VP4RG), G3ERF (YI2GQ) and G3ICH (DL2SU). QTC is the title of the Club's quarterly newsletter. *Hon. Secretary:* G. V. Haylock (G2DHY), 63 Lewisham Hill, London, S.E.13.

CAMBRIDGE & DISTRICT AMATEUR RADIO CLUB.—The Club is due to meet at the "Jolly Waterman," Cambridge, at 8 p.m. on June 19. *Hon. Secretary:* T. A. T. Davies (G2ALL), Meadow Side, Comberton, Cambridge.

CHELTONHAM.—The new Top Band regulations were discussed at a recent meeting when the opinion was expressed that a general improvement would result if some of the non-amateur transmissions were improved. (Readers should appreciate that U.K. amateurs now have no conferred right to operate in the Top Band.—Ed.)

GRAFTON RADIO SOCIETY.—The Society is holding its annual field day at Tumulus Field, Parliament Hill, Hampstead Heath, on June 20-21, when the Grafton station (G3AFT/P) will be active on 3.5, 7 and 14 Mc/s, 'phone and c.w. G3HEA/P will operate on 144 Mc/s. *Hon. Secretary:* A. W. H. Wennell (G2CJN), 145 Uxendon Hill, Wembley Park, Middlesex.

GRAVESEND AMATEUR RADIO SOCIETY.—At a Special General Meeting held on May 6, Leslie Belger was elected *Chairman* in succession to E. C. Woods (G3FST), who has resigned owing to pressure of work. At the same meeting Louis Varney (G5RV) described and demonstrated his latest TVI-proof transmitter. *Hon. Secretary:* R. Appleton, 23 Laurel Avenue, Gravesend.

LANCASTER & DISTRICT AMATEUR RADIO SOCIETY.—This Society has been formed as a result of the interest aroused by the Amateur Radio stand at a recent Rotary Club Hobbies Exhibition. At the inaugural meeting, the following officers were elected: *Chairman:* A. L. Thwaites (G3HHR); *Hon. Secretary:* A. O. Ellefsen (G3FJO), 10 Seymour Avenue, Heysham; *Treasurer:* C. Bennett; *Committee Members:* R. Cordingley (G3BAP) and G. Millray.

QRP RESEARCH SOCIETY.—All amateurs who operate with an input of 5 Watts or less are asked to send details of their activities to the *Hon. Secretary:* J. Whitehead, 92 Rydens Avenue, Walton-on-Thames, Surrey.

RAVENSBOROUGH AMATEUR RADIO CLUB.—Meetings, which include Morse practice classes, are held on Wednesday evenings (8 p.m.) at Durham Hill School, Downham. New members will be welcomed. *Hon. Secretary:* W. Wilshaw (B.R.S. 18936), 4 Station Road, Bromley, Kent.

ROYAL AIR FORCE AMATEUR RADIO SOCIETY.—F/O. B. Arrowsmith (G3HCF) and R. F. Weston (G6PZ) were elected *Hon. Treasurer* and *Hon. Secretary (Administration)* respectively at the recent A.G.M. held at the Society's Headquarters, R.A.F., Locking. The Headquarters station (G8FC) will soon be equipped for operation on all bands from 1.8 to 144 Mc/s.

SALISBURY & DISTRICT SHORT WAVE CLUB.—The Club operated two stations—G3KFF/P on 144 Mc/s and G3IVP/P on 3.5 Mc/s—at the recent Wiltshire Rover Moot, at which G3IVP gave a lecture on the History of Amateur Radio. The Club station (G3KFF) is active on Tuesday evenings. *Hon. Secretary:* V. G. Page (G3IVP), 32 Feverham Road, Salisbury.

SINGAPORE AMATEUR RADIO TRANSMITTING SOCIETY.—The postal address of the Society is now P.O. Box 176, Singapore.

SLADE RADIO SOCIETY.—Recent activities have included a visit to the local airport radio station and a lecture by G3HKC on "Radio Receiver Selectivity." Meetings are arranged for June 26 and July 10 at Church House, Erdington. *Hon. Secretary:* C. N. Smart, 110 Woolmore Road, Birmingham 23.

SOUTHEAST & DISTRICT RADIO SOCIETY.—More than 100 members and friends were present at the Annual Hamfest held on May 16; Council Member C. H. L. Edwards (G8TL) was in attendance. The winners of the Pocock and Hudson cups are to demonstrate their apparatus at the meeting on June 26. On July 10, R. J. Varcoc will lecture on "L.F. amplifiers." *Hon. Secretary:* J. H. Barrance, 49 Swanage Road, Southend-on-Sea.

SOUTH MANCHESTER RADIO CLUB.—A DX contest with Stockport Radio Society is arranged for July 5. Ron Plant (G5SCP) will be the lecturer on June 19 and A. Potter (G3ESK) on July 3—the latter will discuss "Control Systems." *Hon. Secretary:* M. Barnsley (G3HZM), 17 Cross Street, Bradford, Manchester 11.

STOCKPORT RADIO SOCIETY.—Meetings, at the Blossoms Hotel, Buxton Road, Stockport, are arranged for June 23 and July 7 (Lecture on interference by G6UQ).

TORBAY AMATEUR RADIO SOCIETY.—The Society is pleased to announce that arrangements have been made to hold the South West Hamfest, at Oswalds Hotel, Babbacombe, on October 11. Judging of the Constructors' Cup Contest will take place on June 20 at the Y.M.C.A., Torquay. *Hon. Secretary:* L. H. Webber (G3GDW), 43 Lime Tree Walk, Newton Abbot, Devon.

Around the Trade

A comprehensive catalogue of radio and electronic supplies has been published by Webb's Radio, 14 Soho Street Oxford Street, London, W.1. Profusely illustrated, this excellent publication gives full details of receivers, transmitters, high-fidelity equipment, loudspeakers, microphones, tools and test equipment, in addition to all the components, large and small, used by the active radio amateur. The price of 1/- entitles the purchaser to receive up to six information folders which will be issued from time to time in order to keep the catalogue up to date.

Can You Help?

● W. Sinclair Brown, ZS6PN (ex-GM2ANA), P.O. Box 72, Brits, Transvaal, South Africa, who wishes to know where he can obtain a supply of 1 in. diameter meters and slow motion dials similar to those used in the "Top Band Low Power Transmitter-Receiver" described in the April, 1953, issue of the R.S.G.B. BULLETIN.



The Amateur Radio stand at the Morecambe and Heysham Rotary Club Hobbies' Exhibition. G3BAP is at the transmitter, with G3HHR to the extreme right.



Single Sideband Suppressed Carrier Transmission

DEAR SIR.—The aim of the amateur can be broadly summarised as being the development of new circuits and techniques, and in effecting communication with other stations.

The achievement of this aim is becoming steadily more difficult due to the increasing number of amateur stations, the ingress of commercial stations into our bands, the reduction in size of these bands, the increasing possibilities of interference with television receivers; and in difficulty of access to and expense of the numerous technical publications on electronics.

One method, and it may be the only method of improving matters as far as telephony is concerned, is in the widespread introduction of the single sideband suppressed carrier technique. At present this form of transmission is only used by a handful of operators in this country. The chief advantages of s.s.b.s.c. as stated in the BULLETIN are:

- (a) Reduction in transmitted bandwidth.
- (b) Reduction in heterodyne interference.
- (c) Comparative immunity from TVI.
- (d) An increased readability effectiveness.
- (e) The absence of expensive and heavy high-power modulators.

