**PROFESSIONAL PERFORMANCE with KW**

KW 2000E Transceiver covers all HF Bands 10-160 metres (10 metres 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 6146's in P.A.

KW 1000 Linear Amplifier. 10-80 metres. 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 Kv. PSU. PA tubes pair T160L. Very quiet in operation.

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

Other KW Favourites. KW 1000 Linear Amplifier; KW E-Z match ATU; KW 160 ATU; KW 105 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.

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   (d) we supply the largest range of antennas:

**VANTEX FIBREGLASS MOBILE ANTENNAS (Carr. 75p) (Ex-Stock) + VAT**

<table>
<thead>
<tr>
<th>Masts</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>70/1. 70 MHz</td>
<td>£5.00</td>
</tr>
<tr>
<td>143/1. 144 MHz</td>
<td>£2.85</td>
</tr>
<tr>
<td>BGA, 144 MHz</td>
<td>£6.60</td>
</tr>
<tr>
<td>LC800, 80m. coil for 14</td>
<td>£11.50</td>
</tr>
<tr>
<td>TH6DDX, 10-20m. 6 ele. beam</td>
<td>£11.90</td>
</tr>
<tr>
<td>TH13MK3, 10-20m. 3 ele. 2 kW</td>
<td>£99.90</td>
</tr>
<tr>
<td>TH3 Jnr., 10-20m. 3 ele. 600W</td>
<td>£74.00</td>
</tr>
<tr>
<td>THQuad, 10-20m. 2 ele. 3 ele. 60W</td>
<td>£99.00</td>
</tr>
<tr>
<td>RM40 40m. Resonator</td>
<td>£5.20</td>
</tr>
<tr>
<td>RM80 80m. Resonator</td>
<td>£6.50</td>
</tr>
<tr>
<td>RM20 20m. Resonator</td>
<td>£5.45</td>
</tr>
<tr>
<td>RM80S in stock.</td>
<td>£6.50</td>
</tr>
<tr>
<td>RM10 10m. Resonator</td>
<td>£5.00</td>
</tr>
<tr>
<td>RM15 15m. Resonator</td>
<td>£5.95</td>
</tr>
<tr>
<td>TA33 Jnr. &quot;E&quot; for 2&quot; mast</td>
<td>£87.00</td>
</tr>
<tr>
<td>TA33 Jnr., Rotary dipole</td>
<td>£23.00</td>
</tr>
<tr>
<td>SWL. Listeners dipole</td>
<td>£16.00</td>
</tr>
<tr>
<td>LC444A, 54 dB Collinear</td>
<td>£25.00</td>
</tr>
</tbody>
</table>

**GEM-QUAD. The best FIBREGLASS 10-15-20m. QUAD + VAT (Carr. paid)**

<table>
<thead>
<tr>
<th>Hamps.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ele.</td>
<td>£72.00</td>
</tr>
<tr>
<td>3 ele.</td>
<td>£118.00</td>
</tr>
<tr>
<td>4 ele.</td>
<td>£164.00</td>
</tr>
<tr>
<td>Conversion kits ex-stock.</td>
<td>£16.00</td>
</tr>
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</table>

**HY-GAIN (Carr. paid) ..... VAT**

<table>
<thead>
<tr>
<th>Hamps.</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hr tower, 10-80m. self-sup</td>
<td>£133.00</td>
</tr>
<tr>
<td>18V, 10-40m. vertical</td>
<td>£18.00</td>
</tr>
<tr>
<td>12AVQ, 10-30m. vertical</td>
<td>£33.00</td>
</tr>
<tr>
<td>14AVT, 10-40m. vert.</td>
<td>£36.00</td>
</tr>
<tr>
<td>18AVT, 10-80m. vert.</td>
<td>£52.00</td>
</tr>
<tr>
<td>LC800, 80m. coil for 14</td>
<td>£11.50</td>
</tr>
<tr>
<td>TH6DDX, 10-20m. 6 ele. beam</td>
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<td>TH13MK3, 10-20m. 3 ele. 2 kW</td>
<td>£99.90</td>
</tr>
<tr>
<td>TH3 Jnr., 10-20m. 3 ele. 600W</td>
<td>£74.00</td>
</tr>
<tr>
<td>THQuad, 10-20m. 2 ele. 60W</td>
<td>£99.00</td>
</tr>
<tr>
<td>RM40 40m. Resonator</td>
<td>£5.20</td>
</tr>
<tr>
<td>RM80 80m. Resonator</td>
<td>£6.50</td>
</tr>
<tr>
<td>RM20 20m. Resonator</td>
<td>£5.45</td>
</tr>
<tr>
<td>TA33 Jnr. for 2&quot; mast</td>
<td>£87.00</td>
</tr>
<tr>
<td>TA31 Jnr., Rotary dipole</td>
<td>£23.00</td>
</tr>
<tr>
<td>SWL. Listeners dipole</td>
<td>£16.00</td>
</tr>
<tr>
<td>LC444A, 54 dB Collinear</td>
<td>£25.00</td>
</tr>
</tbody>
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**J BEAM ANTENNAS (Ex-Stock)**

<table>
<thead>
<tr>
<th>Masts</th>
<th>Price</th>
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<tbody>
<tr>
<td>Mustang</td>
<td>£70.00</td>
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<tr>
<td>TA33 Jnr.</td>
<td>£35.00</td>
</tr>
<tr>
<td>TA33 Jnr.</td>
<td>£87.00</td>
</tr>
<tr>
<td>SWL. Listeners dipole</td>
<td>£16.00</td>
</tr>
</tbody>
</table>

**NEOTRONICS. 10-40/80m. Vertical 4BTV + RM80s in stock.**

The 4BTV is a self-supporting 10-40m. Automatic band selecting vertical and covers Mustang, 10-20m. 3 ele. 2kW I2AVQ, 10-20m. vert. 18V, 10-80m. vertical Hy tower, 10-80m. (self -sup) L132.00

**NEOTRONICS HUSTLER HF and VHF MOBILE ANTENNAS**

<table>
<thead>
<tr>
<th>Masts</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI Bumper mount</td>
<td>£5.00</td>
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<tr>
<td>MOX Mast</td>
<td>£7.00</td>
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<tr>
<td>RM10 10m. Resonator</td>
<td>£5.00</td>
</tr>
<tr>
<td>RM15 15m. Resonator</td>
<td>£5.95</td>
</tr>
<tr>
<td>RM20 20m. Resonator</td>
<td>£6.05</td>
</tr>
<tr>
<td>RM40 40m. Resonator</td>
<td>£7.50</td>
</tr>
<tr>
<td>RM80 80m. Resonator</td>
<td>£8.00</td>
</tr>
<tr>
<td>C22 Ball mount...</td>
<td>£2.00</td>
</tr>
<tr>
<td>RM20 20m. Resonator...</td>
<td>£6.05</td>
</tr>
<tr>
<td>RM40 40m. Resonator...</td>
<td>£7.50</td>
</tr>
<tr>
<td>RM80 80m. Resonator...</td>
<td>£8.00</td>
</tr>
<tr>
<td>QD1 Quick dis-connect...</td>
<td>£2.50</td>
</tr>
<tr>
<td>GSM...</td>
<td>£7.00</td>
</tr>
<tr>
<td>BGA, 144 MHz...</td>
<td>£6.60</td>
</tr>
<tr>
<td>LC444A, 54 dB Collinear...</td>
<td>£25.00</td>
</tr>
</tbody>
</table>

2. IF YOU'RE BUYING COMMUNICATIONS EQUIPMENT then
   (a) We are the only U.K. company giving you a FREE 1 YEAR WARRANTY on YAESU AND STANDARD equipment. This includes FREE COLLECTION from you by SECURICOR (if too large for post).
   (b) We are the only YAESU APPOINTED DISTRIBUTOR with an elaborately equipped Service Department of our own, which includes a Hewlett Packard 85 Series Spectrum Analyzer (to check your SB and carrier suppression, harmonics up to 1300 MHz, and spurii, etc.). Deviation Meter (to set the deviation of all FM equipments prior to sale), Marconi calibrated signal generator (down to 0-1 microvolt) to check that your receiver is up to standard. If you have purchased your equipment elsewhere, we can collect by Securicor, and service it for you at our normal service rates.
   (c) We were first in the field with the YAESU brand name (see August 1970 ad.), so have the most experience, and,
   (d) We supply the largest range of antennas.

When all is said and done, its SERVICE (not size) which counts.

So to Sid's many personal friends who have come to rely upon his expert advice in HEATHKIT matters, we can only say, "Don't 'phone Gloucester for him! He is on 0703 27464!"

We know of no finer after sales service in the world, but we do know of a lot that are nowhere near this standard.

NOTE: ALL ABOVE PRICES EXCLUDE VAT.

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TELEX: 47388 WESTRONICS
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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.

All power requirements are taken from the accessory sockets of the HF transceiver as in the YAESU MUSEN or SOMMERKAMP range, or with very simple modifications to most other gear, either transceivers or seperates. If any details on modifications are required please do not hesitate to contact us.

We have incorporated in our design one of the well known and highly respected "MICROWAVE MODULES" Mosfet converters.—Need we say more.

It has been our experience in industrial electronics that printed circuits, when used in valve circuitry, prove to be unreliable in many cases and because of this we have chosen to "Hand wire" the RF section of the transverter. In doing this, we are confident that it improves the stability and reliability factor of our product.

SPECIFICATION

Modes: CW, SSB, AM and FM.
Input Drive: Typically \( \frac{1}{4} \) 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.

AGENTS

STEPHEN-JAMES — LIVERPOOL
S.M.C. — SOUTHAMPTON
CRAYFORD ELECTRONICS — KENT

PRICE

£87.96 Plus VAT
Including all valves, relays and power lead to transceiver.
If you already have an M.M. converter in good condition we are prepared to give a generous allowance and use it in the Transverter.

GUARANTEE

12 MONTH UNCONDITIONAL GUARANTEE, but we exclude from this the PA valve, which is covered by the manufacturers own guarantee for 3 months.

For users of the LINER TWO, TRIO, or in fact any low power 2m TRANSCEIVER, we are now producing a Linear Amplifier/Receiver Preamp.

This unit is entirely self-contained, operating off AC mains and provides a stabilised low voltage supply to operate the transceiver.

SPECIFICATIONS

70 Cm. LINEAR
Compatible with the M.M. Transverter
Drive required—Up to 5 watts Rms.
Output 50 Watts.
PRICE: £36.57 Plus VAT. Complete with valve and power lead.
LOWE ELECTRONICS

THE LATEST GO ANYWHERE H.F. BAND TRANSCEIVER — THE

TRIO TS520

OBTAINABLE
ONLY FROM
LOWE ELECTRONICS

The TS520—latest in the new TRIO line of superior amateur radio equipment. Its styling and finish put all the other rigs in the shade; and it’s not just pretty—the front panel is a die casting giving unheard of strength and stability.

All semiconductor except for drive and PA, the TS520 is at home mobile, portable or fixed station thanks to built-in AC power supply and 12v. inverter. Blower cooled 6146’s for long long life and exceptional linearity.

*TRIO exclusive. Built-in speech compression for that extra DX punch—without distortion, due to amplified ALC system.

See it soon, or drop us a line for details.

AND A FEW OF THE REASONS WHY YOU WILL WANT TO OWN IT:

Built-in AC power supply
Built-in 12 volt DC power supply
Built-in VOX with adjustable gain, delay and anti VOX
1 kHz dial readout
Ultra stable FET linear VFO
Built-in noise blanker
Built-in RIT circuit and RIT indicator light.
8 pole crystal filter
Built-in 25 kHz crystal calibrator
Provisions for optional CW filter
Break-in CW with sidetone
Completely solid state except final section.
Compact, low current, reliable, with heater switch for mobile receive-only operation
Built-in cooling fan
Accessory external VFO and accessory external speaker
Built-in speaker

PRICE £290 (VAT exc.)
MATCHING 2M. TRANSVERTER TV502 £100 (VAT exc.)

SEE YOU ALL AT LONGLEAT, WOBURN AND DERBY RALLIES
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
### Lowe Electronics

#### Spec Sheet

<table>
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<th>Frequency Coverage</th>
<th>170—410 kHz</th>
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<tr>
<td></td>
<td>7—14.6 MHz</td>
<td>28—30 MHz</td>
</tr>
</tbody>
</table>

#### Mode
- AM, USB, LSB, CW

#### Bandspread
- Selectable 2.5 kHz/5 kHz at 6 dB

#### Antenna Impedance
- 50—100Ω

#### Sensitivity
- 1μV for 10dB S/N ratio (SSB/CW)

#### AF Output
- Greater than 1.5W, into 8Ω. Internal speaker fitted

#### Power Supply
- Internal 12v, negative ground
- Automatic change-over to internal supply if external supply fails

#### Dimensions (mm)
- 362 wide x 163 high x 322 deep

#### Weight
- 7.3 kg (16.09 lbs.)

**Price:** £130 (VAT exc.)

---

**Natter Net**

Following the announcement of yet another "new" band plan, we can all clearly see the need for flexibility in operating on the VHF bands.

The ultimate flexibility will be guaranteed by following the all new Matlock Elastic Band Plan and we list here some of the basic requirements for SSB operation under this plan.

All SSB transceivers must be used with the R.I.T. control switched on and offset by 2.5 kHz. This will ensure that operators will chase each other up and down the band thus giving the impression that activity is high. This system will also remove the need for a calling channel since all one has to do is wait on any convenient frequency and before long a QSO will hop by and can be latched on to.

The existing calling channel will thus be freed for use as a contest frequency. The contest will take the form of seeing how many simultaneous QSO’s can be carried out on the same frequency. G3FCY and G3ZYC are currently leading the table with their totals of 57 stations all talking at the same time!

This achievement will be printed in the 1976 Guiness book of records and will take some beating.

As well as the legal requirement to give one’s callsign at regular intervals, a new regulation calls for each net to change frequency by 20 kHz every two minutes. This will mean that the meandering monologist will find that after his twenty minute non stop chat, he will have been talking to himself for eighteen and the rest of the party will be on some other frequency.

All CQ calls must be continued for 15—20 minutes non stop and will contain no reference to either location or beam heading. This will lend a touch of excitement to the listener’s life and add to his DF experience. It will also guarantee a rapid turnover in rotator spares due to premature wearing out of bearings, etc.

Use of a disguised voice, either by using an incorrect regional accent or, better still, a combination of speech processing and a touch of overdriving will make the QRA hunt even more difficult.

More details will follow in due course unless:

(a) I’m arrested or
(b) I’m set upon by rabid band planners.

*’73 G3PCY.*
LOWE ELECTRONICS

TR2200G

This little powerhouse is now the world’s fastest selling two metre FM transceiver. Unbeatable at any price, its combination of rugged reliability and high sensitivity give it universal appeal. Now that more and more repeaters are opening, the TR2200G allows the operator to work over long distances with ease—we can often work GB3PI from Matlock using the whip antenna on the TR2200G.

The rig comes complete with carrying case, shoulder strap, microphone, Nicad charger, two battery carriers and fitted with three channels (S20, S22 and R7 normally but alternatives supplied to your choice). Facilities for 12 channels and incorporating Trio’s unique tuning fork repeater access tone generator.

