

The SHORT WAVE Magazine

VOL. XXXI

NOVEMBER, 1973

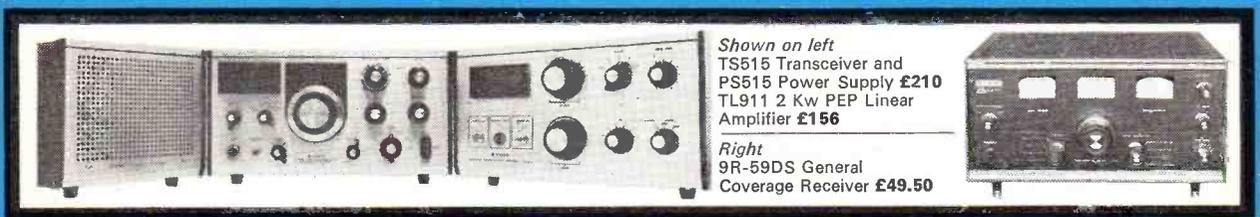
NUMBER 9

TRIO



JR599
Amateur Band Receiver **£160**
Matching Transmitter TX599 **£160**

All prices
exclusive
of VAT



Shown on left
TS515 Transceiver and
PS515 Power Supply **£210**
TL911 2 Kw PEP Linear
Amplifier **£156**

Right
9R-59DS General
Coverage Receiver **£49.50**



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Technical Books and Manuals

(ENGLISH AND AMERICAN)

AERIAL INFORMATION

| | |
|----------------------------------------------------------------------|-------|
| ABC of Antennas | 92p |
| Aerial Handbook (Briggs) | 89p |
| Amateur Radio Antennas (Hooton) | £1.89 |
| Antenna Handbook, Volume 1 | £1.79 |
| Antenna Round-Up, Volume 1 | £1.50 |
| Antenna Round-Up, Volume 2 | £1.80 |
| Antenna Handbook, 12th Edition (ARRL) | £1.42 |
| Beam Antenna Handbook, 4th Edition | £2.13 |
| Quad Antennae, 2nd Edition | £1.82 |
| Simple Low Cost Wire Antennas | £1.75 |
| 73 Vertical, Beam and Triangle Antennas (by E. M. Noll) | £2.42 |
| 73 Dipole and Long-Wire Antennas (by E. M. Noll) | £2.22 |

BOOKS FOR THE BEGINNER

| | |
|----------------------------------------------------------|-------|
| Amateur Radio (Rayer) | £1.63 |
| Beginners Guide to Radio (7th Edition) | £1.15 |
| Beginners Guide to Transistors | £1.15 |
| Beginners Guide to Colour TV | £2.08 |
| Better Short Wave Reception, 2nd Edition | £1.82 |
| Course in Radio Fundamentals (N.E.) | £1.17 |
| Foundations of Wireless and Electronics | £2.06 |
| Guide to Amateur Radio (N.E.) | 90p |
| Ham Radio (A beginner's Guide) by R. H. Waring | £1.75 |
| How to Become a Radio Amateur | 65p |
| Learning the RT Code | 30p |
| Morse Code for the Radio Amateur | 24p |
| Radio, by D. Gibson | 87p |
| Radio Amateur Examination Manual (N.E.) | 90p |
| Simple Short Wave Receivers (Data) | 90p |
| Understanding Amateur Radio | £1.40 |

GENERAL

| | |
|-----------------------------------------------------------------------------|-------|
| ABC of Electronics (by Earl J. Waters) | £1.22 |
| ABC of FET's | £1.38 |
| Easibinder (to hold 12 copies of Short Wave Magazine together) | £1.00 |
| FET Principles, Experiments and Projects | £2.17 |
| Guide to Broadcasting Stations (17th Edition) | 84p |
| Having Fun with Transistors | £1.61 |
| How to Listen to the World—7th Edition | £1.90 |
| Know Your Oscilloscope (by Paul C. Smith) | £1.82 |
| Microphones | £1.67 |
| Practical Integrated Circuits (Newnes-Butterworth) | £1.03 |
| Practical Transistor Theory | £1.12 |
| Practical Wireless Circuits | £1.35 |
| Prefix List of Countries | 24p |
| Radio Engineers Pocket Book (Newnes) (N.E.) | £1.27 |
| RCA Transistor Thyristor and Diode Manual | £1.78 |
| RCA Transmitting Tubes | £1.37 |
| Shop and Shack Shortcuts | £1.77 |
| Single Sideband: Theory & Practice (by H. D. Hooton) | £3.52 |
| 99 Ways to IMPROVE YOUR SHORT WAVE LISTENING | £2.06 |
| Telecommunications Pocket Book (T. L. Squires) | £1.33 |
| World Radio and TV Handbook 1973 Edition | £3.05 |
| 110 Integrated Circuit Projects for the Home Constructor | £1.31 |

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|-----------------------------------------------------------------------------|-------|
| 110 Semi-Conductors Project for the Home Constructor (Illiffe) | £1.31 |
|-----------------------------------------------------------------------------|-------|

HANDBOOKS AND MANUALS

| | |
|--------------------------------------------------------------|-------|
| Amateur Radio DX Handbook | £2.18 |
| Electronic Circuit Handbook, Vol. 1 | £1.43 |
| Electronic Circuit Handbook, Vol. 2 | £1.43 |
| New RTTY Handbook | £1.82 |
| Radio Amateur Handbook 1973 (ARRL) | £2.90 |
| Radio Amateur Handbook 1973 (ARRL) (Hard Cover) | £3.70 |
| Radio & Electronic Handbook | £1.33 |
| Radio Amateur Operators Handbook, 12th Edition | 54p |
| Radio Communication Handbook (RSGB) | £4.13 |
| Rtty A-Z (CQ Tech. Series) | £2.28 |
| Radio Handbook (W. I. Orr) 19th Edition | £7.78 |
| Surplus Conversion Handbook | £1.38 |
| Television Interference Manual (G3JGO) | 91p |

USEFUL REFERENCE BOOKS

| | |
|----------------------------------------------------------------------------|-------|
| Amateur Radio SSB Guide | £1.60 |
| Amateur Radio Techniques—4th Edition | £1.85 |
| Care & Feeding of Power Grid Tubes (Elmac Division of Varian) | £1.61 |
| Engineers' Pocket Book—6th Edition | £1.49 |
| Guide to Amateur Radio | 90p |
| 'G' Call Book 1973 | 72p |
| Hams' Interpreter | 65p |
| Hints and Kinks, Vol. 8 (ARRL) | 63p |
| Radio Amateur Examination Manual (N.E.) | 90p |
| Radio Data Reference Book (3rd Edition) | £1.02 |
| Radio, Valve and Transistor Data (Illiffe), 9th Edition | 92p |
| Service Valve and Semiconductors Equivalents | 36p |
| Single Sideband for the Radio Amateur (ARRL), 5th Edition | £1.68 |
| Single Sideband (Theory & Practice) by H. D. Hooton | £3.50 |
| Sun, Earth and Radio by J. A. Ratcliffe | 92p |
| Surplus Schematics (CQ) | £1.23 |
| Transistor Pocket Book | £1.58 |

TRANSISTOR MANUALS

| | |
|-------------------------------------------------------------------------------------------|-------|
| ABC of Transistors | £1.34 |
| Field Effect Transistors (Mullard) | £1.97 |
| Having Fun with Transistors | £1.61 |
| Handbook of Transistor Circuits | £2.39 |
| Transistor Audio & Radio Circuits (Mullard) | £1.98 |
| Transistor Fundamentals: Basic Semi-Conductor and Circuit Principles, Vol. 1 | £1.95 |

VHF PUBLICATIONS

| | |
|----------------------------------------------------------|-------|
| VHF Handbook, Wm. I. Orr. | £1.81 |
| VHF Manual (ARRL) | £1.38 |
| VHF/UHF Manual (RSGB) | £1.85 |
| Amateur Radio Awards (RSGB) | £1.40 |
| Questions and Answers on Radio and TV | 85p |
| Integrated Circuit Pocket Book | £2.65 |
| International Transistor Data Manual (Semicon) | £5.60 |

O/P (out of print)

The above prices include postage and packing.

Many of these Titles are American in origin.

Available from

Publication Dept., 55 Victoria St., London SW1H 0HF

(Counter Service. 9.30-5.15. Mon. to Fri.)

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SHORT WAVE MAGAZINE

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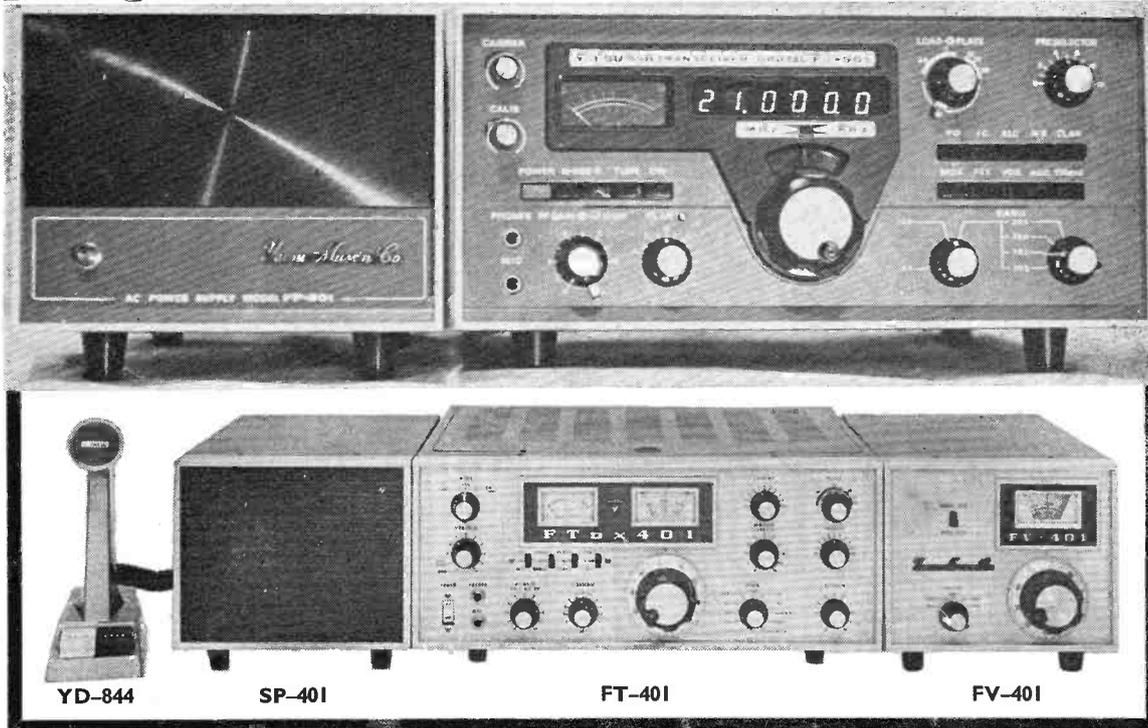
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YAESU PRICES (Carriage free by Securicor) including VAT

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| FT-75 | £108-90 |
| FP-75 | £24-75 |
| DC-75 | £24-75 |
| FT-101 Mk. 2 | £299-00 |
| FT-101B | t.b.a. |
| FT/FP200 | £209-00 |
| FT-401 | £291-50 |
| FT-501 | £368-50 |

HF TRANSMITTERS

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| FL50 + VOX | £86-90 |
| FL400 | £181-50 |

NEW/USED EQUIPMENT (Securicor delivery £1, VAT extra)

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| Codar AT5. V. clean | £16-00 |
| Codar remote T/R unit | £1-00 |
| Codar speaker. Mint | £2-00 |
| Eddystone 750 | £45-00 |
| Eagle Headphones | £4-00 |
| Hallcrafters HT32B. 80m.-10m. (all of 10m.) | £80-00 |
| Hammarlund HX50. 10m.-160m. Good | £79-00 |
| Heath SB300 SH | £80-00 |
| Heath SB303, SH. Mint | £150-00 |
| Heath SB303. New + CWF assembled | £230-00 inc. VAT |

VHF TRANSCEIVERS

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|-----------------|---------|
| FT-2FB | £107-80 |
| FP-2AC PSU | £29-70 |
| FP-ACB + Batts. | £42-90 |
| FT2 AUTO. | £172-70 |

HF RECEIVERS

| | |
|------------|---------|
| FR50 + CAL | £73-70 |
| FR400DX | £148-50 |
| FR400SDX | £192-50 |

FREQUENCY COUNTERS

| | |
|---------------------------|---------|
| YC-355 30 MHz AC PSU | £106-70 |
| YC-355D 220 MHz AC/DC PSU | £132-00 |

REMOTE VFO

| | |
|--------------------|--------|
| FV50 for FT75/FL50 | £30-80 |
| FV-101 | £46-20 |
| FV401 | £46-20 |

SPEAKERS

| | |
|--------------------|--------|
| SP101, 400, 401 | £12-10 |
| SP101P Phone Patch | £28-60 |

LINEAR AMPLIFIERS

| | |
|----------------|---------|
| FL2000B 1200w. | £181-50 |
| FL2100 1200w. | £181-50 |
| FL2500 2kW | £143-00 |

ACCESSORIES

| | |
|--------------------|-----------|
| YD846 Hand Mic. | £5-50 |
| YD844 Table Mic. | £14-30 |
| FAN, FT-101 | £9-90 |
| CW Filter, FT-101 | £17-60 |
| Mobile Mounts | £6-60 |
| FF50DX L.P. Filter | £8-80 |
| Yaesu Log Book | 55p |
| Crystals, FT2F/B | pr. £3-96 |
| Catalogue | 20p |

| | |
|--------------------------------|---------|
| Trio JR599. Mint | £130-00 |
| Trio TX599. Mint | £130-00 |
| Yaesu FT-2FB. Few hours use | £89-00 |
| Yaesu FV200. As new | £33-00 |
| Yaesu FV400s VFO for FT series | £30-00 |
| Yaesu FT401. Mint | £225-00 |
| Yaesu FL400 | £120-00 |
| Yaesu FR400 | £105-00 |
| YD844. As new | £10-00 |

All prices exclude VAT

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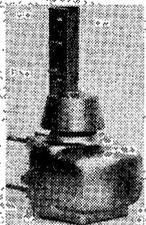
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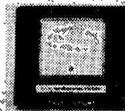
AR20 (£22.00)



AR22 (£27.50)



TR44 £49.50



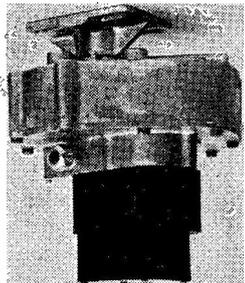
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HY-GAIN 400 (£126.50)

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- AR20** This model replaces the old AR10 and is ideal for VHF beams
- AR22R** This model will turn HF antennas of TA33 Jnr. size and can be mounted on the top of masts up to 2 1/2" diameter or onto a flat plate. It can carry a deadweight of 150 lbs. Requires a 4-wire cable.
- TR44** This model is also for HF beams as the AR22R but carries a 500 lbs. load and has better braking. The control unit requires a 7-wire cable.
- HAM-M** The best of the CDE range. Carries 1,000 lbs. deadweight for large HF beams and employs a solenoid operated brake. Requires an 8-way cable.
- HY-GAIN 400** It's a brute but takes masts up to 3" dia. and automatically rotates to the desired direction by setting the compass control knob pointer as required. Mounts to standard tower plate on Versatower. 5-way cable required.
- CABLE** 4-way, 12p; 8-way, 24p per metre. Carriage free with rotor.

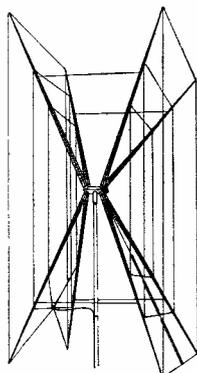


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for 10, 15 & 20m.

- ★ Weighs only 21 lbs.
- ★ Withstands 100 mph winds.
- ★ Forward gain up to 8 dB.
- ★ Balun included.
- ★ Converts to 3 or 4 element quad.
- ★ Fibreglass tri-dectic spreaders.
- ★ Front/back ratio 25 dB.
- ★ Low angle radiation.



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HY-GAIN 18AVT/WB THE GREAT NEW WIDE BAND VERTICAL SELF-SUPPORTING FOR, 10-80m. (ex-stock) £39.05. Take the wide band, omni-directional performance of Hy-Gains famous 14AVQ/WB add 80m. plus extra heavy duty construction and you have the new 18AVT/WB ★ True 1-wave resonance on all bands ★ 52Ω/P ★ SWR of 2:1 or less at band edges ★ 1 kW (AM) ★ Radiation pattern has an outstandingly low angle ★ Roof or ground mounting.

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|-----------------------------------|---------|--------------------------------|-----|---------|
| Hy-tower, 10-80m. (self-sup.) | £121.00 | 402BA | ... | £100.10 |
| 18V, 10-80m. vertical (self-sup.) | £14.13 | 204BA, 20m. 4 ele. beam | ... | £28.00 |
| 12AVQ, 10-20m. vert. (self-sup.) | £18.15 | 203BA, 20m. 3 ele. beam | ... | £79.20 |
| 14AVQ, 10-40m. vert. (self-sup.) | £26.95 | 153BA, 15m. 3 ele. beam | ... | £40.15 |
| 18AVT, 10-80m. vert. (self-sup.) | £39.05 | 103BA, 10m. 3 ele. beam | ... | £31.35 |
| LC80Q, 80m. coil for 14AVQ | £8.52 | LA1 Lightning arrestor | ... | £15.95 |
| TH6DXX, 10-20m. 6 ele. beam | £106.00 | LA2 Lightning arrestor | ... | £2.75 |
| TH3MK3, 10-20m. 3 ele. 2 kW | £82.50 | 261 3/4, co-ax, roofmount | ... | £4.40 |
| TH3 Jnr., 10-20m. 3 ele. 600w. | £56.65 | 262 1/4, co-ax, mag. mount | ... | £9.57 |
| Hy-Quad, 10-20m. 2 ele. | £81.95 | 263 3/4, co-ax, Boot mount | ... | £12.10 |
| DB10-15, 10-15m. 3 ele. | £57.50 | 264 3 dB Gain, mag. mt., co-ax | ... | £13.75 |
| DB24B... | £117.70 | | | |

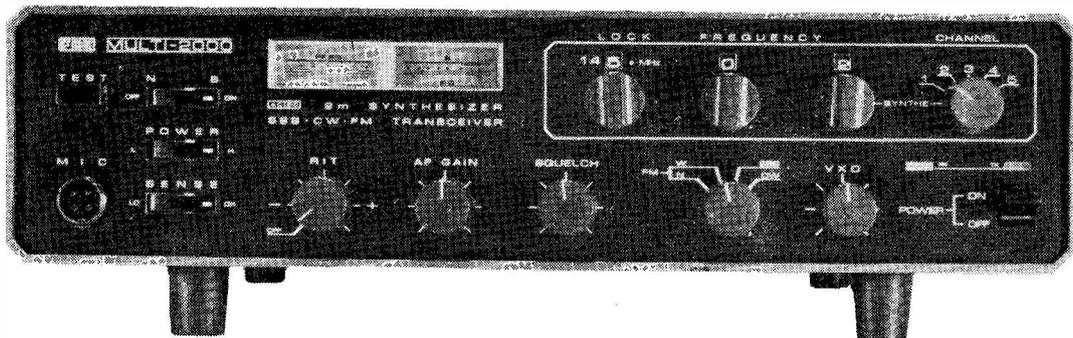
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At last . . .

What you've all been waiting for!

A 2m. SSB/FM/CW TRANSCEIVER, the FKD Multi 2000



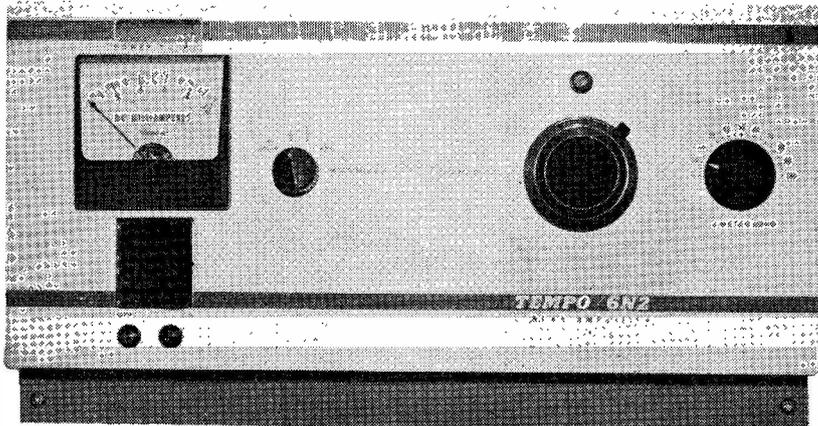
2m. SSB/FM and CW Synthesised 200 Ch. AC/DC.

Two-way solid state Base Station/Mobile transceiver.

- ★ Multi 2000 covers SSB/FM and CW on both transmit and receive.
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- ★ Effective Noise Blanker employed.
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TEMPO 6N2 2Kw PEP SSB/FM



6N2 SPECIFICATIONS

- **Type and function equipment.** The Tempo 6N2 is a 2000 watt input (1000 watts for CW and FM) nominal one stage linear amplifier using two highly linear, grounded grid triodes.
- **Frequency range.** 144-148 MHz.
- **Tube cooling.** Forced air cooling.
- **Type of emission.** SSB, CW and FM.
- **Duty cycle.** 100% for CW and SSB. 50% for FM (15 min. on, 15 min. off).
- **Power requirements.** 115/230v. AC, 50/60 Hz, 25/15 amps.
- **Drive power required.** 50-100 watts.
- **Tube complement.** Two Eimac 8874 grounded grid triodes.
- **Input power.** 2 kilowatt PEP SSB. 1000 watts FM and CW.

- **Output power.** 1000 watts SSB, 500 watts FM and CW.
- **Protective devices.** Circuit breaker on input line, cathode fuse, relay supply fuse, and a warm-up delay relay.
- **Metering.** Relative RF Output power indicator, grid current (0-100 ma), plate current (0-1 amp), and high voltage (0-5000v. DC).
- **Dimensions.** About 7" high x 14" wide x 14" deep.
- **Weight.** 71 pounds.
- **Output impedance.** 52 ohms unbalanced with SWR not exceed 2 : 1.
- **Harmonic and other spurious emissions.** Second harmonic : -40 dB. Third order distortion : -35 dB or better at full power output.

Price : inc. VAT £357-50

TEMPO VHF FM AMPLIFIERS (Carriage/VAT paid)

Tempo brings you the finest amateur RF amplifier for VHF FM available today. Years of experience in solid state RF design have gone into the equipment to assure the highest degree of efficiency and reliability.

Only state-of-the-art techniques in circuit and semiconductor technology make an amplifier of this quality possible. The amplifying transistors are of the balanced emitter silicon power type. These transistors are individually checked for power output and reliability during mis-match conditions, before being inserted in the amplifiers. Additionally the amplifying transistors are operated well within the factory's suggested limitations for added reliability and life. This assures the customer of years of dependable service even under the most punishing conditions.

All circuitry is of micro-strip technique for stability and broadband characteristics. Additional features of the micro-strip techniques include extreme mechanical stability and ease of servicing.

Antenna switching is accomplished through the use of specially selected PIN diodes and printed quarter wave micro-strip transmission lines. These PIN diodes are activated by an RF sensing circuit consisting of a printed omnidirectional coupler and amplifier. Thus when as little as 5 watt of RF power is applied to the input of the amplifier this circuit is activated causing the PIN diodes to switch this RF power through the RF power amplifier.

During receive the antenna by-passes the amplifier and is fed through the PIN diode switch to the transceiver. Also of note is a reverse voltage protection diode. In the event the amplifier is connected to the wrong polarity, the diode will protect the power transistors from destruction.

All RF and DC cables are supplied along with a detailed instruction manual describing installation, circuitry, and service. All of the units are very simple to install and fool-proof to operate. With proper care these amplifiers will give you a lifetime of dependable service.

Commercial, type-accepted equipment is available for slightly higher prices. Those amplifiers include commercial quality filtering. All commercial orders should include a frequency range to which the amplifier should be tuned.

| Type | Drive | Output | Price |
|--------|--------|-----------|---------|
| 502 | 5-15w. | 35-55w. | £57-00 |
| 802 | 5-12w. | 70-90w. | £98-00 |
| 1002-3 | 5-25w. | 100-135w. | £119-00 |

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A PARTRIDGE PACKAGE constitutes a COMPLETE RADIO STATION—ready to use, however confined your domestic space. The World renowned TRIO range of Communications Receivers and Transceivers, the WORLD RECORD, internationally patented JOYSTICK VFA (all band aerial) only 7ft. 6in. long (assembled) and a JOYMATCH aerial tuning unit, a pair of matching headphones or internal speaker, plus accessories, go to complete your READY TO USE RADIO STATION at a price that truly represents VALUE FOR MONEY! H.P. facilities.

PARTRIDGE PACKAGE

| | | |
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| No. 1 with Gen. Coverage AM/CW/SSB (MW/SW) 9R59DS receiver | | £67.77 (save £17.16) |
| No. 2 with Amateur Bands 80 thru 10m AM/CW/SSB JR310 receiver | | £90.97 (save £22.35) |
| No. 3 with Amateur Bands 160 thru 10m plus 2m AM/CW/SSB JR599 | | £176.00 (save £30.48) |
| No. 4 with Amateur Bands 80 thru 10m TS/PS 515 transceiver, 180w | | £231.00 (save £37.08) |

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JOYSTICK VFA £13.75; JOYMATCH Tx/Rx A.T.U. 111A 1-6 32 MHz £13.75; JOYMATCH A.T.U. 111 Rx only 500 kHz 32 MHz £13.75; JOYMATCH A.T.U. LO-Z500 Tx/Rx 500w SSB (PA input), built in RF meter £19.91; Communications 8 Ω headphones (suitable TRIO, EC10 etc.) £3.14; Matching Speaker (with instructions for internal fitting in 9R59DS and JR310) £2.00; TRIO: Linear Amplifier TL911 £172.15; TR2200 2m personal transceiver £87.45; TR7200 2m car transceiver £142.45; Spare set valves for 9R59DS £2.35; OA2 Mains Stabiliser 74p.

NEW: Worldwide reception on the amazing "DX CRYSTAL SET" £2.42 incl. unique aerial.

NEW: AMTRON QUALITY KITS—send for brochure and prices.

PARTRIDGE BUDGET LINE

Artificial Earth—solves receive and transmit earth problems (as used on North Sea Oil Rigs!) £5.80; Aerial Bandswitch—tuned aerial for domestic receivers £5.80; A.T.U. KIT—for use with transmitters and communications receivers £5.80; (assembled £7.01); Mini SWR bridge—1.8 to 180 MHz, 2 kW P.E.P., 75 or 50 Ω, SO239 sockets: 1:1 to 1:3 ratio, 80 x 30 x 30 mm., £5.60.

(All price quotes INCLUDE VAT, CARRIAGE, PACKING, INSURANCE)

Send 3½p stamp for full illustrated details. Special TRIO brochures (state which) 3½p stamp extra

NO VAT ON OVERSEAS ORDERS!