Secondary advantages resulting are:

- (a) The necessary use of stable v.f.o.s.
- (b) Improvements in receiver design.
- (c) Single channel duplex and netting with use of voice-operated relays.

It is appreciated that articles in the BULLETIN must be balanced in order to cater for all tastes, and this reason is respected. However, in view of my foregoing remarks it is for consideration whether the space devoted to s.s.b.s.c. matters should not be increased substantially and made a monthly feature. This will enable contributors to publish suitable circuits and other technical matters which have been originated in this country, rather than to rely on information from abroad.

In conclusion, I feel that it is not asking too much of operators of c.w. and carrier telephony in the European area to avoid, as far as possible, the few kilocycles adjacent to 3800 kc/s. This will be to their own advantage and will also give the s.s.b.s.c. experimenters an opportunity of improving their technique.

Yours faithfully,

A. J. R. PEGLER, A.M.I.Mech.E. (G3END),
Commander (E.), Royal Navy.

Richmond, Surrey.

Amateur Television Topics

DEAR SIR.—Mr. Barlow's reference in the May issue to the Television Society's transmitter is liable to create a misunderstanding because there is no connection whatever between the transmitter, using the call-sign G3CTS/T located at Norwood, and the transmitter which will give out 625 lines for industry. The 625-line transmitter will not operate under this call-sign, will not operate under the terms of an amateur licence, and its location is not yet known.

Incidentally, the frequency of G3CTS/T is given incorrectly; this should be 427 Mc/s vision and 435.5 Mc/s sound.

Yours faithfully,

D. N. CORFIELD (G5CD)

London, N.W.11.

Top Band Power Amplifiers

DEAR SIR.—Your correspondent, G4AY, should have second thoughts.

He states that an 807 valve (rated anode dissipation 30 watts) will handle comfortably an input of 60 watts and yet he uses a 7C5 which has an anode dissipation of 12 watts, so I presume that it can handle comfortably an input of 24 watts. It thus seems capable of handling an input of nearly two and a half times the maximum allowed.

Further more, I do not understand why a valve need be any less efficient when run with small power inputs. When a Class C amplifier is anode modulated the anode voltage and current are varied in accordance with the modulation and their values, at 100% modulation, vary from zero to

twice the peak value of the unmodulated condition. Under correct operating conditions the output is at all times directly proportional to the input, so the efficiency of the stage is constant. This state of affairs may not always be obtained exactly, but any departures from linearity can be very small indeed. If, therefore, the efficiency of the valve can remain constant over the modulation cycle, when the instantaneous value of the input can vary from zero to four times that of the unmodulated condition, surely it can remain constant when the correct operating conditions are chosen for QRP working.

Yours faithfully,

A. SPARROW (G3EKD).

Farmhill, Stroud, Glos.

[This letter, and the one in the April issue from G4AY which inspired it, are particularly appropriate in view of the changed status of amateur operation on the 160-metre band, and the need—more imperative than ever before—to use the minimum possible input on that band compatible with reliable communication.—J.H.]

DEAR SIR.—May I presume on your space to reply briefly to the letters of Messrs. Roscoe and Williams in the May BULLETIN regarding the use of 807 valves in 1.8 Mc/s transmitters?

Firstly, I would hasten to point out that the intention of my original letter, published in the April issue, was to raise the moral issue of excessive power, rather than a condemnation of the 807, which, I freely admit, is an excellent valve of its class.

In view of the delicate nature of our occupancy of the 1.8 Mc/s band, it surely behoves us all to ensure that we give no grounds for complaint from official sources regarding amateur operation. The use of large transmitting valves may be likened to the driving of a powerful motor-car in a built-up area—the driver may not necessarily exceed the speed limit at any time, but the temptation and the means is there—and we are all human!

Messrs. Roscoe and Williams both defend the use of an 807 on Top Band by its low cost, but surely this is largely offset by the uneconomical consumption ratio (total watts "out" to total watts "in"—including heaters) and anyway the 807 is no cheaper than a valve of the 7C5 class.

I can assure Mr. Williams that economy of pounds, shillings and pence concerns me very greatly, so much so in fact that my transmitting licence is for 10 watts only on all bands. G3FFY's remarks about my probable use of an 813 at 150 watts are therefore somewhat wide of the mark!

Yours faithfully,

R. L. PLUCK (G4AY).

Rainham, Kent.

Subscription Rates

DEAR SIR.—As a radio amateur of many years' experience, dating back to the days of the Wireless Society of London, I have read with interest and some regret "Current Comment" in the April BULLETIN. There is, I feel sure, justification for an increased subscription, but the way the case has been presented has been appalling. My impression, after reading the Editorial in the January BULLETIN, was that it had been written by someone with the mentality of a small boy in a paddy! Members have a right to decide these matters for themselves, and their reactions after such an article are likely to be that "They are not going to be dictated to by either paid employees of the Society or by the Committee who are servants of the Members."

It would enable us all to think more clearly if such reactions were allowed to elapse, before further attempts are made to secure the same or similar changes in Article 19, and I certainly think a little clear thinking all round, unprovoked by the Executive, would help a great deal.

As Provincial Members we certainly get the BULLETIN for the small subscription we pay, and some of us consider that fair value—it is also stated that we get support with the Post Office, although some of us think that support is pretty small. The London Membership have considerably more facilities, such as meetings in the I.E.E. building which can be reached with little effort.

In my opinion it is wrong that a Corporate Member, whether he lives in the Island of Skye or in London, should pay the same subscription rate.

The case for some increase of your receipts, assuming everything is in order at Headquarters, can probably be justified, but the attitude should not be, that subscriptions are going to be increased for every member, irrespective of their benefits from the Society and that the increase is to be forced through, regardless of the members' wishes. That is quite a different matter, and I am sure there are many old stagers like myself who would help to smooth matters out and approach the problem with both experience and business ability. I am a director of several successful companies, and the difference of 15s. or 30s. does not worry me, but I feel sure the rights of juniors, who in the main are not large wage earners, should be considered.

Strong feelings have developed which is a pity, because I personally think your claim is just, but you are going the wrong way to get it recognised as such!

Yours faithfully,

G5SF.

Liverpool, Lanes.

DEAR SIR,—Mr. Barber (VK6DX) in his letter (May issue) has, of course, hit the nail on the head when he says that it is impossible for any business to be carried on today with only a pre-war income. Almost everything has gone up 100% since before the war, and it is only natural that the R.S.G.B. subscription rates must do likewise.

In the same issue, Mr. Sharpe (G2HIF) states that the Society must be remodelled on more democratic lines. I would point out here that the Council is elected by the membership; if Members do not like the Council they have only themselves to blame for electing them!

I consider that the QSL Bureau and the BULLETIN alone is worth the 30s. asked. How much would the average amateur spend on the postage of QSL cards in one year without a Bureau? Much more than the 30s., unless he is one of those people I could name who will not QSL at any price.

It is imperative that the National Society remains in existence (which it cannot do indefinitely on the 15s. rate). Without the Society Amateur Radio in this country might just as well QRT.

The only criticism I have to make is that the increase in subscription rates is about seven or eight years overdue.

Yours faithfully,

K. B. ROULSTON (G2BJN).

Loughborough, Leics.

Another Blind Amateur Licensed

JOHN PROCTER, a blind amateur living in Sussex, has recently received his licence and the call-sign G3FJP. In addition to the usual difficulties of the sightless, G3FJP has no hands, and operates his equipment with the stumps of his wrists. He is active on c.w. in the 3.5 Mc/s band using a crystal controlled transmitter specially built for him by local amateurs. The receiver is an Eddystone S640 supplied by Stratton & Co. Ltd.

