

The TS-930S is a superlative, high performance, all-solid state, HF transceiver keyed to the exacting requirements of the DX and contest operator. It covers all Amateur bands from 160 through 10 meters, and incorporates a 150 kHz to 30 MHz general coverage receiver having an excellent dynamic range. Among its other important features are, SSB slope tuning, CW VBT, IF notch filter, CW pitch control, dual digital VFO's, CW full break-in, automatic antenna tuner, and a higher voltage operated solid state final amplifier. It is available with or without the AT-930 automatic antenna tuner built-in. TS-930S FEATURES:

- **160-10 Meters, with 150 kHz-30 MHz general coverage receiver.**
Covers all Amateur frequencies from 160-10 meters, including new WARC, 30, 17, and 12 meter bands, on SSB, CW, FSK, and AM. Features 150 kHz-30 MHz general coverage receiver. Separate Amateur band access keys allow speedy band selection. UP/DOWN bandswitch changes in 1-MHz steps. A new, innovative, quadruple conversion, digital PLL synthesized circuit provides superior frequency accuracy and stability plus greatly enhanced selectivity.
- **All solid state, 28 volt operated final amplifier.**
The final amplifier operates on 28 VDC for lowest IM distortion. Power input rated at 250 W on SSB, CW, and FSK, and at 80 W on AM. Final amplifier protection circuit with cooling fan. SWR/Power meter built-in.
- **Automatic antenna tuner, built-in.**
Available with AT-930 antenna tuner built-in, or as an option. Covers Amateur bands 80-10 meters, including
- the new WARC bands. Tuning range automatically pre-selected with band selection to minimise tuning time. "AUTO-THRU" switch on front panel.
- **CW full break-in.**
CW full break-in circuit uses CMOS logic IC plus reed relay for maximum flexibility, coupled with smooth, quiet operation. Switchable to semi-break-in.
- **Dual digital VFO's.**
10-Hz step dual digital VFO's include band information. Each VFO tunes continuously from band to band. A large, heavy, flywheel type knob is used for improved tuning ease. T.F. Set switch allows fast transmit frequency setting for split-frequency operations. A = B switch for equalising one VFO frequency to the other. VFO "Lock" switch provided. RIT control for ± 9.9 kHz receive frequency shift.
- **Eight memory channels.**
Stores both frequency and band information. VFO-MEMO switch allows use of each memory as an independent VFO, (the original memory frequency can be recalled at will), or as a fixed frequency. Internal Battery memory back-up, estimated 1 year life. (Batteries not supplied).
- **Dual mode noise blanker ("pulse" or "woodpecker").**
NB-1, with threshold control, for pulse-type noise. NB-2 for longer duration "woodpecker" type noise.
- **SSB IF slope tuning.**
Allows independent adjustment of the low and/or high frequency slopes of the IF passband, for best interference rejection.
- **CW VBT and pitch controls.**
CW VBT (Variable Bandwidth Tuning) control tunes out interfering signals. CW pitch controls shifts IF passband and

simultaneously changes the pitch of the beat frequency. A "Narrow/Wide" filter selector switch is provided.

- **IF notch filter.**
100-kHz IF notch circuit gives deep, sharp, notch, better than -40 dB.
- **Audio filter built-in.**
Tuneable, peak-type audio filter for CW.
- **AC power supply built-in.**
- **Fluorescent tube digital display.**
Fluorescent tube digital has analog type sub-scale with 20-kHz steps. Separate 2 digit display indicates RIT frequency shift.
- **RF speech processor.**
RF clipper type processor provides higher average "talk-power", plus improved intelligibility. Separate "IN" and "OUT" front panel level controls.

Other features:

- SSB monitor circuit, 3 step RF attenuator, VOX, and 100-kHz market.

Optional accessories:

- AT-930 automatic antenna tuner.
- SP-930 external speaker with selectable audio filters.
- YG-455C-1 (500 Hz) or YG-455CN-1 (250 Hz) plug-in CW filters for 455-kHz IF.
- YK-88C-1 (500 Hz) CW plug-in filter for 8.83-MHz IF.
- YK-88A-1 (6 kHz) AM plug-in filter for 8.83-MHz IF.
- MC-60 (S-8) deluxe desk microphone with UP/DOWN switch.
- TL-922A linear amplifier.
- SM-220 station monitor.
- HC-10 digital world clock.
- HS-6, HS-5, HS-4 headphones.



DX-traordinary TS 930S

TS 930S £1078.00 inc VAT, AT930 £125.00 inc VAT

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handability TR 2500

portability TR 2300

The TR-2500 is a compact 2 metre FM handheld transceiver featuring an LCD readout, 10 channel memory, lithium battery memory back-up, memory scan, programmable automatic band-scan and Hi/Lo power switch.

TR-2500 FEATURES:

- Extremely compact size and light weight 66 (2-5/8) W x 168 (6-5/8 H x 40 (1-5/8) D; mm (inches), 540g, (1-2lbs) with Ni-Cd pack.
- LCD digital frequency readout, with memory channel and function indication.
- Ten channel memory, includes "MO" memory for non-standard split frequencies.
- Lithium battery memory back-up built-in, (estimated 5 year life) saves memory when Ni-Cd pack discharged.
- Memory scan, stops on busy channels, skips channels in which no data is stored.
- UP/DOWN manual scan in 5kHz steps.
- 2.5W or 300mW RF output. (HI/LOW power switch.)
- Programmable automatic band scan allows upper and lower frequency limits and scan steps of 5kHz and larger (5, 10, 15, 20, 25, 30kHz... etc) to be programmed.
- Slide-lock battery pack.
- Repeater reverse operation.
- Keyboard frequency selection across full range.
- Frequency coverage, 144.000 to 145.995 MHz.
- Optional power source, MS-1 mobile or ST-2 AC charger/power supply allows operation while charging. (Automatic drop-in connections.)
- High impact plastic case.
- Battery status indicator.
- Two lock switches for keyboard and transmit.

STANDARD ACCESSORIES

- Flexible rubberized and antenna with BNC connector.
- 400mA heavy-duty Ni-Cd battery pack.
- AC charger.

| | | |
|---------|----------------------|-----------------|
| TR 2500 | HANDHELD TRANSCEIVER | £ 207.00 |
| ST 2 | BASE STAND/CHARGER | £ 46.23 |
| SC 4 | SOFT CASE | £ 12.19 |
| MS 1 | MOBILE STAND | £ 28.29 |
| SMC 25 | SPEAKER/MIKE | £ 14.49 |
| PB 25 | NICAD PACK | £ 22.31 |
| LH 2 | LEATHER CASE | £ 21.39 |

So the TR2300 now costs less than its predecessor did in 1976. Not only that, the TR2200GX of 1976 only had 12 channels where the TR2300 of today covers the full amateur band.

So we rest our case — the TR2300 has to be, in today's market, outstanding value for money and, what is more, the TR2300 has an unprecedented reliability factor.

There is no need to talk of full 2 metre band coverage, the 1 watt of perfect transmitted signal, the fully comprehensive list of included accessories: carrying case, Nicad charger, 12 volt power cord, shoulder strap, hand microphone, collapsible whip antenna, reverse repeater facility, automatic tone burst, switchable illuminated frequency dial, consequent long life operation out in the field.

Don't ask us about the Trio TR2300 — ask our best form of advertisement: one of the 5,000 owners!

| | | |
|--------|----------------------|-----------------|
| TR2300 | PORTABLE TRANSCEIVER | £ 166.75 |
| | Securicor Carriage | £ 5.00 |



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|--------|-----------------------------------|--------|--------|
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| VFO230 | Digital V.F.O. With Memories | 215.00 | (2.00) |
| AT230 | All Band ATU/Power Meter | 119.00 | (2.00) |
| SP230 | External Speaker Unit | 34.98 | (1.50) |
| DFC230 | Dig. Frequency Remote Controller | 179.00 | (1.50) |
| YK88C | 500Hz CW Filter | 29.00 | (0.50) |
| YK88CN | 270Hz CW Filter | 32.66 | (0.50) |
| TS130S | 8 Band 200W Pep Transceiver | 525.00 | (-) |
| TS130V | 8 Band 20W Pep Transceiver | 445.00 | (-) |
| VFO120 | External V.F.O. | 85.00 | (1.50) |
| TL120 | 200W Pep Linear For TS120V | 144.00 | (1.50) |
| MB100 | Mobile Mount for TS 130/120 | 17.00 | (1.50) |
| SP120 | Base Station External Speaker | 23.00 | (1.50) |
| AT130 | 10W Antenna Tuner | 79.00 | (1.50) |
| PS20 | A.C. Power Supply — TS130V | 49.46 | (2.50) |
| PS30 | A.C. Power Supply — TS130S | 58.55 | (5.00) |
| MA5 | 5 Band Mobile Aerial System | 95.00 | (5.00) |
| MC50 | Dual Impedance Desk Mic. | 25.76 | (1.50) |
| MC35S | Fist Microphone 50K OHM IMP | 13.80 | (0.75) |
| MC30S | Fist Microphone 500 OHM IMP | 13.80 | (0.75) |
| LF30A | H.F. Low Pass Filter 1kW | 17.90 | (1.00) |
| TR9000 | 2m Synthesised Multimode | 371.00 | (-) |
| BO9 | Base Plinth for TR9000 | 34.96 | (1.50) |
| TR7800 | 2m Synthesised F.M. Mobile 25W | 294.00 | (-) |
| TR7730 | 2m Syn. F.M. Cmp. Mble. 25W | 247.00 | (-) |
| TR2300 | 2m Synthesised F.M. Portable | 166.00 | (-) |
| VB2300 | 10W Amplifier for TR2300 | 58.00 | (1.50) |
| MB2 | Mobile Mount for TR2300 | 17.71 | (1.50) |
| RA1 | Flexible Rubber Ant. for TR2300 | 6.90 | (0.50) |
| TR2500 | 2m F.M. Synthesised Handheld | 207.00 | (-) |
| ST2 | Base Stand | 46.23 | (1.50) |
| SC4 | Soft Case | 12.00 | (0.50) |
| MS1 | Mobile Stand | 29.29 | (1.00) |
| SMC25 | Speaker Mike | 14.49 | (1.00) |
| PS25 | Spare Battery Pack | 22.30 | (1.00) |
| TR8400 | 70cm F.M. Syn. Mobile T'ceiver | 334.00 | (-) |
| PS10 | Bse. Station Power Supp. for 8400 | 64.86 | (2.00) |
| TR9500 | 70cm Synthesised Multimode | 449.00 | (-) |
| R1000 | Syn. 200kHz — 30MHz Receiver | 297.00 | (-) |
| SP100 | External Speaker Unit | 26.90 | (1.50) |
| HC10 | Digital Station World Time Clock | 58.88 | (1.50) |
| H55 | Deluxe Headphones | 21.85 | (1.00) |
| H54 | Economy Headphones | 10.35 | (1.00) |
| SP40 | Mobile External Speaker | 12.40 | (1.50) |
| R600 | Gen. Cov. Receiver | 235.00 | (-) |

| ICOM | | £ | curr. |
|----------|---------------------------------|--------|--------|
| IC730 | H.F. Mobile Transceiver 8 Band | 586.00 | (-) |
| IC720A | H.F. T'ceiver & Gen. Cov. Rec. | 883.00 | (-) |
| PS15 | Power Supply for 720A | 99.00 | (3.00) |
| IC251E | 2m Multimode Base Station | 495.00 | (-) |
| IC25E | 2m Syn. Compact 25W Mobile | 219.00 | (-) |
| IC230E | 2m Multimode Mobile | 365.00 | (-) |
| IC2E | 2m F.M. Synthesised Handheld | 159.00 | (-) |
| ICL1/2/3 | Soft Cases | 3.50 | (0.50) |
| ICM9 | Speaker/Microphone | 12.00 | (1.00) |
| ICBC30 | 230 V.A.C. Bse. Charger and Hod | 39.00 | (1.00) |
| ICBC25 | 230 V.A.C. Trickle Charger | 4.25 | (0.75) |
| ICCP1 | Car Charging Lead | 3.20 | (0.50) |
| ICBP2 | 6V Nicad Pack for IC2E | 22.00 | (1.00) |
| ICBP3 | 9V Nicad Pack for IC2E | 17.70 | (1.00) |
| ICBP4 | Empty Case for 6 x AA Nicads | 5.80 | (0.75) |
| ICBP5 | 11.5V Nicad Pack for IC2E | 30.50 | (1.00) |
| ICDC1 | 12V Adaptor Pack for IC2E | 8.40 | (0.75) |
| ICML1 | 10W Booster | 49.00 | (1.00) |

| T.V. INTERFERENCE AIDS | | £ | curr. |
|--------------------------------------|--|-------|--------|
| Ferrite Rings 1 1/2" Dia. Per Pair | | 0.80 | (0.20) |
| Toroid Filter T.V. Down Lead | | 2.50 | (0.50) |
| Low Pass Filter LP30 100W | | 3.95 | (0.50) |
| Trio Low Pass Filter LF30A 1kW | | 17.30 | (1.00) |
| Yaesu Low Pass Filter FF501DX 1kW | | 23.00 | (1.00) |
| HP4A High Pass Filter T.V. Down Lead | | 5.95 | (-) |

| ANTENNA BITS | | £ | curr. |
|---|--|------|--------|
| H1 - Q Balun 1:1 5kW Pep (PL259 Fitting) | | 9.95 | (0.75) |
| T Piece Polyprop Dipole Centre | | 1.00 | (0.30) |
| Ceramic Strain Insulators | | 0.40 | (0.10) |
| Small Egg Insulators | | 0.40 | (0.10) |
| Large Egg Insulators | | 0.50 | (0.10) |
| 75 OHM Twin Feeder — Light Duty — Per Metre | | 0.16 | (0.04) |
| 300 OHM Twin Feeder — Per Metre | | 0.14 | (0.04) |
| URM 67 Low Loss 50 OHM Coax — Per Metre | | 0.60 | (0.20) |
| UR76 50 OHM Coax — Per Metre | | 0.25 | (0.05) |

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| FT1 | Superb HF Transceiver | 1295.00 | (-) |
| FT902DM | 160-10m Band Transceiver | 886.00 | (-) |
| FC902 | All Band A.T.U. | 136.00 | (1.50) |
| SP901 | External Speaker | 31.06 | (1.50) |
| FT101Z | 160-10m 9 Band T'ceiver | 559.00 | (-) |
| FT101ZD | 160-10m Band Transceiver | | |

| DCT101Z | | £ | curr. |
|------------|---|--------|--------|
| DCT101Z | DC/DC Power Pack | 42.55 | (1.50) |
| FAN101Z | Cooling Fan for 101Z ZD | 13.80 | (0.75) |
| FT707 | 8 Band Transceiver 200W Pep | 569.00 | (-) |
| FT707S | 8 Band Transceiver 20W Pep | 485.00 | (-) |
| FP707 | Matching Power Supply | 125.00 | (5.00) |
| FTV707R(2) | Transverter — 2M | 198.00 | (-) |
| FV707DM | Digital V.F.O. | 203.00 | (-) |
| FC707 | Matching A.T.U./Power Meter | 85.00 | (1.00) |
| MR7 | Metal Rack for FT707 | 15.76 | (1.00) |
| MMB2 | Mobile Mounting Brckt. for FT707 | 16.10 | (1.00) |
| FRG7 | General Coverage Receiver | 189.00 | (-) |
| FRG7700 | 200kHz — 30MHz Gen. Cov. Rec. | 329.00 | (-) |
| FRG7700M | As above but with Memories | 409.00 | (-) |
| FRT7700 | Antenna Tuning Unit | 37.85 | (1.00) |
| FT208R | 2m F.M. Synthesised Handheld | 209.00 | (-) |
| FT708R | 70cm F.M. Synthesised Handheld | 219.00 | (-) |
| NC7 | Base Trickle Charger | 26.85 | (1.30) |
| NC8 | Base Fast/Trickle Charger | 44.10 | (1.50) |
| NC9C | Compact Trickle Charger | 8.00 | (0.75) |
| FBA2 | Batt. Sleeve for use with NC 7/8 | 3.00 | (0.50) |
| FN82 | Spare Battery Pack | 17.25 | (0.75) |
| PA3 | 12v DC Adaptor | 13.40 | (0.75) |
| FT480R | 2m Synthesised Multimode | 379.00 | (-) |
| FT780R | 70cm Synthesised Multimode (1.6MHz Shift) | 459.00 | (-) |

| FP80 | | £ | curr. |
|---------|--------------------------------|--------|--------|
| FP80 | Mich. 230V A.C. Power Supp. | 63.25 | (1.50) |
| FT290R | 2m Portable Syn. Multimode | 249.00 | (-) |
| Nicads | 2.2 AMP HR Nicads Each | 2.50 | (-) |
| MMB11 | Mobile Mounting Bracket | 22.25 | (1.00) |
| CSC1 | Soft Carrying Case | 3.45 | (0.75) |
| NC11C | 240 V.A.C. Trickle Charger | 8.00 | (0.75) |
| FL2010 | Matching 10W Linear | 64.40 | (1.20) |
| FF501DX | H.F. Low Pass Filter 1KW | 23.00 | (1.00) |
| FSP1 | Mble. External Speaker 80HM 6W | 9.95 | (0.75) |
| YH55 | Headphones 8 OHM | 10.00 | (0.75) |
| YH77 | Lightweight Headphones 8 OHM | 10.00 | (0.75) |
| QTR24D | World Clock (Quartz) | 28.00 | (1.00) |
| YM24A | Speaker/Mic. 207/208 708 | 16.88 | (0.75) |
| YD148 | Stand Mic. Dual IMP 4 Pin Plug | 21.00 | (1.50) |
| YM34 | As 148 but 8 Pin Plug | 21.45 | (1.50) |
| YM38 | As 34 but up/down Scan Buttons | 24.90 | (1.50) |
| FT230R | 2m Synth F.M. Mobile 25W | 239.00 | (-) |

| FDK VHF/UHF EQUIPMENT | | £ | curr. |
|-------------------------------------|--|--------|-------|
| Multi 70DEX 2m F.M. Syn. 25W Mobile | | 199.00 | (-) |
| Multi 750E 2m Multimode Mobile | | 289.00 | (-) |
| Expander 70cm Transverter for M750E | | 199.00 | (-) |

| STANDARD VHF/UHF | | £ | curr. |
|------------------|-----------------------|--------|--------|
| C78 | 70cm F.M. Portable | 219.00 | (-) |
| CP878 | 10W Matching Linear | 67.50 | (1.50) |
| C58 | 2m Multimode Portable | 239.00 | (-) |
| CP858 | 25W Matching Linear | 79.50 | (1.50) |
| CM8 | Mobile Bracket | 19.95 | (1.00) |
| CLB | Soft Carrying Case | 6.95 | (0.75) |
| C12/230 | Charger | 7.59 | (0.75) |

| DRAE POWER SUPPLIES | | £ | curr. |
|--|--|-------|--------|
| All with Over-Volts — Current Limit and Thermal Protection | | | |
| 4AMP | | 27.95 | (1.50) |
| 6AMP | | 44.95 | (2.00) |
| 12AMP | | 69.00 | (2.00) |
| 24AMP | | 99.00 | (3.00) |

| SWR — POWER METER | | £ | curr. |
|-------------------|-----------------------------|-------|--------|
| Model 110 | H.F./2m Cali. Power Reading | 11.50 | (0.50) |
| SWR25 | H.F./2m Twin Meter | 11.50 | (0.50) |
| UH74 | 2m/70 | 14.30 | (0.50) |
| WELZ SP15M | H.F./2m 200W | 29.00 | (0.75) |
| WELZ SP45M | 2m/70cm 100W | 45.00 | (1.00) |
| WELZ SP200 | H.F./2m | 59.00 | (1.00) |
| WELZ SP300 | H.F./2m/70 | 79.00 | (1.00) |
| WELZ SP400 | 2m/70 | 59.00 | (1.00) |
| DAIWA SW110A | H.F./2m | 35.00 | (-) |
| DAIWA CN620A | Cross Pointers | 52.80 | (-) |
| DAIWA CN630 | 2m/70 Cross Pointers | 71.00 | (-) |

| DUMMY LOADS | | £ | curr. |
|---------------------|--|-------|--------|
| DL30 PL259 30W MAX | | 5.00 | (0.50) |
| DL60 PL259 60W MAX | | 8.80 | (0.70) |
| DL60 N TYPE 60W MAX | | 16.50 | (0.70) |
| CT300 WELZ 1kW MAX | | 42.95 | (1.50) |

| TEST EQUIPMENT | | £ | curr. |
|--|--|-------|--------|
| Drae VHF Wavemeter 130-450MHz | | 24.96 | (-) |
| FXI Wavemeter 250MHz MAX | | 33.00 | (0.75) |
| DMB1 Tri/Dip Meter | | 59.75 | (0.75) |
| MMD 50/500 Microwave Moduls. Freq. Coun. | | 89.00 | (-) |

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| MICROWAVE MODULES | | £ | curr. |
|-------------------|--------------------------------|--------|-------|
| MMT144/28 | 2m Transverter for HF Rig | 99.00 | (-) |
| MMT432/28S | 70cm Transverter for HF Rig | 149.00 | (-) |
| MMT432/144R | 70cm Transverter for 2m Rig | 184.00 | (-) |
| MMT70/28 | 4m Transverter for HF Rig | 115.00 | (-) |
| MMT70/144 | 4m Transverter for 2m Rig | 115.00 | (-) |
| MMT1296/144 | 23cm Transverter for 2m Rig | 184.00 | (-) |
| MML144/25 | 2m 25W Linear Amp (3W I/P) | 59.00 | (-) |
| MML144/30LS | 2m 30W Linear Amp (1/3 I/P) | 65.00 | (-) |
| MML144/100LS | 2m 100W Lin. Amp (1/3W I/P) | 146.00 | (-) |
| MML144/40 | 2m 40W Linear Amp (10W I/P) | 77.00 | (-) |
| MML144/100S | 2m 100W Lin. Amp (10W I/P) | 129.00 | (-) |
| MML432/20 | 70cm 20W Lin. Amp (3W I/P) | 77.00 | (-) |
| MML432/50 | 70cm 50W Lin. Amp (10W I/P) | 119.00 | (-) |
| MML432/100 | 70cm 100W Linear Amp (10W I/P) | 228.64 | (-) |

| MM2000 | | £ | curr. |
|-------------|--------------------------|--------|-------|
| MM2000 | RTTY to TV Converter | 169.00 | (-) |
| MM4000 | RTTY Transceiver | 269.00 | (-) |
| MMC50/28 | 6m Converter to HF Rig | 27.90 | (-) |
| MMC70/28 | 4m Converter to HF Rig | 27.90 | (-) |
| MMC144/28 | 2m Converter to HF Rig | 27.90 | (-) |
| MMC432/28S | 70cm Converter to HF Rig | 34.90 | (-) |
| MMC432/144S | 70cm Converter to 2m Rig | 34.90 | (-) |
| MMC435/600 | 70cm ATV Converter | 27.90 | (-) |
| MMK1296/144 | 23cm Converter to 2m Rig | 59.80 | (-) |
| MMD050/500 | 500MHz Dig. Freq. Meter | 69.00 | (-) |
| MMD600P | 600MHz Prescaler | 23.00 | (-) |
| MMDP1 | Frequency Counter Probe | 11.50 | (-) |
| MMA28 | 10m Preamp | 14.95 | (-) |
| MMA144V | 2m RF Switched Preamp | 34.90 | (-) |
| MMF144 | 2m Band Pass Filter | 9.90 | (-) |
| MMF432 | 70cm Band Pass Filter | 9.90 | (-) |
| MMS1 | The Morse Talker | 115.00 | (-) |

DATONG D70 MORSE TUTOR



£49.45
inc VAT

| DATONG PRODUCTS | | £ | curr. |
|-----------------|--------------------------------------|--------|-------|
| PC1 | Gen. Cov. Convtr. HF on 2m Rig | 120.75 | (-) |
| VLF | Very Low Frequency Converter | 25.30 | (-) |
| FL1 | Frequency Agile Audio Filter | 67.85 | (-) |
| FL2 | Multimode Audio Filter | 89.70 | (-) |
| ASP/B | Auto RF Speech Clip (Trio Plug) | 79.35 | (-) |
| ASP/A | Auto RF Speech Clippers (Yaesu Plug) | 79.35 | (-) |
| D75 | Manually con. RF Speech Clipper | 56.35 | (-) |
| RFC/M | RF Speech Clipper Module | 26.45 | |

DATONG

YET MORE INNOVATION



MODEL DF DISPLAY UNIT

DOPPLER DIRECTION FINDER

Model DF is a direction finding attachment for use with existing narrow band FM receivers and transceivers.

Two units, the display unit and the special antenna combiner convert your NBFM transceiver plus four omnidirectional antennas into a radio direction finder. A built-in r.f. activated antenna relay diverts the transceiver's output to the normal antenna during transmit or when the DF attachment is switched off.

Features

- Works with any existing narrow-band FM receiver or transceiver. No modifications are needed. The only connections required are to the external speaker and antenna jacks.
- Gives a clear directional readout on a circular array of sixteen bright green LEDs.
- Display holds last reading when signal drops out.
- Very easy to use and install.
- Only a single coaxial cable needed between display unit and antenna combiner.
- Professional quality at remarkably low cost. Display unit uses two PTH circuit boards. Gasket sealed combiner unit houses two conventional double-sided PCBs.

Applications

Model DF costs between ten and a hundred times less than conventional RDF systems, and therefore opens up new application areas for both professional and hobby users. Possible applications include:- VHF amateur radio, Citizen's Band radio, aircraft spotting, tracking gliders and light aircraft, locating lost mobile aircraft, private mobile radio systems, coastal and marine radio, tracking and locating anti-social radio operators, locating "tagged" animals in the wild, helping to identify or trace unknown transmissions, law enforcement.

MODEL DFA2 COMBINER UNIT

A complete system needs the display unit and the antenna combiner plus four antennas mounted at the corners of a square spaced apart by 0.05 to 0.3 wavelengths.

For fixed station use, four dipoles are suitable while four magnetically mounted quarter wave whips are ideal for mobile use. Depending on the choice of antenna, the system will operate from 20 to 200 MHz.

Suitable magmount quarter wave whips are available from Datong for VHF use.

* **BASIC DF SYSTEM** (Model DF display unit with Model DFA1 combiner) **£125.00 + VAT (£143.80)**

* **DF SYSTEM**, as above but with mobile version of combiner, Model DFA2 (as DFA1 but fitted with magmount and 4 metre coaxial downlead terminated with PL259 plug) **£131.00 + VAT (£150.70)**

COMPLETE MOBILE DF SYSTEM (Model DF display unit, Model DFA2 combiner, and four Model MA1 quarter wavelength magmount antennas cut for 145 MHz) **£173.50 + VAT (£199.50)**

* Antennas not included



MODEL RFA

WIDE BAND PREAMPLIFIER - MODEL RFA

Eliminates separate tuned preamplifiers for each band.

Model RFA improves the sensitivity of any receiver or transceiver working in the range from 5 to 200 MHz. It connects in series with the antenna and built-in r.f. activated relay switches the pre-amplifier out of circuit during transmit or when the power is off.

Features:

- Extra wide bandwidth saves the cost of separate narrow band preamps.
- Handles strong signals without overload thanks to special low-noise negative feedback technique. Intercept point better than + 20dbm.
- Low noise figure.
- Carefully chosen gain level minimises receiver overload and cross modulation.
- R.F. activated bypass relay allows easy use with transceivers.
- Rugged diecast aluminium case with SO239 connectors and PTH printed circuit board.

Applications

Application areas include:- weak signal reception of all amateur and satellite bands from 5 MHz up to 200 MHz, long distance reception of VHF FM Broadcasts and VHF TV Signals, CB transceivers, private mobile VHF radio transceivers, reception of marine and aeronautical bands, VHF scanner receivers, compensating for signal loss in long antenna feeders.

The wide bandwidth of Model RFA makes it ideal for use with broadband antennas and scanner receivers.

Broadband Preamplifier, Model RFA: £25.50 + VAT (£29.32)



MODEL S "CODECALL"

"CODECALL" SELECTIVE CALLING DEVICE - TAKES THE FATIGUE OUT OF LONG TERM MONITORING

"Codecall" is ideal wherever there is a need to monitor a well used radio channel for one particular call over long periods. "Codecall" gives the same convenience as a telephone bell, in that the receiver remains totally silent while monitoring. It therefore causes no disruption to other activities.

In fact the user can totally disregard the radio until a loud beep from "Codecall" warns that the desired signal has been received. The loud intermittent beep then continues, unless cancelled, for over ten minutes after the call is received.

"Codecall" ensures that the communications channel remains at full efficiency at all times. Without "Codecall" the desired call often blends into the general chatter and is missed by the listener, especially when the volume has been reduced to cut down the radio's nuisance level.

Features

- Each "Codecall" unit acts as a call generator and a call receiver.
- No electrical connection is needed at the transmitter, simply hold "Codecall" next to the microphone.
- At the receiver simply plug "Codecall" into the external speaker jack.
- Over four thousand different codes virtually eliminate the chance of false alarms.
- Internal 9 volt battery has long life since no current is used while monitoring a squelched channel.
- Works over any voice link, whether FM, AM, or SSB.
- Codes selected by either three 16-way switches (Model S) or by altering twelve internal wire links (Model L).
- Compact: only 4 x 2.4 x 1.05 inches.