If you hanker after mobile working from your car, the VB2200 amplifier is a marvellous addition. This superb amplifier comes complete with a carrying cradle for the TR2200G and boosts the power output from 1W to 10W. The amplifier is automatically switched by a RF VOX system and also supplies regulated D.C. for the TR2200G.

Together, the TR2200G and VB2200 give you portable and mobile operation but the real bonus comes when you add together the prices and come out with £109.00 (VAT excl.). This is cheaper than any normal FM transceiver and is the finest value on the market today.

VB2200 £29 (VAT exc.)
TR2200G £80 (VAT exc.)

HEAD OFFICE
119 Cavendish Road, Matlock, Derbyshire. Tel. 2817 or 2430 (9 a.m.—9 p.m.) Telex 377482 (any time)

BRANCH OFFICES
Goring Road, Steyning, Sussex. Tel. Steyning 814466
Soho House, 362-4 Soho Road, Handsworth, Birmingham. Tel. 021-554 0708

AGENTS
Alan GW3YSA, 35 Pen-Y-Waun, Efail Isaf, Nr. Pontyprridd. Tel. Newton Llantwit 3809
John G3IYG, 16 Harvard Road, Ringmer, Lewes, Sussex. Tel. Ringmer 812071
Sim GM3SAN, 19 Ellismuir Road, Baillieston, Nr. Glasgow. Tel. 041-771 0364

OPEN 9.00 — 5.30 TUESDAY TO SATURDAY INCLUSIVE
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 plus the option of three repeater channels or two repeater channels and S24 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 £4.00 + 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 21A, Receive 180mA.
Size: 2/932” x 6 1/4” x 8 1/4” (58 x 156 x 216mm.)

Receiver
Sensitivity: 0.4uV 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.

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

Transmitter
Power output: 5/10 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.

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.
IC-210 FM main station. Fully VFO (see previous advert), £200 + VAT.
IC-21A Updated version of the IC-21A takes the DV-21 direct, £178 + 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 TRANSEIVER. 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.
South Midlands Communications Ltd.

THE FT101B

This de-luxe wireless is the descendant of the world famous FT-101 transceiver. Except for the drive and final amplifier stage, the FT-101B features all Solid State circuitry built on reliable and serviceable "computer type" plug in modules. The 101B is contained in a compact 30lb. package designed to go anywhere. All that is needed for instant "on the air" operation from 160 through to 10m. is either 12v. DC or 100-234v. AC and of course an antenna.

FT101B £330 RF CLIPPER £45

The FT75B is a higher power replacement (120W P.I.P.) of the FT75 the unit which along with the FT101 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 squelch circuit for quiet channel monitoring.

Accessories include the FY50C VFO at £35-00, the VC75 microphone compressor and VOX at £18 and the FT75B AC power supply at £35, and the DCE75B at £40 illustrated right.

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.

S.M.C. models come fitted with 145.00, 145.50 and 145.55 MHz as standard.

FT2AUTO

The FT2AUTO is a unique concept in 2 metres FM transceiver. The "Auto scan" circuit monitors in turn each of the 8 channels every third of a second and automatically locks upon receipt of a signal. Push buttons enable elimination of undesired or occupied channels, on Auto-mode, or selection of the frequency on manual mode. A priority circuit may be activated to check your local net or RAEN frequency every two seconds. To transmit on a channel being received a momentary pressing of the P.T.T. locks the transmitter to the receiver. Separate TX and RX crystals allows duplex operation, switchable tone burst, squelch, built-in mics and 12v. P.S.U. and microphone provided.

YC355D

YC355 £104
YC355D £125

The YC355 series counters are available in two models. The base counts to 35 MHz and the "D" to 200 or over. The YC355D outlines the advanced IC techniques and the dual range system provides an accurate 8 digit readout using only 5 tubes but of course minimum cost with maximum performance. Built-in AC and DC power supplies enable complete portability and double sided epoxy circuit boards ensures reliable operation for years to come.
CRYSTALS Low prices from stock (insured p. and p. 37p) + VAT

- FT2SF (22 MHz Rx 6 MHz Tx) £3-50 each £3-50
- 144 MHz LINEAR RFIS, NEW MODELS RF sensing, switchable drop out times, SSB, AM, FM, CW, 12v, DC 10W drive. Available mid June £10-00 RFA-10-200X (810)
- RFA-10-1500X (900)

THE HANDHELD — THE KP202

Supplied with six of the most useful channels (50, 220, 222, 225, 250, 575) + VAT. £15-20

THE NEW CONTROL UNIT FOR THE CD44 and HAM 2

8 core for CD44/HAM 2 £18-00

CDE ROTATORS EX STOCK (IN TOTTON) FOR FAST DELIVERY

- Carriage (B.R.S.) free Securicor delivery 60p extra. All rotators supplied complete with appropriate control box and instructions
- AR30 for Stereo and small VHF beams £15-00
- AR40 for Medium VHF Small HF beams £18-00
- AR33 de luxe version of AR40 £18-75
- CD44 for large VHF, medium HF band £20-00
- Ham II for large arrays £36-75
- Control Cable: 8 core for AR30/40 at 18p/m. £15-00
- 8 core for CD44/HAM 2 at 20p/m. £15-00

RFL NEW MODELS (as seen) 58102 ECIO EDDYSTONE second hand shop soiled list (Telephone: 04216 4930 for latest)

- YAESU £15-00
- FT501 and FSP51 £13-50
- FT505 £18-00
- FL505 £16-30
- FS50 £10-00
- FT101 Mk. I £10-00
- FT110 Digital readout unit £45-00

SECOND HAND / SHOP SOLE LIST (Telephone: 04216 4930 for latest)

- EDDYSTONE £25-00
- DX5 + VFO (as seen) £20-00
- HAM 200013 £50-00
- FT501 Mk. I £20-00
- FT101 Digital readout unit £45-00

Terms — Cash with order or credit card holders just phone in for, if possible, same day dispatch. Immediate H.P. available for card owners for amounts up to £150-00. Holders of current U.K. call signs (where references have been provided) can be speedily cleared, or normal H.P. at competitive rates is available.
COMMUNICATIONS LTD.

ANTENNAS, TOWERS, MASTS, COAX, Etc.

**GEM QUAD**

- For 10, 15, & 20m.
- Weighs only 21 lbs.
- Withstands 100 mph winds.
- Forward gain up to 8 dB
- Balun included.
- Converts to 3 or 4 el. quad.
- Fibreglass tri-dectic spreaders.
- Front/back radio 25dB.
- Low angle radiation.

**(Carriage extra)**

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Trapped dipole standard 10-80m. (£16.85)

**SMC A MEMBER OF THE ARRA SOUTH MIDLANDS COMMUNICATIONS LTD.**

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**NEW JAYBEAM Complete Range (and more) (Carriage extra) for 70, 144 or 432 MHz + VAT 25%**

**FOUR METRES**

- 47/4M 4 element ... £6.80
- PMH7/4 2 way harness ... £5.30

**BEARINGS**

- RJ100 Alignment bearing £7.40
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**MOSEL TRIBAND (10-15-20m.) BEAMS (Carriage £1.75)**

**NEW SOOMER GENERATORS—EX STOCK IN TILTON VAT 8%**

- from GA123MS 1000W 230V AC ... £135.00
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**NEW SWR/POWER METERS**

**NEW LOW PRICE SWR/POWER METERS**

- Freq. 3-144 MHz (SWR only to 432) up to 25W from SWR Reflector meter, single accuracy quoted 
- 10% VAT £6.90 S.M.C.

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Galvanized lattice 10ft. sections 30ft. height with climbing steps on one face. From: £105.90

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Galvanized steel 10ft. section with or without rigging:

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- 50ft.—£25.00

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(Tiltover Telescopic post mounted es-stock. The tilting action allows ease of maintenance and changes of antennas. The relatively low weight eases installation problems. From: £172.25

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(Carriage paid, England and Wales)

A/Alloy Telescopic 1.5, 2, 3 metre sections, 6-21 metres from ALI MASTS (Carriage paid, England and Wales)

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Contains manuals and latest instructions.

**COMMUNICATIONS LTD.**

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**SMC — A MEMBER OF THE ARRA**

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**WATERS & STANTON ELECTRONICS**

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Prices include VAT (unless stated)  Early Closing Wednesday  \( HP—\text{Trade-ins.} \)

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State clearly your requirements enclosing cheque or postal order.

You are always welcome to come and inspect the equipment at our showrooms.

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**NEW !**

**JAYBEAM VHF ANTENNAS** (inc. VAT)

4m. 4 element yagi £8.90 (50p)
24m, 5 element yagi £5.38 (75p)
8/2m. 8 element yagi £7.00 (75p)
10/3m. 10 element yagi £9.80 (65p)
PBM14/2m. parasbem £11.21 (25p)
DS/3m. slot fed yagi £6.90 (65p)
DB/3m. slot fed yagi £13.12 (65p)
8X/2m. 8 element crossed yagi £10.25 (75p)
IOX/2m. 10 element crossed yagi £17.65 (75p)
UG/2m. ground plane £5.19 (75p)
HM/2m. hole with mast £4.75 (50p)
DB/70cm. slot fed yagi £11.25 (75p)
PBM18/70cm. parasbem £13.12 (75p)
MBM18/70cm. 66 el. yagi £21.12 (75p)
1IOX/70cm. 12 el. crossed yagi £20.88 (75p)

"FULL RANGE OF PHASING HARNESS AND BRACKETS IN STOCK. S.A.E. FOR CATALOGUE.

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HQ-1 handi-tall 10-50cm. £5.00
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C4 vertical £20.00

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TH3 Mk. 3 1kw 3 element beam £124.85 (6p)

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Linem-2x. sub-channeliser £181.25 (n/c)

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2m. FM 6 channel receiver complete with low cost fitted £26.19 (50p)
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Dialog 1700 and 1750 Hz o/p £6.60 (25p)

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50 ohm URM £18p (1p)
50 ohm URM/AGBU £36p (3p)
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New 70 cm. transmitter £75.55 (50p)
2m. converters 660-2800 £19.00 (2p)
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**SPECIAL SIGNAL PUNCHING PACKAGE**

Technical Associates Advanced Speech processor with variable compression, decay time and noise gate. It is important to get the two units, it's unbeatable!

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**WANTED**

Clean STATION ACCESSORIES, etc. as per last issue.

**SOLID STATE MODULES**

CMOS Electronic keyer with Tone burst option available £18.75 (3p)
CWF-3 unboxed cw filter £9.90 (3p)
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**MICROPHONES**

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100/200/500 kHz boxed kifes box £13.30 (2p)
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MFI 100 calibrator less xtal £7.35 (2p)
CHS Oscilloscope with monitor £24.30 (2p)

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**SOLID STATE MODULES**

HP-1001B Aud Shape Processor £75.50 (50p)
HP-1041B Aud Shape Processor £75.50 (50p)

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Shure 201 £6.95 (2p)
Shure 444 £31.20 (2p)
Yaesu YD844 £92.50 (50p)

**MFJ PRODUCTS (U.S.A.) Inc. VAT**

CFW-28X boxed cw audio filter £18.75 (3p)
SBF-28X boxed sab audio filter £22.63 (2p)
CFW-3 boxed cw filter £26.25 (2p)
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MFJ-100 calibrator boxed £10.82 (2p)
MFI 100 calibrator less xtal £7.35 (2p)
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EUROPA B
NOW IN USE IN OVER 50 DIFFERENT COUNTRIES!

2 metre, 4 metre or 6 metre receive and transmit converters to 28-30MHz

Exotic calls like A2, C31, SW1, 9HI, SBC, 2D8, KV7, KH6, FYB, VFB, VE5, etc.

Many of these people never use the receive converter—they have no local VHF activity and use their Europas exclusively for OSCAR work.

The Europa can be used with any normal HF equipment. The Europa B features:

- High transmit power. Up to 200W input, 50% efficiency.
- Adequate power for OSCAR work.
- An aerial change over relay and SO239 antenna socket.
- The Europa can be used with any normal HF equipment.

(continued on next page...)
NEW! R.F. Speech Clipper Module

DATONG R.F. SPEECH CLIPPER PERFORMANCE AT AN AUDIO PROCESSOR PRICE

For those who like to build at least part of their equipment themselves we now offer the "works" of the widely acclaimed Datong r.f. speech clipper in the form of a fully aligned and tested printed circuit module identical to that used in the ready-to-operate clippers.

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SHORT WAVE MAGAZINE

(GB3SWM)

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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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THE MAY R.A.E.

It seems to be generally agreed that the Paper for the Radio Amateur Examination last May was not only pretty straightforward—as indeed it should be for an Exam. of this nature—but distinguished by the fact that not one of the questions involved formulae or calculation, though probably the mathematical types would have preferred to answer Q.6(a) by the well-known formulae. In general, the Paper relied upon diagrams, block or otherwise, for many of the answers, and these if drawn correctly would have shown the Examiner that the candidate understood the question. Only one (alternate) question involved transistory. As in previous years, we shall be dealing with the Paper in detail in either the January or February issue.

FOR POSSIBLE PUBLICATION

We always want to see articles of radio amateur interest—in particular practical, well illustrated constructional material dealing with any aspect of Amateur Radio, e.g., on the sort of work many amateurs will have done in building something of their own design. (If you have worked it out yourself, and got it going to your satisfaction, you are the best person to describe it). All articles that we can use are paid for, at good rates related to the work involved in preparation, immediately on publication. Material should be presented and set out strictly in accordance with the guidance given under “Authors’ Mss.” on the Contents page of any issue of SHORT WAVE MAGAZINE. While there is no guarantee as to when an article will appear, it can be taken for granted that material considered to be of immediate reader-interest will be published as quickly as possible.

Also always needed are good photographs relating to the radio amateur scene—stations, personalities, equipment, Club groups and such—for general illustration. The preferred size is “post-card, black-and-white.”

While any good picture can be processed to the size we want for printing, in general we are not interested in colour prints, negatives or film-strip. Photographs should be lightly identified on the back, in pencil, with the details on a separate sheet.

All material offered for publication should be addressed to: Editorial Dept., SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ.

NO DSB TRANSMISSION

Following the article “Simple Sideband for Top Band” in our February issue, we have had correspondence with the Home Office (Radio Regulatory Dept.) from which it emerges that DSB transmission is not permitted on the amateur bands. Since this is in accordance with Note B on the Schedule to the Amateur Licence, of course we accept it, and publish this correction accordingly—though why DSB should ever have been prohibited in the amateur context eludes us. The first discussions about DSB appeared in this Magazine years ago, long before the SSB modes were written into the Licence.