G2ACC OFFERS YOU—

"Satisfaction through Service"

This year is a memorable one as Coronation Year and it marks a new Elizabethan era which everyone hopes will prove to be happy and prosperous. To us it marks our nineteenth anniversary and a new phase in our history.

We are now settled in our new factory premises and hope to improve our already well-known mail order service of amateur radio apparatus.

Agents and Distributors of:

AERIALITE—AVO—ACRU—AMPLION—BELLING LEE
B.T.H.—BULGIN—BRIMAR—CLIX—COLLARO—COSSOR
COLVERN—DENCO—DUBILIER—EDDYSTONE
EDISWAN—ELAC—E.M.I.—ERIE—G.E.C.—GOODMANS
HAMRAD—HENLEY—J.B.—MAZDA—McMURDO
MORGANITE—MULLARD—Q.C.C.—Q-MAX—RAYMART
ROTHERMEL—SORAD—TALLON—T.C.C.—TAYLOR
TELCON—TUNGSRAM—VARLEY—WAVEMASTER
WEARITE—W.B.—WEYMOUTH—WESTINGHOUSE
WODEN, Etc.

Please note our new address:

Southern Radio & Electrical Supplies
SORAD WORKS, REDLYNCH, SALISBURY,
WILTS.

Telephone: Downton 207.

H. WHITAKER G3SJ

10 YORKSHIRE STREET, BURNLEY

Phone: 4924

VALVES: 6SC7, 6SS7, 6SK7, 6K7, 6AB7, 7/6; VMS4, 7 pin, 4/-; 6D6, 8/-; 12SH7, 5/-; VP4B, 10/-; EF80, 17/6; Z77, UF42, UAF42, 17/6; 6ACT, 8/-; 7Q7, 6/-; 6SA7, 6L7, 8/-; ECH3, 15/-; X150, 10/-; UCH42, 16/-; X24, 7/6; 1R5, 1T4, 354, 3V4, 8/6; 6J5, 5/-; 6C8, 7/6; 12C8, 5/-; L63, H63, 7/6; TDD13c, 8/-; D63, 8/-; 9004, 4/-; GH6, 3/-; 6N7, 8/-; 6F7, 7/6; 6B8, 6/6; 12J5, 3/-; 12SL7, 12SR7, 12AH7, 5/6; 6AL7, 9/-; 6Q7gr, 10/-; 7193, 2/-; 866, 20/-; 836, 17/6; VU29, 30/-; 1W4-350, 8/-; 6X5, 5Z4, 25Z4, 35Z4, 80, 5Y3, 5Y4, 10/-; VU111, 2/6, 24/- per doz.; RK72, 3/-; CV235, CV187, 8/-; VR105, 10/-; 813, 10/-; T200, 60/-; 6AK5, 8/6; 832, 30/-.

METERS, Gc.: Met-Vik and Weston 3in. round flush 100 mA., 200 mA., 15/-; Modulation indicators, type 2, in cast aluminium cases, 1 1/2 in. x 6 1/2 in. x 7 1/2 in. freq. coverage 2.4 Mc/s. to 6.25 Mc/s. continuous in two switched bands, modulation percentage in direct reading on 0-500 3in. microammeter calibrated 0-100%, all have individual calibration charts and complete with transformer coupling coil. To clear 70/- each, carriage paid. Wavemeter W125T 230 V a.c. mains, 22 Mc/s. to 30 Mc/s precision Muirhead dial individual calibration charts. In copper-lined cases, 12in. x 9in. x 8in., AM Ref. 10T/59, made by Marconi. To clear £4 each, carriage paid. J.V. T.V. pattern generators, a.c., 200-250 V, covers all T.V. channels, 40-70 Mc/s, 7 valves, sound modulation, one horizontal bar, optional number of vertical bars. List price £14, to clear £9, carriage paid. Ditto T.V. Signal Generators, 200-250, a.c. mains, all T.V. frequencies, can also be used as grid dip oscillator. List £6 19s. 6d., to clear £4 10s.

COLLARO: AC37 Cram Motor, complete with turntable. Variable speed through 33 to 100 r.p.m., 110-230 V a.c. mains. Exceptional offer at 50/- each.

Plessey 3-speed auto-record changer. Dual sapphire, switched stylus, mixes 10in. and 12in. at 78 r.p.m., and also 33 1/3 and 45 r.p.m. List £23 13s. Last remaining few to clear, £10, carriage paid.

MUIRHEAD: Heavy brass wavemeter dials, 3 1/2 in. diam. calibrated 0-100°, fast/slow release button, 50 complete revolutions for full 100°. A precision dial for v.f.o., etc. Brand new and boxed, 8/6 each. H.R.O. type T1087, with full counter mechanism, 0-500, less gear boxes, 6/- each. National velvet vernier T.U. type. Complete with ceramic coupler for 1/2 in. shafts, 8/6.

CRYSTALS: 1,000 kc/s Valpey, Bliley or Somerset, standard 1/2 in. pin spacing, 20/-; BC221 octal based, 1,000 kc/s. G.E.C., Bliley, etc., 30/-. Full range of Western i.f. frequencies, 450, 465 kc/s., etc., 12/6 each. Amateur and commercial bands, G3SJ crystals are precision lapped and acid etched to final frequency, are available in either FT243 holders, 1/2 in. British, 1/2 in. U.S.A. or 1/2 in. P5 holders. Your own choice of frequency 2 to 10 Mc/s inclusive. We will despatch to within 1 kc/s of your chosen frequency at 15/- each, accurately calibrated with frequencies clearly marked. Slight extra charges for decimal point frequencies. We also undertake the calibration or re-grinding of your own crystals at extremely reasonable and nominal charges. New light craft frequencies available from stock. Your existing frequencies can be re-ground at approximately 7/6 each.

WAVEMETER CLASS C NRL CRYSTAL UNIT Z.A.2959: Each unit contains 1,000 kc/s crystal in 10x holder, with a guaranteed accuracy of .005%. Offered at bargain price of 18/-, post free.

T.U. UNITS: 7, 8, 9, 26, complete with cutter cases, in perfect condition, 25/-.

BRIMAR VALVES

for **VHF** and **UHF**

For amateur work in the higher frequency ranges Brimar types 5763 and 12AT7 are becoming increasingly popular. Check these performance details before designing your new receiver or transmitter.

TYPE 5763

Due to its small size, this vhf beam power tetrode is very suitable for portable equipment. Designed as an r.f. amplifier and frequency multiplier, it is also a useful modulator or driver, since a pair in class AB2 will deliver 25 W with an anode voltage of only 300.

TYPICAL OPERATION

| | Oscillator or Power Amplifier | Doubler | Tripler |
|--------------------------|-------------------------------------|----------------|----------------|
| Anode Voltage | 300 | 300 | 300 V |
| Anode Current | 50 | 40 | 35 mA |
| Screen Supply Voltage.. | 250 | 300 | 300 V |
| Series Screen Resistor.. | — | 12.5k Ω | 12.5k Ω |
| Screen Current | 5.0 | 4.0 | 5.0 mA |
| Control Grid Voltage .. | -60 | -75 | -100 V |
| Control Grid Resistor .. | 22k Ω | 75k Ω | 100k Ω |
| Control Grid Current .. | 3.0 | 1.0 | 1.0 mA |
| Peak r.f. Grid Voltage.. | 80 | 95 | 120 V |
| Input Driving Power .. | 0.35 | 0.6 | 0.6 W |
| Output Power | 8 | 3.6 | 2.8 W |

This data will apply up to 175 Mc/s, but above that frequency the maximum anode voltage and dissipation must be reduced.

