KW 2000E Transceiver covers all HF Bands 10-160m (10m in 4 Bands), 500 kHz VFO. SSB/CW. Outstanding TX audio quality. Excellent receiver signal-noise figures. Includes VOX, break-in CW, 100 kHz and WWV calibrator. Reliable 6146s in P.A.

KW 1000 Linear Amplifier. 10-80m. 1200 watts PEP input max. Designed to be "driven" by KW 2000A/B/E or other unit of similar power rating. In-built 2.5 K.V. PSU. PA pair 6146L. Very quiet in operation.

KW 204 Transmitter. Well known for really good audio quality (SSB) and a favourite with CW enthusiasts. 10-160m. Reliable PA Tubes (2 x 6146).

Other KW Favourites: KW 1000 Linear Amplifier; KW E-Z match ATU; KW 160 ATU; KW 102 SWR/RF Power meter; KW Dummy Load; KW Traps (The original and best) KW Trap Dipoles; KW 109 Supermatch (High Power Version) KW Low pass Filter; KW Balun; KW Antenna Switch.

Stockists for Hy-Gain beams and verticals, CDR rotators, Shure microphones, etc.

Communications Products (DECCA COMMUNICATIONS LTD)
Economical Mobile/Base Station
FT-201

Fresh on the scene is the FT201 which is setting new standards in its price range and has aroused much interest and some very flattering reports.

25\% VAT and all that!

With the escalation of prices due to the imposition of the new high VAT rate on so-called luxury goods the FT-201 pictured above becomes an increasingly attractive proposition at £290 basic. With regard to second-hand equipment this will also be adversely affected by the new rate and for a limited period only we are offering a genuine 10\% reduction on all used items which will alleviate the situation considerably as shown by the example below:

Typical Retail Price—£100 plus VAT at 8\%. Total £108.00
Discounted Retail Price—£90 plus VAT at 25\%. Total £112.50

A stamped addressed envelope will bring you our latest comprehensive list of first-class and guaranteed used gear.

A couple of stamps (we’ll provide the envelope) will bring you the very latest ATLAS RADIO leaflet and if you would like the full YAESU MUSEN or SWAN glossy catalogues these are available against the receipt of stamps to cover i.e., 21 pence each.

Northern Agent
JOHN ROWLEY, G3KAE, Scarborough. Telephone: West Ayton 3039

Scottish Agent
RON TURNER, GM8HXQ, Wishaw. Telephone: Wishaw 72172

AMATEUR ELECTRONICS UK
UNITED KINGDOM DISTRIBUTOR
OF THE WORLD'S FINEST RANGE OF AMATEUR
RADIO EQUIPMENT
BY
YAESU MUSEN
The superbly engineered FR-101 Receiver

** Entirely Solid State
** Transceivers with FL-101
** 23 Bands
** 160m-2m.
** Plus general coverage
** SSB/FM/AM/CW
** Digital readout option available

Full specification available upon receipt of S.A.E. for both models.

**HF TRANSCEIVERS**
- FT-201: 80-10m. AC/DC 260 watts p.e.p. input.
- FT-40IB: 80-10m. 560 watts p.e.p. input.
- FT-200: 80-10m. 260 watts p.e.p. input.
- FT-75B: 80-10m. 120 watts p.e.p. input.
- FP-75B: AC PSU.
- DC-75B: DC PSU.

**VHF**
- FT-2AUTO: Auto Scanning 2m. Transceiver, fitted channels S20, S22, R5, 6 and 7.

**FM**
- FT-224: 24 Channel FM 2m. Transceiver.

**SIGMASIZER 200R**
- 200 channel synthesized 2m. Transceiver.

**HF RECEIVERS**
- FR-101S: 160-10m.

**HF TRANSMITTERS**
- FL-101: 160-10m.
- YO-100: Monitor scope.
- YC-355D: 200 MHz Frequency Counter.

**HF LINEAR AMPLIFIERS**

**WHY SHOULD YOU BUY YOUR YAESU EQUIPMENT FROM WESTERN ELECTRONICS?**
1. The prices are roughly the same elsewhere.
2. The goods are available from stock.
3. As we first introduced Yaesu into U.K., it naturally indicates that we have the most experience in this fine equipment.
4. FREE delivery service by Securicor, and same collection and delivery service for warranty work.
5. As main distributors, we will naturally perform "after sales service."
6. If you intend purchasing, are you sure you will receive the "on the ball" service only available from Western Electronics!
**Electronics (UK) Ltd**

**Note—Summer is almost here—Good time for Antennas**

SOLE IMPORTERS OF HILLS TELOMASTS AND TELETOWERS

<table>
<thead>
<tr>
<th>TELOMASTS</th>
<th>WITH RIGGING KIT</th>
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<tbody>
<tr>
<td>30'</td>
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<table>
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<tr>
<th>TELETOWERS</th>
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<td>42'</td>
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<td>101'</td>
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<th>CDE Rotors</th>
<th>AR-30, £25.00</th>
<th>AR-40, £30.00</th>
<th>CD-44, £60.00</th>
<th>Ham-2, £90.00</th>
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<tr>
<td>50 ohm RG8U, 33p</td>
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<tr>
<td>UR76, 14p</td>
<td>75 ohm T3502, 20p</td>
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<tr>
<td>300 ohm twin flat, 6p</td>
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<td></td>
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<td>300 ohm twin open wire feeder, 18p</td>
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FOR THE PERFECTIONIST — THE FINEST FROM U.S.A.

<table>
<thead>
<tr>
<th>TH6DXX</th>
<th>6-ele., 10-20</th>
<th>£119.00</th>
</tr>
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<tr>
<td>TH3MKII</td>
<td>3-ele., 10-20</td>
<td>£99.90</td>
</tr>
<tr>
<td>TH3 JR</td>
<td>3-ele., 10-20, 600W,</td>
<td>£74.00</td>
</tr>
<tr>
<td>TH2 MKIII</td>
<td>2-ele., 10-20, 2kW, p.e.p.</td>
<td>£69.00</td>
</tr>
</tbody>
</table>

| HY QUAD | 2-ele. quad, 10-20 | £99.00 |
| DB015A | 10-15, 3-ele. | £67.00 |
| 402BA | 2-ele. Mono, 40m. | £121.00 |
| 153BA | 3-ele. Mono, 15m. | £44.00 |

| HY QUAD | 2-ele. quad, 10-20 | £99.00 |
| DB015A | 10-15, 3-ele. | £67.00 |
| 402BA | 2-ele. Mono, 40m. | £121.00 |
| 153BA | 3-ele. Mono, 15m. | £44.00 |

BNC6 Balun | £9.50 |
LA2 Lightning Arrester | £3.00 |

VERTICALS

| IBAYT | 80-10 | £52.00 |
| 18V, 80-10 | £18.00 |
| 14AVQ | £34.00 |
| LC80Q | £11.50 |

Coax prices per metre

| 50 ohm RG8U | 33p |
| UR76 | 14p |
| 75 ohm T3502 | 20p |
| 300 ohm twin flat | 6p |
| 300 ohm twin open wire feeder | 18p |

All prices subject to VAT

And presenting yet another first

SOLE DISTRIBUTORS: HOZAN TOOLS

| S22 | £18.34 |
| 510 | £15.57 |
| 57  | £17.75 |

Electrician Carrying Tool Set

The whole vast range is fully illustrated in our catalogue available, 25p

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**Western Electronics (UK) Ltd**

Agents: JAN PARTRIDGE, G3PRR, CHESHAM, BUCKS. (02405) 4143
ALAN CAMERON, GHSJI, ALLOA (02592) 4653
DAVID LACEY, G6TY, SOLIHULL, WARKS., 021-744 4438

Hours of business: 9.15 - 5.15, 9 - 12.30 (Saturdays)

I-3 WEST PARK ROAD, SOUTHAMPTON
TELEPHONE: SOUTHAMPTON 27464
CABLES: WESTRONICS, SOUTHAMPTON
TELEX: 47388 WESTRONICS
NEW! for the serious FM Repeater operator — the **STANDARD C828**!

There's no other choice!

We're so fascinated by this little beauty that we think it makes everything else "obsolete" (or expensive!).

**Price:** £125 + VAT

- 10 watts (Hi), 1w. (Lo) output.
- 12 channels SIMPLEX or REPEATER.
- Single crystal control of REPEATER means you only have to buy 1 CRYSTAL PER REPEATER.
- Fitted 520, 522, R5, R6 and R7.
- LED (BUSY) indicates whether you have accessed the repeater or not.
- LED's to indicate EXTERNAL VFO, TRANSMITTER ON REPEATER OPERATION.
- SPEAKER/MIC gives PRIVATE LISTENING and has switch to override the channel selector enabling a changeover to be made to an external VFO.
- SIZE: mm 84 wide x 24 deep x 6 high.
- TONEBURST is built in.

---

NEW!

**HERE'S THE LATEST IN SSTV**

From HAMVISION

This advanced system is packed full of features and beautifully styled. The SS-727M (Monitor) and SS-727C (Camera with lens) is £485 + VAT.

NEW!

**REX DG-100** 10-160m.

**DIGITAL TRANSCEIVER** £399 + VAT

NEW!

**CO-AX SWITCH**

DC - 1500 MHz, 1 KW

This is a superb commercial quality co-axial switch. It is NOT a rotary wafer switch but a gold plated microstrip line constant impedance device.

**Specification:**
- Power handling capability: 1 kW. AM. Insertion loss less than 0.2 dB. Isolation better than 80 dB, SWR less than 1:1.1 at 1,500 MHz. Impedance 50 ohms.
- Connectors: UHF standard (gold flashed). BNC, N, C & F available to order.

NEW!

**AC-3**

Remotely operated Antenna Switch

No extra cables required!

The AC-3 enables one of 3 antennas to be remotely selected using a single co-axial feeder. No multicored cable is required. Handles 500w. pep up to 150 MHz. Connectors: UHF. Without doubt this is the best 3-way remotely operated switch we have ever seen.

CATALOGUE. We will be pleased to send you a copy of our COMMUNICATIONS EQUIPMENT catalogue (25p) or TOWERS, ANTENNAS and ROTORS catalogue (25p). No SAE required.
# Radio Shack Ltd.

Just around the corner from West Hampstead Underground Station

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### Drake Receivers and Accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>2-AC</td>
<td>Crystal Calibrator for 2-C</td>
<td>£12.50</td>
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<tr>
<td>2-CQ</td>
<td>Q-Multiplier/Printer for 2-C</td>
<td>£33.75</td>
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<tr>
<td>2-R</td>
<td>Receiver for TRC-2U</td>
<td>£33.75</td>
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<tr>
<td>2R100</td>
<td>Filter for R-4C (250 kHz)</td>
<td>£33.75</td>
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<tr>
<td>2R750</td>
<td>Filter for R-4C (500 kHz)</td>
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<tr>
<td>2R1500</td>
<td>Filter for R-4C (1 kHz)</td>
<td>£33.75</td>
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<tr>
<td>2R6000</td>
<td>Filter for R-4C (6 kHz)</td>
<td>£33.75</td>
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<tr>
<td>4-4</td>
<td>Noise Blanker for 4-C</td>
<td>£43.13</td>
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<td>4-5</td>
<td>Matching Speaker for 4-C</td>
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<tr>
<td>5-N8</td>
<td>Receiver for TRC-5</td>
<td>£13.13</td>
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<td>5-NB</td>
<td>Receiver for TRC-5</td>
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<td>SPR-4</td>
<td>Receiver-General Purpose</td>
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<td>A-4L</td>
<td>Loop Antenna for SPR-4</td>
<td>£18.88</td>
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<tr>
<td>A-5B</td>
<td>Noise Blanker for SPR-4</td>
<td>£18.88</td>
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<tr>
<td>S-5C</td>
<td>100 kHz Calibrator for SPR-4</td>
<td>£13.75</td>
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<td>T-4C</td>
<td>Transceiver, TRC-4, 4XC</td>
<td>£23.75</td>
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<tr>
<td>DC Power Cord</td>
<td>for SPR-4</td>
<td>£23.75</td>
</tr>
<tr>
<td>A-4D</td>
<td>Drake Transmitter with base</td>
<td>£16.88</td>
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<td>Drake Transmitter with base</td>
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### SHURE MICROPHONES

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### HY-GAIN ANTENNAS - Carriage Free

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<td>1BHT</td>
<td>600-MHz, Vertical Tower</td>
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<td>1D7AQ</td>
<td>600-MHz, 20-trapped vertical</td>
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<td>1C4AQ/1WB</td>
<td>100-MHz, trapped vertical</td>
<td>£45.00</td>
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<td>1D8AQ</td>
<td>200-MHz, 20-trapped vertical</td>
<td>£55.00</td>
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<tr>
<td>1L7AQ</td>
<td>200-MHz, 20-trapped vertical</td>
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<td>200-MHz, 20-trapped vertical</td>
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### JAYBEAM ANTENNAS

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### HUSTLER MOBILE ANTENNAS

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### Circle Enquiries

Carriage extra on all items  ALL PRICES INCLUDE VAT

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**SOLID STATE MODULES**

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### Microwave Modules Products

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<tr>
<td>M-20</td>
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<td>£9.00</td>
</tr>
</tbody>
</table>

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** kisses goes to your trade-ins including kardan B and rodagons**

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**Contact Us: 01-624 7174**

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**Radio Shack Ltd.**

188 BROADHURST GARDENS

LONDON, NW6 3AY

Just around the corner from West Hampstead Underground Station

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**Giro Account No.: 588 7151**

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**Volume XXXIII**  
**The Short Wave Magazine**  
**188 BROADHURST GARDENS**  
**LONDON, NW6 3AY**  
**Just around the corner from West Hampstead Underground Station**  
**Telephone: 01-624 7174**  
**Cables: Radio Shack, London, N.W.6**
10-Band Amateur Receiver

R-5995

Trio's new solid-state R-5995 includes all the fine features made famous by the former 599 series along with several innovations, additions and improvements which make this receiver top value. It not only covers all amateur radio bands from 160m. (1.8 MHz) to 10m. (29.7 MHz), but also the 11m. (26.9-27.3 MHz), the 2m-band (144 MHz) and the 2m-band between 144 MHz and 146 MHz due to built-in special converter circuits.

All-Mode Operation—Another "full house" feature of the R-5995: three separate demodulator circuits permit sub reception in upper and lower sideband, AM reception with or without Auto Noise Limiter (ANL) as well as FM reception.

Ultra-sensitive RF Stage—Due to extensive use of the latest FETs and RF semi-conductor devices the R-5995 offers optimum sensitivity, spurious suppression, large-signal selectivity with virtually no cross modulation. Input sensitivity in ssb mode is better than 0.3μV on all bands between 160m, and 10m, better than 2μV in AM mode on 2m. for 10dB S+N/N.

Interference-free Reception—The Automatic Gain Control (AGC) can be switched to FAST or SLOW in accordance with respective receiving mode and guarantees clearly legible Rx signals. The Noise Blanker circuit effectively eliminates pulse-type noises such as car ignition system interference, etc. without affecting the input sensitivity. The additional Squelch circuit is continuously adjustable and suppresses background noise during FM reception.

Highly advanced VFO—Equipped with latest dual-gate MOSFETs provides stable undistorted output signals. In conjunction with the FET mixer circuit and the diode switch-selected crystal filters the new VFO assures utmost frequency stability with less than ± 100Hz drift after 60min, warmup time.

Precision two-speed Dial Drive Mechanism—Employing a multi-stage reduction gear permits velvet-smooth tuning. Only precision milled solid brass gears with miniature ball-bearings are used for this gear train which drives the main and sub tuning dials without mechanical backlash. The sub tuning dial covers a range of 600 kHz with 25 kHz calibration, whereas the main tuning dial covers a 100 kHz band section with 1kHz calibration. A built-in 25kHz crystal marker oscillator assures fast and accurate dial calibration.

Versatile Operating Modes—In conjunction with the matching ssb/am/cw/Transmitter T-5995, the so-called "crossover" switching of both units permits either independent Tx and Rx or combined transceive operation, using either the receiver’s or transmitter’s built-in VFO for master tuning plus RIT (Receiver Incremental Tuning) for transceive operation with offset Rx frequency, but without affecting initial transmitter tuning. Moreover the R-5995/T-5995 combination offers fixed channel operation on five crystal frequencies of own choice—ideal for frequent local and district QSOs.

Packed with Extras: automatic and manual bandwidth control, coupled with the mode switch selects the range bandwidth for each operating mode; built-in 8-element crystal filters for usb, lsb, cw and am; 35-channel tuning for own choice of channels; with mode switch automatically selects the appropriate filter stages. The Noise Blanker circuit effectively eliminates pulse-type noises such as car ignition system interference, etc. without affecting the input sensitivity. This is the topic most talked about on the air these days and we have some thoughts about an ultimate processor developed by our technical staff at Matlock.

This is the topic most talked about on the air these days and we have some thoughts about an ultimate processor developed by our technical staff at Matlock.

All speech processing is designed to make greater use of the available power of a transmitter by reducing the peak/average ratio of the speech envelope. This can be achieved by either increasing the average power or clipping the peaks. The system designed by Lowe Electronics is based on the concept of driving the transmitter to peak power all the time so that no power at all is wasted, and then superimposing the communication intelligence on this signal. An enormous amount of time and effort has gone into the design of a unit to carry out this function and by careful value engineering, we have managed to produce it at only £25 including VAT (passage 37p). It’s called a morse key.
LOWE ELECTRONICS

COMMAND THE BAND — ANY FREQUENCY — ANY MODE WITH THE
TRIO TS 700

BRIEF SPECIFICATION
FULL VFO COVERAGE OF 2 METRES. 144-146 MHz
ALL MODE OPERATION AM, FM, USB, LSB, CW
POWER OUTPUT 10w. MINIMUM
DUAL POWER SUPPLY 240/120v. AC 50/60Hz AND 12-16v. DC

It is obvious from the basic specification that the TRIO TS700 is a totally new concept in 2 metre amateur gear. What is not obvious are the reasons why the TS700 is the finest 2 metre transceiver available today. For example:

(1) The AM transmission (and the TS700 is the only medium priced rig to offer AM) is true double sideband, and not SSB with re-inserted carrier.

(2) The PA and driver transistors have been chosen for optimum linearity in all modes. Both driver and PA run from a 20v. supply to set a new standard in low intermodulation distortion for semiconductors. The 20v. is derived from a TRIO patented DC inverter which runs even when using the 12v. DC input.

(3) No more drifting repeater access tones. The TS700 employs a miniature tuning fork oscillator which is incredibly stable. Another TRIO exclusive feature.

(4) Automatic repeater shift (600 kHz) built in as standard—no accessory crystals to buy. Repeater shift is operational in either VFO or crystal control modes.

(5) Dual ratio gearbox giving 25 kHz/TURN and 100 kHz/TURN means rapid tuning across the band together with superb bandspread for those weak SSB signals.

(6) Front panel one knob tuning of all 2 metre tuned circuits for transmitter and receiver gives optimum gain and low spurious outputs. No broadband compromises in TRIO equipment.

There is so much more to say about the TS700—why not call us if you want more detail. We will be happy to send a complete specification on request.

Remember, you must see and try out the TS700 before considering any other 2 metre transceiver. There is really no comparison.

PRICE £300 (VAT exc.)
ALL PRODUCTS PREVIOUSLY ADVERTISED ARE STILL AVAILABLE
SEND 20p FOR POSTAGE AND RECEIVE FULL CATALOGUES
CARRIAGE. The amounts shown under this heading are for carriage either by Securicor 24 hour service, first class mail, or, in the case of heavier items (over 2 lbs.), parcel post. The Securicor charge is £2.20, other items are charged at the current postal rates.