Two Versions

Model S (as illustrated) has three 16-way rotary switches on the front panel giving a total of 4096 combinations immediately available. Model L has no switches, instead the code is set by altering twelve wire links inside the case.

Both models can be used in the same system. The switched version (Model S) is ideal where frequent code changes are required, whereas the linked version (Model L) is suitable where codes are not likely to be altered often, or for unskilled users who might accidentally set the wrong code.

Note: when used by UK Radio Amateurs all transmissions must be identified as required by the licence conditions.

* **"Codecall" Model L (Link programmed): £24.00 + VAT (£27.60)**
 * **"Codecall" Model S (Switch programmed): £25.50 + VAT (£29.32)**



ALL DATONG PRODUCTS ARE DESIGNED AND BUILT IN THE U.K.

PRICES All prices include delivery in U.K., basic prices in £ are shown with VAT inclusive prices in brackets.

| | | | | | |
|-------|-----------------|----------------|-----------------|--------------------|-----------------|
| FL1 | 59.00 (67.85) | AD370 | 45.00 (51.75) | RFA | 25.50 (29.32) |
| FL2 | 78.00 (89.70) | AD270 + MPU | 37.00 (42.55) | Codecall | |
| PC1 | 105.00 (120.75) | AD370 + MPU | 49.00 (56.35) | (Linked) | 24.00 (27.60) |
| ASP | 69.00 (79.35) | MPU | 6.00 (6.90) | Codecall | |
| VLF | 22.00 (25.30) | DC144/28 | 31.00 (35.65) | (Switched) | 25.50 (29.32) |
| D70 | 43.00 (49.45) | DC144/28 | | Basic DF System | 125.00 (143.80) |
| D75 | 49.00 (56.35) | Module | 25.00 (28.75) | DF System | 131.00 (150.70) |
| RFC/M | 23.00 (26.45) | Keyboard Morse | | Complete Mobile DF | |
| AD270 | 33.00 (37.95) | Sender | 112.20 (129.00) | System | 173.50 (199.50) |

• See text for details.

Data sheets on any products available free on request - write to Dept S.W.

DATONG ELECTRONICS LIMITED
 Spence Mills, Mill Lane, Bramley, Leeds LS13 3HE, England. Tel: (0532) 552461



TRIED, TESTED AND TRUSTED

See review in February Rad. Comms.

IC-720A
Possibly the best choice in HF.
 £883.inc.

IC-2E £159.inc.
IC-4E £199.inc.
The World's most popular portables & now the marine version IC-M12

The main problem that the amateur of today has to deal with is deciding just which rig out of the many excellent products available he is going to choose. Technology is advancing at such a rapid rate and getting so sophisticated that many cannot hope to keep up. Some go too far!

Perhaps one way of dealing with the problem is to look at just what each model offers in its basic form without having to lay out even more hard earned cash on "extras". The IC-720A scores very highly when looked at in this light. How many of its competitors have two VFOs as standard or a memory which can be recalled, even when on a different band to the one in use, and result in instant retuning AND BANDCHANGING of the transceiver? How many include a really excellent general coverage receiver covering all the way from 100kHz to 30MHz (with provision to transmit there also if you have the correct licence)? How many need no tuning or loading whatsoever and take great care of your PA, should you have a rotten antenna, by cutting the power back to the safe level? How many have an automatic RIT which cancels itself when the main tuning dial is moved? How many will run full power out for long periods without getting hot enough to boil an egg? How many have band data output to automatically change bands on a solid state linear AND an automatic antenna tuner unit when you are able to add these to your station?

Well you will have to do quite a bit of hunting through the pages of this magazine to find anything to approach the IC-720A. It may be just a little more expensive than some of the others – but when you remember just how good it is, and of course the excellent reputation for keeping their secondhand value you will see why your choice will have to be an IC-720A!

IC-PS15 Mains PSU £99



Nearly everybody has an IC2E – the most popular amateur transceiver in the world – now there is the 70 cm version which is every bit as good and takes the same accessories. Check the features

Fully synthesized – Covering 144 – 145.995 in 400 5KHz steps. (430-439.999 4E)

Power output – 1.5W with the 9v. rechargeable battery pack as supplied – but lower or higher output available with the optional 6v or 12v packs. Rapid slide-on changing facility.

BNC antenna output socket – 50 ohms for connecting to another antenna or use the Rubber Duck supplied (flexible 1/4 λ whip – 4E)

Send/battery indicator – Lights during transmit but when battery power falls below 6v it does not light, indicating the need for a recharge.

Frequency selection – by thumbwheel switches, indicating the frequency. 5KHz switch – adds 5KHz to the indicated frequency.

Duplex simplex Switch – gives simplex or plus 600KHz or minus 600KHz transmit (1.6MHz and listen input on 4E)

Hi-Low switch – reduces power output from 1.5W to 150mW reducing battery drain.

External microphone jack – if you do not wish to use the built-in electret condenser mic an optional microphone speaker with PTT control can be used. Useful for pocket operation.

External speaker jack – for speaker or earphone. This little beauty is supplied ready to go complete with nicad battery pack, charger, rubber duck.

| A full range of accessories in stock. | | £ | p | | | |
|---------------------------------------|-------------------------------------|----|----|-------|---------------------------|-----------|
| ICML1 | 10W mobile booster for IC2E | 49 | 00 | BC25 | Mains charger as supplied | 4 25 |
| BP5 | 11 volt battery pack | 30 | 00 | DC1 | 12 volt adapter pack | 8 40 |
| BP4 | Empty battery case for 6 x AA cells | 5 | 80 | HM9 | Speaker microphone | 12 00 |
| BP3 | Standard battery pack | 17 | 70 | CP1 | Mobile charging lead | 3 20 |
| BP2 | 6 volt pack | 22 | 00 | IC123 | cases | each 3 60 |
| BC30 | Base charger for above | 39 | 00 | | All prices include VAT | |

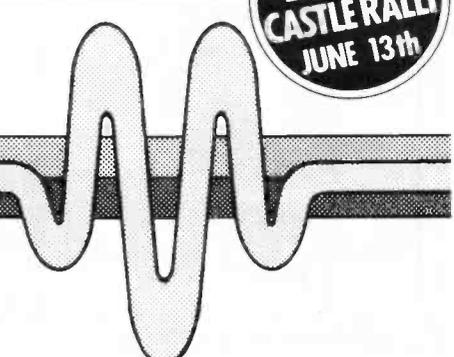
The IC4E is going to revolutionise 70 CM!



Free carriage on direct sales – call us.

Remember we also stock Yaesu, Jaybeam, Datong, Welz, G-Whip, Western, TAL, Bearcat, RSGB Publications.

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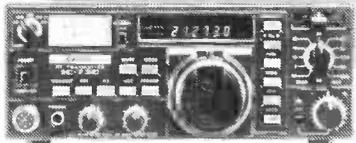


IC-290E £366./IC-490E £445.inc.
Multimode mobiles
 290E-144-146 MHz/490E-430-440 MHz



IOW RF output on SSB, CW and FM. Standard and non-standard repeater shifts. 5 memories and priority channel. Memory scan and band scan, controlled at front panel or microphone. Two VFO's LED S-meter 25KHz and 1KHz on FM-1KHz and 100KHz tuning steps on SSB. Instant listen input for repeaters.

IC-730 The best for mobile or economy base station
 £586.inc.



ICOM's answer to your HF mobile problems – the IC-730. This new 80m-10m, 8 band transceiver offers 100W output on SSB, AM and CW. Outstanding receiver performance is achieved by an up-conversion system using a high IF of 39MHz offering excellent image and IF interference rejection, high sensitivity and above all wide dynamic range. Built in Pass Band Shift allows you to continuously adjust the centre frequency of the IF pass band virtually eliminating close channel interference. Dual VFO's with 10Hz and 1KHz steps allows effortless tuning and what's more a memory is provided for one channel per band. Further convenience circuits are provided such as Noise Blanker, Vox, CW Monitor, APC and SWR Detector to name a few. A built in Speech Processor boosts talk power on transmit and a switchable RF Pre-Amp is a boon on today's crowded bands. Full metering WWV reception and connections for transverter and linear control almost completes the IC-730's impressive facilities.

IC-251 £499.inc.
 IC-451 £630.inc.
Great Base Stations



ICOM produce a perfect trio in the UHF base station range, ranging from 6 Meters through 2 Meters to 70 cms. Unfortunately you are not able to benefit from the 6m product in this country, but you CAN own the IC-251E for your 2 Meter station and the 451E for 70 cms.

Both are really well designed and engineered multi-mode transceivers capable of being operated from either the mains or a 12 volt supply. Both contain such exciting features as scan facilities, automatic selection of the correct repeater shift for the band concerned, full normal and reverse repeater operation, tuning rate selection according to the mode in use, VOX on SSB continuous power adjustment capability on FM and 3 memory channels. Of course they are both fitted with a crystal controlled tone burst and have twin VFO's as have most of ICOM's fully synthesized transceivers.

IC-24G Low-priced mobile
 £169.inc.



The famous IC-240 has been improved, given a face lift and renamed the IC-24G. Many thousands of 240's are in use, and its popularity is due in part to simplicity of operation, high receiver sensitivity and superb audio on TX and RX. The new IC-24G has these and other features. Full 80 channels (at 25kHz spacing) are available and readout is by channel number – selected by easy to operate press button thumbwheel switches. This readout can clearly be seen in the brightest of sunlight. Duplex and reverse duplex is provided along with a 12½ KHz upshift, should the new channel spacing be necessary.



IC-25E
The Tiny Tiger
 £259.inc.

Well worth thinking about!

Amazingly small, yet very sensitive. Two VFO's, five memories, priority channel, full duplex and reverse. LED S-meter, 25KHz or 5KHz step tuning. Same multi-scanning functions as the 290 from mic or front panel. All in all the best 2M FM mobile ICOM have ever made.

Tono RTTY and CW computers
 7000E-£550/9000E-£650inc.



The TONO range of communication computers take a lot of beating when it comes to trying to read RTTY and CW in the noise. Others don't always quite make it!

Check the many facilities offered before you buy – especially look at the 9000E which also throws in a Word Processor. Previous ads have told you quite a lot about these products – but why not call us for further information and a brochure?



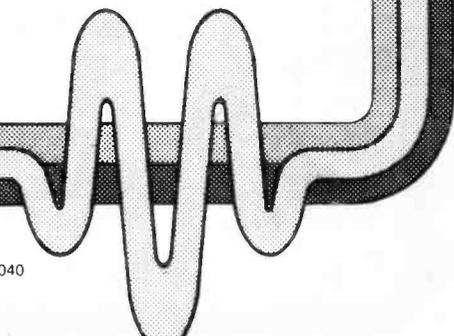
The MT-240X Multi-band trap dipole antenna (80m – 10m) is a superbly constructed antenna with its own Balun incorporated in the centre insulator with an SQ239 connector. Separate elements of multi-stranded heavy duty copper wire are used for 80-40-15 and 20-10 Metres. Really one up on its competitors. £49.50 inc. VAT

Thanet Electronics

143 Reculver Road, Herne Bay, Kent. Tel 02273 63859. Telex 965179

Agents (phone first – all evening weekends only except Scotland)
 Scotland – Jack GM8 GEC 031 657 2430 (daytime)
 031 665 2420 (evenings)
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SMC SERVICE

Free Finance on many items. Two year guarantee on Yaesu. Free Securicor on major Yaesu items. Access and Barclaycard over the telephone. Biggest Branch, Agent and Dealer network. Ably staffed, courteous, Service Department. "B Services" Securicor contract at £3.90!! Biggest stocks of amateur equipment in UK. Twenty-four years of experience.

FREE FINANCE

On regular priced items from: Yaesu, Ascot SMCHS, CDE, HyGain, Channel Master, Hansen, SMC, MFJ, KLM, Mirage and Hy Mound, on invoices over £100 SMC offers Free Finance! How is it done? Simple, pay 20%, split the balance equally over 6 months or pay 50% down and split the balance over a year. You pay no more than the cash price!!

GUARANTEE

Yaesu's own warranty does not extend outside Japan. Repairs are the responsibility of the UK retailer. SMC's two year guarantee is backed, as UK distributors, by daily contact with the factory and many tens of thousands of pounds of spares and test equipment. Avoid hawkers offering sets without serial numbers, spares, service or advice back-up.

WIDE COVERAGE ALL MODE RX; FRG7700 £329 inc. VAT @ 15% & SECURICOR



- ★ 30MHz down to 150kHz (and below).
- ★ 12 Channel memory option & fine tune.
- ★ SSB (LSB/USB), CW, AM, FM.
- ★ 2.7kHz, 6kHz, 12kHz, 15kHz, @ -6dB.
- ★ 3 Selectivities on AM, squelch on FM.
- ★ Up conversion, 48MHz first IF.
- ★ 1kHz digital, plus analogue, display.
- ★ Inbuilt quartz clock/timer.
- ★ No preselector, auto selected LPF's.
- ★ Advanced noise blanker fitted.
- ★ Antenna 500Ω to 2MHz, 50Ω to 30MHz.
- ★ 20dB pad plus continuous attenuator.

- ★ Constantly variable tone control.
- ★ 110 and 240Vac and 12Vdc option.
- ★ Switchable speed A.G.C. system.
- ★ Signal meter calibrated in "S" and SIMPO
- ★ Acc.; Tuners, Convertors, LPF, Memory.
- ★ FRT 7700; 150kHz-30MHz, Switch, etc.
- ★ FRV7700A; 118-130, 130-140, 140-150MHz.
- ★ FRV7700B; 118-130, 140-150, 50-59MHz.
- ★ FRV7700C; 140-150, 150-160, 160-170MHz.
- ★ FRV7700D; 118-130, 140-150, 70-80MHz.
- ★ FF5; 500kHz (for improved VLF reception).
- ★ MEMGR7700; 12 Channels (easy fitting).

GENERAL COVERAGE RECEIVER; FRG7 £199 inc. VAT @ 15% & SECURICOR

- ★ 30MHz to 500kHz in One MHz bands.
- ★ SSB (LSB/USB), CW, AM.
- ★ Sensitivity AM; 0.7µV 10dB S/N @ 30%.
- ★ Selectivity; ± 3 kHz at -6dB.
- ★ Stability; 500Hz after 30 minutes.
- ★ Triple conversion, drift cancelling.
- ★ Direct frequency readout to 5kHz.
- ★ Fine tuning control.
- ★ AGC; DC amplified, 3 stage control.
- ★ AF; Powerful 2 watts of audio.
- ★ Forward facing internal speaker.
- ★ Record socket "volume independent".

- ★ Well calibrated "sharp" preselector.
- ★ AM automatic noise suppression.
- ★ Antenna Hi to 1.6MHz, 50Ω to 30MHz.
- ★ 3 position RF attenuator.
- ★ 3 position AF filter (LP, WBP, NBP).
- ★ 110/240V and 12Vdc. AC.
- ★ Lights; battery economy switch.
- ★ Illuminated edge type "S" meter.
- ★ 2 IC, 9 FET, 13 Tr, 160 (9Ge, 5Si, 2Z).
- ★ Weight; 7Kg (without batteries).
- ★ Dimensions: 340 W, 153 H, 285 D, mm.
- ★ Optional battery holder.



| | | |
|--|--|---|
|  <p>YD148 £21.10 Desk microphone 500 ohm/50K. Adjustable swan neck type.</p> |  <p>YM21 £13.80 Hand microphone 600 ohms. Switchable noise cancelling element.</p> |  <p>YH55 £10.00 Padded headphones. Low impedance ¼" jack.</p> |
|  <p>YD844A £25.30 Desk microphone 500 ohm/50K. Heavy cast type construction.</p> |  <p>YE7A £6.90 Hand microphone 600 ohms. Standard 4 pin connector.</p> |  <p>FSP1 £9.95 External mobile speaker 8 ohms impedance</p> |
|  <p>FP12 £86.25 12V, 12A, Power Supply. c/w Internal Speaker.</p> |  <p>QTR24 £19.95 World time clock. Battery powered movement.</p> |  <p>FF501 £23.00 Low pass filter Fc 30MHz, 1KW PEP.</p> |

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FT ONE £1,295 inc. VAT @ 15% & SECURICOR



*Option

- ★ Rx: 150kHz-30MHz. Continuous general coverage.
- ★ Tx: 160-10m (9 bands) or 1.5-30MHz commercial.
- ★ All Modes: AM, CW, FM*, FSK, LSB, USB.
- ★ 10 VFO's!!! Any Tx-Rx split within coverage.
- ★ Two frequency selection ways, NO bandswitch.
- ★ Main dial, velvet smooth, 10Hz resolution.
- ★ Inbuilt keyboard with up/down scanning.
- ★ Dedicated digital display for RIT offset.
- ★ Receiver dynamic range up to 100dB!!!
- ★ SSB: Variable bandwidth AND IF shift.
- ★ 300* or 600Hz*, 2,400 → 300Hz, 6kHz*, 12kHz*.
- ★ Audio peak and notch filter. FM squelch.
- ★ Advanced variable threshold noise blanker.
- ★ 100W RF, key down capability, solid state.
- ★ Mains and 12VDC. Switch mode PSU built in.
- ★ RF processor. Auto mic gain control. VOX.
- ★ Last but not least *FULL* break in on CW.

- ★ 160-10 metres including new allocations.
- ★ Variable IF bandwidth 2.4kHz down to 300Hz.
- ★ Audio Peak and independent notch controls.
- ★ AM, FSK, USB, LSB, CW, FM, (TX and RX).
- ★ Semi-break in, inbuilt Curtis IC Keyer.
- ★ Digital plus analogue frequency displays.
- ★ VOX built-in and adjustable.
- ★ Instant write in memory channel.
- ★ Tune up button (10 sec. of full power).
- ★ Switchable AGC and RF attenuator.
- ★ Optional 350 or 600 Hz CW, 6kHz, AM filters.
- ★ Clarifier (RIT) switchable on TX, RX or both.
- ★ Plug in modular, computer style constructor.
- ★ Fully adjustable RF Speech processor.
- ★ Ergonomically designed with necessary LEADS.
- ★ Incredible range of matching accessories.
- ★ Universal power supply 110-234V AC and 12V DC.

FT902DM £885 inc. VAT @ 15% & SECURICOR



*Option

- ★ 160-10 metres including new allocations.
- ★ Variable IF bandwidth 2.4kHz down to 300Hz.
- ★ Selectable CW fixed bandwidth CW-W and CW-N*.
- ★ Semi-break in with sidetone for excellent CW.
- ★ Digital plus analogue frequency displays.
- ★ 180W PIP and — 31dB 3rd order intermod.
- ★ RF speech processor fitted — adjustable level.
- ★ VOX built-in and is adjustable from the front panel.
- ★ Wide dynamic range for big signal handling.
- ★ High usable sensitivity, for those weak ones.
- ★ Superb noise blanker — adjustable threshold.
- ★ Attenuator; 0-10-20dB, AGC; slow-fast-off.
- ★ Clarifier (RIT) switchable on TX, RX or both.
- ★ Low level transverter drive output facility.
- ★ Universal power supply 110-234V AC and 12V DC*.
- ★ Incredible range of matching accessories
- ★ 6 models: Digital/Analogue — AM/FM options.

FT101ZD £635 inc. VAT @ 15% & SECURICOR



*Option

- ★ 160-10 metres (including 10, 18, and 24MHz).
- ★ USB-LSB-CWW-FSK-AM multi-mode.
- ★ Full broad band "no tune" power amplifier.
- ★ 240W PIP. 75 per cent power output at 3:1 VSWR.
- ★ 12 memory channels with clarifier on memory.*
- ★ Up/down scanning control from microphone.*
- ★ Variable IF bandwidth — 16 poles of selectivity.
- ★ Bandwidths: 2.4kHz→300Hz, 600Hz* or 300Hz*.
- ★ Selectable CW "fixed" widths CW-W and CW-N.*
- ★ Tunable Audio Peak (AFP) and Notch filter.
- ★ Diode ring mixer for very high Rx dynamic range.
- ★ Noise blanker — front panel adjustable threshold.
- ★ AGC; slow-fast-off. Attenuator 0-20dB switchable
- ★ RF speech processor fitted — front panel adjustable.
- ★ Digital (100Hz) plus analogue frequency display.
- ★ Semi-break in with side tone. Vox built in.
- ★ Choice of built-in or separate power supply units.

FT107M £725 inc. VAT @ 15% & SECURICOR

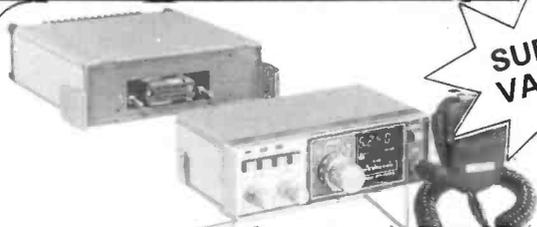


*Option

- ★ 80-10 metres (including 10, 18 and 24MHz bands).
- ★ USB-LSB-CWW-CWN-AM (Tx and Rx operation).
- ★ 100W PEP. 50% power output at 3:1 VSWR.
- ★ Full "broad band" no tune output stage.
- ★ Excellent Rx dynamic range, power transistor buffers.
- ★ Rx Schottky diode ring mixer module.
- ★ Local oscillator with ultra-low noise floor.
- ★ Variable IF bandwidth — 16 crystal poles.
- ★ Bandwidths 6kHz*, 2.4kHz→300Hz 600Hz* or 350Hz*.
- ★ AGC; slow-fast switchable VOX built-in.
- ★ Semi-break in with side tone for excellent CW.
- ★ Digital (100Hz) plus analogue frequency display.
- ★ LED Level meter reads: S, PO and ALC.
- ★ Indicators for: calibrator, fix, int/ext VFO.
- ★ Receiver offset tuning (RIT-clarifier) control.
- ★ Advanced noise blanker with local loop AGC.

FT707 £569 inc. VAT @ 15% & SECURICOR





SUPER VALUE

2m or 70cms FM, from £245 inc.

FT720R 'remotable', 4 memories, RX priority, scanning, mic tune, FT720RV (2M, 12.5kHz/600kHz) 10W £245, 25W £255. FT720RU (70cm, 25kHz/1.6MHz) 10W £265. Dual band capability.



NEW K.D.K

2m, 25W, FM, £199 inc.

2025 MARK II Full coverage 2M Transceiver, 12½kHz (set 12½-200kHz), rapid tune, 10 "easy write" memory channels, memory or band-scan between programmable limits, auto scan stop dependent on squelch and centre zero.



NEW YAESU

2m, 25W, FM, £239 inc.

FT230R 6" x 2" x 7", 12½/25kHz, ±600kHz, special LCD display, 10 memories, memory and band scan, RX priority feature, two independent VFO's.



A GIFT!

70cms, SSB, £129 inc.!!

KLM JUMBO (Liner 430) 432.00-432.48MHz (Plus further 480kHz band (430 up fitted), USB/LSB, 10W PEP, Auto Scan ± 10kHz, semi break-in CW, FET RF and mixer, RIT, N.B., c/w mic and bracket.



2m, 250W (+) PEP. £499

NAG 144XL LINEAR. 4CX350F tube, 10W nom. drive, switchable pre-amp. RF and hard switching. Thermal delay, etc., etc.



2m. 160W OUTPUT, £164

MIRAGE B3016 LINEAR. 12VDC. Nominal 30W drive, switch pre-amp., etc. B108 10-80W £120.75. B1016 10-160W £189.75.

FT480R (2m) £379 inc.

VAT @ 15% & SECURICOR

FT780R (70cm) £449 inc.

VAT @ 15% & SECURICOR

- ★ USB-LSB-CW-FM (A3j, A1, F3).
- ★ 30W PIP A3j, 10/1 W out A1 F3.
- ★ Bandpass filter no tune design.
- ★ Bandwidth 2.4kHz and 14kHz at -6dB.
- ★ Semi break in with side tone.
- ★ Very bright blue 100Hz digital display.
- ★ Display shows Tx & Rx freq (inc RIT).
- ★ String LED display for "S" and PO.
- ★ Digital receiver offset tuning.



- ★ 144-146MHz (143.5-148.5 MHz possible).
- ★ Excellent dynamic range and sensitivity.
- ★ FM; 25, 12½, 1kHz steps.
- ★ SSB; 1,000, 100, 10Hz steps.
- ★ Any TX Rx split with dual VFO's.
- ★ ±600kHz standard repeater split.
- ★ Four easy write-in memory channels.

FT480R



- ★ Advanced effective noise blanker.
- ★ Memory scanning with slot display.
- ★ Up/down tuning/scanning from mic.
- ★ Priority channel on any memory slot.
- ★ Satellite mode allows tuning on Tx.
- ★ Scanning for busy or clear channels.
- ★ Size (Case): 8.3" D, 2.3" H, 6.9" W.
- ★ LED's; "On Air" Clar, Hi/Low, FM mod.
- ★ Matching PP80 Mains PSU available.



- ★ 1.6MHz shift now available
- ★ FT780R 1.6 fitted 1.6 MHz Shift £459 inc.
- ★ 430-434MHz (440-445) possible.
- ★ GaAs Fet RF for incredible sensitivity.
- ★ NMOS four bit micro control.
- ★ FM; 100kHz, 25kHz, 1kHz, steps.
- ★ SSB; 1,000, 100, 10Hz steps.
- ★ Repeater access by use of dual VFO's.
- ★ Four easy write-in memory channels.

FT780R



SPRINGTIME — TIME TO BE THINKING HAND PORTABLE

LOW PRICE

**FT207R
£169 inc.**

VAT @ 15%
& POSTAGE



- ★ 144-146MHz (144-148 possible)
- ★ 12.5kHz synthesizer steps
- ★ 4 bit CPU chip for freq. control
- ★ Keyboard entry of frequencies
- ★ Keyboard lockout safety feature
- ★ Digital display to hundreds of Hz
- ★ Display auto shutdown timer
- ★ Four Channels of memory
- ★ Memory back up disable
- ★ Up/down manual tuning

- ★ Bandscan for busy or clear channels
- ★ Memory scanning features
- ★ ±600kHz split built in
- ★ Any split + or - programmable
- ★ Easy change NiCad packs.
- ★ BNC antenna connector
- ★ "On Air" and "Channel Busy" LEDs
- ★ Built in condenser microphone
- ★ 200mW AF to internal/external speaker
- ★ External speaker/mic available
- ★ 2.5/0.2W of RF output
- ★ Rx; 35mA squelch, 150mA full vol.
- ★ Tx; 250mA low, 800mA high
- ★ 0.3µV for 20dB quieting
- ★ Double conversion 10.7MHz and 455kHz.
- ★ D.T.M.F. encoder built in
- ★ 1.7 (2.2)" D x 2.5 (2.7)" W x 6.7 (7.2)" H
- ★ C/w NiCad pack, helical and case

FT290R MULTIMODE PORTABLE/MOBILE £249 inc.

VAT @ 15%
& SECURICOR

- ★ 144-146MHz (144-148 possible)
- ★ Multimode USB, LSB, FM, CW
- ★ 2.5W PEP, 2.5W RMS/300mW out
- ★ LED's, "ON AIR", "BUSY" MC meter; S.PO
- ★ Integral telescopic antenna
- ★ Bandwidth 2.4kHz and 14kHz @ - 6dB
- ★ Optically coupled main tuning
- ★ 100Hz backlit LCD Frequency display
- ★ 10 memory channels "5 year" backup
- ★ FM: 25kHz and 12.5kHz steps
- ★ SSB: 1kHz and 100Hz steps
- ★ Any TX/RX split with dual VFOs
- ★ ±600kHz repeater split 1750kHz burst
- ★ Up/down tuning from microphone
- ★ AF output 1W @ 10% THD
- ★ 58 (H) x 150 (W) x 195 (D) (1.3kg)
- ★ Rx, 70mA, Tx; 800mA (FM maximum)
- ★ Mobile bracket available (MMB II)



**FULL RANGE
OF MATCHING
ACCESSORIES**

- ★ Matching 10W linear Amplifier (option)
- ★ 8.5 - 15.2V DC External (not included)
- ★ 8' C' NiCads or Drys (not included)
- ★ SMC 2.2 A/Hr NiCad £2.70 inc

FT208R(2m) £209 inc.

VAT @ 15%
& POSTAGE



- ★ 4 bit CPU chip frequency control
- ★ Keyboard entry of frequencies/splits
- ★ LCD digital display with backlight
- ★ Ten channels of memory
- ★ Memory back up five-year lifetime cell
- ★ Up/down manual tuning
- ★ Manual or auto scan for busy/clear
- ★ Priority channel with search back
- ★ Memory scanning feature
- ★ Scan between any two frequencies
- ★ Auto scan restart
- ★ Quick change NiCad pack
- ★ 1,750Hz tone burst
- ★ Built in condenser microphone
- ★ 500mW AF to int/ext speaker
- ★ External speaker/mic available
- ★ Keyboard offers 16 tone DTMF
- ★ 168(H) x 61(W) x 39(D)mm
- ★ C/w NiCad pack, helical



FT708R(70cm) £219 inc.