BOX 4

G3CED

PARTRIDGE
BROADSTAIRS KENT ENGLAND
ELECTRONIC LTD

G3VFA

Telephone: 0843 62535 or 0843 62839 evenings and weekends

SOLID STATE MODULES

Telephone: 0484 - 23991

63 WOODHEAD ROAD,
SOLID, LOOKWOOD,
HUDDERSFIELD, HD4 6ER.

MEMBERS OF THE AMATEUR RADIO RETAILERS ASSOCIATION

Hope to see you at Granby Halls, Leicester, Stand No. 28. We shall be with the Amateur Radio Shop (G4MH), manned by engineering staff, who can answer your technical or application questions. So if you are seeking advice on the equipment we manufacture, please ask. We shall be holding a large stock of our products and trust that we will be able to satisfy your requirements. If you cannot visit us at Leicester your postal or C.O.D. orders will receive our usual prompt attention. G3MXG.

2 METRE CONVERTERS (Ex stock)

The Sentinel Dual Gate MOSFET 2 Metre converters.
★ By far the most popular converters in this country.
★ Low noise figure 2 dB. Gain 30 dB.

I.F.'s AVAILABLE

2-4 and 4-6 MHz for use with most general coverage receivers. Double conversion design using 2 mixers and no crystal oscillator multiplication. These techniques minimise breakthrough from out of band signals. Size 2½" x 4" x 1½".

28-30 and 27.7-29.7 and KW 2000 type. For use with amateur band receivers or transceivers. These converters use 116 MHz range crystals with no frequency multiplication. This overcomes the problem of unwanted signals from the fundamental and harmonics of the 38 MHz crystals generally used in other converters.
Other I.F.'s in stock 9-11, 14-16, 18-20, 23-25, and 24-26 MHz.
Price of all these £15.12.

2 METRE PRE-AMPLIFIERS (Ex stock)

Perhaps I had better clarify the difference between our two models of pre-amplifier. The Sentinel Pre-Amplifier, which we have been making for 4 years, is designed for absolute optimum performance on noise, gain and selectivity. It is built in an aluminium box which matches our converters and has isolated +ve and -ve supply lines to make it compatible with any existing supply polarity.

The PA3 is a small printed circuit amplifier (approx. 1 cubic inch) with solder pins for connections with small size the primary consideration. This was done to satisfy the large demand for a high performance pre-amplifier to put inside transceivers (Japanese types and surplus ones) where it can be fitted in the receive aerial lead after the d/o relay. We have maintained the same gain figure, slightly inferior noise figure and a less than ideal selectivity characteristic. However its many users will testify to the great improvement in receive sensitivity realised.

Sentinel low noise FET pre-amplifier.

★ Low noise figure 1 dB. Gain 18 dB.

Price £7.15

PA3 Dual Gate MOSFET pre-amplifier.

★ Noise figure 2 dB. Gain 18 dB.

Price £5.50

SENTINEL X DUAL GATE MOSFET 2 METRE CONVERTER (Ex stock)

This is a de luxe version containing an internal mains power supplier or battery operation. It has a front panel RF gain control. Size: 5" x 1½" front panel 4" deep. Stock I.F.'s: 2-4 MHz, 4-6 MHz, 27.7-29.7 MHz, 28-30 MHz.
Price £21.45.

THE SENTINEL M.F. DUAL GATE MOSFET 2 METRE TO MEDIUM WAVE CONVERTER (Ex stock)

Receives 2 metres on a conventional M.W.B.C. receiver, very good used with a car radio. IF output 0.5 to 1.5 MHz for 144-5 and 145-6 MHz in two switched bands. Double conversion design with two switched crystal oscillators. Isolated supply lines. Size: 5" x 1½" front panel, 4" deep.
Price £20.62

SM70 70cm. CONVERTER (Ex stock)

This one uses an IF output of 144-146 MHz. This has enabled us to produce a very high performance converter with a noise figure of 4.5 dB for only £15.12

SSM EUROPA 10 METRE TO 2 METRE CONVERTER (Ex stock)

Highly recommended by many users for its very sensitive receive performance which compliments the "punchy" signal transmitted. Dual gate MOSFETS used for receive, Bipolar in the oscillator chain—valves in the transmitter.

It plugs into YAESU/SOMMERKAMP accessory socket KW2000 series compatibility units are available. The size is only 9" x 4½" front panel 4½" deep. Price £64.35 less valves. The two QQVO3/10's are £1.37 each. The QQVO6/40A P.A. is £11.

Anyone who has been following our recent adverts has seen that we have been offering advice on your receiving problems, with the idea of helping you and advising the most suitable preselector from our range where we think you could benefit from one.

We never thought (when we started out on this) that so many people had problems so we intend elaborating and extending this helping hand theme. Unfortunately in some cases we are not getting all the information necessary, people are only giving us the name of their receiver, very little on their antenna position. We cannot work miracles, to do a good job on this and provide a service we need to know your antenna situation as well. We can then relate your receiver and antenna with our preselector and advise you accordingly.

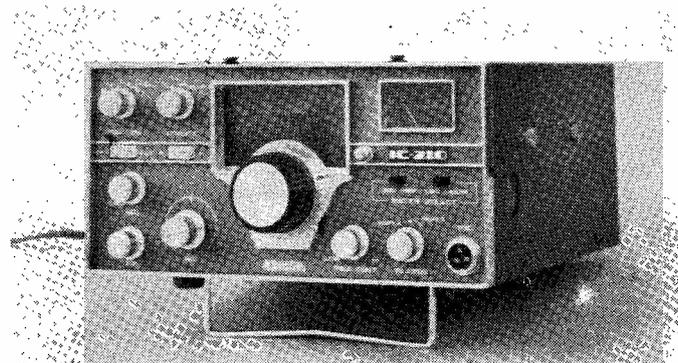
Our preselectors used properly will improve the signal to noise ratio of almost any communication receiver and as all our units have included in their specification an antenna tuner it follows that they will do a good job on a variety of antennas. These units work especially well if you have only a small garden or perhaps live in a flat and stuck for antenna space.

Send for our illustrated leaflets and see if we can help you, our present range of preselectors is probably the largest currently in production anywhere and certainly the only ones with an antenna coupler.

HAMGEAR ELECTRONICS

2 CROMWELL ROAD, SPROWSTON, NORWICH, NOR 65R.
(OFFICE ONLY)

INOUE COMMUNICATION EQUIPMENT CORPORATION



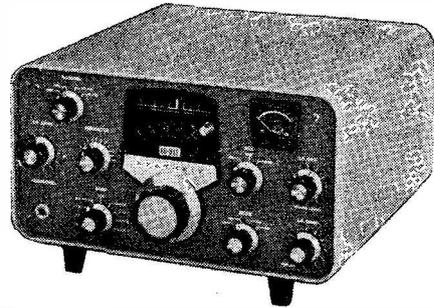
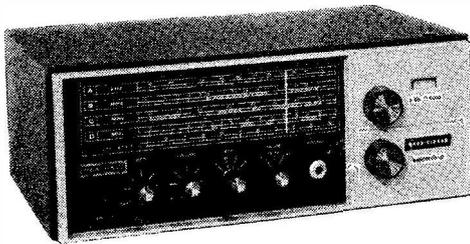
IC-210
£210.00 + VAT

The very finest in FM transceivers. Fully tunable, both Rx and Tx, by a 135 MHz V.C.O. *phase locked* to an 11 MHz V.F.O. Ideal for the operator who prefers true continuous tuning rather than separate channels/VXO. Automatic Repeater Operation. With the "Tx Freq." switch at Duplex A or Duplex B, the Tx frequency is automatically shifted relative to the Rx frequency by means of a single crystal. As standard, the Duplex A shifts the Tx frequency 600 kHz lower to conform with all European and U.K. repeaters. Should another shift be required, it is achieved by simply plugging the appropriate crystal into the Duplex B facility. All solid state, AC or DC operation. 10W output (continuously variable), two optional crystal channels for local nets etc., 0.4 uV for 20 dB quieting, dual crystal calibrator (100 kHz and 50 kHz) R.I.T., centre reading discriminator meter, built-in SWR meter. Complete with microphone.

U.K. AGENTS :

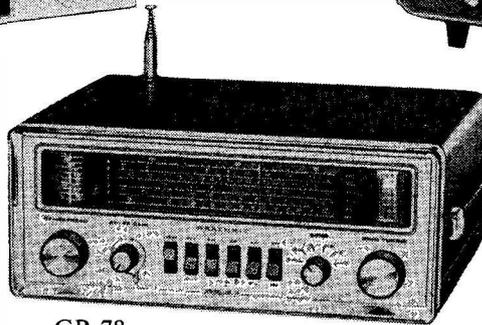
LOWE ELECTRONICS 119 CAVENDISH ROAD . MATLOCK . DERBYSHIRE . DE4 3HE

SW-717



SB-313

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GR-78

Big sellers for the SWL from Heathkit

TRANSISTOR GENERAL COVERAGE RECEIVER, SW-717

SW-717 SPECIFICATIONS: Frequency Coverage Band A. 550 kHz to 1500 kHz. Band B. 1.5 MHz to 4 MHz. Band C. 4 MHz to 10 MHz. Band D. 10 MHz to 30 MHz. Meter indicates relative signal strength. Headphone jack. Headphones or an external speaker. Loudspeaker built-in. Controls: VOLUME with on-off switch. MODE (AM, standby and CW) BFO, MAIN TUNING. BANDSPREAD TUNING. ANL (on-off). Power Supply: Transformer operated. Full wave bridge rectifier. Power Requirements: 120v. A.C. or 240v. A.C. 50/60 Hz 6 watts.

Kit K/SW-717 £34.65 Carr. 77p (VAT £3.22 incl.)

SOLID-STATE GENERAL COVERAGE RECEIVER, GR-78

• 190 kHz to 30 MHz in 6 bands • 11 transistors, 5 FET's and 7 diodes • Four ceramic IF filters • Double conversion superhet circuit above 18 MHz for excellent image rejection • Built-in 500 kHz crystal calibrator • Relative signal strength meter • Switchable Automatic Noise Limiter • Switchable Automatic Volume Control • Switch-selected AM, CW or SSB tuning • Receive/Standby switch and receiver muting connection for amateur operation • Operates from built-in rechargeable nickel-cadmium battery • Charges from 120v. A.C. or 12 to 15v. D.C. with internal charging circuit • 240v. AC wiring option • Size: 6¼" H x 11¼" W x 9" D.

Kit K/GR-78 £75.90 Carr. 55p (VAT £6.95 incl.)

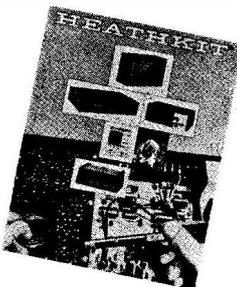
HEATHKIT PROFESSIONAL SOLID-STATE SWL RECEIVER SB-313

SB-313 specification: Frequency range (MHz) 3.5 to 4.0, 5.7 to 6.2, 7.0 to 7.5, 9.5 to 10.0, 11.5 to 12.0, 14.0 to 14.5, 15.0 to 15.5, 17.5 to 18.0, 21.3 to 21.8. Intermediate frequency (IF) 3.395 MHz. Frequency stability less than 100 Hz per hour after 10 minutes warm-up under normal ambient conditions. Less than 100 Hz drift for ± 10% line voltage variation. Sensitivity: less than 0.5 microvolt for 10 dB signal-plus-noise ratio for SSB operation. Selectivity AM 5.0 kHz at 6 dB down. 15 kHz maximum at 60 dB down (crystal filter supplied). SSB 2.1 kHz 6 dB down, 5.0 kHz maximum at 60 dB down (crystal filter available as an accessory). CW 400 Hz at 6 dB down, 2.0 kHz maximum at 60 dB down (crystal filter available as an accessory). Image rejection: 60 dB or better. IF rejection 3.395—greater than 55 dB. 8.595—greater than 40 dB. Spurious response: all below 1 microvolt equivalent signal input except at 10.0 MHz and 15.375 MHz. Dial accuracy: electrical—within 400 Hz after calibration at nearest 100 kHz or 25 kHz point. Visual—within 200 Hz. Calibration every 100 kHz or 25 kHz. Dial backlash: no more than 50 Hz. Antenna input impedance: 50 Ω nominal unbalanced. Audio output impedance: matching speaker 8 Ω. Matching headphones low impedance. Audio output power: 4 watts at less than 10% distortion. Muting: open external ground at Mute socket. Power requirements: 105 to 130 or 210 to 260 volts A.C., 40 watts max. Overall dimensions: 7 15/16" H x 12¼" W x 14" D.

Kit K/SB-313 £209.00 Carr. 99p (VAT £19.09 incl.) less speaker

FREE Catalogue

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Please send me free the Heathkit Catalogue and details of your Monthly Budget Plan.

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Bristol Road, Gloucester GL2 6EE



B. BAMBER ELECTRONICS

20 WELLINGTON STREET, LITTLEPORT, CAMBS. Tel.: Ely 860185 or 860363

Pye M.F. Transmitter, runs 2 x 5B254Ms in final, VFO in 340-540 kHz, 2 x 5B254Ms in modulator. MCW/CW, units complete, but no PSU's. Brand new with circuits, £20-00, carriage £1-50.

Pye Westminster W15 FM, Dash Mount, 3 channel, 12½ kHz spacing. Low Band only, as new, £66-00, carriage 50p.

Pye Cambridge AM10D, dash mount, good cond., 25 kHz channel spacing, High or Low band, £25-00, carriage 50p.

Pye Cambridge FM10D, dash mount, good cond., 25 kHz channel spacing, Low band only, Single channel £27-50. Six channel £33-00, carriage 50p.

Pye Vanguard AM25B, sets only, no control gear. High or Low band, 25 kHz channel spacing, with 2nd conv. xtal and circuits, £8, carriage 75p.

Pye Cambridge FM Boot mount, sim. to FM10MC, High band only, sets only, no control gear, £20-00, carriage 50p.

2M Receive Xtals, HC6U, suitable for Cambridge, Vanguard, Westminster, etc. 51-7 MHz for 144-4, 51-70833 MHz for 144-425, 51-7166 MHz for 144-45, £1-00 each.

Xtals for TV Sync Gen. 20-25 kHz (for 405 line), 31-25 kHz (for 625 line) B7G glass, new, £2-20 each.

Pye Lynx Vidicon scan and focus assemblies, new, £5-50.

Pye Lynx Manuals, £1-50.

C-Mount for Lynx camera lens, 30p.

Xtals, 12-7 MHz for Ranger 2nd mixer, 50p.

PL259 Plugs, 25p each. Reducers for standard co-ax, 10p each (only supplied with plugs).

SO239 Sockets for above plugs, 25p each. Silicon Rect. Stacks, 200v. at 18A, 80p.

HARDWARE PACKS

New, surplus, unused items

Self-tapping screws, asstd., around 200
2BA nuts and bolts, asstd., around 150
4BA nuts and bolts, asstd., around 150
6BA nuts and bolts, asstd., around 250
Solder tags, asstd. sizes, around 250

ALL AT 25p PER PACK

50p PACKS

Order 10 packs and we will include one extra free.

Belling Lee TV Plugs, 6 for 50p.
Belling Lee TV Sockets, 12 for 50p
BNC Plugs, 4 for 50p.
BNC Sockets, round, 5 for 50p.
Jack Plugs, standard, 4 for 50p.
Valveholders, assorted, 20 for 50p.
Rubber Grommets, assorted bag, 50p.
Resistors, assorted bag, 50p.
Tubular Trimmers 1-18pf, 6 for 50p.
4-5 MHz Xtals HC6U, 10 for 50p.
9-10 MHz Xtals HC6U, 10 for 50p.

(Note: all xtals our selection).
Silver plated PA coils, mixed bag, 50p.
RF cans ¾" x ¾" x 1¼" suitable rewind, 16 for 50p.
AC128 transistors, 6 for 50p.
Hellerman sleeves, mixed bag, 50p.

PC Boards (made by Solartron), containing minimum of 40 x BC107 on mounts (therefore longer leads), plus hundreds of min. ½w. resistors (preferred values), caps. and diodes, good quality and good breakdown value. Not to be confused with common boards containing unknown, unmarked, large components, etc. **ONLY £1-00 per pack**

Xtal ovens with bases for HC6U or 2xHC25U, 10 deg. or 80 deg., 35p

ISEP racking, 19in., 5½in. front, 16in. deep, with some connectors and slides, as new, £2-50 each

VALVES

QQVO3/20 (ex-equipment), £2-20 each
QQVO3/10 (ex-equipment), 55p each
QQVO2/6, Mullard, new boxed, £2-00 each
5B254M (ex-equipment), tested, £1-00 each
6B86 (ex-equipment), 4 for 50p

Small Variacs, 2½in. dia., ¼in. spindle, 15 ohms at 1-8A, 35p; 50 ohms at 1A, 35p

Rectifier diodes on heat sink, stud type, BYX25-600, 600v. at 20A, ideal for linear, 20p each

12v. 10w. Zeners, IS6012RA, stud-type, 20p each

Rect. Diodes, SL103A, 100v., 10A, stud-type, 15p each

Please enclose SAE for all enquiries

TERMS OF BUSINESS - cash with order.

Callers welcome by appointment

Please note that all prices include VAT.

POSTAGE AND PACKING CHARGE, 20p ON ALL ORDERS, except where stated

Ever had Component Problems?

1. Problems of choosing your components?
2. Problems of getting them quickly?
3. Problems of locating a supplier?



CHEER UP!



HOME RADIO (COMPONENTS) LTD have created a catalogue and an organisation that between them solve your problems simply & economically

PUT US TO THE TEST

FIRST YOU'LL NEED THE CATALOGUE. SEND COUPON WITH 77p CHEQUE OR P.O.

Please use block capitals

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HOME RADIO (Components) LTD. 912966 London Dept. SW, 234-240 London Rd, Mitcham, CR4 3HD

AMATEUR ELECTRONICS

G3FIK



A rose by any other name . . . !

Since our announcement of new competitive prices in last month's issue we have received many enquiries by letter and telephone asking the specific origin of SOMMERKAMP equipment and querying whether or not the models advertised are identical to the well known YAESU MUSEN range. Incredibly enough, in some instances we have even been asked if the SOMMERKAMP series is a down-graded or obsolescent line and perhaps we should refresh readers' memories on this point.

The SOMMERKAMP range, as recently advertised, is manufactured by the YAESU MUSEN company and, thanks to the fact that Messrs. SOMMERKAMP are the largest distributors in Europe the product, by arrangement with YAESU MUSEN, carries their own label. Quite apart from this, however, many other items are produced either by or for SOMMERKAMP outside the YAESU MUSEN range but the equipment featured in our last advertisement does not fall into this category.

We shall, of course, be exhibiting the full SOMMERKAMP range at the Leicester Exhibition as in fact we did last year and those readers with back copies of the various magazines will realise that SOMMERKAMP is a very old established name indeed.

OTHER LINES

In our recent advertisements we have not mentioned the numerous other lines that we carry but these will be featured once more in next month's issue when the whole range of station accessories, antennas, rotators, filters, etc., etc. will be shown in detail.

TRIO EQUIPMENT

As long established TRIO agents we carry a full range of TRIO products including the superb TS-515 and the exciting JR-599/TX-599 combination.

SALES/SERVICE FACILITIES

First-class demonstration facilities in a second-to-none surroundings backed by full after-sales service on all items sold.

CREDIT TERMS

On-the-spot competitive credit facilities on the great majority of items offered including, of course, used equipment.

REGIONAL REPRESENTATIVES

Full product information is available from the following:—

Northern : John — G3KAE

Tel : West Ayton 3039

Scottish : Ron — GM8HXQ

Tel : Wishaw 72172

Please note that Ron has a most comprehensive and sophisticated service installation and is able to undertake all types of after-sales service in GM land.

IMPORTANT NOTE : IF YOU REQUIRE LITERATURE ON ANY EQUIPMENT LISTED OR OUR LATEST USED EQUIPMENT LIST PLEASE BE SURE TO LET US HAVE AN ADEQUATE STAMPED ADDRESSED ENVELOPE.

**AMATEUR ELECTRONICS, ELECTRON HOUSE, 508-514 ALUM ROCK ROAD
BIRMINGHAM 8 Tel: 021-327 1497 and 021-327 6313.**

MICROWAVE MODULES LIMITED

11 CRANMORE AVENUE, CROSBY, LIVERPOOL L23 0QD Tel: 051-928 1610 9 a.m.-8 p.m.

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**. . . UNLESS YOU
WANT THE BEST
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TECHNICAL FEATURES:

- ★ Mixer designed for good signal-handling capability
- ★ Bandpass interstage coupling for good out-of-band rejection
- ★ Front-end mosfet well protected against static and RF power
- ★ Noise figure 2-8dB. Gain 30dB
- ★ Stable operation over wide supply voltage range (9-15 volts)
- ★ Housed in sturdy black-enamelled diecast box
- ★ I.F.'s available ex-stock:
2-4, 4-6, 14-16, 18-20, 24-26, 27-7-29-7, 28-30 MHz
- ★ PRICE INC. VAT £16.72.

PLUS: UNCONDITIONAL 12-MONTH GUARANTEE WITH FREE SERVICE

The above 144 MHz converter, and all our other products, are available ex-stock direct from us, and from our many retail outlets.

For The Benefit Of Overseas Readers, We List Our Agents In The Following Countries:

Belgium: Entremat, Avenue Baron Robert de Vironlaan 138, 1710 Dilbeek, Belgium.
Denmark: Sono Akustik, Store Kongensgade 46, 1264 Copenhagen, Denmark.
France: Vareduc-Comimex, 2 Rue Joseph-Riviere, 92400 Courbevoie, Paris, France.
Germany: UKW-Berichte, D-8520 Erlangen, Gleiwitzer Strasse 45, West Germany.
Holland: S. Hoogstraal Elektronika, Almelo, Oranjestraat 40, Holland.
Italy: STE, Milano, Via Maniago, 15, Italy.
U.S.A.: Spectrum International, P.O. Box 1084, Concord, Mass. 01742, U.S.A.

ALL EQUIPMENT EX-STOCK—ALL PRICES INCLUDE POSTAGE

G3LRB

G3MCN

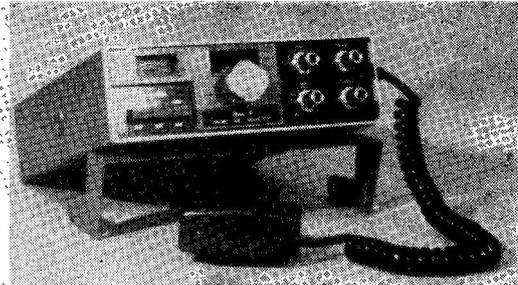
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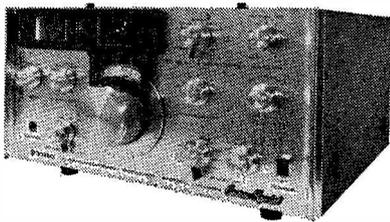
Telephone 051-263 7829



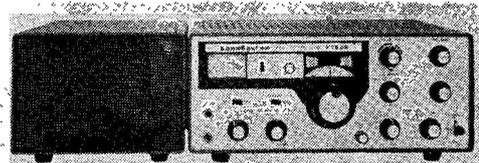
**IC21X 2 METRE FM
TRANSCEIVER 2VFO**



**LINER 2
2 METRE SSB TRANSCEIVER**



TRIO JR599 RECEIVER



SOMMERKAMP FT250

***See all the above and our full range on Stand 11
at the***

**National Amateur Radio and Electronics Exhibition
at the Granby Halls, Leicester
25th-27th October Phone 0533**

**OR WRITE TODAY FOR FULL DETAILS
LARGE SAE WILL BRING DETAILS OF OUR FULL RANGE**

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DURING EXHIBITION PERIOD**

OPEN 30th FOR NORMAL BUSINESS

Fine British equipment from **KW**

The KW 2000 E/B Transceivers

- KW 202 Receiver
- KW 204 Transmitter
- KW 107 Supermatch
- KW 101 SWR Meter
- KW 103 SWR/Power Meter
- KW 1000 Linear Amplifier
- KW E-Z Match
- KW Traps (the original and best)
- KW Low Pass Filters
- KW Balun
- KW Antenna Switch
- KW Dummy Load
- KW 108 Monitorscope

The KW 108 Monitorscope



KW 108 Monitorscope—leave it permanently in your transmission line and ensure correct linearity adjustment. Built in 2 tone generator for SSB power measurement. Excellent handbook with display patterns for SSB AM CW. Useful in checking TX for TVI. SEE YOU HAVE A "CLEAN" TRANSMISSION.

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All equipment available through
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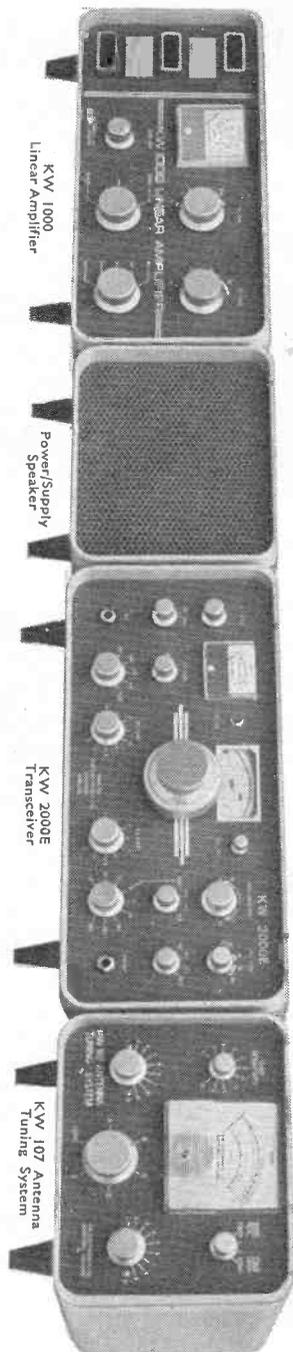
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K.W. ELECTRONICS LTD.

1 Heath Street, Dartford, Kent
Tel.: Dartford 25574/21919

KW
ELECTRONICS
LIMITED

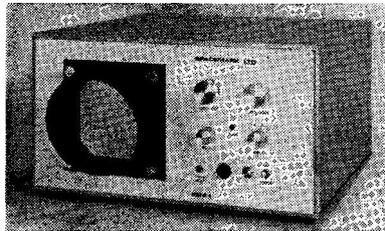
A COMPLETE RANGE OF EQUIPMENT FOR THE RADIO AMATEUR — SEND FOR CATALOGUE
AND ASK FOR DETAILS OF THE NEW KW109 HIGH-POWER SUPERMATCH
THE NEW KW160 ANTENNA TUNING UNIT



EASY TERMS ON EQUIPMENT AVAILABLE OVER 12, 18 OR 24 MONTHS

NOW THE NEW SPACEMARK

SLOW SCAN TV MONITOR SSM-I



Plug it into your receiver phones jack and watch SSTV pictures on the Monitor screen from DX stations all over the world. If desired, SSTV pictures can also be recorded on an ordinary tape recorder for viewing again on your Monitor.