### Price List — June 1975

**TRIO**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Net Price</th>
<th>Price to include VAT</th>
<th>Carr.</th>
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<tbody>
<tr>
<td>TS900 and AC power supply</td>
<td>£480.00</td>
<td>£600.00</td>
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<tr>
<td>DS900 DC power supply</td>
<td>£640.00</td>
<td>£80.00</td>
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<tr>
<td>VFO900 external VFO</td>
<td>£1100.00</td>
<td>£137.50</td>
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<tr>
<td>TS900 CW filter</td>
<td>£290.00</td>
<td>£36.25</td>
<td>20p</td>
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<tr>
<td>TS520 transceiver</td>
<td>£290.00</td>
<td>£362.50</td>
<td>£20.00</td>
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<tr>
<td>VFO520 external VFO</td>
<td>£355.00</td>
<td>£68.75</td>
<td>£20.00</td>
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<tr>
<td>SP520 optional external speaker</td>
<td>£12.00</td>
<td>£15.00</td>
<td>54p</td>
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<tr>
<td>TS520 CW filter</td>
<td>£21.00</td>
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<tr>
<td>TS700 2m. All mode transceiver</td>
<td>£300.00</td>
<td>£375.00</td>
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<tr>
<td>Fixed channel crystals for TS700</td>
<td>£212.00</td>
<td>£29.90</td>
<td>10p</td>
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<tr>
<td>VOX unit for TS700</td>
<td>£150.00</td>
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<tr>
<td>TR7200CG 2m. Car transceiver</td>
<td>£125.00</td>
<td>£156.25</td>
<td>£20.00</td>
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<tr>
<td>TR2200G 2m. Handheld transceiver</td>
<td>£60.00</td>
<td>£100.00</td>
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<tr>
<td>Crystals for TR2200G or TR2200CG, each</td>
<td>£2.32</td>
<td>£2.90</td>
<td>10p</td>
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<tr>
<td>Crystals as above per channel</td>
<td>£4.20</td>
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<tr>
<td>VFO30G external VFO for TR2200G</td>
<td>£55.00</td>
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<tr>
<td>VB2200 10 watt amplifier for TR2200G</td>
<td>£29.00</td>
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<tr>
<td>BP10 NiCad battery pack for TR2200G</td>
<td>£110.00</td>
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<tr>
<td>TR7010 2m. SSB transceiver</td>
<td>£165.00</td>
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<tr>
<td>R599S Amateur band receiver</td>
<td>£275.00</td>
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<tr>
<td>T599S Companion transmitter</td>
<td>£265.00</td>
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<tr>
<td>QR666 General coverage receiver</td>
<td>£130.00</td>
<td>£165.00</td>
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<tr>
<td>QR-6MK 500kHz marker for QR666</td>
<td>£850.00</td>
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<tr>
<td>Extra for fitting QR-6MK, if required</td>
<td>£11.50</td>
<td>£12.88</td>
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<tr>
<td>QR-6FM FM tuner for QR666</td>
<td>£21.00</td>
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<td>34p</td>
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<tr>
<td>Extra for fitting QR-6FM, if required</td>
<td>£4.20</td>
<td>£5.25</td>
<td>10p</td>
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<tr>
<td>HC-2 Ham clock</td>
<td>£11.00</td>
<td>£11.88</td>
<td>46p</td>
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<tr>
<td>MG-10 hand microphone with PTT</td>
<td>£6.30</td>
<td>£7.88</td>
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<tr>
<td>MC-50 table microphone with PTT</td>
<td>£18.00</td>
<td>£23.25</td>
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<tr>
<td>LF-30 low pass filter</td>
<td>£9.00</td>
<td>£11.25</td>
<td>46p</td>
</tr>
<tr>
<td>BFP-2 2m. Band pass filter</td>
<td>£8.00</td>
<td>£10.00</td>
<td>46p</td>
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<tr>
<td>PS5 regulated 13.5v. DC psu/digital clock</td>
<td>£243.00</td>
<td>£303.75</td>
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**Galaxy**

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<th>Net Price</th>
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<th>Carr.</th>
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<tbody>
<tr>
<td>R1530 General coverage receiver</td>
<td>£750.00</td>
<td>£937.50</td>
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**Hallicrafters**

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<th>Net Price</th>
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<tbody>
<tr>
<td>FFP-300 Mk. I Transceiver</td>
<td>£290.00</td>
<td>£362.50</td>
<td>£20.00</td>
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<tr>
<td>Mobile kit for FFP-300</td>
<td>£10.00</td>
<td>£12.50</td>
<td>46p</td>
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<tr>
<td>Fan kit for FFP-300</td>
<td>£20.00</td>
<td>£25.00</td>
<td>34p</td>
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**Venus Slow Scan TV**

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<th>Item Description</th>
<th>Net Price</th>
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<tbody>
<tr>
<td>SS2 Slow scan station monitor</td>
<td>£230.00</td>
<td>£287.50</td>
<td>£2.20</td>
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<tr>
<td>SS2 Slow scan station monitor kit</td>
<td>£155.00</td>
<td>£195.00</td>
<td>£2.20</td>
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<tr>
<td>C-1 camera</td>
<td>£255.00</td>
<td>£318.75</td>
<td>£2.20</td>
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**Nihon Dengyo**

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<th>Net Price</th>
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<th>Carr.</th>
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<tr>
<td>Liner 2m. SSB transceiver</td>
<td>£145.00</td>
<td>£181.25</td>
<td>£20.00</td>
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<tr>
<td>LA-106 Linear Amplifier</td>
<td>£165.00</td>
<td>£206.50</td>
<td>£20.00</td>
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<tr>
<td>FS-1007P 2m. FM Scanning Transceiver</td>
<td>£220.00</td>
<td>£275.00</td>
<td>£20.00</td>
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<tr>
<td>AMR-104 2m. Scanning Monitor Receiver</td>
<td>£65.00</td>
<td>£81.25</td>
<td>62p</td>
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<tr>
<td>Marine version of AMR-104</td>
<td>£86.00</td>
<td>£107.50</td>
<td>62p</td>
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<tr>
<td>R115E regulated psu for the Liner 2</td>
<td>£25.00</td>
<td>£31.25</td>
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**Low Electronics**

<table>
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<th>Net Price</th>
<th>Price to include VAT</th>
<th>Carr.</th>
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<tbody>
<tr>
<td>Marine monitor receiver fitted 3 channels</td>
<td>£195.00</td>
<td>£232.50</td>
<td>£20.00</td>
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</table>
| Extra crystals available — see under "CRYSTALS."

**Low Monitor Receiver REC R1420C**

<table>
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<th>Item Description</th>
<th>Net Price</th>
<th>Price to include VAT</th>
<th>Carr.</th>
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<tbody>
<tr>
<td>Receiver complete, less crystals</td>
<td>£195.00</td>
<td>£232.50</td>
<td>£20.00</td>
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<tr>
<td>&quot;fitted 1 channel&quot;</td>
<td>£21.00</td>
<td>£27.26</td>
<td>46p</td>
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<tr>
<td><strong>Note:</strong> FS1007P transceiver and AMR-104 Monitor Receiver fitted</td>
<td>£22.50</td>
<td>£27.50</td>
<td>46p</td>
</tr>
<tr>
<td>Marine monitor receiver fitted 8 channels</td>
<td>£21.00</td>
<td>£27.50</td>
<td>46p</td>
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**Microwave Modules**

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<th>Item Description</th>
<th>Net Price</th>
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<tr>
<td>MCI144/28 LO</td>
<td>£16.30</td>
<td>£20.38</td>
<td>10p</td>
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<tr>
<td>MMC70/28</td>
<td>£15.00</td>
<td>£19.00</td>
<td>10p</td>
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<tr>
<td>MMC432/28</td>
<td>£18.10</td>
<td>£22.60</td>
<td>10p</td>
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<tr>
<td>MMC432/144</td>
<td>£18.10</td>
<td>£22.60</td>
<td>10p</td>
</tr>
<tr>
<td>MMC1296/28</td>
<td>£24.00</td>
<td>£30.00</td>
<td>10p</td>
</tr>
<tr>
<td>MMC1296/144</td>
<td>£24.00</td>
<td>£30.00</td>
<td>10p</td>
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<tr>
<td>MMY432</td>
<td>£17.50</td>
<td>£21.88</td>
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**Weir V.H.F. Equipment**

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<th>Net Price</th>
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<tbody>
<tr>
<td>Weir 2m. Mosfet Converter 28MHz I.F.</td>
<td>£14.00</td>
<td>£17.50</td>
<td>10p</td>
</tr>
</tbody>
</table>

**Crystals**

We stock all the popular channels for all the equipment we sell as well as many crystals for other F.M. equipments.

- Price per single crystal | £2.32 | £2.90 | 10p |
- Where 2 crystals per channel are required | £4.20 | £5.25 | 10p |
LOWE ELECTRONICS

VALVES
For the very common valves, it pays to shop at one of the large
London importers who buy in such enormous quantities that they
can sell retail at a lower price than we can buy wholesale.
We do, however, maintain stocks of the more unusual valves
which are used in the equipment we sell, and which you may
find some difficulty in obtaining.

<table>
<thead>
<tr>
<th>Valve</th>
<th>Price to include VAT</th>
<th>Carr.</th>
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<tbody>
<tr>
<td>6AQ5, 6BH6, 6C6G6, 6CL6, 6L8A, 6EW6, 6GH8, 12B1YA</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>6F6K</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>6J6C, 6KD6, Matched Pairs</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>6L6B, S2001 direct replacement, Each</td>
<td>£3.20</td>
<td>£4.00</td>
</tr>
<tr>
<td>6L6Q, Matched Pairs</td>
<td>...</td>
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2m. "J" Beams, 50 ohm impedance only

<table>
<thead>
<tr>
<th>Beam</th>
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<tbody>
<tr>
<td>SY/2M</td>
<td>£4.30</td>
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<tr>
<td>BY/2M</td>
<td>£5.50</td>
<td>£7.00</td>
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<tr>
<td>10/2M</td>
<td>£11.00</td>
<td>£13.50</td>
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<tr>
<td>PBM3/2M</td>
<td>£16.90</td>
<td>£21.12</td>
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<tr>
<td>SY2/2M</td>
<td>£8.20</td>
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<td>8X/2M</td>
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<td>10X/2M</td>
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<td>DS/2M</td>
<td>£7.92</td>
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<tr>
<td>DB/2M</td>
<td>£10.50</td>
<td>£13.12</td>
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<tr>
<td>PMH/2C</td>
<td>£2.85</td>
<td>£3.56</td>
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<tr>
<td>SVMK/2M</td>
<td>£2.20</td>
<td>£2.75</td>
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<tr>
<td>XD/2M</td>
<td>£5.75</td>
<td>£7.19</td>
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<tr>
<td>UGP/2M</td>
<td>£6.15</td>
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<tr>
<td>PMH2/2M</td>
<td>£3.55</td>
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<tr>
<td>PMH4/2M</td>
<td>£9.15</td>
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70 cms. "J" Beams

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<tr>
<td>D8/70</td>
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<tr>
<td>MM46/70</td>
<td>£12.10</td>
<td>£15.12</td>
</tr>
<tr>
<td>PBH18/70</td>
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2m. Mobile Whips

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<tbody>
<tr>
<td>&quot;J&quot; BEAM</td>
<td>£6.00</td>
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G-Whips

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<tr>
<th>Band</th>
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<tr>
<td>Tri-band</td>
<td>£12.30</td>
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<tr>
<td>Multimode</td>
<td>£14.30</td>
<td>£17.87</td>
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<tr>
<td>160, 80 or 40m, coils for the above. Each</td>
<td>£4.10</td>
<td>£5.12</td>
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<tr>
<td>Top whip section for the above</td>
<td>£1.10</td>
<td>£1.37</td>
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<tr>
<td>Basemount for all G-Whips</td>
<td>£1.65</td>
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H.F. Beams

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<tr>
<td>Hy-Gain TH3 3j 20, 15 and 15m. 3 element</td>
<td>£74.00</td>
<td>£92.50</td>
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<tr>
<td>Hy-Gain Mk. 3 20, 15 and 10m. 3 element</td>
<td>£99.90</td>
<td>£124.87</td>
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</tbody>
</table>

Our terms are cash or cheque with order—despatch of stock items is by return. If any item is out of stock, your money is immediately refunded.

PART EXCHANGES WELCOME

PRICES, UNFORTUNATELY, ARE SUBJECT TO CHANGE WITHOUT NOTICE

EASY TERMS

MAIL ORDERS — PLEASE ADDRESS ALL MAIL ORDERS DIRECT TO MATLOCK

73 from BILL G3UBO/VE8DP, ALAN G3MME, JOHN G3CY/5N2AAC, IAN G3ZYC
THE SHORT WAVE MAGAZINE

June, 1975

G3LRB - G3MCN

THE NORTH WEST'S
LEADING STOCKISTS OF AMATEUR
RADIO EQUIPMENT

ARAC 102
MOSFET
RECEIVER

28 - 30 MHz
144 - 146 MHz
AM FM SSB
12v. DC operation. Built in speaker. 1uV for 10 dB S/N. Output 1-5 watt 8 ohm
PRICE £103.00

ATAL 228
Solid State 8 watt AM/FM Transmitter
PRICE £145.00

YAESU MUSEN

FT1018 Transceiver
FTA0 Transceiver
FTDX401 Transceiver
FR101D Receiver
FT200 Transceiver
FL100 Linear
YC355 Frequency Counter
FL101 Transmitter
YO 100 Monitoroscope

ANTENNA ROTATORS
AR22R
AR19
CO44
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Stolle Automatic 2010
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BARLOW WADLEY
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TR801 FM Tuner

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TR4C Transceiver and AC PSU

HY-GAIN ANTENNA RANGE
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700CX Transceiver
3008 Transceiver
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KW 1-E 80-100 metres
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KW Balun
KW Antenna Switch

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Single Meter SWR Bridge £6-80
3in. Ceramic Insulators £32p
Ceramic Diode "T" Pieces £32p
PL209 plugs £4p, SC209 Sockets £4p
Cable Reducers £14p
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UR10 UR67 4hp UR233 £16p
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3in. Ceramic Insulators... £32p
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Cable Reducers... £14p
300 ohm and 75 ohm twin feeder... £8p
UR10 UR67 4hp UR233... £16p
Omega Noise Bridge TE701... £14.65
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Maya Practice Oscillators... £3-75
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The FT75B is a higher power replacement (120W P.I.P.) of the FT75, the unit which along with the 101 has been responsible for the upsurge in HF mobile operation around the world. On bands 80 through to 10 there are 3 VXO controlled crystal channels as well as provision for external VFO operation. The FT75B is all solid state except the final and driver stages. Included is an excellent noise blanker and also a squelch circuit for quiet channel monitoring.

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The FT224 is an advanced Solid State transceiver featuring 10W output with a 23 channel flexibility (excluding priority channel) all on one complete package. The FT224 includes a built-in tone burst for repeater actuation. Automatic high VSWR protection of the final transistor and reverse power line polarity protection are included. The wireless comes complete with built-in speaker, mobile mounting brackets and dynamic microphone.

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The FT1018 is except for driver and PA, fully solid state using reliable and serviceable “computer type” plug-in modules. All that is needed for instant “on the air” operation from 160 through 10m is either 12v, DC or 234v. AC and, of course, an antenna.

The FL2100 features operation 80 through to 10m, using two rugged 3728 carbon plate tubes in class “B” grounded grid circuits with individually tuned input coils for each band, and Bifilar wound ferrite filament chokes.

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THE SHORT WAVE MAGAZINE

June, 1975

THE KP202 Super Low Cost Walkie-Talkie. NEW from SMC

144 MHz LINEARS RFL

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145 (95, 96, 97, 180, 360, 364) £4.30 pair

Simplex £3.30 pair £3.00 single

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Simplex £3.50 pair £3.00 single

145 (150, 500, 525, 550, 575, 600)

Duplex £3.90 pair £3.50 single

145 (075/675, 100/700, 125/725, 150/750, 175/775)

Invers £3.00 each

145 (-800, 150, 150, 150, 175, 750, 750, 750)

STANDARD C826MB and GI46A

143 (500, 525, 550, 575, 600, 675, 700, 750, 800)

All £3.50 pair, 41.80 single crystal

Mutel T 18 TR200 44 MHz Rx 12 MHz Tx £3.50 pair

9 MHz SSB FILTERS YF90/F/S

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£2.00 single

RFL 144 MHz LINEARS RFL NEW MODELS

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DC 10W drive. Available mid June

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£110 (Ex stock). Digital readout to ±100Hz for your FT-101(B), FT401(B), etc. 21 IC's 76 diodes provide a most worthwhile accessory. (+ 25%).

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Tiltower Telecopic post mounted ex-stock. The tilting action allows ease of maintenance and changes of antennas. The relatively low weight eases installation problems. From: £172.25 (+ 8%)

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SP101 matching speaker. £11.00 (n/c)

FV101 remote vi0. £48.11 (n/c)

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FT200 80-10m. transceiver £17.00 (n/c)

FP200 matching speaker, AG supply £45.00 (n/c)

FT220 2m. SSB/FSK transceiver, 240V/AC £264.00 (n/c)

FT224 2m. FM. 24GHz, terrain burst £130.00 (n/c)

FP2 matching AC/charger supply £38.00 (n/c)

Y3230 200 kHz counter £125.00 (n/c)

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FT2 Auto £24.95 (n/c)

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PBM140m, parabolic £11.15 (n/c)

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**NEW!**

**TECHNICAL ASSOCIATES COMPLETE RECEIVER AUDIO FILTERING UNIT**

**SUITABLE FOR SSB and CW**

1 watt o/p drives loudspeaker

8 positions of selectivity:

80 / 110 / 180 / 200 / 300 / 500 / 2000 Hz High Pass

**ONLY £24.50 — VAT (50p)**

G-WHIPS Mobile Antennas—Ex stock.

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**HY-GAINS ANTENNAS (inc. VAT)**

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18AV 10–80–vertical £63.00 (n/c)

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**2METER SSB (inc. VAT)**

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QR666 receiver 160-10m. plus general coverage 10–160m. £162.50 (n/c)

Matching calibrator £10.95 (25p)

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**LOWE 2M. MONITOR RECEIVER (inc. VAT)**

2m, FM 6 channel receiver complete with all channels fitted £36.19 (50p)

2m, FM receiver, less xtals £24.95 (50p)

Channel xtals £1.00 (25p)

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**2METER HAND PORTABLES (inc. VAT)**

KEN KPS1 and KPS2 3m. fm transceiver, 6 channels with 145 and 145-5 kHz fitted. £93.75 (50p)

Noise burst option available £12.00 (25p)

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**TONE BURST MODULES**

Dual 1700 and 1750 Hz o/p £4.60 (25p)

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**ROTATORS**

AR38 £31.25 (1p)

AR40 £37.50 (1p)

CDE 44 £25.00 (1p)

Ham £25.00 (1p)

Ssole 2010 £40.62 (1p)

Ssole 2030 £45.95 (1p)

9 control cable £16.00 (1p)

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50 ohm UR43 ...

50 ohm UR67/RGBU ...

75 ohm standard ...

75 ohm UHF low loss ...

300 ohm feeder ...

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**MICROWAVE Modulars**

NEW! 70 cm. transverter £75.55 (50p)

2m. converters 2-4/4-6/28-30 £19.00 (25p)

4m. converters 28-30/50-60 £21.00 (25p)

75cm. converters 144-146 £23.63 (25p)

2m. dual o/p pre amp £11.25 (25p)

1296 MHz converters 28-20 £29.99 (25p)

2m. converter 28-30/16 osc. £17.60 (25p)

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Technical Associates Advanced speech compressor with variable compression, decay, time and noise gate provides the most economical way of increasing talk time. WITHOUT ANY DISTORTION. Still offered at £22.68 (30p) it’s a bargain with the famous Shure 444 mit at £35 the two WITHOUT ANY DISTORTION.

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**STATION ACCESSORIES, etc. as per last issue**

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MFJ-100 unboxed calibrator £10.82 (30p)

MFJ-100 calibrator less xtal £9.90 (50p)

MFJ-100 calibrator less xtal £9.90 (50p)

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**MICROPHONES**

Shure 444 £65.95 (30p)

Shure 444 £65.95 (30p)

Yaesu YD844 £86.66 (30p)

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**SOLAR HAMMERS**

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**FMJ-100 calibrator £10.82 (30p)**

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**CMOS ELECTRONIC LEVEL DETECTOR**

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144MHz Mosfet Converters

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MCC144/28
MCC144/28 LO (with 116 MHz output) Price £16.42 inc. VAT

We have extended our popular range of single conversion converters to include the following I.F.s:

70 MHz MOSFET CONVERTER
I.F.s available : 2-4, 4-6 MHz Price £16.42 inc. VAT

70 MHz CONVERTER FOR SSB—MCC70/28 LO
SSB is now widely used on the 70 MHz band, and we are now manufacturing our 70 MHz converter with the local oscillator output facility provided at 42 MHz. Specification and price are as above for the 144 MHz version.