LOW-DEFINITION A/TV

You have heard of SS/TV. There is now a move to look at, in the Amateur Radio context, the much more sophisticated idea of A/TV on the HF bands, using a refined and up-dated version of the original Baird system of 40 years ago, to give moving pictures as well as sound. The argument is that modern techniques—tape-recording, stereo, transistory, opto-electronics and the availability of IC’s to simplify construction—make the idea of LD/TV much more feasible than it was in the time of Baird, back in the 1930’s. An association has been formed to foster this interest and the address to write to is: D. B. Pitt, 1 Burnwood Drive, Wollaton, Nottingham.
COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

Perhaps the highlight of the past month as far as this writer is concerned has been the events outside the "operating" side of the DX game. For example, reading about KY1IU activity in a letter and following it up a few days later by spending a pleasant evening in the company of the operator, who was acting in a very sincere capacity. In 1942, time with the same operator—W4WFL/j—looking at NFD operations by two Clubs and comparing them with things Field-Day as the Americans do it. Incidentally, if you read QSI you may well have noticed the regular appearance of Murphy's Marauders in or near the top spot in contests—but W4WFL was able to assure us the name of the group is derived from that single siren whose sound of Cussedness of Inanimate Objects also strikes in this country!

And, even if the stations we looked at were all scratching a bit for contacts, and conditions did not seem to be too good, it has to be admitted that NFD, particularly in weather such as we had this year, is still the Greatest, with a magic not even the big DX Contests can quite match; and much better than gardening!

Forthcoming

Culled, of course, from various places, notably Geoff Watts DX News Sheet, West Coast DX Bulletin, and a copy of the South California DX Club Bulletin sent on by W6AM.

Mount Athos first, and an operation seems to be definitely on the cards, with the likely dates the period of good conditions (well, a bit better than lousy!) slated for around July 20; five operators, led by SV1GA, would appear to be the total.

PY7YS hopes to set up an operation for Fernando da Noronha, (P9UVS). Atol das Rocas (P90/5) and St. Paul Rocks (P90YS). There are hopes that P90YS will count as a new "Country." The programme calls for a week on Fernando da Noronha, with a couple of days on each of the other two.

At the time of writing, activity from Serrana Bank, HK0AA, is scheduled for June 17-21, which obviously is before this piece reaches readers; however, there is still time for a slipage in the programme, and if so, the July 20 area will be tried, all bands Top to Ten, plus two-metre activity through a repeater in TG9! Looking forward a while, W7PHZ and his merry men are dreaming of Malpelo in 1976—doubtless an indication of desire by the suffering DX clan to harden their dreams into plans.

History

One hesitates to harken back to that unsavoury caper in Cocos mentioned last time; but one of the DJ operators on the trip wrote to West Coast DX Bulletin with his case. As the above suggests, there are two, rival, clubs in TI-land. Somebody demanded of the HB9 crew a cool five thousand dollars plus a dollar a QSL, to permit them to operate without reference to the Ministries; which, to this old scribe, is still the Greatest, with a magic not even the big DX Contests can quite match; and much better than gardening!

With regret we have to announce the death, on May 4, of Jack Davis, 4X4CZ, at the early age of 58. For the past five years he had been president of the Israel Radio Club. Born in England, he went to Palestine at the time of the British Mandate, and held the call ZC6AB, by changing it to one of the first issued 4X4 calls. He worked in England for the Ferguson Company, and later lived in U.S.A. where he was licensed as K3KCS. He was an associate member of the I.E.R.E.

Ten Metres

A first letter from G4DWO (Horbury), who started as G8HZA, but now runs a Swan 700CX, temporarily to a long-wire, until erection of the sixty-foot tower and TA32 is completed. Bill has quite an interest in Ten and records contacts with Europeans aplenty, including 12RR, DK8GT, 12SRR, YZ3CNO, I4UBJ, HG5KK, 8SM3GII, OE7BL, DL9XN, 11BJB, EA3EF, 15KRW, DK2LM, EA30J and 1Z2EP during the period May 13-25; although G4DWO calls it short-skip, one wonders whether in fact much of this is not genuine first-hop propagation, or Bill notes putting out a call on CW at 1946z on a "dead" band and getting a reply from PY1NEW at a rate of sending which was rather fast for G4DWO; but after an agonised "Pse QRS" Pete slowed down a bit and the contact ended at the 18-20 w.p.m. rate, quite enough for a chap who only passed his Morse test back in February. But, clearly, G4DWO does not subscribe to the fashionable idea that an ex-G8 of getting his G4 call should promptly forget all that CW—and lose part of the fun of the game in the process.

G3NOF (Yeovil) reckons conditions have been as bad as he has known them for a long time—and that is firm words from a chap who has been through two full sunspot cycles and more, first as a top-ranking SWL and later as a DX'er in the upper echelons. As for Ten, Don heard no DX and had no QSOs!

Next we have another new reporter in G4BHE, who runs an HW-100 into a Dexbeam at 28 feet, rotated by the "Armstrong or Handraultic system"—dash into the garden and crank it round, arriving back in the shack to find the DX is buried under a great horde of DX'ers, moved, after hearing it all, that TI9FAG contacts be addressed to "Whom it may Concern" sounded to the writer to be all this sounds to be plain blackmail; and it might be added that the direction of TI2FAG, on another ship, the Dona Dina. This was the last straw which caused the chaps to go, under the threat of an increase the fee to $150 a day with a minimum of twenty days' charter.

Ten, plus two—metre activity through a repeater in TG9! Looking forward a while, W7PHZ and his merry men are dreaming of Malpelo in 1976—doubtless an indication of desire by the suffering DX clan to harden their dreams into plans.

Fifteen Metres

If Ten has been "giving" a little, how about 21 MHz? Here the tale again is largely one of short-skip openings, also like Ten quite long into the evenings on occasion. For the earlier letter, the ten-metre report simply says "infrequent openings to any-one!" but the latest letter indicates that some DX and a lot of Europeans were heard, albeit only the Europeans were raised.

"Am thinking of changing to a long-tailed pair . . . ."
G4CXM found only North-South openings the previous month, and weak signals even at that, but his later letter indicates rather better things, including SSB to CSAR, CT2BP, CT3AD, CT3AR, EA8LD, E12CI (genuine short-skip, this last), LU8FT, PY1MCC, SV1GP, UK9AA, VP8NK, ZD7SD, ZD8RD, SB4BS and 9H4L. In G3NOF's book, Fifteen has also been pretty patchy, with no QSO's, although a few South Americans have been heard in the evenings and on one, W4's were audible at 2300.

G4BHE worked SSB to CSAR, CE2EN, CT7IZ, LU1HDC, LU5EIO, PT2G5B, PY1MCC, VP8NK, ZS3BK, ZS4MZ, ZD7SD, 4U1ITU and 9G1JD; many were below RS56 incoming, but on the principle that if you can hear 'em you have a chance of raising them, he tried and got the QSO.

G3NOF was not impressed with things, he being a severe judge of conditions, recalling previous maxima; in the morning not much in the VK line around 0630 and nothing at all from the Pacific. Africans have also been poor, but later in the evenings, say, 2100 to 0100, East Coast W's and VE's have been heard, and even the odd W6/W7. Among all this, the short-skip stuff has also been quite prominent, with such as G6-GD-GM-G1-E1 all noted. QSO's were made with E10Y/P (Blanket Is.), FG7XL, IM0DMK (Maddalena Is.), K9ZCM, W0HSXN, W0LBP (all from Colorado), KM4DP, KM4FS, OJ0MA, W6CCP, ZS6AKG, ZS6CY, ZS6DN, plus the usual East Coast W's, and lots of those "ITU" calls, including a QSO with Morgan, W4WFL/1.

Because his beam is in the moment only 28 feet up, G4BHE is rather neglecting his chances of DX on Twenty; frankly, one would have thought that even as low as it is, there would still have been quite a lot of interesting stuff to work on the band—but with the move of QTH likely to be completed by the time the next CDXN report comes due, who cares? What's the betting the aerial-erecting party won't get a look-in till the decorating and the gardening are completed?

G3FWE (Lancing) writes to enclose a copy of the rules for the "Calgary Award," in the form of direct copy from his RTTY QSO with VE6AVO. The certificate is free, and the thing is to work, if possible, one QSO with every station worked, operator's name, QTH, frequency, and signal report score as four contacts. A copy of the log entries showing date, time, and CY6 station being allowable; but QSO's with Club stations CY6NQ/P counted as two contacts, and any with CY6 via Oscars as four contacts. A copy of the log entries showing date, time, station worked, operator's name, QTH, frequency, and signal report exchange should be sent to Century Calgary Award, P.O. Box 592, Calgary, Alberta, Canada T2P 2J2. And we might add that this RTTY copy is completely free of any evidence of error in typing or of error due to QRM, which says a lot for the VE6AVO-G3FWE set-ups, and the solidity of the link at the time the QSO was made.

G3NOF, as already indicated, has had his attention—and his rig—elsewhere for most of the period, but he did manage three CW QSO's, with KE1ITU, KP4DRT and W1CLF.

G2HKU (Shephey) has always an amusing comment on something to make your old scribe chuckle; this time he remarks that his XYL, to indicate a certain garden requirement, mildly suggested that she...
had been Sabu on his elephant passing through the grass! That message could be said to have been received R599, with a vengeance. As to Twenty—when the gardening was done, no doubt—there were contacts on SSB with M1D and CW to FG7XJ, HPIAC and VE6KY, of whom the last-mentioned was born in Croydon.

Having got through some minor arrival hiccups, like his G5AYL ticket being sent to your scribe on the day he should have been landing in U.K., which meant W4WFL/1 had to make a trip back to Heathrow to recover the rig after picking up his licence; and finding his hotel had a room for him for only one night, Morgan, W4WFL/1, soon sorted himself out. A trip to the Joystick Man, G3CED/G3VFA in Broadstairs, resulted in a very fine sight-seeing afternoon, and Morgan’s return to London with a Joystick system, which was rapidly fired up from Half Moon Street, in the West End of London, and forthwith resulted in a contact with a DJ, straight back to his first QSO. And, as an afterthought, a check below showed no TVI on the hotel goggle-box. By the time this comes to be read, chances are that G5AYL will be settled in a place of his own, indications at the time of writing being that it will be somewhere in Streatham.

Having just mentioned G3CED, the very next thing we turn to is the latter’s log for this month. In three pages, a couple of QRO contacts at two watts are noted, the rest being at 750 milliwatts input to the Joystick. On Twenty, the W1TW QSO at this low power mentioned last month brought forth a quick QSL, and this time, we note contacts with L21IMG, 1BOXBL, YZ2RTW, UA5AEO, IV0KGM, three successive 599 contacts with LZ2’s, HA5’s, SM7FSV, SM7GPP and so on; it is quite interesting to look at George’s log, in which he manages to squeeze details of the chap’s name, QTH, weather, rig (and power input) and aerial, from which one notes Yugoslav stations on with Japanese gear, and QSO’s where the reports were the same both ways when 750 milliwatts in Broadstairs was matched against, say a couple of hundred watts and a Quad! Another interesting thing is to notice the number of Europeans using the “W3DZZ” wire aerial—it must be one of the most popular ones ever!

Top Band

Here the majority of the ‘chasers are doubtless holding off writing until they have done something in the Trans-Equatorial Tests during June. Your conductor was fully intending to have a little sniff round for the Trans-Equatorialists, but on his return from holiday it was found that although the 28g. half-wave was still up, the vital lead-in bit had parted right at the insulator up top, and some kind soul had coiled it up at a height just enough to be clear of the local junior-ops. This was by way of a disaster, as it requires quite an effort to recover the home end of the span without dropping the lot in order to effect repairs—and dropping the lot means chatting-up the neighbours anyway. But we’ll be back soon.

G2HKU always seems to manage the odd one on Top Band, and this time there were Phone QSO’s with PA0PN, and CW with DJ2TI and GD4BEG.

The absence of a rig for the band for most of the time did not help the scoring at G3YOR, but a slight change to the score is noted in the Ladder. For the present month, chances don’t look too good either, partly from shortage of time, partly from NFD efforts; but no doubt once the home station is, as it were, reconstituted then doubtless the chase will be resumed.

G2NJ (Peterborough) has been operating the band in the middle of the day, and been quite surprised by the distances worked. For example, there was a solid 579 both ways to GD4BEG, and as early as 1045z a contact was made with G3ZEE in Selsey, both being good long hauls by daylight.

G2BJY (Walsall) comes in at this point, and, having enjoyed the Table very much so far, is beginning to worry. The reason is the number of times he has worked a station and claimed it, but on looking through the Call Book has seen the station under a different address there. This worries Geoff to the point where he sends off an s.a.e. and QSL just to satisfy himself he is in the right in claiming. One wouldn’t feel this worrying is necessary; after all, the claim put in by anyone is in good faith, and many people write and correct their scores if an error is in fact found. One feels the question here is simply one of good faith—no casual contact on the band is going to go to the bother of giving a phoney location just to bump up someone else’s score! And after all, the guy who does it to improve his own “attractiveness” as a QSO is going to think up something better than, say, a shift from Glamorgan into Gwent! Perhaps the real thing that is worrying Geoff is that with his tiny aerial system he is sitting on top of the heap—but having stayed there so far, he is determined to stay there, and with his contacts all in good standing. And we reckon he will do just that, worries or none, and in the doing of it he will be an enormous encouragement to other chaps with tiny gardens and aerials, who, with possibly better facilities, are accepting that they just can’t get out more than a few miles.

Eighty & Forty

Put together they just about make a paragraph of reports! But, before we look at the DX lists, we must refer to a latter from G2CAS (Harrogate) about the decline in operating standards, and in particular on Eighty. John is referring to the louts—and some very senior louts who ought to know better, who are plonking their phone signals down into the CW end of the band, disregarding the bandplan agreed not just locally but virtually worldwide. These menaces are bad enough, but then along come the righteous souls who, instead of complaining to the right quarters sit on top with bug keys and swishing VFO’s—the poor bloke who was there before the Phone started is thus now several layers down and even a sharp crystal filter and an MFJ unit together often cannot save his QSO. As he says, if all would observe the bandplan, he would be able to have the odd QSO on QRP, the jammers could retire to their nurseries, and the sale of tranquillisers would go down! Having quoted G2CAS, it is perhaps necessary for us to comment. As far as this scribe is concerned, he would be far happier were people who are wiped up in
On p. 201 of the June issue we showed the station of G3NVE, Goole. Here is his home-designed and built beam turning mechanism, involving simple gearing, a car starting handle for rotation and a direction-indicating device.

this manner to (a) Name the offenders, by callsign and any other details, and (b) To make recordings of the interference straight off the receiver; and then (c) Write to this column, giving the details.

However, we must revert to reportage. G4CXM seems to have crept to the top of the pile this time, and we notice from his first letter that on Eighty, the QRM is a bit daunting when hunting for those nice African and S. American signals. But, of course, PA0GMTW and his two-element delta-loop outrun most Europeans in such a chase. Turning to Forty, Ray offers lots of hearings of VK but no contacts as yet, and as worked C31UX, CT7BP, CO5DM, K1GMW, PY7ADL, PY7AES, UL7NAR, U8ABQ, UM3MBA, U9AAAG, W1PV, W6LKO, YV1BI, 9J2WR, all on CW, and on one solitary SSB contact with C31UX.

G2HLU has of course been playing with his new toy, mainly on CW, although he did take part in both WAB Phone and CW contests. In addition he has been having a fine old time working the QRP clan and finds himself quite amazed at the signals these ‘little chaps’ can brew up and radiate.

G2NJ is also still on the hunt for QRP stations to work, and one day found G4DJX, St. Albans, running 2½ watts, and had a nice QSO; as he finished G3CEL up in Hyde came on frequency for a contact—the latter is a remarkably consistent signal.