- All solid state except 5" CR tube with 7 IC's, 17 transistors.
- Tuning indicator. ● Conforms to international SSTV standards.
- 4 switched inputs. ● Manual. ● Two tone pvc coated cabinet, 13" w. x 7" h. x 13" d. Weight 17 lbs.

SSM-I MONITOR—£143 (includes V.A.T. and U.K. carr.) . . . Why pay double for an imported Monitor?

ALSO AVAILABLE IN KIT FORM. COMPLETE KIT SSM-IK (less case), £82. SET OF PCB's only with full data, £7.50. Special transformer and some other parts available. Kits come with instructions, circuits, layouts, parts lists. SSTV TAPES and CASSETTES with sync. pulses and patterns for setting up Monitors, £1.80. COMING : SSTV Camera and Fast Scan Sampler.

JOIN THE FAST-GROWING SSTV CROWD NOW !!

SOLID-STATE RTTY CONVERTER-KEYER SRD-1

- COPIES 850/400/170 HZ SHIFTS
- BUILT-IN SINGLE AND DOUBLE CURRENT PSU
- F.S. KEYER FOR TX (AND OPTIONAL AFSK)

Complete and ready-to-go for send-receive RTTY with TX, RX and teleprinter.

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The
SHORT-WAVE
Magazine

E D I T O R I A L

Neophytes

From time to time, the question of a U.K. Beginner (or Novice) licence is "resuscitated"—it has been an issue on the U.K. Amateur Radio scene for years. In a way, it is again brought into prominence by that item, on p.536 of this issue, "Point of Law," this being of course based on a Ministry pronouncement.

What could be done to meet all interests, including those of MinPosTel, having regard to the fact that nowadays there is a vast literature available on the design, construction and operation of amateur band equipment, with no mention (except by implication) of any licensing requirement?

Our suggestion is that the Ministry should revert to the Artificial Aerial concept, by which it would be possible to build, possess, use and experiment with transmitting apparatus for operation into a dummy-load, or non-radiating aerial, only, on acceptance of a valid application and the payment of a fee. At first sight, this looks like neither one thing nor the other—but in fact a great deal can be done (and used to be learnt, in pre-war days) under AA conditions. All the principles of transmitter construction and operation, in any mode, can be studied and practised, and in general the AA-Licencee, when finally qualifying for full on-the-air operation, would start open-aerial work with a good deal more practical knowledge and experience than many of his contemporaries under the present regulations.

In the past, one of the official objections to the AA Licence was that it "tended to encourage piracy" and illegal operation generally. But we consider the very reverse could be the case. In the first place, AA licences would only be granted to applicants with good character references, and minors would be under parental control and responsibility. Secondly, because AA licencees would be known to the G.P.O., they would be well aware that in any cases of TVI/BCI reported in their neighbourhood, they would be the first to be suspected. Thirdly, like everyone else holding a U.K. amateur licence, their stations would be subject to official inspection at any time.

An indirect benefit for the AA-licence holder would be that he would come to the R.A.E. with a good deal more knowledge and experience, and therefore confidence, making the examination a simpler proposition that it is at present for many candidates.

The system of Artificial Aerial licensing worked well in the years between the Wars—all the G2/3 callsigns in the present U.K. lists are original holders (they did not have to pass an Exam nor a Morse Test)—and there seems no reason why this intermediate grade should not be re-introduced for the benefit of the beginners of today.

*Austin Forsyth
G6FO*

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

ANOTHER month passes and summer has turned into autumn, both electronically, and weather-wise—the latter being painfully evident to those of us who for one reason or another have still got some outdoor maintenance to do on aerials and feeders. As far as this writer goes, it has meant that one of the radials to the trap vertical used for monitoring conditions has chosen this time to break more than usually awkwardly, while in the garage the Quad, the rotating mast, the rotators, and other accompanying bits remain till next Spring till they may be erected in comfort!

Ten Metres

G4ALG (Reading) has hung up his parallel dipoles for 14, 21, 28 MHz and attacked the bands with

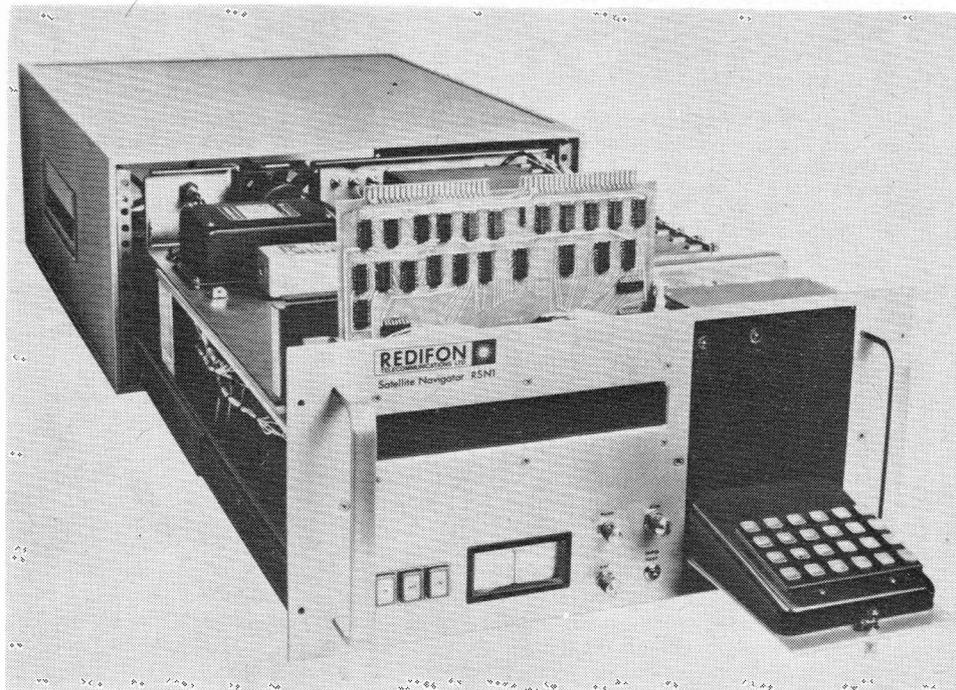
gusto, still using the FT-401. As he says, 28 MHz is largely a question of inactivity rather than "dead band." As example, he was having a local natter on Ten, when the band appeared "out" for DX but was surprised when the contact finished to be called by PY2PA! Others booked in included CN8CG, EL8G, ET3USE, LU4EGE, VE1UW, VO1BT and PY2EOQ, all on SSB.

G4BKI has added to the aerial farm by way of a ground-plane for this band, and found it works (SSB) to the tune of PY1EMM, CR6LX, A2CCY, EA8CR, CR6NO, CR6OZ and CN8CG. The CW segment also "gave" with ZS10U, UF6QAC, CR6AL, XW8BP and 9H1CH; so that G/P certainly does its stuff from St. Ives.

G3ZPF (Dudley) persists with his

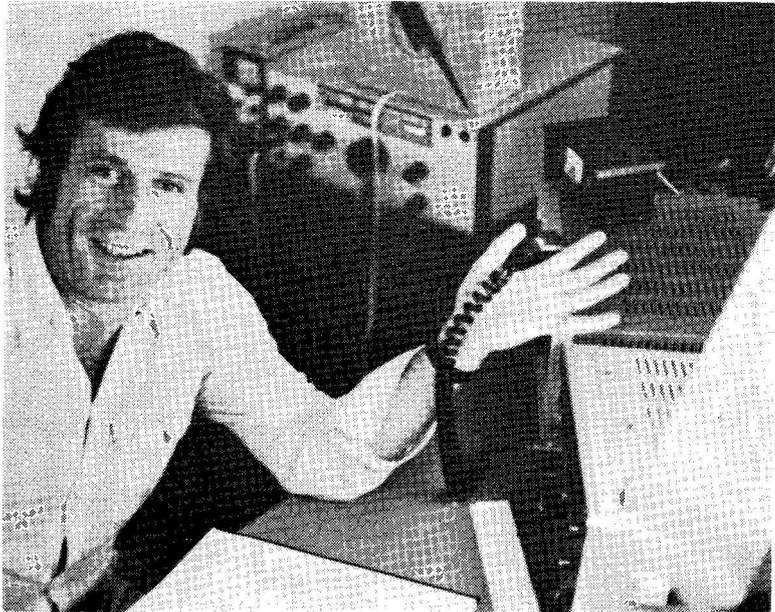
feeling that on Ten even over four miles the best report for a local QSO would be about S6—but on the other hand admits that Ten is much easier in terms of aerial-farming for the chap with the modern "token offering" of garden. On a different tack, David notices during his monitoring of the band that the ZC4CY beacon signal has a minor malfunction on its keyer, which shortens the first dash of the C down almost to dot length.

Now to G3RFG (Henlow) who says it is a pity only one in a thousand (he puts it) ever reads the Editorial—'cos he agreed one hundred per cent with the September Editorial! To prove his faith, Stan sat down and monitored the 10-metre band by calling CQ on 28040 and 28182 kHz CW at approximately hourly inter-



This interesting looking piece of gear is the new Redifon Satellite Navigator, which receives data from the five Transit satellites in continuous orbit. The positioning accuracy is better than 500 feet, anywhere in the world. After initial setting-up no further adjustments are needed during the course of a voyage. The RSN1 is another fine example of sophisticated electronic engineering applied to the particular problem of ocean navigation.

XUIAA, Khmer Republic (Cambodia) operated by F5IQ during a recent visit. The gear consists of FT-101, FL-2000B into a 5-ele beam for 20 metres. Other operators also take a turn on XUIAA.



vals, searching the band from the bottom up to 28.2 MHz, logging all contacts plus other stations heard over the monitored segment. Contacts were made as early as 0855z and as late as 2055z. Apart from the first-hop Europeans, and G's over quite a wide range of distance, G3RFG worked LA2MA/MM (near EA9), HG4KYB, KZ5BB, LU2DEK, LU3DSI, LU6EF, LU7DZ, PY1HQ, PY1MB, UV9DX, WA8UZZ/4, YU3ETR/MM (off ZD7), ZC4BI, ZE1EN, ZS2AG, ZS6SS, 7Q7DW and 9H1CH. Heard but not worked included more EU's, plus K5RNM, LU1DPR, LU6DKX, PY1MCC, W1EVT W9DD, YV5AIZ, ZC4CY and 3B8MS. It all suggests that Ten may be lying down, but it's far from dead!

Conditions generally have been on the up-turn on Ten opines G3NOF (Yeovil), as well as the other bands, although with Ten it has been a case of wait-and-watch. In the mornings Russians were heard, and in the afternoons Southern Africans, but no U.S. stations apart from W4GJO. SSB contacts made included CN8CG, CR6NO, CR6RC, DK8GH, EA8CR, ET3USE, FY7AD, KP4DKX, LU8DTV, PY2PA, YV1YC/5, ZD7FT, ZS1YM, ZS3AK, ZS4KC, ZS5PS, ZS6U, 8P6CG, 8P6ES, 9J2DT and 9J2FD.

That the 10m. band is certainly showing signs of life, although not as hot as last year, is the finding of GW4BLE, particularly during the last few days of September. On the 28th, G3ZGC/MM near Durban was raised with his 15 watts out of an FT-75 and long-wire aerial. September 30 was excellent, with all continents noted, from a GI through to VK6. Actual contacts were with CR6LF, CR6LX, CR6NO, CR6OZ, CR6RC, CR6UE, CX7BF, LU7FAG PY2ECQ, PY5XV, PY7CKP, RA6HBB, RA6HEO, UA6HDD, UA6JAD, 4Z4MJ, 8P6ES and 9J2WS, while the beacons, particularly ZC4CY, were audible most of the time on the 18AVT/WB aerial and FR-DX400S.

The inference is that Ten Metres should not be neglected.

Now Fifteen

G2HKU (Sheppey) kicks off, his offering being a CW contact with UL7JAG, plus SSB with VK9FV (Territory of New Guinea), VK9MC (Papua) which last was a new country for Ted.

It was all SSB for G4ALG, and Steve notes his contacts with CR6NO, CR7IZ, DF0BG, KP4DRW, PY's, VO1BT, W's, 4X4QG, 9H1CQ and G3ZGC/MM, who was off the coast of Mauretania and 599 with his

FT-75 rig.

G4BKI says he now has a total of 190 countries worked and 95 confirmed, so he is nearly ready to apply for his DXCC. On the key, he found WT0NEB, hundreds of W's and JA's, JT0AE, MP4BJR, CN8CG, 4W1BC, LB1V, ET3USE, HS4AGN, ZS's and PY's. Turning the function switch to SSB resulted in contacts with 5U7AZ, 5H3AP and 5V4AH.

Another chap to try both ways of making QSO's was G3ZPF who used CW for ZS2GJ, 9H1CH, UK2OAA and the W2, W3, W4, W9 and W0 call areas. On SSB he booked in PY2EAD, PY4KL, PY3BXW, UA9BE, CR6LF, CR7IZ, CR7UZ, 9J2TB, JH6FFB, LU1ACO, 3B6CF, ZE1CS, 3V8DM and LU5MAO.

Long-path openings to VK and VS6 around 0700z were noted by G3NOF, although the short path from 1000 to 1200z has been better; Don tried the latter to work A4XFE, A4XFJ, JA2WTM, HM1GN, JH2AGC, UK3MAD, UK5MAF, UK9CAE, VS6CY and 3V8DM.

W4WFL/1 (Farmington, Conn.) treated himself to a Hallicrafters FPM-300, and spent a couple of weekends trying it out—the results in terms of SSB included A2CCY, 9J2AR, 9J2FD, 9J2MD, 5U7BA, XT2AJ, VP2GRN, VP2KF, 3V8DM,

UD6DR and UI8LAG (all new ones) plus M1B, M1C, M1D, F6CLZ/FC, ZE7JV (who had a fine signal on 5 watts p.e.p.), EA6BG, EA6BH, FY7YI/FGØ, GC3EML and 9X5VA. In addition, what Morgani describes as "proper attention" has been given to CW, but the results have been mainly run-of-the-mill prefixes.

Although his list is not as long as last month, G3VLX (Chislehurst) reckons his time on the band was well worth the trouble—he made SSB contacts with ZD7FT, PJ9AVN, 9X5NA and VP2GBL.

G3RFX/DJØEQ is now active under the DJ banner in West Berlin, using an FT-101, which is brought home for leave in England; he comments on how often it is that the QRM which wipes out *his* contacts is almost invariably an I callsign ("here Eetalion station Eye-Wan") which leads to the deduction that receivers are at a premium in Italy! He used both modes from Berlin, and notes CW QSO's with 4K1D, WBØEQ, LU1HDC and CX1JM, while SSB accounted for CR7HC, 9J2DT, KØAGM, LU6AJ, LU6DPB, LU6DMQ, A4XFJ, K5LWL/YV6, ZD9GC, VK6HE, CE3PY, 3B6CF, ZS6MP, ZS6BAG and EL9A.

Only CW seems to have been used by G3DCS (Ipswich) which suggests Enver has lost interest in RTTY or is brewing up some infernal device to combat the QRM. However, Fifteen CW did him quite well with contacts to WA6NGG, FØAVG/FC, PY2FCJ,

W4KNW, UA9SAA, CX1BBL, HK3CTJ, PY2FQP, W7WE and WA1CQW.

G3ORP (Maidstone) had a spot of bother during a recent storm, when lightning "fused" the aerial, blew up a PA bottle in the linear and melted the UHF connectors, male and female, on the ATU—luckily the new Drake-line was not yet connected up! Apart from sorting all this little lot out, Peter has spent most of his spare time aerial-farming for the LF-bands DX season to come, but he did find time to get on 15m. to raise KP4DRW, 9V1QO, PY4KL, K5LWL/YV6, LU6ADQ, all on SSB.

Twenty Metres

As ever, the QRM congregates on this band—because on it the bulk of the world's amateur traffic is worked. Most of it seems to hail from Italy where it seems to be the normal thing to have output stages regenerative to make the speech quality as bad as possible, with maximum radiation of splatter. While we all regret DX countries being rendered inactive by their Governments, one could wish the Italian authorities would clamp down *hard*. (Years ago, it was the F's who were held up as anathema on the amateur bands—now it is the Eyeties.) Leaving out the QRM, conditions have been pretty fair for the stage of the sunspot cycle, and the time of year.

Health troubles have been the lot

of G8HX (Mansfield) who suffered what seemed to be stroke during a contact with DL6LY; luckily, the effect was on the left-hand side so the QSO was completed, but Frank now finds himself stuck at home until he is passed fit for work again. The rig has not been much used, the 14 MHz bag being UI8IAG, W9AE, ZS2CV, JH1IIW, HK2DP for a new one, VE6EO and a brace of UA9's. (W9AE above mentioned is running a kilowatt to a beam for the HF bands, with a two-element 7 MHz job ten feet higher—it must need quite a hefty rotator to cope with that lot!)

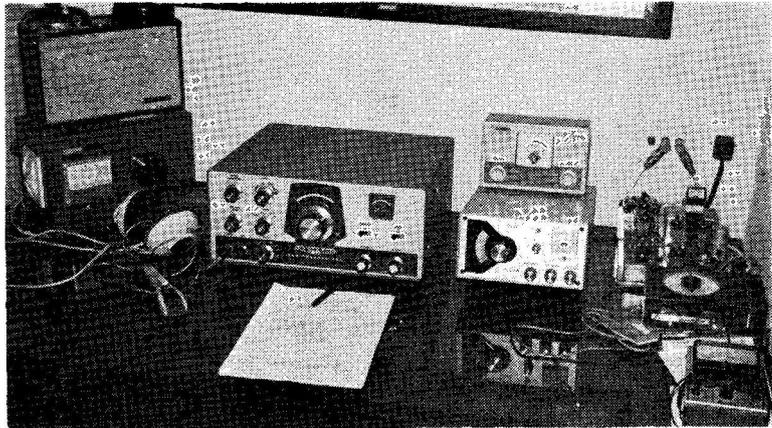
Still QRP says G3MZE (Stevenage) who runs an HW-7 with a home-spun E1-Bug keyer, to indoor dipoles; he managed to put his two watts across to UP2BAØ, UØ5WB UQ2AN, UB5MZ and UN1BR, also many Europeans and KX1MUM, TF3HP, W2AXZ (this contact was with two watts from an HW-7 at *both* ends), WB2BGV, WA3EHC/T, W3SQ, 5U7AZ and 9H4C.

DX has popped up when least expected, says G3UZ (Goring-by-Sea) but though the DX was called, it was not always possible to raise it; nonetheless, QSO's were made with LU5AQ, LU9FAN, VP2LAW, VS6GM, PY7AMX, PT1RA, OD5LX, KP4DLC, 9M2FK, CN8CG, VP9HM, EA8JH, YV5CEP, HI8LPN, YK4XY, JR1NRP, OY6FRA, DU1OR, 4Z4JS, A4XFD, VP2VBU, UI8LK, UKØSAL,

Seated centre is G3YXK (Colchester) when in Hungary as the guest of HAIYB (extreme right). At left is the operator of station HA100KBC.



As G3IAG (Littleport, Cambs.) found on his visit this last summer, there is no shortage of modern amateur-band equipment in Yugoslavia. This is the station of YU2RBN, Porec.



UL7GAV, UL7QF, UA0YAE, VK2CX, UA0AN, YV5TT, EA8GU, UF6FAX, UF6LW, UD6CM, UD6DFK, the usual run of UA9's, plus all W call areas, CW exclusively—indicated pretty extensive coverage.

The SSB end of the band was given a working over by G2BON (Aldridge) with his "5RV" aerial and HW-100. He hooked with 9M2CJ, 3V8DM, UV9AB and ZS5ZS (all around 1730z) while the morning period produced UK6JAA, UK9CCE, and G5CS/HB0; lunch-time operating accounted for VO1BT, while EP2JP and VK3MR were both snapped up after lunch. Incidentally, Tom raised AX2APK, who said he was in Australia; AX was used by the VK's for a year some time ago, so perhaps this chap suffers from slow communications with the authorities. (Later information is that AX is in use again).

G4BKI managed a short spell on Twenty, CW bringing in KZ5AA, VP2ST, VP9GK, 3V8DM, TA1MB and some W/VE stations. SSB was not neglected, and reached out to VP8KF, VS9MJ, 9V1QO, 3V8DM, T2AK, PY0AO and VK3BOB.

G3ZPF used CW to work numerous UA9's, WIBUX, and WA0OXS and Europeans then turned off the keyer and brought his mike into play to book in CR6LX, CX3BR, CR6NO, EA8CR, A4XFJ, PJ9BG, YV5EFR, WA5ZTY/YV5, VK3AOF, M1B, VE8MD, VS9MJ, lots of UA9's and W's, and the Europeans.

Another both-modes operator on this band is G4ALG, whose SSB tally included CX4CR, ET3DS, IC8HN, PI1LC/MM, UD6HB,

VK1WB, VK2QM, VK2AZX, VK3EQ, VK3AKC (the E-M-E exponent), VK3AKP, VK6WC, assorted W's, YV1AD, ZM4FT and 9G1GG, while CW came in for UD6DHU, VK7CH and VP2VBU.

At G2HKU the activity has been spread across more bands and more evenly than usual, but Ted still found enough enthusiasm to work UM8MAQ on CW plus ZL1VN, ZL3RS, ZL3SE and 5B4LR on SSB. K2LZQ/OH0, F0AVG/FC, UK9CCJ, UW9TW, PY7ASV, UL7IH, VE3EEW, XQ3ED, and PY2CJW were the contribution from G3DCS from his weekend tours round the band; all were worked on CW.

The report from G3NOF mentions the mornings as being good to the Pacific and KL7, from 0700z, with the VK and ZL stations there a little later, and staying in longer than in previous years. At around 0730, JA's were heard, with the long-path to 9M2, while afternoon short-path openings to 9M2 and VK6 have been noted; little of interest around tea-time, but the 20m. band opening up well to the Americas in the evening, until closing time. SSB contacts were rung up with C21KM/MM (in the North Pacific), FP0II, I0SJX /IA5, JA1AFI, JA1YFL, JA4BZH, JA9YBA, JH1CNT, KL7BJW, KL7HOV, KP4DHD, KX6BU, SV1CH/IFT (an exhibition station), SV1EH (Evia Is.), TU2AE, VE6HQ, various VK's including VK9FV (Papua), VS6ER, WB5GUV/KL7, WW4RDC (at a convention), ZL's, 3V8DM, 5B4WR, 9G1GG, 9M2DQ and 9Y4PL.

DJ0EQ says he is not masochist

enough to spend much time on Twenty, but he did give it the once-over; CW yielded OD5GC, HV3SJ, and 3V8DM, while SSB was taken to work JA7FS, KZ5PY and LU3EX.

Now to G3VLX, who seems to have become a totally phone man of late years; this was the mode used to hook UD6HB, UL7BAB, FC2CI, VP7GY, FP0KX, 5Z4FB, FM7WW and 9H4K.

Shortly after that mention of his lack of GD contacts, writes W4WFL /1, he managed to find first GD2HCX, and then GD3YDB, in short order! However, CW on Twenty otherwise has been fairly run-of-the-mill, into Europe mainly.

Snippets

The committee of A.R.M.S. have it in mind to create an award in memory of the late G3NMR, probably something along the lines of a "best mobile to mobile" QSO by a member; to avoid the likelihood of both ends of the QSO being members and therefore both being winners, possibly they will take into account the best three contacts for each entry. Sounds like an interesting idea, so long as the rules make it necessary to use the mobile aerial at both ends.

The American yacht *Seeker* is able to operate on our bands as VR4BM /MM; she is now in Singapore for repairs before continuing a leisurely round-the-world cruise, and we understand there have been contacts with G3RXC, G3TJW, G3RUX and G3KWK.

A nice little note came in the mail from WB8OWM, who likes the coverage we give to QRP—we must

have more than average QRP operators among the readers! Another letter came from G3JZV (Portsmouth), who wrote at the instance of W2OEH—it seems there has been a character on the bands signing “C31CQ,” asking for cards *via* W2OEH—but the real one has a different manager according to the *Call Book*, and W2OEH knows him not. It's a bit hard on G3JZV, but Terry has now worked no less than seven stations in Andorra—six pirates, and a publicised G-expedition who have completely failed to QSL despite repeated requests.

The Ex-G Club have their contest, from 0001 GMT November 10, to 2359 November 11. A new contest, this one is intended to make reciprocal licensing privileges better known. Operation is held to a period of 24 hours out of the 48, exchanging signal report, QSO number, and your original call if you are an Ex-G member. The frequencies to look for are around 3950 kHz, 7250 kHz, 14347 kHz, 21415 kHz and 28650 kHz.

We have several times recently

BRIEF DX DATA

- DU1EJ** Edgar is on Top Band, QRV for DX, 1100-1200z, 1806, 1826, 1876 and 1908 kHz. Will be pleased to try skeds.
British Commonwealth Net has restarted, 14170 kHz, 1430z, Mondays, Wednesdays and Fridays, with G3LQP as Net Control.
- VQ9.../F** It is understood that VQ9R and Co. will be there by the time this issue is out, with four rigs, CW and SSB, operation 7-28 MHz but mainly 14/21 MHz. QSL to VQ9R.
- VS9MS** Steve is on from Gan. Try late afternoon, 14170 or 14210 kHz. QSL *via* G8HYM.
- ZD9BM** Leaves at end October. It is understood his relief will be ex-VP8GZ.
- XP1** XP1AA is around 14018 kHz about 2200z. XP1AB, SSB on 14162 kHz, 2330z, is worth trying for.
- 4L6A** From Oblast 003, is UD6-land, a rare one, by UF6HS and a group, October-end.

Reporting the HF Bands

mentioned AGCW/DL. They are running, over the weekend January 12, 1800z to January 13, 1500z, another QRP contest. Operate not more than 15 hours, with the six-hour break being split into not more than two periods. Under ten watts it must be for an entry, although you can work the QRO chaps. Use 3-5, 7, 14, and *either* 21 MHz or Top Band. Exchange RST, serial number, power to give a group such as “579001/3” and then add an X if you are crystal controlled. Score one point for your own country, two for another country in your own continent, three for another continent; add 3 points if the other chap is also QRP. Then there is a handicap bonus, giving 3 points if either station is under 3 watts, or crystal controlled, so that if both ends were under 3 watts and crystal controlled there would be maximum handicap bonus of 12. Score multipliers: For each country in your own continent 1; each country in another country 2. Use ARRL countries list, but count each JA, PY, VE, VK, W, or ZS call area as a country. The multiplier is totalled up on each band. Logs to G8PG, at 37 Pickerill Road, Greasby, Wirral, by February 7, with an s.a.e. for a copy of the results.

A new ten-metre contest is being arranged by ARRL, running from 1200z on December 15 to 2359 on December 16, with no breaks. Work a station once on CW, once on Phone. W/VE will send RST, with State or Province—others RS plus a serial number starting at 001. No cross-mode contacts. All CW QSO's are to be within the area 28-0-28-5 MHz, saving those made through *Oscar VI*. Two points for a QSO or four if you work a Novice. Multiply by a figure made up of the sum of the States, VE/VO call areas, ITU regions worked by /MM stations, and countries as determined by ARRL's countries list. The final score is QSO points times multiplier. Logs to be postmarked no later than January 21, 1974, on ARRL forms or a reasonable facsimile, with a

summary sheet in the usual form. There is a clause which disqualifies for more than 2% duplicate contacts, and another which says that not only will the duplicates be removed, but an extra penalty of three points deducted. And ARRL will list the disqualified stations in *QST*.