144 MHz DOUBLE CONVERSION MOSFET CONVERTER
I.F.s available ex-stock : 2-4, 4-6 MHz Price inc. VAT £16.42

This unit was developed to meet the heavy demand for a converter suitable for use with receivers having better performance at lower frequencies. It uses two dual-gate mosfet mixers, both fed from the output of a 70 or 71 MHz crystal oscillator. Selectivity is obtained at the first IF in the 74 MHz range, thereby overcoming the usual problems associated with low-I.F. single conversion converters.

136 MHz SATELLITE BAND CONVERTER
I.F.s available : 28-30 MHz and others Price inc. VAT £16.42

All our converter and varactor units are housed in durable alloy diecast boxes, well-finished in matt-black stove-enamel. Each unit measures 110 x 60 x 31 mm, and weighs approximately 200 gms. With the exception of the 1296 MHz units, Belling-Lee 75 ohm sockets are used for RF input and output connections. Units can be supplied from stock fitted with 50 ohm BNC sockets at an additional charge of 40p per socket. PTFE feedthrough insulated terminals are used for DC power connection.

Terms : Cash or cheque with order, or by Giro Transfer to our account, no. 663 4159.

NB—OUR PRODUCTS STILL CARRY 8% VAT.

136 MHz VARIACCTOR TRIPLER

Maximum input power at 136 MHz : 24 watts. Typical output power (at maximum input) : 14 watts. Price inc. VAT £22.00

1296 MHz VARIACCTOR TRIPLER

Maximum input power at 1296 MHz : 24 watts. Typical output power (at maximum input) : 14 watts. Price inc. VAT £22.00

432 MHz MOSFET CONVERTER
I.F.s available ex-stock : 14-16, 18-20, 24-26, 28-30, 144-146 MHz. Price inc. VAT £19.55

This unit uses a dual-gate mosfet mixer for excellent strong signal performance preceded by two BFY90 transistor RF stages for high sensitivity. All UHF tuned circuits are printed using Microstrip technology, and a crystal in the 100 MHz region is used in the oscillator chain to overcome unwanted beats in the tuning range.

432 MHz MOSFET CONVERTER
I.F.s available ex-stock : 2-4, 4-6 MHz Price inc. VAT £16.42

This unit uses a high performance 28-30 MHz tunable receiver.

1296 MHz CONVERTER

This converter has been developed using an extension of the microstrip techniques that have been well proven in our 70 cm. converter design. Two versions of the design are available using either a 96 MHz or 106-66 MHz crystal to produce I.F.s of 144-146 MHz or 23-30 MHz respectively, corresponding to the 1296-1298 MHz band. We are using crystals of a very tight tolerance to minimize the offset that would otherwise be very noticeable when using high performance 28-30 MHz tunable receiver. The multiplier chain uses three BFY 90 transistors and the mixer is fabricated using a pair of MA 4882 Schottky diodes in a balanced hybrid ring configuration. The I.F. head amplifier uses a selected low noise dual-gate mosfet to give an overall noise figure which is typically better than 8-5 dB, and a gain of 25dB. Microstrip UHF circuitry ensures repeatability of this high performance design. The unit is housed in the same small die-cast box as the rest of our range of converters and is fitted with 50 ohm BNC connectors for optimum UHF performance. The converter operates from a nominal 12v. supply and is available in negative earth version only. Price inc. VAT £25.92

144 MHz DUAL OUTPUT PREAMPLIFIER

MICROWAVE MODULES LIMITED
11 CRANMORE AVE., CROSBY, LIVERPOOL L23 0QD Tel: 051-928 1610 9 a.m. to 8 p.m.
The Heathkit 5-band HW-101 transceiver. 
It'll make you very pleased with yourself.

Like most Heathkit amateur radio equipment, our HW-101 SSB transceiver comes in kit form. So, besides the enjoyment of using it you'll also have all the satisfaction of knowing you built it. It should make you very pleased with yourself. Especially as it's about the best transceiver in its class. And represents exceptionally good value for money.

Take a look at the technical specifications now and then send for your free Heathkit catalogue. In it you'll find the whole of our amateur radio range together with full details about the easy payments available with the Heathkit Monthly Budget Plan. Which should please you even more.

**HW-101 transceiver specifications**

**Receiver section:**
- **Sensitivity:** Less than 0.35 microvolt for 10 dB signal-plus-noise ratio for SSB operation.
- **SSB selectivity:** 2.1kHz min. at 6 dB down; 7 kHz max. at 60 dB down (3.395MHz filter).
- **CW selectivity:** (with optional CW filter installed) 400 Hz min. at 6 dB down; 2.0 kHz max. at 60 dB down.
- **Input:** Low impedance for unbalanced coaxial input.
- **Output impedance:** 8ohm speaker and high impedance headphone.
- **Power output:** 2 watts with less than 10% distortion.
- **Spurious response:** Image and IF rejection better than 50 dB.

**Transmitter section:**
- **DC power input:** SSB—180 watts PEP; CW—170 watts.
- **RF power output:** 100 watts on 80-15 M, 80 watts on 10 M.
- **Output impedance:** 50ohm to 75ohm with less than 2:1 SWR.
- **Oscillator feed-through or mixer products:** 55 dB below rated output.
- **Harmonic radiation:** 45 dB below rated output.
- **Transmit/receive operation:** SSB, PTT or VOX. CW provided by operating VOX from keyed tone using grid-block keying.
- **CW sidetone:** Internally switched to speaker or headphone in CW mode. Approx. 1000 Hz tone.
- **Microphone input:** High impedance with a rating of –45 to –55 dB.
- **Carrier suppression:** 45 dB down from single-tone output.
- **Unwanted sideband suppression:** 45 dB down from single-tone output at 1000 Hz reference.
- **Third order distortion:** 30 dB down from two-tone output.
- **RF compression:** 10 dB or greater at 1mA final grid current.

**General:**
- **Frequency coverage:** 3.5 to 4.0; 7.0 to 7.3; 14.0 to 14.5; 21.0 to 21.5; 28.0 to 28.5; 29.5 to 30.0 MHz.
- **Frequency stability:** Less than 100 Hz per hour after 45 minutes warm-up. Less than 100 Hz for ±10% line voltage variations.
- **Modes of operation:** Selectable upper or lower sideband and CW.
- **Dial calibration:** 5kHz.
- **Calibration:** 100kHz crystal.
- **Audio frequency response:** 350 to 2450 Hz.
- **Power requirements:** 700 to 850 V at 250mA with 1% max. ripple; 300 V at 150mA with .05% max. ripple; –115 V at 10mA with .5% max. ripple; 12 VAC/DC at 4.76 amps.
- **Cabinet dimensions:** 6½⁴₁₆" H., 14½₁₈" W., 13½₈" D.
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SHORT WAVE MAGAZINE

(GB3SWM)

Vol. XXXIII JUNE, 1975 No. 380

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AUTHORS’ MSS
Articles submitted for Editorial consideration must be typed double-spaced with wide margins on one side only of quarto or foolscap sheets. Photographs should be lightly identified in pencil on the back with details on a separate sheet. All drawings and diagrams should also be shown separately, and tables of values prepared in accordance with our normal setting convention—see any issue. Payment is made for all material used, and it is a condition of acceptance that full copyright passes to the Short Wave Magazine, Ltd., on publication.

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THEFT OF MAIL—APRIL 30
On the morning of Wednesday, April 30, our mail box at 55 Victoria Street was rifled before arrival of staff. It would have contained material posted to us over April 28-29—that is, immediately following delivery to readers of the May issue, when we would normally receive a fairly heavy post. It is, of course, impossible for us to know what we lost in the way of book orders, subscriptions and such. Obviously, there is nothing whatever we can do about it without the co-operation of readers affected, who should let us know about any orders sent in dated April 28-29 which appear to be outstanding.

POSSIBLE PUBLICATION DELAY
We should warn readers that there is again some unrest in the printing industry, involving one of the key unions. It may be that appearance of the July issue (due on June 27) could be affected. Many other periodicals and provincial newspapers are in the same difficulty. Therefore, if the July issue of SHORT WAVE MAGAZINE is not with you on time, we would ask that this situation be borne in mind before ringing in or writing to us to complain. It can be taken for granted that we always do our utmost—and have done for more than 30 years—to publish on the due date, the last Friday of the month.

R.A.E. COURSES—1975-'76
As in previous years, we shall be listing, starting with the August issue, courses of instruction to be held for the Radio Amateur's Examination, Subject No. 765, City & Guilds. Course organisers are asked to let us have details as soon as possible, addressed “R.A.E.” SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ giving, as well as the address for application, the fee to be charged, the name/callsign of the course instructor and any other relevant information. Uniquely, Amateur Radio is the only hobby activity for which an official examination has to be taken and passed!

RAOTA DINNER MEETING—May 16
The 17th Reunion of the Radio Amateur Old Timers' Association took place in London on May 16, about 60 members and guests being present under the chairmanship of Kenneth Alford, G2DX, the president. Among two-letter calls of early pre-War days there were G2AK, G2Y, G2UV, G5DJ, G5OX, G5RS, G5UK, G5YH, G5YN, G6CI, G6JP, G6LL, G6MN and G6YP—all wearing their years well and still retaining their early enthusiasms. It is intended that next year's Reunion should be centred on a Saturday lunch-time session, rather than on a Friday evening. Qualification for membership of the RAOTA (started some 20+ years ago by the writer of this piece as the British Old Timers' Club) is the holding of a full U.K. licence for at least 25 years. The hon. secretary, RAOTA, is Miss May Gadsden, 79 New River Crescent, Palmers Green, London, N13 5RQ. There is a regular RAOTA net every first Thursday in the month, with G2FUX, QTHR, as ringmaster.

CORRECTION—“QRP on Eighty”
In this article by G3DNF, in the April issue, the 16 lines below Fig. 4 (p. 86) should be read as the caption to Fig. 5, p. 87. And also on p. 87, in the fourth line of text below Fig. 5, the capacitor should be “40015 µF polystyrene” and not as stated, the VC1 referred to being that of Fig. 1 on p. 85.

GOBITUARY—David Corfield, G5CD
We much regret to have to record the passing of this well-known old timer, on April 16 at the age of 69. He was a professional of high standing in the field of radio engineering, and in the sphere of Amateur Radio pioneered the use of FM working and UHF transmission, as well as being an important contributor to the RSGB's Radio Communication Handbook.
One may conceivably have noted a certain hint of disillusion with life on reading the preamble to this piece last month, possibly some sense that Dark Forces were sitting on your 'KFE's aged head. You might be right at that—at precisely the time that a farmer's wife was embedding the front-end of her vehicle into this person's horseless carriage, some five miles away his previous car was being shunted up the hind-quarters; and, as if that were not enough, the sou-in-law in driving the clumping motor managed to dent a hub-cap in a car park. Whoever the guy is with the wax and pins—Lay Off!

In a general sense, there can be no doubt that those who, like G2BJY, believe we should all brew-up everything ourselves, must be laughing at those of us who might have been considering a change of commercial rig—the Chancellor's latest Budget has brought us a 'way from the old situation whereby one could buy a rig without any form of blood-money being involved.

The Bands

Rather like the curate's egg; but what more can we expect at the bottom of the sunspot cycle? However, re-arrangement of the bands has revealed activity, to a greater or less degree, on all of them, for the pleasure of the DX chaser or the plain communicator. Let us start at the bottom, with Top Band, if you read us!

Activity on 160m. may seem to be down on this band, as viewed by someone who has not listened for, say, ten years; but most of this activity which has disappeared with the nature of local weather and nets. If one is in there for an interesting GDX or EDX QSO, either on CW or Phone, there is plenty going on.

Up in Kirkaldy, GM3YOR has been dipping his feet in the HF waters to the detriment of Top Band activity; and in his case, as he is well on with the easy ones, he is now scratching about a bit for some expeditions to fill up the difficult areas. In addition, changing over to shift work and the consequent opportunities to operate at “useful” times on the HF bands has had its effect.

G2BJY (Walsall) divided his time between Top Band and Forty, on the hunt for the “30” prefixes from OK, the end of which was a total of no less than 82 of them which may well make him the top scavenger from G-band. And, we could remark, we go along with Geoff’s feeling that the U.K. authorities could well have followed all the other countries who celebrated the end of Hitler’s War—or, perhaps even better, the Battle of Britain 35 years ago—with a special prefix?

On a different theme, G2BJY has been trying his hand at what might be called QRP reception! This is by reason of a 1-2 TRF unit running about 75p, using a 6AG5 RF stage, 6AG5 triode-strapped as the detector with reaction, and two more 6AG5's to bring signals up to level. However, for serious use headphones are preferred, with an audio filter, and this Rx is being used on a short, about 20ft., aerial, even though OK's have been worked on the “big” wire. We could only make the comment that if we sold chips taken from for the receiver, a power supply from the junk-box or Club junk sale, plus a couple of valves gleaned from the same source and turned into a transmitter (say, a pair of EF91's), plus a bit of wire aloft and a lot under the ground could, even at today’s inflated prices it would get a keen chap on the air and able to enjoy contacts aplenty for well under a fiver.

Looking at the snippets at the bottom of Geoff Watts’ DXNS, as regards Top Band, we notice that A2CBX is QRV on 1828.5 kHz weekends, between 0230 and 0415z-QSL to Dave Harris, P.O. Box 52, Gabarone, Botswana. KV4FZ worked T9DX for his 100th country on the band since 1969, not to mention taking top place in the CQ one-sixty metre contest each year—W1BB had better look to his laurels by the sound of it! On a different tack, WB8APF has made a WAC using two-way SSB on One-Sixty.

Eighty Metres

We had hardly made that comment, last month, on the problems of unwanted noises generated in receiver front-ends and put the copy into the post, when the mail at the salt-mine produced a most interesting Siliconix Application Note, No. 48, referring to the advantages of using a ‘double-balanced mixer’ comprising four U310 FET’s, or, better still, the U350 device which is four U310’s in an oven-controlled case, 142°C maximum, paid about $6.00 each to get the same wafer to give a quite remarkable degree of matching of the FET’s and hence of balance. The note refers to the performance over the range 50-250 MHz, at which the device has a noise figure of 8 dB—more than enough to be used without an RF stage in, for example, a direct-conversion receiver for Eighty of performance probably superior to anything on the market today. An interesting thought!

Two letters came in from G4DMN (Shrewsbury School), the second being a large amendment to the first and realising he had reported some stations twice; as if that were not bad enough, Richard addressed both of them to Justin Cooper of “SWL” from whom they had MF11 therby covered by main force! To be serious for a moment, G4DMN has added another RVATVW to the school aerial farm, and oddly enough finds it relieves him of TV as compared with the dipoles.

On Eighty, the dipoles entraped signals from VP2ABC, 8P6AJ and ZB2CJ, but the run up to A-levels is this term and so have activities have been more academic than DX-oriented.

Next we have a brief letter and log from G3CED (Broadstairs) who seems to have varied his gear quite a lot from band to band, and also to have tried out a new type of ATU with his Joystick. On Eighty, it was either five watts or 750 milliwatts to a BFY52 doubler PA; the latter made contact on CW with DK6VF, F2WW, ONSRL, G3DBZ, G4AYG, G3JL, PAOFV, TK8TM—the “celebration” prefix used by the P’s—using a G3WZZ, finding that going up to five watts made little difference to reports.

G2NJ (Peterborough) maintains his noon-time activity on Eighty QRP and had quite a crop of interesting QSO’s, including G3FMW in Harrogate with two watts; G3CEL, Hyde, on five occasions, of which three were when he was /P from Pwllheli in Wales (with only 35 feet of wire) and two were G2CJ using one watt from Hartogane; G8PG and G2DOJ, both running two watts; G3JUV, the QRP Club spark-plug, with four watts, plus many five and six watters in the Low Power contests.

Yet another QRP artist is G2HKU (Isle of Sheppey) who says his MF11 allowed on to the back of the Ten-Tec receiver is a great help with the writing-out job to always provide the other bloke doesn’t drift! 90 watts of SBH hooked WIWQC/P4 and 6IW8Y who came back with a fast QSL via VE4SK and air-mail, while the QRP CW at one watt (those batteries getting flatter still?) made it to DA2SL, DK3PY, OK30DNJ, ONS5K and PAOF1IN.

Forty

There are people who claim that DXing is best done on 7 MHz at this phase of the sunspot cycle, but it is certainly not for the faint-hearts and refugees from the VHF telephone-links!

G2BJY found conditions for what he calls real DX were pretty poor, but noticed at the same time that often the Eastern Europeans were getting through when he couldn’t, which told him the skip was not right—though some people would have ascribed it the easy way and said those same EU’s were running overpower and unmentionable elements! Nice to hear someone put a problem down to skip and not to crimes against the licence committed by “they”—whoever “they” may be. However, his second place found quite a crop of odd prefixes of which Geoff candidly comments “their significance eludes me!” and a very nice QSO with DL6XT, Lake Chien, and a very rare one for DOK.

G4DMN did not brave the QRM on Forty, but he has now received his second call-sign, EI4CV, on which he is restricted to 25 watts and CW on Twenty and Forty until he has held his G-ticket for a full year— but it’ll be good practice, he reckons. For this old world to hear of a probationary period of a year attached to a U.K. licence brought back memories of twenty-years ago!

G3CED/G3VFA did not risk his real QRM on the band, but were ORO to five watts(!) at which level he hooked HB9AAI, SM7WZ, SM7FYK, EA2JJ, YU3UMC and F6AGH, all on the key—George is a dyed-in-the-wool key-basher ex-pro. operator.

As for G2HKU, Ted stuck to the Big Rig for this band, and CW, accounting for K2BT, KP4BM, PY7ASY, PY7BPA, U8HAU (for a new o.s.e.), VP9HP and YV4II.

Comments

As always, lots of these, some grave, some gay, some quite unprintable! G2HKU kicks his off by wondering at the collection of funny noises infesting Top Band of late, and what they do—for instance, the 141.5 MHz path! But four things serve any useful purpose beyond getting rid of surplus electricity?

G2BJY has been having some surprises at the way people keep their logs—stations operating Vox on Top Band and arguing as to the date they had their last QSO, as one end of the contact appeared
Ernest Phillipson operates G3NVE at 67 Newport Street, Goole, South Humberside, running all bands Top to 10m. and VHF, with an FR-50B as main station Rx and a CR-100 as tunable IF for VHF. Antennas are a TA-32Jr., with beams for 2m./70cm. on a simple home-designed and built rotator and direction indicator. G3NVE was licensed in 1959 and his interest goes back to 1936.

not to have made any entry, even a wrong one, in his log, or the GW who claimed it was their first QSO but who seemed familiar—it turned out their last contact was a fortnight earlier! As Geoff sees it, and your scribe agrees wholeheartedly, apart from the “licence conditions” aspect of the thing, well-kept old logs are a source of much pleasure to study when the band is flat, always bringing back memories of people, places or events.

From WIY we have a Xerox copy of the results of the 1974 CQ WPX Contest, both CW and Phone, a full two months earlier than usual. Looking at the CW results which we have to hand, the U.K. representation was higher than for some years past. HC2YL was at seventh among the world-high scores all-band, EI0RE to top on Eighty, and GM4ASY on Top Band made third place. Of the U.K. entrants, G3F3XB led the all-band with over the million points mark, ahead of sixteen other G’s; GM3BCL led the Jocks home and GW3SLA did the same for the GW’s; in the multi-op. single-transmitter class the leaders were, by country, G3WYX, EI0GRC, G3FFF, GM3ZRC, and GW3UCB. Top single-operator in Ireland was EI2BB, and GB3CMG, competing in the multi-operator multi-transmitter class, racked up over the million points; the total U.K., and Eire entry was no less than forty-five stations—quite a livening-up of interest in the big contests!