G2BY amused the writer with his tale of how he didn’t seem to be getting out too well—he was getting RS22 from Somerset, for example, and the same from G2AOF; so he came downstairs to see what was up, and found the aerial was connected to the downstairs box of tricks, leaving the rig upstairs minus an aerial. Fair enough as far as it goes—but even to be heard in Somerset from Wallall without an aerial is quite amazing. But of course, there is probably quite a bit of stray capacity somewhere which will transfer at least a whiff of RF to the aerial proper. Geoff is now finding it tough going, with all the gardening as well, so has sensibly decided to stick on Top Band until September, to take things more easily.

Only Forty from G2HKU, who offers OJ0MA on SSB and 9Y4TR on CW as his contribution.

Having rung up 421 contacts on the QRP trail, all bands, G3C3ED is getting statistically-minded. The average signal strength of the stations worked came out at S7-45, and of his own reports S6-26; this is next going to be related to average power used both ways, which should be a revealing exercise on how accurately people give signal strength reports! However, and even allowing for the fact that G3C3ED is a good CW operator in any language, is the fact that with a watt or less with a Joystick as the aerial, no less than 81% of his contacts returned him a report of R5. One doubts if many QRO stations on Eighty could better that. However, let us look at the log—there are literally dozens of CW contacts, all over U.K., and most of the European countries, a liberal plastering of S9 reports, from both near and distant stations, and, on top of that, one notes quite a high average of CQ’s which raised distant stations—not by any means a normal tactic for a QRP operator.

Here & There

We hear that AMSAT-UK are developing an HF-type Oscar, which would have 21.2-21.3 MHz as the up-link and 29.4 to 29.5 as the down-details from G3IOR, to whom also could go donations to help defray the cost. This one could be a great idea for creating activity on a dead band—but one shudders to think of it being used when the bands are wide open at a weekend, or in the middle of a big contest! However, G3IOR and his party are wise in the ways of the world as well as on the technical side and of course there is no doubt about the value of the idea in the way of learning a bit more about propagation on the HF’s.

If you hear YN9JMP you will have an interesting one. Jacques was born in Holland in 1898 and was a missionary in China from 1924, when his callsign was XU2JM. He left China and went to Boaco, Nicaragua, in 1952 where he continued his missionary work. On his retirement in 1973 he was presented with a rig, and after 36 years out of practice he is again pounding brass. Long may he be able to enjoy it.

We notice that in Washington, Congressman Charles Vanik of Ohio is introducing legislation to give FCC the right to regulate the manufacture of home entertainment devices to reduce their susceptibility to radiations outside their bands of operation, rather as is already done with, for example, aircraft test equipment. Isn’t it about time we in this country started lobbying for a similar bill?

The latest copy of WCDXB to arrive here, on the morning on which this should hit the letterbox on its way out, brings us a bit more up to date. The Serrana Bank, HKBAA, effort looks as though it will be all over by the time you read this. Likewise, the Easter Island effort by W9NTP, Don Miller—this is the SS/TV Don Miller, not the W9WNV one of a few years back. However, you can look for the Dodecanese as it is understood that SV0WZ has opened up shop for a two year tour. Finally, the Rodrigues trip by Roddy, 3B8DL, which was set for June has now slipped back to early July; but he will be there for twenty days, so don’t fret if you don’t hook him first time. CW operation is certain, SSB operation may take place; and QSL’s to WASZC.

Please don’t send QSL’s for anywhere else to the VQ9 QSL Bureau; they are drowning in a sea of VQ2, VQ8, VR2, VR6, VS6 and YS cards arriving over the past couple of months! They are only a small show, and this sort of thing puts a heavy burden on them.

Back to contest results, and at this last moment we have a note from W1WW on the CW Leg of the 1974 CQ WW contest. The overall winner was CR6IK in the single-operator, single band listing, with GHCT second, both on Twenty. However it is very noticeable how scores dropped with the fall in the sunspot count. The only other G place-men were on Top Band, where GM4AGG was second, GD4BEQ fourth and GM3YOR sixth.

If you have faith in rumours, then this one is for you. It is rumoured, and apparently the rumours may have some truth, that in the coming autumn, there is just a possibility that China may have created a new show, and this sort of thing puts a heavy burden on them.

Deadline

Once again we seem to have drunk the well dry of news. So, it remains just to pass on the deadline for the next issue, which will be July 8, or in other words, the usual 17 days before publication date, the last Friday in the month. Address “CDXN,” SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ. Till then, good DX, and may your garden not need too much working on!
**THE MOBILE SCENE**

MORE REPORTS AND PICTURES

This feature ought more properly to be titled "The Rally Scene & Sales Bonanza"—because the bigger Mobile Rallies have in fact developed into large social gatherings combined with a one-day market, the actual mobile aspect having become of secondary importance. Numbers of people appear who have no interest in mobile working as such and are there mainly for the party and a good day out—also, of course, for a browse around the Trade stands. Nowadays, a large volume of solid business (even in the high-priced items) is done at these one-day marts, which are becoming ever more popular with the Trade, provided the organisers can ensure a good turn-out.

Even if such events do now tend to obliterate the fundamental concept of a Mobile Rally—chaps with vehicles fitted to get together to talk "mobile"—there can be no objection to this from the Amateur Radio point of view, because (a) It brings radio amateurs together in a way not otherwise possible, (b) Enables potential buyers to see the sort of equipment they have in prospect, and (c) Helps to keep the distaff side within the general ambience of Amateur Radio.

The recent North Midlands Rally is a good example of the trend. Though the "real" Amateur Radio attendance here is somewhat blanketed by the fact that Trentham Gardens—being a show-place in its own right and open to the general public, many of whom make up the numbers round the stands without being even potential buyers—the Rally also draws a huge radio amateur crowd and the traders' cash registers jingle accordingly. As somebody said "There's supposed to be a shortage of cash but you could have fooled us."

However, a small cloud on the horizon for the organisers of one recent successful Rally in another part of the country was the appearance of the local Customs & Excise boys, to levy VAT not only on the

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Neville Grassby, G4CPY (Leicester) receives the prize for "the longest distance travelled" to the R.N.A.R.S. Rally held at Petersfield (H.M.S. "Mercury") from Mrs. O'Reilly, wife of the C.O. of the Signals School, Capt. D. A. O'Reilly, R.N.
entrance takings but also on the modest operations of their bring-and-buy stall! This is, of course, a matter of the interpretation of the law which, no doubt, Customs & Excise will be glad to explain in specific instances.

Though we have no direct reportage on the Hull Amateur Radio Society's Rally at Bishop Burton on May 25, they had a well-organised and carefully-timed programme of events to occupy the hours between noon and 5.0 p.m., with talk-in on VHF and Top Band. This is an attractive venue, in the grounds of the East Riding College of Agriculture, and they even had first-aid facilities, with a doctor on call.

Once again, the organisers of the Maidstone Rally on May 25 were lucky with the Wx, a good crowd of radio amateurs and their friends finding the way to the congenial surroundings of the Y-Centre sports arena. The talk-in stations, including Top Band, were kept busy, in spite of the efficient local sign-posting. A check during the afternoon gave a count of 70 /M's having been given guidance, most of them on two metres—another example of the “black box” popularity. A look along the car park confirmed this, and it was significant that the halo is giving way to the 518th whip—perhaps by reason of the proliferation of repeaters as much as from the aesthetic point of view.

The number of Trade stands at this year's “Maidstone” was a bit down on 1974. Discussion with traders confirmed that the paralysing effect of the imposition of 25% VAT was beginning to wear off—not only were many firm enquiries made but also actual sales were perking up.

An innovation at this Rally was the demonstration put on by the Kent Repeater Group, showing some of the equipment to form part of their installation, which should be in operation by the end of the year.

All QSL's for GB3YSC, the Rally talk-in station, should go to G3ORP, QTHR—and, finally, the committee of the Maidstone YMCA Amateur Radio Society is to be congratulated on another very successful event.

The Royal Naval Amateur Radio Society Rally at the Signa School, H.M.S. Mercury, Petersfield, Hants. on June 1 had fine Wx and turned out to be their best event yet, with 192 cars on the ground, of which 36 were fitted /M, and a total recorded attendance of 702. Of the mobiles, 25 were for two metres, eight on 4m., 19 on Eighty and four on Top Band. Twelve firms put on stands for the Trade show and one of the demonstrations was that by the GPO with their “dreaded TV detector van” and RF interference-suppression display. It is worth mentioning that the prize for the best non-commercial mobile rig went to G3RJF, from Maidstone.

Organisers of forthcoming Rally events are reminded that we shall be glad to have reports (on the lines of the foregoing) as soon as possible after the day, for notice in this feature. Needless to say, good photographs are also wanted, any that we can use being paid
THE RALLY CALENDAR

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 GSYB/P (1920 kHz), G3MY/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.

July 6: Worcester & District Amateur Radio Club Rally at Hill High School, Tunnel Hill, Upton-on-Severn, on the A.4104. Talk-in by G8JC on 3750 kHz and G3GJL on 144.22/145.50 MHz. Sports events and displays (it is hoped) of model trains and aircraft, with trade stands and a stall for the disposal of unwanted gear. Information: B. A. Jones, G8ASO, QTHR. (Tel.: Worcester 351565).

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.

July 20: Polegate Steam Rally at Milton Gate, on the A.27 Polegate-Lewes, Sussex, with talk-in on 2m./4m. by GB3SS, and GB2SS also on the air. Enquiries: R. T. Holder, G8CFZ, QTHR.

August 3: Mobile Rally in the Coach Park, Woburn Abbey Estate, near Luton, Beds., with all the attractions of this well-known stately home. Details: N. Miller, G3MVY, 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.

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

August 31: Preston Amateur Radio Society Mobile Rally at Walton-le-Dale Secondary School, Brindle Road, Bamber Bridge (off M.6 at Junc. 29) with talk-in on two metres and Top Band. Trade stands, bring-and-buy stall, refreshments and ample parking. Details: G. W. Earnshaw, G3ZXC, QTHR.

September 21: Peterborough Mobile Rally at Walton School, Mount-steven Avenue, Peterborough, Cambs. Information from: A. H. Jackson, G8GNY, QTHR.


The two-metre talk-in station for the Rally at Keighley on May 18 was operated by G8AWN, who was kept pretty busy on this smart rig.

Correction: Please note that the subscription rate given on p. 298 should read £4.20.
SWR INDICATOR FOR LOW-POWER WORKING

CONSTRUCTING A USEFUL TEST INSTRUMENT

G. C. DOBBS (G3RJV)

The increase in Q.R.P. activity on the amateur bands has brought in its wake the need for some specialised test and auxiliary gear. Much of that designed for QRO transmission can, of course, be used with low power equipment, but there is a requirement for special QRP test gear. One of the problems of low-power operation is to get as much of the RF power as possible into the aerial. If little power is being used, it is obviously important not to waste what is available.

An additional problem with QRP is the actual tuning of the PA stage for maximum efficiency. In higher power transmitters, it is usual to meter the current to the PA and to tune for dips in this current, whereas QRP transmitters are best tuned for actual RF output from the PA stage. This may be done with a simple “relative power indicator,” an RF voltage indicating device coupled to the output of the transmitter. When an ATU is being used, it is possible for a simple relative power meter to give quite misleading results.

The ideal instrument would be a calibrated SWR Meter, but most of the commercial models available are too insensitive for QRP work. It is, however, easy enough to make up a monitor capable of indicating forward and reflected current flow in a feeder line to an aerial. This will not give a calibrated SWR reading, but will indicate relative forward and reverse RF current flow. Such instruments are common in amateur practice and are often called “Reflectometers,” although most of the available circuits are not designed for sensitivity at low power.

The Basic Circuit

The heart of a standing-wave ratio indicator is the bridge arrangement used to sample the forward and reflected RF current in the feeder line to the aerial. When faced with matching an HW-7 QRP transceiver into various aerials, it was found that the simple relative power meter included in the transmitter could give misleading readings. The first SWR indicator tried is shown in Fig. 1. This circuit comprises a simple form of RF bridge used by many amateurs for SWR indication.

The bridge is based upon a length of heavy duty air-spaced coaxial cable. The ends are bared as shown in Fig. 2 and a length of 22 or 24g. copper wire is pushed down one of the air-spacing holes. The piece of coax cable in the prototype was 18 inches long. How does one get the wire down the whole length of the coax insulator hole? With great patience! The inserted wire samples the RF between the conductor and the shield and a switching arrangement enables the current to be measured from either end. The two wires and the braiding at either end must be insulated from each other, using p.v.c. tape.

The current is measured through a DC amplifier enabling an inexpensive 0-1 mA meter to be used. By simply adding a 10K variable resistance at the emitter, a sensitivity control is provided. This enables the indicator to be used with a range of RF powers and provides for an increase in sensitivity to measure the, hopefully, low reverse current. The transistor used for Tr1 can be any high gain n.p.n. type, and the BC108 may be replaced by a BC109 or most of the “unbranded” n.p.n. types. An n.p.n. transistor is used because the low leakage current should have little effect on the meter with no input to the DC amplifier. Though p.n.p. transistors could be used, a backing-off circuit would be required to zero the meter.

The SWR indicator in Fig. 1 is set up using a dummy load, a non-inductive resistance equal to the impedance of the aerial. This is connected to the output, or Aerial end of the indicator and a few watts of RF are fed into the Transmitter end. Switch on the indicator and adjust RV2 to give the maximum reading with the switch in the “forward” position. With an ideal non-inductive load, the reverse reading should be almost nil. If it is not re-adjust RV2 for a low reading, then repeat the adjustments for high “forward” and low “reflected” readings.
The simple circuit of Fig. 1 can provide a useful instrument for loading QRP transmitters, but in use it was found to be frequency conscious. This is probably related to the length of coax used to make the bridge, although variations of coax cable length have not been tried to investigate the problem. Many modern commercial SWR meters use an RF bridge based upon a toroid transformer. In the basic QRO RF bridges, a coaxial or similar screened cable passes through the centre of a toroid former, which has an RF pick-up winding around its entire length. This method of coupling would not pick up enough current in the toroid winding when using low RF power, so a more direct method of coupling is required.

Toroid RF Bridge

The basic construction of the toroid RF transformer is shown in Fig. 4. The pick-up winding is 55 turns of 28g. enameled wound around the whole circumference of the T-68-2 toroid former. The RF input is provided by a couple of turns of 24g. insulated wire wound over the centre of the main winding. This was found to give full-scale readings with transistor PA stages with as little as 1 watt DC input. If even lower powers are being used, the main winding could be decreased to 50 or even 45 turns of 28g. wire. An extra turn on the RF winding could also be tried. The windings are arranged as shown in Fig. 4, the rigidity of the wire being enough to hold them in place.