G8HX comments on the amount of retuning needed to cover Eighty and wonders whether a national or international calling frequency could not be used, say, for CW, 3530 or 3540 kHz, during the day. It sounds like a very good idea, at that.

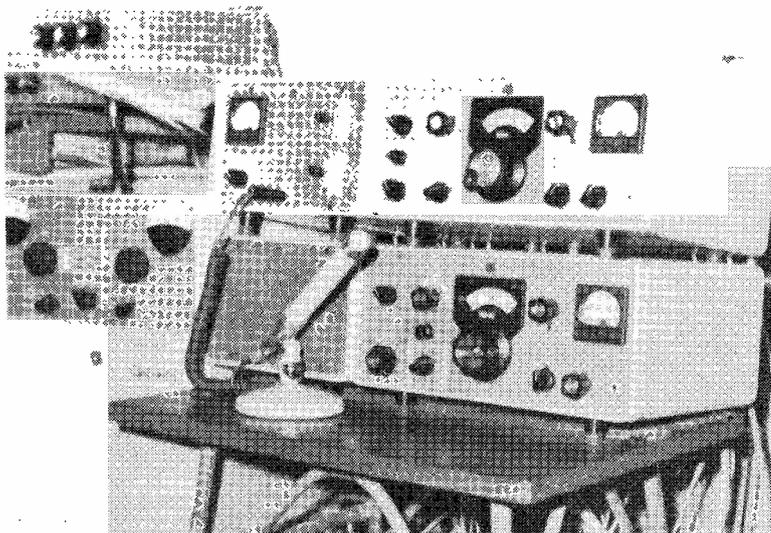
G3TXF writes to say he is going to be on during the 1973 *CQ WW SSB Contest* as FG0ZZ/FS7, with F2QQ, F5ZW, KP4TIN and himself as the operators, the QSL being *via* F2QQ. In addition, Nigel hopes to be operating from Anguilla during the first two weeks of November. The actual call is not known but VP2EN is hoped for. QSL's for this, and the subsequent operation as G3TXF/KP4, all go to G3TXF.

W4WFL/1 mentions that at present there are three amateurs in the Andaman and Nicobar Is., VU2ANI, VU2CW and VU7GV, and there are twenty people studying for their “tickets!”

G3YRR has some points to make over the question of newspaper publicity for Amateur Radio, usually of the most idiotic sort. As Charles sees it, the fault lies with Clubs and individuals, who should make sure a copy of suitable publications is received each month by the local paper, together with a covering letter drawing attention to activities and Field Days; also an approach can be made to the Post Office to ensure their prosecutors are correctly briefed before they appear in Court as to what constitutes proper and pirate operation. A good point, this, and even more so that local papers could give a line or so to a mention of Club activities—if they are told, date, time, venue, speaker and subject.

A major gripe comes up from GW4BLE, who points out that the

The set-up at JA3GZN, owned by Masanobu Katsusai, Box 29, Amagasaki, Hyogo 660, who is well-known in Jap. DX circles and is an active QSL manager for DX-peditions and the like.



Amateur Radio Exhibition is set for a weekend which clashes with the *CQ WW Contest*. However, it has to be said that there is practically no weekend date in the year which is not occupied with some sort of activity in the way of a contest. We could all wish otherwise!

Forty

Not much interest shown this month, what with the improvement on Twenty, the QRM and the noise. GW4BLE's long list of last month is replaced by just one contact this time—with VK7GK during the VK/ZL Contest.

G2NJ notes another HW-7 operator in DK6FG, on Forty, looking for QRP contacts. He has only had the little rig a short while but already has been in QSO with UB5, SM, OK and OH, plus the 100% QSO that G2NJ had with him.

G3ORP says that the best aerials he has for Forty are the 166 and 204-foot end-fed wires, although reception is better on the vertical, discriminating against the Europeans. A half-wave dipole at 36 feet used for a short while failed to raise a single station at DX. Peter selects as his best QSO's with UA90BW, K4GSU, K1NOL, W2CXM, VE2MAV, WB6CWD/1, W3UZ, ZP5RL, K4GSW, YV1TO, K4GSU, WA3GJU/1, W1VAH, W3NZ, W3JDC, K4PJ, W8IO, FG7JM and ZP5RL.

For G2HKU, we see CW with UD6HQ, UJ8SAB, UJ8SAC and UL7TAK, while his SSB connected with UA9BE and UK9AAN.

G4BKI has it simply expressed in his letter: 40 CW, EU's; 40 SSB: *Nuffin'*! Paul uses SSB most of the time, but says he finds CW *quite* handy for some of the DX.

Eighty

The effect of the Five-Band DXCC has been to induce people to try DX operating on this band; but one feels that, at least at the CW end, more is being worked than they are prepared to admit. As for the HF end, DX is certainly there, but one needs monumental patience and a charitable outlook. However, one supposes that for the 3.5 MHz DX'ers, familiarity breeds content!

G2NJ (Peterborough) ever seeking his /MM stations and QRP types, winkled out G3PHV on September 27, when the latter was using the G3TAG rig described in *SHORT WAVE MAGAZINE* for June last, built up to be 7 × 4 × 6 inches with a couple of internal lantern batteries for the power, for an excellent QSO. On another occasion he found 4A5CI/MM, when the latter was in the Bay of Biscay, both contacts of course on CW.

G4BKI uses his long-wire on all bands save Ten, *and*, as we have already mentioned, is up to 190 countries worked—but this last month 3.5 MHz gave nothing better

than U.K. and European stations in either CW or SSB mode.

Top Band

A very thin clip for this month. G3ORP has been aerial farming, ready for the DX season. He now seems to have settled on a "terminated" aerial, which goes straight up for 50ft. from the coax feeder, the outer of which is taken down to several earths; it then goes into 150 feet of top, before dropping down 36 feet to a grounded-end connection. In the very centre of the flat-top there is a *closed* stub hanging down, dimensioned and placed to put the voltage point at the bottom of the stub, the short then feeding the other half of the aerial. Cunning indeed. In the way of stations worked on 160m. Peter offers GI4BBE, OK1MIW and PA25HIP (who is this "PA25HIP"—we know he's a Dutchman, but what does the call signify?) on one session of CW, G3WKH/HBO and DK2QL on Phone on another occasion, a shaky one with DJ4SS, and at the beginning of October, QSO's with GM4COK, OE3SGA, GM3YOR/P and G4CBQ.

The only other to mention Top Band could be your scribe, who was amused one evening after working a station in Notts. on the key, to turn back the AF gain and sit reading a book. Then it was noticed that the S-meter on the rig was dancing about. Raising the AF gain again revealed DJ8WL and DA2LJ, both good

SSB signals on 1834 kHz, with no takers—at least till the G3KFE signal had spread the news all over the U.K. while calling them!

QSL Addresses

A very long and detailed list from G2BON had to be reduced to fit the space, so the remainder will be given next time round. He mentions, among the rare 'uns, *YB1HR*, to P.O. Box 314, Bandoeng, Indonesia; *YAIED* and *YAIJS*, both to P.O. Box 5, Kabul; *VP8KF*, to P.O. Box 59, Port Stanley, Falkland Islands; *8RIUGF* to P.O. Box 841, Georgetown, Guyana; *3V8DM* to VE6HN; *5R8AR*, to P.O. Box 924, Tananarive, Madagascar.

G3NOF offers *WW4RDC*, to W4UPJ, *FP01I*, to WB2MAN; *WB5GUV/KL7* to W5 Bureau; *TR8MC* to W2YY; *A4XFI* to BFPO 66; *ZD7FT* to VE1AIH, and *C21KM* to P.O. Box 29, Nauru, South Pacific.

Odd Bits

Perhaps the most important is the news that for some unexplained reason the Afghanistan Minister of Communication has closed down all YA amateurs; the QSL Bureau is also out of action, but it is understood that cards may be sent to the YA (CDRC) Award Manager, Wolfgang Renner DK5AR, Friedensstr. 25, D-34, Goettingen, Germany.

W4WFL/1 says that two more Top Band WAC certificates have gone out from the ARRL—it's getting too common, this WAC on Top Band business!

G3YRR quotes the case of a local lad who passed RAE at the age of 13½ and so has to wait till he is 14 in December to apply for a ticket. The boy started out from his school electronics project and took it from there—good for Kim Ranyard.

Last time, it will be recalled, G3VLX claimed to be a non-contest type; by the time it appeared in

print, Deryck had taken a close look at the record, to find that this year he has been involved in three Top Band CW contests, the 7 MHz Phone, the WAB LF Phone, the Welsh 3.5 MHz contest, and operated for his Club in WAE, WPX and the *CQ WW DX* contests. Not a bad year for a non-competitive sort of chap!

G2HKU, his head hung in sorrow, notices that the bad manners of Eighty are beginning to penetrate to Top Band—one hopes it never gets to be as common as on Eighty, or even Twenty. Perhaps, he suggests, the answer is never to take any notice of the rude one, who then stands condemned out of his own mouth.

Conclusion

All for this time, sad to say. For next month the deadline is November 13, latest, addressed as always to "CDXN," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ. Maybe see you at the Exhibition.

NORTHERN IRELAND OCCASION

In the Bangor district of Northern Ireland, they are arranging an Amateur Radio get-together for the evening of Tuesday, December 6, 7.30 p.m. at the New Imperial Hotel, Donaghadee. This is open to all interested, whether licensed or SWL, and it will be an ecumenical occasion. There will be a dinner-and-dance, tickets £2.50, and the contact man is John Stringer, G13KDR, *QTHR*, or ring Holywood 3983. We wish him and the Bangor Amateur Radio Society well in laying on an event of this kind in what he himself describes as "these difficult times."

VISITOR OPERATION FROM SARK, C.I.

There has recently been trouble with the Seneschal of Sark in regard to /A and /P operation by visiting radio amateurs. Sark is a constituent Island of the Bailiwick of Guernsey—the Channel Islands coming under our Ministry of Posts & Telecommunications for their radio administration—and /A, /P operation is permitted under the normal U.K. licence regulations. However, it has been decided that henceforth special permission must be obtained for Amateur Radio operation from Sark, which is virtually private property. (Of course, it is easy to divine what has been happening—certain types have been coming in, setting up /A or /P without so much as a by-your-leave, and causing BCI or TVI without anyone in local authority knowing who they are or why they are there). So, if you are thinking of mounting a DX-pedition to that delectable Island, or any other in the Bailiwick of Guernsey, prior notification of intention is required and should be made

to: The Development Controller, Development Division, States Telecommunications Board, P.O. Box 3, St. Peter Port, Guernsey, C.I. (Tel. 0481 24211.)

This does not in any way invalidate your U.K. licence for /A, /P, operating. All you are asked to do is to give prior notification, so that those concerned know what is going on. Though the Ministry suggests that at least 48 hours' notice be given, we would think that a week should be allowed for the wheels to turn.

As well as Sark and Guernsey itself, the other Islands in the Bailiwick of Guernsey are Alderney, Herm, Jethou and Lihou. All take the GC prefix.

SUCCESSFUL R.A.F. EXHIBITION

For the recent "Meet The Royal Air Force" event, during August at Birmingham, the R.A.F. Amateur Radio Society—with the assistance of the R.A.F. Cosford group—put on a very successful stand, actively to demonstrate Amateur Radio. They had about 300 visitors holding call signs and, from a good site, GB3RAF is reported as having done pretty well on the air.

POINT OF LAW

The Ministry asks us to remind readers, and all interested in radio transmission, that under the Wireless Telegraphy Act it is an offence to construct or possess transmitting apparatus for the amateur bands without the appropriate Licence issued by the Ministry of Posts & Telecommunications. In other words, get the R.A.E. behind you before you start thinking about transmitting gear. Heavy penalties are prescribed for transgressors, and our information is that recently the Ministry prosecutions have been more than usually successful.

TRANSPORTABLE AERIAL FOR THE LF BANDS

VERTICAL SYSTEM FOR
80/160 METRES —
DESIGN AND CONSTRUCTION

V. S. EVANS (G4AVT)

This is an ingenious and entirely practicable approach to the problem of radiating effectively, on either Eighty or Top Band, when you are out |P or away |A. There are no new principles involved—merely the application of known techniques to a practical problem.—Editor.

THIS aerial rig was designed to be transportable with a view to making short visits to sites not immediately accessible by car. Being self-supporting and free of guy wires it is quick to get into action and to dismount. It breaks down into easy stowable parts for carrying back to the vehicle. A tuning unit is provided for full band coverage.

The theory of the quarter-wave Marconi vertical can be referred to in any text book on the subject. Suffice it to say that the short loaded vertical for the amateur LF bands is so far away, electrically, from the true Marconi, that its mode of operation becomes very different in practice. The mobile 160m. whip, for instance is but a tiny fraction of the desired length, and to substitute for 32 radials of soft copper, each some 132 feet long, we are obliged to make use of an inconveniently placed large steel box! (The car body.)

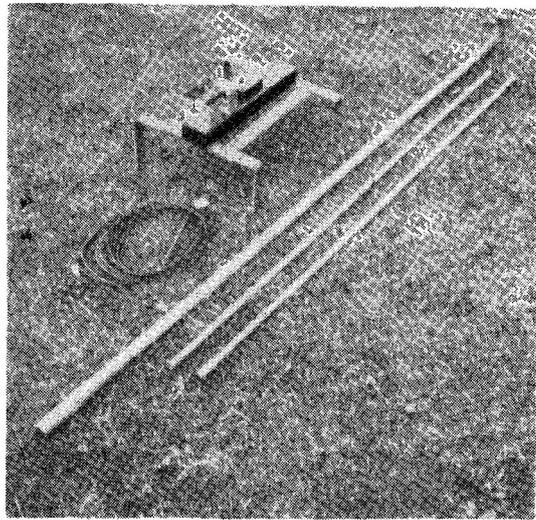
An antenna system can be regarded as a tuned circuit—it has inductance, capacitance and true resistance. In a loaded vertical the loading coil provides most of the inductance, compensating for the lack of antenna length, and equalising the capacitive reactance present.

The position of the coil along the antenna length is of considerable significance. The higher the coil is placed the more effective should be the radiation, but adversely, a greater number of turns is required for the same frequency and therefore the higher its DC resistance. As the coil gets larger, and heavier, and higher, it develops greater wind resistance and requires more physical support. Base loading for mobiles is convenient because the weight and bulk is at the bottom, but radiation suffers as a consequence. A good compromise is about one third up from the bottom.

In our case this is a convenient height to reach for changing the loading coil.

The shape of the coil is also important. The theory of maximum "Q" being obtained with a coil the length of which is twice its diameter has to give way to the fact that more effective radiation occurs if the coil is long compared to its diameter, thus approaching the theory of the helically wound antenna. The wire used for winding the coil should be enamelled high conductivity copper and as heavy a gauge as the practical application will allow.

The drawing and photographs herewith illustrate a practical transportable radiating system.

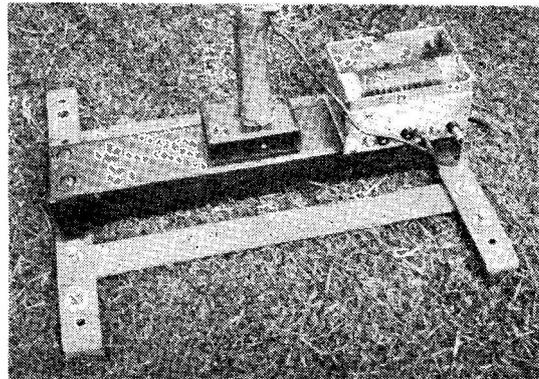


The elements involved in G4AVT's transportable LF-Band aerial design. The actual length of coax used becomes an essential part of the system—see text.

The Base: In the present project the base provides physical stability and the earthy end of the system. The chassis is made from strip metal about $1\frac{1}{2}$ x $\frac{1}{4}$ inch, preferably non-ferrous, but hard enough to withstand knocking into the ground. The timber cross-pieces should be of dry hardwood and given several coats of poly. varnish to keep out moisture, particular attention being given to the end grain. The 1 in. diam. hole should be a good fit, but eased to enable the dowel foot of the bottom tube to be inserted and removed.

Wood Dowels: A good quality broom or garden tool handle, usually made of ash, will make the dowelling required with some to spare. After drilling and tapering, several coats of varnish should be applied. Both dowels are permanently fixed to the bottom tube and should be a tight fit.

Bottom Tube Top Section: The tubes were obtained



The base assembly, of which one of the main features is that the spiked metal mount can be driven right into the ground—see text and drawings.

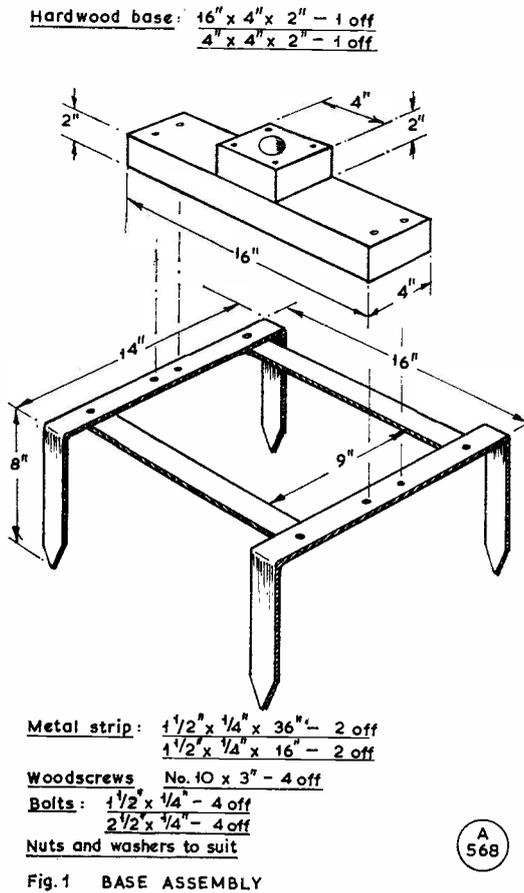


Fig. 1 BASE ASSEMBLY

Fig. 1. Base support details for the self-supporting vertical aerial.

from defunct TV aerials, being 1in. and $\frac{1}{2}$ in. O.S. diameter and are each 5ft. long. The two top pieces are joined with an electrical conduit junction sleeve which has two fixing screws.

The ends of these top tubes are best fitted with two or three inches of wood dowel inside to maintain shape and prevent compression. The assembled top whip is an easy fit into the socket drilled in the top dowel of the bottom tube. It is slipped out for easy removal or change of loading coil.

Loading coils: Plumber's plastic water pipe is used for the formers. Two lengths are required, each 10in. long x $1\frac{1}{4}$ in. inside diam. Windings are started two inches from the bottom end, and are close-wound. For the 160m. coil, 170 turns of 22g. The 80m. coil has 68 turns of 18g. Sufficient length should be left at both ends to reach the connecting points on the tubes. When finished the coils should be given three coats of insulating varnish.

The Tuning Unit: This is wound with 22g. enamelled wire on a 6inch length of the $1\frac{1}{4}$ in. plastic tube, the turns being spaced one wire diameter. Tappings are made by

small twisted loops at intervals and brought out to sockets with short lengths of plastic covered flex. The whole is contained in an aluminium box 6 x 3 x 3 inches. The coil is centralised with an equal clearance all round by locating the former over three metal screws fixed at each end of the box. A coax socket is fitted as indicated and a fly lead of plastic covered flex, "B" with plug, is soldered to the socket centre contact and brought through the side of the box. Two bolts secure the box, through the wood cross-piece to the chassis. Contacts must be made electrically clean and varnished over.

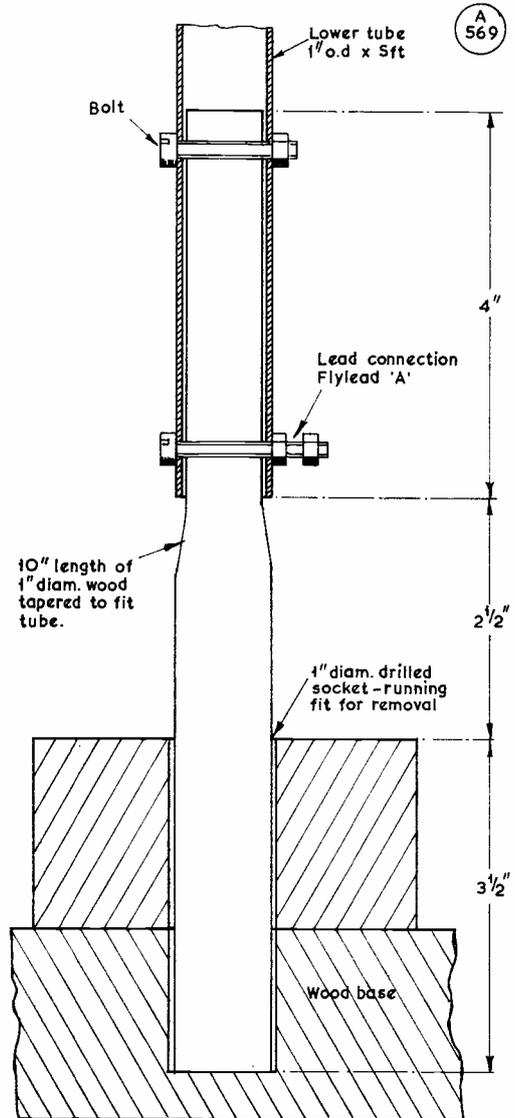


Fig. 2. BOTTOM TUBE ASSEMBLY

Fig. 2. The bottom tube fitting detail.

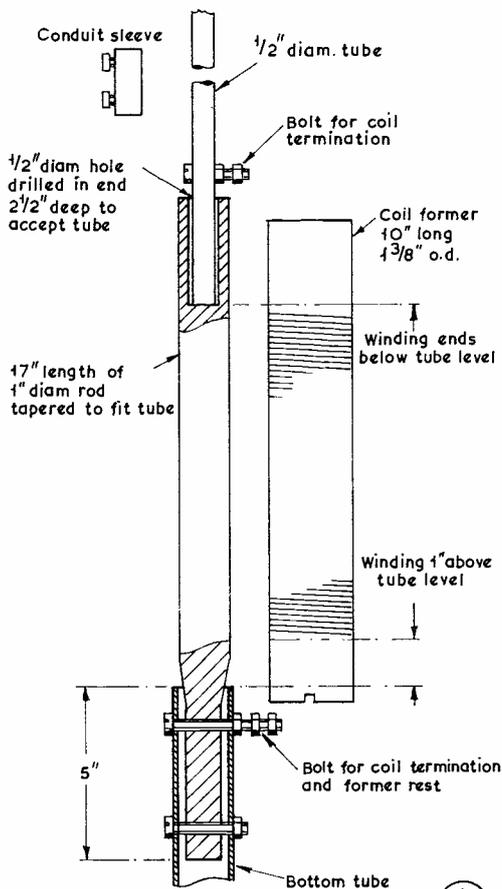


Fig. 3 MIDDLE SECTION

Fig. 3. Schematic for the mid-section arrangement—see text.

Assembly: When all is ready the base is placed on soft ground and knocked into the full depth of the spike legs. The foot of the lower tube is inserted in the hole in the base block and the 160m. coil slipped over the top dowel. The complete whip section is inserted in the socket provided in the top dowel and the loading coil connected up at both ends to the respective terminal points.

Tuning: With fly leads plugged in, the antenna is required to resonate at the top end of the 160m. band. The loading coil may have to be trimmed to achieve this. Removing turns raises the frequency. A GDO can be used to locate the actual resonant point, using a coupling coil of about 20 turns connected across the coax socket, initially tightly coupled to obtain a reading. More than one reaction may occur. The coupling is progressively reduced for accuracy and to eliminate spurious readings. During this procedure the GDO readings must be checked from time to time against an accurately calibrated receiver. When the desired frequency is approached



That the whole bag o' tricks is indeed portable is proved by this picture of G4AVT's XYL taking the LF-Band Ae. rig out to the car.

the feeder line should be connected and final adjustment made by using an SWR meter in conjunction with the transmitter.

This latter procedure is adopted because some consideration must be given to the role of the coax feeder line. The outer sheathing is acting in some measure as a counterpoise or radial and is part of the antenna system. To help stabilise the point of resonance, the feed line should be a permanent feature at its *set length* and always laid flat on the ground to within the last few feet at the transmitter. A length of 20 feet was found to be practical and effective.

The 80m. coil is substituted for the Top Band inductance and the fly leads moved to the appropriate sockets. A similar procedure as the foregoing is worked through to adjust the 80m. loading coil and resonate the system at the top end of the 80m. band.

In The Field

The antenna has been used exclusively with an FT-101 and Hansen SWR Bridge. Results over a considerable period have been surprisingly effective without any additional ground aids. For a lengthy stay in one location (camping or caravanning) radials could be laid out on the ground and attached to bolts located on the chassis for the purpose. A shift of resonance can be expected but the versatility of the tuner will help to overcome this effect. It is a useful, if temporary, dodge, to put a capacitor in series between the antenna and the

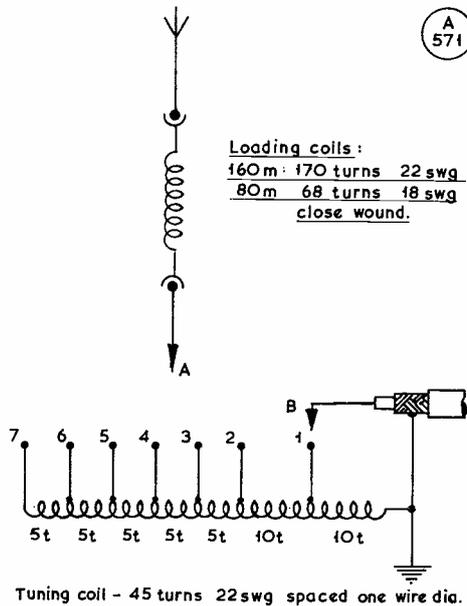


Fig. 4 : COIL DATA

Fig. 4. Coil data for the G4AVT LF-Band Vertical Ae.

tuner whereby the whole resonance area can be shifted higher in frequency—10,000 to 500 pF can be experimented with and mica capacitors used.

Choice of site has interesting possibilities. Not always is the highest point the best. Soft moist ground seems more important and this can sometimes be found in a hollow on the side of a hill rather than at its top. Riverside and lakeside hillocks, cliff tops overlooking the sea and rising ground from marsh or bog are among the better locations.

MAGAZINE CLUB CONTEST—MCC

This popular event, the 28th in the series, no less, is an inter-Club CW Contest, played off on Top Band, the dates this year being November 3-4, 1700-2100z each evening. Non-Club operators, meaning single-station entrants on just for the fun of it, are invited to take part because under the Rules—given in full on p.497 of the October issue of SHORT WAVE MAGAZINE—they can give Clubs they work a point and also score for their county, towards a possible multiplier. The going is fast-and-furious, and generally MCC exhibits a high standard of CW operating. There are no prizes—but if in the opinion of the judges a sufficient number of single-operator stations turn in logs covering just Clubs worked, with the usual details, we would be glad to show a separate table for them. Logs sent in under this category should make it clear that the entry is non-Club, with QSO's timed to the minute, and of course giving call and QTH. Address to: "MCC Single Entry," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.