- ★ 144-148MHz (144-148 possible)
- ★ 12.5/25kHz synthesiser steps
- ★ Any split + or - programmable
- ★ ±600kHz repeater split
- ★ 2.5 or 0.3W RF output
- ★ Rx: 20mA squelch 150mA max AF
- ★ Tx: 800mA at 2.5W RF
- ★ 0.25µV for 12dB SINAD
- ★ Dual conversion 16.9MHz and 455kHz

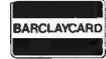
- ★ 430-440MHz (440-450 option)
- ★ 25kHz synthesizer steps
- ★ Any split + or - programmable
- ★ ±7.6MHz EU split standard
- ★ 1W or 100mW RF output
- ★ Rx: 20mA squelch, 150mA (max AF)
- ★ Tx: 500mA at 1W RF
- ★ 0.4µV for 12dB SINAD
- ★ Dual conversion 46.255MHz and 455kHz

FT208R
★—★
FT708R

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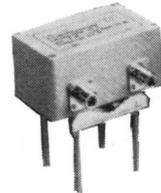
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TRIO/KENWOOD

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TR9500 UHF Multimode £440.00
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TR7730 the new compact 2m Transceiver



TR2300

TR2300 2m Synthesised Portable Transceiver. We have lost count of the number of this model we have sold over the last 12 months. Hikers, campers, climbers, you can hear them all over the country and reliability which is the essence of TRIO equipment. **£166.75**

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| 10Y/2M 10 element..... | £33.35 |
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TR7800

Continuing TRIO's policy of presenting the Radio Amateur with the finest equipment available, we were pleased to announce the NEW TR7800 2m FM Mobile Transceiver. 15 memory channels — Priority channels with simplex ± 600 KHz or non-standard operation — "Priority alert" bleeps when signal on M14 priority channel. Frequency coverage 144.00, 145.955 in switchable 5 KHz or 25 KHz steps. Front keyboard for selecting frequencies, programming memories and controlling scan function. ALL THIS and MORE for **£284.97**.



TRIO R1000

R1000 Receiver **£297.86**
The latest general coverage from Trio. Frequency coverage 200 KHz to 30 MHz in 30 bands. Using an advanced PLL system. Full digital readout. Three filters 12 KHz for AM — 6 KHz narrow AM and 2.7 KHz SSB. Also incorporates a noise blanker. Operation is from 100-240V AC or 12V DC.



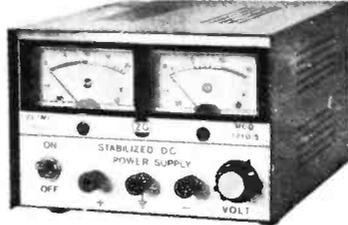
TR9000

The TR9000 is a compact lightweight 2 mtr. FM USB/LSB/CW Transceiver with an outstanding array of functions. FM1 for 25KHz steps (for mobile use) FM2 for precise 100 Hz steps (for base station use). Microcomputer control giving many advanced features. Built in 5-channel memory. New type microphone with UP/DOWN switching. Built in high performance. N. Blanker. Side tone for CW. **£374.90**

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| AT230 All band Antenna Tuner/SWR..... | £119.83 |
| TS530S HF Transceiver..... | £534.98 |
| SP230 Speaker..... | £34.96 |
| DFC230 Digital remote control..... | £179.86 |
| TS130S Solid State HF Transceiver..... | £525.09 |
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| TR2500 Hand Held 2m Transceiver..... | £207.00 |
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Full range of TRIO Accessories stocked.

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| D70 Morse Tutor..... | £49.45 |
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| AD270 Active Antenna (indoor)..... | £37.95 |
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| Yaesu FRG7 Receiver..... | £199.00 |
| 'Sky ACE' Hand Held Aircraft Band Receiver..... | £49.50 |
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TRIO TS530S NEW £534.98 ALL BAND HF TRANSCEIVER



TS830S HF SSB TRANSCEIVER £694.83

The new TS830S, the latest from TRIO. A high performance, very affordable HF SSB/CW transceiver with every conceivable operating feature built in for 160 through 10 metres (including the new three bands). The TS830S combines a high dynamic range with variable bandwidth tuning (VBT), IF shift and an IF notch filter, as well as very sharp filters in the 455 KHz second IF. Together with the optional VFO230 (remote digital display VFO) which provides split frequency operation and 5 memories for frequency hold, the amateur has available today's advanced technology linked to the proven reliability and exceptional linearity of a valve PA.

- ★ VBT variable bandwidth tuning
- ★ IF notch filter
- ★ IF Shift
- ★ Various filter options
- ★ Built in digital display
- ★ 6146B final with RF negative feed-back
- ★ Optional Digital VFO for increased flexibility
- ★ Innovative PLL system of frequency generation
- ★ RF speech processor
- ★ Adjustable noise blanker level
- ★ Adjustable audio tone
- ★ RF attenuator
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- ★ SSB monitor circuit
- ★ Expanded frequency coverage

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FT-ONE SUPER HF TRANSCEIVER

This is the latest and most exotic product from YAESU's superb design team. The new FT-ONE provides continuous RX coverage of 150KHz-30MHz plus all nine amateur bands (160 thru 10m). All mode operation LSB, USB, CW, FSK, AM, *FM • 10 VFO system • FULL break-in on CW • audio peak filter • notch filter • variable bandwidth and IF shift • keyboard scanning and entry • RX dynamic range over 95 dB! and NO band switch!!!

***OPTIONAL**

FT-101ZD Mk III



YAESU'S FT-101ZD **WITH FM** is the most popular HF rig on the market thanks to its very comprehensive specification and competitive price. Incorporates notch filter, audio peak filter, variable IF bandwidth plus many other features.

FT-902DM Competition grade HF transceiver

The YAESU world famous pace-setter with the acknowledged unbeatable reputation. 160 thru 10 metres including the new WARC bands. All-mode capability, SSB, CW, AM, FSK **and FM** transmit and receive. Teamed with the FTV-901R transverter coverage extends to 144 & 430MHz.



FT-707 All solid-state HF mobile transceiver



The definitive HF mobile rig, digital, variable IF bandwidth, 100watts PEP SSB, AM, CW (pictured here with 12 channel memory VFO). Latest bands



FRG-7700 High performance communications receiver

YAESU'S top of the range receiver. All mode capability, USB, LSB, CW, AM **and** FM 12 memory channels with back up. Digital quartz clock feature with timer. Pictured here with matching FRT-7700 Antenna tuner and FRV-7700 VHF converter.



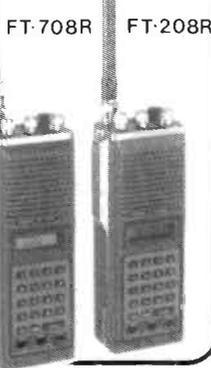
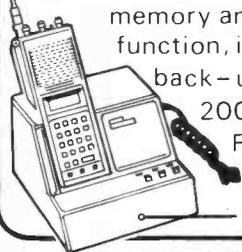
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£239.00
Including VAT

- Two independent VFO's
- 10 memories
- Priority function
- Memory and band scan
- 12.5/25 KHz steps
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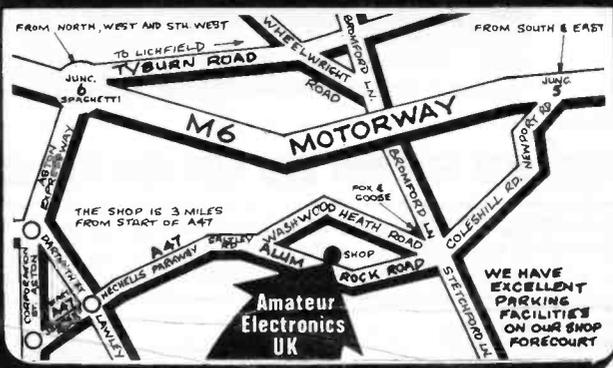
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EDITORIAL

VP8

A glance at the *Call Book* reveals just how many licensed amateurs there are on the Falkland Islands: 400 or so — which represents nearly a quarter of the total population — and their part in passing on news of the Argentinian invasion is widely known. As this is written (just after Easter) we understand that, sadly, their equipment has been confiscated: a distressing, though obvious, action by the invading forces.

To all VP8's, and indeed the entire population, we extend a message of support and solidarity on behalf of U.K. radio amateurs in this time of crisis, and express the fervent hope that the issue can be resolved without violence and to the satisfaction, as the first priority, of all inhabitants of the Falkland Islands.

Information

Legal CB seems to have resulted in many CB-ers being bitten by the real radio bug. They are ripe for amateur radio, but how can they find out about it? Some will have amateur friends, some will by their own efforts find out about *S.W.M.* and/or the RSGB and write-in or ring for all the gen. But there is still a majority out there quite unaware of how to widen their radio horizons.

Now, since the January 1982 issue, *Short Wave Magazine* has been available to the general newstrade on sale-or-return (this means that any copies which remain unsold can be returned to us for credit — in other words, your local newsagent can't lose!), and herein lies a possible part-solution to the situation outlined above, and an area where readers can help: get your newsagent to have a good display of *S.W.M.* on his shelves, next to the CB magazines. Perhaps that way. . . .

Also, if your local club doesn't usually report to us, let us have details of the contact man. If you don't want this published, OK: but at least we will be able to direct enquiries from CB-ers to the right person in his district. That way the enquirer is helped, the club may gain a new member, and we may gain a new reader!

Ed. Williams
G3KFE.

WORLD-WIDE COMMUNICATION

VHF BANDS

NORMAN FITCH, G3FPK

VHF Convention

MARCH 20 was the occasion of the second RSGB VHF Convention to be held at the Sandown Park Racecourse. The trade show attracted thirty-two exhibitors, and special interest groups such as AMSAT-UK, BATC, BARTG and, of course, the RSGB. There was the obligatory Bring-and-Buy stall. The Tote Hall is a very large area, big enough to accommodate all the stands, and the 1,300-plus visitors, in comfort and a far cry from the cramped conditions at the previous Winning Post Hotel venue.

There was a vast amount of stuff to buy, from utter junk, through state-of-the-art low noise preamps., to expensive multimode transceivers. British manufacturers do not offer anything to compete with the oriental products such as the FT-225RD, TR-9000, IC-290, etc., but do excel in the accessories market. Mostly, these products are better than any bought from abroad and mention must be made of *Microwave Modules Ltd.*, *muTek Ltd.*, *Packer Communications*, *SOTA Communication Systems Ltd.*, *Wood and Douglas* and *Davtrend Ltd.* The keen interest in VHF/UHF aerials was catered for by *muTek Ltd.*, showing the German *H.A.G.* range, based on Günter Hoch's (DL6WU) "doubly optimised" designs; *Randam Electronics* with the popular French *Tonna* products; and *Halbar*, a recent British newcomer to the field.

Highlight of the Convention, for serious VHF/UHF buffs, are the lectures. Your scribe, and scores of others, were looking forward eagerly to Oscar Bäckman's (SM5CHK) talk on aerial gain measurements, which immediately followed the opening address by RSGB Executive Vice-President Bob Barrett, GW8HEZ. The background to these tests were the annual VHF meetings at Ännaboda in 1979 and 1980 during which some 100 different aerials were tested. This is such a fascinating subject that it will be reported in some detail.

Oscar reminded us what dBd. and dBi. mean — dB. gain over a dipole and over an isotropic radiator, respectively. He introduced two more units; dBdM, meaning Manufacturer's claimed gain over a dipole, and dBdÅ, signifying the actual gain figures from the Ännaboda

measurements. Most listeners were aware that their aerials seem to work better at some heights than at others and this is due to the wave reflected from the ground a few wavelengths in front of the aerial adding to that radiated horizontally. Of course the opposite can happen, too. To eliminate ground wave enhancement, it is essential to absorb any energy from it and prevent it reaching the target aerial.

The technique used at Ännaboda was to erect two wire fences between the aerial under test and the target one. These reflected back and/or absorbed the wave which would have otherwise reached the target aerial. This resulted in a close approximation to a free space environment, enabling very accurate comparisons to be made between the many test aerials. The target aerial chosen was the *Wisi UY10*, a German 8-ele. *Yagi* with two reflectors. This aerial was investigated by the Swedish military and its gain established as 9 dBd. with a very clean pattern and low, flat VSWR.

The test aerials were mounted on a telescopic, tilt-over mast on a trailer and could be wound down and tilted over very quickly, an essential requirement when so many tests were involved. The transmitter power was fed to the aerial under test and in the receiving tent the results were displayed on a *Hewlett-Packard* network analyser and photographed with a *Polaroid* camera. Allowances were made for mismatching in assessing the final gain figures. The top six 2m. aerials are listed below. The figure immediately after the type is the boom length in wavelengths and the figures in parentheses after the dBd. figures are the manufacturers' claimed gains at the time.

KLM; 3.2, 12.6 dBd. (15.5)

Jaybeam 14-ele. Parabeam; 2.9, 12.7 dBd. (13.7)

Cushcraft Boomer; 3.2, 12.8 dBd. (16.2)

Cue Dee 3.1, 13.0 dBd. (14.0)

Tonna 16-ele; 3.1, 12.2 dBd. (15.7)

The best gain for the boom length was a design by PAOMS with 11.5 dBd.

The *Jaybeam* resonated at 144.0 MHz and was 0.5 dB. down at 144.9 MHz. The *Tonna* resonated between 145 and 146 MHz and was 0.1 dB. down at 144.0 MHz. SM5CHK mentioned that the 7-ele. *Quad* design by GW4CQT, featured in *DUBUS Magazine* some years ago, was quite good with 10.7 dBd. gain. However, this 7-ele. aerial needs a *Balun* to achieve this result.

On 70cm., the biggest gain was from a huge, 8.6 wavelength *loop Yagi* home made with a 16.9 dBd figure. Two *Tonna* 21-ele. beams were tested, a new one yielding 15.8 dBd. and an old one 14.4 dBd. against a claimed figure of 16.9. These have a 6.6 wavelength boom. The other beams were:—

Jaybeam MBM88; 5.7, 15.5 dBd. (18.5)

K2RIW; 5.6, 15.4 dBd. (16.0)

It can be seen that all manufacturers claim more gain than was ever proven and

that some of the figures were very exaggerated. For example, in the case of the 2m. *KLM*, *Cushcraft* and *Tonna* aerials, two accurately phased beams would not give the gain claimed for one. What the measurements also reveal is that, for a boom length of about three wavelengths on 2m., there is not much difference between these aerials. So the choice is more of price and mechanical soundness. It was a pity that the new *H.A.G.* range were not available when these tests were conducted.

The next lecture attended by your scribe was John Nelson, G4FRX, on his pet subject of the 4CX-series of valves and their associated power supplies. This talk was based upon John's definitive *Magazine* articles. It can only be hoped that those newcomers, anxious to run high power on VHF and UHF, will heed his advice. By all accounts, the other lectures were well received.

The Social Evening was attended by 84 people and it was a great pleasure to be able to chat to friends without being deafened by loud music. Various VHF/UHF trophies and awards were presented during the evening. This year's VHF Convention must be judged a great success and congratulations are in order to all those who planned and realised the event. Even so, it was a pity that there were no facilities for visitors to test their preamplifiers, receivers, etc. Perhaps this can be provided next year?

Awards News

Congratulations to Alan Owen, G4HMF, who becomes the 19th member of the 2m. QTH Squares Century Club, with 103 squares confirmed. The certificate was issued on March 11. Alan operates from Ipswich and his station now comprises a *Trio* TS-770E with an improved "front end," a single 4CX250B amplifier and a pair of 16-ele. *Tonna Yagis* at 65ft. The QTH is one of the highest points in Ipswich. All the QSLs were for SSB contacts and comprised two *via Ar*, the rest being *via tropo*.

Mike Lee, G3VYF, is the first QTHCC member to win a 250 sticker which was issued on March 9 for Certificate No. 7. Some very choice offerings here, such as LZ2KBI (LD) *via Aurora* — the first LZ-to-G, they reckon — UB5EAG (QI) *via E's* on CW, and CT1ASM/M (WY) on FM *via E's*.

On the VHF Century Club scene, certificate No. 345 for 2m. goes to Václav Homolka, OK1GA, who lives in Kutná Hora, about 60kms. east of Prague. The QTH is 280m. *a.s.l.* with a good take-off to the west, north and east, but the south is screened by a 360m. hill. The transceiver is a solid state one for CW, SSB and FM producing one watt which drives a 60w. PA. The aerials are a 10-ele. horizontal *Yagi* for DX and a 4-ele. vertical *Yagi* for FM. Václav has worked 142 squares and 36

countries on 2m. and is also QRV on 70cm. using a transverter from a DC6HY design. The 70cm. aerial is a 15-ele. *Yagi*.

2m. VHFCC award No. 346 goes to George O'Connor, G8OPS, who lives in the historic part of the city of Lincoln. Licensed in Feb. 1978, his station comprises a *Yaesu FT-225R* with a crossed 10-ele. *Yagi* aerial. He is QRV on 70cm. with a *Yaesu FT-780R* and *Jaybeam* 48-ele. *Multibeam* aerial. This claim was submitted by Pam Rose, G8VRJ, on George's behalf.

About the monthly tables; the Four Band one is an *annual* affair, as it states. One reader seems to think it is an all-time listing. Anyone may enter just by stating the counties and countries worked on any, or all, of the four bands. The QTH Squares table runs from Jan. 1, 1975 and is a cumulative listing. If you move less than 50kms. from the original QTH, you can carry on the scoring, otherwise start again. Also, up-grading from Class B to Class A makes no difference; carry on counting! The 23cm. table is a truly all-time one based on current, *administrative* counties such as Greater London and Powys and *not* Middlesex or Radnorshire.

DX Notes

The *HADRABS* Contest Group are planning a DX-Pedition to Andorra between June 6 and 11, priority being given to 70cm. No prior skeds. but they will be on the 20m. VHF net for arranging "same day" skeds. The callsign will be C31XV/P, operating on 144.185 and 432.185 MHz., SSB/CW. The proposed schedule is;— 144.185 MHz 06-09; 17-18; 20-21. 432.185 MHz 18-19; 21-22. Between 16 and 17; 19-20 and 22-23, they will monitor both bands, the choice depending on conditions. From 09-16, likewise, listening on 14.345 MHz VHF net. At 2300 closedown is suggested unless conditions warrant staying up. All times are GMT and G3VYF will be anchor man in England. QSLs to G8APZ. (QTHR).

The *R.A.F. Amateur Radio Society* is mounting a trip to the Scilly Isles between June 11 and 28, the basic object being to attempt transatlantic VHF communication possibilities. Callsigns are G3RAF/P and G8RAF/P and the location will be St. Mary's Island. The expedition is open to serving R.A.F. personnel who must be fully paid up members of the RAFARS and who hold current Class A or B licences. Twelve places are available and applications, stating *RAFARS* membership number, callsign, morse proficiency, previous expedition experience, service number, rank and parent unit should be made immediately to: The RAFARS, Administrative Secretary, R.A.F. Locking, Weston-super-Mare, Avon, BS24 7AA. The gear will consist of an *Icom IC-251E*, a large amplifier and six 11-ele. *H.A.G. Yagis*. Contact the above

for skeds. They will also be QRV on the HF bands.

Moroccan VHF operation is planned for the first week in July from YU square by F6CIS, who will be QRV on the 20m. VHF net. No further info. on times and frequencies yet. Other DX notes on page 101, last month, are still relevant.

Sporadic E Study

Serge Canivenc, F8SH, has written concerning the C.C.I.R. *E's* propagation study project outlined last month and stresses they need observations throughout the entire VHF spectrum from 30 to slightly beyond 200 MHz. Thus reports on reception of VOR beacons (108-118 MHz), and aeronautical transmissions (118-136 MHz), plus Band III (174-216 MHz) TV stations are important. Serge states that, whenever there is a long — over two hours — *E's* opening on 2m. with high signal strength levels, it is quite likely that Band III TV will be affected, too. It is very important to ascertain the upper frequency limit for *E's* reflexions. So far, it seems that 210 MHz would be the extreme limit. The bearings of the MOFs (Maximum Observed Frequencies) should also be recorded so that the drift of the *E's* clouds can be plotted in later analyses.

Contest Notes

The 432/1, 296/2, 304 MHz contest on May 1/2 is from 1400-1400 GMT. The 144 MHz low power — 25w. Tx output — event is on May 2, 0900-1700 GMT. The second leg of the 10GHz *Cumulatives* is on May 16, 0900-2000 GMT, and the May 22/23 weekend sees the 144 MHz contest which is a 1600-1600 GMT affair. The next *E-M-E* contest is from 0000 on May 1 to 2400 on May 2. In the Greenwich Meridian area, Moon set on May 1 is 0228, rising again at 1141. Moon set on the 2 is 0257, rising again on 1257, remaining above the horizon till after the end of the contest.

The Satellite Scene

First, *U-0-9*, or *UOSAT* as many still call it. The University of Surrey's command station has had more Tx problems and, at the time of editing, was trying to enlist the help of a suitably equipped station to transmit the necessary command signals to the "bird." The "Digitalter" has been activated again recently and seems to work satisfactorily. The gravity gradient boom has yet to be deployed and the HF beacons cannot be switched on till it is.

The European Space Agency has slipped one *ARIANE* launch, resulting in a further delay of the launch of the AMSAT Phase IIIB satellite. Sept. 15 is the presently advised date. Your scribe has tried to find out some data about the so-called "Mode L" transponder — 1,269 MHz uplink/436 MHz downlink — so that some idea of ground station

QTH LOCATOR SQUARES TABLE

| Station | 23 cm. | 70 cm. | 2 m. | Total |
|---------|--------|--------|------|-------|
| G3VYF | — | 93 | 281 | 374 |
| G3POI | — | — | 354 | 354 |
| GJ4IGD | 1 | 97 | 208 | 306 |
| G3IMV | — | — | 296 | 296 |
| DK3UZ | — | — | 287 | 287 |
| SP2DX | — | — | 280 | 280 |
| G3JXN | 43 | 87 | 124 | 254 |
| EA3LL | — | 15 | 231 | 246 |
| GJ8KNV | 8 | 73 | 164 | 245 |
| G4IJE | — | — | 241 | 241 |
| G4ERG | — | 16 | 223 | 239 |
| G3XDY | 30 | 84 | 123 | 237 |
| G3BW | 5 | 31 | 191 | 227 |
| G3COJ | 24 | 74 | 126 | 224 |
| G4IGO | — | 17 | 207 | 224 |
| 9H1BT | — | 11 | 210 | 221 |
| G3CHN | — | — | 214 | 214 |
| G3PBV | 14 | 65 | 125 | 204 |
| G4DEZ | — | — | 203 | 203 |
| GM4COK | — | 12 | 182 | 194 |
| GW3NY | — | 36 | 153 | 189 |
| G3NAQ | — | 58 | 128 | 186 |
| G3FPK | — | — | 180 | 180 |
| G8HHI | 6 | 52 | 121 | 179 |
| G8VR | — | 3 | 174 | 177 |
| G8ATK | 6 | 56 | 113 | 175 |
| G2AXI | 8 | 60 | 106 | 174 |
| G4BWG | — | 38 | 136 | 174 |
| G4NFD | — | 36 | 138 | 174 |
| G3KEQ | — | — | 173 | 173 |
| G8KBQ | 4 | 50 | 115 | 169 |
| GM4CXP | — | 25 | 144 | 169 |
| G8MFJ | — | 28 | 133 | 161 |
| G4JZF | — | 40 | 120 | 160 |
| G4NBS | 13 | 57 | 89 | 159 |
| G4MCU | — | 34 | 125 | 159 |
| G4NOX | — | 46 | 111 | 157 |
| G4ERX | 6 | 46 | 104 | 156 |
| G4AWU | — | 22 | 130 | 152 |
| G4GFX | 7 | 40 | 103 | 150 |
| GW4EAI | — | — | 150 | 150 |
| G8CXQ | — | 25 | 123 | 148 |
| G8IXG | — | 7 | 140 | 147 |
| GD2HDZ | 12 | 44 | 90 | 146 |
| G8JJR | — | 38 | 108 | 146 |
| G8RZP | — | 40 | 104 | 144 |
| G8FMK | 16 | 57 | 71 | 144 |
| G8RZO | — | 39 | 103 | 142 |
| GJ8SBT | 1 | — | 138 | 139 |
| G8KAX | 11 | 45 | 79 | 135 |
| G4HFO | — | 55 | 80 | 135 |
| G4HMF | — | 13 | 116 | 129 |
| G8VRJ | 8 | 28 | 88 | 124 |
| G3FIJ | — | 29 | 86 | 115 |
| G8LFB | — | — | 115 | 115 |
| G8TGM | — | — | 109 | 109 |
| GM4IPK | — | — | 102 | 102 |
| G8KPL | — | 7 | 91 | 98 |
| G4GHA | — | — | 95 | 95 |
| G4MJC | — | 12 | 76 | 88 |
| G8JAG | — | 7 | 81 | 88 |
| G4IRX | — | — | 85 | 85 |
| GW3CBY | 3 | 14 | 65 | 82 |
| G4MUT | — | 31 | 50 | 81 |
| G4NWT | — | 22 | 55 | 77 |
| G8WUU | — | 20 | 56 | 76 |
| G8RWG | — | — | 71 | 71 |
| G8VFX | — | — | 68 | 68 |
| G4BVY | 9 | 58 | — | 67 |
| G4KXL | — | 5 | 62 | 67 |
| G8XMP | — | — | 62 | 62 |
| G6ADC | — | 14 | 47 | 61 |
| G8TIN | — | 3 | 56 | 59 |
| G6ECM | — | — | 59 | 59 |
| GM8OEG | — | — | 58 | 58 |
| G6DDK | — | 4 | 53 | 57 |
| G4CXL | — | 4 | 52 | 56 |
| G8LXY | — | 20 | 34 | 54 |
| G8XQS | — | — | 47 | 47 |
| G4LDY | — | 3 | 41 | 44 |
| G8MBI | — | 1 | 40 | 40 |
| G4NRG | — | 1 | 36 | 37 |

Starting Date January 1, 1975. No satellite or repeater QSOs.

requirement can be advised. So far, such information has not been forthcoming. However, at maximum slant range of nearly 42,000kms., it would seem that considerable *e.r.p.* at 1,269 MHz may be necessary to gain access, and over 20 dB. of aerial gain at 436 MHz for reception would seem to be required.

Six Metres

There was a meeting of the U.K. Six Metre Group during the recent VHF Convention. Ken Ellis, G5KW, was elected Chairman, Steve Richardson, G4JCC, Secretary, and Peter Turner, G4JIL, Treasurer. It was decided that the Committee should include one member from G, GI, GM and GW and Harold Rose, G4JLH, and Chris Tran, GM3WOJ, were elected, leaving GI and GW vacant. The aims of the group, set out in the inaugural notice of 2.11.81, were ratified. Suggestions that the group seek to negotiate directly with the Home Office to get permission to operate on 50 MHz were rejected by the Chairman as the RRGB has been doing this for some time.

John Baker, GW3MHW, writes that early February saw the end of the transatlantic season on 6m. The ZS beacons have been copied on Feb. 16 and BBC TV sound on 48.25 MHz was received the same day by ZS6PW. On the 19, TV sound on 53.25 MHz was copied, which Fred reckoned had never happened before. The ZS6DN beacon is now on 50.055 MHz. John uses an old *Halicrafters* S-36A with the "acorn" RF valves replaced by a 3N201 and 2N3819. His first 10/6m. crossband to ZS was on Mar. 11 this year, with ZS6LN. G4BPY heard the beacon ZS1STB on Mar. 10. The ZS5VHF beacon on 50.080 MHz is on all day and belongs to ZS5TR. On Apr. 1, between 1735 and 1755, John heard ZS6DN, ZS3E, ZS6AXO, ZS6PW and ZS6BMS (ex-G3HBW) who had rather spongy keying. ZS6BT was heard working G4GLT crossband. On Apr. 2, ZS6DN was heard briefly and weakly at 1628. ZD7BW is now on 6m. and has worked several JA stations.

Four Metres

Syd Harden, G2AXI, added another four counties in the month of March, best DX being GM3WOJ (D & G) on the 28th. Syd now leads the annual table overall, and on 4m. Arthur Breese, GD2HDZ, added EI6DT (Dublin) for country No. 4 this year, plus five more U.K. counties, including G3VIP (Humberside) and G4FRO (Avon).

GW3MHW had his regular QSOs on the band in March and took advantage of the *Cumulatives* on Mar. 14 and 28th to work some new ones, such as G4KPZ and G4EQR. G8VN is back again with a new transverter. John asks that operators spread out more, since the band is quite wide. He reckons he missed some stations due to this crowding in the contest sessions. He is having a bit of a rebuild of his 4m. Tx at the XM60d QTH and gets a lot of satisfaction building gear using old parts and PSU components.