Table of Values

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1, C2</td>
<td>0.001 µF, disc</td>
</tr>
<tr>
<td>C4, C5</td>
<td>0.001 µF, disc</td>
</tr>
<tr>
<td>C7</td>
<td>500 µµF,</td>
</tr>
<tr>
<td>C1, C2</td>
<td>20 µµF cer. trimpers</td>
</tr>
<tr>
<td>R1, R2</td>
<td>100 ohms</td>
</tr>
<tr>
<td>RV1</td>
<td>10K linear</td>
</tr>
<tr>
<td>RV2</td>
<td>100-ohm lin.,</td>
</tr>
<tr>
<td>M1</td>
<td>0-1 mA, m/c</td>
</tr>
<tr>
<td>Trl</td>
<td>BC108, or</td>
</tr>
</tbody>
</table>

Notes: For winding T1, see text and Fig. 4—toroid former T-68-2 obtainable from T.M.P. Electromes, Ltd. and all other parts from J. Birkett.

The RF bridge circuit, with the DC amplifier, is shown in Fig. 3. The bridge circuit was built up on a piece of 2 1/4 x 1 1/8in. perforated board (2mm. spacings between holes). The unit could well be constructed on a similar plain piece of paxolin, with holes drilled to accept the component leads. Two 18g. copper wire bus bars were mounted as shown. The lower one is the "chassis line" and the upper one the connection between R1 and R2, marked as X-Y on the circuit diagram in Fig. 3. The layout is shown in Fig. 5.

Mounting The Components

The whole unit was built into an aluminium wrap-round box measuring some 4 1/4 x 4 x 4in. This size happened to match the dimensions of the meter. RV1 and SA/B the unit could be smaller. The RF bridge circuit board was mounted on to the bottom of the case with a thick blob of Bluettack, the putty-like adhesive agent. The input and output sockets were placed on the
back of the case with RV1 and SA/B brought to the front panel as knob controls.

The DC amplifier was built on a small tag strip, as shown in Fig. 6. The mounting hole at one end of the tag strip was bolted to the meter + screw to hold it in place and enable a short connection to be made from Tr1 collector lead. A stiff-wire earthing bus bar was connected between one meter/front panel screw and the chassis connection screw on the output socket. C4, C5, RV1 and the battery + lead were connected to this wire. The battery used was a PP3. The current drawn from the battery is low, in the order of 1 mA for full-scale reading on the "forward" position with 5 watts DC input to the transmitter. The leads between the sockets and CT1 and CT2 should be kept as short as possible; the prototype used screened leads just over one inch long, the outer braid being connected to X-Y of Fig. 3.

Setting Up The Bridge

Before the instrument is used the bridge should be "nulled" using CT1 and CT2. This setting up can be done on any of the higher frequency bands. The indicator has been used on the 10-metre band, but the prototype was set up at the CW end of 20 metres, the band mainly used by the author. The setting-up is done by using a non-inductive dummy load of 50 ohms (or 75 ohms) and a suitable RF input. The dummy load is first plugged into the Aerial socket and about 2 to 5 watts (DC input) power is fed to the Tx socket. Set the switch to the "Forward" position and adjust RV1 for a full-scale reading. Switch to "Reverse" and adjust CT1 for a minimum meter reading. Now reverse the transmitter and dummy load positions to the opposite sockets. As the bridge is now operating in reverse, adjust CT2 for the lowest meter reading with the switch in the "Forward" position. This setting-up routine may be repeated two or three times for the best compromise result. Now check the Indicator with RF inputs on other bands. It should be possible to accommodate the variation in "Forward" readings with a small adjustment of RV1.

Simple SWR Calibration

Although the Indicator is basically a reflectometer, to give relative forward and reverse current readings, it is possible to make a basic calibration of VSWR readings. The readings on the instrument are not an accurate indication of RF voltage over the entire range of meter readings because of the non-linearity of the diodes and the DC amplifier and the frequency-conscious nature of the bridge.

A simple calibration is possible using various values of non-inductive load. Such a calibration only applies to frequencies close to that used in the actual calibration operation, and is therefore best made on the band most frequently used.

The ratio of a load resistance to the bridge’s designed resistance (50 ohms) gives the standing-wave ratio. A 250-ohm load with the 50-ohm bridge gives a ratio of 250 : 50, or 5 : 1; 15 ohms gives 50 : 15 or 3.3 : 1, and naturally the 50-ohm load gives 50 : 50 or 1 : 1. Beginning with the 50-ohm load and using the same power input and the same sensitivity (RV1) setting, meter readings corresponding to several loads can be plotted to give a meter reading/SWR graph. RV1 must not be altered during this calibration as the DC amplifier is not linear, nor should the power input be changed. This simple type of calibration can only represent a rough indication of the actual SWR and even then the readings only really apply to the actual calibration frequency. Even without this calibration, the Indicator is very useful for relative forward and reverse readings when loading into various aerials using an ATU.

Using The Indicator

When the Indicator is used with an ATU it should be placed between the transmitter and the tuner. The connections to and from the unit should be made with coax cables and correct plug/socket arrangements. The ATU is best adjusted for the lowest reverse reading and then the transmitter PA can be retuned for maximum forward power. Because of the nature of tuning up a QRP PA stage, the indicator can give useful readings when tuning up aerials without an ATU. When first built, the Indicator was used to load up an HW-7 into an indoor 20-metre dipole. It suggested that a few inches
should be cut from each end of the aerial. It was after
that the first of several W's were worked using two
watts and the indoor dipole on 20 metres. The Indicator
has been tried with power inputs of up to 10 watts, but
it is not recommended to use an actual RF power input
of more than about 20 watts to the bridge circuit of
Fig. 3. The indicator has been tried on all bands 160-
10 metres with good results.

Construction of the transmitter is very similar to
that of the 4-metre unit described in the August issue of
SHORT WAVE MAGAZINE and the layout of the latter is
followed except for the crystal oscillator, and a few
other minor changes.

Circuit
This is shown in Fig. 1, and has only three stages—
oscillator, doubler and PA.

Oscillator: Triode V1 is an overtone oscillator, work-
ing on 72 MHz. This simplifies the equipment as only a
double is required before the PA. L1 is tuned to about
72 MHz by trimmer T1. Feedback to the crystal circuit
and grid of V1 is by the coupling winding L2. L1 and
L2 have to be in the “sense” shown, to secure oscillation.
It was found of advantage to have a separate feedback
winding, rather than using a tapped coil, as the amount
of feedback can be easily adjusted by moving L2 in
relationship to L1. This is simpler than moving the
position of a coil tapping.

With this overtone oscillator, the lowest frequency
produced is 72 MHz, unlike oscillators where a lower
frequency is developed but a second, third or other
harmonic is taken from the anode.

This stage must be tested by placing a meter at the
HT end of R2, using a 20 mA or similar range. When

Fig. 1. Circuit of the Two-Metre RF Unit
feedback from L1 to L2 is suitably adjusted, rotating T1 will produce a dip in anode current, in a similar manner to that noted with other crystal oscillators. In addition, when the Tx is tuned up and the signal is checked with a converter and receiver or similar means, there is only a very slight change in frequency due to T1, from pulling of the crystal frequency. In these circumstances, the oscillator is crystal controlled and tuning L1 much off frequency will stop oscillation.

Should feedback be insufficient, so that no oscillation can arise, there will be no dip in anode current, and no adjustment of T1 will give any RF from the stage. This is cured by moving L2 a little nearer to L1.

Alternatively, if coupling and feedback are too great, the stage will not be crystal controlled, and will oscillate and produce RF at almost any frequency to which it is tuned. Rotating T1 will move the signal several MHz up and down the band. This must of course be avoided by moving L2 away from L1. Some care is necessary to obtain the best output from V1, without losing control by the crystal.

The crystal used is a 5th overtone 72 MHz type. Such a crystal can easily be excited at its 3rd overtone if L1 is tuned to the vicinity of this. However, this frequency is far removed from that wanted, and there should not be any trouble from this cause. If necessary, a check with a wavemeter will confirm that the circuit is operating as it should.

A very small re-adjustment will probably be needed after V2 is in position and operating. A check should be made that the oscillator starts when the equipment is switched on, and this usually makes it necessary to set T1 just off the point which gives maximum output. When subsequent stages are working, adjustments to the oscillator can be directed towards obtaining a suitable grid current for the PA, as shown by the grid meter.

Doubling: V2 receives drive at 72 MHz, and L3 is tuned to 144 MHz, as are all subsequent circuits. T2 is to compensate for the stray capacitance of V2.

L4 is tuned by VC2, and grid current is shown by M1. Split-stator or butterfly capacitors are essential for VC1, VC2 and VC3. If surplus items are to hand, there is no need to use the exact values given.

If a GDO is available, it is helpful to set L3 and L4 with this, before applying power. Failing this, and with V1 working correctly, adjust VC1 and VC2 until some

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### Upper chassis layout for the Two-Metre RF Unit

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### Table of Values

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1, C2, C4, C5, C6, C7, C8, C9</td>
<td>0.01 μF disc cer.</td>
</tr>
<tr>
<td>C10, C11</td>
<td>0.002 μF, 600V, disc cer.</td>
</tr>
<tr>
<td>T1</td>
<td>30 μF trimmer</td>
</tr>
<tr>
<td>T2</td>
<td>10 μF tub. trimmer</td>
</tr>
<tr>
<td>V1</td>
<td>82,000 ohms, 1w.</td>
</tr>
<tr>
<td>V2</td>
<td>27,000 ohms, 1w.</td>
</tr>
<tr>
<td>V3</td>
<td>2,700 ohms, 1w.</td>
</tr>
<tr>
<td>R3</td>
<td>= 82,000 ohms, 1w.</td>
</tr>
<tr>
<td>R4</td>
<td>= 27,000 ohms, 1w.</td>
</tr>
<tr>
<td>R5</td>
<td>= 270 ohms, 1w.</td>
</tr>
<tr>
<td>R6</td>
<td>= 22,000 ohms, 1w.</td>
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<tr>
<td>R7</td>
<td>= 47 ohms, 1w.</td>
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<tr>
<td>R8</td>
<td>= 39,000 ohms, 1w.</td>
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<td>R9</td>
<td>= 10 ohms, 1w.</td>
</tr>
<tr>
<td>R10</td>
<td>= 10 ohms, 1w.</td>
</tr>
<tr>
<td>L1, L2, L3, L4</td>
<td>= 82,000 ohms, 1w.</td>
</tr>
<tr>
<td>L5, L6</td>
<td>= see text</td>
</tr>
</tbody>
</table>

**Notes:**
- V1 should be in B7G holder, with can. V2, V3 should be in B9A ceramic holders. Chassis can be 4 x 7 x 2in., with screens 4 x 2in. and 4 x 3in. Cabinet and panel can be to choice.
grid current is shown by M1. HT must not be applied to point 4. VC1 and VC2 can then be peaked up for maximum grid current, and their settings interact slightly. Should either capacitor prove to be fully open, stretch the coil a little to correct this. On the other hand, if either capacitor is fully closed, the coil must be compressed. The coils described should prove to be suitable without adjustment in this way.

The setting of T2 is not very important. If T2 is slowly screwed down from minimum, VC1 meanwhile being re-adjusted very slightly as required, a setting should be found which gives a slight rise in grid current. Otherwise leave T2 at about 5pF or so. (With the power pack to be described, there is provision for reducing the HT voltage for these adjustments). L3 and L4 need to be quite closely coupled, this being adjusted by bending one or both coils to change the separation, to secure best grid drive, as shown by M1. VC1 and VC2 should be checked afterwards.

PA Stage: HT should not be applied until 2 mA or so if grid current is obtained. A 12v. 6-watt lamp or other load can be temporarily plugged into the output socket of L6. VC3 is rotated for maximum brilliance. This may not agree exactly with the usual dip on M2. Final adjustments to all trimmers should be made, while watching the lamp and M2.

For first adjustments, reduced HT voltage can be used. L6 will probably need to be a little way out of L5, to avoid excess loading. PA input is of course anode voltage x anode current. As example, with a 300v. supply and the meter showing 30 mA = 300 x 0.03 = 9 watts. When a large supply is available, up to 20 watts may be used.

Inductors
L1 is six turns of 20g. wire, and is 7/16th in. outside diameter and ½in. long. L2 is three turns of insulated wire, of the same diameter as L1.
L3 is wound with 20g. insulated wire and has five turns, separated to make the winding ½in. long. It is centre tapped for R5, and ¾in. in outside diameter.
L4 is also 20g. wire, six turns centre tapped, ½in. long, and the same diameter as L3.
L5 is of 16-gauge wire, four turns centre tapped, 9/16th in. o.d. and ¾in. long, with one turn of insulated wire centrally placed for L6.

Constructional Points
Except for the oscillator, details are virtually the same as for the 4-metre transmitter already described (August issue) as can be seen from the chassis layout for that unit, as well as from the under-chassis view.

A screen runs across under the PA valveholder, and a screen is also fitted on top of the chassis. Instead of the single meter and switching of the 4m. unit, two meters are used, permanently wired for PA grid and anode current. These are on a panel above the chassis. The screens and chassis can be made from ready formed “universal chassis” members as for the 4m. unit, or can be fabricated to suit. (A suitable case is available from Home Radio and other sources). The actual dimensions of the chassis will not be too important, provided leads can be short in the RF circuits, without cramping.

Chassis returns and other RF leads should be as short and direct as can be arranged. The QQVO3-10 should then be found to be perfectly stable. No difficulty will arise with the 5763, as this valve is functioning as a doubler.

Wiring around the oscillator stage is shown in Fig. 2. As mentioned, care is necessary here to obtain proper crystal control. This is the price paid for the avoidance of a low frequency crystal, possibly around 8 MHz, which would involve additional multipliers.

Relay
The power supply described has provision for controlling a relay in addition to the HT circuits, and this item is connected as in Fig. 3. The relay is a 12v. aerial type, and was found to operate reliably from the 8-9v. DC available for this purpose.

Some transistorised converters will need protective diodes adding, to avoid damage from RF leaking into the converter. When the relay is not energised the aerial circuit is to the receiver side.

Tune-Up Indicator
The resistors and diode allow a high-resistance voltmeter to be clipped on for RF tune-up purposes when the
Under-chassis construction, showing screening

Aerial is connected. A reading of a few volts DC will be obtained, and adjustments are directed towards securing the best meter indication. If the aerial or other parts of the installation are not changed, the meter can then be removed. A slight re-adjustment of tuning from the spot found best with a lamp or resistor load will probably be needed.

**Crystals**

Output is x2 the crystal frequency. With a crystal controlled converter and accurately calibrated receiver, frequencies can be read in terms of tunable IF on the receiver. The signal should come up at very nearly the expected point, though it may not be *exactly* in agreement with the receiver scale.

Operation is very straight forward, once the equipment has been tuned up, and the switch on the power supply/modulator gives complete control. Because of the modulator limitations, there is little advantage in running over about 10 watts. Doing so it likely to bring reports of under-modulation. A somewhat similar effect can be produced by inadequate grid drive. Grid drive was adequate with the value given for R4, but this resistor can be reduced to boost gain in this stage, provided the 5763 anode dissipation is not exceeded (12 watts). Cans are not used on this stage, or on the PA.

For this month's Reader Small Advertisments, see pp. 292-298
QUITE a crop of letters again this time, and one would think most of them—at least from the chaps who have been around for some years—would comment on the fallaway of conditions on the bands as compared to say, two or three years ago. Here, the sunspot cycle has its advantages; although nothing can be done to enable DX to be heard on a dead band, the poor conditions are often manifested by way of openings with poor, watery signals, which by their very nature tend to make the SWL or amateur look to his equipment with a view to any improvements which can be made. And, often, this will lead the chap who thought himself "non-technical" into the fascinating paths of home-construction and so into a whole new facet of Amateur Radio.