Next we have WB2OZW/G5AUP, writing from Park Ridge, N.J., to comment on the recent review of the MFJ CW filter. Paul offers some findings of his own which will be of interest to any CW op. thinking of using one. First, he compared the filter against his previous passive devices, and found it no-contest—the CW out of the MFJ filter is far superior. However, he does make a couple of points of interest as to the best place to connect the box—not, as most of us do, putting it in the headphone leads, but between the slider of the receiver volume control and the grid of the first audio stage, where the level is at its lowest. A good point, at that, which Paul takes further in his Drake 2B by running his unit off a twenty-five volt line, divided down from the 60-volt rail in his receiver, so as to improve further the rejection of overload crud. However, while it is quite safe to do this, one must be sure that the HT never under any circumstances rises above thirty volts, which rather indicates the use of a zener diode to be on the safe side. Keeping the MFJ filter outside the receiver physically, but taking screened leads inside the receiver to the volume control slider, as just mentioned, means that you can control the receiver as normally without fear of overloading the MFJ unit, and also that you can use the receiver headphone jack and speaker in the normal manner. G3KFE has tried this and the improvement is quite noticeable.

The HF Bands

Broadly, things have been about what one would expect for the time of year and the sunspot cycle. Ten has had a few odd openings Southwards around noon-time, plus the occasional “VHF-type” opening. However, the greater interest in Ten at the bottom of this cycle as compared with the last two minima has resulted in more DX contacts being reported, by far—such just goes to show that, as we have so often remarked, activity is needed to detect an opening!

GM3YOR has been getting his feet wet on HF, and finding out about the required arts for raising DX—not necessarily quite the same as Top Band, he ruefully remarks of the ones that failed to come back! The FT-101B is hooked to a K.W. trap dipole at thirty-five feet and aligned SE/NW, which only made one contact on Ten apart from *Oscar*, which was to YU2BST, and even that needed a combination of SSB and CW to complete.

Just for a while, G4CXM is back at his Paignton home, and naturally enough he is enjoying it, although he will be going away again, possibly to work in Bristol. Ray didn’t see much activity on Ten, but usually there were at least stirrings around 1200-1400, with 9J2DT always to be looked for as a beacon.

G3NOF (Yovil) dismisses the ten-minute activity as far as he is concerned in very few words. He noted a few openings into Europe, but made no contacts.

* * * * *

Now we must look at Fifteen, and here our first exercise is the letter from G6AH (Burnham, Essex) who was stirred to write in by
our comments on sunspots and the lack of them last month. Being retired, G6AH began keeping a daily watch in August 74, on 21 MHz for one hour, the chosen period being the first activity in the morning, moved in steps to coincide roughly with the seasons. The aerial used for these watches was a quarter-wave rod against ground or a ground-plane; results are expressed in terms of DX prefixes heard.

G6AH then totals up the DX prefixes logged in a given month, and divides the total by the number of days in that month to give the "per day" figure for each month. The highest per-day total was in February 1972 at 19-1, dropping more or less as one would expect to February 1975 with 3-6; April 1975 at 2-2 shows as the worst month since the watch started but November 1974 showed up as the best month since November 1972 and the fifth best since operations began in August 1971! In general, November seems to be the best month and April the worst, for DX, for some unknown reason. Further, the answer is not connected with the sunspot count, which was for October 74, 47; November, 25; and December, 20. Very odd, and very interesting! Research along these lines is always rewarding, and we would like to hear of more.

Fifteen for G4DMN meant contacts only with LU4MBI and 5B4BS, both taken on the 18AVT. On the other hand, GM3YOR used SSB for QSO's with CE3RC, CR7BU, OD5BV, VQ9HCS, and VQ9SS/C (Chagos), while the CW bait hooked EA8BK, LUI1DNU, PA6AW/YA1A (over the Persian Gulf), K1DG, JI6CP, PY2ZBU, MCV, VQ4NB/MM off Gabon, 4X4AT and 5B4RW.

On to G4CXM, who reckons that the band went well for him to have reacted to poor conditions by way of a linear not mentioned in previous reports; the K.W. Viceroy still gives of its best, and the Joystick, while UA1CZ in Leningrad could hardly be regarded as a bad return to a CQ with such a power level either, come to think of it. Twenty QSO's with the little 'un, and a change was made to two watts for another twelve QSO's all round Europe; the five-watt "big rig" was not needed on Twenty, being reserved for the tough stuff on Forty and Eighty!

At G2HKU, the only SSB was with UD6CC, but CW raised VK3 to 9K2DI, VK3 to two watts for another twelve QSO's all round Europe; the five-watt "big rig" was not needed on Twenty, being reserved for the tough stuff on Forty and Eighty!

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The letters from G4DMN indicate quite a lot of activity; on the dipole there were CR6XA, TAIHY, KZ5ED, C5AR, TU2EP, CN8AG, VP2LBR, FM9OQ/F/G; a switch to the vertical produced the desired exchanges with 9K2BR, WØNNY, 5Z4OG, PY6AM, VP1PKW, PY1RP, K2OAS/M, W1YWL (who was S3 running one watt of SSB), PZ1BW, PY7VKN, UP2AYL, 9Y4VV, HK3LY, YS1GMV, W5NYU, IA4HMS, HM1AQ, YJ2ZH, FY9MS, HZ1TA, KZ25BC, LC1ATQ, 9L1JM, LUBAAE and CE5DC.

GM3YOR found he was gradually learning his way about the band, and his success ratio improved over last month, with eight new ones booked in, by way of CE, CR7, HC, HK, M1C, VQ9, VQ9/C and 9K2. CW saw off HC1XG (who is otherwise G3HVG) the best month since operations began in August 1971! In general, November seems to be the best month and April the worst, for DX, for some unknown reason. Further, the answer is not connected with the sunspot count, which was for October 74, 47; November, 25; and December, 20. Very odd, and very interesting! Research along these lines is always rewarding, and we would like to hear of more.

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K9UTN, John Kline of 3302 Nottingham Way, Madison, Wis., 53762, having started in 1959 now holds the coveted Extra-Class licence, involving among other things Morse at a steady 20 w.p.m. Regularly on the low end of Twenty, some 70 countries have been worked on CW this year alone. Though the gear shown in our picture is all of ten years old it is still regarded as “top line” in the U.S.

and SSB did the rest, with CE2PC, CT2AK, FY7AQ, HV3SI, HP2KP/MM (in the Persian Gulf), JY9MS, HK3BGN, UK9CAE, UK9MAA, VB2RCS, WB2ZHN, WA5QQZ/MM and 9K2DR.

An April Fool’s Day special? wonders G4CXM of his contact with QO7AA who was worked although no-one appeared to be able to extract a QTH out of his phonetics! However, more likely candidates for the log were, on CW, FM7WH, U77AF, V01HP, UF6FAY, U98AP; SSB, VP5GT, LU4DSZ, YV3AGG, YV2AMG/3, Y94P/3, YQ4VU, OD5LO, 4U1IFU, HK3YXH, VK2PA, VK4NE, VK2LW, VS5DB, VS5MC, VS9MB, PY2HY, AE4XF, M1D, OE2SCL/YK, UA9VH/JTI, 5TSZ, VU2RG, CT2AC and UK9’s.

The best of a bad lot, opines G3NOF, who found conditions on 20m. poor for the week prior to his letter, and occasionally disturbed earlier in the month; but he still manages to get around, and so his QSLs have been worked on CW this year, including A4XFE, A4XFE, CR6MX, DU1DCC, DK6PN/A6, EASES/9 (Rio de Oro), EP2DB, H89HJ/1, HP2KP/MM, JH3QPR, JY9MS, K6M0O, KZ2PTF, OE2SCL/YK, SU1MA, UA9VH/JTI, VK2TG, VP2LB, VP2MB, VS5MC, VS5MAS, VU2CK, VU2MX, WA7MKI (Nevada), YB0ABV, 457AW, 5B4CA, 5N2NAS, 5E2GK, 5Z4AG, 9G1IDX, 9J2KP, 9L1JM, 9M2AP, 9M2CJ, 9N1MM, 9Y18G and Y94VY—but the gotaways included DUIJMG, DU3BS, FG7AN, KG6JAR, DK6PN/A6, EASES/9 (Rio de Oro), EP2DB, H89HJ/1, HP2KP/MM, JH3QPR, JY9MS, K6M0O, KZ2PTF, OE2SCL/YK, SU1MA, UA9VH/JTI, VK2TG, VP2LB, VP2MB, VS5MC, VS5MAS, VU2CK, VU2MX, WA7MKI (Nevada), YB0ABV, 457AW, 5B4CA, 5N2NAS, 5E2GK, 5Z4AG, 9G1IDX, 9J2KP, 9L1JM, 9M2AP, 9M2CJ, 9N1MM, 9Y18G and Y94VY—but the gotaways included DUIJMG, DU3BS, FG7AN, KG6JAR, VS5DO and 9M8VLC.

Snippets

It looks as though there will be no more AC3PT contacts in the foreseeable future, as Indian troops occupying the Royal Palace seized the AC3PT rig; Sikkim has for all practical purposes been annexed by India and will become an Indian state. It looks as though there will be no more AC3PT contacts in the foreseeable future, as Indian troops occupying the Royal Palace seized the AC3PT rig; Sikkim has for all practical purposes been annexed by India and will become an Indian state.

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It looks as though there will be no more AC3PT contacts in the foreseeable future, as Indian troops occupying the Royal Palace seized the AC3PT rig; Sikkim has for all practical purposes been annexed by India and will become an Indian state.
For the well-known (and well supported) Spalding Tulip Time outing, enjoyed by them all—but what a crowd when they got there!

For the White Rose Rally, members of the Sunderland Amateur Radio Society got together to hire a mini-bus for their trip to the first Rally of the Season. This was a well-organised outing, enjoyed by them all—but what a crowd when they got there!

THE MOBILE SCENE

REPORTS, PICTURES AND EVENTS TO COME

The first Rally event of the season—staged in Leeds on March 30 by the White Rose Radio Society, as last year—was again an unqualified success. They had no less than 24 trade stands, offering a wide variety of interesting items, from shiny boxes to trays of components. The one complaint registered was that it was “all too crowded,” there being a larger attendance than for any previous Rally occasion.

An interesting result on the /M side was that while more than 100 items changed hands, to the mutual satisfaction of all concerned (you get your price for what you offer and pay fairly for what you want and the Club gets a percentage of the gross). The cost of organising the Rally was astronomical, every single item being at least 25% up on last year, it is hoped to hoist Club funds up a notch or two. For the White Rose Rally, members of the Sunderland Amateur Radio Society got together to hire a mini-bus for their trip to the first Rally of the Season. This was a well-organised outing, enjoyed by them all—but what a crowd when they got there!
June 8: Sixth Mobile Rally at Elvaston Castle Country Park, south of Derby, off the B.5010.—P. Neal, G3WFU, QTHR.

June 29: For the 18th West of England Rally at Longleat House, Warminster, Wilts., the under-cover accommodation will be spacious marquees, with trade stands, a raffle, bring-and-buy stall (no rubbish, please), refreshments available on site and talk-in by G6YB/P (1920 kHz), G3JMY/P (3775 kHz) and G3TAD/P on 145.5 MHz/VFO. There is something for everyone here, including the House itself and the magnificent wild-life park, overnight camping (from 6.0 p.m. on the Saturday) and plenty of space for parking and to picnic. There is an admission charge, as this is one of the "stately home" sites. Further information from B. Croker, G3ULJ, QTHR.

July 6: Worcester & District A.R.C. Rally event at Upton-on-Severn, as in previous years.—B. Jones, G8ASO, QTHR.

July 20: Cornish Radio Amateur Club 12th Annual Rally at the Technical College, Redruth, Cornwall, with talk-in on Top Band, 80m., and two metres, from 10.0 a.m. There will be trade stands, a raffle with radio and non-radio prizes, and refreshments arranged at the College. Details: W. Locke, G3NKE, QTHR.

July 20: Anglian Mobile Rally at Stanway School, Colchester, Essex (exit A.604 off A.12), with ample car parking, trade stands (usual and unusual), family attractions, undercover accommodation, bring-and-buy stall, refreshments and talk-in on 2m./80m by GB3AMR.—T. Mills, G3YAI, QTHR.

August 10: Mobile Picnic at Avoncroft Buildings Museum, Stoke Heath, Bromsgrove, Worcs., B4091/A.4024, admission payable, free parking and picnic site (bring your own sustenance), bring-and-buy stand and talk-in on 2m./80m by GB3AMR.—T. Mills, G3YAI, QTHR.

August 17: Derby & District Radio Society annual event at Rykneld School, Bedford Street, Derby, as in previous years. Details later. Information from T. Darn, G3FGY, 1 Sandham Lane, Ripley (2972), Derby.

A commercial mobile installation as supplied by Redifon Telecommunications to the Nigerian Police Force. A 100-watt SSB set for HF working, it has been tested under location conditions to give ranges up to 900 miles or so.

August 24: Torbay Amateur Radio Society Rally at Newton Abbot Rugby Club ground, as in previous years.—L. H. Webber, G3GDW, QTHR.


For the White Rose Rally at Leeds the hall was "jam-packed solid" before lunch-time! This is a general view, with the crowd milling round the stands. The White Rose group could well feel that this year their Rally was almost too successful!
INTRODUCTION TO MOBILE WORKING

SOME OF THE PRACTICAL CONSIDERATIONS

C. PAGE (G4BUE/M)

WHENEVER mobile operation is discussed there is often doubt as to what is actually regarded as mobile operation or a “mobile QSO.” Driving along the M1 at seventy whilst in QSO is clearly “mobile,” whilst parked in a field using a Quad on a 40 feet mast is clearly portable. Doubt is raised when the vehicle is stationary and the equipment, including the aerial is self-contained in or on it. The generally accepted definition is that if, at any time during the QSO, the operator can drive the vehicle safely away, and maintain the contact, it is a “mobile QSO.” The writer does not regard stationary CW operation as true mobile, in that the vehicle cannot be said to be driven safely if the driver is also keying. (It is a different matter, or course, if a passenger in the car is operating the key). The question of CW operation whilst mobile is very controversial amongst mobile amateurs and there are widely differing opinions.

Having established what a mobile QSO is, the next step (after obtaining the mobile licence) is to decide on what bands and modes it is intended to operate. The writer’s experiences have been on the HF and LF bands, with the exception of 40 metres. For some reason mobile amateurs and there are widely differing opinions.

Whatever is decided, membership of The Amateur Radio Mobile Society is recommended. Members are very experienced in all aspects of mobile operation and are only too willing to assist others interested. An excellent information service is maintained through which particulars are available on all aspects of vehicle suppression and reciprocal licensing. Various achievement awards are offered and a monthly news bulletin is published. Full details about ARMS and membership are available from the hon. secretary, Norman Fitch, G3FPK. QTHR and reports appear regularly in “Month with The Clubs” in SHORT WAVE MAGAZINE.

Safety

The aspect of safety cannot be emphasised too greatly. It is to the credit of mobile amateurs that no record can be found of road accidents that have occurred through operation of their equipment. Although there is no law forbidding radio transmissions being made by the driver of a motor vehicle, it is an offence to “drive without due care and attention.” The ideal arrangement is to be able to transmit with both hands on the wheel. This can be accomplished by using a headphone and/or mike boom arrangement. Although the danger of wearing headphones must be considered, most can be worn in such a way that external noises can also be heard. Alternatively a neck fitting can be worn to hold the microphone. The push-to-talk switch can be a push-button mounted on the steering wheel or direction indicators depending on the make of car. This arrangement then only necessitates a hand being taken from the wheel to adjust the VFO, once initial tuning has been carried out. Better still, by using Vox control, greater safety can be ensured. It is very noticeable that even police officers in their vehicles still use old fashioned hand sets with manual changeover. All controls should be reached in comfort from the driver’s seat. The SWR bridge, if used, needs to be mounted so it is clearly visible. The comfort of others using the car should be taken into consideration, as should the mounting arrangements for the gear that could affect the re-sale value of the car. If a domestic car radio is fitted, its speaker can also be used for the amateur-band receiver, by a two pole/two way switch to enable either Rx to be selected.

If “stationary-mobile” operation is envisaged to any large degree, the fitting of auxiliary batteries is recommended. With more than one extra battery, switching should be arranged to break the connection between them, when not in use. A battery charger is used by the writer to keep the three auxiliary batteries right up by charging them in situ in the boot of the car over night.

The Rig

The question of the rig to be used mobile is often determined by that available in the main station (FT-101 in the writer’s case). If a new rig is to be purchased for mobile use, the advantages of transistors over valves (to conserve power) must be considered. Apart from home-built equipment, the FT-101, FT-75, KW-2000 and TR4 probably account for the majority of commercial mobile rigs in use today. It has to be borne in mind that those which require an external DC power supply take up more room than those which are self-contained.

Mounting the gear in the car is mainly a matter of initiative and ingenuity of the amateur himself. (A mounting kit is available for the FT-101 which can be modified quite easily to fit most makes of car).

Suppression

Unless steps are taken to suppress ignition and other noises, the S-meter will register a permanent reading of about S8 or S9, making it impossible to copy all but the strongest signals. A summary of the steps taken on the writer’s car (a 1971 model Hillman Avenger), is as follows:

1. 0-5 μF coaxial (or feed through) capacitors are fitted from: (a) SW terminal of the coil to earth; (b) “D” terminal of the voltage regulator to earth; (c) “A” terminal of the voltage regulator to earth; (d) “D” terminal of the dynamo to earth.

2. A 5-ohm resistor (about 2 watt), in series with a ‘0047 μF mica capacitor from the “F” terminal of the voltage regulator to earth,

3. A 15 K in-line resistor in the HT lead between the coil and distributor, as close to the coil as possible,

4. The HT leads were replaced with screened leads made up by using lengths of UR-57 (or UR-67) coax screening, with the original HT lead inside. The screening should be kept within three quarters of an inch from each end to avoid shorting between the screen and the wire.
Chris Page, G4BUE/M, home QTH 25 Ashurst Avenue, Saltdean, Brighton, Sussex, runs a Hillman Avenger fitted with an FT-101 incorporating a "G3LLL" RF clipper for more talk power, and an SWR bridge for the 20-metre monoband whip.

An earth lead is taken from each screen to the car body.

(5) A Dot Line C.B. 330 tunable filter was purchased (from Radio Shack), and tuned to 20 metres, found to be the worst band for interference. It was then fitted between the "D" terminal of the dynamo and the 0.5 µF capacitor, the other side of the capacitor going to earth.

(6) A filter was fitted in the power supply to the rig itself, consisting of two coils in series with the supply cables, with disc ceramic capacitors to earth. (The one actually used was as fitted as standard in the Pye "Cambridge" VHF equipment).

(7) Lengths of earth strapping (old coaxial cable screening) were fitted between the car body and bonnet, boot, dynamo case and engine block. In some cases an earth strap from the exhaust system to earth also helps prevent interference.

A range of suppression equipment is manufactured by Lucas, but this is mainly for use on military equipment. It should be possible virtually to eliminate all noises, although the level of noise will vary with band conditions.

The Aerial

The aerial is what usually determines why one mobile station performs better than another. Whereas at home, full size directional aerials and linear amplifiers can be used to give a big signal, the /M operator is very restricted both in terms of the overall height of the aerial, and the practical problems of mounting (and keeping) it on the car. Although the law does not restrict the overall height of a motor vehicle including attachments, safety does, and thus the mobile aerial, with the exception of ten metres, normally has to be considerably shortened. This means a loading coil, usually mounted at the centre or base of the aerial. There are several excellent commercial designs on the market, but as is the case with all multi-band aerials a compromise has to be made. A monoband aerial is the way to obtain the best efficiency, and many amateurs have achieved excellent results on simple home-made whips. The text books describe the methods of constructing mobile whips, and the 20m. aerial in use by the writer was constructed by taking the best ideas from a number of such books, the cost of the job being about 35 pence. On-the-air tests show it to perform better than commercial aerials. Full-size quarter-wave whips are being experimented with at present for 10 and 15 metres, but it is too early to assess results.