TYPE 12AT7

This high-slope double triode with separate cathodes is an excellent frequency-changer, oscillator, earthed grid or earthed cathode r.f. amplifier up to and including the 70 cm. band.

Frequency Changer.—With a conversion conductance of 2.5 mA/V, the 12AT7 at 70 cm. gives a conversion gain of 5db, with a noise factor of 10, thus offering distinct advantages over a diode mixer at these frequencies.

Oscillator.—Up to 500 Mc/s. With lines as the tuned circuit, the two halves in push-pull will deliver approx. 2 W r.f. at 400 Mc/s.

Earthed Grid r.f. Amplifier.—In push-pull earthed grid operation the input impedance is approx. 300 ohms, thus matching to 300 ohms balanced feeder is simple. A single-ended amplifier using one-half only gives at 200 Mc/s a gain of about 10db, and 6db. at 400 Mc/s. Operation of both sections in push-pull gives an additional gain of 2-3db.

Earthed Cathode r.f. Amplifier.—Feeding an earthed grid stage, a gain of 14db. is obtainable at 200 Mc/s with a noise factor of 7.

BRITISH MADE BRIMAR VALVES

Send for **FREE DATA SHEETS**
to the Publicity Dept.

Standard Telephones and Cables Limited

FOOTSCRAY, SIDCUP, KENT.

FOOtscray 3333

Recognised as the Most Reliable Valveholders



B7G Valveholders

are now available moulded in:—

Phenol Formaldehyde (Black).

Nylon loaded Phenol Formaldehyde
(Natural Brown).

P.T.F.E.

and now **MYCALEX.**

Wholesale Enquiries :—

CYRIL FRENCH HOLDINGS LTD.

High St., Hampton Wick
Middlesex. KIN. 2240

Manufacturers' Enquiries:
THE McMURDO INSTRUMENT CO. LTD.,
VICTORIA WORKS, ASHTEAD, SURREY
ASHTEAD 340

HENRY'S

5 HARROW ROAD, LONDON, W.2.

Telephone: PADDINGTON 1008/9 & 0401

Shop hours, Mon.-Sat. 9-6, Thurs. 1 p.m.

EXCEPTIONAL VALVE OFFER

Ten EF50 (Ex. Brand New Units) 6/- each 55/- Set
 6K8G, 6K7G, 6Q7G, 5Z4G, 6V6G (or
 KT61) 42/6 ..
 1R5, 1R5, 1T4, 1S4 or (3S4 or 3V4) 32/6 ..
 TP25, HL23/DD, VP23, PEN25 (or QP25) 27/6 ..
 6K8G, 6K7G, 6Q7G, 25A6G, 25Z5 or
 25Z6G 42/6 ..
 12K8GT, 12K7GT, 12SQ7GT, 35Z4GT,
 35L6GT or 50L6GT 42/6 ..
 12SA7GT, 12SK7GT, 12SQ7GT, 35Z4GT,
 35L6GT or 50L6GT 42/6 ..
 Complete set of specified valves for "P.W." Personal
 TV, 5 6AM6, 2 6AK5, 1 6J6, 1 6C4, 1 EA50, and
 3BP1 C/R Tube with base .. £5 12s. 6d.
 PX25, KT35C, KT66, GU50, 12/6 each. (PX25's
 Matched Pairs, 25/- pair)
 Rathern CK510AX Sub-miniature Valves, brand
 new, 7/6.

PYE 45 Mc/s STRIP. Type 3583 Units. Size.
 15in. x 8in. x 2in. Complete with 45 Mc/s Pye
 Strip, 12 valves, 10 EF50, EB34 and EA50, volume
 controls and hosts of Resistors and Condensers. Sound
 and vision can be incorporated on this chassis with
 minimum space. New condition. Modification data
 supplied. Price £5, carriage paid.

INDICATOR UNIT TYPE 182A

Unit contains VCR517 Cathode Ray 6in. tube, complete
 with Mu-metal screen, 3 EF50, 4 SP61 and 1 5U4G
 valves, 9 wire-wound volume controls, and quantity
 of resistors and condensers. Suitable either for basis
 of television (full picture guaranteed) or Oscilloscope.
 Offered BRAND NEW (less relay) in original packing
 case at 79/6, plus 5/- carr.

25/73 TR1196 RECEIVER

This unit is complete with 6 valves, 2 EF36, 2 EF39,
 1 EK32, 1 EBC33 and 465 kc/s i.f.f.s. in new con-
 ditions. Circuit and conversion data supplied. 39/6.

25-WATT AMPLIFIER (ex-Admiralty)

By Parmeko and Sound Sales. PX25, 2 AC/HL, MU14,
 a.c. 100/250 V. Complete in steel grey amplifier case.
 £12/10/0. Call for demonstration.

RECEIVER R1355. As specified for "Inexpensive
 Television." Complete with 8 valves, VR65 and 1 each
 5U4G, VU120, VR92. Only 55/-, carr. 7/6. Brand
 new, in original packing case.
 RF24, 25/-; RF25, 25/-; RF26, 59/6; RF27, 59/6.

Radio G200 Announces

VALVES At 2/9: RK34/2C35, VR78, D1,
 954, 12H6. At 4/6: 2X2/879,
 4D1, VU111, CDT4C, NGT1. At 5/9: 12SH7,
 SP41/VR65A. At 7/6: 6U5C, 12SC7, 12SL7, EC52,
 EF54, VR136, CV73, 6C6, U78. At 8/6: 1619, OZ4,
 6AG5, 6SK7gt, 2A3. At 9/6: 7S7, 7C5, 7B7, 7H7,
 7R7, 7Y4, PT25H, VT46, 1T4, 3A4, 3Q4, N18,
 W77, 6K7gtg, 25L6gt, 50L6gt, 6V6g, 6K6gt, KL35,
 PM2HL, 6D6, 6X5gt, 1R5, 154, 3V4, 1A5gt,
 1C6gt, 6B8g, 6CH6, 5Z4G, 6SL7, 12AT7, 12AX7,
 6AT6, 6BE6, 6BW6, 6X4. At 11/6: X66, 12K8gt,
 6J7, 5763, 8012, 801.

ARTHUR HOILE 55 UNION STREET,
 MILDSTONE, KENT.
 Phone: 2812.

METRO-VIC (METROSIL) PENCIL

TYPE E.H.T. REGULATOR up to 10 kV, particularly
 suitable for regulating E.H.T. Fly-Back. 5/-.

INDICATOR UNIT TYPE SLCS. This Unit is ideal for
 conversion for a "Scope" Unit or basis for Midget
 Television. It contains C/R Tube type ACRI0
 (VCR193A) complete with holder and cradle, also
 earthing clip. 1-VR66, 2-VR65, 24uF 550 V wkg.
 condenser, potentiometers and a varied assortment of
 resistors and condensers. These Units are in new
 condition and packed in wooden transit cases. The C/R
 Tube will be tested before dispatch. Dimensions:
 8 1/2 in. x 6 1/2 in. x 1 1/2 in. 57/6.