The Angus beacon, GB3ANG, is now operational on 70.06 MHz running 25w. to a 4-ele. *Yagi* beaming south and a 2-ele. beaming north-east. Chris Tran gave this

ANNUAL VHF/UHF TABLE

January to December 1982

| Station | FOUR METRES | | TWO METRES | | 70 CENTIMETRES | | 23 CENTIMETRES | | TOTAL Points |
|---------|-------------|-----------|------------|-----------|----------------|-----------|----------------|-----------|--------------|
| | Counties | Countries | Counties | Countries | Counties | Countries | Counties | Countries | |
| G2AXI | 33 | 4 | 60 | 12 | 38 | 9 | <i>10</i> | <i>2</i> | 156 |
| G4JZF | — | — | 65 | 14 | 43 | 7 | — | — | 129 |
| G8RZP | — | — | 64 | 14 | 35 | 10 | — | — | 123 |
| G8RZO | — | — | 64 | 14 | 30 | 10 | — | — | 118 |
| GD2HDZ | 29 | 4 | 31 | 9 | 20 | 4 | <i>2</i> | <i>1</i> | 97 |
| G6ADC | — | — | 51 | 11 | 29 | 3 | — | — | 94 |
| G8TFI | — | — | 39 | 9 | 37 | 7 | — | — | 92 |
| G4DEZ | — | — | 65 | 25 | — | — | — | — | 90 |
| G8VRJ | — | — | 37 | 10 | 21 | 3 | 8 | 3 | 84 |
| G3FIJ | 11 | 1 | 39 | 11 | 17 | 3 | — | — | 82 |
| G8VR | — | — | 44 | 22 | 10 | 1 | — | — | 77 |
| G3BW | — | — | 40 | 14 | 14 | 3 | 2 | 2 | 75 |
| G3FPK | — | — | 61 | 13 | — | — | — | — | 74 |
| G8WUU | — | — | 41 | 10 | 17 | 4 | — | — | 72 |
| G8LFB | — | — | 57 | 12 | — | — | — | — | 69 |
| G6ECM | — | — | 54 | 14 | — | — | — | — | 68 |
| G4KLX | — | — | 49 | 14 | 3 | 1 | — | — | 67 |
| G8VFX | — | — | 47 | 12 | — | — | — | — | 59 |
| G3PBV | 1 | 1 | 29 | 8 | 14 | 3 | — | — | 56 |
| G4MUT | — | — | 33 | 9 | 12 | 1 | — | — | 55 |
| GM8OEG* | — | — | 44 | 11 | — | — | — | — | 55 |
| G8KAX | — | — | 23 | 4 | 13 | 2 | 8 | 1 | 51 |
| GM4CXP | — | — | 30 | 11 | 1 | 1 | — | — | 43 |
| GW3CCF | — | — | 32 | 4 | 6 | 1 | — | — | 43 |
| G6AJA | — | — | 38 | 5 | — | — | — | — | 43 |
| G6CGY | — | — | 32 | 10 | — | — | — | — | 42 |
| G8XHL | — | — | 25 | 8 | 4 | 2 | — | — | 39 |
| GM4COK | — | — | 21 | 15 | 1 | 1 | — | — | 38 |
| GW4HBK | 18 | 3 | 11 | 5 | — | — | — | — | 37 |
| G4FKI | 17 | 1 | 3 | 2 | 9 | 1 | — | — | 33 |
| G8LXY | — | — | 18 | 1 | 12 | 2 | — | — | 33 |
| G4NRG | — | — | 16 | 10 | — | — | — | — | 26 |
| G6FSH | — | — | 13 | 3 | — | — | — | — | 16 |

Three bands only count for points. Non-scoring figures in italics

news to Paul Turner, G4IJE, during an *auroral* SSB QSO on Apr. 10.

Two Metres

G2AXI's March and early April operation on 2m. has paid off by providing another 23 counties and three countries. Syd burned the midnight oil in the Mar. 1/2 *Aurora*, to good effect, and also found the *Ar* on Apr. 2, good in the late afternoon. Frank Howe, G3FIJ, (Essex) collected most of his score in the March 6/7 contest weekend. Clive Penna, G3POI, now has his monster 160-ele. *Cushcraft* colinear array in operation with full *az-el.* control for *E-M-E* work. During the contest on Apr. 3/4, one 20-ele. group was disconnected. Even so he managed to work DK4TG, F6BSJ, LA1TN, OE1XUA, UA1ZCL, UB5JIN, SM2GGF, SM4GGC, SM7BAE, K1WHS, N4PZ and WA1JXN/7. The event was somewhat marred by an *Aurora* and Clive worked SM5BEI (JU) on the 3rd. In the extensive *Ar* on Apr. 10, G3POI worked 12 U stations and 3 OHs for best DX, and reports that Bob McHenry, G3NSM (Oxon) who has an 80-ele. colinear, worked 8 U stations.

Keith Haynes, G3WRO, will be operating —/MM off the Essex coast on May 29/30, using a multimode transceiver but will probably stay in AL square. Doug Parker, G4DZU, (Leeds) was on in the *E-M-E* contest and worked YV5ZZ so completing WAC on 2m. He worked ten stations and found conditions good on the Sunday. He has four 19-ele. *Yagi*s providing about 18 dBd. gain.

During March and up to Apr. 3, Paul Turner, G4IJE, (Essex) had 25 MS skeds

of which 8 were completed. These were OZ1FDH (GP) on the 7th, DL1MF (GH) on the 12th, LA6CU (CU) on the 14th at the 13th attempt totalling 28½ hours! OZ1CLL (GP) on the 17th, DJ5MS (GI) on the 20th, SM3UL (IV) on the 23rd, OE6WIG (HG) on the 28th, and DJ5MS again on Apr. 3. He heard a number of stations in the *E-M-E* event including SM2GGF, K17D and G3POI's echoes.

Graham Taylor, G4JZF, (Staffs.) has been hard at it to achieve second place in the annual table. In the March 6/7 contest conditions were variable with F, ON and PA stations contacted from time to time, F1FHI (ZH) being best DX. The Mar. 24/25 tropo. lift only produced DJ, ON PA, and in the *Ar* on Apr. 2, only GI and GM were worked. In the event the next day, only GMs were copied at QTFs between 350° and 20° and GM8ESB/P (XR) gave square No. 120.

Jonathan Naylor, G4KLX, (Derbys.) has been selling, borrowing and buying equipment lately. He was impressed enough with a borrowed *Yaesu* FT-290R in the March contest that he later bought one and a 100w. amplifier. He plans to be in Holland and Luxembourg in the first week in June so may be using G4KLX/PA and —/LX. Jon Stow, G4MCU, (Essex) took advantage of the Mar. 24/25 lift when the band was well populated with Danish stations. He found someone in the elusive FN square, DD0HR, for a new one, and also got DL2LAA (FO), both on SSB. On the 25th, nothing further east than the E squares was heard. The *Ar* on Apr. 3 brought GM8ESB/P (XR) at QTF 20° for another

new square, and later on, SM4AIQ (HT) at 10°.

Congratulations to Roger Greengrass, ex-G6ANS, now G4NRG, (Essex) whose best DX on Mar. 24 was OZ5QF (EP) a new square and country. Adrian Chamberlain, G6ADC, (Coventry) was in on the Mar. 2 *Ar* and found two new squares thanks to GM5FM (WR) and GM6CFN (XR). However, he went to bed early with a cold on Mar. 1, so missed that *Ar*. He has been operating through RS-8 from time to time and hopes for better 10m. reception when he puts up a *Mini-beam*. Furthest west so far is W4AUZ in Kentucky via RS-8.

Bob Percival, G6CGY, (Cleveland) enters the annual table. He uses an FT-290R with Tono 40w. amplifier and 10-ele. long *Yagi* at 40ft. Mick Cuckoo, G6ECM, (Kent) had a couple of *Ar* QSOs at the beginning of March. On the 24th, he worked OZ1DPR and OZ5QF (EP), DH3LAH (EO) and DF2HC (FN) and 21 other Germans in EK, EL and EM squares, mainly. On the 25th, the beacon in EO square, DL0PR, was S9, but only OZ1DPR (EP) was worked in Scandinavia. However, between 1730 and 0230 on the 26th, Mick worked 62 PAs, 41 ONs and 47 DLs.

Welcome to another Coventry reader Garry Clark, G6FSH, who started up in October last using a secondhand *Mizuho* SB2M. He now has a 10w. amplifier and a 5-ele. *Yagi* on the balcony 80ft. *a.g.l.* On Mar. 27, he managed to work GU8JKS and GW4FPS for new prefixes. John Lemay, G8KAX, (Essex) was out —/P in the Barking Club's contest on Mar. 28 and made 128 QSOs worth 5,069 pts.

Jackie, G8RZO, and John, G8RZP, Brakespear, (Kent) were on for the *Ar*'s on Mar. 1 and 2. Their successes included a couple of OZs, GI4GVS in Antrim, GM8EOG (Tayside), GM6BEW (Strathclyde), DD0HR (FN), GM5FM, (W. Isles) and GM3WCS (YQ). Jackie advises slow and clear speech for SSB working via *Ar*. In the Mar. 6/7 contest, 531 QSOs were made for an average of 9.6 pts. *per* QSO. G8RZO worked a number of PAs on Mar. 25, and GM4CXM and GM8TSI (Lothian) in the Apr. 1 *Ar*. Neil Clarke, G8VFF, (W. Yorks.) worked into G, GM and PA on Mar. 1 in the *Ar* and mentions good, southerly, signals in the Mar. 24-26 period. He has just acquired a *Sinclair ZX-81* computer and is busy with writing amateur radio programs.

John Cooper, G8WUU, (Essex) was well sited for the Mar. 23-25 tropo. to the east and northeast. OZs and DLs in EP, EO and FO were worked and several new squares accrued. Congratulations now to Bob Lane, ex-G8VLQ, now G4NQX in Doncaster, and Nick Try, ex-G8WAQ,

now G4NWT — his initials — from Bucks. Welcome to Anthony Prior, G8XHL, (Essex) who enters the annual table for the first time. He uses an *Icom* IC-251E and a 9-ele. crossed *Yagi* at 30ft. with two feeders and switching for different polarisations. A bigger aerial is contemplated.

GD2HDZ seems to have added quite a few for the table in the Mar. 6/7 contest and also on Mar. 28 during the Barking event. Geoff Brown, GJ4ICD, found the contest hard going and made 377 contacts, best DX being a PA in DM66 at over 700 kms. Derrick Dance, GM4CXP (Borders) can be found on CW on 144.05 MHz. He was on for the *Ar*'s of Apr. 2 and 3. His extensive list of stations worked include DL, F, G, GM, LA, OH, OZ, PA and SM, all at QTFs between 40° and 50°. Squares were from YL to LT and BI to EU, much of it little heard down south.

Alex Scott, GM8BDX, (Borders) runs a *Trio* TS-770E and *Nag* amplifier with a 19-ele. *Cushcraft Yagi* at 42ft. So far this year he has worked 32 squares. Walt Davidson, GW3NYY, (Swansea) did not enjoy the tropo. lift in March, but the highlight of the month was an *E-M-E* QSO on the 9th with K1WHS, completed in 30 mins. with o/o reports. On the *Ar* front, Walt managed SM4IVE (HT), and various GMs, plus PAs in CL and CM on Mar. 1 on CW. MS mode CW saw completed QSOs with OK1OA (HK) on Mar. 7, and SM3UL (IV) and OK1AFN (IK) on the 21st. Nothing heard from UA3LBO (PO) on the 21st, though. A number of satellite QSOs — 2/10m. — have been made. RS-5 came on on Mar. 14 to supplement RS-6 and RS-8. SSB was used with OX3WS, and CW with W0ZWW (Minn.), VE5XU, VP9IB, GD5UG, UL7GBD, UA9FAD and UA9FDZ. Walt heard a 2m. repeater testing in the Swansea area on 145.80 MHz, without a proper call-sign, claiming to be a "Raynet" thing authorised by the Home Office and the RSGB.

Seventy Centimetres

G2AXI has been quite active during March, accumulating a respectable total in the table. G4JZF's best DX in the March contest was PE0MAR/P in rather quiet conditions. On the 25th, Graham got his 40th square, XN, thanks to GW8UZL, who told him that GW2HIY and GW8YUJ are also in XN. The Apr. 4 contest was "... an uphill struggle ..." with only 65 QSOs. In the good tropo. on Mar. 24, G4MCU was copying the beacon OZ2ALS (EP79c) at S3 but there were no Danish stations to be heard. However, Jon did manage DK3UC (FN). The next day, PE1GIF (CL) was S7 with 240 *milliwatts* and OZ9FW (GP) was very strong for half an hour from 2235.

G4NRG is now QRV on the band but did not mention his gear. G6ADC mentions a Coventry net on Sundays from 2100 local time on SU8, with G3AQ, G8's KCP, MWR and ZPU to which all are welcome to join. G8RZO and 'RZP thought the contest conditions bad and only made 34 QSOs in 3½ hours. On Mar. 25, John used FM to work some PAs, and SSB for more and some DLs. Their visitor on Apr. 4 for the Contest was G8TFI, Chris Easton, and they put up four *H.A.G.* aeriels and worked 192 stations, including FN and DH squares.

G8WUU found things quite lively on Mar. 24 from 2028 and, with his 10w., worked a number of QRP PAs with good reports. At 0100 on the 25th, John got DF3XU (FN31a) who runs 1 kW. to four 21-ele. beams. G8XHL is on the band, using the *IC-251E* and an *MM* transverter. The aerial is only a home made folded colinear at 20ft. but a *Yagi* is contemplated. In the March contest, GJ4ICD worked G4CLA/P in AN for square no. 97 and best DX from 21 QSOs. GM8BDX is on the band, too, with the *TS-770E* and *MM* 50w. amplifier to a 48-ele. *Multibeam* at 48ft. Alex is QRV most evenings from 7 to 8 p.m. We referred to Dave Lewis, GW4HBK, (Gwent) as a new reader last month, but he says he has been a *Magazine* addict for ten years. Sorry! John Quarmby moved a short distance at the end of last year and no external aeriels were up at G3XDY (Suffolk) when he wrote. However, on Mar. 24, DC3LC (FO) was worked using an 8-ele. *Yagi* precariously balanced on the first floor window sill. Other QSOs included DL3UZ (FN) and stations in EN and DN. Only nearer PAs were heard the next day.

Twenty-three Centimetres

G2AXI is still only running 1½w. but Syd's amplifier is nearly ready. Even so, he is getting around quite well. Alan Owen, G4HMF, (Ipswich) hopes to be on the band soon. G8WUU is still receive only but copied good signals in the March lift from DF9LM (FO) who runs 200w. to a 2m. dish, PA0DKO (DN), and PA2GBK (CL). G8KAX was on in the Apr. 4 contest in poor conditions, making 14 contacts.

Deadlines

Bit of a squeeze this time. All your news, claims, etc., for June by May 5 please, and for the next offering, by June 2 to;— "VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. 73 de G3FPK.

MODIFYING THE KW-2000A TRANSCEIVER FOR 10 MHz

P. C. COLE, G3JFS

THE modifications to be described were devised as a cheap and easy way to convert the station KW-2000A transceiver so that it could be used on the new 10 MHz band. Few circuit changes are needed to effect the conversion and as these are in no way permanent the equipment may be reverted to its original state quite easily if it is ever required to do so. This is an important consideration as even equipment as old as the KW-2000A has a considerable resale or trade-in value which could be greatly reduced by the presence of non-standard modifications.

suitable crystal in the HF oscillator and to retune the transmitter and receiver RF circuits as necessary. Thus with the tuning range possible with the 3 x 260 pF variable capacitor used for the pre-selector tuning it seemed that the 7.0-7.2 MHz range would be usable on 10 MHz by changing crystal X4 and retuning the preselector and PA panel controls.

Unfortunately, although there was enough latitude in the 7.0-7.2 MHz range preselector tuning to cover the 10 MHz band, this idea did not work too well in practice because of problems with PA instability and poor tracking of the RF tuned circuits. This was largely due to the unorthodox neutralising circuit used in the KW-2000A which, as shown in Fig. 2, is very frequency conscious as it is dependent on the setting of C40c.

The RF tuned circuit arrangements are also somewhat unusual and the operating principle of these can best be understood by considering the Rx input tuned circuits as shown in Fig. 3. For operation on the 3.5 MHz band the secondary of the input

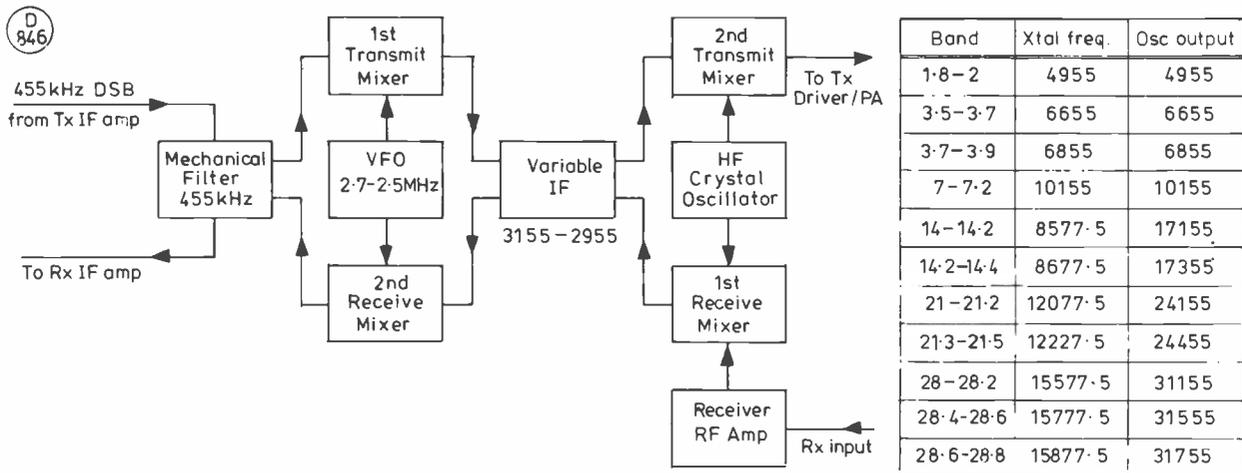


Fig.1 BLOCK DIAGRAM SHOWING THE FREQUENCY CONVERSIONS OF THE KW2000A

The KW-2000A

Fig. 1 is a simplified block diagram showing the essentials of the frequency conversion process used in the KW-2000A. The transceiver uses double conversion circuitry based on a fixed IF of 455 kHz and a variable IF of 3155-2955 kHz, to give coverage of eleven 200 kHz wide sections of the various HF amateur bands as selected by the bandswitch. Basically, the only changes needed to alter the coverage of any of these 200 kHz wide bands are to fit a

transformer L1 is tuned by the variable capacitor C40a. On all the higher frequency bands L1 is still used as an input transformer but the resonant frequency of its secondary is increased by shunting L1/C40a with a smaller inductor selected from the series connected coils L5-L2. For Top Band C143 is switched into circuit and this lowers the resonant frequency.

Modifications

After considering various possibilities it was decided to modify the existing 3.7-3.9 MHz range by fitting a new crystal and new coils suitable for 10 MHz. This range was chosen because it involved the least amount of disturbance to the transceiver wiring. Also 3.7-3.9 MHz operation would still be possible by fitting the 6855 kHz HF oscillator crystal in the X2 position.

The required output frequency for the HF conversion oscillator is 3155 kHz above the low frequency end of the band to be covered (or 2955 kHz above the HF end). A tuning range of 10-10.2 MHz, requiring a crystal of 13.155 MHz, would be a good choice as it fits the dial calibration and also allows reception of the standard frequency transmissions on 10.0 MHz. However because the new band covers only 50 kHz from 10.1-10.15 MHz, crystals of

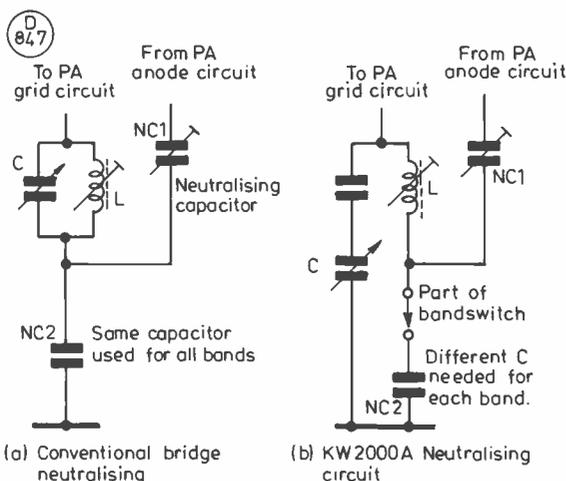
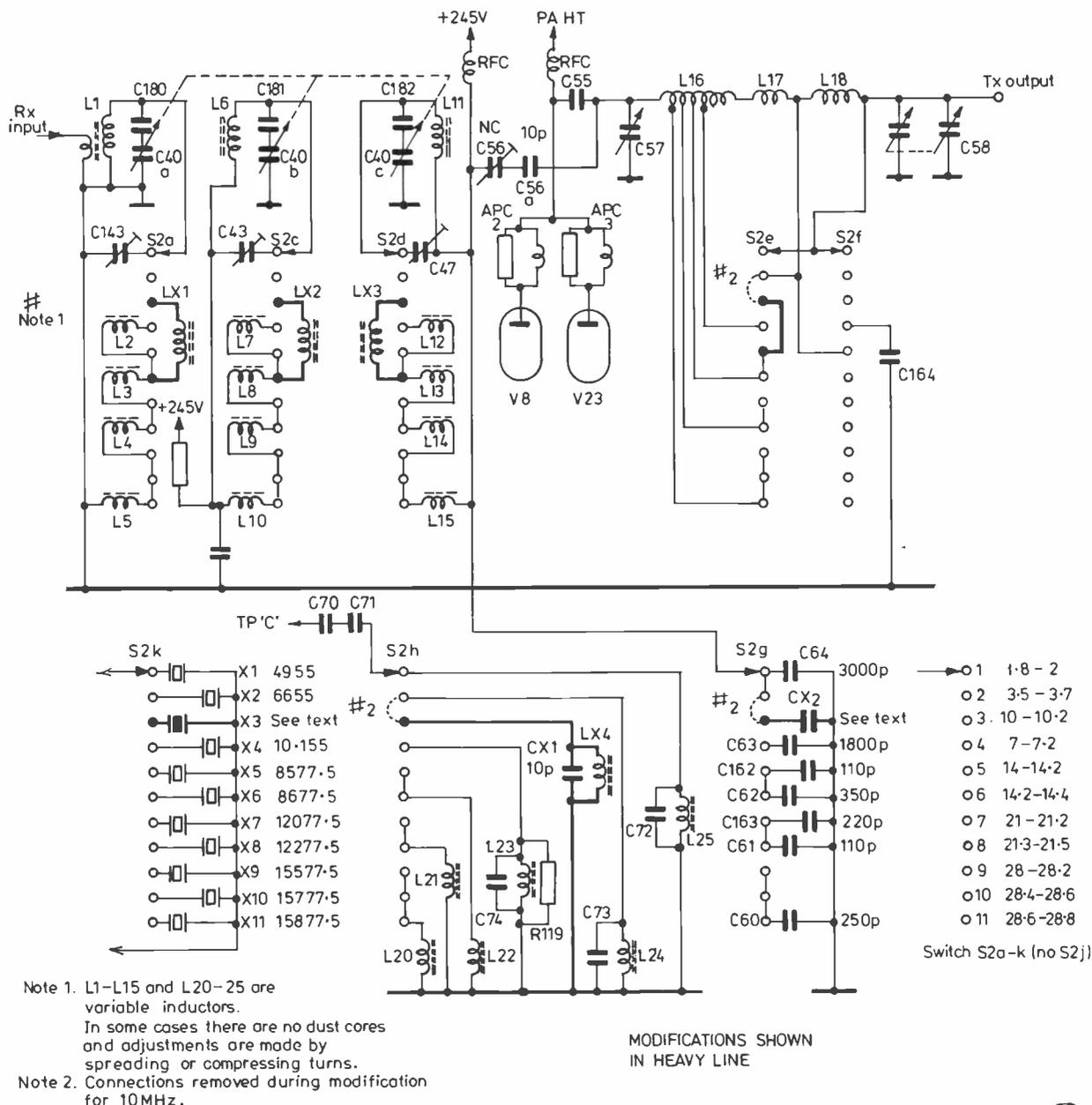


Fig.2 Comparison of a conventional bridge neutralising circuit with the KW2000A system.

Fig. 2(a). Neutralising feedback is determined by the potential divider action of Nc1 and Nc2. The adjustment holds over a wide frequency range until stray capacities and/or lead inductance upset the balance. **Fig. 2(b).** Because one side of the tuning capacitor is earthed Nc2 is shunted by L in series with C so that neutralising feedback is affected by the tuned circuit adjustments. In practice, it has been found impossible to maintain really accurate neutralising over the 28 MHz band with this circuit.



Note 1. L1-L15 and L20-25 are variable inductors. In some cases there are no dust cores and adjustments are made by spreading or compressing turns.
 Note 2. Connections removed during modification for 10 MHz.

MODIFICATIONS SHOWN IN HEAVY LINE

Fig.3 CIRCUIT DIAGRAM SHOWING THE ESSENTIAL DETAILS OF THE KW2000A RF TUNED CIRCUITS



Component values and circuit references of existing components are as in the KW-2000A handbook. *New components:* Cx1 = 10 pF ceramic or silver mica. Cx2 = 1500 pF poly or similar, but see text. Lx1 to Lx4 = 10 turns of 20 s.w.g. enamel covered wire close-wound on a 7mm. dia. dust cored former; these coils, like the existing ones, are supported on their leads and should be positioned so that they do not short to anything when the covers are replaced. X3 = 13.105 - 13.225 MHz crystal (if ordering a crystal it is recommended that a crystal of 13.155 MHz, 30 pF load, parallel resonance is used).

13.105-13.225 MHz can be used and it is quite possible that a mature junk box will yield a suitable item. Odd value crystals of course have the disadvantage of equally odd dial calibration but this is only a minor inconvenience as it is easy enough to make a small calibration chart on a piece of graph paper.

All of the circuit changes required are shown in Fig. 3 and it is recommended that these are done in a logical sequence, such as the step-by-step procedure below.

Procedure

1. Remove covers and check transceiver alignment in accordance with the handbook instructions. Give particular attention to the neutralising procedure.
2. Disconnect mains power.

3. Replace the 6855 kHz HF conversion crystal X3 with a crystal suitable for 10 MHz operation (13.105-13.225 MHz).
4. Place the transceiver upside down on the workbench.
5. Identify switch wafer S2h which is the second wafer from the front panel. Set bandswitch to the 3.7 MHz position and identify contact number 3 of S2h — the one now engaged with the moving contact.
6. Remove the wire link between contacts 2 and 3 of S2h.
7. Connect new coil Lx4 and capacitor Cx1, 10 pF, between S2h contact 3 and the earth busbar.
8. Switch on power to the transceiver and with a wavemeter or monitor receiver check that the crystal is oscillating at the proper frequency.
9. Adjust the core of Lx4 for maximum output as measured on

a VTVM connected to test point 'C' (see Fig. 3). The handbook recommends a reading of 1.5-2.0 volts at this point but it does not seem to be at all critical. If necessary reduce the level with a damping resistor across Lx4.

10. Disconnect mains power.
11. Identify switch S2a, the third wafer from the front panel and connect the new coil Lx1 between contacts 3 and 6 of S2a.
12. Identify switch S2c, the fifth wafer from the front panel and connect the new coil Lx2 between contacts 3 and 6 of S2c.
13. Identify switch S2d, the sixth wafer from the front panel and connect the new coil Lx3 between contacts 3 and 6 of S2d.
14. Identify switch S2e, the wafer nearest to the rear panel. Remove the link between contacts 2 and 3 of S2e and transfer the red-sleeved black lead from pin 3 to pin 2. Link contacts 3 and 5 of S2e.
15. Identify switch S2g, the seventh wafer from the front panel. Remove the link between contacts 2 and 3 of S2g. Connect temporarily (because it may need to be changed) new capacitor Cx2, 1500 pF, between contact 3 and earth.
16. The wiring changes are now complete. The HF crystal oscillator was checked and aligned in steps 8 and 9 so all that remains to be done is to align the transmitter and receiver.

Receiver Alignment

Apply mains power and allow the transceiver to warm up. Set the preselector pointer so that it is midway between the 7.0 and 14 MHz calibration points and adjust the cores of Lx1, Lx2 for maximum receiver output at a frequency of about 10.1 MHz. Ideally a signal generator should be used for this adjustment but it is also possible to use the built-in crystal calibrator, on-the-air signals, or noise.

Transmitter Alignment

Connect the transmitter *via* an SWR/power meter to a 50 or 80 ohm dummy load. Keep the preselector tuning as above, switch function switch to TUNE and slowly advance the MIC GAIN control until the PA current starts to increase. Adjust Lx3 core to peak the PA current, using the mic. gain to keep this current below 59 mA.

PA Neutralising

Adjust the mic. gain for an off-resonance current of 130 mA and load up the transmitter for a cathode current of 120 mA at dip. Check that maximum power output coincides with the PA dip. If it doesn't, move the PA TUNE condenser either side of the dip and note which side of dip the output increases. If it is on the LF side then *increase* the value of capacitor Cx2 and *vice versa*, repeating the procedure as necessary until maximum output is obtained at the dip.

This method of making the neutralising adjustment may seem a bit inconvenient but it was used because there is not really enough space in which to fit a trimmer capacitor. Fortunately the capacitor value is not too critical and accurate neutralising can be achieved quite quickly if a good selection of capacitors is available. It is of course possible to use a capacitor which is too small in value and pad it up with additional capacitors.

Once the neutralising is correctly adjusted the transceiver is ready for use on 10 MHz simply by connecting a suitable aerial and operating in the normal manner. It should be noted that to avoid having to make a new tapping on the PA coil the 14 MHz winding is used for 10 MHz operation. This has been found to be quite satisfactory in practice and control settings when feeding an 80-ohm load are: PA TUNE — near the HF end of the 40 metre calibration; PA LOAD — 6.