Positioning of the aerial on the car is also important, and after having tried the front and rear wings, the writer has settled in favour of the centre of the roof. Anywhere near the engine compartment is to be avoided as this encourages interference. Fixing the aerial to the roof has been by using a roof rack with a sturdy metal plate at the centre, making a flat platform. The roof rack is earthed to the body of the car by attaching two earth straps from the rack to the gutter of the roof. The whole thing can be easily removed, leaving only two small holes in the gutter, which can be filled and painted over any time. In the case of the 20-metre whip, four thin nylon guys are attached to the corners of the rack by using old fashioned picture hooks. Although this arrangement causes heads to turn, the aerial is very safe, and the car may be driven at normal speeds. If the aerial is mounted on a rear wing or bumper, a piece of cord should be run between the aerial and the rear side window to prevent the aerial being bent backwards when the car is driven at high speeds. Care should also be taken to see that it does not sway from side to side. It is debatable as to whether a mobile whip performs efficiently in anything but the vertical position.

Operating

If it is intended to work DX, similar tactics have to be adopted as used by the QRP operator. Calling CQ
can result in working Europeans on 20 metres, but the DX generally has to be called. However, the mobile suffix very often stands out in a pile-up, resulting in the DX station saying, “Go ahead the mobile.” Once a DX contact has been established, the fact that one is mobile very often results in a much longer QSO than one would have had from the home QTH. The writer’s experiences have been limited to the last two years, and the full offerings of 15 and 10 metres have not yet been experienced. Most of the countries worked have been on 20 metres, but when the upper bands are open, it appears a lot easier to work DX on them. Recently the writer has been chasing DX on 80 metres, with surprising results.

Phone contests are a very good way of testing the mobile rig and building up the countries score. The newcomer will be very surprised at what can be accomplished. WAC/Mobile can be obtained by a good mobile station without too much difficulty, though DXCC/Mobile is a different matter.

For a mobile, the final compliment is when the station being worked refuses to believe you are mobile because of your good signal strength—and this can happen in a surprisingly high number of cases.

MORE QRP CIRCUITS
SIMPLE TRANSISTOR ARRANGEMENTS
F. G. RAYER, T.Eng. (CEI), A.I.E.R.E. (G3OGR)

There is a lot of interest in running low power—say under two watts—either to find what it can accomplish, or for easy portable operation. Low power is often used on 160m, but the circuits here have been tried exclusively on 80m, where a good 100-mile contact with under one watt is not exceptional—provided the aerial is effective, and conditions reasonable.

For simplicity, and because crystals were to hand from earlier valve equipment, crystal control is used. Crystals also give an assured logging frequency.

Oscillator

Fig. 1 is the circuit of this stage, which has always proved to operate satisfactorily, using various transistors, crystals, and supply voltages. The transistor recommended is a BFY51. It is cheap, has a total dissipation rating of 800 mW, operates readily at the required frequencies, but is less likely to function at very high frequencies, unlike some VHF types.

This stage alone, keyed and with L1 coupled to the aerial, would form a QRP transmitter. R4 (to decouple when later stages are present) is then unnecessary. The supply voltage is quite flexible, but a meter should be clipped in one lead, when first testing the circuit, or making adjustments. A 9v. to 15v. supply is recommended. Provided current is kept under 80 mA with the 9v. supply, or under 50 mA with 15 volts, dissipation will be inside the 800 mW limit, even with no RF output. The actual current, when used as an oscillator, will lie more in the 10-20 mA region.

There is no particular reason why any of the values R1, R2, R3, or C1 should not be modified, if this gives improved results. C2, with L1, naturally depends on the operating frequency.

When testing this part of the circuit, a 6v. 0.04A bulb, fed from a 4-turn loop around L1, is a useful RF indicator. L1 has to be adjusted for reliable starting, and near maximum RF output—at 9v. this is not sufficient to light the bulb brightly.

With this circuit, and indeed with all oscillators or finished transmitters, a check should be made with the receiver. With some crystals and settings of L1 core it may be possible to produce RF at an unwanted or unexpected frequency. When the circuit is correctly set up, the receiver will locate the carrier at almost or exactly the crystal frequency, and small movements of L1 core will have no apparent effect on the frequency.

As Tr1 case is common to the collector, it should not be too near other components, or actually touch any parts. If Tr1 is hot to the touch after being on for some time, the power it is dissipating can be checked as described for the PA stage—see later.

For bands other than 80m., L1 would have to be changed; also possibly C2, as well as C1.

Single Transistor PA

Fig. 2 shows the circuit for this, L1 being the oscillator stage coil L1 as in Fig. 1. Tr2 draws no current in the absence of drive, so tune-up is now for maximum current in this stage, while obtaining full RF output by adjusting L3 as well.

A good way to test this stage is to load it with a 6v. 0.1A bulb, fed from L4, as this will take up to 600 mW, and is then a load of around 60 ohms. This is near-enough that of a dipole not to cause trouble when the aerial is substituted. (End-fed aerials will need some other form of adjustment, such as a mini-ATU to present about 60 ohms to L4, or variable coupling of L4, or other similar measures.)

For L2, eight turns should be satisfactory, over-wound on the battery-positive end of L1, but the effect of varying coupling by moving L2 or changing the number of turns can be tried if the whole circuit is not giving what is expected of it. With a 9v. or 10v. supply, there should be enough RF to light the bulb fully, and it will probably prove wise to employ a larger bulb. A pair of 6.3v. 0.15A bulbs in series will take 1.8 watts or so and be about 80 ohms when lit.

PA Ratings

As with valves, if a lot of DC is put in, a substantial level of RF should be got out. Otherwise, the difference is wasted as heat in the PA. If this exceeds the safe level, the transistor is destroyed. The worst conditions for Tr2 is with high drive causing a heavy DC current, with L3 mistuned or not loaded.

As example, assume a 6v. 0.1A bulb coupled to L4 lights as brightly as from a 6v. battery. About 600 mW RF is thus being obtained. If Tr2 were drawing 100 mA at 12v, this would be 0.1 × 12 = 1.2 watts. As only 0.6w. output is obtained, power dissipated in Tr2 is Input
less Output, or 600 mW.

It is thus necessary to watch the input with a meter in the supply circuit. For initial tests DC input can be kept down by reducing the voltage, or including a resistor in the supply to this stage. Fig. 3 will give a more accurate indication of any improvement in output than does the bulb. The loop can be one or two turns neat L3, and the output indicator a multi-range test-meter on a 1 mA or other sensitive range, if no other instrument is to hand. This will in any case be useful when L4 is coupled to the aerial, and the bulb is discarded.

The dip in PA current, corresponding to correct tuning as obtained with a valve PA, must not be expected. It is more a matter of adjusting drive (tuning of L1) and tuning of L3, for proper starting.

Modulation

The temptation to modulate these little circuits to get AM phone has resulted in several circuits being tried. As the modulation cannot properly be applied to the oscillator (because it is crystal controlled), and there is no driver to modulate along with the PA, leak-through in the PA gives an impression of not very adequate modulation. Trying to boost this by increasing the AF results in severe distortion. But if these points are kept in mind, reasonable speech quality can be obtained by a series Class-A modulator, transformer coupled Class-A modulator, or push-pull stage giving a watt or so.

Remember that with many systems the collector voltage of the PA will be swung from zero to twice the normal voltage, so that further reduction in supply voltage is necessary, if peaks are not to be higher than the base-collector rating.

Parallel

It was found that Fig. 1 provides adequate drive for a pair of transistors in the power amplifier. Fig. 4 is the PA circuit used. The emitter resistors are to equalise currents, so that one transistor does not have to sustain most of the input.

Changing Fig. 2 to this requires little else than the extra transistor and resistors, followed by re-tuning. It was rather more susceptible to the production of "whiskery RF"—it is essential that all RF output is cut off when drive is removed, and that a check is made up and down the band, with L4 feeding a bulb, before putting the signal into an aerial.
MAINS PSU FOR THE LINER—2
SUITABLE FOR BENCH OPERATION
R. M. CROSSLEY (G4CZP)

THIS power supply was built to enable the “Liner-2” to be operated from the 240v. AC mains, and was prompted by the cost of the matching commercial supply unit, together with the fact that the author’s shack is also his bedroom, hence lead-acid accumulators are not favoured. There is no reason why this PSU should not prove suitable for running any of the 10-watt output transceivers requiring 13.8v. DC at approximately two amps, or as a variable voltage, stabilised bench supply. Requirements were that the unit should be inexpensive to build compared with the commercial counterpart, that it should provide the nominal 13.8v. DC with good regulation and low ripple at load currents of up to approximately 2.5 amps, and that it should be possible to make it physically small.

The circuit, for which no originality is claimed, is shown in Fig. 1 and uses a readily available operational amplifier (Op. Amp.) as a voltage comparator driving a Darlington configuration series stabiliser, which is fed from the smoothed, unregulated DC supply.

Circuit Operation

The step-down mains transformer feeds a full-wave bridge rectifier which is followed by C1 as smoothing in the form of C1. This forms the unstabilised source which supplies the Darlington pair and from which the zener diode, D5, providing a reference voltage for the op. amp., is fed via R1. C2 ensures that this reference voltage is free from ripple. The unstabilised source also produces the supply for the op. amp. (the stabilising performance of which is not significantly affected by itself being fed from an unregulated supply) and in this circuit need not be balanced with respect to earth.

The op. amp. is basically a high gain DC-coupled amplifier having two inputs termed inverting and non-inverting, denoted by − and + respectively. If the non-inverting input is made positive with respect to the inverting, then the op. amp’s. output goes positive, as it also does if the inverting input is made negative with respect to the non-inverting. The non-inverting input is fed from the zener reference voltage, whilst the inverting input comes from a potential divider across the output of the supply. The two inputs are decoupled to RF by C3 and C4.

In order to understand the stabilising performance, suppose that the output voltage of the supply is such that the voltage at the wiper of the potential divider is equal to the zener reference voltage. Under these conditions the op. amp’s. output is zero. Now suppose that the output voltage starts to fall (e.g., by placing a load on the output). Then the voltage at the wiper of the potential divider and hence the voltage at the inverting input of the op. amp. will fall. So the potential at the inverting input becomes negative with respect to that at the non-inverting input, and the output of the op. amp. goes positive. This drives the Darlington pair harder so the output voltage of the supply rises and with it the voltage at the inverting input, this reducing the op. amp. output—and so on. Thus stabilisation is achieved.

The range of RV1 enables the output voltage to be set anywhere between a minimum of the zener reference voltage and a maximum of approximately that of the

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**Table of Values**

<table>
<thead>
<tr>
<th>Circuit of PSU for Liner-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1, C5 = 2200 µF, 40v. elect.</td>
</tr>
<tr>
<td>C2 = 100 µF, 10v. elect.</td>
</tr>
<tr>
<td>C3, C4 = .001 µF, disc</td>
</tr>
<tr>
<td>R1 = 1500 ohms, %w.</td>
</tr>
<tr>
<td>RV1 = 5K lin., w/wound</td>
</tr>
<tr>
<td>D1, D2 = 3 amp 100 p.i.v. silicon</td>
</tr>
<tr>
<td>D3, D4 = 3 amp 100 p.i.v. silicon</td>
</tr>
<tr>
<td>D5 = 4-7v, 400 mW zener</td>
</tr>
<tr>
<td>IC1 = 741 Op. Amp.</td>
</tr>
<tr>
<td>Tr1 = BFY51</td>
</tr>
<tr>
<td>Tr2 = 2N3055</td>
</tr>
<tr>
<td>FI, F2 = 3 amp fuses</td>
</tr>
<tr>
<td>T1 = Mains xformer, 20v. sec.</td>
</tr>
</tbody>
</table>

(see text)

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**Circuit of the Power Supply Unit**
unregulated source, though towards the maximum-voltage end regulation is impaired.

**Construction**

This may take any convenient form but several points are worth watching. The 741 op. amp. is most frequently encountered in 8 pin DIL configuration and it is suggested that an IC socket be used. Tr2 requires a heat sink of at least 120 sq. cm. and Tr1 one of the small, clip-on style TO-5 heat sinks. The transformer used in the prototype is rated 20v., 2 amp. Whatever type of transformer is used, its secondary voltage should not exceed 22v. r.m.s. (the op. amp. will not tolerate a supply of more than 30v.) and should not be less than 15v. r.m.s. If continuous currents of approximately 2.5 amps are envisaged, rather than the current peaks of 2.5 amps drawn by the Liner-2, then a 3-amp transformer would be required. The electrolytic smoothing capacitors used were Mullard types having a high capacitance to volume ratio and a ripple current rating of 2.9 amps.

If the supply is used to feed its equipment along a lengthy cable, resulting in significant voltage drop, this may be compensated for by placing RV1 at the load end of the cable and running an additional wire back to the supply from the wiper of RV1. If this is done the regulation will take into account any voltage drop along the cable and the voltage at the load end will remain constant.

As it was not thought likely that, under normal conditions, the output would be short-circuited, no protection was built in other than the fuse F2. This will usually save Tr2 in the vent of such a mishap.

**Performance**

Regulation is such that, with a voltmeter connected across the output and the Liner-2 “talked up” to approximately 2.5 amps peak current no variation of output voltage could be detected on the meter. Using a digital voltmeter, regulation was measured as approximately 2% for a 2 amp load. The same basic circuit, but with the op. amp. driving four Darlington pairs via two pre-drivers, together with a more substantial transformer and rectifiers, has been used to build a 13.8v. 15 amp supply suitable for ex-commercial radio-telephone equipment. The regulation of this is also approximately 2% for a 15 amp load.

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**BOOK REVIEW**

“RADIO AMATEUR'S HANDBOOK”—ARRL

52nd Edition, 1975

What is this ARRL Handbook, of which we hear so much? What does it cover? And being American in origin, what meaning has it in the U.K. context? As an active and progressive radio amateur, reading all I can get hold of about Amateur Radio, is there anything it can teach me? On the other hand, as a beginner, in what way can the Handbook help me with the theory and practice of the subject?

It would take a great deal of space to answer these questions fully—and we certainly could not, in what must necessarily be a brief review, digest fully about 700 pages of a manual that for the best part of 50 years has been dealing with every aspect of Amateur Radio in the context of its time—theory, design, construction, operation and the process of getting a station on the air.

The fact that the ARRL Handbook is American in origin in no way makes it “strange,” because fortunately we all speak, in English, the same radio language, so that whatever is said in the ARRL Handbook has basically the same meaning for any U.K. amateur.

What the ARRL Handbook does is to teach the fundamentals and the practice and establish the principles on which the techniques of Amateur Radio are founded, in all their various aspects.

As a standard text covering “how and why it works, how to make it work, how to put out a signal, how to make that signal effective” it is an obvious “must.” The latest ARRL Handbook—the 52nd of a long line in a successful series—is the bookshelf “bible” on the subject of Amateur Radio. As such, in its 700 pages, it is a practical guide to everything to do with Amateur Radio, from basic theory to the latest techniques in HF, VHF, UHF, Antennae, Frequency Measurement, Power Supply, Workshop Practice for the amateur, and much else besides.

Of course, because the ARRL Handbook is an annual compilation for all amateurs, new or old, it cannot offer entirely fresh material in every edition—because there is a large volume of technicalia which is not alterable if it is to retain its status as a standard text. What the Handbook does attempt is to keep up-to-date, which involves constant revision—and this is what makes any issue different from that of, say, three or four years ago.

There are drawings or illustrations on practically every page, with a general index running to twelve pages, and the numerous data and tables include 26 pages on valve and semiconductor characteristics, with connection diagrams.

Since its inception—and the earliest copy we have is of the 3rd edn, dated 1928—more than 4½ million copies of the ARRL Handbook have been sold! They have gone not only to radio amateurs throughout the world but also to professional radio men at all levels, for the Handbook is essentially practical and written in straightforward language.

The Warsaw Conference

THFARU Region I Conference in Warsaw during April 1975 covered a tremendous amount of ground in the time available to them, and it is not possible here to do more than to condense those decisions which are of more immediate application to our VHF bands.

(1) Steps are being considered to seek an allocation of 220-225 MHz for amateur use in Region I, which may alleviate some of the congestion on 144 MHz.

(2) Based upon a paper by G3RPE and G3HWR, it has been decided to go for new allocations of 220-225 MHz, which will be in harmonic relationship with established lower frequency amateur bands.

(3) After the recent changes in our VHF band plans it is hardly likely that further extensive modifications would be welcomed or universally compiled with. However, such a state of affairs was recognised and has been avoided. Amendments have been limited to:

(a) CW calling frequency -144-0 MHz, SSB calling frequency -144-30 MHz,
(b) Random M/S SSB calling frequency -144-20 MHz,
(c) The upper limit for SSB is to be 144-50 MHz and, by implication, FM/AM transmissions should be kept above this frequency.

(d) Steps are being considered to seek an allocation of more immediate application to our VHF bands.

(4) Repeater channels have been allocated in Region I, which may alleviate some of the congestion on 144 MHz.

(5) Considerable emphasis was placed upon the study of anomalous propagation at VHF. The co-ordinator for Sporadic-E phenomena is Serge Canivenc, F8SH, 6 rue de Pont-Hélot, 22700 Perros-Guirec, France, while our own Charlie Newton, G2EJKZ, QTHR, co-ordinates auroral observations. Widespread reports to these two centres are likely to improve our image vis-à-vis the outside. world, and national administrations in particular, and may form a vital bulwark in the defence of amateur allocations at forthcoming conferences.

(6) Although we can hardly claim that the comments made in this Column recently about the desirability of agreement on a common speed for RTTY forced the issue, this has now been achieved. BARTG recommended 50 bauds, but there was no support for this idea from other representatives and, by common consent, 45-45 bauds was adopted as the standard for HF/VHF/UHF operation. This will entail winding down the governor, retuning the decoupling gears or going to electronic conversion in the case of the popular Creed 7B printer if it is synchronouos on 50 bauds. Space frequency is 1275 Hz and Mark 1445 Hz for narrow band, 170 Hz operation, and 2125 Hz for 850 Hz shift.

**VIHF BANDS**

A. H. DORMER (G3DAH)

On balance, it is fair to say that we have gained more than we have lost at this Conference in that more of the British proposals were accepted than were rejected. Whether we like it or not (and there are some who would prefer that we go our own, isolated way) some measure of standardisation in Region I is a "must" if mutual interference between different modes of operation is to be avoided and if we wish to continue to work our Continental neighbours. The days when one could roam at will over Megahertz of VHF/UHF are over.

Twickenham Convention

Attention was slightly down on last year, but the event was, nevertheless, well supported by both the Trade and amateurs generally. The lecture session opened with a report by the VHF/UHF Contests Committee with its impact on band planning and was then divided into two streams, one with a UHF bias and the other covering subjects of more general interest. Perhaps the most controversial episode was the confrontation between the VHF Contests Committee and a fairly critical section of contest-minded amateurs. A determined attempt was made to get agreement to submitting the three best scores out of four on the bands used in VHF/NFD, but this was resisted on the grounds that such a sweeping change would entail winding down the governor, retuning the decoupling gears or going to electronic conversion in the case of the popular Creed 7B printer if it is synchronous on 50 bauds. Space frequency is 1275 Hz and Mark 1445 Hz for narrow band, 170 Hz operation, and 2125 Hz for 850 Hz shift.

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certainly does not lack users. GB3SN is still in trouble and the latest buzz has it that this is associated with the common antenna system. (Suggestions that there has been a move afoot to make it difficult for "outsiders" to get into the device have been denied!). The 70 cm. repeater, constructed by the Pye Group at Cambridge, is now operational on 431.35 MHz In and 433.35 MHz Out. Callsign is GB3PY and access tone is 1750 Hz. It is reliably reported that GB3PY will also go to 1750 Hz access tone, which will be a boon to many.

A new repeater has been set up near Antwerp which should be workable under lift conditions. Callsign is ON6DH and it is a dual-channel job with input on 432.15 MHz and output on 144.558 MHz during 0800-0900z each morning and on 7020 MHz during 0900-1000z each evening over 2000-2300z. The below-par conditions as are available in the South.