Technical Matters

After reading your conductor's reportage of the preselector question, Hamgear Electronics wrote in to present their own (opposite) view. To summarise what they say, taking their own preselectors as the example: The gain of the preselector, which itself has a noise figure quite good enough for use on the HF bands, is of the order of 32 dB. They go on to say that their recommendation for use (and we certainly cannot cavil at this) is that the preselector be run at full gain with the receiver RF gain turned right down. This, it is argued, means that the signal reaching the mixer is no more hefty than it would have been before, except that the noise figure of the receiver has been swapped for the noise figure of the preselector which is generally better; and that this contention can very easily be demonstrated on a receiver simply by disconnecting the preselector when the receiver proper will become for all practical purposes silent. They go on to say that even quality receivers can benefit.

This, it must be admitted, is a very attractive argument. However, one feels it is spoiled by the invocation of a totally irrelevant demonstration, even though there can be no argument that the method recommended is the best way of handling any preselector, in the absence of any definite indications to the contrary. What is not offered is any real proof that the method will give the improved reception of DX signals which is the reason for building or buying. The first part of the ideal receiver system is an Aerial Tuning Unit to get the maximum possible signal extraction from the aerial and the preselector. In the absence of any definite indications to the contrary, it is fair enough, but it should be stressed that if the aerial erected is of a great one for putting aerials up and ripping them down again. This is fair enough, but it should be stressed that if the aerial erected is of a

What's all this RTTY stuff about? enquires L. Craven (Alvechurch). Simply, it is the use of a teleprinter on radio link. The printer, whether on line or radio, works by sorting out a code comprising a sequence of five pips of tone of two frequencies called, respectively, mark and space. In addition, a "space" is sent at the beginning of each letter to act as a start-pulse, and a "mark" at the end to act as a stop. The reason for these is that since the receiving and sending printers must run at the same speed, by starting the machine and stopping it on each letter the accumulation of speed errors is reduced. In the amateur shack, to receive a RTTY signal requires an ordinary stable communications receiver/aerial system, plus additional gear in the form of a teleprinter (with its own PSU most likely) and a thing called a Terminal Unit which in effect turns the signals out of the receiver into a form capable of driving the printer. Turning to the RF side, the mark and space are transmitted as two different frequencies spaced apart by either 850 Hz, or, particularly on HF, 170 Hz; this is done by shifting the carrier frequency itself on the HF bands, or by using two audio tones, (the standards are 2125 Hz for mark and 2975 Hz for the space signal) on a fixed carrier frequency, this latter technique being more often met on VHF.

So, firstly you require a teleprinter, preferably a "page-printer" type which usually will require to be worked over to get it into tip-top condition mechanically, motor speed set up by means of a strobe, lubricated, and so on. Unless you have an isolated shack at

SHORT WAVE LISTENER
FEATURE

By Justin Cooper

SOME INTERESTING TECHNICAL POINTS — MORE ON PRESELECTORS, FILTERS AND AERIALS — RTTY FOR THE SWL — TUNING SSB ON OLDER RECEIVERS — NOTES, NEWS AND COMMENT — THE TABULAR MATTER

To the receiver instead of the aerial, pulling out the RF stage valve, and shorting the aerial input straight to the mixer grid. The chap thought the result "fantastic" . . . one supposes it could be regarded as fantastic, but not in the way he meant the word!

P. J. Brent (Helensburgh) has some interesting points on aerials; he feels that the correct thing to do is to cut them to size for a particular band, pad them to other bands with C or L as necessary, and then feed them through a pi-tank as an aerial coupler, in and out in coaxial to the receiver, when, he asserts, no problems should be noted. The philosophy is largely correct, insofar as a known type of aerial with dimensions suitably adjusted is more likely to work than a "gash length" without benefit of ATU, simply because the amateur has no measuring gear for its aerials, and cannot build any. However, one thing should be noted about the pi-coupled used as an ATU and that is that sometimes it will not match effectively; the condition occurs when the square of the reactance of the inductor is greater than the product of the input impedance and the output impedance; the solution, clearly, is to either reduce the inductance in the pi-tank or to increase the feed impedance on either the input or output or both, so the product up high enough.

H. A. Londesborough (Swanland), asks about the worth of the MFJ filter, his problem being that he finds it hard to notch out those 59 Italians on his FR-4005DX without losing the wanted signal. A fair question to which one would think the answer would be "yes" — not given that the problem is not due to cross-modulation earlier in the receiver. Personally, for his CW listening, J.C. uses both an MFJ CW filter and an attenuator put between the aerial and the receiver; the MFJ box is most definitely better than any audio-selective device found in thirty years of SWL and licensed operation.

M. Rivers (Whitleype) is also on the aerials kick. He mentioned a great one for putting aerials up and ripping them down again. This is fair enough, but it should be stressed that if the aerial erected is of a

THE SHORT WAVE MAGAZINE
July, 1975
the end of the garden you will very quickly find yourself looking for a silence cover, too! Once you have receiver and printer sorted out, when you go to the Terminal Unit—they vary from the sublime to the other sort. One of the nicer ones appears in the 1975 ARRL Handbook, while the Radio Communication Handbook carried some detail on a simpler one and also on mechanical details of the printer. Perhaps the best thing to do would be to check out such details in a Handbook, and certainly it is advisable to join BARTG for the sake of the gen. in their Newsletter. One must always recall that a RTTY set-up not only needs to be set up—it also needs regular meals of paper and inked ribbon, which can be expensive and hard to find if you are not getting a sight of the BARTG Newsletter! And as to whether it will work while—this is all very individual to decide.

Still with the technical points, lots 'em this time, we have R. Elliott (Brentwood) who wants some guidance on valve life in his Trio 9R-59D5s which is now some three years old. This is very largely a function of set design—Sylvania once showed that for a good design 90% of the valves were still going nicely after 1200 hours, while with another set, poorly designed, over 80% were dead at the same time! The things to be looked at, if one assumed the electrical design to be competent, are, in the main, the valve envelope temperatures, and mechanical handling. For the first, look at the ventilation, and recall that heat rises. A few significant holes in the chassis may improve the under-chassis cooling enormously, and a few in the bottom of the case and in the lid may even move improvement inside at the expense of making the outside surroundings somewhat hotter—but who cares at a warm shack and a reliable receiver? And for mechanical handling, never, ever, remove a valve from its socket unless you have to; rather than put it on a valve tester, check the pin values in situ if they have changed since you bought the receiver (you should have noted these as very first task) and if you must pull out a valve, then use care and never "wriggle" the valve out of its socket. On life, don't worry too much about the ones with cathode bias, as the inherent negative feedback tends to keep performance constant; but check the RF stage valve, the mixer, and any stage without cathode bias every 1000 hours or so on a low-level stage should be changed as soon as they drop into the "doubtful" area, and keep as standbys, and the others the moment they reach replacement stage. At every valve change, the set should be re-aligned at the relevant stage.

But, let it be stressed that these day valves are not unreliable if they are in a good design electrically and ventilation-wise and if they are not being used as test-jacks by the service-man.

T. Pinch (Ivybridge, S. Devon) has trouble tuning SSB on his HA-230 Lafayette receiver, and from the symptoms it sounds a bit as though he has two problems. The first one is probably having too many aerials being up thirty feet.

Another oddball comes from K. Kyezor who is back on the bands and the need for a CW test. Back to us on this one came two letters, one from an absolute amateur, the other from a SWL with the RF/IF gain control.

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metrical operators, such indeed as Gareth himself, are lumbered with a collection of chaps who have to be taught just about everything concerning operating. Also, we must point out that there was a sentence following which made quite clear JC's own humble attitude to the eighty-metre bad operators.

Next, to E. Parker (Hove) who started the hare in the first place—

Ernie also didn't read the whole of the sentence! However, although he has much to say in his letter, space prenses hard and we must just extract his special point: that his irritation with the Home Office people for not enforcing the conditions of the ticket—hear!, hear! Just to jump on a couple of the worst and most blatant offenders hard and to say (for publication) just why they did so would cause an immediate improvement, we are certain.

J. D. Porter (Bathford) is another who is low on prefixes this thanks to the work done on R.A.E., for which he now awaits the result anxiously.

Robert (Hampstead) has a problem—his filing system! Seems he happily ditched the old one before he got the new one organised properly—hard luck. On a different line, John wonders about correspondence courses for R.A.E. and their practicality. One would feel this is very much a matter of the individual's personal temperament, provided the said person can cope with the very simple maths involved.

And that brings us to a cry for help; old G3KFE was sampling the pubs on the Oxford Canal just recently and he met the publican of the "Great Western" at Aynho, who, as 'KFE entered the bar was bemoaning his inability to get an R.A.E. course off the ground at Banbury Tech, for want of numbers to make a start. Is there anyone who could help this lad achieve his long-held ambition—if so, drop him a line direct to his home address: D. E. Nicholls, 27 St. Johns Road, N. W. 1, to see if a convenient time to go and have a talk about it.

The question of a special commemorative U.K. prefix is raised by R. H. McVey (Wessex-super-Mare). It would be interesting, certainly, but the administrative work from the Home Office point of view could be quite considerable for the amount of gain there would be.

On a different tack, Les has managed to continue logging, using the left hand for both pencil and receiver, and seems to have heard most of the goings-on around the bands. His queries include "UR5GZ" and "UA60HAR" on the same band, but while we are reluctant to damn them as phonies it can perhaps be said that the two calls are not numbered among the known run of things, and so, unless someone comes back to us with some other details, or one of our Russian readers can enlighten us, we must reluctantly scrape them off the list.

P. Rooney, writing from Worcester College, Oxford, comments that he has wondered why people were bemoaning so much about conditions, as when he heard some home DX calls he observed 20 and 15 metres as wide open to DX. But he soon realised when his next few listening sessions produced either dead bands or a day of I, UA-Europe and OK signals with nothing else!

E. W. Robinson (Bury St. Edmunds) is getting more time to play with the wireless now, he having retired from work—lucky chap! Perhaps the best of a very good bunch was JF1NZM/MM, operator Ken, on a 254,000 ton tanker about twelve hours sailing-time from Singapore and headed for the Persian Gulf, who was heard well at 1654z and still was coming in strongly an hour later.

Our sympathies go out to R. Carter (Blackburn) who was stricken with total deafness on April 18 for four days—it must have been pretty terrifying, particularly for one with an interest in Amateur Radio.

There is nothing like an algebraic approach to problems, says M. (Barlow-in-Furness). His personal equation is expressed as: Bad conditions plus flat batteries plus schoolwork plus fallen-down aerials equals low HPX score! We know the feeling—indeed one of the J.C. aerials has obeyed the force of gravity since this offering was commenced.

L. Gibson (Barlow-in-Furness) wonders if all the funny prefixes are always going to count for very little, as he managed to do, provided they do by that they are heard direct and not by way of Oscars, and in addition that are genuine amateur callsigns. On a different tack, Les has shifted the 14 MHz dipole outside in an effort to reduce the TV timebase noises; it has improved reception quite a bit but done no good to the volume of the TV timebase harmonics—oh, well, you can't win 'em all!

G. Lucas (Kenvoway) has a long letter this time, about this-and-that; he signs it GM8JKT, on which our congratulations are in order and is at the moment pegging away at Morse. However, he has been turfed out of his warm corner of the XYL's bedroom into the coal-cellar; but he is philosophical about as it lets him listen on a bit later at night without complaints from the dishes side. Come to that, isn't it we have a steady diet of old G3KFE and his coal-cellar shack at the Anvil Point lighthouse and it looks a mighty fine sort of place for the rig. In addition, of course, there is the matter of NF&D still to be tackled (at the time of his letter, that is) which will keep him well occupied.

M. Quintin (Wotton-under-Edge) was a bit worried at hearing a W discussing the next frequency-allocation conference in a few years time and making the dismal prediction that we shall lose all our bands to the commercial interests. We could comment that it's a long way ahead yet anyway; but it would be less than realistic if we claimed that no losses of our bands could possibly occur. The problem basically is not one of "commercial interest" but rather one of "developing nations." Each country which sends a delegate has one vote only. Thus, Russia, U.S.A., and U.K. muster three votes, while emergent African countries which have no knowledge of, or are actively against, Amateur Radio probably number thirty-three; thirty-three countries equals thirty-three votes against. Hence the importance of promoting a good image of Amateur Radio at the conference and before, so that as many as possible voters are cast in favour of resolutions to retain or even increase amateur allocations.

It's nice to have a reserve receiver around the place, as A. F. Roberts (Kidderminster) realised when his 840A packed up; he was then able to continue listening with the old standby R.107 and collect a few more for his CW list.

A few interesting comments on the R.A.E. paper from R. C. Wood (Ashbourne) who found it somewhat different from what he had expected, no calculations and hence all descriptive—it has to be admitted that in that way it was, as it were, a bit of a "turn-up for the book." On the other hand, Richard doubts his own ability at describing things and is therefore somewhat pessimistic. Thus, he is spending his time brushing-up from the Examination Manual and practicing Morse. However, if he writes answers from the right facts, he is clearly as he writes a letter, it should be a pass for him—most people lose far more marks than one would expect of him by way of self-contradiction and woolly phraseology.

A. C. Roberts has various points to make from Shepshed, among which we notice he was lucky enough to log 3C1AGD during that strange day of operation on Fernando Po; and he also managed to hear UA9VH/J1 after a long time trying, as the pick of his rather nice crop of DX callsigns.

H. M. Graham (Harefield) continues his steady way up the HPX ladder, and in the process picked-up a couple of all-time new countries in YB0AV and V53MC, the latter heard no less than three times at strengths varying from S1 to S5, always around tea-time of course, and on Twenty.

Finally, another New Boy—N. A. Phelps (Devizes) comes into the CW HPX list at 278 prefixes claimed, of which only one is disallowed, namely the claimed "KY9ITU" who was in fact K9YITU, with whom your conductor and G3KFE spent a merry evening on May 31 over pints of ale.

New The Sign-Off

Deadline for the next appearance of "SWL," in the September issue (due out on August 29) will be July 24, addressed "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM, MK18 1RQ. Till then, all the best from J.C.—and keep the wheels turning.
VHF BANDS

A. H. DORMER (G3DAH)

The recent improvement in the weather brought some good opportunities on all the VHF bands right down to 23 cm. Most remarkable, probably, was the sporadic-E opening to Italy on May 21 which extended up to Lancashire and into Northern Ireland. GIJL.A in Co. Tyrone first heard 105SVS on 144-20 MHz SSB at 1920z at 5 & 8, but could not raise him. However, he moved up a few kHz and worked in succession at the VHF bands right down to 23 cm. Most bands covering a large service area in spite of the most reliable and accurate guide to conditions.