S.T.C. RECTIFIERS E.H.T.

| | | |
|------------------------|----|-----|
| K3/25, 650V, 1 mA | 4 | 7 |
| K3/40, 1,000 V, 1 mA | 8 | 0 |
| K3/100, 8,500 V, 1 mA | 14 | 8 |
| K3/200, 10,000 V, 1 mA | £1 | 6 0 |

WEYMOUTH SUPERHET MINIATURE COIL PACK

Covering Med./Long/Short wave bands. Iron cored
 coils. Dimens.: Height 1 1/2 in. Length 3 1/2 in. Width
 2 1/2 in. Spindle length 2 in. Complete with Circuit.
 Price 19/6.

V.C.R. 517C BLUE & WHITE 6 1/2 in. TUBE

This tube replaces the VCR97 and VCR517 without
 alteration and gives a full blue and white picture.
 Brand new in original crates, 45/-, plus 2/- carr.

CATHODE RAY TUBES

| | | | |
|---|----|----|---|
| VCR97. Guaranteed full TV Picture (carr. 2/-) | £2 | 0 | 0 |
| VCR517. Guaranteed Full TV Picture (carr. 2/-) and Screen | £2 | 0 | 0 |
| Mu Metal Screens for above | 10 | 0 | |
| 6in. Enlarger Lens for above | 17 | 6 | |
| VCR139A (ACRI0). For TV or 'Scope, brand new and boxed | £1 | 15 | 0 |
| 3BP1. For TV or 'Scope (carr. 1/6) | £1 | 5 | 0 |

No. 38 "WALKIE-TALKIE" TRANS-RECEIVER.

complete with Throat Mike, phones, Junction Box and
 Aerial Rods in canvas bag. Freq. range 7.4 to 9 Mc/s.
 Range approx. 5 miles. All units are as new and tested
 before dispatch. Offered complete with battery.
 £4 10s. 0d.

T.V. PRE-AMPLIFIER FOR LONDON AND BIRMINGHAM.

Complete with 6AM6. Ready to plug in to your
 set. 27/6. P.P. 2/6.

WANTED

723 A/B and CV129 Klystron Valves, Philips Trimmers,
 3-30 uF. RL18, NR88. Crystals. Any quantity.

R.T. & I. SERVICE AT YOUR SERVICE!

Eddystone 740 receiver (500 kc/s-30 Mc/s). £32. Eddystone
 358X (90 kc/s-30 Mc/s). £18. Hallcrafters SX.17 (550
 kc/s-61 Mc/s). £32. Hallcrafters SX.28 (550 kc/s-42 Mc/s).
 £50. Hallcrafters S.38 (550 kc/s-30 Mc/s). £25.
 Hammarlund Super-pro (540 kc/s-20 Mc/s), with power pack,
 £45. H.R.O. Junior 5 coils (0.9-30 Mc/s) and power pack,
 £26. H.R.O. Senior, 9 coils (50 kc/s-30 Mc/s) and power
 pack, £42. H.R.O. Senior, 5 coils (0.9-30 Mc/s) and power
 pack, £33. Marconi CR.100 (60 kc/s-30 Mc/s). £25.
 R.C.A. AR77E (540 kc/s-31 Mc/s). £32. Other communi-
 cations receivers available from stock.
 Genuine AR.88 spares. AR.88 LF main frequency dial, 15/-.
 "D" or "LP" cabinets, £5 each. Speakers in black cradled
 cabinet (matched), 8/- each.
 All ranges of H.R.O. coils in stock. S.A.E. for list.
 Eddystone 358X coils as follows: Range C, 15/-, E, 15/-,
 G, 10/-, H, 10/-, I, 10/-.
 National "in-line" gearbox, similar design to H.R.O. type,
 15/- each.
 Hudson car radio, 6-volt type, working order, £8.
 Carriage is extra on all items.

Your enquiries are cordially invited. S.A.E. please.

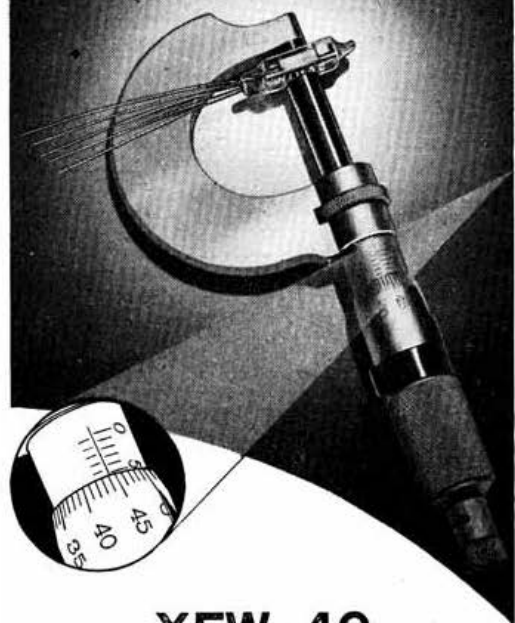
RADIO TELEVISION & INSTRUMENT SERVICE,
 254 GROVE GREEN ROAD, LEYTONSTONE, LONDON, E.11

Telephone: LEYton 4986.

SUB-MINIATURISATION

HIVAC

FIRST
TO GET DOWN TO IT!



XFW 40

**Beam Tetrode Sub-miniature Amplifier
with still lower filament current**

TYPICAL OPERATION

| | | | |
|---------------------|---|---|-----------|
| Filament Voltage | - | - | 0.625 V |
| Filament Current | - | - | 10 mA |
| H.T. Supply Voltage | - | - | 22.5 V |
| Anode Load | - | - | 1 to 2 MΩ |
| Screen Resistance | - | - | 3 MΩ |
| Stage Gain | - | - | 32 |

The maximum cross-section is only 8mm. by 6mm. with a glass length of 27.0mm.

HIVAC
THE SCIENTIFIC
VALVE

The most modern small flat subminiature voltage amplifier for hearing aids and other small electronic equipment.

Hivac Ltd.

GREENHILL CRESCENT, HARROW-ON-THE-HILL, MIDDLESEX

Telephone: HARROW 2655

DINGHY RADIO TRANSMITTERS

American Bendix Model BC778E. Brand new, all the following components wired and fitted in metal case with knee-strap.

One Hand Generator for h.t. and i.t. One Miniature Relay 1,000 ohms 28 V. Two 6.5 V Warning Bulbs. Holders. One Small Neon Lamp. One 2-pin Socket. 12 Fixed Condensers, assorted sizes. 6 Fixed Resistors. One Valve, 12SC7. One Valve, 12A6. One Variable Air-Spaced Tuning Condenser, .0005 μF. One 6-way Single Pole 60-degree Yaxley Switch. One Transformer, BX/17/20. One 6-way Miniature Jones Plug and Socket. 4 Tuning Coils. One Push Button. One Coil Covered Aerial Wire, flexible. One Coil Earth Wire. Only 55/- each.

Carriage and Packing 5/- England, Wales and Scotland.

ELECTRADIX RADIOS

Dept. N, 214 Queenstown Road, Battersea, S.W.8

Telephone: MACaulay 2159

Come to SMITH'S OF EDGWARE ROAD

THE FRIENDLY SHOP
FOR ALL RADIO COMPONENTS

We stock everything the constructor needs—our 25 years' experience of handling radio parts and accessories enables us to select the best of the regular lines and the more useful items from the surplus market in:

Loudspeakers and Phones Valves and CR Tubes
Transformers and Chokes Cabinets and Cases
Meters and Test Equipment Capacitors and Resistors
Pickups and Turntables Coils and Formers
Switches and Dials Plugs and Sockets
Metalwork and Bakelite Aerials and Insulators
Books and Tools Motors and Generators
Valve Holders and Cans Wires and Cables
Recorders and Amplifiers Panel Lights and Fuses
Sleeving, Nuts and Bolts, Tags, Clips, Grommets and all other bits and pieces.