Results

During the first day of operation on 10 MHz contacts were made with twelve different European countries, mostly with 599 reports both ways. Several VK/ZL stations were heard but apart from an incomplete contact with a VK3 the competition was too much for the signal put out by the writer's short indoor dipole. However the results achieved are sufficient proof that the modified rig works and they also give a good indication of the potential of the new band.

The modifications should be equally applicable to the KW-2000 which was the forerunner of the 'A' model and which had a single 6146 PA stage only, but the writer cannot comment on the later models as he has no knowledge of their inner workings.

• • • **SWL** • • •

SHORT WAVE LISTENER FEATURE

By Justin Cooper

HELLO again! We've quite a large clip this time, with some 'duplicate' reports — the first letters just not arriving in time for the last column.

New Names

First off we have a letter from *M. Toms (Barking)* who was a regular years ago but dropped out for various reasons. He has now come back to the game again and indeed is well into it; he has a FT-101EE from the estate of the late G3BBU, and his previous receivers have gone away to make room for the nice new FR-101. Certainly HPX 'knack' is still there, as a listen on Ten during the ARRL contest showed. To log the first 200 prefixes on that band took just 3 hours 40 minutes; the final tally after five hours being 218, in 66 countries.

Next we come to *H. Blackburn (Edinburgh)* who has become interested in us by way of a Panasonic DR-49 receiver bought

from a friend. Horace has two queries, of which the first is "where's the local radio club?" — and not too hard to answer. There are two: the Edinburgh Radio Club and the Edinburgh Repeater Group (which we guess also acts as a club in itself). Neither have updated very recently, but for the former you could try a phone call to GM3RFQ on 668-1749 for the details of the sessions at the City Observatory, Calton Hill; for details of the latter club, ring GM3GBX on 447-2611. The second question is that Horace wants to know simply "what is HPX?" A quick answer would be to call it an activity in which you aim your listening to the hearing of amateur stations, and record all the prefixes heard; when you get 200 — with no duplicates — then you can have an entry at the bottom of the Annual Ladder. Rules for all this were last printed in the March issue. You'll soon get the hang of it, and it does add a little competitive spice to listening.

Finally, Horace doesn't get about too well through arthritis, so

how about someone organising to get him to a club meeting? He is at 22A Gardners Crescent, Edinburgh 3, and his phone number is 228-2025.

Our next newcomer has been an SWL for 54 years, having started back in 1928 with a single Mullard LF valve, a 60-volt Siemens HT Battery and an Exide accumulator for heating the valve — not forgetting the good old Brown's high-impedance headphones. Then at the end of the last war, there was a multi-band Murphy BC set, which still works happily alongside the present FRG-7, and the indoor aerial which has always been used. Ronald also tunes the BC DX in, as he is retired now and 76; but he is a keen member of the North Bristol club. We are of course talking about *Ronald Gardner of Bristol, Hengrove*.

Another re-appearance of a familiar fist signals that we are reading the letter from *A. Roberts (Kidderminster)* who has been away from the hobby quite a while. He left SWL with a licence as we recall, and seems to have dropped it all until he came back to SWL-ing a year or so ago. A 'starter' entry of 923 on CW in the HPX about sums it up!

Technical

J. Worthing (Shrewsbury) is suffering from a small problem; if he is on 28 MHz, a strong signal on 28.455 is also received, and similarly on 21.455 MHz appearing at 21 MHz. Irritating! Since the IF is itself 455 kHz, an 'image' or 'second channel' would appear 910 kHz higher than the wanted signal, which doesn't quite marry up with the data given. What we really want to know before a sensible comment can be offered is whether this interference pattern is *tunable* or not. Assuming a double-conversion superhet, one has to look for possible mixing products due to the signal, the first and second local oscillators and up to at least their fifth harmonics, all of which are tunable, or some way a signal can get into an IF strip direct — an example of the latter was the pick-up on the crystal gate phasing control at 1.6 MHz in the old Eddystone S.640. More data please!

Now we go to *Ruddington*, and *E. B. Ward*; he was one of those old J. C. missed at Donington last year, but he obviously made a hit with Ye Editor — who sold him an ARRL "Antenna Book" which he reckoned to be as good as any. Which puts reader Ward, the Editor and your scribe all in agreement for once! On a different angle, Barry has observed that quite a lot of older buildings have still got *flagpoles*; so he is out and about trying to buy one. Provided it marries up with the definition of a flagpole, it is one of very few things you can put up without planning permission, provided you can keep it nicely white-painted and nautical. Having got one, apply a bit of lateral thinking, and — presto! — a better aerial!

Turning technical again, and still with Barry Ward, he wonders about the FRG-7 and its selectivity. Yes, it is broad, which is why so many amateur-band users have attacked it with a view to improving the IF strip. Now, selectivity, ideally, should be right at the aerial, so that interfering signals never get past the filter to the receiver. That being said, one has to admit that selectivity in the *audio* stages does help a lot, at least on CW; but it can only do so when the user realises that it's too late to solve problems caused by overload in earlier stages. The implication is very clear that in operating with an audio filter providing the selectivity, *everything* must be done to ensure the filter gets its chance; up AF gain, down RF/IF gain as far as is possible. We suggest something akin to the old MFJ CWF-2 800 Hz filter might answer.

S. Foster (Lincoln) has been saying for as many years as one can recall that he isn't going to make a meal of the WPX contest. But every year we recall the letter that follows, telling us how he got on — these big 48 hour affairs certainly turn out the rare ones!

Our next entry comes in from *R. Everitt (Huntingdon)* whose first try just missed the bus last time around, through no fault of his own; the second made it with a bit to spare. Richard uses one of the HF5 verticals, and finds it is less prone to pick up TV harmonics than the old 66-foot wire. His main interest appears to be operating from 0630-0715 each morning, plus Friday and

ANNUAL HPX LADDER

Starting date, January 1, 1982

| SWL | PREFIXES | T. Kirby (Cheltenham) | 274 |
|-------------------------|----------|-------------------------|-----|
| R. Everitt (Bluntisham) | 434 | C. N. Woods (London W3) | 267 |
| D. McKinney (Portadown) | 392 | R. Wooden (Staines) | 236 |

200 Prefixes to have been heard since January 1, 1982 for an entry to be made, in accordance with HPX Rules, p. 28 March issue. At score 500 transfer to the All-Time list is automatic.

Saturday evenings, with a Trio 9R-59DS. Welcome aboard, Richard.

N. E. Jennings (Rye) mentions this question of headphones again. If one can wear them, they are far and away the best way to listen, if only because of the local noises they attenuate. On a different tack, Norman was another of the poor souls who missed the bus last time; but it seems to have given him the time for a rehash of his records as reflected in the Tables.

J. M. Dunnett (Prestatyn) had his TV blow up on him, so he replaced the continental-made one with a British one, the end result being a surplus of line-timebase harmonics as compared with the foreign set. There must be a moral somewhere! On the prefix front, 1A0KM is the call of a station of the Sovereign Order of Malta, which is an independent 'country' having accredited representatives in many countries.

K. Cooke (Cardiff, Lakeside) says he would like to know how many prefixes there are possible. A Good Question! One would have to define a starting date, as early stations had no prefix — which didn't matter until they first worked out of their home country, when they informally added a prefix of nationality. Again one would have to take into account the oddities spawned in the first years after the resumption in 1946, even if one chose to disregard the 'undercover' chaps from countries who had still not released licenses. And of course most of the Third World countries were colonies and so were using different prefixes from now. Yet another point is that one would have to consider countries that in theory have amateur radio and in practice do not — China and Albania spring to mind immediately. A guess would put the 'possible' as being around the 3500 mark.

We turn now to the YLs, with *Mrs. R. Smith (Nuneaton)* leading the van. She has a couple of oddities in M4GM and O3COQ, neither of which sound to be very likely — does anyone know more of these two?

Mrs T. Parry (Blackpool) seems to have settled down after the trauma of moving home, and she has the receiver back at work again; Ws on Top Band SSB are real DX, and she has a similar collection on all bands, though she missed the 3V8 on Eighty and Forty.

Mrs. J. Charles (Colchester) seems to have missed little that was to be heard, and is now making the steady rise from the bottom of the listings.

Over to D. Casson (Earley) who reckons he is now all but up to Morse Test standard now, and hopes he will have it passed before too long — we hope he is successful and that he then goes on to a G4 licence.

P. Lincoln (Aldershot) is keen on SS/TV and seems to be sweeping them in from various countries; he also has RTTY and reckons the XJK Antenna we described back in the June/July, 1979, issue outperforms his dipole, vertical and LW aerials most of the time.

Several people remarked that it was nice to find warm enough weather to be able to get out into the shack after the cold snap of winter; *Bernard Hughes of Worcester* certainly found it so, and as a result his score mounts again.

Studying for the RAE has kept *M. Law (Chesterfield)* away from the receiver most of the time, and now he is also making a start at learning Morse; we hope that after all the delays Mike is at last going to be able to get his 'ticket'.

HPX LADDER (All Time Post War)

| SWL | PREFIXES | | |
|-------------------------------|----------|-------------------------------|------|
| PHONE ONLY | | | |
| B. Hughes (Worcester) | 2475 | N. E. Jennings (Rye) | 785 |
| S. Foster (Lincoln) | 2193 | B. L. Henderson (Salisbury) | 690 |
| Mrs. R. Smith (Nuneaton) | 2036 | J. Dunnett (Prestatyn) | 656 |
| E. W. Robinson | | Mrs. J. Charles (Colchester) | 648 |
| (Bury St. Edmunds) | 2005 | J. Hayes (London N9) | 628 |
| J. Worthing (Shrewsbury) | 1582 | K. Cooke (Cardiff) | 597 |
| H. M. Graham (Chesham) | 1450 | P. Lincoln (Aldershot) | 518 |
| G. W. Raven (London SE13) | 1408 | | |
| M. Cuckoo (Herne Bay) | 1398 | CW ONLY | |
| M. Rodgers (Harwood) | 1351 | D. W. Wadell (Herne Bay) | 1237 |
| M. Toms (Barkingside) | 1337 | J. Goodrick (Bognor Regis) | 1100 |
| M. Law (Chesterfield) | 1206 | E. B. Ward (Ruddington) | 977 |
| N. Askew (Coventry) | 1187 | A. F. Roberts (Kidderminster) | 923 |
| J. Singleton (Skelmersdale) | 1127 | J. Dunnett (Prestatyn) | 885 |
| J. Doughty (Bloxwich) | 1069 | N. I. Neame (Lancing) | 508 |
| D. C. Casson (Reading) | 1054 | A. Rowland (Bude) | 287 |
| D. J. S. Williams (Wednesday) | 975 | D. J. S. Williams (Romsey) | 227 |
| B. A. Payne (Leeds 18) | 970 | | |
| L. Stockwell (Grays) | 952 | RTTY ONLY | |
| Mrs. T. Parry (Blackpool) | 864 | J. Dunnett (Prestatyn) | 223 |

Minimum score for an entry: 200 for CW or RTTY, 500 for Phone. Listings include only recent claims and are in accordance with HPX Rules, p. 28, March issue.

The *Bury St. Edmunds* gang of SWLs has again been a bit reduced, as we learn from *E. W. Robinson* that his friend *G. A. Davey* has collected credit passes in both halves of the RAE and only awaits the necessary licence to arrive to be able to get on the bands. Good for him! *E. W. R.* himself is also chuffed, as he has at last cracked the magical 2000 mark, thanks at least to the ARRL Contest, which yielded no less than 13 new U.S. prefixes.

N. I. Neame (Lancing) has his RAE and is due to take the Morse test soon; as he says, with deafness, his only way to compete with the rest is on CW — even lip-reading is made difficult for him by people who do not enunciate clearly. Nigel was once G2AUB, and will soon be back on again (with the old call?). He recalls that back in those 'nostalgia days' he heard AC4RF and AC4YN; the former was Reg Ford, taken by the Chinese when they invaded Tibet and held for many years but eventually released. So far as we know he never actively took up Amateur Radio again. AC4YN, however, is G5YN and still to be heard around the bands, with a very nice home-brew SSB signal.

An early letter this time from *H. M. Graham (Chesham)* as he was off to SV-land for a week. Maurice also was interested in that bit of nostalgia last time and it moved him to dig out some of his logs and books from those far-off days. Maurice was active as an SWL from the end of the war with a 1-V-1 straight receiver until 1950, when it all came to an abrupt stop, enthusiasm included, with the demise of the receiver. The bug bit again quite by chance, through stumbling across Twenty with a Murphy BC set, in 1963. Eventually this led to an Eddystone 84OA, and then a Yaesu FR-50B which is still in use. The latest in the stable is the Drake SSR-1 which replaced the old Eddystone job. The surprising thing about it all is the number of countries *not* heard since 1963 but almost commonplace in those early post-war logs; something, one supposes, at least partly the result of so many servicemen being away from home and waiting demob — and there they were on the bands and hearable.

On now to *J. Singleton*, who is in *Skelmersdale*, and has been working very hard on his receiver for a 599 entry. Joe wonders about two metres in the HPX context, and all we can say is that any prefix heard on 144 — or even 10000 MHz is perfectly acceptable *provided* it was not heard through a repeater. Signals

heard by E-M-E, by OSCAR or RS satellites, or by M/S are all okay, provided they aren't through repeaters. We would even bend a little to the extent that we would accept the copying of the call of the repeater itself: but nothing going through the repeater is acceptable.

Just a very brief note from *B. Payne (Horsforth)* who is obviously out to pass the 1000 mark before next time!

J. P. Goodrick (Bognor Regis) says he has actually become interested in SSB as a result of his WAB hunting; although he reckons it'll be a long while before he can cope with the 'English' slung around the bands from all countries during one of the world-wide contests or in a pile-up! Still with the contests, John says he isn't surprised at the small number of entries for SWL contests, as he agrees that for most people the fair copy entry, weeding out the errors and duplicates and all the rest of it, must be a chore — but John, perversely, gets just as much fun out of this as he does from the Real Action.

T. Kirby (Cheltenham) asks the perennial one about /A stations. They do not constitute a new series in their own right, but if a station is /A and at the same time in a different area, then his case is covered by Rule 3. G3SWM at home or G3SWM at the office is the same; but if G3SWM/A was in fact signing G13SWM/A from Northern Ireland, then he would be acceptable as a G13.

Congratulations to *Brian and Simon Henderson (Ryde, I.o.W.)* who have both, father and 15-year-old son, got their RAE passes. Sometime around June/July, when they are settled into the new quarters, they will be setting out for some 144 MHz gear and aeriels.

N. Askew (Coventry) wryly admits his latest list just gets him up to the end of 1981, no new ones having been logged in 1982 — yet!

Another New Entry

This one is from *C. N. Woods (Acton)* and was not spotted earlier because he has a handwriting very much like one of the regulars. Sorry! SWL Woods doesn't have a lot to say for himself yet, but he has a quite fine collection of prefixes to kick off with — which maybe says more!

J. Williams (Romsey) says his need for the active antenna has diminished as he is shortly moving into his own house, where intensive aerial-farming will be practised. John did have a dabble in the ARRL DX contest, and cleaned up the last three States for the full set.

Just a list this time from *G. W. Raven (London SE13)* taking him up to 1408 prefixes.

Finally a letter from *Jean-Louis Delfort (Brussels)* who comments on Mr. Blohm's adventures on Ten. Jean-Louis, like several others, offers an explanation which notes that there are several ten-metre repeaters in the U.S.A., and he was actually listening to WR2AID on 29.680 MHz output — the inputs are always 100 kHz lower. He also points out that several repeaters in the States have cross-band linkings to VHF which could answer the second part of reader Blohm's question. All it needs is for Mr. Blohm to have been up 1 MHz in the band, and that could be no more than a slip of the pencil in writing. So, there you are — instant magic!

Finale

Deadline for next time is *May 20th*, addressed as always to your scribe, "SWL", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. By that time, Spring should have sprung properly! But, weather or not, the Equinox is the time for the DX to be chased. 73, and keep logging them in!

Please mention "Short Wave Magazine" when contacting Advertisers — it helps you, helps them and helps us.

THE OTHER MAN'S STATION — G3WRO

THE photograph shows the station owned and operated by Keith Haynes at 33, Ash Tree Field, Harlow, Essex.

Keith first became interested in amateur radio in 1965 at the age of 16. On leaving school in that year the first receiver was purchased, an Eagle RX60N — which still performs quite well today. Keith was a very keen short wave listener in the ensuing months, and in fact had a stab at the R.A.E. in May, 1966. However this proved to be a bit premature as the result was, sadly, a failure. His enthusiasm was not dampened but some more arduous studying was obviously needed; a pass was finally secured in May 1967. Immediately, a start was made on the CW with which Keith didn't have too much difficulty — mainly, he believes, because he is a very keen musician (and there is a very close tie between music and Morse code!) The CW test was passed at the first attempt and the full licence was issued on the 17th August, 1967.

The first transmitter used at G3WRO was a Codar AT-5 on 160 and 80 metres with a long wire strung out. Keith then joined the Havering & District Amateur Radio Club and was a member until 1976. During the in-between years many pieces of gear were used, including a K.W. Vanguard and a K.W. Vespa Mk. 2 Tx. It was in 1976 that Keith married and had to sell some of the gear in order to get a deposit for a mortgage. However in 1978 an FDK Quartz 16 was purchased for work on 2m. and this performs excellently in conjunction with a Jaybeam colinear. Today the equipment in use at G3WRO is a K.W. Viceroy HF Tx, Trio 9R-59DE Rx, homebrew Tx for 160 and 80m CW and phone, and the 2m. rig mentioned earlier. HF aerials are a multi-band dipole and a long wire, both of which are supported at the bottom of the garden by a 45-ft. tree-trunk.

One of Keith's main interests within the hobby is organising special event stations. During 1969/1975 demonstration stations were laid-on at various schools in the Romford area for their summer fetes. In 1969 and 1970, G3WRO operated /M from a motor cruiser on the Norfolk Broads; also Keith was involved with GB2RUT, which was the last amateur station in the county of Rutland before it was absorbed into Leicestershire in 1974. More recently Keith, together with other members of the Harlow club, organised GB2SW which operated from Sutton Windmill in Norfolk in September, 1981 (which was the subject of an article in the January issue of *Short Wave Magazine*). Today, Keith is a very keen member of the Harlow & District Amateur Radio Society, serving as Chairman from 1977 to 1980.

One thing Keith is *not* too keen on is decorating. The 600 or so QSL cards collected over the ten years come in very handy here, and practically every space on the walls of the shack is covered. Keith has now started putting them on the ceiling!



AN HF DUMMY LOAD

I. D. POOLE, G3YWX

IT is not always appreciated just how useful a dummy load can be for tuning up or testing out a transmitter; it is an invaluable piece of test equipment. However when looking into the possibility of purchasing one for HF band use only, which could dissipate up to 100 watts, it was found that the loads advertised possessed a frequency specification well in excess of the requirements.

Accordingly, it was decided to build a load from a bank of small carbon or metal oxide resistors. Wirewound resistors could not be used as they become almost completely inductive at high frequencies rendering them completely useless.

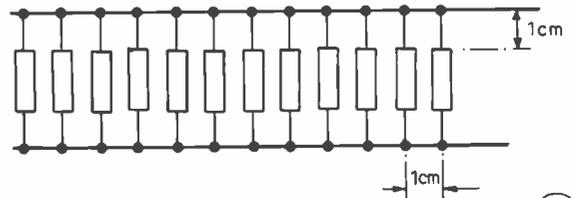


Fig.1 View of one row of resistors showing method of construction

D 84.9

Construction

In the event one hundred 5K1 0.75 watt resistors were used as a cheap source of supply was found, the actual type being UPMO75, however most carbon or metal oxide resistors would be more than suitable. The resistors used produced a 51-ohm 75-watt load. In practice, the maximum rating of a resistor can be exceeded for a short period of time and so 100 watts can be applied intermittently.

The resistors were made up into eight sets of twelve resistors which were soldered onto two wires at intervals of 1 cm to allow for ventilation, as shown in Fig. 1; in order to minimise any inductive effects, each resistor was placed the opposite way round to the previous one. The eight rows of resistors were then connected as shown in Fig. 2 and the four remaining resistors were then soldered onto suitable points, and finally the co-ax is attached.

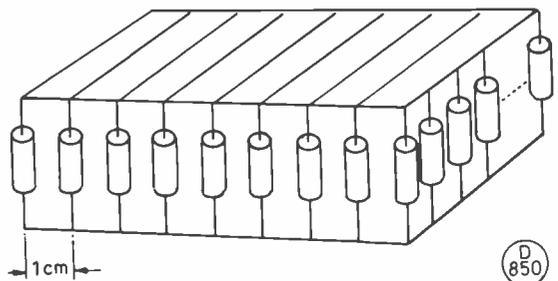


Fig. 2 Overall view of dummy load

Results

The results were found to be surprisingly good at 3.5 MHz, the SWR being better than 1.1:1, and at 30 MHz it was better than 1.2:1. If the load is to be used frequently it can be placed in a case, but very good provision should be made for ventilation.

BITS FOR "BEN"

ADDITIONS TO THE LOW-COST TRANSCEIVER FOR THE 10.10-10.15 MHz BAND

REV. G. C. DOBBS, G3RJV

I HAVE this recurrent nightmare: I dream that, for some reason, I am forced into buying a £500 transceiver. You know the sort of thing — low slung grey case, covered in knobs and LEDs with an inside looking like robot's vomit. As with all pieces of equipment, within a short time I become aware of its design shortcomings and in the nightmare I sit for hours, with my soldering iron poised in my hand. Dare I plunge it into 500 quids worth of resaleable electronic equipment?

Gladly there are no such problems with home made equipment: part of the game is amending circuits and adding bits to improve performance. I described in a two-part article the making of "Ben — The Little Transceiver for Ten" (*Short Wave Magazine*, Jan. and Feb. 1982), this article describes some small additions to improve the basic circuit of that transceiver.

Siditone

I have always admired the telegraphists in the old western films, reading Morse as clicks coming from a fine assembly of brass parts in the corner of their hut. Lesser mortals like me really need to hear the CW they are sending in order to make it anything like sensible. Although it is possible to obtain a monitoring tone from the actual RF being transmitted, the usual approach is to key some kind of audio oscillator simultaneously with the transmitter. This only requires a simple piece of circuitry and such circuits are common in the annals of amateur radio.

The circuit adopted for Ben is shown in Fig. 1. The audio oscillator, TR2, is a single unijunction transistor. The unijunction transistor (UJT) is a useful device commonly used as a trigger or in timing circuits. For our purpose it has the useful property that it loves to oscillate and requires very few components to enable it so to do; the circuit around TR2 is that of a simple relaxation oscillator. A unijunction is novel in having two bases with a single emitter, and between these two bases there is a DC resistance of a few thousand ohms. If a supply voltage is connected across the bases, the emitter being unconnected, the emitter will have a potential between the voltage extremes of B1 and B2 — this is called the natural voltage. When voltage is first applied across TR2, in Fig. 1, the emitter is below its natural voltage and the UJT does not conduct. The capacitor C1 will begin to charge up through R3. When the charge at E exceeds the natural voltage the UJT junction E/B1 acts as a forward biased diode and conducts heavily through R4; this discharges C1 and the UJT stops conducting. C1 will then begin to charge again and the whole cycle is repeated. What a simple oscillator! The values of C1 and R3

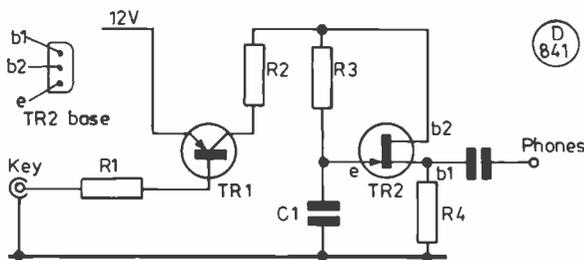


Fig. 1 Siditone circuit

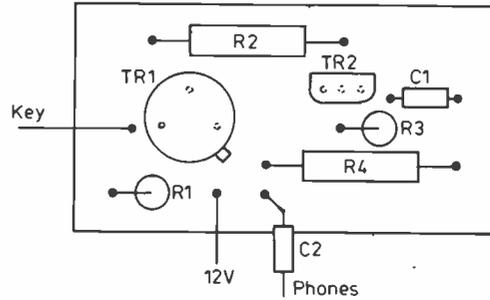


Fig. 2 Siditone layout (twice full size).

control the frequency, the output is sawtooth in shape, not exactly a bell-like note but adequate for the purpose.

It would appear that all one would have to do is connect the UJT across a 12 volt keyed line. There is such a line already in the Ben Transceiver, but to prevent any interaction problems a simple DC switching transistor TR1 was added to the circuit. This switching transistor can simply be put across the key line. The leads between the siditone board and the key input socket can be as long as required without any problems. The circuit was built up on a small piece of printed circuit board with the layout shown in Fig. 2. This is quite a compact layout but in practice any layout of any size may be used. It would also be simple to build the circuit on Veroboard or plain perforated board with underside wire connections.

Receiver Incremental Tuning

Independent adjustment of the tuning of a transceiver on receive only is a useful facility. Apart from allowing the user to tune a little from the transmitting frequency for stations poorly netted, it also enables the operator to chase drifting CW signals around the band! The idea is to provide a small degree of additional tuning on receive only, the transmitter remaining on the frequency set by the VFO tuning capacitor. The simplest way to do this is to provide some addition variable capacitance to the VFO tuned circuit on receive.

Fig. 3 shows the circuit that proved to work well with the Ben Transceiver. C2 and D1 form a varicap circuit across the VFO tuned circuit; D1 could be a varicap diode, but a junk box silicon diode was used. The capacitance across D1/C2 can be altered slightly by a voltage change at D1. This voltage change is provided by RV1, which with R1 forms a potential divider across the 12 volt receive line. As RV1 is turned clockwise, D1 sees an increasing voltage through R2. This increasing voltage raises the capacitance across D1/C2 and, if they are connected across a tuned circuit, the frequency will lower; C2 goes to the top of the VFO tuned circuit.

Table of Values

Fig. 1

- R1, R3 = 10K
- R2, R4 = 1K
- C1, C2 = 0.1 μ F
- TR1 = BCY31 or similar pnp
- TR2 = TIS43

Fig. 3

- R1 = 10K
- R2 = 100K
- C1 = 1000 pF leadthrough
- C2 = 100 pF silver mica
- RV1 = 50K lin.
- D1 = silicon diode
- RFC = 7 turns 32 s.w.g., on ferrite bead

Fig. 4

- R1, R2, R3 = 51R
- R4 = 1K
- RV1 = 10K lin.
- D1 = OA91
- C1 = 0.001 F
- C2 = 0.01 F
- S1 = 4-pole 3-way wafer switch
- M1 = 1mA or less

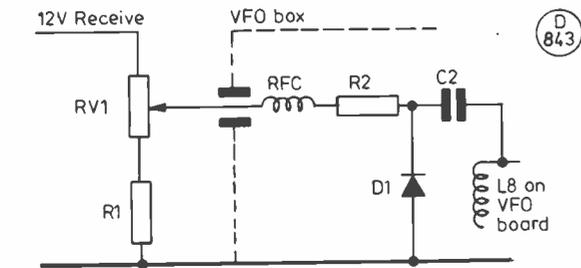


Fig. 3 R.I.T circuit

Usually in such a circuit there is switching between a potential divider for transmit and one for receive. To make the circuit simpler in Ben the C2/D1 combination is only given voltage on receive. This means that some adjustment must be made on transmit so that the transmit and receive signals can be netted. In practice this is very easy to do. When the RIT circuit has been added, determine by experiment a setting of RV1 which will give a swing of some 2 kHz either side of a centre point. This will be the transmit net frequency and can be marked on the front panel, with RV1 fitted with a pointer knob. The transmit frequency must now be adjusted to match this centre frequency of the RIT. Such an adjustment can be made using the trimmer in the crystal oscillator section of the Transmit Mixer Circuit (see Fig. 1 of the Ben transmit circuits where CT1 is the required trimmer). The simplest way to do this is to get Ben and another receiver to receive the same signal on the band — a signal generator or an actual signal. Ben must have the RIT control RV1 set at the decided centre point. Ben can now be switched to transmit, with the other receiver still on the same frequency, and CT1 adjusted to the desired frequency, which is heard on the receiver. This may require a little trial and error, but once CT1 has been set, the mark on the centre point of RV1 will indicate the transmitting frequency.

The RIT circuitry is mainly mounted inside the VFO screened box, with a 1,000pF leadthrough capacitor taking the lead from the box to RV1; this lead is decoupled so should present no problems, although it is probably best kept fairly short. Should RV1 not provide a useful degree of off-set of the tuning, R1 can be altered by experiment to provide the best voltage swing for the desired results. Remember to keep the wiring in the VFO box as short and as solid as possible. VFOs should be built to be dropped from 30,000 feet without any of the internal wiring moving.