Reports:

The QRB was 151 km. and the signals were 59 both ways. The equipment both ends consisted of a Gunn

**DX-Peditions**

The Cambridge University Wireless Society are mounting an expedition to Angu, Kinross and Perth/Fire, June 9 to June 14. They will be running high power SSB/CW on 2m. and 4m. and medium power on 70 cm. They will operate on 70-20 MHz during 08000-0900z each morning and on 144-17 MHz ± 10 kHz SSB and 144-050 MHz CW each evening over 2000-2300z. The 70 cm. frequencies and operating times will be announced on 2m. Skeds for 70 cm. and 4m. may be arranged by s.a.e. to Ken Vickers, G3YKI, Trinity College, Cambridge. Callsigns are GM6UW/P on 2m., GM4CXP/P on 4m. and GM4CZP/P on 70 cm. If you don't work them in Scotland, they will have SSB mobile on the way there and back using the call GM6UW/B.

Peter Wallis, G3YJI, will be on from Guernsey during July 5-17 with both 2m. and 4m. SSB.

**Contests**

Reports: Conditions were generally very poor for the 1296 MHz Open on April 27 although G3JVL managed to make 15 contacts for 1550 points which is the highest score heard to date. His best DX was with G3KMS at 332 km and G3DY and G4BEL, both at 200 km. The below-par conditions on 70 cm. didn't help with the establishment of contacts on the higher-frequency band.

Things were not much better for the 70 cm. Open on May 4. An outstanding signal in the South was that of GW3UCB/P in Wrexham and G8AGU/P from Linton, Devon, was a welcome contact for many. One cannot help being surprised yet again at the lack of CW activity on this band when conditions are as poor as they were. Your scribe put out 46 CW calls altogether with one reply only, from G3FJJ, and 'DAH is not running a transistor in the PA either! Phone activity was nearly all SSB, as is becoming usual on this (and other) VHF bands.

**Forthcoming Events:** May 31/June 1, 144 MHz Portable. June 21/22, Microwave Field Day (23 cm. and up). June 22, RSGB Region 1 VHF Contest, and July 5/6, VHF Open and SWL.

**Scottish Scene**

More microwave exploits by the GM3OXO team. George climbed Ben Ime (3318ft.) with GM8GEC (who unfortunately damaged his TX during the ascent) and made a 3 cm. contact with GM8BKE and GM3DXJ located near Dunbar. The QRB was 151 km. and the signals were 59 both ways. The equipment both ends consisted of a Gunn

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**THREE BAND ANNUAL VHF TABLE**

January to December 1975

<table>
<thead>
<tr>
<th>Station</th>
<th>FOUR METRES Countries</th>
<th>TWO METRES Countries</th>
<th>70 CENTIMETRES Countries</th>
<th>TOTAL Points</th>
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<tbody>
<tr>
<td>G3DAM</td>
<td>31</td>
<td>47</td>
<td>32</td>
<td>128</td>
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<tr>
<td>G3KMB</td>
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<td>GD2HDZ</td>
<td>28</td>
<td>47</td>
<td>21</td>
<td>115</td>
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<td>G4BGW</td>
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<td>9</td>
<td>99</td>
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<td>GM3FFX</td>
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<td>G3FJI</td>
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<td>G4BYP</td>
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<td>G8EOP</td>
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<td>20</td>
<td>76</td>
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<tr>
<td>GM4CXP</td>
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<td>42</td>
<td>3</td>
<td>74</td>
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<tr>
<td>G3BH</td>
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<td>19</td>
<td>73</td>
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<tr>
<td>G4CZP</td>
<td></td>
<td>58</td>
<td>14</td>
<td>72</td>
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<tr>
<td>G3BW</td>
<td></td>
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<td>10</td>
<td>71</td>
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<td>G8BKRC</td>
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<td>5</td>
<td>63</td>
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<td>G4A6E</td>
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<td>G4BKY</td>
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</table>

The Table shows claims to date from January 1, 1975 and will close on December 31, 1975. All claims should be sent to: "VHF Bands," Short Wave Magazine, Buckingham, MK18 1RQ, as soon as possible after the start of a new month.
TWENTY-THREE CENTIMETRES

ALL TIME TABLE

<table>
<thead>
<tr>
<th>Station</th>
<th>Counties</th>
<th>Countries</th>
<th>Total</th>
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</thead>
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<tr>
<td>G4BEL</td>
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<tr>
<td>G3DAH</td>
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<td>G3JVL</td>
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<td>23</td>
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<tr>
<td>G8ARM</td>
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<td>2</td>
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<td>G4BYV</td>
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<td>6</td>
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<td>G3JXN</td>
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<tr>
<td>G4ALN</td>
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<td>G1COJ</td>
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<td>G3NTE</td>
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<td>G8FMK</td>
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<td>G8EOP</td>
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<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

radio society, callsign GM4EAF, and so increasing 2m. radiation from the fair city. GM8BFJ has now completed the solid-state linear for the mid-Scotland repeater and it is undergoing the usual BJF stringent soak tests.

On 4m., GM4CXP now has 50 watts available and GM3BOA in North Berwick has SSB on this band from a Europa transverter and an FT-101.

VHFCC Awards

A very well-known callsign on 2m. is that of Steve Marsh, G4BWG (Peckham, SE London), and we are pleased to send him Award No. 239 for two metres. The equipment used to achieve this has varied considerably, but most of the contacts were made using an FM-208 followed by a QQV06-40A in conjunction with an HRO RX. Latest situation is that 130 watts of SSB are available from a pair of 4CX250B's to feed the 14-ele. Parabeam at around 50ft. and the HRO has been replaced by a Trio JR-599 with a Burns converter. Steve is also active on 4m. with a "Cambridge" on 70/26 MHz and a 4-ele. beam, and has plans for SSB on 70 cm.

Bob Matthews operates as G3ZNZ from Driffield, N. Humberside and gains Award No. 240 for his 2m. work. The interesting thing about his list of 100 contacts submitted was that every one was with a separate county or country—and you don't get many like that! He runs an FT-DX401 and a Europa transverter, and this feeds that 5-ele. Cubical Quad of his. To confirm that he is not in the least parochial in his outlook, Bob has gained the PA25 Award and wants but four more for the PA100 Award. He was the first British station to gain the "VHF DLD 1000" certificate for working 1000 different DOK numbers in Germany. He has made the appropriate contacts for the "VHF DLD," but is waiting for the QSL cards to come in.

News Items

Four Metres: G4BYP is still very active on this band in spite of the S6/9 noise level caused by thermostats in adjacent blocks of flats and the proximity of the Radio Mersey-side and Radio City transmitting masts. He can frequently copy the Sussex beacon now, so the Rx should be OK, but he apologises to those who may call him and get no reply. In spite of this handicap, he made it with GI3JLA (ex-EI6AS) of Co. Tyrone on 2m. and has skeds laid on for 4m. G2AXI (Basingstoke) is now fully equipped with 120 watts p.e.p. input on 4m. A call over the PA system at the Drayton Manor Rally recently for a "70 MHz Corner" produced 14 replies and a great deal of discussion—mostly about the lack of 4m. contests. Of the 14, seven were known to operate SSB on this band which is yet another sign of the times. G3IJE (ex-GW3IJE) is in Northwich and has some good SSB going...
from a ground-plane which is due for replacement by a four-ele. Yagi.

Don’t forget the G3VPS/P trip at the end of May. Details were given on p.156 of the May issue of SHORT WAVE MAGAZINE.

Two Metres: G4DOJ of Cheadle, Cheshire, reports that his call is being pirated—so watch out if you want a QSL card. GWSHVP spent Easter in Malta and reports that 9H1CD and 9H1BT are getting ready for the Sporadic-E season with 2m. SSB using a QKV06-40A in the PA with the possibility of adding a 4CX250B linear later. G4CXL worked into Italy on the night of April 23 and was a bit mortified when he learned later that the same station had been worked from a mobile! Did anyone else manage an Italian contact that night? G3JVL (flayling Island) made it with ON and DC the same evening.

GM8FFX, who is such a big signal on 2m. SSB, is pressing on under the tutelage of GM3ZBE with the CW test and will be coming on 4m. and 70 cm. with high power shortly.

This month again, several readers have commented on the misuse of calling channels— on this as well as on other VHF/UHF bands. Major trouble arises when two mobiles get going and fail to QSY once contact has been established. It is quite likely that the channel may appear clear to them, but a fixed station with a horizontally polarised antenna, and no cross-polarisation loss therefore, may be trying to copy some weak DX through the QRN and finding the situation rather trying to say the least. G3FFPK writing on this subject suggests that one should try and avoid 144-19-144-21 MHz so that any really weak stations calling CQ are not clobbered by strong locals slightly off-channel. This applies in areas of high density traffic only, of course. GWSLGD finds the situation aggravated by some who will tune up on the calling channel as well as operating on it. It may be added here that your scribe does not subscribe to the allocation of 2m. calling channels except for the more esoteric forms of communication—M/S, RTTY and the like—since band occupancy is such that they are quite unnecessary these days and their nominated function is so frequently ignored. Incidentally, G3FFPK is radiating a very nice, clean SSB signal from Purley, Surrey and attributes some of this to the dodge of eliminating residual carrier in the USB mode at the expense of a little more in the unused LSB mode. A useful tip. He runs the Europa with ITT-46 as the prime mover, Norman is trying to get an ARMS net going on Monday evenings at 1930z on 144-275 MHz. Members are welcome to join in.

Report has it that we may shortly be hearing news bulletins on Sunday mornings on RTTY on 144-6 MHz and perhaps also on GB3SX on 70-685 MHz.

Seventy Cm.: G2AXI is now fully operational on this band from Basingstoke with 25 watts p.e.p. to a QQV03-20A driven by a QQV02-6 mixer which accepts an injection frequency of 362 MHz on the screens and SSB on the grids from the 4m. transverter. The aerial is a 46-ele. Multibeam.

G3WSN and GM8FFX are both on with SSB now, the former with 500 mW at present, to be increased to 50 watts in the near future, but he was able to work G4BEL in Roxburghshire with this flea-power.

Twenty-Three: G4BEL and G3LQR are not by any means strangers to this Column, but of interest is that they both worked into DL during the opening in April. Nice going! GD2HDZ has had more cross-band QSO’s with G3KMS near Liverpool, but is not at present ready to transmit on the band.

G3JVL draws attention to a new front-end device for 23 cm. This is the DC5402 manufactured by AEI which out-performs the BFR91 at these frequencies as the gain is much higher. He has been testing with Paul Widger, G8AGU/P, up on Dartmoor with good results and says that Paul should be putting Devon on the map regularly. G3JVL runs skeds with G3KMS (Liverpool) on 432-2 MHz, with QSY to 23 cm., when Cdz are good, at 2300z each night; with G3OBD (Poole) on 1296.2 MHz at 2230z; and G6XM (Swindon) on 1296.4 MHz at 2200z.

The PAOSSB sked on 23 cm. has been dropped pro tem as Jan has been concentrating on E-M-E.

Deadline
All correspondence by June 7 please, addressed as usual to: “VHF Bands,” SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ. Cheers for now and 73 de G3DAH.
THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for July issue: June 5)

Perhaps this month we should start by giving a sort of "perpetual deadline" which will enable Club scribes to know their deadline for months ahead. Everything is geared to publication day—the last Friday in the month, e.g., May 30 for the June issue, June 27 for the July issue, and so on. Come back twenty-two days, and you get May 8, which was the deadline for this piece, and June 5 for the coming crop; so it runs every month without fail, saving only that such an arrangement of necessity does by being used at times of "industrial unrest" such as printing disputes or that which might arise if a power stoppage becomes a fact in the next few months. At such times arrangements may well have to be changed and we might even lose an issue.

National/International

First in the clip is the Royal Navy group, with their members scattered over the four corners of the earth and a Newsletter full of assorted varieties of entertainment, awards to be obtained, a QSL dept. and various other items of interest. As well as their Mobile Rally at Petersfield on June 1, planned events include GB3ZU/A on the air from there for the Lee-on-Solent Air Day, July 26, and GB1RNI activated from Portsmouth Dockyard over August 23-25 for this year's Navy Days. For the R.N. or old-sailor type this is the one to join. No doubt G3MTP would be pleased to give you all the details; his address appears in the Secretaries Panel.

The activities of the G-QRP Club are more or less explained by the title; this one is for the many amateurs who find satisfaction in operating on real low power and seeing what can be achieved with it, on any band. Apart from a couple of awards—one aimed at SWL's, who by the way can also become members—the Newsletter and the series of bulletins which are sent out between the Newsletters are in themselves well worth keeping as a digest of QRP ideas and circuits. Details from G3RJV at the address in the Panel.

A.R.M.S. enfold the interests of the /M operators, both SWL and FISTS. Details from G3PUC at the address in the Panel.

Up North

Here our first call should be to the Star lads at the New Inn, Bramley Town Street, Leeds. It may be recalled that last time they reported they were searching for a new place as their Hq. was to be demolished—well, they duly got their notice, but they now are happy to say they have a reprise at least until 1976, which will give them a breathing space. Another important point is the change of secretary's address, duly noted in the Panel.

Sunderland give details of their July activities instead of June; July 3, nothing firm arranged, and July 17, the Annual General Meeting—visitors and new members welcome to both. No doubt the hon. secretary would be only too pleased to hear from you should you want to join during June—his address appears in the Panel.

One thing always stays the same at Northern Heights—G3MDW is always announcing "this is his last year," and he always remains in office! Lucky Club to have such a stalwart, and how he manages year after year to generate his programme is amazing. For June 11, the group is "away" for a quiz against, and at, Denby Dale, and June 25 is a ragchew session at Hq.; it should also be noticed that the lads are out again on July 2, this time "hunting treasure"—Wot, no pirates?

Any Thursday you can meet the York group, in their Hq. at the British Legion Club, 61 Micklegate. They are definite now that GB2NRM will be operational at the opening of the new National Railway Museum, for a week commencing September 27. GB2TTZ is another of their callsigns, this one for the Tollerton Show, and there is a plan afoot for a talk/demonstration at York University. A little oddity in its own way is that their Morse class is conducted, not by any of the licensed chaps but by SWL Daniel, who is credited with the basic first aid around for teaching Morse.

The QTH of 83 Town Street, Altrincham, Leeds is home for the White Rose Club, every Wednesday evening, and from 10.30 to lunchtime on the first Sunday morning in each month; the evening affairs open at 7.30 for an 8 o'clock start to the lecture. In June also we notice they are out for NFD, the weekend of June 6-7, and on June 15 they have a "family luncheon date" at the Red Lion Hotel, Bursnall.

Midlands

Bury & Rossendale forget the informal in the Mosses Community Centre, Cecil Street, Bury every Tuesday, while making the second one in each month into the "proper" one with lecture, film show or whatever. In addition, of course, summer tends to bring on the outside activities, details of which G8ECM would be pleased to provide, either at a meeting or from his address in the Panel. The second week of June sees them being instructed by G4BVI on the subject of Basic Logic—a facet of electronics that offers more outlets for hobby projects, quite apart from its use in devising sophisticated control circuits, ie., the keying arrangements in the shack.

At Nottingham there has been a change of staff, with G8IPH now doing the secretary chore. For June, he reports the group will have June 5 for a Forum and NFD preparation, June 12 for president G2FUB to talk about the £1.80 Electronic Keyer; on June 19 there is the preparation for the GBRHR activity which takes place on Victoria Embankment, Nottingham at the Vintage Transport Rally. Finally, June 26 is down for a talk, topic not specified.

Wolverhampton have a fine Newsletter from which we learn that the Hq. is at Neachells Cottage, Danescourt Road, Stockwell End. The issue currently to hand covers all the programme from April to the beginning of June, when on the 2nd there is a talk on Marine Radio by G3IGK, an ex-professional in that game who still "does a bit" for holidaying. It seems, basically, that the Hq. is open on Sundays and Wednesdays for normal activities, and then on Thursdays there have been the R.A.E. sessions which by now will presumably have been dropped until September.

If you have an intention to visit Midland you should book the date June 17, subject not finalised at the time of writing. Venue, of course, is the Midland Institute in Birmingham—any Brummie should know where it is!

G8IP writes to say he has been shotgunning into the secretary's job at Bristot; the Club have their premises with the University Settlement, Barton Hill—more details from G8IP at the address in the Panel.

Now to Bromsgrove where they assemble at the Avoncroft Art Centre, on the second Friday in each month. This gives them June 13, at which time they will be hearing from G4AAL, all about Closed Circuit TV. Looking ahead, and thinking about the holiday season, we notice a Natter Nite set for July 11.

At Derby, the Hq. is at the Top Floor, 119 Green Lane, Derby, every Wednesday. Programme for June says a Surplus Sale on June 4, and a Film Show on the 11th. D/F Practice takes up June 18, and Technical Topics fill the 25th.

And, oh, couldn't we wish other societies would follow the practice of their G3VGW—he has it all there, never a waste word, gets it cleared up and leaves the chat till he has disposed of all the business.

This QRP lark is definitely getting a grip in U.K., and we notice that now South Manchester include a talk on the subject by G3FNM on May 30, our publication day. Then May 6 is down for the Technical Forum, and on the 13th the talk is on Modern Telephone Exchange, again, by G4AUR. A "Mini D/F Contest" fills June 20, and then on June 27 there is a Night on the Air. Sale Moor Community Centre sees these Friday activities, and on Mondays the VHF and D/F element get

PLEASE NOTE!

Closing dates for this feature for the next few months will be: June 5, July 3 and August 7. These are final dates after which material cannot be taken in but will be held over for the month following.
Flying the A.R.M.S. flag at the Drayton Manor Rally on April 20 was Brian Meaden, G3BHT, from the vehicle that has carried him, with G3BA and others, on many successful DX-peditions. G3BHT is a committee member of the Amateur Radio Mobile Society.

Together at the shack at "Greeba," Shady Lane, Manchester 23.

That address in Gaol Street for Hereford should not worry anyone—we have no reports of members being locked up! Expanding a little, the place to look for is actually the County Control, Civil Defence HQ. The date is June 6, and we would expect the activity to be not unconnected with NFD which is down for the next couple of days.

The first and third Wednesdays are booked at Wirral, although our current copy of their Newsletter cuts off giving detailed gen from the end of May. The venue will nevertheless still be the normal one at the Sports Centre, Grange Road West, Birkenhead.

Solihull are pleased to announce that Dud Charman, G6CJ, will activate his famous Aerial Circus for them; the venue is the Physics Lecture Room at Birmingham University—other Clubs are invited to attend, but will secretaries of these please write to Silothull's G4AEJ with an indication of the numbers likely to turn up. We need to add is that if you haven't seen Dud's lecture, you really must make the effort to get there—he doesn't do it so often of late years since he retired to his DX hide-away in Dorset.

Mid-Cheshire have a place at the rear of Verdin Buildings in the Technical Activities Centre of Verdin Comprehensive School, Winsford, where they can be found on the following dates: June 11, a talk on D/F Techniques, and details of the Club D/F Contest, times and frequencies; and on June 22, the Club D/F Contest proper. In addition, they put the Club rig on, on most Wednesday evenings, and would like someone to come back to G3ZTT's CQ's!

Gone West

The "brains trust" theme is revived at Cornish, though we doubt whether either Professor Joad or Commander Campbell will be appearing. The date for this one is June 5, and it will be at the SWEB Clubroom, Pool, Camborne.

The letter from Bath set your old scribe a bit of a problem; their Secretary writes very nicely, but just one word was a bit indistinct—Murphy's Law says it just had to be the important one! June 14 and 15 are the dates in question, when GB3CTR will be operational, from the Steam Traction Engine Rally at Camerton. Normal Club meetings are every Monday evening, starting at 8.30. Head for Coronation Avenue, Oldfield Park, Bath.

A new Hq. address is noted for Exeter, who are now quartered at Combe House, Coombe Street, South Street, where they foregather

The cities of Leeds and Dortmund (West Germany) are "twinned," as is the civic fashion these days. Here we see Connie Wade, G4CUY, of the White Rose Radio Society, presenting the Lord Mayor of Leeds with an "honorary White Rose award" after a successful link-up with Dortmund by Amateur Radio.
on the second Monday of each month—albeit there is a hint of a possible increase in the monthly ration of meetings. Over the weekend of June 21-22, they will be running GB3ESE for the Exeter and District Scout Jamboree.

At Torbay things are obviously going well as the entire slate of officers were re-elected en bloc, and they now have 100 members. The Hq. is Bath Lane, rear of 94 Belgrave Road, Torquay, and the date Saturday June 28, for a talk and checkover for the NFD effort.