NOTHING TOO LARGE—NOTHING TOO SMALL!
Everything you need under one roof—at keenest possible prices.

H. L. SMITH & CO., LTD.,

287/9 Edgware Rd., London, W.2. Telephone: Paddington 5891.
Hours 9 till 6 (Thursdays, 1 o'clock).
Near Edgware Road Stations, Metropolitan and Bakerloo.

UNIVERSITY RADIO LTD.

Dealers in Guaranteed used Electronic Equipment.
Established 25 years—all equipment guaranteed
3 months.

We have a large selection of Transmitter-Receiver Equipment by leading British and American manufacturers at very attractive prices.

British and U.S.A. Valve Testers, Test Meters in stock. Please state specific requirements. We are unable to publish lists owing to our constantly changing stocks. S.A.E. please.

We specialise in Disc and Tape Recorders and can offer most leading makes, used, but as new, at reduced prices.

WE NEED GOOD USED EQUIPMENT URGENTLY.
PLEASE SEND, BRING OR PHONE FOR OFFER.

WE NEED AR88s, BC221s, 348s, 342s. ALSO COSSOR DB'SCOPIES 339a or 3339, &c. WE WILL PAY WITHIN £2 OF THE MARKET PRICE.

FOR FIRST-CLASS EQUIPMENT WE ARE PREPARED TO PAY MORE THAN ANY DEALER IN THE COUNTRY.

WE URGENTLY NEED GOOD USED EQUIPMENT OF ALL TYPES. WE PAY TOP PRICES & SPOT CASH.

Write, Call, or Phone: (3 lines)
GERrard 4447, 8582 and 5507

22 LISLE ST., LEICESTER SQ., LONDON, W.C.2

EXCHANGE AND MART SECTION

ADVERTISEMENT RATES. Members' Private Advertisements 2d. per word, minimum charge 3/-. Trade Advertisements 6d. per word, minimum charge 9/-. (Write clearly. No responsibility accepted for errors.) Use of Box number 1/6 extra. Send copy and payment to **National Publicity Co., Ltd., 36-37 Upper Thames Street, London, E.C.4.**, by 25th of month preceding date of issue.

AMATEUR selling up.—250 W transmitter (160, 80, 40, 20 m, easily modified higher frequencies), consisting of p.a. (2 803s), modulator (plate and screen) and speech amplifier, power packs, 50 W driver (80, 40, 20 m). High quality commercial v.f.o. Broadcast quality m/c microphone. Aerial tuning unit. Various valves and other small components. £55 the lot; prefer buyer collects; consider selling individual parts separately. Sale in mid-July.—Write **R. M. PREVETT, Stonebrook House, Somerton, Somerset.** (472)

A small modern house for sale, 3 bedrooms, 2 reception, garden and garage. Brick shack in garden. £3,475. Long lease.—**G2BNI, D. B. Drage, 53 Hendon Way, London, N.W.2.** (494)

AVO model 40 for sale, excellent condition, £9.—Offers.—**H. VAUGHAN, 10 Gayton Road, Harrow, Middlesex.** (479)
BC.348, £15. BC.221, £20. Wilcox v.f.o./transmitter, £6. All as new. S.A.E. for details.—**PAGE, G3HKV, Beaminster, Dorset.** (449)

B2 transmitter and receiver in steel case with transmitting coils, £8.—**J. TOLMAN, 34 Cookham Road, Maidenhead, Berks.** (455)

BULLETINS for sale, January, 1937, to March, 1948 (one missing). Also Guides, 1935, 1936, 1937, 1940.—Box 452, **THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4.** (452)

BULLETINS, August, 1943, to April, 1953 (August, 1945, and May, 1949, missing).—Offers to **BM/NIM, London.** (462)

CCLASS "D" wavemeter, 6 V a.c., £5 10s. 100 kc/s crystal, 10/-, 6K7, KT61, 6N7G, 6/- each. 6K8G, X66, 7/- each.—**60E Lewis Buildings, Liverpool Road, London, N.1.** (446)

CNY1, good working order, £8 10s. Buyer collects.—**G3FVY, 28 Lindale Gardens, South Shore, Blackpool.** (489)

COMplete B.2 in watertight cases, excellent condition, £18. Receiver, R.208, 10-60 Mc/s in three bands, unmodified, in metal case, £10. CR.100 (B.28) cabinet and chassis in reasonable condition, £1 10s. Class "D" wavemeter with crystal but minus valves and vibrator, unmodified, £4 10s. Eversheds ex-G.P.O. Bridge-Megger, 250 V, pre-war model, £5. Manuals: AR.88D, SCR-211-N (SCR-211-K, SCR-211-L), SCR-399-A, SCR-499-A, (BC.610-ABCDE, BC.312N, 312NX, 342N, 314G, 344D), 15/- each.—**36 Engel Park, Mill Hill, N.W.7.** (477)

CONSTANT volt. transformer, 190/250 V input to 115 V at 4 A output, £6. T1621C v.h.f. jamming transmitter, including type 105 oscillator (CV82), £5. TU5B, £1. T.1196 power unit (24 V), £1. VCR138, unused, with base, 17/6. VT501 (TT11), 4/-, T.1131 modulation transformer, 30/-, Various American transformers, 100-117 V input to 5 V-2.5 kV output, cheap; stamp for list. AR.88LF output transformer, 15/-. AR.88 4+4+4 μ F condenser block, £1. 1625 (12 V-807s), 4/-. Makers' handbooks: AR.88LF, 15/-; BC.221M, 5/-. 50 yds. twin lead-covered cable 7/029, £3. Offers.—Box 476, **THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4.** (476)

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.

Copy required by 25th of month preceding date of issue. For Advertisement Rates see above.

DDOUBLE superhet, 200 kc/s to 34 Mc/s B.S., all ham bands, "S" meter, every refinement, crystal, etc., £15. 65 B Windsor Genney, 9.—**TAYLOR, Shoeshop, Lake, I.O.W.** (475)

EDDYSTONE 640 communications receiver with matching speaker, very little used, £18.—**G6BS, 96 Hinton Way, Gt. Shelford, Cambridge.** (495)

EXCHANGE H.R.O. receiver, eight G.C. coils and power unit for S.640 or S504, or sell £20. BC.348L, "S" meter, ANL P.S., £20. Class "D" wavemeter, a.c., new, £6. Crystal calibrator, 1,000/100/10 kc/s, with modulation, 50/-, New Miniscope, £12. BC.453, modified as per S.W.M., £3. Communication receiver, 80 kc/s to 19 Mc/s, £8. You collect, London.—Box 485, **THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4.** (485)

FOR SALE.—Denco DCR.19, £30. Excellent condition; "ham" selling up; Lancashire area; buyer collect.—Box 101, **THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4.** (101)

GOVERNMENT Surplus Sale. Come to the Radio Centre and inspect unrepeatable offers of bargains in electronic equipment.—**MAIL ORDER SUPPLY CO., 33 Tottenham Court Road, London, W.1.** (463)

HAM selling all gear, must clear complete QRO station and spares owing to ill-health. Many bargains. S.A.E. list.—**G3DCQ, 8A Sunnyside Avenue, Highams Park, E.4.** (480)