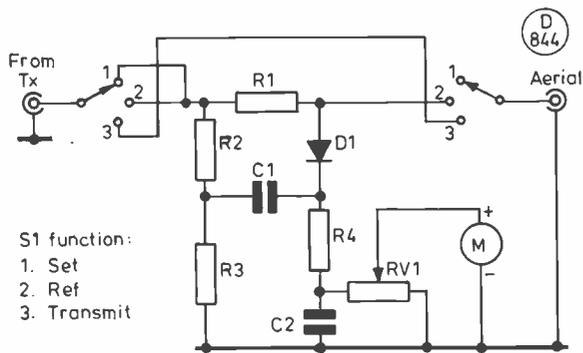


Fig. 4 SWR Bridge circuit

- S1 function:
1. Set
 2. Ref
 3. Transmit

SWR Bridge

A useful addition to any transceiver is a built-in SWR bridge. "An in-transceiver, analogue indicator, providing visual feedback of the antenna/power-amplifier interface situation" as they might say! This little SWR bridge circuit, shown in Fig. 4, is the one used in the S.C. Deluxe (*Short Wave Magazine*, August 1981), and a full description of the circuit is given in that article. The circuit is that of a simple resistive bridge: R2/R3 and R1 with the aerial forming the arms of the bridge. The meter indicates a null when the aerial is at 50 ohms, the correct output impedance for Ben. Such a circuit has the advantage of always providing a resistive load to the PA stage when adjustments of the Aerial Tuning Unit are taking place. The meter M1 can be any suitable moving coil meter of full-scale-deflection 1 mA or less, as RV1 acts as a sensitivity control.

What was not shown in the S.C. Deluxe article which included this circuit was how simple it is to build in a confined space. Fig. 2 shows the layout of the SWR bridge with all the components, except RV1 and M1, mounted on the back of a 4-pole, 3-way,

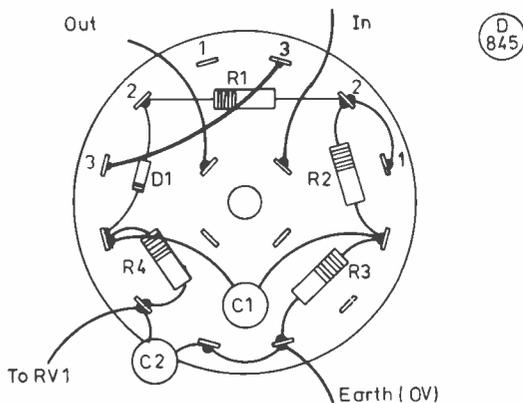


Fig. 5 SWR Bridge layout on S1 Wafer switch

wafer switch. Only two poles of the switch are required, but the spare tags from the other sections are used for mounting the components. This construction is a little confined, but allows the whole circuit to occupy little more space than the controls: the switch, the potentiometer and the meter. The switch position 1 (SET) allows the output from the transmitter to go to the bridge without an aerial load. This mis-balance will give a high reading on M1 and so RV1 can be set to full scale. (This position can serve to show the full output of the transmitter as an RF indicator.) Position 2 (REF), allows the output to see the bridge with the aerial load included; a low reading on M1 will indicate that the aerial load is near 50 ohms. In position 2 aerial matching can be performed, usually with an ATU. Position 3 (TRANSMIT) bypasses the bridge and allows the signal to go directly into the aerial; this is the normal operating position, although incoming signals can be received with the switch in any of the positions.

These three extra 'bits' should all help the Ben Transceiver in its performance on the band. Naturally they can also be used on any similar transceiver on any band. The only exception is that the SWR bridge is not really suitable for use with VHF transmitters.

I wonder what other additions readers have tried with Ben? That is assuming that some readers have built the little transceiver . . .

Product Reviews

THE ALTRON SM30 AERIAL MAST

THE antenna is a very important part of any amateur radio station. Doubtless, for the HF and VHF bands we would all like a nice, big motorised, telescoping and tilt-over tower, festooned with large beams, but for most of us, this remains a dream. On the LF and HF bands, surprisingly good results can be achieved with simple wire antennas and tuning units, while multiband vertical systems are quite popular and effective.

On the VHF and UHF bands, all serious DX work is done with horizontally polarised beams. Moreover, many amateurs like to try new arrays on various bands quite frequently, so there is a need for a relatively simple and inexpensive telescoping and tilt-over support. Such a product is the *Altron SM30*, made by *Allweld Engineering* of Selsdon, Surrey. As this firm is but a few minutes drive from the writer's home, a visit was made to the factory where an erected mast is on display.

The *SM30* comes in two versions. The *SM30-PM* is a ground post mounting type and the *SM30-WM* a wall mounting alternative. The basic steel mast consists of a $3\frac{1}{2} \times 3\frac{1}{2}$ inch square hollow section bottom part, about 14'6" long, into which a 3" diameter tubular top section slides. Two head units are available. The *RT-1* is a simple extension tube projecting 18" out of the top for spigot mounting of the rotator, the top of the whole assembly being 30ft. above ground. The *RH-1* unit is a triangular, tubular piece 30" high with a bottom plate on which a rotator can be fixed, a sleeve at the top providing a bearing for the stub mast for the antenna. The top of this is 31ft. *a.g.l.*

Winding up-and-down and tilting over is accomplished by one winch and in the fully extended position, a safety catch is used which relieves the cable of any strain. The mast assembly weighs 150 pounds. For the wall mounting version, a simple ground hinge assembly is supplied which is fixed to a concrete foundation by four $\frac{3}{8}$ " diameter *Rawbolts*. The standard wall bracket gives a 12" clearance between mast and wall but 15-18" and 21" types are available for situations where there is a large eaves overhang. The wall bracket must be a minimum of 11ft. *a.g.l.* and is fixed to the wall by three $\frac{3}{8}$ " diam. *Rawbolts*. The winch is mounted 3'6" *a.g.l.* onto the wall with four $\frac{3}{8}$ " diam. *Rawbolts*.

The post mounting variant comes with a square ground post about 7ft. long, weighing 40 pounds. It has to be concreted into the base for 3ft., the winch being bolted to the top of the ground post. Very detailed instructions for the assembly and erection and operation of the masts are supplied, well illustrated with "exploded" views of the various hinges and connexions.

The manufacturer quotes the loading in the form of aerial surface area of 1.3 square feet. However, if the mast is guyed — and guying points are provided as standard — the maximum surface area is 6.1 sq. ft. To quote from the leaflets:— "Loadings given are for guidance only based on CP3 Chapter V, Part 2 and may vary depending on local conditions and type of aerial or rotator fitted. Please consult us if in doubt." The maximum extension above the rotator is stated as 4ft. for the unguyed case and 5ft. for the guyed situation. The maximum weight of aerial plus rotator at the masthead is 50 pounds.

It is worth remembering that it is not only wind loading which needs to be taken into account when designing any structure of this kind. Very occasionally, as happened during part of the severe weather this past December and January, ice can build up on the antenna, guys and support structure to an alarming degree, thus greatly increasing the effective "wind area" of the whole affair. All these factors are covered in the aforementioned Code of Practice.

It is a pity that the various manufacturers of masts, towers and antennas cannot agree on a single system for specifying wind loadings their products will safely carry. For example, *Allweld Engineering* quote surface areas of antennas, whereas most antenna manufacturers mention wind load at certain wind velocities. Goodness knows how the ordinary customers are supposed to compare these products with each other! As a Consulting Engineer, all the writer wants to know is the maximum permissible wind loading in pounds, or whatever, at a stated height above the guying point or top of the tower or mast, such that the maximum permissible working stresses in the structure will not be exceeded. Given such data, and making due allowance for ice loading, site exposure and geographical location, one can work back to calculate the appropriate, maximum antenna area and rotator size that can be accommodated.

In the instructions for the post mounting mast, a 3'6" deep by 18" square concrete base is recommended. Using the maker's 50 pounds maximum antenna-plus-rotator weight at the top of the fully retracted mast, such a base set in, say, the lawn or in earth, would be inadequate as there is insufficient weight to prevent the whole lot tilting over. So further advice and clarification should be sought on this.

The masts are neatly made with a galvanised finish. Their slender silhouette renders them very unobtrusive. The current price of the wall mounting version is £215.50, the post mounting job being £225.00. The *RT-1* unit is £11.50 and the *RH-1*, £28.50. All prices include VAT and carriage in the U.K. These masts are also available in extruded aluminium alloy material and the Company also makes a mobile trailer, type *TM30*, for portable use. Prices for these latter items on application.

THE ALTRON QM1 AERIAL MOUNTING

Many flat dwellers have no opportunity at all to put up any kind of mast on the ground or on a wall, or even a wire antenna attached to a chimney. However, everyone has a window or two so for them, the *Altron QM1 Q Mount* could be a useful acquisition. The standard model suits openings between 24 and 42 inches, but extensions are available for bigger openings. Basically, the *QM1* consists of an outer, square tube into which a smaller tube is a sliding fit. A mounting foot slips over the larger tube as does a 23" long arm for mounting the antenna. A $\frac{3}{8}$ " diam. BSW threaded rod is fixed at the end of the smaller tube and secured with a knurled locking ring. A number of holes are provided through the inner tube to set the approximate length of the assembly to suit the opening. The chosen holes are matched with holes in the outer tube and secured with a $\frac{1}{4}$ " diam. bolt and wing nut. Firm fixture of the whole is achieved by adjustment of the jack screw.

The *QM1* can be mounted vertically or horizontally and the kit includes a clamp for a 1 to 1 $\frac{1}{4}$ " diam. mast, and a plate drilled with a 15mm. diam. hole for hole-mounted antennas. This plate also has four holes for attachment of ground plane radials, if required. It is suitable for light aerials up to 3 pounds in weight and up to 9ft. long. A second mounting arm can be bought enabling the aerial or mast to be held in two places in which case a 15ft. long, five pound aerial can be supported. The various parts are zinc plated and, in the standard bright finish, the cost is £27.60. A de-luxe black model costs £29.60. These prices include VAT at 15% but U.K. postage is another £1.50. The manufacturer of the above two products is:— *Allweld Engineering*, Factory 6, 232 Selsdon Road, SOUTH CROYDON, Surrey, CR2 6PL. (Tel. 01-680 2995 and 01-681 6734).

N.A.S.F.

soldered to pins, enabling the user to replace them if more attenuation is required.

It needed approximately 8 volts *r.m.s.* at point "A" to switch the relays off to the straight-through position, equivalent to about 300mW *r.m.s.* into "Z", the aforementioned pi-network attenuator. At a supply voltage of 14.5, the *SNLAI44S* took 30mA of current. No socket is provided for power connection, the positive supply lead and hard-switching control lead requiring soldered connexions to 1nF feed-through capacitors. A solder tag is provided for the earth return lead.

Conclusions

As a sensitive preamplifier, the *SNLAI44S* does all its makers claim, further improving an already good system. No signals

strong enough to overload the preamplifier were encountered. In fact, some of the very strongest locals seemed slightly narrower than usual! If masthead installation is considered, the device would have to be housed in a dry, water-tight case and the hard switching option used throughout. This product can be confidently recommended to anyone seeking to improve the receiving department of their two metre station, but the comments about gain distribution in the overall system must be borne in mind.

The *SNLAI44S* came with an A4 leaflet headed "Preliminary Data" and by now a better one ought to be supplied. The current U.K. price is £33.90 including VAT plus 60p for postage.

N.A.S.F.

[1] *Radio Communication*, December 1981, pp. 1120.

MODIFYING THE TR-2300 FOR QRO OUTPUT

FRANK AVENIA, G4MWM

BEFORE describing the modification, it should be pointed out that if your TR-2300 is still under warranty any alterations may invalidate the guarantee, so check on this point first. The modification is fairly simply, requiring only one component — the SD1127; provision has also been made for high-low power switching using the rig's light switch.

Firstly, remove the speaker grille panel to reveal the PA and PCB (X56-1280-00). Next remove the connectors on the PCB, removing the orange and grey leads, the local oscillator (LT, E), the aerial lead (P, O and E) and the two PCB connectors; now undo the six PCB mounting screws and the PA heatsink screw. Desolder the PA transistor (2SC2329) and replace it with the SD1127, noting that the lead configuration is different: first put an insulated sleeve on the base of the transistor, then follow the orientation of it according to the information sheet and Fig. 1. Make sure that the heatsink is in position before soldering the transistor into place. Replace all screws and leads correctly and securely.

For high-low power switching, remove the blue, white, orange and purple leads from the light switch, and re-solder according to Fig. 1. Solder a wire carefully on top of RV2 slider at point 'X' (there is room, by using thin gauge wire); do not put too much solder on the slider which otherwise might be damaged, so good soldering techniques are needed. Finally, solder the other end of the wire to the switch as indicated. The modification is now complete.

Setting-Up

Connect a dummy load on the aerial end of an SWR bridge, transmit and adjust TC2, 3 and 4 for maximum output; do this several times for best results, and then do not adjust again! Set switch to position 1 or 2 (low power) and adjust the low-power setting by pre-setting RV2. The rig is now ready to use.

Comments

The author's TR-2300 gave out a high power of 2.5 watts (4 watts claimed by one amateur), and the low power was adjusted to 250 mW. Depending on the bias of Q8, the less the bias voltage, the greater the voltage placed on gate 2 of Q5 (the driver transistor), the greater the power. This principle is used to switch to high power by shorting the slider (base) to ground; in the low power position the slider is open circuited. The principle use for this arrangement is for setting the power range the same for the entire two-metre band (feedback).

This method involves no power loss and is much easier than using a dropping resistor for high-low power switching, as well as requiring only one connection (RV2 slider) to be made. Stability of the modified TR-2300 when fed into a PA was found to be excellent.

Further information on SD1127 characteristics is available from the author or from *Modular Electronics*, 95 High Street, Selsey, West Sussex PO20 0QL.

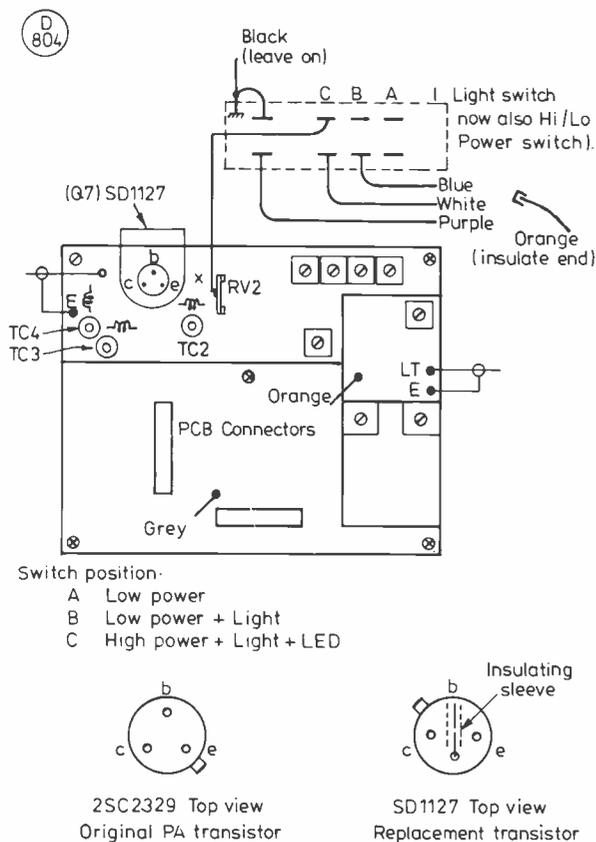


Fig.1 TR-2300 "QRO" MODIFICATION by G8TVJ

A UTILITY CHASSIS FOR THE FRG-7 RECEIVER

H. N. KIRK, G3JDK

HAVING recently constructed a converter for the two-metre band, I realised I had also constructed yet another box to add to the ever growing litter on the operating desk — and decided to do something about it.

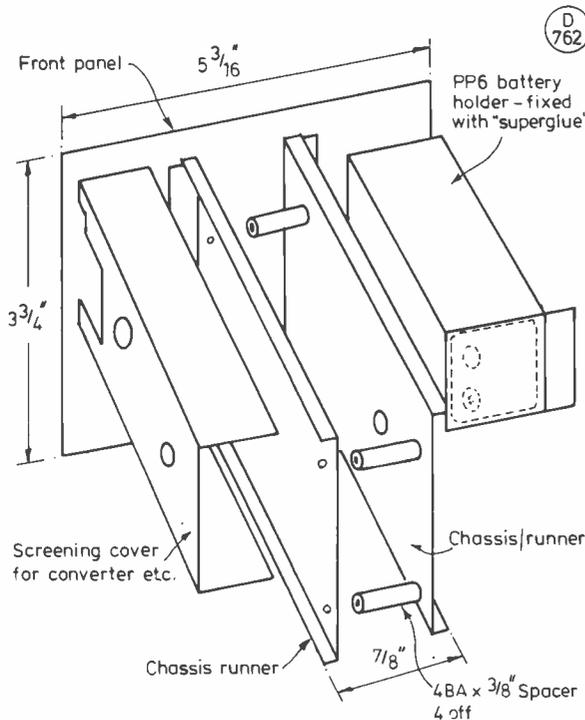


Fig.1 Exploded view of utility chassis for FRG7 use with 2m Converter

Previous examination of the FRG-7 had revealed acres of unused chassis area, most of it being taken up by the battery box. Since I never run the receiver on batteries, it was decided to remove the plastic battery holders from the battery box and somehow replace them with the two-metre converter. Being a lazy fellow — and a prudent one when it comes to FRG-7 re-sale time — it was then decided to retain the battery box "as is", and

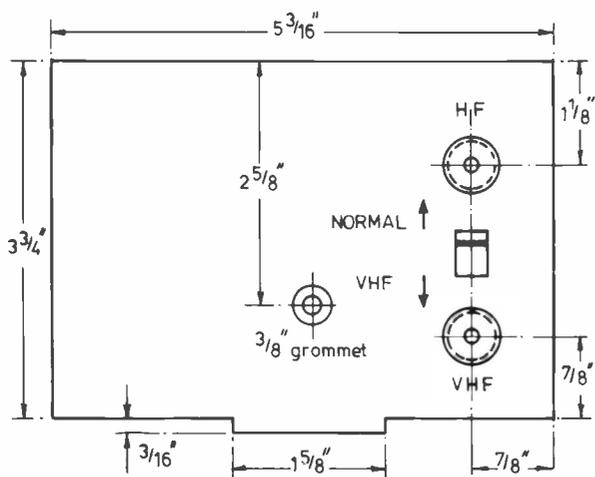


Fig.2 Converter front panel - 16swg aluminium

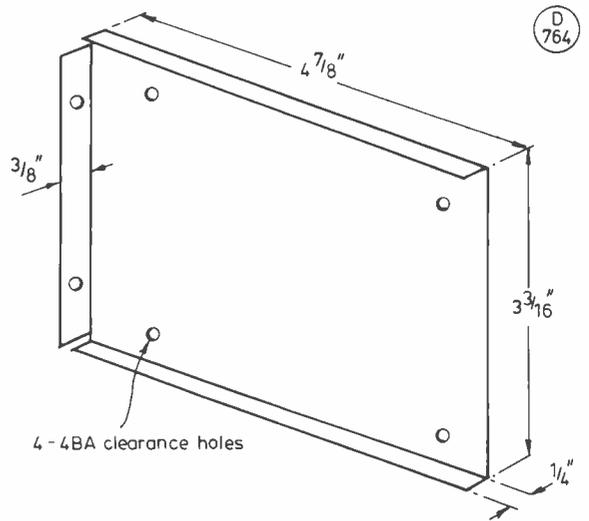


Fig 3 Vertical mounting plate - 16swg aluminium one l.h and one r.h required

instead construct a replica (almost!) from lighter and more easily worked aluminium sheet. The results of this exercise can be seen in the constructional drawings.

Construction basically consists of a 16 s.w.g. aluminium front plate drilled to take the two co-ax connectors, a grommet and a two-way changeover switch. The latter switches either the HF antenna or the converter to the receiver whilst at the same time switching the 9 volt DC supply to the 2-metre converter. The two vertical mounting plates — one for the battery and the other for the converter — are spaced apart by pillars so as to provide a runner which mates with the receiver tracks and so holds the assembly in position. The 90° bends on the top and bottom edges of the vertical plates are easily achieved by the assistance of two short lengths of steel angle held in a vice jaw — the aluminium then being bent over by the use of a piece of wood and a hammer.

The battery box shown is perhaps a little elaborate: the same job could be done by a simple 'U' shaped bracket fixed by a couple of self-tapping screws.

In the case of the 2-metre converter, the results were satisfactory — one less box on the desk and the added facility of the new band on the FRG-7 (when tuned from 28 to 30 MHz, of course).

However, the reader will no doubt be quick to realise that the basic sub-assembly could be used to accommodate other pet projects, such as a 70cm converter, a multi-output crystal marker, or even a small transistorised transmitter working from the receiver power supply on the band of his choice. All this without a

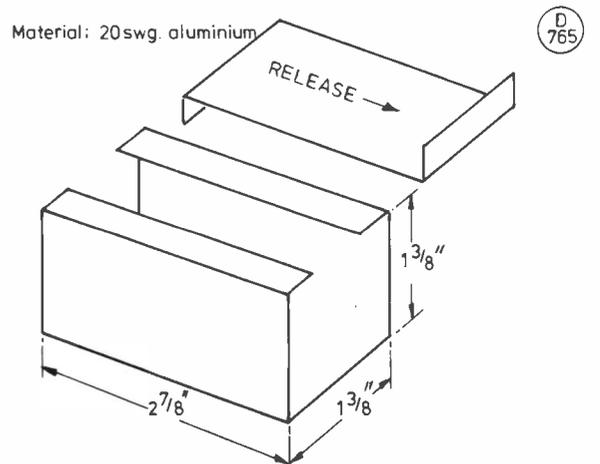


Fig.4 Battery box. Sliding lid ejector fits inside 'U' shaped section

single extra hole having been drilled in the pristine chassis of your FRG-7! The rather pleasant "anodised aluminium" finish is obtained by immersing the metal-work in a bowl of dissolved sodium-hydroxide pellets (*don't* use the XYL's stainless steel sink for this operation) until the required etch is obtained. Wash and dry the work piece well and then spray with clear lacquer to prevent fingermarks. The legends are applied using *Letraset*

although of course any other method of marking is acceptable; a further light coat of lacquer then seals the lettering.

Perhaps the only snag to the project was the inability to obtain four of the plastic snap-in fasteners as used on the original FRG-7 assembly. The purist may like to approach Yaesu for a supply but the author found that the internal chassis guides provided adequate security.

BASICS FOR THE S.W.L. AND R.A.E. CANDIDATE, PART V

SUGAR-COATED THEORY

LAST time out we looked at inductance, capacitance and resistance in an AC circuit; now we must consider the question of what happens when current flows in one of two wires placed close together.

Let an alternating current flow in one, and let the other be positioned so that the varying magnetic field from the energised wire reaches the 'unenergised' one. Connect a testmeter on a suitable AC range to this 'unenergised' wire's ends, and we will see, to our surprise, an alternating current reading. Move this second wire about relative to the energised wire and the effect will be more marked as the two wires come closer together: now stop the energising AC, and the 'unenergised' wire ceases to do its thing. We have a very basic *transformer* — just two wires side by side.

We can, and in due course will, build that up to the big iron-cored thing inside our power-pack, but for the moment let us just say that the energy we can extract from the second wire (call it the 'secondary' from now on) is related to the frequency, the degree of 'coupling' (how close the wires are to each other) and the amount of energy we put into the 'primary' (*i.e.* the energised wire).

For the moment just think about this; if we coil up the primary the magnetic field from each turn will affect its neighbours; and if we wind the secondary on top of the primary winding we will get more 'coupling' between turns *and* between primary and secondary. This is what we have agreed: we energise the primary and find the secondary has been energised. It's a fairly educated guess that if we took our secondary to the energising source and primary to the meter, we would see a similar effect.

Now hang on to your hat! If we energise the primary, we find the secondary has become energised: now the secondary has some energy of its own, it will put out *its own* magnetic field which will act on the *primary*. Lenz's Law codifies this (and indeed the case of a single winding) when it says that the induced voltage due to an input voltage will be of such a nature as to endeavour to cancel the disturbance causing it. The most obvious demonstration of this is to connect a mains transformer through a switch to the mains and watch the spark as you switch it off. The spark is due to this 'back EMF' which is trying to make the current continue.

Going back to *Part I*, if we were to take a battery of internal resistance X , a perfect ammeter and a perfect voltmeter, and a series of resistors, we can measure the power in watts in the load resistance. It we can do the exercises without flattening the battery we will find that the maximum transfer of power occurs when the value of the load resistance is also X . Get a bit of paper and try. (Hint: imagine the battery to be a perfect one with a resistance X in series with it.)

You didn't notice but we described the process called 'matching' in that last paragraph!

To Work

Why do we play with a wireless set? To listen to that station . . . preferably to the exclusion of the others on nearby frequencies. To that end we hang up an aerial, and we connect it to a receiver; Depending on the aerial it will pick out all the signals reaching it to some lesser or greater extent and present the whole lot to the receiver terminals (forgetting for the moment any ideas we may have about 'tuning' or 'matching' aerials) — a bit like the family cat which lays all its mice on the doorstep for our admiration. Our receiver has to sort out which signal we wish to listen to (with some help from us twiddling the knobs, admittedly). This is where our resonant circuit comes in handy. See Fig. 1, where we can imagine a receiver hanging between the terminals A and B. Signals are presented to terminals A and B by the aerial wires Y-Y. Lower frequency signals see the inductance as a longish bit of wire shorting the capacitor, higher frequencies see the capacitor as a short-circuit and the inductor as a choke; either way they don't notice the tuned circuit. At the *resonant frequency* of the tuned circuit, signals see an open-circuit and the signals at this frequency beetle off down X-X to be processed.

Sounds too good to be true? Agreed but the *essence* of the thing is there. Get that clearly in the mind first, before you read on.

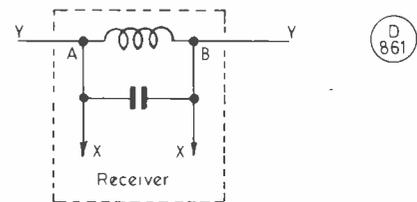


Fig 1 Application of tuned parallel resonant circuit (see text)

Back to *Part II*, where we agreed there was no such thing as a perfect inductor, capacitor or resistor. Our two wires Y-Y have inductance in their length, and capacity to ground and to each other. Yes, you've guessed: the wires Y-Y do themselves form an LC circuit which may or may not be resonant at the chosen frequency. If Y-Y are both random length it is odds-on they won't be resonant at the desired frequency, in which case they will look to the tuned circuit A-B like a reactance; and that reactance will appear across A-B and change its resonant frequency. As the aerial is coupled to and collecting signals from space, it will exhibit a lower 'Q' and thus will reduce the effective Q of our tuned circuit A-B. Thus, in practice we are going to need more than just one plain tuned circuit, and unless we can arrange that our aerial is resonant at the desired frequency we will find the detuning effect a nuisance; not to mention that we want the impedance of the aerial to match that of the tuned circuit so as to get the maximum transfer of wanted signal to the terminals X-X.

Fig. 2 indicates roughly how this is achieved; in the practical case the arrangement on the left in the dotted box would be called the Aerial Tuning Unit and the one on the right would be the first tuned circuit in the receiver. Note how the aerial is tapped down the coil; this is to arrange matching. The *link* between the aerial

tuning unit (AFU) and the receiver would normally be coaxial, and matched. Thus for a given aerial and wanted frequency we would fiddle with the tapping point for the aerial and the number of turns in the link coil at each end until our wanted signal is maximised. At least, that is the idea — but Professor Jeremiah Sodde will doubtless start the band fading just as you try one turn past the best position!

What have we found out? One, our tuned circuit is the thing we want, to enable us to abstract from all the signals collected from space by the aerial the one we want to listen to. Two, by implication we have indicated that the 'aerial' — the wire running from A and B to Y and Y — may itself be a tuned circuit in behaviour; and three, we have indicated how a transformer is based — and mentioned Lenz's Law.

Now, what about the series-resonant circuit? It can indeed be useful in radio, although it does not too often appear in so basic a fashion in modern circuitry. It is used as a series trap to short unwanted signals away in some transmitters, and it has an occasional use as a 'wave trap' to remove a signal which is so big that it is too much for the parallel tuned circuit and breaks through to interfere with our wanted programme. In this application — see Fig. 2 — we will put a series-resonant circuit across the main tuned circuit, and maybe we can put one in the aerial as well, as we have shown. The one in the aerial and the receiver main tuning are both tuned to the wanted signal, while the shunting one is tuned to the unwanted one. Already, there must be whispers of "that's too complicated to operate in the shack" — which is why we don't see these traps being much used nowadays when we can find other, and operationally simpler, ways of getting round the problem. And, of course, the concept of the resonant circuit comes into the explanation of the crystal filter, the crystal oscillator, the aerial, and various other things, as we shall in due course see.

Iron Cores

However, let's go back to our coil of wire, with a primary and secondary, and let's consider it is being energised at 50 Hz by the mains. We will be able to detect some lines of force, but if we put a lump of soft iron down the middle of the coil (like we do a tuning slug down an RF coil), we will see a considerable increase in the apparent magnetic field. It is as though the iron 'core' has increased the number of lines of force. If we have done this, we will find we have increased the inductance, and we talk about the permeability of iron; we talk of its power to increase the apparent flux density as compared with the same coil in air, under specified conditions.