DISCUSSING THE KW-2000E

IMPROVED ALL-BAND CW/SSB TRANSCEIVER

THIS article discusses the latest of the *K.W. Electronics, Ltd.* line of transceivers, the KW-2000E. Basically, they are all very much of a family, starting from the original KW-2000 running 90 watts to a 6146, developed to the 2000A which ran 180 watts p.e.p. to a pair of 6146's, and then on the 2000B which was similar in many respects to the 2000A but had undergone an external face-lift and minor improvements, notably to the dial-and-drive, and the front panel layout, not to mention boxing-in the rear of the AC PSU.

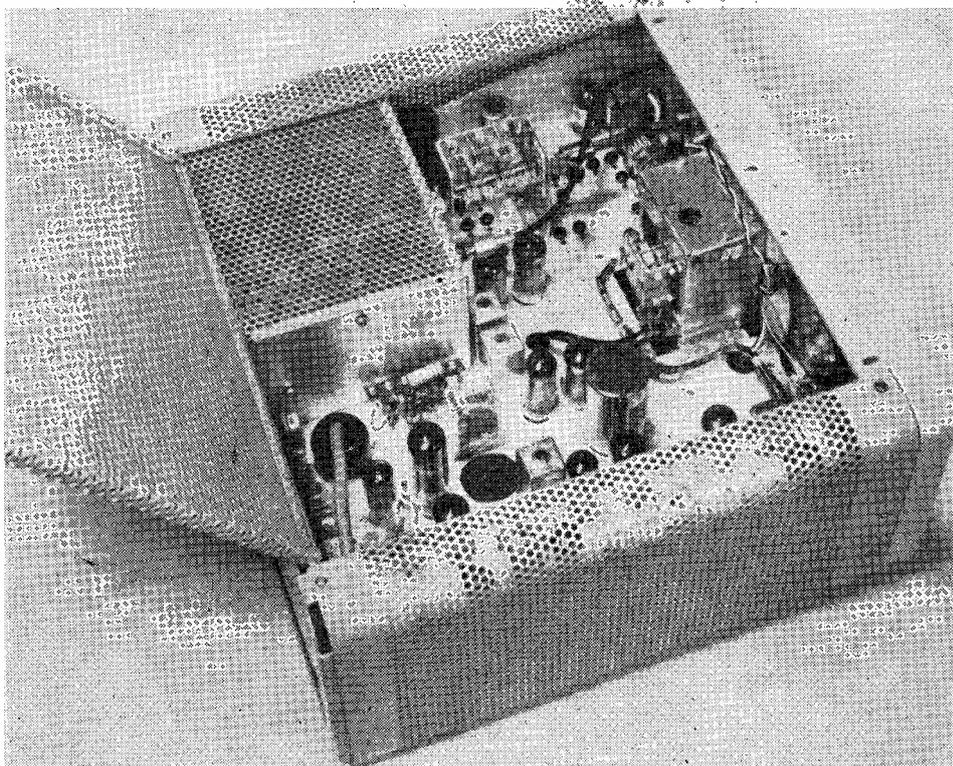
Now we come to the KW-2000E, which is superficially very much like the 2000B, but has several electrical changes which make minor alterations. For example, there is now a separate position of the "Function" switch for CW transmission; the band switch has a lever on the knob for easier operation; the VFO dial is altered to take account of the increase in the VFO swing from 200 kHz per segment of the bandswitch to 500 kHz; the bandswitch has fewer segments and now gives full coverage of all bands 1.8-30 MHz; and a very important one is that provision is now made, by switching to 14 MHz and the send-receive-Vox switch, to a new WWV position, enabling one to tune in the 15 MHz WWV signal and so to check one's wavemeter against a standard frequency signal.

So much for the obvious surface changes. A less obvious one is that the "Pre-selector" control no longer has little white stripes to say where each band lies, but a simple white arc marked "HF" and "LF" at the ends. Another is the provision of a separate socket for a jack-plug on the rear drop of the chassis, so that the key can be plugged in at will, rather than having to wire it to the octal socket. This in fact is an overt sign of a far less obvious change—the KW-110 Q-Multiplier accessory can be plugged into the octal socket with no wiring changes, to give far improved CW reception.

The PSU Side

The KW-2000E and the 2000A series power supplies will not intermarry—the connectors are of similar type but differently polarised to prevent the wrong PSU being used with a KW-2000E transceiver. The reason is simply that several changes have been made to improve the 2000E PSU—like, for example, the stabilising of the VFO heater supply by the use of an integrated-circuit stabiliser, instead of a simple zener diode arrangement, as on the 2000B equipment.

Perhaps the most noticeable change from the later KW-2000B series transceivers is that the socket for an outboard VFO is blanked-off, this accessory being no longer available for the 2000E model. The chassis proper of the transceiver also carries a blanking-plug as the location of the various relays has been changed to take into account the new Vox arrangements, which are now on a printed circuit board mounted at the rear of the chassis for easy access and adjustment.



Upper chassis view of the KW-2000E.

Operation

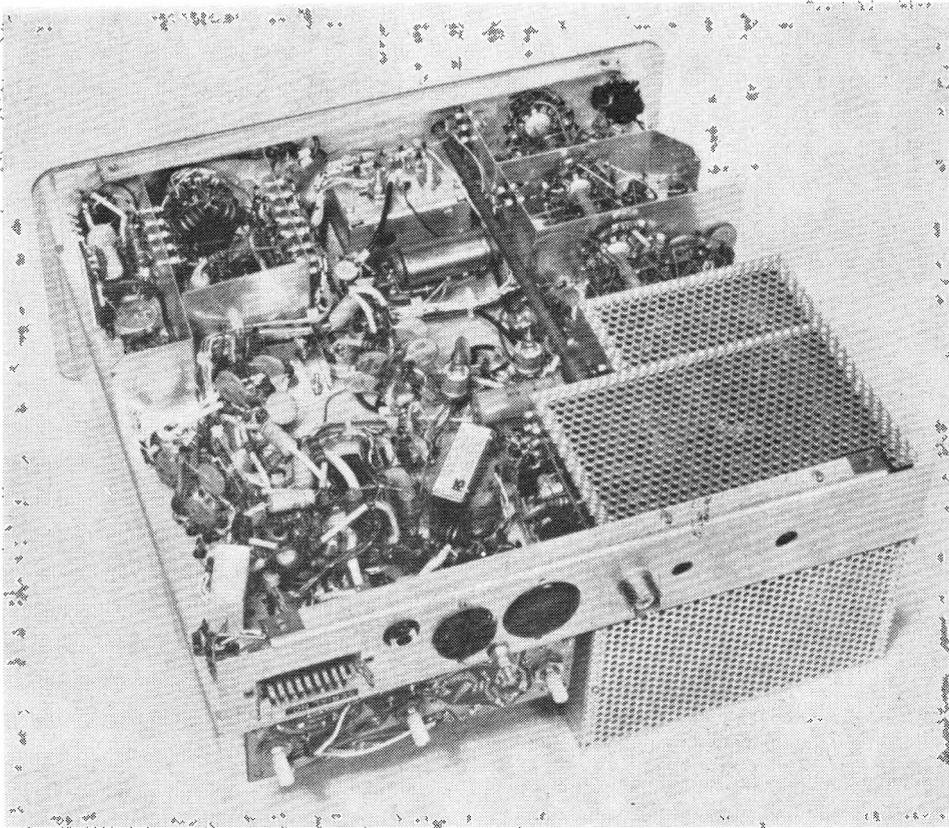
There can hardly be a U.K. amateur on the HF bands who has not at some time or another either owned, operated or worked a KW-2000 rig or one of its variants.

Perhaps the first thing to mention as regards the KW-2000E is the additional facility of the Q-Multiplier and the CW position on the function switch, which can be used with Vox, making CW operation far more of a pleasure than before. This writer's 2000B has a minimum Vox delay too long for comfortable CW operation on break-in, as it would hold in between letters or words, and only drop out when a very definite pause was made to listen to the channel. The '2000E tested had a much more agreeable setting, the change-over between every word being at a reasonable keying speed, to give all but full break-in CW facilities.

On SSB, the transmitter behaved just as all the '2000-series have led us to expect—good clean audio, at full output a peak power of at least 100 watts on all bands but Ten (about 98 watts there) assuming one retains the standard 6146 valves in the PA—one can get a shade more by going to 6146B's but the gain is not worth the expense in this reviewer's opinion. Stability is very good indeed—several times while the rig was in the

shack SSB nets were called in on with the rig at stone cold. On only one occasion did anyone other than the writer notice any drift during the net period of up to an hour—and in that one case the trouble was at least partly due to the rig being netted on to the wrong station in the net, the guy who was himself drifting!

On the "receive" side, the RF stage seemed to be more free from cross-modulation troubles on Forty, always the band on which to make a practical test of a receiver when compared with the KW-2000B on the same aerial. With the Q-Multiplier connected and switched in to give a peak at a low beat note—the DX'ers way of winking them out of the QRM—the receiver was tuned to the LF end of Forty and a spell of concentrated logging undertaken on a random evening around 2130 clock-time. A QSO with VK3MR was copied complete, followed by a JA and a South American, all around the S3 mark and deliberately chosen as being mighty close to a big EU signal. Switching the Q-Multiplier out resulted in the DX just disappearing from mortal ken under the QRM; switching it back again resulted in them resurfacing and being quite reasonably readable, always provided one had the RF gain control backed off as far as possible to prevent a big EU from



*Layout and construction under-chassis,
KW-2000E.*

putting enough of his whiskers through the filters to make the AGC bite, or to prevent cross-modulation.

Summarising, one can say that this rig is a good one for a CW operator who likes a bit of SSB, as well as the chap who is 99% SSB and only goes on the key when all else fails!

Like most SSB rigs operated on CW, one must at all times be careful not to inject too much "oomph" into the PA, lest that end distorts, to produce the familiar noise that ever distinguishes an over-enthusiastic brother trying to scratch the last ounce out of the rig. This is a matter for self-control—in fact the signal on CW is clean up to a full 150 watts input/100 watts output, which should be enough to raise anything, given the operator is fairly savvy himself and has patience.

General Performance Notes

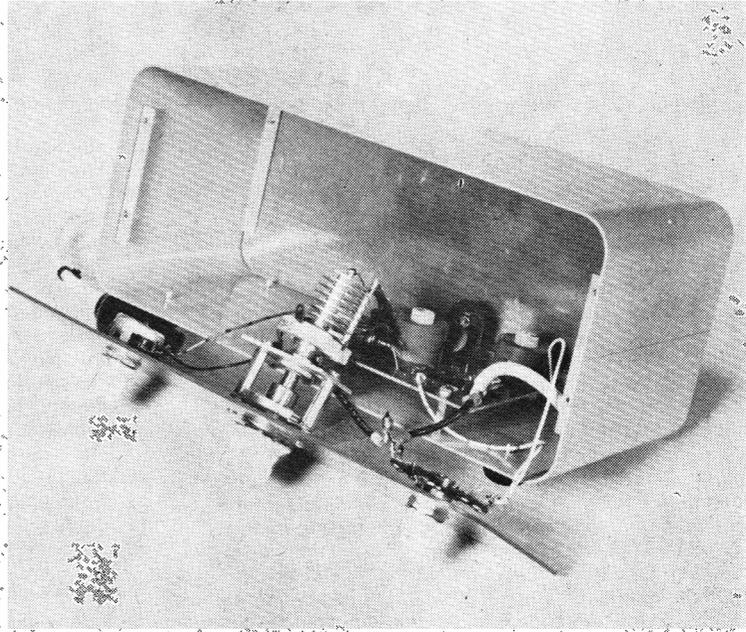
Having discussed the rig in general terms, one must think of it in more detailed ways. First, measurements confirmed that the receiver performance is indeed up on that of the old '2000B as far as cross-modulation is concerned. Warm-up drift is about the same as on the earlier models, but the '2000E tested is definitely less affected by mains-voltage variations than earlier models,

no doubt due to the improved VFO heater-voltage stabilisation. For all practical purposes the rig has settled down within fifteen minutes of switch-on, both on "send" and "receive" conditions.

We have already mentioned the Q-Multiplier as an adjunct to CW operation; it was also found to have some application when an SSB signal was being dragged out of the QRM, albeit under SSB conditions it needs to be used with care lest the wanted signal have too much shaved off it along with the crud! Nonetheless, this writer likes the Q-Multiplier accessory for all-around use with the KW-2000E.

When transmitting with the earlier 2000-series rigs fitted with the ALC board, one got the impression that if one "overdid" the mic. gain control, the intelligibility of the outgoing signal suffered owing to too-sharp ALC action. This did not appear to happen with the '2000E, and deliberate winding-up of the AF gain did not result in complaints from stations being worked of loss of quality in the speech or splatter. However, one would like to see provision for the meter to indicate, in addition to PA current, ALC operation on "transmit," and perhaps also peak indication when tuning-up, as on the Japanese rigs.

Exploded view of the Q-Multiplier for use with the KW-2000E.



Conclusions

There can be no doubt that the transceiver gains much of its popularity from the need for XYL-approval of its appearance. This rig amply meets this requirement, and at the same time provides a good SSB or CW signal on any part of any of the bands 1.8 to 30 MHz. The WWV provision enables one to check the accuracy of one's inbuilt 100 kHz calibrator, which should make the rig self-contained as far as GPO

requirements go, and the CW and SSB signals are as good as one could desire on all bands of operation. Receiver sensitivity is such that any signal heard should be resolvable on a clear channel, while the addition of the Q-Multiplier gives CW and SSB reception far above the average transceiver. As to whether your reviewer liked it, let it just be said it was only his XYL who stopped him trading-in his 2000B—on the grounds that when she gets her G8 call she wants a Liner-2 rig on VHF!

E.P.E.



The KW-2000E with PSU and Q-Multiplier

DIGITAL ELECTRONIC KEYS

USING IC's — CIRCUIT
ACTION FULLY DESCRIBED

P. R. CRAGG (G3UGK)

WITH the increasing availability of reasonably priced integrated circuits, more and more complex circuit designs become feasible to the amateur constructor. The Mk. II keyer described here, while fairly sophisticated in operation, should present little difficulty even to the inexperienced, and should satisfy the demands of the most critical CW operator.

Why Mk. II? Well, the Mk. I was a hybrid version of the G3KPT design, published in the March 1971 issue of *SHORT WAVE MAGAZINE*, with a number of additions, but retaining the transistor pulse generator. In an effort to improve upon this rather basic, albeit effective, circuit, it was decided to retain the best features, and add the necessary components to produce an "unbeatable" keyer. It was to be all integrated circuit, if possible, using standard SN-series IC's, and it had to be foolproof in the sense that dot/dash processing was totally controlled by the electronics and timing. Above all, it had to be impossible for normal paddle operations to corrupt characters. Builders of the G3KPT original will have noticed that, in spite of the modification to the pulse generator (described by G3FCW in the September 1973 issue of the *Magazine*) it is still possible for a very short contact of the *dash* side of the paddle to produce *dots*.

Looking at the block diagram, Fig. 1, we can see an outline of the theory of operation. Movement of the paddle in either direction will enter the dot or dash into its appropriate store. It will stay there regardless of further paddle movements until the completion of the character. (In this description, the word "character"

refers to a dot or a dash, not a complete Morse code letter).

The next box, "Gate", selects the character set up first, starts the pulse generator going, informs the dot-dash generator which character to expect, and in the case of a dash, prevents the dot store from being reset one third of the way along a dash.

The output of the dot-dash generator drives the one transistor in the circuit to operate the relay, and resets the relevant input store. Not until this reset pulse arrives can another character be started.

Note that both input stores can be set up to hold a character simultaneously, but the first one selected will be processed first, and when this is complete, the gate will automatically process the other one, with the correct spacing between characters. The only exception to this is a "key-down" condition whereby the character will be repeated until the paddle is returned to its central position.

The external speed control, by a variable resistor, regulates the pulse repetition rate and hence the speed of the characters. A thorough understanding of the principles outlined above will be of great benefit in following the logic and timing description.

Theory of Operation

Before going into the detailed circuit explanation, we must examine the integrated circuits used, and see how they can be connected to produce different effects.

Looking at Fig. 2, we see that the SN7400 consists of four separate NAND gates. These conform to the following rules: Any '0' in, gives a '1' out, and two '1's in, give a '0' out. To elucidate: '0' refers to GND, and '1' to plus 5v. Thus, if pins 1 and 2 are both a logical '1', pin 3 will be a logical zero. (Note that we refer to *logical* '1' and *logical* '0', as these are not necessarily exactly 0v. and plus 5v.) In accordance with the rule above, therefore, if either pin 1 or pin 2 is at logical '0', then pin 3 must be at logical '1'.

The SN7475 is a Quad Latch. Note that although

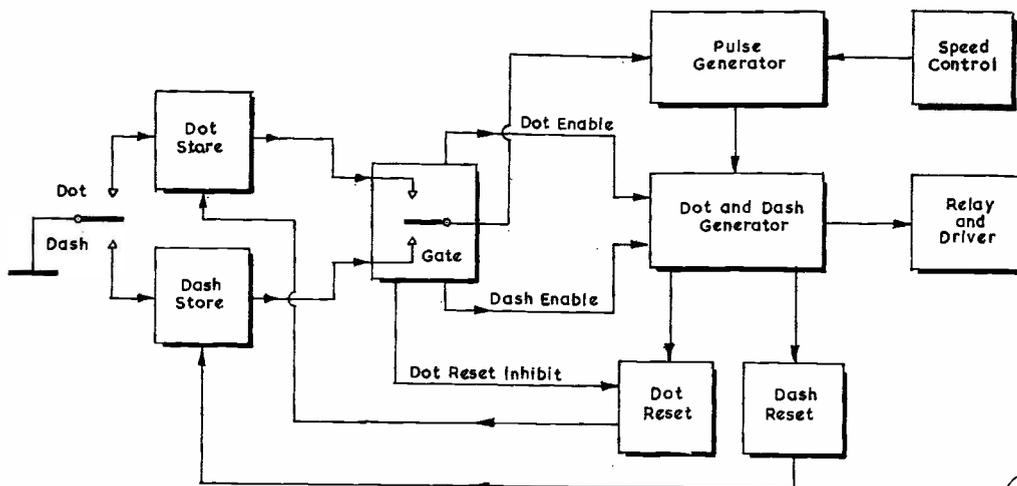


Fig.1 BLOCK DIAGRAM

there are four circuits, they are paired up as far as the enable-lines, marked 'CL', are concerned. The rule for this device is that any information present on the 'D' input will be fed through to the 'Q' output whenever the 'CL' line is a logical '1', and will remain there when the 'CL' line goes to a logical '0'. With the 'CL' line '0', the 'D' input will have no effect on the 'Q' output. The 'Q' output is always opposite to the 'Q' output.

Next we have the SN 74107, which is a Dual J-K Flipflop. This is one of the most useful devices ever invented for digital electronics, and can be used in a number of ways. It is only necessary to describe the particular configuration used in this circuit, which has both the 'J' and 'K' inputs wired up to a logical '1'. When the 'CL' input goes from '1' to '0', the 'Q' output will change its state. So for every transition from '1' to '0' at the 'CL' input, the 'Q' output will change from '1' to '0' or from '0' to '1'. It is important to understand that it is the *change* from '1' to '0' at the 'CL' input which alters the state, and not a permanent '0' or a change from '0' to '1'. The other input, marked 'CLR', overrides the 'CL' input, and when '0', forces the 'Q' output to '0'. When the 'CLR' input is '1', the 'Q' output will obey the rule above. The 'Q' output is always opposite to the 'Q' output.

Finally, the SN74123, which is a dual Monostable. This device consists of two separate circuits, each of which will produce a pulse, the duration of which is determined by external R and C components. The rule is that a logical '0' on pin 1 (or 9), and a logical '1' on pin 2 (or 10), will give a positive-going pulse at pin 13 (or 5). There will be only one pulse initially, and in order to produce another one, either of the inputs has to change twice. For example, if pin 1 is at '0', as soon as pin 2 goes to '1', we will get an output pulse, and to get another one, pin 1 must change from '1' to '0' and back to '1'. Alternatively, pin 1 must change from '0' to '1' to '0'.

Logic Circuit

Fig. 3 is the logic diagram, and there are two special logic circuits which merit further attention. The first is the input store. This uses two NAND gates interconnected as a "set/reset" latch. Looking at IC1A and IB1B, the dot store, we have pin 1 as the "set" input, and pin 5 as the "reset" input. When the paddle is moved to the dot side, GND, i.e. logical '0', is applied to pin 1. In accordance with the operating rule, any '0' in gives a '1' out. So pin 3 goes to '1'. With pin 5 at '1', that is the Q output of IC5, and pin 4 at '1', pin 6, and hence pin 2, will be at '0'. With pin 2 at '0', pin 3, which was initially set to '1' by the paddle, remains at '1', until a reset pulse arrives.

When pin 4 of IC5 goes to '0', IC1B pin 6 goes to '1'. Provided the paddle is not connected to the dot side at this time, pin 1 is at '1'. Now we have both pins 1 and 2 at '1', so pin 3 goes to '0'. Remember that the presence of a dot in the store is indicated by a logical '1' at pin 3. Of course, exactly the same principle applies to the dash store, IC1C and IC1D.

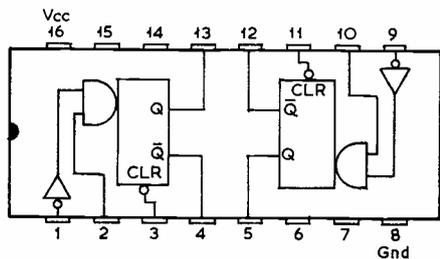
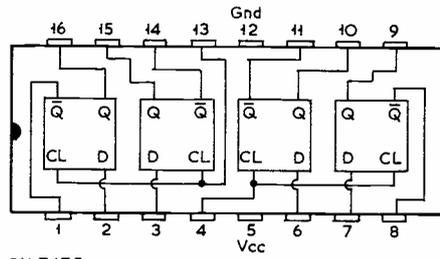
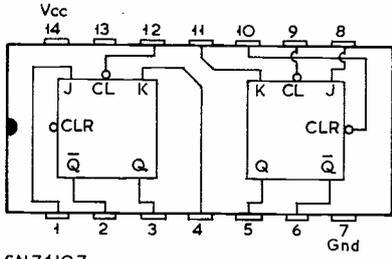
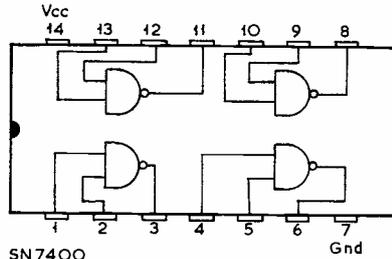


Fig.2 INTEGRATED CIRCUITS (Top view)

Q 553

Pulse Generator

The second circuit to understand is the pulse generator, IC3. The Q output of IC3B is connected back to the inverted input of IC3A. In its rest condition, this line is at '0'. When pin 2, which is normally '0', goes to '1', a negative-going pulse will appear at pin 4. At the end of this pulse, when pin 4 goes from '0' to '1', and with pin 9 connected to '0', IC3B will trigger.

As soon as pin 5 goes to '1', pin 12 goes to '0', giving the first clock pulse to IC4 pin 12. At the end of the

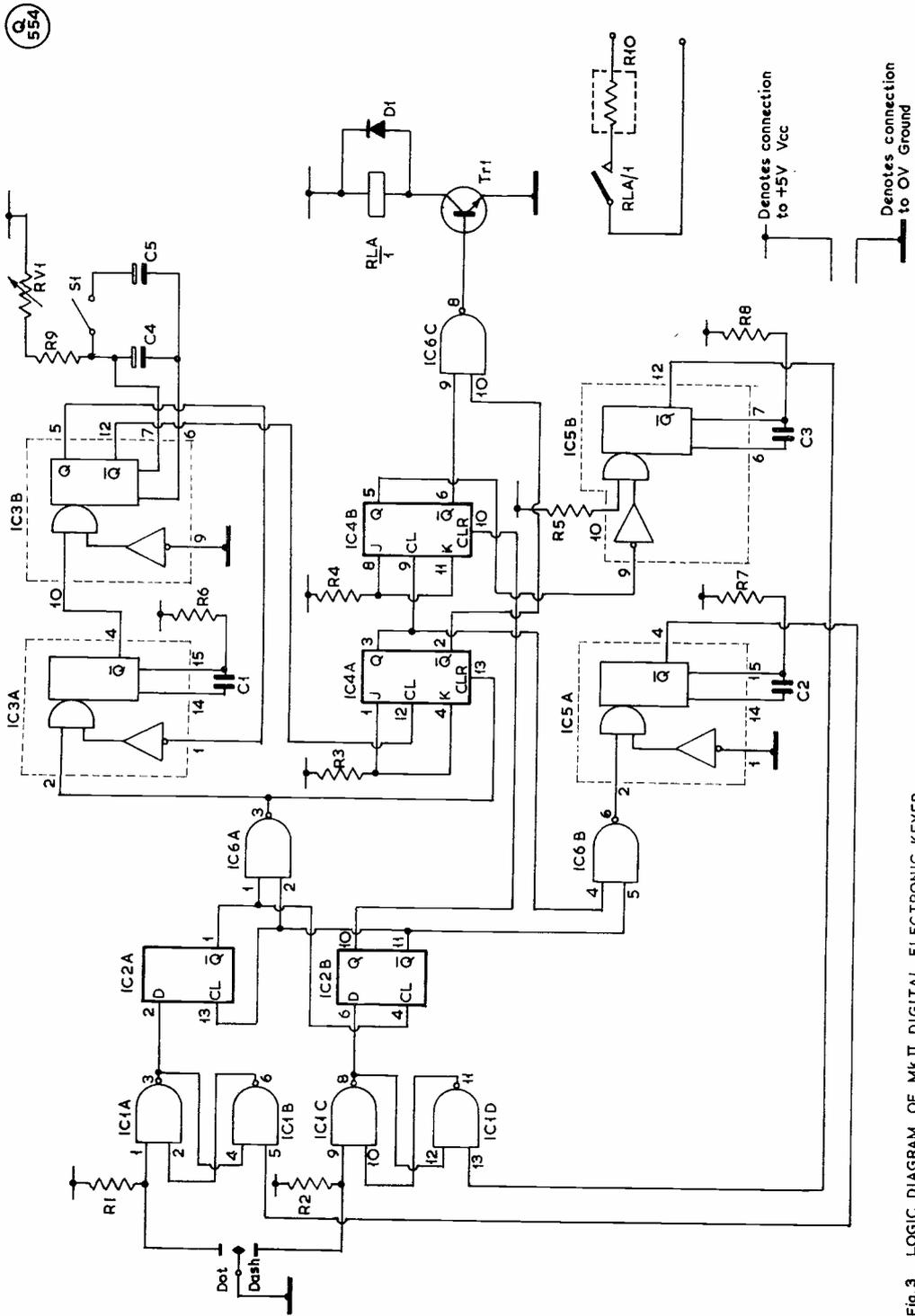


Fig. 3 LOGIC DIAGRAM OF Mk.II DIGITAL ELECTRONIC KEYS

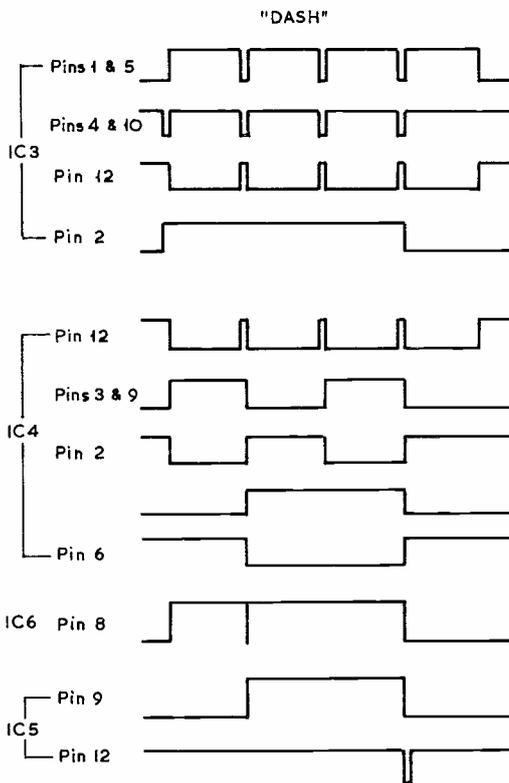


Fig. 4 DASH TIMING DIAGRAM

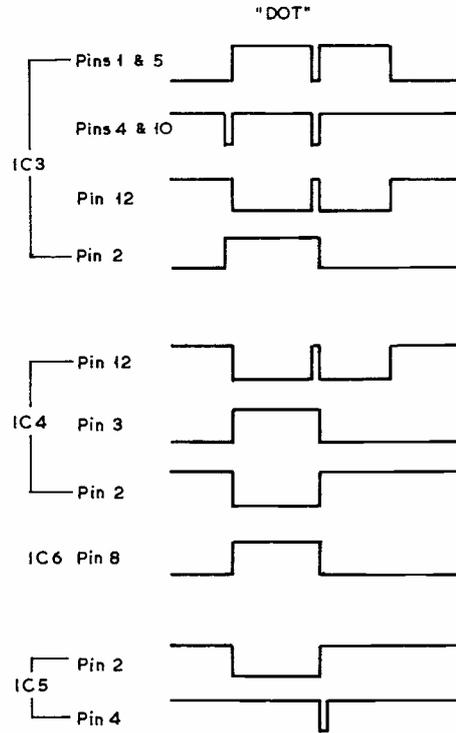


Fig. 5 DOT TIMING DIAGRAM



pulse, the duration of which is determined by the setting of the speed control, pin 5 goes to '0', causing IC3A to trigger again via pin 1, providing pin 2 is still at '1' at this instant. All the time pin 2 remains at '1', the two monostables will re-trigger continuously, giving a series of negative-going pulses at pin 12.