The opening was not confined to sporadic-E propagation. There was extended tropo. around also, which was evident over most of the country instead of being confined, as it so often is, to a small area, and which peaked on the evening of May 28. To quote from two reports: G8HHI (Yately, Hants.) worked a couple of OZ’s and a string of PA’s and DL’s while G8GLG in Preston, Lancs. (around the same time) got into OZ, PA’s and DL’s while G8GLG in Preston, Lancs. (around the same time) got into OZ, PA’s and DL’s while G8GLG in Preston, Lancs. (around the same time) got into OZ.

Edmunds was also getting into DL well. On 4m., G4API (Hitchin) put his new SSB rig to good use and worked several stations well to the North—he probably has had plenty of practice on the band since he was one of the operators at G3KMI, the Southampton University Society.

For a most interesting report, G2AXI (Basingstoke) has added two more countries, DL and PA, to his 70 cm. score and now has SSB available on that band, in addition to 4m. and 2m., and G4BGLG in Dyfed should now be on 70 cm. with 70 watts of SSB. He says that he has the QRV on the 70 cm. calling channel most evenings during 1830—1900 BST and around 144-20 MHz between 1900—2100 BST if anyone wants to fix a sked with that county. G3BW in Cumbria had a good 70 cm. contact over a difficult path with GMZ2BE in Aberdeen on the night of June 9.

G4BYP (Liverpool) reports that the 4m. activity nights in the NW have not been very successful, and that to get the real DX! A further attempt to prove this from GM3OXX trip to GD under way. The weekend of May 31/June 1 saw the long-awaited GM3OXX trip to GD under way. On Sunday, May 11, GM8BKE, GM3DXJ, GM3HEY and GM3XXX assembled at Benan Head, Ayrshire, to attempt a 3 cm. QSO with GI8AYZ, located at Torr Head, Co. Antrim—over an all-sea path of some 70 km. Good signal strengths were received from GI, but, unfortunately, a fault developed in the receiver at the Antrim end which could not be cleared in situ and two-way contact was not established on this occasion. A further attempt to prove this path was made from the hills behind Culzean Bay on May 18, but again, due to Rx trouble at the GI end, two-way contact was not achieved.

Following this session, GM3OXX, GM8BKE and GM3DXJ made tracks for Auchencoul Bay (NGR NX-236517) leaving GM8BKE to continue with the GI tests. They arrived 30 minutes late for the skeds with GW4BRS/P, the Barry Radio Society Microwave Group located at St. Davids Head, but all established contact at the first attempt with signal strengths at RS9 both ways. Indeed, it was estimated at the GM end, that the link was about 40 dB in hand. No talk-back link was required. One cannot but admire the expertise which made this achievement possible over a non-optical path, the propagation medium being superrefraction. Members of the Barry Group concerned were GW4AMV, GW3PPF and G8FQD. Their equipment consisted of a Gunn diode running at 10 mW through a circulator to an SIM2 mixer and a 40673 moist pre-amp into a broadcast receiver tuned to the 10 MHz. The antenna was a 30in. dish. Very fine! Hold on! there is more to come! The weekend of May 31/June 1 saw the long-awaited GM3OXX trip to GD under way.

VHF COUNTRY CLUB MEMBERS

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Four Metres

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<td>4 G3FDW</td>
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Operating from Snaefell at 2031ft. a.s.l., G3D3OX and G3D8HEY made two-way contacts with G3DXJ and G5MBF (PA99KA) located at Lank Rigg on the West coast of Cumbria. They worked over a 74 km. path, with GW4ALN and GW56FJ located at 1843ft. a.s.l. near Llangollen, over a 156 km. path, with G1SEY near Lame, a 110 km stretch; and with GM8BKE near Portpatrick, distance being 71 km. One-way exchanges were made with GMSGEC South of Dumfries and with G8AYZ and G8DPM at a site near Newtonards. Profit-South of Dumfries and with G8AYZ and G8DMX at the Newtonards site, G3DXJ worked GW4ALN and GW56FJ at Crum-y-brain and GMSGEC had a one-way with G3DXJ.

Altogether a most memorable day for all concerned and a great boost to amateur operation on the Gigahertz frequencies. Heartiest congratulations to all concerned.

Twenty-Three

What looks like a new record has been set up on this band by G3M3WDG/P who, on May 28, worked PA4UYV (who had G8GNZ in the shack with him) PA0HDQ and PA0MDK. Signal strengths varied from S5 to S1. He was also heard working DL, but details are not available at the time of writing.

Martin Dann, G3NHE in Sheffield, found the whole of the last week of May to be excellent for 23 cm. propagation. He worked six new counties and two new countries to bring his All-Time score for the Table to 21. The G3M3WDG/G5HD expedition brought him Powys, Cumbria, Wigtown, Roxburgh, Durham and Cwlyd and his countries worked on 23 cm. are now G, GM, GW, PA and DC. Very nice going! John Tye, G4BYV in Norfolk, also worked RM3WDG/P on May 28 and thus got his first GM contact. He now has 15 different letter QRA's and has worked 51 different stations on this band. He is much occupied at present in building for the higher frequencies but is pressing on with the SSB gear for 23 cm. and at the moment has the 2C39A working on FM and CW, with 70 watts input from a BAY96 driver.

G3LQR (Woodbridge, Suffolk) worked into Berlin on 23 cm. during the opening on the evening of May 28 and also heard the D12LF beacon. On the same night, G2DHJ, copied PA0MDK, PA4UYV, G3M3WDG/P and G4BEL on 23 cm. He is going to be very popular when he gets his 23 cm. Tx operational!

Conditions have been better on 23 cm. than on 70 cm. on several occasions during the last few weeks. On June 10, for example, G4ALN in Essex found this to be true when he worked G3DY in Peterborough and G3NHE in Sheffield for two new counties on 1296 MHz.

Contests

Results: In spite of poor weather and propagation conditions, there was a good entry for the 4m. Open in April. In the Fixed Station section, the leader was GD2HDZ, whose best DX was with G4BOX/P, at 420 km., followed by G3XDY as runner-up. The Portable section was headed by GW4ABR, whose 530 km. contact with GM3E0J was the best recorded in the event, and he was followed by GW90AS. One cannot escape the conclusion that there is some deep-rooted, and secret, objection among Welsh-based opera-

Tors to using their own mountain sites for contests! Time and time again we have to report that events have been won by visiting teams, an exception being GW3UCB based in Bangor and indeed, in this particular contest the three GW portables who figured in the first five places were all from outside the country. What gives?

The March 144 MHz Open attracted a large entry and the DX worked well the reports received at the time that "conditions were poor over most of the country." Several contacts of over 700 km. were made and the list of "Best DX" included DC, ON, PA and F—not all from good portable locations either. The Portable section was won fairly easily by GW3UCB followed by G8BQX, operating in Hastings, of whom a
lot more is likely to be heard in the contest miles now that the high power SSB available and a very clean signal to boot. The March & District Club, operating G3PMH/A, led the field in the Fixed station section, followed by ON8W.F.

Reports: Activity and propagation were both good for the month. Portable event over May 31/June 1 with several scores approaching the 500 mark. A fair amount of Continental DX was available and this fact, with the absence of GM and GI contacts in the South suggests that the major axis for extended tropo, working was to the South and the East, and this would fit the pressure pattern prevailing at the time. Best score heard was that of GW3WAS/P from near Oswestry (the Lichfield Group—and yet another visitor to GW!) who were passing 485 just before the end, and GW3UCB/P who had amassed 362 contacts by early morning on Sunday. There were a few dreadful signals to be heard from both portable and fixed stations and there was the usual QRO, the calling channel and close contacts. Perhaps the fact that the SSB limit for SSB is now 144-50 MHz has not yet got through to all operators. It was noticeable that those who did work higher up the band were not having to waste time calling “QO” signals being in the clear, one call sufficed and stations were lining up to work them. Once again, although this was an Open contest, there was little CW activity, and the two FM stations logged in Herne Bay were both on the SSB calling channel! Fortnightly events: July 5/6 Jubilee Contest, July 27 Two-Metre QRP, August 10, 50 MHz Portable.

DX Peditions
Some of the Essex University members have planned a Continental trip for 14 days starting: August 2. They will visit Belgium, France, Luxembourg, Switzerland and Liechtenstein using a variety of callsigns. They will have an FT-101 with transmitters for 2m and 70 cm, all equipment portable. The 2m. gear will be QRO with a pair of 4CX250B's feeding a 14-element Parabean, the 70 cm. antenna being a 46-ele. Their itinerary is a bit flexible and so they do not wish to make skeds, but will be looking towards England for contacts. Those taking part are G3DMY, G4CDN, G8FU and G8GUO. They will also have HF-band gear.

G3COP will be operating as GC3COP in Guernsey for the last two weeks of August. He will have AM on 144-17 MHz, 144-25 MHz, 144-38 MHz and 144-675 MHz from an 8 watt Tx and a 3-ele. quad antenna.

Peter Lennard, G3VPS, sends his regrets to those who were looking for him on 4m. during his recent trip round the ’Milk Run’ circuit. A combination of car and radio unserviceabilities meant that his schedule had to be much modified, and many of the operating periods either curtailed or cancelled. This rarely happens to such an experienced expeditioner, but there will certainly be other opportunities to work Peter during the summer months.

G8HDR will be operating in ON, LX and DL from July 13 to August 3 using his own callsign plus the appropriate country suffix. He will have SSB to an 8-ele. Yagi and skeds can be arranged QTHR.

OSCAR News
The trouble with OSCAR VI persisted and many of the scheduled “ON” orbits have been missed due to ground command station problems. However, it is hoped to have the situation under control again in the near future.

OSCAR VII continues to perform with very little trouble but it is becoming difficult to find new prefixes now—particularly on Mode “B”. The scheme of tuning around the 70 cm. up-link after a pass does not seem to have caught on to any great extent, although one can still get the odd, unexpected QSO this way, and it is an indicator of propagation.

The AMSAT-UK organisation is now well under way and the British command system is functioning, although at the moment, more cash, design and construction time and space are needed. The devices are under automatic basis. G3IOR and G3WPO are to be congratulated on their initiative in this respect and also on the production of OSCAR News which is full of useful information about the two satellites. At £3 per annum this is a good buy.

Here are a couple of Orbital predictions for OSCAR VII:
July 1 Orbit No. 2836—Equator crossing 1348z-bearing 257° W—Mode “B.”
July 2 Orbit No. 2943—Equator crossing 1424z—bearing 265° W—Mode “A.”

The method for calculating other orbits was explained fully in the February, 1975 issue of SHORT WAVE MAGAZINE.

VHFFC Awards
The only 2m. Award this month goes to Bob Harry, G3NRT of Billericay, Essex, with Certificate No. 241. He was first licensed in 1960 with the callsign GW3NRT/T which stood for a while and was stable. The 2m. gear will be QRO with a pair of 4CX250B's feeding a 14-element Parabean, the 70 cm. antenna being a 46-ele. Their itinerary is a bit flexible and so they do not wish to make skeds, but will be looking towards England for contacts. Those taking part are G4DMY, G4CDN, G8FU and G8GUO. They will also have HF-band gear.

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“Short Wave Magazine” covers the whole field of Amateur Radio and should be obtainable to order through any newsagent.
MORE ABOUT SPEECH CLIPPING

REVIEWING THE DATONG UNIT

THIS review deals with another of those “clip-ons” which are intended to improve the effectiveness of the station in one way or another. This time we are dealing, not with a device to improve reception of CW, but transmission of Phone, namely the Datong RF Clipper. Much of the technicalities have already been covered in the October 1974 issue of SHORT WAVE MAGAZINE. It remains for your reviewer to discuss a production unit, tacked on to the station KW-2000B and associated linear.

The clipper arrived well packed and in perfect condition. Attention to detail was such that when the cover was removed in order to fit the recommended PP9 battery, the connector was held down for transit by a strip of sticky tape, and, also inside and taped in, the six screws with which the cover would be secured after fitting the battery. No risk here of odd bits bouncing around in transit. The PP9 was as firmly fixed inside the case as the PCB itself once the lid was fitted properly. One could use this bit of gear in a mobile rig without any fear of it coming to bits or doing itself an internal injury.

At the writer’s request, a lead was supplied to mate the Clipper to the KW2000B; and here we hit a snag which was not really the fault of Datong engineering at all. Simply, it was that the connections to the “tip” and “ring” of the KW2000B were reversed during the run of production, as and from S/N 1854. Murphy's well-known Law ensured that the Datong people made the KW-2000B matching lead up to suit the later models, while your reviewer has the earlier series model transceiver. The result was quite fascinating in that rotation of the Clipper gain control would pull the change-over relay in the rig in and out. Turning up the gain to go to “receive” didn’t seem to be right, somehow, so a certain amount of lead-tracing inside the Clipper and the rig had to be gone through before the penny dropped. All this tomfoolery had no effect on the workings of the Clipper itself, needless to say.

Read The Book!

There is an old saying which is that “If all else fails, read the instructions!” An initial trial on the air didn’t seem to indicate the desired improvement in oomph positively, although it did indicate that there was no noticeable deterioration in speech quality with the Clipper in circuit, either in local or at DX. Eventually it was realised that the reason for this was that the mike gain control on the 2000B was set so far up that the ALC was really hammering—which is exactly what the instructions warned against!

The second try was made by following the Datong instructions to the letter, both as recommended when an oscilloscope is available and when one is not to hand. The settings which resulted were very closely matched and it was evident that the Clipper could be set up to quite a reasonable degree of accuracy without the need for an oscilloscope. It would be still easier were the KW transceivers fitted with a meter switch to enable one to monitor the ALC, as is done in some other rigs.

Once the settings had been found using the oscilloscope, a series of tests were made with the Clipper switched in, and with it out—the latter position is achieved merely by switching the unit to “out” which puts the mike and press-to-talk straight through and also switches off the internal battery.

Air Tests

In this condition it was tried out on all bands which were open during the period of the review; in each case the received signal came up with a bump, and likewise the distant signal, whether near or far, did not notice any degradation of received quality or of readability in QRM conditions. In other words, the Datong Clipper lives up to the maker’s claims 100% operationally. The other claim, that it could be tacked on to the end of virtually any transmitter, was checked as far as could be, by hanging it on to the end (mike socket) of all the gear around the shack; this means that the Clipper was observed to yield the same effect on AM rigs as was noted over the air on the SSB Tx.

Circuitry

Circuitry is largely CMOS integrated, plus a few discretes on the printed board. Datong, and here we are in full agreement, are of the belief that the average amateur is not really able to service gear built around MOS technology—not for want of know-how, so much as the sheer lack of adequate grounding facilities for himself, his bench and his iron. This being so, they offer a servicing facility to all Datong users, at reasonable rates or free of charge as may seem to be appropriate. It was not possible to prove out this part of the service as such, but we did lose the data sheet and phone for a new one, which turned up as fast as the posts could have sent it, so there is every expectation that service would be good.

Snags? Nothing is perfect in this imperfect world, and the Clipper supplied for review lost some of its pristine beauty when part of the front-panel labelling peeled off. Datong were tackled about this, after your reviewer had examined the damage under a low-power microscope device; it looked as though the area under the offending bit of white had been inadequately cleaned by whoever was contracted to point and line-out the box. The Datong opinion was that the suppliers of the printwork had been finding that the specified cleaner had been taking off the ground slightly when used over-exuberantly—so instead of reporting this they had cut the cleaning process right down to a mere wipe-over. However, Datong “jumped up and down” a little, so no more trouble of this sort need be expected by other buyers.