While we were thinking thus, our transformer core began to warm up, and this discloses a first problem about the use of a core. As we raise the frequency, so we find our iron core warms up more, so clearly it must be 'lossy', and we could guess that what we put in equals, roughly, what we get out plus the energy wasted in heating. How to reduce the problem? At mains and audio frequencies, we can use a 'laminated core' which comprises a pack of thin sheets of the iron material, each of which is coated such that it is insulated from its next-door neighbour in the core. The idea is that the magnetic fields we set up will induce currents into the core, and by making it of laminations we keep the eddy currents set up into small amounts of iron. At higher frequencies we can use *iron dust cores* in which each bit of iron dust has a coating of oxide, and the dust is compacted into a usable shape. The eddy currents are now confined each to its own particle of dust iron. At higher frequencies still one can use *ferrites*; these are ferritic ceramic based materials and there are umpteen different formulations to cover different needs, and different frequencies

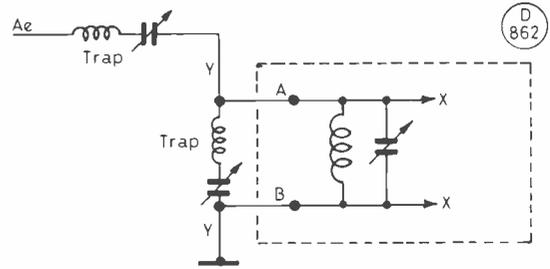


Fig 2 Application of series resonant circuit (see text)

right the way up to VHF/UHF. Whether we use laminations, or dust iron, or ferrite, we can obtain the data from a catalogue just as we might for a transistor or valve.

A special case of the iron-cored inductor is the 'choke' which often appears in the smoothing circuits of a power supply. In this case we have two conflicting requirements, one of which is the need to carry some DC (and hence for the core to be partly magnetised all the time) and at the same time to maintain a specified inductance. We can do some experimenting with a core, and we will observe that while they all have a permeability index greater than unity (unity being that of air, by definition) they will all show the phenomenon of 'saturation' where a further increase of current in the winding no longer results in more lines of force. In order that we may avoid this nuisance, which in effect makes the inductance 'limit' we will insert an air gap somewhere in the make-up of the laminations, with the thought in mind that if we do lose a bit of inductance in the absence of DC, which we can remedy in the design, we have prevented the core from saturation and so our DC output from the power-pack will be what we expect; but more of that anon.

Our transformer for a mains power supply is of course designed with 50 or 60 Hz in mind. However, when we come to talk of audio frequencies, and particularly hi-fi, our transformers have to cover a frequency range from below 50 Hz to upwards of 20 kHz. This is very difficult to do without a spurious resonance effect turning up somewhere in the range and spoiling things. Nowadays we can use solid-state devices to make an audio amplifier with no transformers, so that is by the way of a problem of the past. It used to appear in the old AM transmitters of years ago in the 'modulation transformer' which took the audio output and transferred it into the PA stage.

Summary

We have looked, in a purely qualitative way, at the effects produced by putting an alternating current into a wire. We have seen that the magnetic field 'couples' primary to secondary, and we have seen that a back-EMF is generated. We have also seen that at mains frequencies an iron core increases the lines of force and named the property in question permeability. We have noted that iron cores involve losses, and how we keep them down as frequency rises. Finally, we have noted that proximity of primary and secondary are involved.

As a side-issue this, almost, we noted that an aerial partakes of the 'resonant circuit' character, and applied the idea of practical use of resonance and its combination with the concept of the transformer.

So, a bit of a hotch-potch this time, around the edges and into the ideas of inductance. Next time, we'll try and clarify, with numbers and things.

to be continued

"Plug in Your Soldering Iron and Begin Here", a new series for the novice constructor by Rev. G. C. Dobbs, G3RJV, starts next month.

“A Word in Edgeways”

Letters to the Editor

The views expressed here are not necessarily those of the Editor, nor should they be taken to represent any particular SHORT WAVE MAGAZINE policy.

Dear Sir — This letter is possibly not one of the kind usually published, but I do feel it may be of interest to all the budding amateurs out there who have not yet taken the plunge.

Twelve months ago I could not in honesty fit a 13 amp plug to anything without first double-checking with my DIY books. Radio was something on which to listen to sport on Saturday afternoons. Radio amateurs? I had never heard of them (retrospective apologies).

Then a sort of boom happened in our area. All the local lads in the pub were talking of ‘breakers’, ‘buzbies’ and all the rest of the inane jargon. My interest was aroused. What could they be talking about? I soon found out: Children’s Band radio. Obviously I knew about CB, but never thought that it existed in this country. I was shown how it worked and given examples of “DX-ing” by some of the “better equipped” locals. My appetite was, I must admit, slightly whetted.

This now is where my fortunes change and the real story begins. I was enthusing at great length about this CB and DX-ing with a friend in his local pub, when a chap, slightly known to us, came over and joined the conversation. It was not long before he was telling us of all the facilities open to radio amateurs, probably the most appealing being the legality!

Over the next few weeks my friend and I talked of nothing but bouncing signals off the Moon, chatting to people in America *via* satellites and sending each other TV pictures. We shopped around and bought every magazine (both of them!) on the subject we could find. That was when the bubble burst: we did not understand a word. SSB, CW, gotaways, OM, G3, 9K — it was worse than CB! After some pondering we decided to press on a little further. Well, in for a penny, in for a pound: I joined the RSGB.

Can you remember the first time you saw *Rad Com*? If we had not been made of such fine British stuff I know we would have given in then and there. But it was then that we discovered G. L. Benbow’s excellent work *The R.A.E. Manual*: we decided we would go for the exam, no turning back, G6 or bust! We arranged to meet every Monday evening and do a few pages each week over a pint and a smoke, and aim at the May, 1982, R.A.E. Remember, neither of us knew a thing about radio or electricity, but it was amazing how soon we were able to read, enjoy and even partially understand the magazines. Our enthusiasm did quaver a bit when we got to transistor theory and when we found that we needed a Class-A licence to do TV, etc. Our group by this time had grown to six; a quick reappraisal was necessary. We decided we would take the R.A.E. in December 1981 and the CW some time this year — and hope that there were not too many questions on transistors. The Monday sessions soon started lasting from 2000 to 0200!

Our next problem threatened to stop us dead in our tracks: due to the ‘cut backs’ we could not find anyone prepared to admit that they were holding the December R.A.E. However, after much telephoning we managed to find somewhere and get booked in. The day of the exam came, and what an exam it was! I would swear that there were no answers to some of the questions, but I think everyone says that after an exam. We all agreed that the exam was fair but tough (*sic?*). Much waiting and nail biting later, we got our results: all six had passed. Our marks ranged from ‘distinction’ to ‘pass’, but what difference did the grade make — we could all now apply for our G6. Three of us had started to learn CW with the aid of a Digitalter and decided to press on for a G4; the others either applied for a G6 or just “thought” about CW. The three of us duly applied to take the CW test — and we all

passed. Now with our applications in the hands of the H.O., we hope soon to continue our “self-training in communication by wireless telegraphy”.

I have heard many CB-ers talking of these ‘super brained’ amateurs; I have heard G6’s referring to the impossible CW test. To those people I say this: less than twelve months ago I had never heard of amateur radio. I am sure the exam is not designed to keep you off the air, and the Morse test is certainly not the great ogre you may think; 15 minutes Morse every day will enable you to pass the test in eight weeks. My friends and I are just ordinary people: if we can start from scratch and have our licence applications in the post in under 12 months, so can any other ordinary person.

So come on you “CB DX-ers”, get on 10 metres legally; and come on you Class-B licence holders and have a go at the Morse test. You can surely get more out of amateur radio if you have access to a wider spectrum of frequencies and modes of operation. It is certainly easier to build a QRP Top Band rig than a two-metre rig for under a fiver!

A. Reeley, G4???

Dear Sir — I apologise for taking up yet more space in your “A Word in Edgeways” column but I feel it necessary to respond to G8ADD’s letter in your April edition.

It seems that 8ADD has fallen into the trap of hearing one word and constructing from it a full length novel. If my letter in the February issue had been putting forward the idea that “real” radio amateurs are those using CW then I would agree that it would have been divisive. All I was doing, however, was answering 8ADD’s previous statements that a knowledge of CW is irrelevant for HF operation and that the great majority of Class-A licencees have “forgotten” their CW. There are many facets to amateur radio. That I chose to mention only one of them does not mean that I consider it to be the most important but merely that it was the only one mentioned in a contentious way by 8ADD.

As to teaching people Morse code, I agree with 8ADD that this can be achieved in one week; also, of course, people can be taught to fly an aeroplane in one week. It must be added that the latter process does not produce experienced pilots nor does the former produce experienced morse operators. The reason for this is quite simple, experience cannot be taught.

G8ADD’s statement that the high level of CW operation, both commercial and amateur, on the HF bands is irrelevant to the discussion does not sit very comfortably with his previous statement that a knowledge of CW is irrelevant to HF operation.

Not knowing how 8ADD compiled his estimate of 90% for the CW drop out rate (“A Word in Edgeways”, Jan ’82), I cannot comment on the likelihood of it being haphazard. Similarly, I do not see how he can be so certain that my survey was haphazard. I concede that it might have been on a relatively small sample — 50 — but I believe it to be a representative one ranging from those who operate only on CW to those who have never operated on that mode. I should add that none of the stations included in my survey were asked the direct question on the subject, my information came from casual comments or from hearing the station actually using CW.

As to the rest of G8ADD’s letter, I think G3RKH and G3MYX have said it all (“A Word in Edgeways”, March ’82).

Anthony Plant, G3NXC

Perhaps discussion of this subject should now be closed — for the time being, at any rate! — Ed.

Address your letters for this column to “A Word in Edgeways”, SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

CLUBS ROUNDUP

By "Club Secretary"

ONCE more we are looking at a quite enormous pile of reports, newsletters and data on clubs; and this pile has to be memorable as it probably has more new formations than we have seen in any one "Clubs" for many a long year — and that must be saying something!

The Clubs

Chiswick Town Hall is home to the **Acton, Brentford & Chiswick** group, and they will be gathering there on Tuesday, May 18, for a discussion about 'Interference to Domestic Entertainment Equipment'.

Now our first newcomer; this one is the **Antrim & District** and we have it that they have a monthly booking on the third Thursday of every month in the Board Room of the Antrim Forum, and they will be trying to have something organised each time and to announce it on the previous weekend's GB2RS News Service. More details from the Hon. Sec. at the address in the Panel.

Now we come to **A.R.M.S.** which is the club to join if your main interest is in mobile operating — all the details from the Hon. Sec. — see Panel.

A new venue is indicated by the Hon. Sec. of **Aylesbury Vale**; they will be at *Stone Village Hall* (which lies a couple of miles west of Aylesbury on the A418) on May 18 for the judging of the Construction Contest. In addition to the monthly "do" at this venue, they also have an informal in the saloon bar of the "Red Lion" at Berton on the fourth Tuesday. However, in this instance the May one is in fact put back to June 1.

The letter from the PRO of **Barry College of Further Education** notes that he never thought that one day he would be reporting: we wonder what they slugged him with. Seriously, the gang are based in the Annexe, Weycock Cross, and are normally to be found there every Thursday from 7.30. At the time of writing the main thing was the preparation for their Mobile Rally at the Barry Memorial Hall on May 23.

May 19 at **Basingstoke** is down for G3KNZ to give his talk on microwaves — but they forgot to confirm the venue! Our record indicates Chineham House, Popley, but if you are on a first-time visit, perhaps it would be well to check with the Hon. Sec. — see Panel for his name and address.

B.A.R.T.G. used to be synonymous with the use of the teleprinter — but nowadays it is more than possible the set-up is all electronic, though the signals sent and received are still Murray-code. The newsletter covers all the variations — ACII, AMTOR, and the rest, and if you are interested in this sort of thing you should be a member. Details from the Hon. Sec. — see Panel.

Nice to hear that the new **Biggin Hill** lot are booming in numbers — meet them on Tuesday, May 25, at the Biggin Hill Memorial Library, for a talk on engineering in the IBA.

Over now to **Bournemouth**, and here again they don't give details of the venue — but again our records help out with the Kinson Community Centre, Pelhams, Millhams Road, Kinson, Bournemouth; on May 7 they have a programme by several members on 'Aids for the Blind' while on May 21 they go off D/F hunting.

There seems to have been a little bit of a problem at **Brighton** over a late cancellation by a speaker, and the Hon. Sec.'s attempt to fill the gap. As a result of the argy-bargy, sadly, they now lack a President and an Hon. Sec. All we can say about this is that there *must* be a less destructive way to carry on. Anyway the club still exists, and meets at 47 Cromwell Road, Hove, on every second Wednesday at 7.45. May 19 is down for a Micro Night.

If you work for **British Rail**, then you are entitled to membership of this club. All the details from the Hon. Sec. at the address in the Panel.

On to **Bromsgrove** where they are based on the Avoncroft Arts Centre; the second Friday is the main meeting and on the fourth Friday their QRP group meet.

The update from **Burnham Beeches** says that they are using as Hq. the St. Johns Ambulance Hq., Serena Hq., Slough, on the first and third Monday of each month. More details from the Hon. Sec. — see Panel.

Contests are discussed by G4BVE for the benefit of the **Bury** group on May 11, at Mosses Youth and Community Centre, Cecil Street. This is the main meeting, but every Tuesday evening they foregather for a natter, Morse, construction or whatever at the same place.

Cambridge come next, and the data we have shows May 7 for a talk on crystals by G8XLE, informals with the transmitter on the air on 14 and 28 May, plus on May 21 a visit to the Applied Psychology Unit (to be confirmed later). Find them in the Visual Aids Room, Radegund Road, Coleridge Road, Cambridge.

Now to **Chelmsford** where they seem to be booming, with attendances up to sixty at Marconi College, Arbour Lane, Springfield, Chelmsford. The May meeting is down for a talk by the Senior Engineer, Essex Radio, on commercial radio; and although they don't actually say so, we deduce the date as the first Tuesday of each month.

Deadlines for "Clubs" for the next three months—

June issue — April 30th

July issue — May 28th

August issue — June 25th

September issue — July 30th

Please be sure to note these dates!

A new Hon. Sec. takes over at **Cheltenham** — see Panel — and we have it that their programme for May 6 is a joint meeting with other local clubs — one assumes at Hq. — and an informal on May 21. The place to head for is the Old Bakery, Chester Walk, Clarence Street, and they welcome visitors specially.

Every Wednesday evening you will find the **Cheshunt** crew headed for the Church Room, Church Lane, Wormley. There is a natter on May 5, and on 12th they have a session of RAE course revision, followed a week later on 19th with a combined RAE debriefing and equipment evening. Finally on May 26, G6CFW will talk about Mainframe Computers.

A new Hon. Sec. takes over at **Chiltern** and he should be contacted for details of the 'where' and the 'when'; and of course Chiltern implies that the coverage is the area around High Wycombe.

The Friday evening sessions of the London **Clifton** club, at the New Cross Inn (junction of New Cross Road and Clifton Rise), seem to be successful as the attendances are rising. All the details from the Hon. Sec. — see Panel.

On Thursday May 13, the **Colchester** group will be at the Colchester Institute, Sheepen Road, Colchester, for a planning evening, to cover the Anglian Rally and NFD.

We haven't had an update from the **Conwy Valley** gang of late, but we have it that they foregather at Green Lawns Hotel, Bay View Road, Colwyn Bay.

Down in the West country you come to Cornwall, and Camborne, where the **Cornish** club have their base at the SWEB clubroom, Pool, Camborne. G3WKP will be the speaker on May 6 and his topic "Beetling around Africa".

A first offering from the new editor of the **Crawley** club newsletter seems to indicate he will be able to keep up the standard of his predecessors. On the fourth Wednesday of May they will, if we have extrapolated the earlier dates right, be gathering at Trinity Church, Ifield, Crawley; they also have an informal on the second Wednesday. We suggest a contact with the Hon. Sec.,



The new Verulam A.R.C. committee for 1982 shown here at their recent meeting in St. Albans. Standing: Alan Gray G4DJX (Hon. Sec.), Frank Clayton-Smith G3JKS (Chairman), Nigel Townley G4NGT (Hon. Treasurer); seated: Peter Hildebrand G3VJO, Harold King G4HKA, Bob Goss G4CQF, Norman Fisher G8ATO. The remaining member, Chris Lee G6BQJ, is absent. Photo by G3PZF

particularly as the informal will be at a member's home. The detail is in the Secretaries' Panel.

The **Cray Valley** Hq. is at Christchurch Centre, High Street, Eltham, and they go there on the first and third Thursdays in every month; the first meeting of the month is normally the 'formal' effort. May 6 is to be a "Surprise Event", the surprise being dished out by G3XMD.

Crystal Palace have Saturday, May 15, booked at Emmanuel Church Hall, Barry Road, East Dulwich, SE22, and the letter from the Hon. Sec. indicates he hasn't got the programme quiet nailed down for this particular date — the chosen speaker must be wriggling hard!

On to **Denby Dale** where they have the formals on the second and fourth Wednesdays with informals on the other Wednesdays, at the Pie Hall, Denby Dale.

If you want to find the **Derby** crowd, you set off on a Wednesday evening to find 119 Green Lane, and then you go to the top floor where they have the 'doings'. May 5 is a junk sale, May 12 a talk by G5YY on his 50 years in Amateur Radio, and on 19th there is a visit from *SMC (Jack Tweedy)* from Chesterfield, and the month is rounded off with a Measurement Evening, on May 26.

The new **Derwentside** club meets at the R.A.F.A club in Sherburn Terrace, Consett, every Monday evening, and all we can add to that is that we need an update — Hint!

Edgware may not be 'at home' on May 13 for the talk on Territorial Army communications, but they will be at Hq. on May 27 for the Constructors' Contest and NFD briefing. A check with the Hon. Sec. — see Panel — would settle the 'where' question against the earlier date; normal Hq. is 145 Orange Hill Road, Burnt Oak, Edgware.

We have a change of address notified for **Exmouth** — see Panel — and that is where we must point you for data on the club and its meetings, as our information is well outdated.

Now we turn to **Fareham**, and their base at Portchester Community Centre, in Room 12; May 5 will be on-the-air and a natter, May 12 a talk on DX working on 144 MHz, a special-event station at the Hq. over the weekend of 17th/18th, an Open Night on May 19, and finally a talk on Six Metres by G4JCC.

Farnborough have their 23cm. beacon going now, and on May 12 they have the attraction of a talk by Ron Ham. May 26 is down for a talk on the Basingstoke canal combined with a review of the HF NFD plans. Venue is the Railway Enthusiasts club in Access Road, which is off Hawley Lane.

Up to GM and **Glenrothes**, where the coverage is essentially the Kingdom of Fife; the Hq. is at Provosts Land, Leslie, every Wednesday evening and on the third Sunday of every month —

this last being the 'formal' one with a speaker.

May 27 for the **Greater Peterborough** club means a visit to an Hq. they forgot to mention, for a talk on Long Distance TV Reception by G8BKG. The missing bit of information can be obtained by getting in touch with the Hon. Sec. — see Panel for his address.

Guildford's Hq. is at the Guildford Model Engineers' Hq. in Stoke Park, and they will be there on May 13 for a Natter Nite and again on 28th for a talk on aircraft 'black boxes' by Phil Smith from Heathrow.

Harlow seem to be having the most successful time ever, on Tuesday evenings at the Old Barn, First Avenue, Harlow, and we hear that they are putting on a very good programme of events.

We have a cryptic note atop the letter from **Harrow** this month saying "don't publish" — so we confine ourselves to mentioning that they are at Harrow Arts Centre, High Road, Harrow Weald every Friday evening. For the rest of the details a contact with the Hon. Sec. seems indicated — see Panel.

Now **Hastings**, where the main meetings are on the third Wednesday of each month at West Hill Community Centre, and weekly on Fridays at the clubroom at 479 Bexhill Road, St. Leonards-on-Sea. May 3 is an extra, at the Blacklands School Bonanza.

Hereford have their Hq. at the County Control, Civil Defence Hq., Gaol Street, and they will be at home on May 7 for G6CJ's Aerial Circus on videotape, and May 21 for the NFD arrangements to be settled.

Over the water now to EI-land, and **IRTS** where they have now formed a section called 'Baggot Street IRTS' meeting at 91 Lower Baggot Street, Dublin; this one meets every Thursday evening. In the current IRTS newsletter — which is their 50th Jubilee issue, they mention clubs in Fingal, Donegal and other places in EI — all the details from the Hon. Sec. in the Panel.

Down in the **Isle of Wight** the group are to be found in County Hall, Wootton Bridge, near the Sloop Inn, on Tuesdays for some operating and Fridays for a natter. One evening each month is normally set apart for a talk or films or whatever.

Another new club has been formed; this one is called **Itchen Valley** and they foregather in the St. John Ambulance Hq. on the corner of Desborough Road and Blenheim Road, Eastleigh on every other Thursday evening. Details from the Hon. Sec. — see Panel.

Our next letter covers the formation of a new club in **Limerick**, based on the Dept. of Marine Radio and Radar, School of Engineering, O'Connell Avenue, Limerick. Details from Bill Hurley, EI9BX at the above address.

From the new to the old — **Lincoln** celebrate their Diamond Jubilee with a 'Hamfest' on May 9 at the Lincolnshire Show ground, which lies 4½ miles north of Lincoln on the A15. The club itself isn't mentioned in the release, so for that we must refer you to the Hon. Sec. at the address in the Panel.

Lough Erne is a new club in GI, where they are at Lake Land Sports Centre, Enniskillen on the second Friday of the month. More details from the Hon. Sec. at the address in the Panel.

Now to GW and **Loughor**, where the Hq. is at Loughor Scouts Hall, meetings being fortnightly on Tuesday. Details from the Hon. Sec. — see Panel.

The second Tuesday in every month is the date for the get-togethers of the **Malvern Hills** group, and for May they have a talk on matching circuits and SWR by Dave Yates, G3PGQ. The place is the "Red Lion", St. Annes Road, Great Malvern.

May 6 for **Meirion** is down for a talk on the Arfon Repeater, at the Royal Ship Hotel, Dolgellau.

Melton Mowbray have the Annual Construction Contest on May 21, the judges being G3WKM, G8CZ, and G3XJW; this, and all meetings are at the St. John Ambulance Hall, Asfordby Hill, Melton Mowbray.

It's the third Tuesday in the month for **Midland**, and their Hq. is at 294A Broad Street, Birmingham, which is opposite the Repertory Theatre. More details from the Hon. Sec. — see Panel.

Back to GI, where the **Mid-Ulster** club have their Mobile Rally

Names and Addresses of Club Secretaries reporting in this issue:

- ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3. (01-992 3778)
- ANTRIM & DISTRICT: Dr. David Hutchinson, G14FUM, 8 Oaklens, Greystone Road, Antrim, N. Ireland.
- A.R.M.S.: N. A. S. Fitch, G3FPK, 40 Eskdale Gardens, Purley, Surrey CR2 1EZ.
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- BARRY (College of F. Education): J. A. Share, GW3OKA, 3 Uplands Crescent, Llandough, Penarth, S. Glam. (0222-702455)
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- B.A.R.T.G.: E. Batts, G8LWY, 27 Cranmer Court, Richmond Road, Kingston-on-Thames.
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- CHILTERN: R. Ray, G3NCL, 21 Parish Piece, Holmer Green, Nr. High Wycombe, Bucks.
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- COLCHESTER: F. R. Howe, G3FIJ, 29 Kingswood Road, Colchester. (0206-70189)
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- HARROW: C. D. Friel, G4AUF, 17 Clitheroe Avenue, Harrow, Middx. HA2 9UU. (01-868 5002)
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- LOUGHOR: T. Griffin-Thomas, GW8TYS, Riverside Manor, 77 Castle Street, Loughor, Nr. Swansea.
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- NORTHERN HEIGHTS: R. Harker, G4CMK, 11 Buck Street, Denholme, Bradford. (Bradford 844442)
- NORTH WAKEFIELD: N. D. Horne, 81 Denshaw Grove, Morley, Leeds LS27 8SA.
- ORKNEY-CAITHNESS Repeater: Mrs. K. Gee, GM4LNN, Brinnafea, Orkney, Orkney.
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- VALE of the WHITE HORSE: I. White, G3SEK, 83 Portway, Didcot, Oxon, OX11 0BA.
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- WATFORD: R. J. Willard, 21 Garston Crescent, Garston, Watford, Herts. (Garston 72832)
- WEST KENT: B. P. Castle, 6 Pinewood Avenue, Sevenoaks, Kent. (0732-56708)
- WIMBLEDON: E. G. Allen, G3DRN, 30 Bodnant Gardens, Wimbledon. (01-947 3914)
- WINCHESTER: P. Simpkins, G3MCL, Lawn End, Park Road, Winchester, Hants.
- WIRRAL: G. Lee, G3UJX, 30 Manor Drive, Upton, Wallasey. (051-677 1518)
- WORCESTER: D. S. Pritt, G8TZE, 15 Paxhill Lane, Twynning, Tewkesbury, Glos.
- WORTHING: R. Poore, G8LBN, 30 Melbourne Avenue, Goring-by-Sea, Worthing, W. Sussex.
- YEovil: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset. (Yeovil 24956)
- YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

at Parkanaur, near Dungannon in Co. Tyrone, on May 23. After that, the next club meeting will be on September's first Sunday at GI4BAC in Banbridge, when they have the AGM; start time is at 3 p.m. sharp.

Our next new group is called **Nene Valley** who have every Wednesday evening and occasional Sundays at "The Royal", Knox Road, Wellingborough. More details from the Hon. Sec. — see Panel.

We come next to **Norfolk** where the club is based on Crome Community Centre, Telegraph Lane East, Norwich, and is active every Wednesday evening.

You have to be able to count up to twelve before you can get to a **North Devon** meeting, because its odd months (that includes May!) meetings at Bideford Community College, Abbotsham Road, on the fourth Wednesday; in even months the pattern is the same but at Pilton Community College, Chaddiford Lane, Barnstaple. Either way, the start is at 7.30.

We are due for an up-date from **Northern Heights** as they have just had an AGM. However they will still be getting together each Wednesday at the Bradshaw Tavern, Bradshaw, Halifax. More details from the Hon. Sec. — see Panel.

Just up the road takes us to **North Wakefield**, and here we must refer you to the Hon. Sec. for the latest details, or you can go on any Thursday evening to Carr Gate Working Men's Club and find out for yourself!

For details of the **Orkney-Caithness Repeater Group**, we must refer you to the Hon. Sec. — see Panel. They are aiming to get GB3OC operational on Wideford Hill, near Kirkwall, Mainland, Orkney in time for the summer.

May 13 sees the **Pontefract** lads going to Emley Moor; and on May 27 they are back at base for a talk on construction techniques by G4DTO and G3HCX. The Hq. is at Carleton Community Centre where they have the top floor. On a different tack, there was a sad sense of loss when G8BVH died suddenly on February 28, at the age of 43; a good friend and committee member who will be missed.

We turn now to **R.A.I.B.C.**, and here we need to think ourselves — is there anyone locally who could be enrolled in a group which is primarily for the invalid and blind, but needs supporters and representatives just as much? There are many who would or could be interested in our hobby as a window on to life. Details from the Hon. Sec. — see Panel.

On May 18, the **Reigate** group will be gathered to listen to G5RV talking about "Aerials 1927-1982". This event will be, as usual, in the Upstairs Meeting Room, at the Constitutional and Conservative Club, Warwick Road, Redhill, Surrey.

At **St. Helens** the locals head for the Conservative Rooms, every Thursday evening. The programme for May looks like: May 6 a VHF Foxhunt; May 13, speaker to be finalised at time of their letter; May 20, a video-tape lecture, and May 27 a VHF night on the air. We note that the Hq. will not be open on the night of the Foxhunt.

Silverthorn are at Friday Hill House on Friday evenings — easy to remember! This venue is in Simmons Lane, Chingford, London E4. An additional event over the weekend of May 22/23 is the Spring Camp at Carrolls Farm, off Bury Road.

It's every Wednesday for **Southampton**, at the Toc H in Little Oak Road, Bassett, Southampton, and one meeting each month is set aside for a formal — May 12 is down for a talk by the GB3NF repeater group.

Now we turn to the ever-busy **South Birmingham** lot; they are 'open for business' on the first Wednesday in each month, for a lecture or whatever, every Thursday evening for HF operating, and every Friday evening for the VHF fraternity to operate.

Turning now to **Southdown**, we are surprised that their May 10 date was not confirmed at the time they wrote — it must be the first time in years. We can be quite certain, though, that there will be something organised by the date, and probably already settled as your conductor writes. The venue is the Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne, Sussex.

Our next stop is with **S.E. Kent YMCA**, based on Dover YMCA in Leyburne Road. They are there every Wednesday evening, but we have no May programme data for which we refer you to the Hon. Sec. — see Panel.

Our next stop is at **Stanford-le-Hope**, where the gang have Hq. at the Scout Hut, Hardie Road, Stanford-le-Hope every Monday evening.

Now to **Stevenage** and the British Aerospace Plant B in Argyle Way, where the routine is to foregather on the first and third



The first major event of the year for Pontefract & District A.R.S. was their Components Fair held on March 14th, and judging by this picture it must have been a great success! Photo by G4ISU

Thursday of each month.

Yet another new one — this is at **Stirling**, where they have the second and fourth Wednesdays of each month in the upper lounge at "Checkmate", Baker Street, Stirling. More details from the Hon. Sec. — see Panel for his address.

Most club newsletters cover the Home Office licence pantomime, and **Surrey** is no exception; but a more important note concerns the May dates, as these are both taken back a week to cater for the Bank Holiday situation. Thus May 10 is down for a talk by a visiting speaker, and on May 24 there is the Constructional Contest.