At the end of the character, pin 2 will go to '0', preventing IC3A from triggering from pin 1. The output pulses from pin 4 are very short, some 6½ micro-seconds, long enough to trigger the second half of the pulse generator, but not to long to introduce any undesirable delay between operating the paddle and starting the character.

If the above description is read in conjunction with the timing diagram, Fig. 4, it will be easier to understand.

We can now correlate all the fore-going information, and see how the keyer works. First, a complete 'dot' sequence will be described. When the paddle is moved to the dot position, (and released), a '1' appears at IC1A, pin 3. At the same time, IC2A pin 1, goes to '0', causing the enable-line of IC2B pin 4 to go to '0'. This prevents the output of the dash store from going any further than IC2B pin 6.

The '0' at IC6A pin 1, produces a '1' at IC3A pin 2,

and IC4A pin 13. The pulse generator is started up, and the CLR input to IC4A will allow the flip-flop to change over at the first negative-going pulse from IC3B pin 12. As the Q̄ output of IC4A pin 2 goes to '0', a '1' appears at IC6C pin 8, turning on the transistor, and calling the relay. Also, the Q output of IC4A pin 3 goes to '1'. As the dash gate, IC2B, has not been enabled, a '1' is present at IC6B pin 5. With a '1' also on pin 4, IC6B pin 6 goes to '0'. However, IC5A pin 2 must go to '1' to trigger the monostable, so nothing more happens at this point.

At the second clock pulse to IC4A pin 12, the flip-flop once again changes over. Pin 3 goes to '0', giving a '1' at IC5A pin 2, and a negative-going pulse at pin 4. At the same time, IC4A pin 2 goes to '1', IC6C pin 10 goes to '0', switching off the transistor, and dropping out the relay. The negative pulse from IC5A pin 4, connected to IC1B pin 5, sets IC1A pin 2 to '1'. With the paddle in its centre position, IC1A pin 3 goes to '0', and IC2A pin 1 goes to '1'. This turns off the pulse generator via IC6A pin 3, and everything is reset ready for the next character.

If the paddle was still connected to a dot, the reset pulse onto IC1B pin 5 would still produce a '1' at IC1A pin 2, but with IC1A pin 1 held to '0', this would have no effect on pin 3, and continuous dots would ensue until the paddle was released.

(To be concluded)

• • • **SWL** • • •

SHORT WAVE LISTENER
FEATURE

By *Justin Cooper*

**LIMBERING UP FOR THE R.A.E. — READERS
WHO HAVE QUALIFIED—NEWCOMERS
AND THEIR PROBLEMS — SOME INTERESTING
TECHNICALIA — LADDER POSITIONS**

BY the time this comes to the reader, the R.A.E. class season will be well in swing, preparing for next May's examination. Perhaps some few words on the subject of the homework set at most of these classes would be not unhelpful to readers.

It must be realised that homework is the only source of "feedback" of any real use to the lecturer in his attempts to adjust his teaching method to his class. A chap who doesn't bother to do the homework probably forfeits his R.A.E. pass in the process anyway, and as bad is the guy who consistently serves up model answers by culling from his class notes and text-books and copies out in detail all the information, taking hours to do so.

What matters is this: In the exam, the basic requirement is to be able to answer a question in twenty minutes, without the aid of "cribs" or a textbook. Thus, the student should, if he wants to, read up the night before doing his homework, and then put the books away and write twenty-minutes-worth of answer, which he will then hand in, blots, jam-stains and all, as a sample of what will be written on the examination day. If it makes the lecturers hair stand on end, OK—but listen to what he says is wrong with it, and try to act on his words.

You, the individual reader, may reckon this is all boloney—but J.C. has just had the pleasure of seeing a student pass after four years of failure in the exam. and perfect homework. So he was given a complete paper each week, and told to do as much as he could in three hours, bringing in the result for marking. A couple of months of this treatment had such an effect that this year he not only passed, but passed handsomely. No need to comment that the effort was worth the pleasure of holding a callsign!

Passed R.A.E.

Talking of R.A.E., we have some readers who tell us of their success, and to whom congratulations are due. First of these is *P. Barrett (Welwyn)*, who is now sitting at the receiver, soaking up the CW on Eighty, as good practice in the noble art. He now copies 15 w.p.m., but, sensibly, has not yet tried sending. A prefix which has puzzled Pete is a DJ9 signing /YJ7, operating portable in Yugoslavia. Not surprising, since YJ is the prefix allocated to the New Hebrides Is., in Zone 32—a very long way from Yugoslavia! Perhaps a QSL sent to the DJ would result in an answer indicating a mis-reading of the suffix.

G4CKR is the new callsign now sported by *S. Scott (Stockport)*, who reckons he has learnt much about the game from his SWL work at HPX. Steve says he will be pleased to QSL any SWL reports, provided they are correct.

How nice to hear that *J. Fitzgerald (Gt. Missenden)* got his pass, thanks he says to the help of G3ZKE at the Grafton R.A.E. class. All efforts are being turned to getting the CW, by listening on the bands and attending the Morse class at Princes Risborough, rather than going through the B-licence stage, which John reckons will only slow his progress to a full Class-A ticket.

W. McFaul (Londonderry) has stayed away from the receiver through the months and gets his reward by way of a pass-slip—he now has the problem of attacking the Morse, a subject which in the past has eluded him. Not to worry, OM, having the R.A.E. pass-slip in your pocket will probably stiffen your resolve!

D. Rodgers (Harwood) has a KW-2000E station to a 14-AVQ, plus a Liner-2 in the car, with which to activate his G4CKF call. Already he has had a TVI complaint and been cleared OK by the GPO. On a different tack, the HA-600 receiver has gone to son Michael, who is showing interest—the XYL is horrified at the thought of another rig in the house!

G8HUU is *P. Newman (Thame)* active on the bands with a Pye Vanguard and anxious to receive SWL reports; he will, if they are correct and useful, QSL them.

Although he has been issued with G8HYH as a result of his R.A.E. pass, *O. Cross (Bexleyheath)* is not yet operational on the transmitting side, so his call has as yet only been heard under the /A suffix from other local stations.

Newcomers

J. Sutton (Fareham) has been an SWL for a year, with an AR88D plus PR30 preselector to a Joystick. John harkens back to our mention of books for R.A.E., and wonders whether Rayer and the *Examination Manual* should both be used, or what. Rayer's *Amateur Radio* is a hardback book of some 190 pages, and goes in some detail into the material syllabus of the R.A.E. The *Examination Manual* is, on the other hand, a brief exposition of the various sections of the syllabus, with a collection of questions culled from various papers of recent years at the end of each chapter, plus some other details of relevance to the passing of the exam. The Rayer book is for the regular night-time reading, with the *Examination Manual* used to provide practice and revision of real questions to be attempted "against the clock," and so more useful for the final run-up.

* * *

T. Rozier (Wednesfield) lives on the fourth floor of

a block of flats, so his aerials are a tank whip on the roof for the HF bands, and for VHF there is an 8-element Yagi at 11 feet above the roof, turned by a Stolle rotator. Down below in the shack there is an RA-1 Rx. and Sentinel converter. Terence comments on the enormous amount of help received from G4BXC over the past 18 months, for which he is duly grateful.

From a start with a two-transistor receiver for 144 MHz, *S. Eldridge (Crawley)* has progressed to a CR-70A, fed by an aerial wound round the bedroom, with which he has his fun mainly on Eighty and Fifteen, 14 MHz being too full of QRM for comfort.

A long and interesting letter from *B. J. Tarry (Rainford, Lancs.)* recounts the story of his first week as an SWL since he had to put away radio ten years ago after a change of job. Back in 1961, well over half the DX was still on AM, and the receiver BFO hardly brought into play. Now, the Trio 9R-59D has been bought and coupled to a dipole in the loft, and the signals are all so much stronger, and all SSB. The increased strength of phone DX stations is of course only partly due to the better receivers of today, but more is the result of the use of beams, and the general availability of big linears, which probably mean that a rise of a couple of S-points in the level of signals about hits the mark, saving on Top Band, where beams and "afterburners" are for various reasons not often found. Generally, though, it seems that, changes or not, Brian still finds Amateur Radio as potent as ever.

Probably because he was at one time a marine radio officer, *W. Hutchinson (Hornchurch)* makes his efforts as an SWL at the CW end of the bands—strange how, once you have, for one reason or another, had to learn Morse to a high standard, you rarely like Phone operating. He runs a Heath RA-1 to a dipole for 14 MHz and a 100-foot wire with a Marconi marine receiver as back-up.

Technicalia

M. Hartley (Preston) has built a crystal calibrator with 500 kHz pips, and on coupling it into the receiver finds it generates pips all over the place in addition to the proper 500 kHz markers! They result from the fact that the nature of a superhet receiver is to have spurious responses, and the object of design is to keep them to a minimum. The unwanted pips result from the very strong signal from the calibrator beating with the local oscillator—and, possibly, the BFO as well—and the harmonics thereof, plus the "image" frequencies also beating with the oscillator harmonics, and so on *ad infinitum*. The answer is to reduce the coupling between calibrator and receiver to as little as possible—for example the output of a BC-221 wavemeter crystal oscillator is quite enough to drive a Hewlett-Packard counter direct, a fact which is useful at calibration-time, but a thundering nuisance if you find difficulty in reducing the coupling to the receiver sufficiently.

R. G. Foot (Bristol) recalls the point made last time about using a car gearbox as a thrust bearing and says that another useful gadget for beam-rotator making is the bevel-box from the rear-end of an old LE Velocette motor-bike—the silent ones that the police used to use so many of—plenty of which are still about and in scrap yards. The ratio is about right, the shaft is about

HPX LADDER

(All-Time Post War)

| SWL | PREFIXES | SWL | PREFIXES |
|------------------------------|--------------------------|-----------------------------|-------------------------|
| PHONE ONLY | | PHONE ONLY | |
| R. Shilvock (Lye) | 1415 | O. L. Cross (Bexleyheath) | 735 |
| W. Bingham | | M. Williams (Sleaford) | 732 |
| | (Carrickfergus) 1400 | B. Thomas (Pontefract) | 729 |
| T. Rootsey (Ilford) | 1333 | M. Cuckoo (Herne Bay) | 701 |
| S. Foster (Lincoln) | 1327 | J. Gravel (Burry Port) | 699 |
| K. Kyezor (Perivale) | 1163 | C. K. Verstage (Old Basing) | 695 |
| J. Fitzgerald | | R. H. McVey | |
| | (Gt. Missenden) 1149 | | (Weston-super-Mare) 682 |
| A. W. Nielson (Glasgow) | 1138 | L. Thomas (Castleford) | 662 |
| I. Brown (Newtownabbey) | 1064 | P. L. Barrett (Welwyn) | 634 |
| R. Carter | | H. A. Londesborough | |
| | (Blackburn, Lancs.) 1037 | | (Swanland) 613 |
| L. A. S. Poole | | B. Cushing (Hove) | 611 |
| | (London N.21) 1032 | J. Cowan (Rochford) | 589 |
| H. Alford | | M. J. Stringer (Southend) | 577 |
| | (Burnham-on-Sea) 1028 | K. C. Webb (Earley) | 572 |
| B. Hughes (Worcester) | 954 | P. Barker (Sunderland) | 550 |
| M. Quintin (Wotton-u-Edge) | 941 | M. Kitchener (Hitchin) | 528 |
| D. Rodgers (Harwood) | 901 | P. C. Jane (East Looe) | 526 |
| G. W. Raven | | K. Williams (Swinton) | 514 |
| | (London, S.E.13) 899 | C. L. Lee (Ilford) | 507 |
| J. H. Sparkes (Trowbridge) | 886 | R. Smye (Shrewsbury) | 503 |
| N. Henbrey (Northiam) | 850 | G. Lucas (Kennoway, Fife) | 505 |
| P. L. King (Emsworth) | 843 | | CW ONLY |
| N. Askew (Coventry) | 841 | A. Glass (Plymouth) | 945 |
| A. West (Herne Hill) | 803 | T. Rootsey (Ilford) | 702 |
| C. Henderson (Beckenham) | 803 | G. Proud (Letterston) | 688 |
| M. Fisher (Bradford) | 784 | W. B. Taunton (Meopham) | 646 |
| A. R. Holland (Malvern) | 783 | C. Henderson (Beckenham) | 536 |
| H. M. Graham (Harefield) | 772 | D. Rodgers (Harwood) | 434 |
| E. W. Robinson | | H. A. Londesborough | |
| | (Bury St. Edmunds) 770 | | (Swanland) 412 |
| W. B. Taunton (Meopham) | 767 | W. Hutchinson | |
| A. Judge (Bishops Stortford) | 758 | | (Hornchurch) 256 |
| E. Parker (Hove) | 752 | S. J. Proud (Letterston) | 201 |

Starting score 500 for Phone, 200 for CW. Listings include only recent claims. Rules for HPX—see Panel, p.163, May issue.

eight inches long effective, and it comes complete with a universal joint, just the ticket for a "handraulic" rotation system.

H. Alford (Burnham-on-Sea) wonders what happens to the feed impedance of a dipole when the ends are sloped down to form an inverted-Vee. A dipole on its nominal frequency and in "free space" has an impedance of about 73 ohms; sloping the ends down causes a slight change in resonant frequency and lowers the feed impedance, so it is best to lengthen the ends slightly and to couple it with 50-ohm instead of 75-ohm feeder. If tests are done with an aerial bridge, the lengths for resonance can be adjusted to give lowest VSWR at the design centre frequency, and the angle then adjusted by trial-and-error to bring a further improvement in the VSWR.

Can a counter be used with a receiver? Thus *K. Kyezor (Perivale)*. Yes, by taking a sample of the BFO frequency and the local oscillator frequency, beating them back up to give a mixed signal on the operating frequency, which can then if need presses be amplified before being presented to a digital counter for it to measure. The Heath SB-650 is such a design, in kit form.

A. West (Herne Hill) has gear for HF, VHF, and RTTY to keep him amused. He has spent quite a bit of his time playing around with attenuators, comparing one circuit and its usefulness with another, and finding the dual-potentiometer design mentioned in one of our contemporaries back in June very convenient. However,

the interesting thing is that he has discovered a way of using the RF gain control pot. in his FR-50B as an attenuator. The scheme is quite simple: First locate, remove, solder together and tape up, the existing two wires on the pot. Now find the two ends of the lead from the aerial socket to the RF stage, and remove. Connect from each of the points where the aerial lead ran, a piece of coax cable, leading the two free ends of the coax to the RF gain control pot. now thrown spare, and there connecting between slider and end. As the potentiometer fitted is 500,000 ohms, the slider is shunted to the top end of the control by means of a resistor of about 470 ohms to reduce the value and give a better match.

Prefixes

A. May (Bromsgrove) wonders which receiver is best, HA-350, or FR-50B—a query for someone who knows them both well to answer, as your conductor has not enough experience of either receiver to make any comment. Andrew also raises the question of the “JF1CSF” he heard on the band; another variation of the JA theme.

A long interesting letter from *C. Rouse, LAØAR*, brings us up-to-date on the Norwegian licensing conditions. Seems that the LB prefix is in fact a form of Novice Licence allowing 15 watts of CW for a couple of years, during which time if they wish to continue they must take the test for a full LA ticket. LJ calls are issued to schools, navigational, radio-technical establishments and such, while LF calls are for businesses in the radio trade for testing equipment and similar work. The LAØ calls are issued to foreign amateurs permanently resident in Norway, such as Colin himself—there are eight or nine such calls listed, but LAØAR himself is about the only one active upon the DX bands.

Among various points, *H. M. Graham (Harefield)* has a prefix query in the shape of an “XQ3BP” in Santiago, Chile—does anyone know any reason for this variation on their usual theme? Maurice has, as usual, looked at all the bands, and seems to have found Twenty best of the bunch, although Fifteen gave him A2CCY and 3D6AW, the latter being an all-time new one.

P. Barker (Sunderland) corrects us on his slow-scan TV activity; he was thinking in terms of the G3RHI box, but in fact has been able to come by a G3ZGO-type monitor, with Mullard tube, on which twelve countries had been seen at the time of writing. Incidentally, the tube alone of this beastie sets one back by thirty-five quid! His prefix question concerned SWØKJ/4X, who counts as a 4XØ.

We slipped up by passing his “NP3EDB” last time, says *G. Raven (London, S.E.13)*. Too right, Geoff, and out it comes this month to make all square. On a different tack, Geoff has recently received a card from KH6HDB, Kure Is., whose QSL manager is Mary-Ann, WA3HUP—she gives one of the best QSL-Manager services going by way of a fast return card, which is a lot more than can be said of many managers.

A “UZ3RV” puzzled *H. A. Londesborough (Swanland, Yorks.)* a bit, although, as he guessed, it comes from Russia. On a different tack, SWL Londesborough replies to the question about U5ARTEK and his location last time; in Yalta, on the Crimean Peninsula.

One would hardly have thought the A6 prefix would

have excited comment at this late stage, but it puzzled *M. Kitchener* a bit; however, Mike got mighty close by comparing the time given by the operator at A6XP against GMT, and putting him in the Middle East. Actually, he is in Sharjah, part of the United Arab Emirates.

Can he retain his HPX score when he moves from *Emsworth, Hants.*, to Stafford, wonders *P. L. King*. This is rather a hefty move to make and still retain the old score—the general attitude is that one should make a new start after a move of any distance, and most chaps make a fresh start after even a local move. Peter’s main interest at the moment is in 144 MHz, for which crossed dipoles at 22 feet feed a Sentinel converter.

Other Comments

G4BWJ comes back to that comment by *E. Parker of Hove* last time, explaining that he is an “exile from this SWL piece” and also one of Ernie’s locals; Barry finds if he tries to reduce power on local natters he almost always gets carved-up by a station at 100 miles or more. Certainly this is a point where operation on 3.5 MHz is concerned, but your scribe has a sneaking feeling that the real answer is to use Eighty less as a local-natter band than a place for inter-EU contacts and DX-chasing, and transfer the local natters to Two or Top Band, or, even Ten.

The intermittent loss of Twenty on his JR-599 is troubling *W. H. Smyth (Hartlepool)* not to mention timebase QRM and lack of the other sort of time. Operating has in fact mainly been on Forty and Eighty, from 0100 to around 0330. One oddity heard on Ten was a half-callsign, “something-R6GW” in town Cela, operators name being Mary. An interesting conundrum, but one would suspect it is a Russian call chopped-up a bit by the QRM.

W. Lardner (Tackley, Oxford) has been with us since the beginning. Before Hitler’s War, he did a bit, using such receivers as the Hammarlund Super-Pro, Halli-crafters SX-28, and National NC-100. Now, the Rx is an FR-100B coupled to a trap dipole for 14/21/28 MHz.

P. C. Jane (East Looe) wanted to improve his aerial, so he went down to look at the local fishing craft and copied their antenna set-up (a U across spreaders, with the download taken from the end of one arm) which has produced quite an improvement.

G3PMI came to the rescue of *T. Vale (Abingdon)* by going through the valves in his receiver with a tester, following up with a re-alignment which has made the receiver far happier—and hotter!

How to keep the XYL happy in a radio-orientated home is the main theme of *R. Carter (Blackburn)*. Ben reckons to have been training his wife in radio interests for the past 46 years! So she does find interest in an activity which can be shared.

G3ZQS says he reads this piece every time—which may be a bit unusual for licensed types! George mentions one SWL report he had from an 11-year-old in the USSR on his CW signals. The point here is that G3ZQS was “knocking on a bit” to the tune of 30-40 w.p.m., so young Vlad got a QSL and a long letter of thanks for an FB report.

ANNUAL HPX LADDER

(Started January 1, 1973)

| SWL | PREFIXES | SWL | PREFIXES |
|----------------------------|----------|-------------------------------------|----------|
| PHONE ONLY | | PHONE ONLY | |
| M. Whitfield (Stroud) | 482 | M. Hartley (Preston) | 305 |
| B. F. Hughes (Worcester) | 452 | S. Hall (Hucclecote) | 304 |
| D. Churchill (Bexleyheath) | 446 | B. Rhead (Stoke-on-Trent) | 291 |
| L. Craven (Alvechurch) | 444 | R. Shelley (Bisley) | 282 |
| W. J. Smith (Benfleet) | 444 | C. B. Russell (Runcorn) | 281 |
| S. Scott (Stockport) | 416 | S. Sharred (Birmingham) | 281 |
| D. Johnson (Clitheroe) | 409 | A. May (Bromsgrove) | 272 |
| S. Eldridge (Crawley) | 378 | M. Smith (Matamata, New Zealand) | 257 |
| C. M. Little (Addiscombe) | 366 | P. Davies (Stoke-on-Trent) | 250 |
| W. H. Smyth (Hartlepool) | 349 | W. McFaul (Londonderry) | 246 |
| P. Eaton (Folkestone) | 343 | M. Rodgers (Harwood) | 231 |
| G. Ridgeway (Darlington) | 340 | | |
| M. Wickstead (Taplow) | 311 | | |

Starting score 200, in accordance with the HPX Rules.
All prefixes to have been heard since January 1, 1973.

Back in February, *G. Thompson (Selly Oak)* reckoned he would get some real listening time in when he retired. In the event, he retired all right—but instead of listening, George has been aerial rigging; a Diamond KK-105 vertical for one, and a twenty-foot dural mast for another, not to mention the need for drinking lots of coffee to get the plastic cups for use to plug the top of the mast. Then the two-metre aerial had to be put on the mast and cabled, while the bottom was fixed to a bearing made up of the spigot from an expansion-box of an old car exhaust-system—a novel bottom bearing never mentioned before.

On to *S. Hall (Hucclecote)* who has a SW-717 receiver of Heathkit origin, and finds difficulty in receiving signals beyond about 2000 miles with his loft aerial. One would feel that the fault lies not in the receiver so much as the fact that the aerial is so reactive at the amateur bands, and also the lack of a good earth system. The earth we have talked about before, and with the aerial coupled to the receiver through an aerial-tuning unit of some sort, and to an improved earth, signals could be lifted by up to 2-3 S-points on a particular band, bringing to light much that was previously below the receiver threshold.

R. H. McVey (Weston-super-Mare) remarks that the OM is now active with an FT-101 under his call of G3GMC. Roger has found the FT-101 receiver better than the FR-50B, which in itself is pretty hot, while from an operating point of view the "clarifier" or IRT control, is very useful for net operation and as an aid to getting DX dug out of the QRM.

* * *

On the subject of monster aerials, *L. A. S. Poole (Winchmore Hill)* mentions the K6 chappie who has built a *Quad for Eighty*, which is intended to be rotatable and in use this winter, to outwit the opposition. SWL Poole recently bought an Eddystone 730/4 from a dealer, and was not too happy at the state in which it arrived.

DX is what you find DX'y; *C. Henderson (Beckenham)* looked at his *DX News Sheet*, and made a mental note of his three most wanted ones as KH6 (Kure Is.), 5W1, and KJ6. On the morning of his letter, between 0650

and 0803, he heard KH6HDB, Kure, 5W1AU, 5W1AN, KJ6BZ, and KJ6DI. For good measure there were also VS6CY on 21 MHz, KL7CUS, TU2DD, KL7HFQ, KL7HOT and F6CLZ/FC heard on 14 MHz at the same time.

How many radio officer types are there active in the ranks of SWL's, wonders *J. Cowan (Rochford)* who starts his Radar Maintenance Certificate course before this is due to reach readers. If there are any, he would like to hear from them, at 28A York Road, Ashingdon, Rochford, Essex.

A novel reason for relatively low scoring in the Cray Valley SWL contest is offered by *D. A. Johnson (Clitheroe)* who claims he ran out of log-book! Seriously, the receiver also chose this time to play up intermittently, and fatigue didn't help either.

A. Judge (Bishops Stortford) has made the effort and improved his Top Band wire after many threats to do so—but conditions have not been helpful with DX on which to try it, although day-time signals are coming in from a wider area than the previous aerial could yield, which is at least encouraging.

G4APF has a few words of wisdom for *P. C. Jane of Looe*, on the subject of R.A.E. studies. G4APF reckons, given enough keenness, shift work is a gain rather than a handicap, and reading at lunch-times and teabreaks a good change from the daily routine. Malcolm also says that he is sure, if SWL Jane can only get to the R.A.E. class once a fortnight, the lecturer will be pleased to give him notes for the remaining weeks—a good point, and one that most R.A.E. class lecturers would endorse, as J.C. knows from his own experience.