Another snag (and this may be personal to your reviewer) is that the output connector comes out on the side of the box; this could be a bit of a nuisance when space at the operating-table is at a premium. It was intended to fit the Datong Clipper between the outboard VFO and the main rig here, but this meant that if the plug were uppermost the letters on the front panel of the Datong unit were wrong way round and the output
cord rose in the air above the rig; t’other way up needed a hole in the bench? In the end, the Clipper was placed at the front of the rig, where the log should sit, and the slight inconvenience thereby tolerated for the sake of the benefit obtainable on the air. But alternative output lead positioning, to special order and for an extra fee, would be of assistance to many potential users.

Comparisons

Finally, perhaps one should try to make some comparison between the normal variety of AF clipping used on an SSB rig and the RF clipping exemplified by the Datong box. To do this, a well-filtered AF clipper was set up on the oscilloscope in the same manner as had the Datong. The rig was run into a dummy load, and a separate receiver used to monitor the quality of the output signal from the KW-2000B. Care was taken to ensure that, as far as possible, the signals both from the Datong and from the AF clipper were at the right levels for the transceiver. Outputs were taken on a tape recorder. In addition, some noise from the amateur bands was recorded and mixed on to the final tape, to simulate QRM conditions. Basically, one could say that both systems made a bigger noise when they were connected, and on a clear channel the bigger signal sounded more potent. However, the AF clipper quite definitely degraded the speech quality, and in heavy QRM—the DX-pile-up situation!—the actual readability of the audio clipper seemed to fall a bit. But the Datong device did not degrade the readability in the same way, so that switching the Datong RF clipper out under these conditions showed a loss in readability.

This seems to bear out your scribe’s long-held view that often the addition of an audio clipper to a DX rig is of negative advantage; but he has to admit that the Datong device makes an improvement to the audibility at the receiving end of the pile-up, or in the sort of conditions one finds so often on Twenty or Top Band when QRM pops up from nowhere.

Conclusions are basically that this box is built in the Rolls-Royce style rather than that of the Beach-Buggy; that it works as the maker claims; that it will stand mobile conditions and can be used on any Phone rig; and that it is good value for money. A final-final might well be to remark that all the DX-minded chaps in your reviewer’s home area have now got a Datong RF Clipper included in their rigs, and in use.

PA Valve Temperatures

This, strictly, is not part of a review of a Speech Clipper. However, it should be understood that “filling the signal with modulation,” which the Datong Clipper does so well, must result in the temperatures of the PA valves rising somewhat as a result of the increased average signal and anode dissipation.
ONCE more our pile of Club reports mounts up, and the time comes to attack it—with the added incentive this time of getting it through in time for at least a brief spell operating for the local Club in Field Day.

Our usual routine of separating into geographical groups applies this time, and we can make a start by going straight to the clip in which the majority of the reports lie.

Southern Area

Whether the chaps down South are more "clubbable" than the northern and Scots types one would not know; but it is very noticeable how little one hears about any group much north of Birmingham, with a few honourable exceptions.

At Bishops Stortford it does look as though the hiatus in programming might have been overcome at last, with G8UJQ doing the honours in June, G3KFE on something-or-other in July, and a ragchew for August. All are the third Monday in the month, at the British Legion Club, which is located at the top of Windhill.

The committee at Verulam (and, we suspect, many other groups), are looking very seriously at the cost of keeping their newsletter going—and who can blame them? They have a "main" meeting, at the Market Hall in St. Albans each month, at which there is always something of interest presented, and in addition an informal session is held monthly at Salisbury Hall, London Colney. July sees a club picnic added to the activity, on 20th. For all the details, contact the G3YHY, at the address shown in the Panel.

Now to Sutton & Cheam where we notice they are running a regular net with the towns with which Sutton is "twinned," namely London S.E.22. Only July 19, they have Slow Scan Television as the attraction.

Another "regular customer" for this space every since your old "Club Secretary" started doing this piece ten years ago is Acton Brentford & Chiswick; on July 15, G31GM will be showing them his newly-acquired FT-101B, at the Trades and Social Club, 66 High Road, Chiswick.

Very coy about their goings-on are the chaps at Silverthorn. Although they tell us about their Hq. at Friday Hill House, Simmons Lane, Chingford, they don't say on which evening each week they assemble; no problem though, as Secretary G4AJA would welcome a phone call for details of his group—see Panel for his QTH.

The more noticeable things about the Club scene in recent years is the increase in the number of YL/XYLs taking an active part in the goings-on; for instance Echelford, where there are two licensed ladies contributing actively to the committee and—maybe as important—to the Newsletter. Echelford assemble at St. Martins Court, Kingston Crescent, Ashford, Middx., on the second Monday and the last Thursday of every month.

If you are a connoisseur in the way of pub names, visit Newbury on July 14, or August 18, when they will be found in the "Spotted Dog" at Cold Ash, near Newbury.

Every Wednesday evening the Cheshunt types head for Rosedale Sports Club, Andrews Lane (off Golfs Lane), Cheshunt, and the July programme looks like this: 2nd, Field Day preparations followed by the Field Day itself on July 6; 9th, betting going on the IC-210, by G8IFC; 16th, home-brew aerials for two metres, by G8JXU; G4DCP has a talk on a subject of his own choice on the 23rd; and on the 30th, G3GBL talks about "Drake's Progress" with the help of his secretary's TRAC.

Details were not finalised at the time of writing by G3MGL of Crawley, but we can tell you the date is July 23, at the United Reformed Church Hall, Ifield.

The big event at Barking in July is the Dagenham Town Show on July 12-13, when the group will be showing two stations under the callsign G8GBYS, plus an exhibition of radio and electronic equipment; they would be only too pleased to see any visitors in their marque.

A new compiler takes over the Mid-Sussex newsletter, and a mighty fine job he seems to be making of it, too, particularly as he has to follow the years of good work by his predecessor G3WPO as a standard. On July 3, they have a talk by G3PEQ, titled "Introduction to Logic." Looking on a bit, on July 20, they intend to be at the Polegate Steam Traction Engine Rally where another local club, Southdown, have a stand and a couple of stations signing GB2SS and G3BSS running.

Knowing how popular July is as a holiday month, the Maidstone YMCA crew have not arranged anything special; nevertheless the normal Friday evening sessions will carry on. Additionally, on June 28 they will be putting on an exhibition station at the YMCA Regional Rendezvous held at Crittenenden House, Marfield, near Tonbridge in Kent.

A second letter was needed for Maidenhead to bring us up to date with their activities. We now have it that on July 3, G3RYP will be talking about and demonstrating the Drake Line equipment, and on July 15 G8IXB does the talking and demonstrating, this time about a Home-Brew Rotator. Notice the first date is a Thursday and the second a Tuesday; and both are at the British Red Cross Hall, The Crescent, Maidenhead.

Stevenage still have their Hq. in the canteen of Hawker Siddeley Dynamics, in Gunnels Wood Road, on the first and third Thursdays in the month; nothing was planned for July, although there is a possibility of a talk on Solid-State RF design at one of them.

Western Reaches

First-off in this section are Yeovil who have every Thursday at the Youth Centre, 31 The Park; July 17 is the selected evening for the playing-over of a Mullard tape-and-slide lecture entitled "Introduction

PLEASE NOTE!

Closing dates for this feature for the next few months will be: July 3, August 7, and September 4. These are final dates after which material cannot be taken in but will be held over for the month following.
to Electronics.” Another one is noted for August 14, again by Mullard, but this time it is “Electron Tubes.”

The current issue of Tamar Pegasus from the Saltash lads is a very good bit of work, and has the additional advantage from the writer’s point of view that it gives all the desired information clearly. From it we learn that they are to be found at the Burraton Too-Hall, Warraton Road, Saltash, Cornwall, on the first and third Fridays in each month, starting July 4. At July they have G2MU to talk on “An Anthology of Radio Signals,” and on the 11th a boat trip to Calstock is planned. After the party, the return to routine—back at Hzq. on July 18, and nothing arranged at the time of the printing of their newsletter.

No details of the programme are given by the Newquay Secretary, save that they have fortnightly get-togethers, occurring on July 23, August 6 and 20 at Treviglas School. He would prefer to tell prospective visitors or members about it all himself, from the address and telephone number appearing in the Panel.

The big event in July at Cornish is their Mobile Rally, which is to be held at Cornwall Technical College, Pool, Redruth on July 20. However, before that there is the usual monthly session, which comes to be held at Cornwall Technical College, Pool, Redruth on July 20.

Along the coast is Devon, and here we must stop over at Torbay, with Hzq. at Bath Lane, 94 Belgrave Road, Torquay. Here they will be found on July 26, for an activity which was still being settled at the time of the report. Reverting to that note on their intention to try and help anyone in RAIBC in the area, they make it clear that any request for aid should go in the first instance to the RAIBC hon. secretary who will then pass it on as necessary.

One supposes Hereford is a bit of a border-line case; but we hope we have not upset any sensibilities in putting them in the Westerly clip.

The venue for their activities is the Civil Defence Hzq., Gaol Street, Hereford, on the first and third Fridays. As the front door of this place is kept shut, there is a bell located just above the Civil Defence sign to be used by anyone desiring to get into the clubroom.

The Midlands Area

One chap who does a lot of running about for his lads is the secretary at Solihull—he was running this time to catch the postman and so to meet the deadline with his news. Their regular routine is to assemble at the Manor House, High Street, Solihull on the third Tuesday in July. The cause of the running just mentioned was that G4AEJ had been doing a bit of arm-twisting to get G4AXW to address the July gathering on the subject of “Electronic Control of Traction.”

Now the Association of Sheffield Amateur Radio Clubs, whose common Newsletter gives all the information. Naturally, the University and Polytechniq groups will be closed through the summer, starting again with the new term in September. However, Workshop assemble every Thursday, and details can be obtained from G4CRE—see Panel. Then there is the Sheffield group itself, where on July 21 they have a home-brew night—gear, we are assured, not ale! This is at the Mason House Hotel, High Street, Sheffield.

“Oscar, Past, Present and Future” sounds to be an interesting title for a talk; and it is the Cheltenham (RSGB) group who have this one set up, the speaker being G4BBR, and the date July 3.

Baden-Powell House (Boy Scouts Hzq., one guesses) is home for the Coventry chaps; and they will be noted as being “in residence” each Friday evening, starting around eight o’clock. It is interesting to note that the Club provides Morse tuition free of charge to anyone, in the hopes that this will cause people taking advantage of the offer to join up after a few weeks.

We have the first and third Wednesdays in each month as the dates for the Whitchurch get-togethers, and the venue as the Sports Centre, Grange Road West, Birkenhead. The details were not settled at the time of printing the Newsletter, but no doubt something will have been fixed up in good time.

They certainly believe in variety at Nunfield House, Boulton Lane, Derby; we note on July 4, a Judo lecture, by J. Barker and P. Wilson, a Film Show on July 11, a Quiz on July 18, and a talk about Telexprinter Technology—and a bit further on in the year there is a lecture on Central Heating as well!

A change of Secretary at South Manchester was immediately noted, that old familiar “fit” being replaced by a typewritten job. It seems our old friend has now been promoted to chairman—congratulations! This active group have Fridays at Sale Moor Community Centre, Norris Road, Sale as their main activity, but in addition the VHF and D/F types have an informal evening each Monday at the Club shack, Greeba, Shady Lane, Manchester 23. In either case visitors are welcomed.

It’s a long time since last we heard from Norfolk, who now have

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their Hzq. at Crome Community Centre, Telegraph Lane East, Norwich. On July 2 there is an informal evening with Morse practice for those who want it; July 9 is a talk on "DX from the Other End" and July 16 another informal. Then G8BNE is let loose, on July 23, leaving July 30 to round off the month when OE2JG/G5BDF will be talking about his home-brew two-metre foxhunting receiver.

Worcester have such a crowded list of coming events in their newsletter that one finds it hard to sort out the actual club dates; but it looks like Monday, July 7, and Saturday, July 19, both at the Old Pheasant Inn, New Street, Worcester.

Derby have some bad news for their members in the current Newsletter, where they are told the rent of the Hzq. rooms at 119 Green Lane. Derby has gone up to treble, and the cost of hiring Rykaeld School for the Mobile Rally has been multiplied by six times! However, they seem pretty confident about their ability to cope, luckily. On each Wednesday, they can be found at the Hzq. address, where they rent the upper part; July 2 is a Surplus Sale, July 9 a Surprise Night. On July 16 there is a D/F practice, followed by a discussion on technical topics on July 23; then on July 30, G3VGW is to talk about Outside Broadcasting, he being on Radio Derby.

Peterborough don’t hear from very often, but this time they have sent us a copy of their Newsletter, from which we can gather that they get together on the third Friday in each month, at the Scout Hut, Occupation Road, Peterborough. Any more details will have to be obtained from G8GNV, as Panel.

Up North

Northern Heights have revived their Newsletter after a year’s lapse, and from it we gather that the new syllabus of lectures and activities is in the process of being made up; however, a call, letter or ring to the secretary—see Panel—will no doubt bring you all the latest information. Hzq. is at the Peat Pitts Inn, Ogden.

Just to forestall any arguments, we drew the line that put Bury & Rossendale into this clip as just north of Manchester. Look for them every Tuesday evening at the Mosses Community Centre, Cecil Street, Bury, the second Friday being the main one each month and the rest informals. This time the talk is on RTTY, to be given by G8DVR.

A recent move of Hzq. has taken Bolton back to their old place in the Recreation Club, Kensington Place, St. Georges Road, Bolton, where they assemble on the third Wednesday in each month; for July it is understood the talk will be on Amateur TV, by G3ZPL.

Over  

|. . . . Now trying the No. 3 microphone . . . .
Every Monday evening the Harrogate & Knaresborough locals gather at the Further Education Centre, Church Lane, Harrogate, where a varied programme is being fixed up by the new committee elected at the AGM.

If you live in the Glasgow area, you will be in the catchment zone of West of Scotland. If so, we suggest that before making visit plans, you contact G3MJRH at the Panel address before you set off, as the venue is, by the look of it, still in doubt.

While many groups allow visitors in free, there will always be the odd character who will try to continue in the grade of visitors and so avoid paying a sub! This is unfair, particularly in these days of rising prices, and it is difficult to know how to stop it. One way, adopted in the Club to which your conductor belongs, is to say up to three visits, then become a member, with the committee to have power to vary this, as for example for the chap who attends regularly but only once or twice a year when he is on holiday in the district. The White Rose group suffer from this sort of thing more than most for a year of twelve issues, post free.
Special Offer of Component Packs

60 Assorted wire wound resistors 3–5-10 watts for £7p
200 Tubular ceramics for £7p
200 Polystyrene miniature capacitors for £7p
200 Disc ceramics for £7p
25 BC128 Transistors tested at £7p
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<td>Single Meter SWR Bridges</td>
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<td>Omega TE-701 Noise Bridge</td>
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<td>Omega TE-702 Noise Bridge</td>
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<td>B &amp; W 5 way antenna Switch</td>
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<td>KW Antenna Switch</td>
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