Southern England

As usual, this is by far the largest heap of reports, although the density of the amateur population and so the number of radio clubs is probably higher in the Midlands and North—puzzling.

Newbury have pole position, and they announce that their get-together is on June 2 at South Berks College of Further Education, 7.30 to 9.30. G4DGU will be talking about a 70 cm. exciter and an eighty-metre transceiver; quite a contrast!

At Bishops Stortford, it was mentioned last time that they were a bit disorganised owing to letting in an extra—special even to the programme and the general change-round resulting. This continues, the May meeting having been fitted up with a talk and demonstration of Amateur TV by G8AZM; this transfers the hiatus to June, so the May meeting having been fitted up with a talk and demonstration of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague of Amateur TV by G8AZM; this transfers the hiatus to June, so it must be accepted that on June 16 they will have to listen to colleague.
Another lot who like to keep their activities a deep secret is at Southgate—here we have to tell you that it is always the second Thursday in the month, and if you go to the Scout Hut, Wilton Street, Winchmore Hill Green to visit them, keep off the grass! It seems some twit parked on the grass, and in trying to get off again made a prize mess of the lawn, which nearly made the Scouts refuse further use of their place. And who can blame them?

Now to Bedford who have a two-metre D/F contest on June 5, with announcement of the results on the 12th. A guest speaker comes on June 19, to talk about Radio Control of Models, and on June 26 they will be readying for SSB Field Day, and listening to a mini-lecture. Hq. is at the United Services Club, The Broadway.

Cheshunt are, as it were, "reformed" characters; they now operate on a weekly basis, every Wednesday evening at Rosedale Sports Club, Andrews Lane. June 4 sees G3GBL talking about Aspects of Various Bands of Operation, and on June 11 there is, first, Morse, and second R.A.E.—this repeats on June 25. The intervening June 18 date is filled by G4DCP on Digital Logic.

Every evening of the week between Monday and Thursday the Barking lads have something going on at Westbury Recreation Centre, Westbury School, Ripple Road, with Wednesday evenings devoted to Closed Circuit TV activities. More details can be obtained from the G8JEG, as Panel.

From where we sit, it looks as though Cray Valley have booked the first and third Thursday at Eltham United Reformed Church Hall, 1 Court Road, S.E.9 but it is suggested you check first because this is not explicitly stated in the Newsletter we have to hand. Neither, come to think of it, do we have the programme for which we must refer you to the hon. secretary, G3YWQ.

June at Chiltern means the 10th for an informal, and the 25th for the lecture—Telefax, by G8GGU. Both are at the Ernest Turner works (in the canteen), High Wycombe.

Lots of activities are available if you are in the Maidstone YMCA group, at the Sportscentre, Melrose Close. On June 6, there are, naturally, things to be done in preparation for NFD, and on the 13th there is a Beginners’ Class, aiming at R.A.E. and Morse. The YMCA competition on June 28 at Tonbridge will be prepared for on June 20, and on the 27th G3REM will be demonstrating and talking about "Tools and Materials used in Amateur Radio."

West Kent are based on the Adult Education Centre, Monson Road, Tunbridge Wells, and on June 13 they will be wheeling and dealing at the Junk Sale. Simple Test Equipment, its Construction and Use, will form the diet on June 27. In addition there are informals on June 3, 17, and July 1, either for nattering or construction work, which will be based on the Drill Hall, Victoria Road, Tunbridge Wells.

The FT-220 transceiver will be the talk-and-demonstration by G3ZLQ at Maidenhead on June 5, while on June 17, G3VCT will discuss the business of Speech Processing. Both are at the British Red Cross Hall, The Crescent.

The weekly doings at Dunstable Downs are set down by the “temporary” hon. secretary, who realises he has probably been lumbered with the chore for good! Map-reading is on June 6, out on the Dunstable Downs, or, if wet, at Hq. A general natter-session appears on June 13, and on the 20th the St. Johns people will come along and demonstrate how they deal with electricity, or, rather, its consequences. Finally, on June 27, comes the half-yearly get-together for which one brings a YL or XYL. Hq. is at Chews House, 77 High Street South, Dunstable.

After forty years of continuous activity, Surrey are still going strong, says the secretary after he was re-elected at the AGM. They have a Constructional Contest on June 17, at the Ship Inn, 47 High Street, Croydon.

Epilogue

Which is where we sign off the programme for another month. Next time, we want the news for “Flaming July” with dates, venues, details of what goes on, secretary’s address and phone number, and all the chat after the vital stuff, by June 5. Send it to “Club Secretary,” SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.

Subscription rate to Short Wave Magazine is £4.20 for a year of twelve issues, post free.
NEW QTH's

This space is for the publication of the addresses of holders of new callsigns, or changes of address, in EII, G, GC, GD, GI, GM and GW to stations not already listed. All addresses published here will appear in the UK section of the American "CALL BOOK" in preparation. Please write clearly and address on a separate slip to QTH Section. Be sure to give correct County designation and post-code. Address items for this space to: "NEW QTH Page," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.

EIIUC, R. A. Smye (G4DMN), Dourwood, Co. Galway, Eire (QSL to G4DMN)
EI0CV, M. H. Smye (G4DHC), Dourwood, Co. Galway, Eire. (QSL to G4DHC)
EI7CS, M. B. Rooney, The Post Office, Glencar, Sligo, Co. Leitrim, Eire. (Tel: Manorhill Road 44)
G2ABH, L. S. Gumbrill (ex-G4CJN), 4 Finley Close, Kendal (22541), Cumbria, LA9 6JN. (Re-issue)
GMP2FR, W. G. C. Drury, 39 Williamwood Park West, Netherlee, Glasgow, G44 3TE. (Re-issue)
G3CBV, J. P. Hannifin, 31 Elms Way, Southbourne, Bournemouth (48248), Hants., BH6 31TU. (Re-issue)
G4DFH, J. R. Dales (ex-G8GPE), 100 Ruisken Avenue, Lincoln, LN2 4BT.
G4DPY, S. Ford, 3 Hill View, Milton, Stoke-on-Trent, Staffs.
G4DUO, D. McLaughlin, 9 Josephine Terrace, Limavady, Co. Londonderry, BT49 9AY, Northern Ireland.
G4DRC, W. S. Moore, 63 Leopold Avenue, Stockton Heath, Stockton-on-Tees, Staffs., TS19 2PN.
G4DYB, A. Mitchell (ex-G8JFI), 50 Jermyn Crescent, Bournemouth, Dorset, BH2 4JN.
G4DXL, Dr. L. A. W. Kemp, 17 Thorn Bank, Onslow Village, Guildford, Surrey, GU2 5PL.
G4DYL, G. J. Kennedy, 44 Park Avenue,高达, Auckland, New Zealand.
G4DYP, B. Castle, 6 Pinewood Avenue, Sevenoaks, Kent, TN14 6SA.
G4DYO, B. J. McCartney, 123 Reading Road, Finchampstead, Berks, RG11 4RD.
G4DZG, A. Green, The Cottage, 3 Rothwell Lane, Hailsham, Sussex, BN27 5ND.
G4EA1, W. A. Minton (ex-G8IIT), 17 Grotton Lane, Eastcote, Middlesex, UB8 1JW.
G4EAM, E. J. Howard, The Close, Ashwell Road, Oakham, Leicestershire, LE15 6QJ.
G4EBC, M. J. Cooney, 50 Calder Avenue, Southport, Lancs.
G4EDU, S. J. Williams, 11 Salop Road, Warley, West Midlands, B68 9AD.
G4DTH, W. J. A. Oldham, 7 Grassmere Road, Beeston, Leics., NG9 3PF.
G4EGR, D. R. Jones, 57 Treding Road, Thorpe-le-Soken, Essex, CO7 1FA.
G4GIR, S. A. Hall, School House, 12 Caxton Road, Sheffield, South Yorkshire, S10 3DE.
G4DMU, T. S. Hunt (ex-G8GPY), 11 Gordon Crescent, Richmond, North Yorkshire DL10 5AQ.
G4DWH, G. Simmons, 11 Castle Hill Road, Prestwich, Manchester, M25 8YT. (Tel: 061-740 8056.)
G4DYG, M. J. Cooke, D.M.A., 76 Falcon Road West, Sprowston, Norwich, Norfolk, NR7 8NY.
G4DYS, F. P. Castle, 6 Pinewood Avenue, Sevenoaks, Kent, TN14 5AF. (Tel: 01-673 2260.)
G4DYF, B. P. Castle, 6 Pinewood Avenue, Sevenoaks, Kent, TN14 5AF. (Tel: 01-673 2260.)
G4DYC, M. J. Cooney, 50 Calder Avenue, Southport, Lancs.
G4DVP, P. A. Leslie-Reed, c/o Yew Tree Farm, Oddington, Cirencester, Gloucestershire, GL7 3NA.
G4DYO, B. J. McCartney, 123 Reading Road, Finchampstead, Berks, RG11 4RD.
G4DZG, A. Green, The Cottage, 3 Rothwell Lane, Hailsham, Sussex, BN27 5ND.
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G4DYG, M. J. Cooke, D.M.A., 76 Falcon Road West, Sprowston, Norwich, Norfolk, NR7 8NY.
An old friend in a new box... but with 5 or 8 channels fitted!

The very popular IC-22 has had a face lift to smarten it up a bit. The dial knob has been moved to the left and re-designed to give clearer channel indication, and the knobs, switches and S-meter have been re-positioned and re-shaped to give a modern smart appearance. The important bit of the set, i.e. the works, have hardly been changed at all. The only main alterations being a change in the front end transistor and a re-designed squelch circuit. Thus the 22A will be in every way as good as the old faithful IC-22 and have the same excellent speech clipping for optimum readability both direct and via repeaters. The same highly sensitive receiver with slight improvements in the squelch circuit will give excellent results ensuring that you have the best chance of hearing stations that can hear you. We supply free of charge an automatic tone burst which operates only on repeater channels. Channels fitted are 145, 520, 521, 522 and 523 for £115 + VAT with the option of three repeater channels or two repeater channels and 524 for £125 + VAT. You will have noticed that this works our cheaper than a similar number of channels fitted in an IC-22. This is our bit towards helping to soften the Chancellor's blow! Extra channels up to the full complement of 22 can be supplied for a further £40 + VAT per channel.

IC-22A BRIEF SPECIFICATION

- **Frequency coverage**: 144-146 MHz 22 channel capacity.
- **Power requirements**: 13.8v. DC ± 15% neg. ground.
- **Consumption**: Transmit 2.1A, Receive 180mA.
- **Size**: 2 9/32” x 6” x 81” (58 x 156 x 216mm.)

**Receiver**
- **Sensitivity**: 0.4µV for 20 dB quieting.
- **IF's**: 10.7 MHz and 455 kHz.
- **Bandwidth**: ± 8 kHz (—6dB) ± 15 kHz (—50dB)
- **Spurious response**: —60dB or less.
- **Crystal frequency**: 14 MHz.

**Transmitter**
- **Power output**: ≥ 10 watts switchable.
- **Modulation**: Variable reactance phase mod with clipping.
- **Deviation**: Adjustable 3-16 kHz (we set to 4.5 kHz).
- **Spurious output**: 60dB or less.
- **Crystal frequency**: 18 MHz.

**Accessories supplied**
- Microphone
- DC Power cord
- Versatile mobile mounting harness
- Spare fuse, etc.

**Other lines from Thanet**

- **IC-3PA** DC PSU and speaker. Fitted with Automatic overload protection. Mounting harness to hold IC-22, IC-22A, IC-225 or IC-20, £35.00 + VAT.
- **PL-VI** External VFO for the IC-210 or IC-225, £42.00 + VAT.
- **21-VFO** External receiver VFO for the IC-21, IC-21A, IC-22 or IC-22A, £42 + VAT.
- **Crystals** for IC-32, IC-22, IC-22A, IC-22F, IC-320 or IC-31, £4 + VAT per pair.
- **Crystals for IC-225 or IC-210**—reverse repeater or special channels, £1 + VAT.
- **FT-501** Digital HF Transceiver bargain at £415 INCLUDING VAT AND PSU.
- **IC-225** 80 channel Mobile transceiver—fitted 80 channels.
- **IC-210** FM main station. Fully VFO (see previous advert), £200 + VAT.
- **IC-21A** Updated version of the IC-21—takes the DV-21 direct, £170 + VAT.
- **DV-21** Digital frequency synthesiser VFO for IC-21A, IC-21, IC-22, IC-22A (the last three rigs need modification), £172 + VAT.
- **IC-320** UHF MOBILE TRANSCIEVER. 12 channel capability, fitted with 4 channels including 433-2 MHz. 10 watts out. Ideal for UHF repeaters, £169 + VAT.
- **IC-31** Base station version of the IC-320, £220 + VAT.

24 HOUR ANSAPHONE SERVICE

THANET ELECTRONICS

Note our temporary change of address during alterations

34 CLIFF AVENUE, HERNE BAY, KENT (02273) 63486

AGENTS

NORTH

PETER AVILL, G3TPX,
7 Moorland Crescent,
Mapplewell, BARNSLEY, Yorks.
Telephone: DARTON (022678) 2517

LONDON

TERRY BARNETT, G8BAM,
7 Cochrane Court,
Leyton Grange,
LONDON E10. Telephone: 01-556 9366
STATEMENT OF POLICY

FROM THE DATE OF THIS ANNOUNCEMENT WE WISH IT TO BE KNOWN THAT OUR ONLY AUTHORISED DISTRIBUTORS FOR THE UNITED KINGDOM ARE AS FOLLOWS:

AMATEUR ELECTRONICS UK Birmingham
WESTERN ELECTRONICS (UK) LTD. Southampton

IN THE INTERESTS OF GOOD AFTER-SALES SERVICE ALL CUSTOMERS ARE RECOMMENDED TO PURCHASE FROM OUR MAIN AGENTS OR THEIR AUTHORISED OUTLETS.

WESTERN ELECTRONICS (UK) LTD.

owned and managed
by
H. E. PERKINS, G3NMH
and trading only from

1 WEST PARK ROAD
SOUTHAMPTON
Telephone: SOUTHAMPTON 27464

wish it to be known that they are the original and only

WESTERN ELECTRONICS
started at Hook, continued in Totton
and now here in Southampton

No other firm can make this genuine claim!
ONLY THE ANTENNA WAS ON THE FLOOR!!

ZL1ASY worked GC3EML on the 20m. band with "*JOYSTICK lying ON FLOOR OF SHACK!"
G2BAH (ex G4CJN), Kendal, reports: "I happened to be listening on 80m. and heard someone in Manchester testing. We established a strength 8 qso each way. He had a *VFA laying on his kitchen table and was making tests to see if it would load up, etc. An old timer, a G2 and 2 letters, so he knew what he was doing."
G3ZDR worked a W3 on 20m. using a *VFA and a PM3A with 5 watts.
G3VFA worked W1TM on 20m. using a *VFA and 750mW.
W6TYP worked WA6JPR over hundreds of miles on 40m. using *VFA and microwatts "equivalent to ONE MILLION ! ! ! miles per watt of input power" (So says his WORLD RECORD achievement certificate).

*These are VFA USERS claims, and remember, SWL's, A GOOD TRANSMITTING AERIAL IS AN EQUALLY GOOD Receiving AERIAL—You sure can't work 'em if you can't hear 'em!

Here is YOUR Complete WORLD RECORD AERIAL SYSTEM for 160, 80, 40, 20, 15 and 10m. plus all SW BC bands and everything between FOR ANY LOCATION—
SYSTEM "A," for modern communications RX's and QRP xcvrs. ... ... ... ... ... £32.76
SYSTEM "D," for other SW and MW receivers ... ... ... ... ... £24.43
SYSTEM "J," for TX's and XCVR's up to 500w. PEP 160 thru 10m. ... ... ... ... ... £40.72

ALL PRICES DELIVERED (incl. insurance)
Send STAMP for full list of PARTRIDGE PRODUCTS including PARTRIDGE SUPER PACKAGE COMPLETE STATION FOR ANY LOCATION.
(PRICES SUBJECT TO ALTERATION WITHOUT NOTICE)

BOX 4

Partridge Electronics Ltd

CW IS STILL VERY MUCH ALIVE!

SAMSON ELECTRONIC KEYERS
—the choice of Ships and Coast Stations the world over.
Two different models:

ETM-2B TRANSISTORISED KEYER
ETM-2b — with make-break relay contacts, (Ratings : 1A, 400V, 30W max.) Complete with mercury batteries, £42.77 (or with penlite batteries, £41.09).
ETM-2bS — with spdt changeover relay contacts, (Ratings : 0.5A, 250V, 5W max.). Complete with mercury batteries, £48.56 (or with penlite batteries, £46.83).

ETM-3b INTEGRATED CIRCUIT SQUEEZE-KEYER
Printed circuit with 4 ICs and 13 semiconductors. Twin paddles. Constant 3 : 1 ratio. Speed control, 8-50 wpm. Operate/Tune button. AC mains power supply, 110/220-240v. Almost-inaudible sealed reed relay. Grey case 4" x 2" x 6". The renowned SAMSON keying lever movement with fully adjustable gaps and tensions. Can be used either as an iambic mode squeeze-keyer (characters made with fewer paddle movements—you can make a "C" with one squeeze)—or as a normal electronic keyer.
ETM-3b — with make-break relay contacts, (Ratings : 1A, 400V, 30W max.), £49.71.
ETM-3bS — with spdt changeover relay contacts, (Ratings : 0.5A, 250V, 10W max.), £55.78.

— OR IF YOU LIKE IT STRAIGHT...

JUNKER PRECISION HAND KEY
A superbly engineered straight hand key used for many years by professionals afloat and ashore. With this key you can't help but send good morse.

Free-standing—it does not have to be screwed to the operating desk. Good weight distribution and large rubber feet stop it sliding or rocking. Weight : 21 lbs. Front and back contacts of precious metal, with fine adjustment of contact gaps by positive click-stop action. Lever-action spring tension adjustment. Spring pigtail at keying arm pivots ensures good contact. Insulated keying arm, moulded knob with rubber anti-slip insert. 3-way terminal block and cable clamp at rear. Key-click filter (L, C & R) built into base. Rear-hinged cover (with spring catch) and other metal parts finished in attractive hammer-tone grey. Base area: 3½" W. x 7½" D. Overall height : 2½", £31.48.

BAUER KEYING LEVER UNIT
We have imported this popular unit for many years for inclusion in home-built electronic keyers. Adjustable contact gaps and spring tensions. Single paddle on moulded base 1½ x 2". Height : 1" (excluding paddle), so is compact enough to go inside most keyers, £6.68.

BUILDING CW FILTERS?
Don't let RTTY and SSTV hog the 88 mH TOROIDS, 62p each.
ALL PRICES INCLUDE 25% VAT
All goods post-paid U.K.

SPACEMARK LTD.
THORNFIELD HOUSE, DELAMER ROAD, ALTRINCHAM, CHESHIRE.
(Tel. 061-928 8458)
**TELFORD COMMUNICATIONS**

**TC 10**
Mains or D.C. operated 2 Metre Tx with A1/A3/A3/F3 modes, full high stability Mixer VFO coverage plus one Xtal controlled A3 call channel. 2 Watts RMS 25 Watts PEP output. Repeater Tone access. Integral solid state aerial C/O and Control/Muting Relays. Fully stabilised and protected PSU.

**Price:** £130.00

**TC 5**
12 Volt negative earth 2 Metre Tx, 2 Watts output with up to 3 chip Xtal controlled A3, or with companion TC 6 A3/F3. Ideal for Mobile use, supplied with Ch 1 Xtal on 145-5 MHz complete with Ae C/O relay, Converter muting and Microphone.

**Price:** £35.00

**ANCILLARY EQUIPMENT**
2 Metre Bandpass Aerial Filter
Ideal to clean up those unwanted Tx sprogs
2 Metre Bandpass Aerial Filter
Ideal for use with Mobiles
2 Metre Bandpass Aerial Filter
Ideal for use with Mobiles

**Price:** £5.00

** tc 7**
Bandsearcher
Ideal to clean up those unwanted Tx sprogs
2 Metre Bandpass Aerial Filter
Ideal for use with Mobiles
2 Metre Bandpass Aerial Filter
Ideal for use with Mobiles

**Price:** £30.00

**G8AEV MK. 2 2 METRE CONVERTER**
The well-known kit in ready-built form with 3 IF outputs for contest use etc. All popular IF's available. 12 Volt D.C. operated either polarity earthed. Typical gain 20dB, typical N.F. 3dB. Join the other 650 users for £13.00.