There is a new editor in the chair at **Sutton & Cheam**, but he hasn't got the full programme data for May in the issue we have; not surprisingly, really, as the AGM was on April 30! As this club has two venues and doesn't seem to have a set routine for use of one or t'other, we must refer you to the Hon. Sec. — see Panel.

Now we head for **Thames Valley** club, which covers the Thames Ditton area; the Hq. is at Dittons Library meeting room, Watts Road, Thames Ditton, and they can be found on the first Tuesday of the month.

The writer always thinks of **Thanet** as "that cold place" — his only experience of it having been at time of a wintry east wind! They will be in session on May 7 for a talk on D/F by G3OWQ, and again on 21st for a tape lecture. That leaves one snag — we don't know where, for which we have to refer you to the Hon. Sec. (who incidentally sports a nice new G4 call sign!).

The Hon. Sec. of the **Thornbury** club suggests that an interested visitor or prospective member contacts him for details — see Panel. The May date is on the 5th, and is looking at 144 MHz converters.

The **Torbay** correspondent notes with regret the passing of Len Spencer, G3TVB, of Churston, Brixham. The club have a place at Bath Lane, rear of 94 Belgrave Road, where they have informal evenings every Friday, plus a once-monthly formal affair on the last Saturday of each month.

Our next new club is called **Tynedale**, and they have a place at the Falcon Hotel, Prudhoe, Tyne & Wear; the May date is May 11, and for the rest we refer you to the Hon. Sec. — see Panel for details.

At the **Vale of the White Horse** club they have a place at the White Hart Inn in Harwell on the first Tuesday of each month; for May they have a talk by Geoff Bridges on video.

Verulam have their main meeting on May 25, when G8ASI will give a talk and demonstration of Amateur Television, at the Charles Morris Memorial Hall, Tyttenhanger Green, Tyttenhanger, near St. Albans. In addition they have an informal session on the second Tuesday of each month at the R.A.F.A. Hq. in New Kent Road, St. Albans.

Wakefield have a natter-night on May 4 and a junk sale on May 18; both are at Room 2, Holmfield House, Denby Dale Road, Wakefield. Both the May dates are to start at 7.30, rather than the more usual 8 p.m. kick-off time normally used.

WACRAL is a group of committed Christian amateurs, denomination irrelevant, and world-wide in coverage. More details from the Hon. Sec.

Our note from the **Watford** club says that they are 'at home' to visitors or prospective new members, on the first and third Wednesday of each month, in the Small Hall, Christ Church, St. Albans Road, Watford, Herts.

Next we head for **West Kent**, at the Adult Education Centre, Monson Road, Tunbridge Wells; on May 28 they will have a discussion of their last-minute NFD chores. The club also have an informal on the intervening Tuesdays at the Drill Hall in Victoria Road, Tunbridge Wells. They have bought a K.W. Ten-Tec rig and it is being used at these informals on CW to train operators in its intended use in contesting.

Wimbledon's Hon. Sec. is that stalwart of the QSL Bureau, G3DRN; he advises us that they are at the St. John Ambulance Hall, Kingston Road, Wimbledon, on the second and last Fridays of each month.

A new one to us is **Winchester**, who gather at the Log Cabin, Stockbridge Road, Winchester, on the third Saturday in each month starting at 2000.

The distinctive **Wirral** newsletter cover has all the necessary details — first and third Wednesdays, at Minto House School, Birkenhead Road, Hoylake.

Worcester have two places. They are at the Oddfellows Club, New Street, on May 10 for a talk on Constructional Techniques by G4EYJ, the accent apparently being on printed board methods. Then, on May 17, they have their informal meeting at the Old Pheasant, also in New Street.

The **Worthing** club newsletter is a 'worthy' effort too, although they have some problems with the duplicator. They can be found on Tuesdays at the Amenity Centre, Pond Lane, Worthing. They

sound to be a very involved club with lots of activities.

Down West again now, to **Yeovil**, who have their Hq. at Building 101, Houndstone Camp, Yeovil. May 6 is the AGM and on May 13, G3MYM takes a post-RAE look at sine waves. G3KSK expounds upon the advantages of CW operating on May 20, and on May 27 G3DSS will discuss "Receiver Middles" — sounds interesting! On June 3, we see G3MYM back again this time talking about electro-magnetic radiation.

Finally, **York** where the Hq. at the United Services Club, 61 Micklegate is used on each Friday *except* the third one, at 7.30 — with special welcome for visitors. They will be operating GB3YCS at Snowball Plantation, Stockton-on-Forest, York, on Saturday, May 15, surrounded by hordes of interested Cub Scouts.

Finale

As always, the dates are in the 'box', and are deadlines for your letters to arrive, addressed "Clubs Roundup", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. And, this time we are going to have a Big Purge on outdated material — so if you disappear from the list next time, you know what to do!

Rallies

We apologise for errors last month (p. 97) in the details given for the **Swindon Rally**, which should be as follows: **May 16**, Swindon and District A.R.C. Radio & Electronics Rally at Park School, Marlowe Avenue, Swindon, Wilts., from 10 a.m., free parking, refreshments, talk-in on 2m. (S22) and 70cm. (SU8 or GB3TD), admission 50p, family attractions. Details from G8SFM, QTHR (tel: 06668-307). **June 13**, Elvaston Castle Radio Rally, Elvaston Castle Country Park (5 miles S.E. of Derby), talk-in on 144 and 432 MHz, full catering, family attractions. Full details from Ian Cage, G4CTZ, 27 Long Row, Shardlow, Derby DE7 2HE.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

The Bands

WE are now some two years past the sunspot peak, and it is something of a wonder that the peak has been, as it were, such a plateau. However, there are signs that the downward trend is now on in earnest. All that being said, it is also probably true to say that this equinox has been marked by more disturbed band conditions than normal. So, let's go and look.

Top Band

Not a lot of reports, but we were surprised to get one from G2HKU (Sheppey) whom we had thought to be still laid up after his hospitalisation. Ted is finding that the business of recovering concentration and co-ordination is being greatly helped by radio operation, which included, on SSB, contacts with HB9BLQ, EA3VY, DJ1SU, DJ2YE,

DJ6QT, and PA0PN, and one CW QSO, with UT5AB.

G3PKS (Wells) says he has managed to keep out of the clutches of the medics, and with the warm weather just recently he has even been able to do some gardening. Jack found Top Band, in his idea, quite good, with midday contacts of Oxford and the Isle of Wight at 59; and in the evenings up and down the country. G3PKS says the Mendips net, on Monday evenings, 1900 clock-time and frequency 1950 kHz, is quite active and welcomes break-ins.

As far as G4AKY (Harlow) was concerned, the band has been a bit 'iffy' with the dawn peak much less marked than usual. However, Dave worked quite a lot of DX, the pick of the crop being ZB2EO, VK6HD, EZ7RAC, OY2J, UA9CSG, 9H1CG and FG7AM, all on CW, while SSB took care of LX1PD, W8LRL, K2BQ and NP4A. Gotaways on CW were

K3SXA/MM, PY1ARS, and W6RW, and it was noted that KP2A/KP1, ZL1AH, ZL3GQ and 9V1TK were on but had not surfaced to G4AKY or others known to him. The ZL path, of course, is a very difficult one, but we have it from spies that ZL1AH has in fact been heard in the UK.

Eighty

Again, not a lot to report; G3PKS says it varied from very good to bloody awful. One Sunday morning he found his way to the shack at 0600z thanks to the influence of BST, and there was a W calling "CQ FOC". Just one CQ DX, put out a couple of kilohertz away, and W2BA was rattling the speaker with a 599+ signal from a kilowatt into a 'sloper' aerial. By 0615 the band had gone so quiet that a turn to Twenty seemed indicated, and G3EIW, when they had their regular sked, said he checked the band at 0630z and it was

definitely dead.

Turning to G2BON (Aldridge) we find that Tom has been concentrating on the lower bands to level the scoring a bit — there's not a lot in the way of new countries left to chase on the higher bands. Thus Eighty SSB gave with PR2DD, GU2FRO on Sark, UA6PCJ, UD6DJH, UD6DLL, SV8CS (Zante Is.), SV8IH (Corfu), UO5OCR and CT2ARA.

Knowing that G3ZPF (Dudley) has to rise at 0615z to go to work, when he refers to getting up early he is talking in terms of 0500 . . . but when he can actually achieve it, the results seem worth while, with such as EA8FJ, ZB2HE/A, K9DX/V2A, N5DKG/YV5, 3V8DX (G3SVK in disguise), VP2EV, C6ABA, K5NA/KP2, some Ws and the usual crop of Ruskiens.

Our other 3.5 MHz reporter is G2NJ (Peterborough) who mentions listening to SM6EHY calling "CQ DX long path" at 1540z on March 21; at 1550 the SM event "ZK1? pse try again". After a pause he sent 'Nil' and changed to "CQ DX Pacific via short path". Another interesting one was with ZD8WB on a trawler at 1545z; the ZD8 indicated happy memories of Peterborough and said he had been on a course at a well-known engine firm in the city. G8ND was worked one mid-afternoon for some twenty minutes; the G8ND aerial was 35 feet of washing line up at seven feet! Finally, a medal for the QRP operating of Y230H near Halle, heard in the midst of a QRO contest, and worked with a steady 579 from two watts.

Points

First, the ever-useful line from W1WY and his Contest Calendar. First comes the CQWW WPX CW context over the weekend of May 29/30; the rules are exactly the same as for the SSB leg. Some points arise: the single-op stations are allowed just 30 hours out of the 48, the off times being taken in up to five periods; multi-op single transmitter entries, where only one operator and one transmitter may be on one band in any period, defined as a minimum of ten minutes (this means just what it says, and hence no quick QSYs to another band for a sneaky multiplier!); the Prefix multiplier counts once only, *not* per band; the definition of a Prefix includes the suffix where used, so for example W8IMZ/4 would count as W4 and such a station is required to show by suffix where he is actually operating even where licensing does not insist on it; QSOs on 160/80/40 count as worth double points compared with QSOs on 10/15/20. Mailing date for completed logs is July 10; they are to include a checklist in alpha-numerical order of all Prefixes claimed, and are to be addressed to: CQ Magazine, WPX Contest, 76 N. Broadway, Hicksville NY 11801; or alternatively to B. Welch, W8IMZ, 7735 Redbank Lane, Dayton, Ohio 45424. U.S.A. of course!

Still with W1WY, Frank has sent us a list of the 1981 CQ WW WPX SSB results.

From this we see G3VBL was at tenth in the all-band single operator section with 3,161,304 points, as against the winner's 5,489,042 by NP4A. In the multi-operator single transmitter entry we note G6UW in eleventh place with 5,674,515, and the multi-transmitter multi-operator fifth place was taken by GB4ANT with 11,334,124 points. Congratulations to all these. Among the others we note GU3YIZ with a 7 MHz entry of significance, and a few — very few — others.

Port Talbot ARC have their HF context on May 9, from 0600 to 2359z, open to all GWs. score 2 for EU, 3 for American mainland QSOs and 5 for elsewhere. Multiplier of one for each country worked, W and VE call areas each counting as one country. 80-10 metres, to *exclude 10 MHz*, and the ten-minute rule is to apply (*i.e.* once on a band you must stay there for ten minutes minimum). Exchange RS/T and serial number from 001. SWLs to log as above, and in addition time, frequency of both stations in QSO. Logs to go in within fourteen days of the contest. Notice an odd provision, which is that only six hours of the 18 may be used, divided into up to three periods. An award for the winner and for the best SWL also. Use RSGB contest log sheets, and clearly mark any duplicate contacts.

According to Geoff Watts' *DXNS*, VE7BC received a letter indicating that the first two BY amateurs were to appear on 14 and 21 MHz CW, one licensee being an OM and one a YL. BY1PK, operator Tong, was heard on 21037 at 0200-0300z — his lunch time — working JAs. It is understood that a group of Ws and VEs will be heading for China, including W1RU from ARRL, to discuss amateur radio matters with Chinese officials, and VE7BC also hopes to be able to operate. The QSL address for BY1PK is PO Box 6106 Beijing. Nice to hear the BYs back after all these years.

In the DXCC countries list, Kamarin Is. (VS9K) was deleted as from March 11, 1982, so the current total is now 318. Geoff Watts also notes that SeneGambia is a federation of two countries and not a 'new one'.

A letter from G3WRO (Harlow) indicates that Keith will be out /MM between 29/30 May, aboard the yacht *Beagle Hound*, using 7/14/21/28 MHz and VHF, sailing the Blackwater estuary and the Essex coast.

We have a note of the RSGB Convention, at the Belfry Hotel, Oxford on Saturday June 19. There will be films, lectures, and so forth, and GB2HF will be on the air and manned by members of the QRP Club, who will also have a show of QRP equipment there. This starts at 1000 and closes down at 1800. The place is very close to Junction 7 of the M40, and there is a bus service from Oxford. Admission is £1 at the door. And if you're wondering why this is mentioned in "CDXN", we are hoping to see the QRP gang produce some

DX fireworks if the bands are good to us.

A letter from G3UOF is accompanied by his W reciprocal call, and a comment that he will be signing G3UOF/W/MM from the oil rig *Penrod 85* drilling for Conoco off Great Yarmouth — the rig call is WRA4842.

Anyone wishing for data on old radio/TV sets or tape recorders might care to note that G3KPO, as Honorary Curator of the National Wireless Museum, has been given an enormous pile of old literature, even including some transmitters using 807s and 6L6s. If you think he might be able to help, his telephone is Ryde 62531 on the Isle of Wight.

"CDXN" deadlines for the next three months —

June issue — May 6th
 July issue — June 3rd
 August issue — July 1st

Please be sure to note these dates

Ten Metres

G3CED (Broadstairs) has been somewhat aback as a result of the combined attentions of arthritis and lumbago and submitted a ten-metres only log this time, mostly CW QSOs. An interesting list includes SV1NN who gave his 50 watts a report of RST599, W3ARK, K7RDG from Tombstone, Arizona, F9NI on QRP, AF7F in Oregon, UA0UKC, JA5JTE, KA4YAE, a very fast QRQ contact with YU5XEC; KA4EOQ, PY8MM, UA8LIX, UB5ZFQ, UF6FAI, UB5JNT who gave George a shock by sending his QTH Krasnoperexopsk, which must come fairly close to the ever-famed Llanfair . . . A brace of PYs were followed by VP8ANT raised more or less by accident in the pile-up, N2IT, W1JOL, SVOBV, WA5WYN, SU0CG who gave no details, KJOOU, and WA8CLT/5 in Texas. That should make the CB-ers turn to Amateur Radio!

Now we turn to G2BON who offers SSB with VS6HJ, 3X1Z, 9N1BMH, JG1NBD, and VK5RX.

G3PKS kept his visits to the band to the pre-breakfast and after teatime periods, and this policy netted him — all CW — JA5EXN, JA5EZL, W7DC, JR6IM/2, VE3EK, Z23JO, UA9COD, UK7CAO, UL7PTU, 9J2TY (QSL *via* JH3PDB), WB4PUB, SM0GMG/CT3 and N6DJM, with VU2ALQ and HL1AV as gotaways (heard so weakly that there wasn't much hope).

G3NOF (Yeovil) now, and Don stuck to his SSB, and found conditions quite strange, with sometimes the band poor all afternoon and opening later to W6/W7 and maybe KL7, KH6, ZL around 1800; on other days open to U.S.A. from 1100 to

2200. Short path VK/ZL/JA and Pacific around lunchtime, in with Caribbean and South Americans, the last mentioned re-appearing around 2000. Don notes QSOs with A71AD, A92DD, A92F, A4XJN, DL2VK/ST3, DU6ZO, FB8WG, HL1QO, J3AH, JA1CSL, JA2ELA, K0RF, KH6DX, N6AQ, N7AYF, N0ASA, UA0YE in Zone 23, RH8ACV, UM8MAI, P29GO, P29MF, PJ9AA, VE5RA, VE5UK, VE6HP, VE6WQ, VE7KG, VK2DPN, VK9NYG, VK9XM, VP2EC, VQ9WB, VS6HJ, XZ9A, W6COE, W0ACT (S. Dak.), W0KEA (Colorado), W0YK, W0ZV, WB6LED, WB8LDH/J3, WD0BFT (Colorado), ZL1AAS at 1903z, 6E5RN, 8Q7BN, 9Y4TAM, and 6Y5OLL.

G4HZW (Knutsford) mentions hearing the beacons VK2WI and ZL2MHF from as early as 0650, and ZL2MHF again by short path at 1930z; the VK2WI beacon was audible at 2100z short path. In terms of QSOs he reckons it a vintage month, using a TS-820 and two-element Quad at 24 feet boom height. During the CQ WW contest, DA1US was heard using 700 watts to a 19-element log-periodic and attracting one or two takers(!) The long list includes 3B8DB, 4S70WG, 5H3BH, 6D5ZZA, 9K2BE, A4XJO, CE5BYY, some CN8s, DL2VK/ST3, FY7YE, H44PT, H44JE, H44SH, HL5OC, HLIADQ, HSIAMH, JT1BG, KB7IJ/KH2, KP2A/KP1 for Navassa, lots of JAs including a couple running five watts and 8J5SUN, NP4A, VS6CT, VP8LP, VP9IX, VP9IQ, VP9IB, VP2MGQ, VP2EC, Ws in all call areas and most States, KL7LF and KL7RA both at 0900z, KH6DX, KH6XX, KH6DQ, KH6MP, KA7GEI/M/7, WA2FSP who had five watts and a dipole at twenty feet, W6s and W7s at 2300z, a stack of UA0 and UA9 stations, UL7DAA, UL7QF, RH8HCV, UK8AAS, lots of VEs in all call areas save for VE8 (some using the contest prefix XK5), VY1BQ and VY1CQ both 59 signals, a daffy of ZLs, YJ8MP who came back to a CQ, YB0ACL, VKs, SV0AU, ZS4SP, and ZF2FV.

G4NKM having successfully sold his house is /A from Bromley until all is sorted out at the new house, and so he has been a bit busy. Steve reckons his ten feet of wire indoors and 100 watts only got him to VE3WA, who is ex-G3XI from Hammersmith; but on the other hand it was noticeable that the CB QRM is decreasing.

Our last on this band is G3FPK (Purley) who notes that whatever else happens to the band there are usually Russians, and some of them have fearful signals both CW and SSB. He has little to report; a few odd times during BERU, which gave several VE districts, VK and so on, plus VS6JW, with SM0MG/CT3 for a new country on the band.

Fifteen

G4NKM used the set-up already mentioned to look at 21 MHz also, and

found at 0100z 6Y5HN, and at 1000z KC1F and VE1DXA.

G3FPK felt quite pleased with his successes on the band, which included VK9NM on Lord Howe Is. for an all-time new one, on SSB. CW found another all-time new one in KP2A/KP1 on Navassa (QSL via KP2A). Other firsts on the band included ZF2FQ (QSL via AB8Y) and VK9NS in BERU. Other CW QSOs of note were with VP2ES (QSL via K8CV), and JX5VAA for whom the cards go to LA7JO.

Turning to G3PKS, Jack did not spend too much time if the band sounded to be wide open; he prefers these days to attack the band when it is just opening or just folding up, times when it can be rewarding and not so much hassle; a sign, he thinks, of age!

Down in Somerset, G3NOF found lots of short-path openings to VK/ZL/JA/Pacific/Far Eastern Russia about 1000z and, around 1900, some openings to Central Africa. 1600-1800z saw good openings to the Pacific seaboard of the U.S.A. It added up to SSB QSOs with AD7N (Idaho), FG7BG, JD1BAT (Minami Torishima), K6EDV, KB7UI (Arizona), KF7E, KP2A/KP1 (Navassa), OY2J, P29FV, SP2YK/MM, TN8AJ, UA0FCL (Zone 19), UA0FDG (Zone 19), UG6GAF, UO5OAL, UW0WE (Zone 19), VE7BRI, VK5NM, VK7NTP, VK9NM/LH, VQ9CB, VY1CM (Yukon), ZC4AK, ZK1CG (Manihiki), W6USG, W6QL/PJ2 (Yasme), ZL1BQD, ZL2BAO, 3D2WR, 5H3BH, 5Z4CM, 5Z4CX, 5W1DQ and 6E5MX.

Help!

The cry goes up from G4MVA, who had the good fortune to work FR7BX but the ill-fortune to choose that moment to have to QRT with TVI troubles, so that he wasn't able to get a QSL address. If anyone can help Glynn, drop him a line: G. Burhouse, G4MVA, 15 Lairs Crescent, Snainton, Scarborough, N. Yorkshire.

Twenty

At times it sounded a bit like a garbage bin into which all the world's awful electronic noises had been poured; but it is still where it all happens, especially at the bottom of a sunspot cycle.

G2BON trawled the band with some profit, in the form of SSB QSOs to VP2EV, 6Y5OFS, VK3DQS, 3V8DX, 6D5VIC, VK3AIH, VK3DLZ, W5ZR in Louisiana, VO2CW and K6DXK.

G3NOF remarks that the good conditions on 21 and 28 MHz didn't leave much time spare for 14 MHz. The early morning 0630-0700 period was often good to VK-ZL-W6-W7 and the Pacific, and the early evening about 1800 was also good for VK and ZL by the short path. However, Don only worked SSB to N6RO, VK2BZA, VK4SU, VK9LM (Lord Howe Is.) and ZL3MF. G3NOF usually has a snippet of news at the tail of his letter and

this time he notes that locally CB sets are going at a discount of £20 or more, and from that postulates the idea that a few conversions of CB sets to 28 MHz should be turning up. A good thought, indeed!

Twenty in the view of G3PKS was in an interesting condition when he looked at it. His CW worked out to SM6DEC, K1EPC, N6DJM, KA0HDJ/2, W7JCT and W7WCC; and some real DX by way of G8II in Lingfield, Essex.

G3FPK didn't bother with SSB on this band, but CW yielded LZ13CSF for the WPX hunters, UA0ZBF in Zone 19, and on the Kamchatka Peninsula, K5NA/KP2 (QSL by W4JVN), and C53AP in BERU. ZM7VU came on the morning of Norman's letter, and he was all ready to call him when JT1KAA came up slap on the frequency calling "CQ DX". The resulting shemozzle drowned the ZM without trace despite his being after Europeans.

Back to G2HKU, and Ted found SSB right for UF6CR, ZL3RS and ZL3FV, but CW for PAOVD/PJ7, K4FW/VP2K (the Ten-Tec man himself), CX5RV, CX4GL, OY7ML, VU2BK, W6YK, UD6DLJ and TI2PZ.

Look Ahead

The crystal ball seems to have got a bit clouded over at this moment; we hear rumours of a Mellish operation slated for early May by VK2BJL and Co., and maybe SM0AGD will appear from various parts Pacific; otherwise, future DX seen from here stops dead a mite before publication day!

30 & 40 Metres

Lumped together for want of reports! Taking our new band first, the only reporter is G3FPK, who notes that the QRN is beginning to build up a little; but it didn't stop him from picking up a brace of new ones in the form of W6QL/PJ2 (Lloyd and Iris Colvin), and EA8GS.

Our own observations on the band have been rather sparse while other things have occupied the mind; but your scribe noted the static is beginning to build up, and also noted W6QL/PJ2. One must hope that we don't start seeing contest-style operating or large pile-ups on this, our narrowest band.

As to 7 MHz, it has received the universal thumbs down from our reporters, save for a solitary QSO noted by G2HKU — he worked VP2ED on CW.

Finale

So, friends, that's it once again, and for the writer it concludes his sixteenth year in the commentary box. But, we would like still more feedback from you out there; send it to "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ, to arrive on the date shown in the 'box'. Meanwhile, Happy Lawnmowing!



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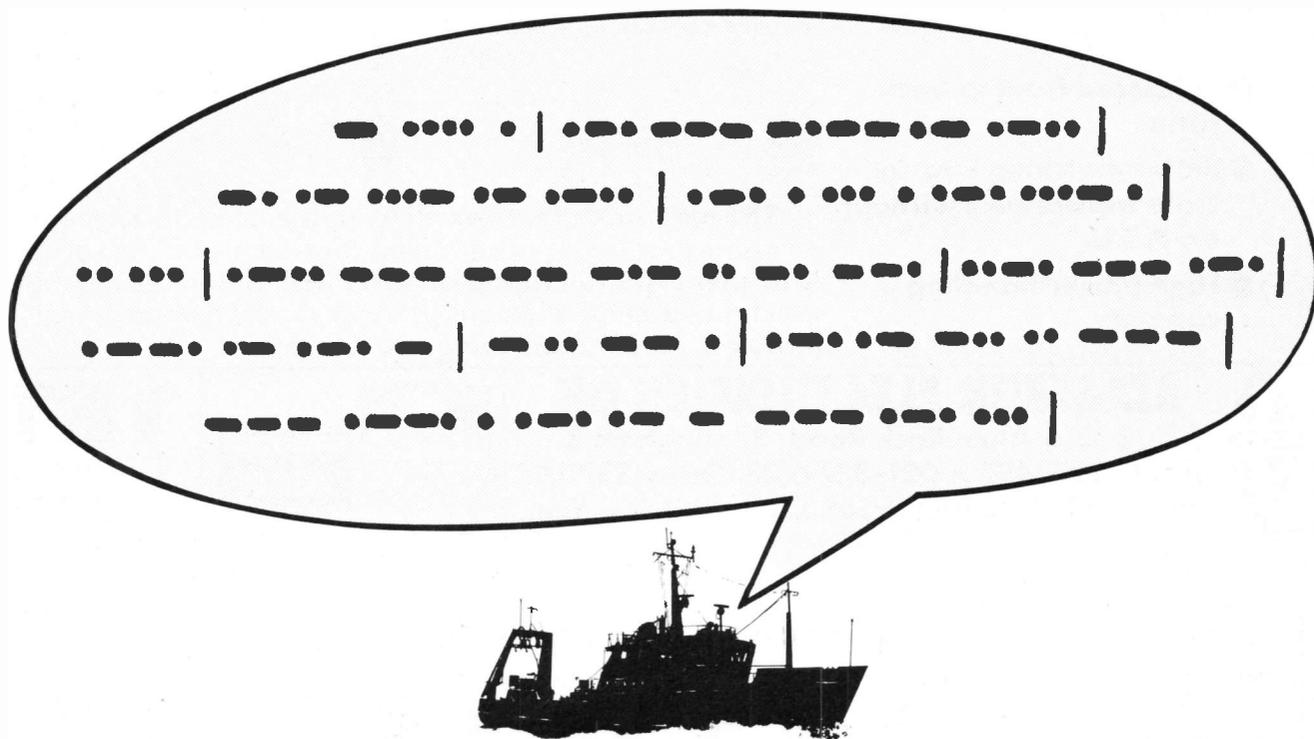
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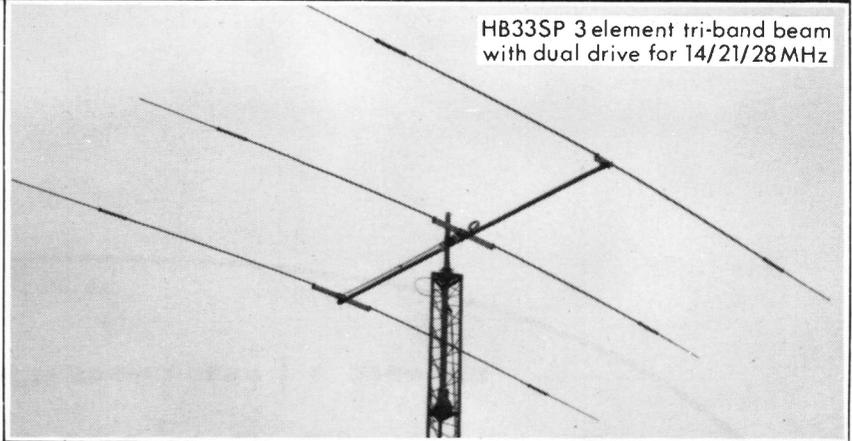
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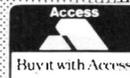
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Unless otherwise requested fundamentals will be supplied with 30pF load capacity and overtones for series resonance operation.

HOLDERS — Please specify when ordering — 10 to 200kHz HC13/U, 170kHz to 170MHz HC6 or HC33/U, 4 to 225MHz, HC18 and HC25.

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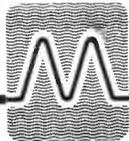
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MML144/100-LS

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- 100 WATTS RF OUTPUT
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- STRAIGHT THROUGH MODE WHEN TURNED OFF
- ULTRA LOW NOISE RECEIVE PREAMP (3SK88)
- EQUIPPED WITH RFVOX
- SUPPLIED WITH ALL CONNECTORS

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MML144/30 WATT
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(Appearance as MML144/100-LS)

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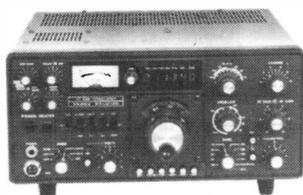
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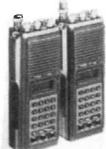


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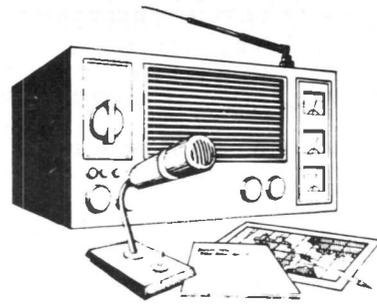
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