Diversifying his activities in the Amateur Radio field seems to be the motto of *G. Lucas (Kennoway, Fife)*. Apart from being the elected cook on NFD for the Glenrothes Club, he has been mixed up in an entry for the *CQ WW Contest* by some of the lads, and is trying to get to the local R.A.E. classes as well, all this being in the intervals of actual listening.

Others

Here we mention the various letters containing matter not covered in the piece, or just carrying a table entry without comment. There were: *L. T. Poyner, Sutton Coldfield*; *M. Cuckoo, Herne Bay*; *M. J. Wickstead, Taplow*; *B. Cushing, Hove*; *B. F. Hughes, Worcester*; the Bingham family, *Carrickfergus*; *E. W. Robinson, Bury St. Edmunds*; *N. Askew, Coventry*; *Bert Glass, Plymouth*; *M. Rodgers, Harwood*; *C. L. Lee, Ilford*; *R. A. Smye, Wirral*; *G. Ridgway, Darlington*; *R. Shilvock, Lye*; *M. J. Quintin, Wotton-under-Edge*; *G. G. Proud, Letterston*; *W. B. Taunton, Meopham*; *T. Gravell, Burry Port*; and *J. H. Sparkes, Trowbridge*.

Closing

That's it for another round. Letters for next time, scores, comments, questions and gripes, send 'em all, to arrive first post on **November 22** at the latest, addressed as always, "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.

73 de J.C.

THE Scottish VHF Convention took place this year in Edinburgh on September 22 and attracted a larger attendance than in previous years. Some 180 visitors arrived for the lecture sessions and of these 110 stayed on for the Dinner in the evening. The organisers were fortunate in being able to secure the Pollack Halls of Residence at Edinburgh University as the venue and this enabled cost to be kept down.

The first speaker was Geoff Stone, G3FZL, who outlined the proposals for the new two-metre band plan. Briefly, this puts into practice, with some local modification to adapt it for present and future operating procedures in the U.K., the plan agreed at the Scheveningen conference of last year by which SSB goes to the lower end of the band and FM to the upper, *i.e.*, the old geographical zoning disappears, and frequencies are allocated by modes rather than to areas. (We shall be elaborating on this at a later date). A vote taken after his presentation showed almost unanimous support for the scheme.

There followed a talk by Brian Flynn GM8BJF, on integrated circuits for amateur use which wound up with a description of a counter he has developed for direct frequency readout from a receiver.

Graham Knight, GM8FFX completed the session with some pertinent remarks about portable operation, and his acknowledged success in this field lent emphasis to his advice. He stressed the importance of adequate preparation, correct operating procedures, clear enunciation of callsign without gabble and used recordings to illustrate many of the points he made. Although hardly a strictly portable occasion, his signal on 2m. SSB from an upper window of the Caledonian Hotel, with a halo perched precariously on the sill, were being read with ease in North Berwick. It being impossible for a person to be in two places simultaneously, your scribe cannot report on the UHF session which was going on in an adjoining room but to judge from comments heard later this attracted much attention, and one looks forward to reporting DX contacts to and from GM on microwaves.

The afternoon activities concluded

VHF BANDS

A. H. DORMER—G3DAH

with the presentation of trophies, the "Jock Kyle Award" for services to VHF going to Alec Low, GM3GUI, and the "Jack Wylie Cup" to Willie MacMillan, GM8HBE.

Once again, Vic Stewart, GM3OWU, and his committee did a grand job in making this a most pleasant social and technical occasion.

Scottish News

GM3EUM is putting a fine two-metre SSB signal into Edinburgh from Cowdenbeath. GM8DKB (Edinburgh) is now the proud owner of a Liner-2 and radiates a considerable signal when taking time off from developing 12 MHz VFO's and multipliers for his 2m. FM rig. GM4ATI (Broughty Ferry) is also active on the band and doing a good job with an indoor beam and Pye Cambridge, the receiver section of which is now fully tunable.

On the mobile front, GM3BQO has become convinced that the answer to his problem of radiating a good signal from the car is to change the quarter-wave vertical for a five-eighths whip—this after side-by-side tests with GM6XI who has been using one with excellent results for some time now.

A useful comment from GM6XI concerns the use of the mobile calling channel of 145.0 MHz in Scotland. It seems that very few

fixed station operators tune this channel, possibly due to receiver limitations which were referred to some time ago in the Column. It is recommended that a radiated frequency in the Scottish zone allocation between 145.8 and 146.0 MHz be used. These facts were confirmed by a PAØ visitor to Edinburgh recently and were also noted by your scribe during his recent visit. There were plenty of takers on 145.1 MHz, the SSB calling channel.

Judging by the number of Murphy mobiles sold by GM3BQA at the VHF Convention there should be a considerable increase in 4m. activity in GM before long, and this will be welcome news for all users of this band.

Contests

Results: The Region 1 VHF contest on August 5 brought victory for the Liverpool & District A.R.S. operating as GW3AHD/P, with G2CUZ/P, the call of the Ainsdale Radio Club contests manager, as runner-up. In the fixed station section, G3BRS/A pulled it off. The organisers comment on the lack of activity on 4m. and the increase in 2m. SSB operation. It is hoped to run the event in June next year, the small number of entries this time being attributed to the clash with the holiday season.

Congratulations go to GM8FFX and GM4AOR who finished first and second respectively in the Scottish Zone of the RSGB Jubilee VHF contest. Also to G4ASR of London who won the June WAB VHF phone contest with a massive 57,000 points from 120 contacts.

Reports: Propagation was poor for the first of the 4m. Cumulatives on September 30, and this also gave the impression of low activity. The VHF/UHF contest over the weekend of October 6/7 was also characterised by poor propagation and atmospheric conditions over most parts of the country. There was a marked increase in activity on 23 cm. and above compared with last year and it appeared that the higher frequency bands were often yielding better results than was 70 cm. It was perhaps surprising that more use was not made of CW on 432 MHz under these circumstances. G4BEL and G8AZM/P, with over 60 contacts, were doing well.

Personalities at the recent VHF Convention in Edinburgh—left to right, GM6XI, GM3GUI and GM3SFH, and all well-known call signs in the VHF context.



Forthcoming Events: 4m. Cumulatives on November 11 and 25; 70 cm. Cumulatives on November 6, 14, 22, 30. November 3/4 are the dates for the 432/144 MHz event and December 9th for the 144 MHz Fixed Station Contest.

OSCAR News

Oscar VI is nearing the end of its useful life. Readers may recall that it was launched on October 15, 1972, and given a life expectancy of one year. Supply voltage trouble and high internal temperatures may well prove the forecast accurate. However, if still aloft, it is to be rechristened *AMSAT I* on its birthday! Just a reminder that *Oscar* is "On" from 0001z to 2400z on Thursdays, Saturdays and Mondays, on N/S passes only, and "Off" the rest of the week. If heard outside the scheduled on-periods it should *not* be used for communication.

During the first ten months of the satellite's life some 1,400 stations have used the transponder, the breakdown being: 640 in U.S.A., 83 in U.K., 126 in Germany, 72 in Japan, 63 in France, 51 in Australia, 47 in Canada, 39 in New Zealand, 35 in Sweden and 23 in the U.S.S.R. In

addition, there has been occasional use by various expeditions. Modes used have been SSB, CW, RTTY and SS/TV by fixed, portable, /MM and even one /AM (aeronautical mobile). W3TMZ was the first operator to work all 50 of the American States via *Oscar*.

Still nothing firm about the launch date for *Oscar VII* ("Amsat-Oscar B"), but it seems that the operating frequencies have been finalised. The two translators accept traffic between 432.125 and 432.175 MHz and retransmit between 145.925 and 145.975 MHz in one case, and receive over 145.9-146 MHz and retransmit on 429.4-429.5 MHz in the other. There is still talk of a third channel using the same frequencies as *Oscar VI*. Beacons are to be on 145.98 MHz, 435.1 MHz and 29.5 MHz.

An interesting report on his equipment used for *Oscar* has come in from George Sassoon, G3JZK (Warminster). The 2m set-up consists of a *J-Beam* 10-ele crossed Yagi, with a 3-ele plane polarised beam on 10m, both being equipped with rotators for elevation and azimuth. The resultant evolutions are startling, and involuntary during strong gales, but using the prediction Tables, an HP35 calculator and a lot of patience,

George was able to hold the satellite during QSO's. He finds the downlink on 10m. to be the weakest part of the system. He is now working on a punched tape control device which will give him automatic tracking, particularly useful for *Oscar VII*! His station consists of a 6146 Tx with 9 watts out and a xtal converter preceded by a pre-amp with a noise figure of about 1 dB, and to date he has had 64 QSO's in 20 countries with 34 prefixes, all on CW. Much water has flowed under many bridges since his days as an undergraduate at Cambridge when he was a regular correspondent to CDXN!

Portable Operation

G8GQY (Alverstone, Lancs.) goes portable in Cumberland on the last Thursday of each month. Look for him on 145.932 MHz. He is also portable from local sites each Thursday.

The hearts of many 4m. men must have been gladdened when the news got around that Peter Lennard, G3VPS, was off on another /P trip. He describes his own feelings about his results as "fantastic" and here are some of his comments: *Cheshire*: Excellent location and

(over)

On the way to the summit of Snowdon for their 3-centimetre attempt with GM8AZU/P (picture opposite) at 212 km for a new British record on that band. Here we see the GW8CKT/P team with, left to right, G8HCO, G8BPN and G8FTB. Their beam was a small horn (held by G8FTB) and the gear used is outlined in the text. Their equipment, all solid-state, was humped to the summit of Snowdon by leg power, the train being out of commission!



worked 32 stations. *Flint*: 30 stations worked in spite of some doubt about the suitability of the site on Hope Mountain. *Caernarvon*: Conditions difficult in spite of the 1,000ft. a.s.l. site. Was surprised to contact G3JYP (Westmoreland) through a hill about 100 yards away. Made 31 QSO's. *Anglesey*: Very hard going with no signal from the South better than S4 with the exception of that from G3ZMD in Luton. Decided not to lug the gear to the top of Holyhead mountain on his own. Total of 18 QSO's. *Pembroke*: 30 stations worked during the morning and although conditions seemed to tail off a bit, there was no real difficulty in working the Southern stations. Over 90% of the week's QSO's were on CW, but Peter was very impressed by the quality and quantity of the SSB signals. The equipment used was the Tx section of the mobile rig which ran 40 watts, and for reception an Eddystone EC-10 and Mosfet converter. Antenna was a 4-ele at 20ft. Peter requests that his thanks be passed to all those who called him, and,

indeed, there are many who are grateful to *him* for the splendid effort he made in covering so much territory in so short a time to give so many rarer four-metre counties an airing.

Further to the note last month about the West of Scotland A.R.S. expedition with Southern stations in mind, it can now be confirmed that the site will be in the Campsie Hills, in Lennox Forest north of Glasgow, where they have a caravan sited permanently. Callsigns will be the Club call, GM4AGG/P, also GM4BGS and GM8HBU. Operation on 4m. and 2m. with AM, CW and FM, also possibly SSB on 2m. Efforts are being made to carry 70 cm. gear as well. Dates are November 10/11, opening at 0900z on the 10th until 2000z on the 11th. Skeds via GM8HBU, Mike Parks, 18 Netherplace Crescent, Newton Mearns, Glasgow, G77 6BT.

VHFCC Awards

John Males, G8HAC (Moulton, Northampton) collects Certificate No. 195 for contacts on 2m. in a

surprisingly short time. He started up on the band in March, 1973, and had all the necessary cards in by September, the QSL return rate being of the order of 52% due, probably, to the fact that he sends many cards direct with s.a.e. His interest in radio goes back to 1948 while he was in the R.A.F. at Cranwell and was heightened by a spell in Germany during the Berlin airlift. He now runs a Pye Vanguard, Trio JR-310 and a Sentinel converter. The antenna is a 4/4 slot at 36ft., but John intends to convert this to a 6/6 before the winter.

G8GGP is Tim Hague of Meopham, Kent, and has gained Award No. 196 for his 2m. work. He first came on the band in August, 1972, with a borrowed Ranger, but now has a VFO controlled Tx with a BLY35 in the final giving about 6 watts output. The Rx is a Trio JR-500S, preceded by a DL6SW converter, and he uses an 8/8 slot-fed beam at 15ft. a.g.l. and 450ft. a.s.l. Gear is being constructed for 70 cm. and plans are in hand for changes to the antenna system to give him four

The GM8AZU/P group take a breather on their way up the Cairnsmore of Fleet. Their 3-centimetre equipment was somewhat similar to that used by GW8CKT/P (picture left) but their antenna a 32-inch dish with horn feed. Seen here are G8APZ, G8DKK and G8AMG. The two groups had a talk-back link, summit to summit, on two metres and their base stations maintained contact on 80m. Altogether, a very enterprising effort crowned with success.



8-ele Yagis on 2m. and a Parabeam for 432 MHz.

Finally, Certificate No. 197 goes to Frank Howe, G3FIJ, Colchester. The interesting thing about this claim is that it consists entirely of contacts made with G8/3 stations, although Frank has been on the 2m. air since 1949 (he was a regular correspondent in A. J. Devon days) and has obviously collected enough cards in that time to gain the Award several times over. He is trying out 2m. SSB with satisfying results. The beam is a 10-ele Yagi at 35ft. located

on a site 150ft. a.s.l. A dual-gate Mosfet converter and Eddystone EA-12 serve for reception. Frank is also active on 4m. and 70 cm., running 25 watts of CW and AM.

General News

G8EMS is now G4CMV and operates mainly on 2m., although he has gear for 4m. (6-40A PA and 4-ele beam) and for 70 cm. (3-20A tripler and PA with 46-ele beam) which he hopes to have fully functional by the end of the year.

GW8DUP is another who feels strongly, and several correspondents have commented on this, that operators whose calls do not yet figure in the *Call Book*, or who are operating away from home, should be encouraged to give their *locations* when calling CQ. The reasons for this are fairly obvious, one would have thought.

The EI3WPO venture produced some nice DX on both 2m. and 4m. in spite of poorish conditions. G4ASR is planning an expedition to the Outer Hebrides for next year and has promised to send details in plenty of time for publicity and skeds to be arranged. GD2HDZ suggests, now that the I.O.M. postal arrangements have been changed, that those operators who wish to send an s.a.e. use English stamps as long as they are *not* stuck to the envelope. IRC's are a waste of money as the Commonwealth Coupons are cheaper and serve the same purpose.

News Particular

3 Centimetres: It looks as if a new British microwave record has been set up with the contact on September 13 between GW8CKT/P on Snowdon and GM8AZU/P on Cairnsmore of Fleet, a distance of 212.5 kms. Weather conditions were dreadful with visibility down to 15 yards at the GW end and 20 yards at the GM site. The high winds on Snowdon, which, incidentally, caused the cancellation of the train service there, prevented the use of a dish antenna and required that a 10 dB horn be

OSCAR VI — Prediction Data

| Orbit | Date | Time | Position | Direction |
|-------|---------|------|----------|-----------|
| 4804 | Nov. 3 | 0824 | 22°E | N/S |
| 4805 | | 1019 | 07°W | N/S |
| 4806 | | 1214 | 36°W | N/S |
| 4809 | | 1734 | 34°E | S/N |
| 4810 | | 1929 | 05°E | S/N |
| 4811 | | 2124 | 24°W | S/N |
| 4891 | Nov. 10 | 0708 | 41°E | N/S |
| 4892 | | 0903 | 12°E | N/S |
| 4893 | | 1058 | 17°W | N/S |
| 4897 | | 1814 | 24°E | S/N |
| 4898 | | 2009 | 05°W | S/N |
| 4899 | | 2204 | 33°W | S/N |
| 4979 | Nov. 17 | 0748 | 31°E | N/S |
| 4980 | | 0943 | 02°E | N/S |
| 4981 | | 1138 | 27°W | N/S |
| 4984 | | 1658 | 43°E | S/N |
| 4985 | | 1853 | 14°E | S/N |
| 4986 | | 2048 | 15°W | S/N |
| 4987 | | 2243 | 43°W | S/N |
| 5067 | Nov. 24 | 0827 | 21°E | N/S |
| 5068 | | 1022 | 08°W | N/S |
| 5069 | | 1217 | 37°W | N/S |
| 5072 | | 1738 | 33°E | S/N |
| 5073 | | 1933 | 04°E | S/N |
| 5074 | | 2128 | 24°W | S/N |

Times shown are for crossings at 52°N on Saturdays. Orbits beyond 45°E or W are not included. To calculate later orbits, deduct 1.15 minutes and add 1.29 degrees each 25 orbits. Time in GMT. Position referred to Greenwich.

THREE BAND ANNUAL VHF TABLE
January to December, 1973

| Station | FOUR METRES | | TWO METRES | | 70 CENTIMETRES | | TOTAL Points |
|---------|-------------|-----------|------------|-----------|----------------|-----------|-----------------|
| | Counties | Countries | Counties | Countries | Counties | Countries | |
| G3NHE | 43 | 6 | 75 | 13 | 42 | 9 | 188 |
| G3ZMD | 59 | 6 | 69 | 11 | 35 | 6 | 186 |
| GD2HDZ | 40 | 5 | 78 | 10 | 31 | 5 | 169 |
| G3DAH | 48 | 5 | 58 | 15 | 29 | 6 | 161 |
| G3OHH | 57 | 6 | 56 | 10 | 9 | 2 | 140 |
| G4BMM | 35 | 3 | 56 | 11 | 28 | 7 | 140 |
| G3FIJ | 43 | 4 | 51 | 9 | 24 | 7 | 138 |
| G4BEL | 23 | 2 | 60 | 11 | 30 | 6 | 132 |
| G8FUI | — | — | 78 | 11 | 24 | 3 | 116 |
| G8EOP | — | — | 62 | 12 | 30 | 2 | 106 |
| G2AXI | 39 | 4 | 43 | 7 | 6 | 1 | 100 |
| G4ASR | 28 | 2 | 58 | 10 | — | — | 98 |
| G8GNE | — | — | 64 | 11 | 17 | 5 | 97 |
| G8BXX | — | — | 62 | 12 | 19 | 2 | 95 |
| GW8FOL | — | — | 82 | 11 | — | — | 92 |
| G8DNK | — | — | 76 | 13 | — | — | 89 |
| GW8FKB | — | — | 76 | 11 | — | — | 87 |
| G8ECK | — | — | 67 | 13 | 6 | 1 | 87 |
| G8FNK | — | — | 45 | 9 | 28 | 4 | 86 |
| GW3ZTH | — | — | 66 | 14 | — | — | 80 |
| G3BW | — | — | 71 | 9 | — | — | 80 |
| G3XDY | — | — | 65 | 11 | — | — | 76 |
| G8CKY | — | — | 53 | 10 | 7 | 2 | 72 |
| G8CKZ | — | — | 60 | 11 | — | — | 71 |
| G8FQE | — | — | 58 | 13 | — | — | 71 |
| GW8DUP | — | — | 58 | 9 | — | — | 67 |
| GM3ZVB | 9 | 1 | 46 | 8 | — | — | 64 |
| G8BKR | — | — | 41 | 7 | 16 | 2 | 64 |
| G8HET | — | — | 50 | 12 | — | — | 62 |
| G8FWB | — | — | 53 | 9 | — | — | 62 |
| G8GPR | — | — | 55 | 6 | — | — | 61 |
| G4AEQ | — | — | 36 | 4 | 17 | 3 | 60 |
| G8EWM | — | — | 47 | 7 | — | — | 54 |
| G3SMU | 18 | 3 | 10 | 2 | 16 | 3 | 52 |
| GW8EHK | — | — | 44 | 8 | — | — | 52 |
| G3FPK | — | — | 43 | 6 | — | — | 49 |
| G4AJE | — | — | 38 | 8 | 1 | 1 | 48 |
| G8ATY | — | — | 41 | 7 | — | — | 48 |
| G4BKG | — | — | 40 | 7 | — | — | 47 |
| GW8BXQ | — | — | 39 | 8 | — | — | 47 |
| G8CBU | — | — | 36 | 3 | 7 | 1 | 47 |
| GW3CBY | 7 | 2 | 21 | 5 | 5 | 2 | 42 |
| G8DGR | — | — | 32 | 2 | 6 | 1 | 41 |
| GW4BXE | — | — | 34 | 5 | — | — | 39 |
| G8COG | — | — | 28 | 3 | 5 | 1 | 37 |
| G8EMS | — | — | 27 | 7 | 2 | 1 | 37 |
| G8DOT | — | — | 27 | 8 | — | — | 35 |
| G8GXE | — | — | 28 | 5 | — | — | 33 |
| G8GNC | — | — | 28 | 2 | — | — | 30 |
| G8GBV | — | — | 19 | 3 | 5 | 1 | 28 |
| G4AEZ | — | — | 23 | 5 | — | — | 28 |
| G4BOW | — | — | 23 | 2 | — | — | 25 |
| GD4BJL | 4 | 3 | 13 | 5 | — | — | 25 |
| G4CMV | — | — | 19 | 3 | 2 | 1 | 25 |
| G8FUL | — | — | 23 | 2 | — | — | 25 |
| G8GJB | — | — | 21 | 3 | — | — | 24 |
| G8ECU | — | — | 19 | 2 | — | — | 21 |
| G3EKP | 8 | 3 | 4 | 2 | 2 | 2 | 21 |
| G3WHK | — | — | 17 | 3 | — | — | 20 |
| GW8CMA | — | — | 14 | 3 | — | — | 17 |
| GW8CGH | — | — | 12 | 2 | — | — | 14 |

The Table shows claims to date from January 1, 1973 and runs through to December 31, 1973. Your claims should be sent to: "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ each month.

used. The other terminal was able to get at 32-inch dish up. Equipment at both ends incorporated a CXY19 Gunn oscillator in the Tx with about 100 mW output, and either CS10B or BAY95 mixers and CL8370 or CL8380 local oscillators in the Rx. Those involved were: In *GM*—G3VUQ, G3YCO, G8AMG, G8AZU, G8DKK, and in *GW*—G3XSO, G3YMV, G8BPN, G8CKT, G8ENX, G8FTB and G8HCO. Congratulations!

70 Centimetres: G8COG (Birmingham) is now on 70 cm. with phase mod. into a varactor tripler. The Ae. is an 18-ele Parabeam at 17ft. and the Rx a BF180 pre-amp, FET converter to the 2m. section and thence to an R.107 which can accept any of the usual modulation modes.

G3ZYC has sent some useful notes on getting the DJ6ZZ 70 cm. transverter to work properly, a difficult task as many constructors can testify. They are too detailed to reproduce here, but an s.a.e. to G3ZYC, *QTHR*, will get you the information. DC9KU has been worked by several British stations on this band and it looks as if it may become easier in the near future as, having lost his 16-ele in a storm recently, he has seized the opportunity to exchange it for a 120-ele job at 90ft. a.s.l.!

A new distance record was set up on 432 MHz when KH6BZF and W6FZJ established two-way communication on July 29 last. This followed a period of strong ducting on 2m. from the West coast of America into Hawaii, signals being audible in a band between 5,000ft. and 10,000ft. only. Many contacts were made with comparatively low power through the 2m. repeaters at both ends, the first of them being between KH6AFS and K6DYD in San Diego, while the latter was running 1 kW into an 80-ele array!

Two Metres: GWFOL (Anglesey) lost his beam in an 85 m.p.h. gust during the recent storms, but he now has a 14-ele up at 60ft. and seems to be working some nice DX with it. He noted an aurora on September 9 with *three* phases, but the effect was weak with signals rarely above the S1 mark.

GM8BZX (Forfar, Angus) had a good session on September 15, working some 50 stations *via* the Cuxhaven repeater, DB0XA, including East and West Berlin and, for a long, short

cut, a station in Cambridge! He runs 120 watts of NBFM. Frank noted that, once he was into the repeater, no tone burst generator was required to keep the device open, the carrier alone seemed to do the job. Nice going!

G8ATY (Hanslope, Bucks.) has been keeping a sked with FICRP/P near St. Brieuc who runs just 2 watts of AM. CRP reported that EA1EH in Lagrono is QRV on the band. GW8EHK should, by now, have the 4CX250B linear operational on 2m, and is working on a 70 cm. transverter. Those looking for Cardigan-shire should contact GW3MHW, QTHR, who is willing to arrange skeds. EI5BH is very active on RTTY these days but finds that many contacts are ruined by AM/FM QRM. The frequency 145.3 MHz is the international RTTY calling channel and should be respected as such. How about keeping it clear? GI8EWM has been going through his logs and finds that since he came on with SSB in February this year he has had more contacts using that mode

than he had during the previous two years while he was using AM. *Verb. sap!*

“Mirabel II”

The second Mirabel transponder is due for launch on October 28 at 1400 hrs. GMT. Call on 432.1 to 432.4 MHz and listen over 145.6 to 145.9 MHz. The device will accept all forms of modulation, since it is, in effect, a linear translator, but CW and SSB offer the best chance of success. Three beacons will be carried: No. 1, 200 mW, frequency-shift keying on 145.6 MHz; No. 2, 700 mW on 145.2 MHz with the callsign “Mirabel” in CW repeated three times followed by four tones, frequency modulated; and No. 3, 800 mW on 1296 MHz. Reports on reception of the latter would be particularly welcomed as this would appear to be the first time that such an arrangement has been tried in amateur circles. The address for all reports, including listener, is: A. Jungbluth, F6APU, 3, rue des Tulipes, 67380 Lingolsheim, France

—and we would like to hear, too.

Beacons

F8SH comes up with some information about the troubles with the French 2m. beacon, F3THF. It appears that there was some spurious radiation in the weather satellite band around 136 MHz, and the beacon was taken out of service for investigation, the results of which showed that the trouble lay in the exciter. However, the spuri did not interfere with the work of the local satellite centre in Lannion (about 1 km. away) and so full service was restored on September 8, arrangements being made for the exciter to be checked further with a view to the elimination of the unwanted emissions.

Deadline

Deadline for the next issue is **November 8**. Correspondence to: “VHF Bands,” SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ, as usual. BCNU es 73 de G3DAH.

“FET VOLTMETER”—Correction

In that article on p.484 of the October issue the phrase “The input divider has a total resistance of . . .” should have read 10 megohms, and not as given. The input network R1-R6 adds up to near-enough 10 megohms, within the usually-accepted limits of the resistor and meter tolerances. This FET Voltmeter is not intended to be a precise instrument so much as a handy tool giving readings within tolerable limits.

GETTING ROUND TO IT—CHRISTMAS

It has been said—and not just by us—that one of the best presents you can give is a book, either for Christmas or a birthday. This problem could confront some at least of our readers, casting around for a Present for Somebody—either a relation, a friend or (in the Amateur Radio context) a contact beyond the seas—with a prime interest in Amateur Radio.

With due modesty, we suggest that one possible gift could be a year's subscription to SHORT WAVE MAGAZINE. This costs £3.20 for first-class posting within the U.K. (£2.75 second class) or £3.20 by surface mail to any address in the world. (Airmail rates work out very much higher and can be quoted on request).