H.R.O. Senior, modernised under laboratory conditions, Z77s in r.f. stages, 6BE6 mixer, 6C6 oscillator. All paper condensers replaced. Noise suppressor. Complete facilities for break-in. In mint condition and a first-class job all round. Complete set of bandspread coils plus 50-100 kc/s GC. Stabilised power pack, 230 V. Professional job throughout. Comprehensive instruction manuals. £50.—Box 467, **THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4.** (467)

ITEMS at 5/-: CQ, March, 1948/December, 1949; T55, PT15 (2), 2X2, 10Y, 801A, 1626, ML4, RK72 (2), 2050 (2), 2051 (2), 723A/B (rough condition), 5Z3, UUS, S130, PEN46, 6N7GT (4), 6A6G, 6K6G, 6K8GT, 6AC7, 6B8, 6K7M, 6SC7, 6SH7 (4), 12A6, 12SG7, 12SH7, 12H6, 12SJ7, 7B6, 7C5 (2), 7C7 (2), 7F7. At 10/- each valve: 845, CV57 (2), VT4C (2), RK11 (2), DET12, two CV187 (vac. equiv. GU50), VU29 (2), 715B, STV280/40. Coil turrets and p.a. coil for transmitter 12, £1. Type "F" aerial tuner, £2 5s. All post paid. Wanted: surplus conversion manual, volume 2.—**GM2HFV, 23 Noran Avenue, Dundee.** (468)

LOW-PASS filters made to order, in copper-plated box, any area, available stock for Holme Moss; greater than 60 db down at rejection frequency; 27/6 each, post free. S.A.E. for details and list of surplus valves, components, etc. Wanted: HK2578.—**J. SIMPSON, 1 Marsh Terrace, Darwen, Lancs.** (490)

METALWORK.—All types cabinets, chassis, racks, etc., to your own specifications.—**PHILPOT'S METAL WORKS LTD. (G4BI), Chapman Street, Loughborough.** (99)

PATENTS and Trade Marks. Handbooks and advice free.—**KINGS PATENT AGENCY LTD. (B. T. KING, G5TA, Mem. R.S.G.B., Reg. Pat. Agent), 146a Queen Victoria Street, London, E.C.4.** Phone: City 6161. 50 years' refs. (98)

PORTABLE transmitter/receiver, brand new T.48, complete 10 valves plus 10 spare, microphone, key, batteries, generator, etc.; £12, or exchange BC.348, SX.24, S.640, or similar receiver.—**39 Kingsbury Road, Birmingham 24.** (453)
PREMIER transformer, 500/500 at 150 mA, 20/- (Fil. transformer, 7.5 at 2 A, 6.3 at 4 A, 5 V at 3 A twice, 15/-) Choke, 30 H, 140 mA, 15/-, PT15, 5/-.—**G8CO, 2 Whitehall Road, Grays, Essex.** (461)

PROFESSIONALLY engineered rack-built transmitter, 120 W c.w., 100 W telephone, v.f.o., 3.5-30 Mc/s; 24 valves, 808 p.a., p.p., TZ40 modulator. Fully metered. Buyer collects, S.E. London, £30.—Box 454, **THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4.** (454)

QMAX" table-top transmitter, cost £75, £45. Tape recorder, £30. Bug key, Lionel, £3.—**G3HQV, James Street, Barrow, Lancs.** (493)

QSLs and log book (P.M.G. approved). Samples free. State whether G or B.R.S.—**ATKINSON BROS., Printers, Elland.** (772)

QST, 1948 to date, wanted. Complete set or odd copies. Your price.—**CHORLEY, 6 Calton Road, New Barnet, Herts.** (484)

R.107 and 10-metre converter, excellent condition, £11. Wanted: M.C.R.1. small transmitter or transmitter/receiver.—**RENWICK, 11 St. Paul Street, St. Helens.** (447)

R.107 with manual, £12. CR.100, £21. Thermador, 680-0-680, 225 mA, 28/-, Eddystone S.440D transmitter, 25/-. Labgear wideband multiplier unit, £3 10s, Agfa Isolette II, £4.5 coated lens, Compur rapid shutter, E.R.C. Dolland rangefinder and 3 yellow filters, £21; or offers any item.—**HUGHES, 20 St. Peter's Street, Glasgow, C.4.** (483)

SALE.—Receiver, 1392, 100-150 Mc/s, instruction book, £8. Signal generator/wavemeter, 1185A, 20-100 Mc/s, instruction book, £7 10s. Two 1355 receivers, 25/- pair. BC.433, 200-1700 kc/s, £2. BC.800, 200 Mc/s, i.f.f., 15 valves, £2. 6 V and 12 V valves, cheap.—**KIMBER, 61 Gale Lane, Acomb, York.** (481)

SALE.—R.C.A. AR.88D, mint condition, £55. Wanted: SX.28 in good condition.—**80 Ellesmere Street, Moss Side, Manchester 16.** (488)

S.27, £2. CNY.2, £18. Buyer collects. Also B.2 Minor, £9. Spy miniature transmitter (a.c.), £3: ditto receiver, £5. S.A.E. enquiries.—**G6AB, 44 Preston Road, Holland-on-Sea.** (465)

TWO Army wireless sets No. 19, Mark III, for sale, frequency coverage 2-8 Mc/s + 235 Mc/s, complete with 12 V power pack, starter relays, aerial variometer, remote control unit and head-set. Offers invited.—Box 448, **THE NATIONAL PUBLICITY CO., LTD., 36-37 Upper Thames Street, London, E.C.4.** (448)

(Continued on page 552)

EXCHANGE & MART SECTION

(Continued from page 551)

TZ40, 21/-, Cydon 60+60, 7/6. Woden 20 H-250 mA, £2. 2 μ F condensers, 1,000 V, 3/- each. 4 μ F 750 V working, 5/-. H.R.O. "S" meter, £2. Quantity of gear for callers. Stamp reply.—2 Cliff Road Gardens, Leeds 6. (459)

URGENT.—Due to removal, GSCP wishes dispose at fraction of cost complete transmitter in specially designed, battleship grey, sheet steel cabinet, comprising pair RK28A final, 3 buffers, Wilcox Gay v.f.o., pre-amplifier and final modulator, all power packs, coils 160/10 metres, including 15 metres, relays, speech final p.p. 211 UM3 mod. transformer. Variac control on h.t. 0/2000. Buyer collects and loads to Lorry. Bargain, £65, near offer. Cabinet outside dimensions, 6 ft. high, 3 ft. wide, 2 ft. 3 in. deep. Photograph available.—33 Manley Road, Sale, Manchester. (Sale 3816.) (471)

VALVES.—At 2/6: 1C5, 1A5, 1LH4, 6H6GT, 6P7G, VR136, VR101, VT153, VT91, VT104, VT93, 28D7, VT52, L63, 6L5. At 4/6: 12SQ7, VR91, 12SK7, 6SQ7, 6K7G, DF91, 12SJ7, 6AG5, EF8, 6L7G, 6SH7, 6F5, 11726, 2D21, 78, 688G, 6K7, 6F6, 6J6, DET19/RK34, IT4, 6J7, 6SN7, KT61, 3Q5, 84, 607G, 2A4, 7C5, ECH35, 954, 956, 955, GU50, 2A3. At 6/6: 6AG7, 6K8G, TT11, VT501, EL38. At 8/6: 6L6, VR150, 1625, VR105. At 15/-: 8025, 703A. At 50/-: BC.453, 250 to 550 kc/s; BC.455, 6 to 9 Mc/s; both with valves. SX.28 handbook, 3/6.—TREMAINE, 30 Montague Road, Cambridge. (463a)