**Price:** £13.00

**GENERAL**
All prices VAT exclusive (add 25%).

**AMATEUR RADIO**
CHAS. H. YOUNG LTD.
170-172, CORPORATION STREET, BIRMINGHAM B4 6UD

**PRICES IN THIS ADVERT HAVE BEEN CORRECTED FOR 25% VAT WHERE APPLICABLE**

**AERIALS AND AERIAL EQUIPMENT**
Bantex 8 wave 2M Fibre Glass ... (75p) £3.56
Bantex 16 wave 2M Fibre Glass ... (75p) £6.37
Bantex 22 wave 2M Fibre Glass ... (75p) £6.00

**Prices Include VAT and are subject to change without notice.**

**Midland Agents**
for EDDYSTONE, JAY BEAM, JOSTY KITS, AMTRON KITS

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**TELFORD COMMUNICATIONS**

**TC 7**
Tunable I.F. unit A1/A3/A3/F3. Any 2 MHz coverage between 15 and 30 MHz. (Standard Model 28-30). Mains or D.C. operation. Variable tuned front end. 4 in. Scale length individually calibrated at 100 KHz increments. 5 Meter (c. zero on F3) integral monitor loudspeaker. I.F. output at 1.6 MHz for scope etc. Can’t be beat at the price, over 250 now sold.

**Price:** £19.55

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**FOR ALL YOUR 2 METRE SOLID STATE BRITISH-BUILT EQUIPMENT**
78B HIGH STREET, BRIDGNORTH, WV16 4DS, SALOP. Telephone 074-62 4082 9 a.m. - 5.30 p.m.
FM FOR 2 AND 4

STORNO CMG13C HIGH BAND FM TX/RX for 2 metre conversion, with circuit. 10 watts output. £14.00 + £2 c. & p.

PSU 24 volt inverter. RX double superhet cascade ECC84 RF, ECC81 & 6AK5 mix, 4x 6AK5 IF and limiters, ECC83, ECC80 AF, ECC81 osc. TX & RX crystals fitted (our choice), complete with control box, mic, cables and speaker.

STORNO CMG13D VHF UNIT LOW BAND TX/RX for 2 metre conversion. £16.00 + £2 c. & p.

TX 10 watts output from QVQ03-10 PA. PSU 12 volt inverter. RX double superhet 6AK5 RF, mix, osc., 2nd mix. Transistor IF and AF. TX and RX crystals fitted (our choice), complete with control box, mic, cables and speaker.

STORNO CMG13D VHF UNIT LOW BAND TX/RX for 4 metre conversion. £25.00 + £2 c. & p.

CRUFTS SUITABLE FOR STORNO FM TX/RX £2 each.

2m CQ 13. TX-2X4 RX-17+: £45. 6000 6010 6020 6021 6030 6032 6034 6040 6043 6050 6065 6070 6076 8454 8472 8500 8550.

4m CQ 33. TX-2X4 RX-9+: £95. 2924 2931 2958 2965 7863 7866 7867 7869 7870 7900.

Transmitter source 123, 123-5, 124, 124 for 21 MHz mix. £19.00.

Transmitter source 130, 130-5, 131, 131-5 for 14 MHz mix. £19.00.

Extra channels in 100 kHz steps. £31.00.

RX RF UNITS, 2-180 MHz, 3 bands, 2 RF stages 6BA6, Mix 12AT7, 3 gang variable, 6AM6 xtal osc., 6AM6 cathode follower, with circuit. 4 x 4 x 14....

IF UNITS, giving a few examples which are normally in stock:-

HEATHKIT SW-717 Receiver £105.00 (43.00)

EDDYSTONE 730 Receiver £60.00 (25.00)

STAR SR-550 Receiver £50.00 (22.50)

EDDYSTONE 730 Receiver £29.50 (13.00)

HEATHKIT SW-717 Receiver £30.00 (13.00)

R.216 Receiver, V.H.F. Receiver £105.00 (50.00)

CRYSTALS SUITABLE FOR STORNO FM TX/RX £2 each.

We also supply PHILIPS & LABGEAR COLOUR TV TEST EQUIPMENT including Colour Bar Generators, Cross Hatch Generators, Degaussing Coils, Oscilloscopes, CRT Testers, Transistor Testers, etc., etc.

We have full H.P. facilities.

We offer a first-class overhaul service for your electronic equipment, whether you are an amateur or professional user.

We have EASY Parking facilities.

We welcome your enquiries for specific items which although not advertised, may very well be in stock.

PARTRIDGE "JOYSTICKS," "New Lightweight VFA" £12.10 (60p) ; "JOYMATCH" III. Aerial Unit, £12.10 (60p). LO-200, £17.60 (70p) ; ATU kic, £5.00 (30p) ; ATU assembled, £6.05 (30p) ; Artificial earth, £6.05 (30p) ; Aerial Switch, £6.05 (30p). Literature on request.

TRIO EQUIPMENT. Please enquire.

SHURE MICROPHONES, 444T. £15.00 (40p) ; 444. £13.00 (40p) ; 40A. £6.50 (30p) ; 201. £2.50 (30p) ; 202. £6.05 (30p). Full details on request.

KEYNORRSENS, piano key mains connector units, £6.25 (40p). Trade enquiries welcome.

AT R.T. & I.

* We have full H.P. facilities.

* Par exchanges are a pleasure.

* We welcome your enquiries for specific items which although not advertised, may very well be in stock.

R. T. & I. ELECTRONICS LTD.

Ashville Old Hall, Ashville Road, London, E11 4DX Tel: 01-539 4896

NEAREST STATION: LEYTONSTONE (Central Line)
Y.A.T. AS A RESULT OF THE BUDGET VAT AT THE RATE OF 25% MUST BE ADDED TO OUR PRICES WHICH ARE NOW SHOWN EXCLUSIVE OF V.A.T. HOWEVER WE ARE PLEASED TO ANNOUNCE THAT AS A RESULT OF A NEW AGREEMENT WITH OUR SUPPLIERS WE HAVE BROUGHT DOWN THE BASIC COST OF MANY OF OUR STOCK ITEMS.

N.B. Frequencies as listed above but in alternative types of holders are available as per code (b).

ORDERING: All we require to know is (1) output frequency, (2) crystal frequency range and (3) the holder. It is not necessary to give the exact crystal frequency when ordering any of the above range.

BURNS ELECTRONICS

We are pleased to announce we have been appointed Northern Stockist of BURNS ELECTRONICS kits, etc., and are able to supply most of their products from stock. We will also be representing them at many of this years rallies.

MARKER CRYSTALS

1 MHz and 5 MHz in HC6/U and 10-0 MHz and 10-7 MHz in HC6/U and HC25/U at £1.50 each.

PYE POCKETPHONE (PFI) AND PYE CAMBRIDGE (U1018) UHF CRYSTALS

Crystals for the above equipments for use on 433-2 MHz (TX and RX) and for GBFPY are available at £4.00 per pair.

CONVERTER/TRANSVERTER CRYSTALS — HC18/U

New low price—all at £2.80 each, 38-666 MHz (144/28), 22 MHz (70/28), 58 MHz (144/28), 70 MHz (144/6), 71 MHz (144/12), 95 MHz (432/52), 96 MHz (1296/432/144) 101 MHz (432/28), 101-105 MHz (1296 MHz (1296/28) and 116 MHz (144/28).

CRYSTAL SOCKETS—HC6/U AND HC25/U (Low loss)

1op each plus 10p P. & P. per order (P. & P. free if ordered with crystals).

CRYSTALS SPECIALLY MANUFACTURED FOR AMATEUR USE TO CUSTOMERS REQUIREMENTS

In either code PE (±0-003% at ambient) or code ID (±0-005% @ 0 to 60°C) in HC6/U 2-105 MHz and HC18/U and HC25/U 4-105 MHz all £2.80 each. Delivery usually about 4-5 weeks. Fundamentals (2-21 MHz) will be supplies to 30pf circuit conditions and overtuned (21-105 MHz) will be supplied to series resonant conditions unless otherwise specified. For details of closer tolerance crystals please send S.A.E.

CRystals TO COMMERCIAL SPECIFICATIONS

We can supply crystals to most commercial and MIL specifications, with an express service for those urgent orders. Please send S.A.E. for details or telephone between 4.30-7 p.m. and ask for Mr. Norcliffe. (Regret no phone enquires May 26-June 23)

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MULLARD SUB-MINIATURE 1-4 to 4pF SEMI-ARSPACED TRIMMER at 6p each.

SUB-MINIATURE CERAMIC PLATE CAPACITORS.
50v.w. 1-8 pf, 3-3 pf, 5-6 pf, 6-8 pf, 270 pf, 1500 pf, -01 uf. All 15p doz.

100 PIV 10 Amp. SILICON BRIDGES at 83p each.
ZN414 RADIO I.C. with data at £1.20 each.

MATCHED QUAD DIODES like CV 227 at 50p.
BB 121 A TUNING VARACTOR DIODES at 15p each.

VHF FET's BF 256 equivalent to 2N 887 at £1.55 each.
X BAND GUNN DIODES with data at E1.65.

10 SILICON BRIDGES. 10 amp type untested for £1.25.

SGS 5 Watt AUDIO I.C. type TBA 800 at £1 with data.

VHF TUNING VARACTORS. Untested, 6 for 25p.

X BAND GUNN DIODES with data at £1.65.

SUB-MINIATURE TRANSISTORS.

SUB-MINIATURE TANTALUM CAPACITORS. -066uf 35v.w., 2uf 2v.w., 2uf 15v.w., 27uf 2v.w., 6-4uf 4v.w., 1uf 4v.w.

AF 279 STRIPLINE PNP TRANSISTORS at 44p each.

SPECIAL SPRAGUE. 1uf 200v.w., 5% CONDENSERS at Sp each.

MULLARD SUB-MINIATURE TRANSISTORS.

50 ASSORTED POTENTIOMETERS for 75p.

SUB-MINIATURE TANTALUM CAPACITORS.
5uf 200v.w., 20uf 400v.w., 47uf 400v.w. 6 for 15p.

300+200pf TUNING CONDENSERS with S.M. Drive at 33p each.

SUB-MINIATURE MICROPHONES.
SUB-MINIATURE TANTALUM CAPACITORS.
SUB-MINIATURE GUNN DIODES.

10.7 MHz TRANSISTOR I.F. TRANSFORMERS at 11p each.

MOTOROLA TUNING VARACTORS.

12 TO 507 400 pf CAPACITORS.

MILLER POLYESTER CAPACITORS.

15uf, 22uf, 6uf at 8p each.

7uf 200v.w., 5% CONDENSERS at Sp each.

SUB-MINIATURE ROTARY SWITCHES.

10 TO 300pf MINIATURE CERAMIC TRIMMERS. 3 for 10p.

SOLDER-IN FEED THRO'S 1 pf, 2pf, 15pf.

SUB-MINIATURE TANTALUM CAPACITORS.

SUB-MINIATURE TRANSISTORS. OC 57 at 5p, OC 58 at 10p, OC 59 at 6p, OC 60 at 10p.

SUB-MINIATURE 3 TRANSITOR AMPLIFIER. 1½ volt.

J. BIRKETT

Radio Component Suppliers

25 THE STRAIT . LINCOLN . LN2 1JF

Telephone: 20767

MILLER POLYESTER CAPACITORS.

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15uf, 22uf, 6uf at 8p each.

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- 23cm. Varactor £6.00
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As most high level transmissions are now moving to UHF this unit enables their reception without the necessity of an expensive receiver.

The unit will receive frequencies in the range 420-470 MHz or to customers’ requirements and allows any VHF radio to receive UHF transmissions.

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**JUST ARRIVED FROM JAPAN**

**MULTI 2000 TRANSCEIVER**

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The unit will receive frequencies in the range 420-470 MHz or to customers’ requirements and allows any VHF radio to receive UHF transmissions.

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ADDRESS

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We are sorry for the delay. However, we shall be at 11a High Street, Emsworth, Hants., from the 2nd June ’75, onwards, just off the A27 between Chichester and Portsmouth. Free car parks at rear, and plenty of room to browse. Come and visit us, we shall be pleased to see you.

Prices and goods mainly as per April ad. except of course add 25% VAT now. Business hours will be 9.30 a.m. to 5.30 p.m. every day except Monday when we close.

Hope to see you at 11a High St., Emsworth, Hants.
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Our transverters accept low level drive from most HF transceivers in the 28-30 MHz band (other IF's to special order) and transvert this signal to the corresponding frequency in the 70 MHz or 144 MHz band. Signals being received in either of these bands, are in a similar manner, converted back to the 28 MHz band.

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Input Drive : Typically ½ Watt RMS.
Output Power : Minimum of 50% efficiency.
Typically when used with FT 200, 90-100 Watts SSB output.

SIZE
10" x 6" x 7".
No special cooling required.
Our transverters are constructed for good mechanical stability, while providing adequate ventilation.

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PRICE
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Including all valves, relays and power lead to transceiver.
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This unit is entirely self-contained, operating off AC mains and provides a stabilised low voltage supply to operate the transceiver.

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70 Cm. LINEAR
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**1614B & 6146B Valves:** British made, new and boxed, guaranteed, not surplus, prices inclusive, 1614B £2.75, 6146B £3.15. Cash with order.—A. E. White, G3HCU, QTHR, Tel: Dorking (730) 215.

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**Sale:** FL-2100, with one spare 572B, £150. DC input PSU’s, 12v., s.a.e. for details.—Wake, G5RP, College Farmhouse, West Hendred, Wantage, Oxon., OX12 8RP. (Tel: East Hendred 384).

Wanted: General-coverage receiver, such as AR88D, AR88LF, NC-183D, SX-28, SX-100, HQ-145X, BRT-400, R.50M, SP-600X. Must be in good working order and unmodified. Details and price please.—Box 5413, Short Wave Magazine Ltd., 55 Victoria Street, London, SW1H 0FF.

**Selling:** Europa-A two-metre transceiver, updated by S.S.M. to “B” spec., complete with valves and blow unit, 668 post paid.—Denman, G3MEW, 24 Ascot Road, Copnor, Portsmouth (20315), Hants.
For sale: B.40 receiver, coverage 640 kHz to 30.5 MHz, in very good condition, complete with manual, £23. Also unmodified R.1155, very good condition, and two tatty '1155's for spares, with circuit diagram, price £15 — or £35 the lot, buyers to collect.  — Lees, 450 Castle Lane West, Bournem-outh (517200), Hants. (Ring after 6.0 p.m.)

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Wanted: National HRO general-coverage receiver, with seven coil packs, PSU and speaker, in nice condition, bargain at £23. — House, 10 Leagh Close, Kenilworth (54556), Warwickshire. (Ring after 6 p.m.)

Wanted: Hammarlund HQ-180A receiver. Good price paid for model in immaculate condition. — Tooke, 6 Chelmer Avenue, Rayleigh, Essex, SS6 7TB.

Wanted: Communications receiver, transistorised preferred, in first-class condition; full details, please. — Box No. 5415, Short Wave Magazine Ltd., 55 Victoria Street, London, SW1H 0HF. (Or ring Woolhouse, 01-643 7648, evenings, Sutton).

Wanted: Heathkit SB-10U (or similar) SSB adaptor. Good price offered. — Ring Mohammed, Nottingam 257675, evenings.

Wanted: Circuit diagram for HRO, and coil packs below 1 MHz. — Staurou, 11 Ravelich Road, Wimbolden, London, SW19. (Tel: 01-542 9186, evenings).

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For sale: Heathkit HR-10B receiver, £35. Wanted: Small Tx rig, such as AT5, etc. — Ring Williams, 0242 (Cheltenham) 20409.

For sale: Heathkit GR-98 VHF Rx, coverage 108-136 MHz, with PSU GRA-88-1, complete with manual and crystals to receive on 122.6, 128.5, 133.2 and 135.85 MHz, price £40. Also Heathkit SW-717G Rx, 550 kHz to 30 MHz, with manual, £30. Both these receivers tested and aligned by Heathkit. — Ring Benzie, Killen Schoolhouse, Avoch (Fortrose 324, after 6.0 p.m.).

<table>
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<tr>
<th><strong>2 METRE F.M. MODULES</strong></th>
<th><strong>RX-2SB</strong></th>
<th><strong>TX-2SB</strong></th>
<th><strong>P-210SB</strong></th>
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<tr>
<td>12 Channel Receiver Board, (c/w 4 Xtals)</td>
<td>S20, 22 and R6, 7 output</td>
<td>12 Channel Transmitter Board, (c/w 4 Xtals)</td>
<td>Power Amplifier Module</td>
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<tr>
<td>£28.00 + VAT</td>
<td>£30.00 + VAT</td>
<td>(2M FM only)</td>
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CUT PRICE CRYSTALS IN POPULAR FREQUENCIES

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<tr>
<th>TX CRYSTALS (MHz in HC6/U)</th>
<th>RX CRYSTALS (MHz in HC8/U)</th>
<th>PRICE (£)</th>
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<tr>
<td>10-3603</td>
<td>10-3612</td>
<td>S20</td>
</tr>
<tr>
<td>10-3621</td>
<td>10-3630</td>
<td>S21</td>
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<td>10-3631</td>
<td>10-3639</td>
<td>S22</td>
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<td>10-3644</td>
<td>10-3659</td>
<td>S23</td>
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<td>10-3658</td>
<td>10-3674</td>
<td>S24</td>
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<tr>
<td>10-3663</td>
<td>10-3682</td>
<td>S25</td>
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These are brand NEW and top spec. units. All are fully guaranteed. The addition of a few extra components will enable the following to be constructed:

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Note: Frequencies below 4 MHz are not available in HC8/U or HC25/U. Normal delivery time within 4 weeks

P/CUT CRYSTALS IN POPULAR FREQUENCIES

<table>
<thead>
<tr>
<th>TX CRYSTALS (MHz in HC6/U)</th>
<th>RX CRYSTALS (MHz in HC8/U)</th>
<th>PRICE (£)</th>
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<tbody>
<tr>
<td>4.0416</td>
<td>4.0423</td>
<td>S21</td>
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<tr>
<td>4.0423</td>
<td>4.0430</td>
<td>S21</td>
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<td>S25</td>
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<tr>
<td>4.0430</td>
<td>4.0423</td>
<td>S26</td>
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Additional Frequencies

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<tr>
<th>145 MHz</th>
<th>433-2778-0/655</th>
<th>433-2778-0/655</th>
<th>70-26 MHz</th>
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<tbody>
<tr>
<td>52 MHz</td>
<td>4.0416</td>
<td>4.0423</td>
<td>£1.85</td>
</tr>
<tr>
<td>52 MHz</td>
<td>4.0423</td>
<td>4.0430</td>
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<td>52 MHz</td>
<td>4.0426</td>
<td>4.0423</td>
<td>£1.85</td>
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Tupe F-95 5187 145 MHz 628.00 + VAT

Mains regulated supplies for IOW

IW 0/P Power Amplifier Module

TX-CRYSTALS (MHz in HC8/U)

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<td>1000 kHz crystals 50/21-0</td>
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<tr>
<td>£2.60</td>
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For sale: Heathkit, Killen Schoolhouse, Avoch (Fortrose 324, after 6.0 p.m.).
G. W. M. RADIO LTD.

An excellent speech compressor for only £7.80

THE EMPRESSOR

This old favourite will give your audio a life at low cost. No clipping, so minimum distortion, practically the same output whether you speak into a Mic. or test a wave, no knobs to adjust, fit and forget. A sample tested gave 6dB change of output for 60dB change of input. Fitted with co-ax sockets for easy connection. 100 kc/s or 1000 kc/s bands at 5 or 60 kc/s. Price E10.50

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Wanted: Bowler or buy, circuit and/or instruction manual for Taylor Type 94A TV waveform and alignment generator. — O'Hara, E19BY, Ardagh, Rocheston Road, Douglas, Co. Cork, Eire.

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