Books in which most radio amateurs are interested include the ARRL's *Radio Amateur's Handbook*, at £2.90, or £3.70 in the “hardback” library edition. The RSGB's *Radio Communication Handbook*, at £4.13. *Wire Antennas*, a good compendium on aerials, £1.75. *Sun, Earth and Radio*, dealing with the mysterious and

fascinating subject of radio propagation, 92p. *Field Effect Transistors (FET)*, from the Mullard library, £1.97. The ARRL *Antenna Handbook*, 12th Edn., telling you about all you want to know on how to radiate effectively, £1.42.

These are just a few of the steady-selling, and therefore reliable, titles in our regularly advertised lists.

For Beginners in the context of Amateur Radio, we can suggest as good books to have for instruction and general reading: Rayer's *Amateur Radio*, £1.63. *Foundations of Wireless & Electronics* (this is by one of the masters of the subject), £2.06. *Guide to Amateur Radio*, telling you what it is all about, 90p. *Radio Amateur Examination Manual*, dealing with the passing of the Exam. to qualify you for an amateur transmitting licence, 90p. The *Radio Amateur Operator's Handbook*, which untangles the mysteries of callsign prefixes, the codes used in the jargon of Amateur Radio, with other basic data, 54p.

We also stock a useful selection of Maps of radio amateur interest, as regularly advertised in the *Magazine*. These are full of detail and, being in several colours, are not only useful but also decorative.

All prices quoted in the foregoing are post free. Delivery is normally from stock and despatch on the day order is received—though there are, of course, interim periods when we are temporarily out of stock of some titles.

Orders, with remittance, to: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H 0HF.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for December issue: November 8)

(Please address all reports for this feature to "Club Secretary", SHORT WAVE MAGAZINE, Buckingham.)

WITH MCC, the Magazine Club Contest, now upon us, there are various points to be emphasised in connection with the Rules, which appeared in full on p.497 of the October issue of SHORT WAVE MAGAZINE.

Main changes this year are that the Club indentification system is abolished (temporarily at least) and the emphasis is on working not only Clubs but also counties (because by next April the geographical counties as we know them now will be abolished).

The scoring system is loaded accordingly and, in view of the possibility that, as in previous years, the odd European will be workable (stations in DL, OK and HB have cropped up from time to time in MCC) they can score as single-point contacts and earn a multiplier. In order not to penalise the GDX, the least possible scoring emphasis is placed on EU contacts, so that EI and the more distant U.K. Clubs do not feel themselves at a disadvantage. With the multiplier possible, scoring could reach astronomical proportions, and this is what we expect to see.

As at the moment of writing, we have had no queries about the new Rules, nor any hint of criticism—which seems to suggest that most Clubs who normally take part in MCC are prepared to give them a try.

Rule 7, about the setting out of the logs, is of the utmost importance. We just cannot look at entries that do not conform to this layout—for the reason that otherwise it would be virtually impossible to check the logs quickly and accurately. Careful time-keeping, within one minute, is also essential—and that means that an accurate time-check should be taken at the start of each session.

As mentioned last month, the log sheets can be prepared in advance and the entry sent us should be a fair copy—not the scribbled original, with the crossings-out, the coffee stains and the dog-eared edges!

As usual, in the interests of all concerned, the Contest will be closely invigilated, and—though it is very much to be hoped that no disqualification will be necessary—Rules 8 & 9 will be strictly enforced, so watch it!

We look forward to finding a high level of Top Band activity over the week-end **November 3-4**, with your logs turned in as soon as possible after the event (though *Friday, November 16* is allowed by the Rules, it will help a lot to have entries in sooner).

So, there it is—this year's MCC is at hand. May all who enter have a Good Time. We at this end will do our part in getting it all sorted out for the January, 1974, issue, to appear on December 28.

Scotland

Cause for celebration indeed—we have our biggest-ever crop of Scottish Clubs since this scribe first took the secretarial chair. One hopes that this will encourage more of the groups from North of the Border to let us know their doings. (Well, three GM Club reports in one month is a lot!)

Falkirk first, where the Hq. is at the Temperance Café, Lint Riggs, and the date of the meeting November 9, for a recorded lecture.

At **Mid-Lanark**, they have November 9 and November 23 booked in, at Wrangholm Hall Community Centre, Jerviston Road, Motherwell. A bring-and-buy Sale covers the first date, and the second is down for GM3UCI to demonstrate Stereo Radio and Quadraphonic Sound. To look forward just a little, everyone is wanted at the AGM on December 7.

West of Scotland meet at 81 Virginia Street, Glasgow G2, every Wednesday and Friday evening. Basically, the Wednesday sessions are very informal and slanted to practicalities, like trouble-shooting or Morse practice, while Fridays are more formal, with lecture, film, junk sale, or whatever. Something for everyone, in fact, which doubtless accounts for the very large membership.

North of England

Our first call is all but in Scotland—on the south side of the Solway Firth, and called the **Solway Club**. They have a place at the Settlement, High Street, Maryport, Cumberland. For more data, we have to refer you to the Secretary—see Panel p.561.

Nottingham is an active and lively group; their latest ploy is to send a circular letter about themselves to all known amateurs within a five-mile radius of the city centre, and also to schools, youth clubs, and such groups. November 1 at Sherwood Community Centre, Mansfield Road, is down for a talk by, probably, an outside speaker. November 8 is an Activity Night; November 15 the regular forum evening; and on November 22 G4BUY will be talking about either fourth-generation IC's or

Propagation Predicting over long distances. The November 29 date rounds things off with a film show, all sessions being at the QTH given.

* * *

You may recall the announcements about the **Star** chaps and their Sale for RAIBC—we are pleased to congratulate them on sending a cheque for no less than £100 to RAIBC as a result of the effort. They meet weekly at the New Inn Hotel, Bramley Town Street, Bromley, Leeds 13.

* * *

Liverpool University has its group, as do most of the Universities in fact. The Liverpool chaps take their chances to meet, every lunchtime, plus the more formal Monday evening sessions to which visitors are invited. For the details, get in touch with G8GMI—see Panel.

It is quite a while since last we heard from **Harrogate and Knaresborough**, but they still prosper. A change of Hq. has been made, to the Further Education Centre Annexe, adjacent to 62 Chain Lane, Knaresborough, where they will in future assemble each week on Monday evenings. November 5 is down for a talk on Transmission Lines and Aerial Matching; on the 12th Simple Transmitters; 19th, Operating Procedures; and for the 26th, Converting Surplus.

Another move is made by **Bolton**, through no fault of their own, and now the Hq. is at the Clarence Hotel, Bradshawgate, where the third Tuesday of each month is the standard booking. In addition the Club net is on Tuesdays at 8.0 p.m. on 145.73 MHz, says the hon. sec.

How to get members to attend at the specified time and not half-way through the lecture is puzzling the Secretary of **Northern Heights**. For this old scribe, such behaviour is, to put it mildly, downright discourteous to the lecturer, and should be stamped on as firmly as may be. One could of course make the starting time half-an-hour before the lecture is due to start, so the lads can stoke up in the bar, have their ragchew, and then go into the clubroom, or arrive a bit later and go straight into the talk, which seems to work fairly well at the Club your scribe attends. **Northern Heights** chaps can be found at the Peat Pitts Inn, Ogden, Halifax, on November 7, for G8ENN to talk about the technicalities of VHF; on November 14 there is a committee meeting; November 21, G8CB talks about Transformer Techniques, and on December 5 they will be building the G83HN/G3TQA Frequency Counter.

For **Derby** the Hq. is at 119 Green Lane. Every Wednesday it is, which makes a November list like this: The 7th, an Auction Surplus Sale; 14th, a home-made wine tasting (?) to which you are requested to bring a bottle of your best booze; November 14 sees G3VGVW talking about BBC Overseas Broadcasting; and on the 28th there will be a film show. YL's are invited to the Wine evening.

Midlands Area

Worcester have had the AGM and re-elected their officers for the coming year, but as a result have not yet sorted out the details of the coming programme. Not to worry though, as we can tell you that they get together at the Old Pheasant Inn, New Street, on November 6 and 17.

Baden-Powell House, St. Nicholas' Street, is where the **Coventry** group convenes on Friday evenings—the venue is not far from Radford Road. Nights-on-the-Air come up on November 9 and 23; November 2 is the sausage-and-mash Supper; November 16 is a Natter Nite, and on November 30, the talk and slide show will be on Direction-Finding.

From **Melton Mowbray** we only hear at rare intervals; but they always seem to be running on well-oiled wheels at the same Hq. This is the St. John Ambulance Hall, Asfordby Hill, and the November 16 date is for G8ELH to discuss Veroboard and its Uses.

Sad to say the secretary at **Lincoln** will have handed over the reins of office by the time this comes to be read—however, he still remains in the panel for this month, and tells us that on November 7 there is an evening with programme as yet undecided, an Open Night on the 14th, Films on the 21st, and a Talk on the 28th. The meeting-place is the Lincoln Astronomical Society, Westcliffe Street, off Burton Road.

The proceeds of the Junk Sale on November 20 at the Midland Institute in Margaret Street, Birmingham, will go to the funds of the **Midland** group, whose meeting this is for the month.

While Sale Moor Community Centre is the Hq. for **South Manchester**. Their VHF experts also have a shack at "Greeba," Shady Lane, Manchester 23. Thus, on Mondays you go to the shack and talk VHF, and on Fridays you go to the formal meetings, these being noted as: November 2, an Introduction to the TF-200 transceiver; November 9, the Club Silver Jubilee dinner; November 16, films on Insulators and Insulation, with G8HIW and G4AHX doing the talking; November 23 will be a talk on Slow-Scan TV by G4AOK; and on November 30 they will have a DX-chasing session with the Club's new FT-200. A nice programme.

"Signals since the days of Spark" is the title of the tape lecture to be given to the **Cheltenham** Group on November 1st—for most of the members it will be the first time they have heard the noise of a spark rig. This one is at the Royal Crescent Hotel, Clarence Street.

Wolverhampton have a News Letter which is a model, from our point of view, with all the essential items where they can be easily found; they meet at Neachells Cottage, Stockwell End, Tettenhall, every week; on November 5 there is a Film Show; the 12th is a Natter Nite, while Practical Receiver Alignment is to be demonstrated on November 19; and a committee meeting occupies November 26.

South Birmingham are to be found at Hampstead House, Fairfax Road, West Heath, Birmingham 31, where, on November 7, they will be having the Annual General Meeting.

Back to their old Hq. go **Wirral** after being in temporary "digs" for several months. Apparently the lads are highly intrigued by the label on the door of the room they are to be using, so you had better go and have a look, on November 7 or 14, at the Sports Centre, Grange Road West, Birkenhead.

Wales, Westerlies and Ireland

Let us make a start on this group by looking at **Blackwood**, who can be found at the Community College, Oakdale, on Friday evenings. On November 2, they

will be playing some tapes of members transmissions (that should stir things up!) while on November 9, GW3MMU will be talking about Integrated Circuits.

A new place is noted for the meetings of the **Rhyl** crowd, namely the New Ambulance Station Lecture Room, Mercia Drive, off Coast Road. The next date is November 13, for a discussion on Aerials and Feeders.

Over the water now, to **Bangor** where, despite all the difficulties that must hamper activity in Northern Ireland, the Club is doing rather well. November 2 is taken at the Borough Gymnasium, Hamilton Road, and will be the ever-popular Surplus Equipment Sale. Then, on November 30, comes the normal formal meeting, when the topic is intriguingly described as "An Aspect of Amateur Radio." In addition GI3WSS is still running his invaluable R.A.E. course at Bangor Technical College.

The **11th Battalion, Ulster Defence Regiment** is the newest battalion of the newest regiment in the British Army—but that doesn't stop them running their own Club and callsign. One would like to make a bet that there will be some new GI calls on the air as a result. Details from GI3IEO, address as Panel, opposite.

November in **Plymouth** means the annual dinner on November 17, and the Film Night at Hq. on November 6, plus a meeting on November 20; the last two at Virginia House, Bretonside, Plymouth, the dinner at Davie Hall.

The **Yeovil** group meet every Thursday evening, at the Youth Centre, 31 The Park; we have no detail of the activities planned for November.

The usual double bill returns at **Cornish** on November 8, with a Sale of Surplus Equipment followed by G3VVK talking about DX/TV. This session is back at the normal place, SWEB Clubroom, Pool, Camborne, after their change last month.

Down South

Sad news for the **Echelford** crowd is that they are losing their popular G5AGX, returning to the States; but Kurt is paid-up till March 1975, so they will keep touch through the *Newsletters*. They meet at St. Martins Court, Kingston Crescent, Ashford, Middlesex, on the second Monday and last Thursday of each month.

Brighton Technical College emphasise that they cater for all, not just for College staff and students. They can be joined by going along to Richmond Terrace, on November 12 for a talk on Servo-Mechanisms for the Radio Amateur, or on November 26.

At **Thanet** they get together every week, the dates being November 2, 9, 16, 23, and 30; the November 23 meeting will be taken with the South-East VHF Group at Canterbury, while the first and last meetings of the month are devoted to the Club Project. That leaves a visit by G3MDO on the 9th, and a talk on 430 MHz by G3BHW—a well-known VHF man in the area—on the 16th. However, the Hq. address is not mentioned and so we have to refer you to G3DNR for that—see Panel.

Kent Coast are in the same neighbourhood, and have their place at the R.A.F. Club, Camden Square, Ramsgate, where they get together on the first Tuesday in every month—as a new formation, they say they need all the new members they can get!

Still in Kent, we come now to **Medway** who, among

other activities, have R.A.E. lectures on meeting nights. Friday evenings it is, at the Aurora Hotel, Gillingham. Information from the Secretary, as Panel.

Yet again in the county of Kent, this time the **Cray Valley Club**, who will have G6HD talking to them about "Standing Waves and All That." Then on November 15, there is a Natter Nite; both sessions are at the United Reformed Church Hall, Court Road, Eltham, London, S.E.9.

The **Stevenage** crowd have been in their present Hq. for years now, and seem set for life at the Hawker-Siddeley Dynamics Senior Staff Canteen in Gunnels Wood Road, on the Industrial Estate. Here they are booked in on November 1 and November 16, albeit we are not told "what gives" on those evenings.

The "DX-pedition to Andorra" tape-lecture by G3DNF is the subject for the **Edgware** meeting on November 8, and then of course there is the informal session on November 22. Both are at Hq., the Watling Community Centre, 145 Orange Hill Road.

At **Maidstone YMCA** they have facilities that most Clubs cannot even dream about, let alone achieve, in terms of room space, canteen service and acres for aerials! Friday evenings in November will be occupied in this manner: November 2, a talk on MCC and what will happen then; November 9, a Junk Sale; November 16, the R.A.E. class; November 23, a talk on Sheet Metal Working for the Amateur by G3REM (who knows his stuff in this context); and on November 30, again the R.A.E. class. Members say they feel that the G3REM talk and the Junk Sale would be of interest to other Clubs—but they don't say where their Hq. is! For that we have to refer you to G3ORP, address as Panel.

Chichester's secretary remarks that his are a lively lot, and your scribe can himself vouch for the welcome given to a visitor to the area. They assemble at the Lancastrian School on the first Tuesday and the third Thursday of each month; November 15 will be an interesting one, as they will be having a visit from G5CS, to talk about the "First Five Years." Gerald Garrett is a master on the history of Radio, on which he has done years of fascinating research.

Bishops Stortford put the November accent on Home Construction. This meeting is on November 19, and the prize the G3WYD Trophy; venue is the committee room of the British Legion, in Windhill, starting at about 8 p.m.—but you may well hear amateur-radio type talk in the bar before that!

The chairman of **Acton Brentford and Chiswick** finds himself in the hot seat on November 20, when he is down to demonstrate the Heathkit HW-7 Transceiver. This one is at the Chiswick Trades and Social Club, 66 High Road, Chiswick.

The third Wednesday in November is the **Verulam** date, at the Market Hall, St. Albans, but at the time of writing it is not known just what is programmed for that evening. (Their reports always seem to be out-of-phase with us!)

The AGM has just been passed at **North Bucks**, and a new slate of officers takes over. November 12 is for G2ANS to talk about Spectrum Analysers. To find them on that evening, look for Wolverton Youth Club Hq.—particularly if you are SWL, as they say they want

more SWL members.

G2MI is down to talk to **Purley** on November 16, his topic being the RSGB QSL Bureau. This is at Lansdown Hall, Lansdown Road, and all are welcome.

For **Reigate** the first November get-together is the popular Natter Night, at the "Marquis of Granby," Hooley Lane, Redhill, starting at about 8.30 p.m. As for the main meeting of the month, that is at St. Marks Church Hall, Alma Road, Reigate, on November 20, for 8.0 p.m., when the speaker will be Ron Ham, talking about Propagation under the title of "Cause and Effect."

The exhibition station set up back in July by the **Dunstable Downs** group to show Amateur Radio was quite a success, thanks to extensive advertising in the local press and over Radio Oxford and Radio London. As a result they got mentions in three local papers.

Turning to their November programme, we notice what they call "between weeks" on November 2, 16 and 30. G8BPK, see Panel, can give you programme details.

Worries about security of tenure of their Hq. are cropping up at **Sutton and Cheam**, and they are, therefore, on the lookout for something suitable in the way of an Hq. where they can put up a Club station, or at least be able to run test gear. November's meeting is down as a Surplus Sale, on the 20th. To keep in touch, contact G4BOX, as Panel below.

For **North Kent** our crystal ball does not look as far ahead as November, although we know the dates will be the second and fourth Thursdays in the Congregational Church Hall, entered from Chapel Road, alongside the Bexleyheath Clocktower.

On to **Southgate** where we find that the meetings

Names and Addresses of Club Secretaries reporting in this issue :

- ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, London, W3-8LB.
 A.R.M.S.: N. A. S. Fitch, G3FPK, 40 Eskdale Gardens, Purley, Surrey, CR2-1EZ.
 BANGOR: W. Langtry, G1AAM, 32 Bayview Road, Bangor, Co. Down.
 B.A.R.T.G.: G. P. Shirville, G3VZV, 12 Bradford Way, Toddington (2470), Dunstable, Beds.
 B.A.T.C.: J. Rose, G6STO/T, Pincnbeck Farmhouse, Mill Lane, Sturton-by-Stow, Lincs. (Stow 356).
 BISHOPS STORTFORD: E. P. Essery, G3KFE, 17 Ascot Close, Parsonage Lane, Bishops Stortford (52501), CM23-5BP.
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 BOLTON: S. MacDonald, G4AQB, 8 Archer Avenue, Bolton (20668), Lancs., BL2-2SJ.
 BRIGHTON (Technical College): R. J. Henley, G2CMH, 35 Wilmington Way, Brighton, BN1-8JH.
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 YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset.

will be at a new venue not yet finalised. This being the case, get in touch with G3XMV, as Panel.

November 17 for **Crystal Palace** could mean a visit to Emmanuel Church Hall, Barry Road, London, S.E.22, to hear a talk by Jermyn Industries on Solid-State Devices and their Applications.

The **Harrow** membership can be found on Friday evenings at the Sea Cadets Hq., Woodlands Road. November 2 is a film show, and the 9th and 30th both Practical evenings. A talk is being arranged for November 16, and on November 23 there is a bring-and-buy Sale—always a draw!

On November 1, the **Maidenhead** crowd will be at the British Red Cross Hall, The Crescent, for a lecture and discussion on "Amateur Radio Topics" by none other than our old friend Douglas Findlay, G3BZG—though how he can find time to go round giving talks to Clubs we would not know! Then, on November 20, comes the informal; and on this occasion it is intended to spend a little time in discussion on the future activities of the Club.

The new venue for **Surrey** is "The Ship," 47 High Street, where, we gather, the manager is G3KER. On November 20 G6OPB/T will be bringing the meeting up-to-date on the world of A/TV.

G8FYO of **Silverthorn** indicates clearly what it is that makes a Club really successful, incorporates pride of achievement, in this case their Field Weekend event during the summer—see p.499, October. Meetings are held weekly in a local community centre, where they run R.A.E. classes, have a Club station and shack, and a room for talks and filmshows; all the details can be obtained by writing to G3YJZ, as Panel.

Others

This clip covers the groups who have no local affiliations, for example **British Rail**, who have a newsletter made up largely by the letters from members.

A.R.M.S. support the mobile Amateur Radio interest; their *Mobile News* carries items of interest to the mobileer and information on the subject of reciprocal licensing between countries; they also run an Information Service for /M's.

Another somewhat specialised interest is that in Radio Teletype (RTTY) an activity covered in various ways by the B.A.R.T.G. for SWL or licensed amateur, on HF or VHF bands.

R.A.I.B.C. is concerned for the interests of the blind and invalid members of the Amateur Radio fraternity who join as members; there is also a large number of supporters, who get the *Newsletter* and on occasion are asked to tackle some small task for a member, either directly or indirectly. RAIBC is always on the lookout for new entrants, in either grade of membership. The hon. secretary is G3LWY, as Panel.

There are three Clubs catering for Amateur Radio in the **Swedish Broadcasting Corporation**; SK6DA at the Television Centre at Gothenburg, and SK7FY at Radio House in Malmö—for more details, drop a line to SM7RN/G5ALK at the address in the Panel.

B.A.T.C. is the Club concerned with A/TV (Television on the amateur bands) and at the time of writing

they are running a series of contests for A/TV stations; their newsletter *CQ-TV* is always full of interest for TV types, and the services given in other directions are probably vital to anyone who wants to play A/TV to a reasonable budget.

Last, but by no means least in this category is W.A.M.R.A.C.,—concerned for those amateurs throughout the world who are of the Methodist persuasion. They keep in touch by way of a *Newsletter* by G3NGF, and net contacts world-wide.

Conclusion

It remains but to tell you that the deadline for next month is **November 8**, containing all your *December* programme material, Hq. address, current secretary's name and address (with telephone number, if there is one) and of course the meeting dates. Send it all to arrive on the deadline date or earlier, addressed to "Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18-1RQ.

Too Late: The following Club reports were received after the deadline and could not be taken into the foregoing summary: Bedford, Farnborough, Hereford, Lincoln, Southgate, Spalding, Spen Valley, Torbay, White Rose and York. We do our best to accommodate all Club reports received but it is just not possible to write-in late reports because this feature has to be worked to a very tight schedule.—*Editor.*

R.A.E. Q. & A. REPRINTS

For many years we have been offering what we hope to have been reasonable answers (which could have got the candidate an honourable pass) for the Radio Amateur's Examination held annually in May, under the auspices of the City & Guilds of London Institute, first called "Subject No. 55" and now Subject No. 765 in the C. & G. syllabus.

As in previous years, the 1973 Examination, question and answer, will be dealt with in forthcoming issues, in anticipation of the May, 1974, R.A.E.

The issues in which previous R.A.E. Papers have been covered are long since out-of-print—there has always been a large demand for them. But we can supply for those interested, either candidates or lecturers, photostat copies of these articles, going back seven years, as follows:

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Papers for any year, with our suggested answers, can also be selected from the foregoing list, at the individual post-free prices given. So far as we know, a study of all these Papers, with the answers suggested, would give most of the clues to the next R.A.E., in May 1974.

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NEW QTH's

This space is available for the publication of the addresses of all holders of new U.K. call signs, as issued or changes of address of transmitters already licensed. All addresses published here will be reprinted in the U.K. section of the "RADIO AMATEUR CALL BOOK" in preparation. QTH's are inserted as they are received, up to the limit of the space allowance each month. Please write clearly and address on a separate slip to QTH Section.

- G3AWR**, C. D. Hammett, 48 Hadrian Road, Newcastle-upon-Tyne, NE4 9QH. (*Re-issue.*) (Tel. 0632-30038.)
- G3BJD**, Amateur Radio Club, 11th Bn. Ulster Defence Regt., c/o W. B. Johnston, 146 Ulsterville Park, Portadown, Co. Armagh.
- G3USE**, S. J. Down (*ex-GC3USE/GW3USE/G8HKF*), c/o 59 The Crescent, Caddington, Luton, LU1 4HZ. (*Re-issue.*)
- G3WCJ**, P. F. Hackett, 3 Winnington Close, Fareham, Hants.
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- G4CFZ**, M. Stevens (*ex-G8FBN*), 94 Merafield Drive, Plympton, Plymouth, Devon.
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- G4CLX**, A. Dewsbury, 10 Rectory Road, Oldswinford, Stourbridge, Worcs. (Tel. *Stourbridge* 3530.)
- G4CLY**, N. C. Thompson, 5 Beechcroft, Ashted, Surrey, KT21 2TY.
- G4CMH**, D. Spendlove, 33 Christchurch Lane, Harwood, Bolton, Lancs., BL2 3QE.
- G4CMX**, P. Rossiter, 40 Papplewick Lane, Hucknall, Notts., NG15 8EF.
- G6AJL/T**, G. A. Talbot, B.Ed. (*G3VAL*), Monsol, Dark Lane, Mawdesley, Ormskirk, Lancs., L40 2QU. (Tel. *Mawdesley* 637.)
- GM8HKT**, A. T. McCudden, 20 King Edward Street, Alexandria, Dunbartonshire, G83 0EJ.
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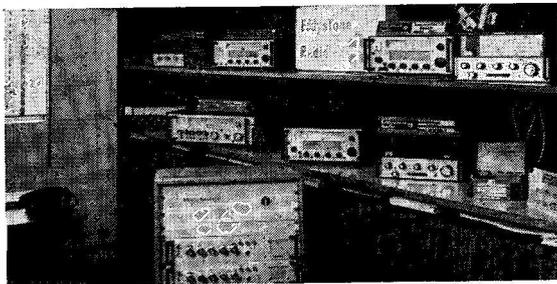
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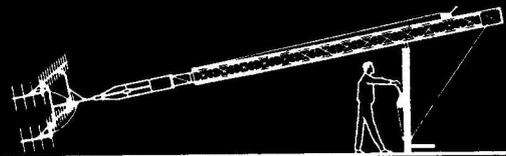
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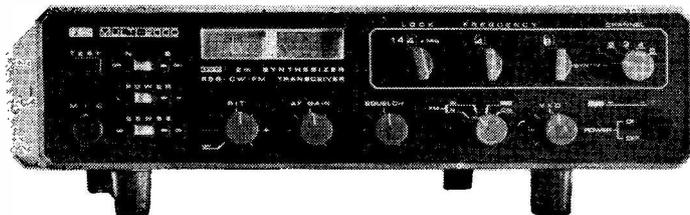
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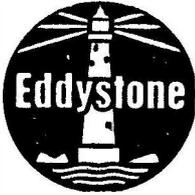
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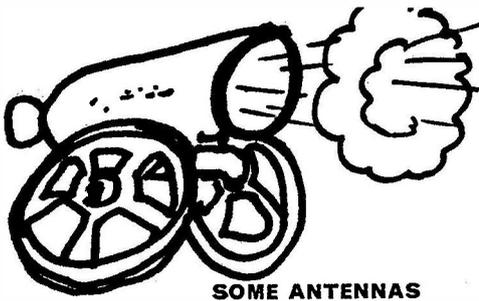
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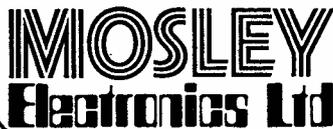
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