VARIOUS micro-ammmeters and 6J6s, 5/6 each; 4 for £1. Other valves and crystals. BC.221 transmitter/receiver sets. And other gear. Lists.—Box 482, THE NATIONAL PUBLISHERY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (482)

WANTED.—B.2, transmitter section only (with coils).—G8UA, 406 Higher Brunshaw, Burnley, Lancs. (450)

WANTED.—BC.610 Hallicrafters, ET.4336 transmitters, SX.28s, AR.88s, receivers and spare parts for above. Best prices.—P.C.A. RADIO, The Arches, Cambridge Grove, London, W.6. (455)

WANTED.—R.C.A. speech amplifiers, type MI-11220 J or K and aerial tuning units BC.939A. Coils and tuning units for BC.610 transmitters.—Offers stating quantity and price to P.C.A. RADIO, The Arches, Cambridge Grove, London, W.6. (456)

WANTED urgently.—5527, 6198 and 931 valves.—PAGE, G3HKV, Stoke Abbott Road, Beaminster, Dorset. (457)

WANTED.—Power supply units for No. 33 transmitters (ZA.10729).—Call or ring, P.C.A. RADIO, The Arches, Cambridge Grove, London, W.6. (RIV 3279.) (469)

WANTED.—Eddystone S.640, must be good condition and reasonable. Preferably with "S" meter.—G3HHR, 15 Wyndham Place, Lancaster. (473)

WANTED.—Table-top T.V.I.-proof transmitter, 80-40-20-10 bands: 100 W c.w. and 60/75 W 'phone.—Full particulars and price, SLANEY, 32 Highland Grove, Workson, Notts. (474)

WANTED.—Canadian V.R.L. receiver, set must be in good condition — Box 478, THE NATIONAL PUBLISHERY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (478)

WANTED.—BC.455, with or without valves: 6AG7.—G3GWW, 6 Shelley Road, Maidstone. (486)

WANTED.—Periscope gun aligning instrument, ref. IE/5140, or information where available.—J. JACKSON, 27 Thomson Avenue, Johnstone, Renfrewshire. (491)

WANTED.—Valves: 4E27, HK257B, 8001. "S" meter for AR.88. Have 723/AB-726A.—BEN JOHNSON, Tofts Farm, Seaton Carew, Co. Durham. (492)

WANTED.—R.C.A. 4331 transmitters.—P.C.A. RADIO, Cambridge Grove, Hammersmith, W.6. (Telephone RIVerside 3279.) (562)

WANTED.—H.R.O. coils, receivers, power packs, AR.88Ds, AR.88Ls, SX.28s, BC.348s, AR.77s, etc.—Details please to R.T. & I. SERVICE, 254 Grove Green Road, Leytonstone, E.11. (LEY 4986.) (460)

APPOINTMENTS SECTION

Appointments vacant

DEVELOPMENT engineer required by well-established firm manufacturing components and electronic apparatus. Should be conversant with normal communications engineering principles and practice. Ability to exploit ideas and work on own initiative essential. Send full details of previous positions held and type of work undertaken, together with approximate salary required to Box 460, THE NATIONAL PUBLISHERY CO., LTD., 36-37 Upper Thames Street, London, E.C.4. (460)

CROWN AGENTS FOR THE COLONIES

RADIO OFFICER required by the East Africa High Commission for the Directorate of Civil Aviation for one tour of 30-48 months in the first instance. Salary according to age and experience in scale £687 rising to £929 a year. Gratuity between £74 and £96. Outfit allowance £30. Free passages. Liberal leave on full salary. Candidates should possess the First Class Certificate of Proficiency in Radio Telegraphy issued by the Ministry of Civil Aviation or alternatively an Operator's Licence of equivalent standard provided they have had at least 5 years' operating experience and can operate at 25 words a minute. Apply in writing to the Crown Agents, 4 Millbank, London, S.W.1, stating age, name in block letters, full qualifications and experience, and quoting M2C/32494/RC. (458)

CROWN AGENTS FOR THE COLONIES

ASSISTANT SIGNALS OFFICERS required by the Government of Nigeria for the Aviation Department for one tour of 18 to 24 months in the first instance. Salary, etc., either (a) in scale £750 rising to £1,315 a year with prospect of permanency, or (b) in scale £807 rising to £1,453 a year on a temporary basis with gratuity at the rate of £100 a year. Outfit allowance £60. Free passages for officer and wife, and assistance towards cost of children's passages, or their maintenance in the United Kingdom. Liberal leave on full salary. Candidates must have a knowledge of the fundamental principles of electricity and magnetism and of radio engineering, with experience in the maintenance of aeronautical radio transmitters and receivers, direction finders, test equipment and small petrol and diesel engine generator sets. Workshop experience and a knowledge of radar will be of advantage. Minimum examination qualifications are C. & G. Certificate in radio communications or technical electricity, or satisfactory pass in M.C.A. radio mechanics course. Apply in writing to the Crown Agents, 4 Millbank, London, S.W.1, stating age, name in block letters, full qualifications and experience and quoting M2C/29637/RC. (464)

CROWN AGENTS FOR THE COLONIES

WIRELESS STATION SUPERINTENDENT required by the Nigeria Government Posts and Telegraphs Department for one tour of 18 to 24 months in the first instance with prospect of permanent and pensionable employment. Salary, etc., in scale £750 rising to £1,175 a year. Outfit allowance £60. Free passages for officer and wife and assistance towards cost of children's passages or their maintenance in this country. Liberal leave on full salary. Candidates (under 40 years) must have had wide practical experience of modern radio techniques and equipment, in particular v.h.f. equipment, and preferably also v.h.f. multi-channel equipment. Apply in writing to the Crown Agents, 4 Millbank, London, S.W.1, stating age, name in block letters, full qualifications and experience, and quoting M2C/28927/RC. (470)

CROWN AGENTS FOR THE COLONIES

WIRELESS OPERATOR MECHANICS required for the Falkland Islands Dependencies Survey for one tour of 18 or 30 months in the first instance. Salary in scale £330 rising to £420 a year. Quarters, subsistence, clothing and liberal canteen stores free while in Dependencies. It is possible to save almost all emoluments. Liberal leave on full salary. Candidates must be able to transmit and receive Morse at 25 words a minute (plain language or code) and be capable of elementary maintenance of wireless transmitting and receiving equipment. Apply in writing to the Crown Agents, 4 Millbank, London, S.W.1, stating age, name in block letters, full qualifications and experience and quoting M2C/29989/RC. (487)

★ American Publications

| | |
|---|------|
| QST Yearly Subscription - - - | 36/- |
| CQ Yearly Subscription - - - | 29/- |
| Audio Engineering, Per Year - - - | 29/- |
| Radio Amateurs' Handbook, 1953 Edition (A.R.R.L.) - - - | 31/6 |
| Antenna Book (A.R.R.L.) - - - | 11/- |
| Radio Handbook, 13th Edition (Editors and Engineers Inc.) - - - | 48/- |
| Radio Antenna Manual (Editors and Engineers Inc.) - - - | 27/- |
| Hints and Kinks, Vol. IV (A.R.R.L.) - - - | 9/6 |
| How to Become a Radio Amateur, 11th Edition (A.R.R.L.) - - - | 4/6 |

R.S.G.B. HEADQUARTERS, NEW RUSKIN HOUSE, LITTLE RUSSELL STREET, LONDON, W.C.1.