

Practical Wireless

**PW**

amateur radio & more!

*review*

**portable &  
fun...the FT-897**

*inside*

**...catch the DX on 20!**



**August 2003 £2.85**



**WIN! antenna matching unit kit**

# WATERS & STANTON

**WEB ORDERING**  
www.wsplc.com

**BRAND NEW!!!**

## NEW HEIL QUIET PHONES

### Active Noise Cancelling Headphones

Ambient noise drops away as you switch NR unit on. Amazing reduction! Fitted 3.5mm / 1/4" jacks. Requires 1xAA battery.

**£99.95 B**



## NEW KENWOOD HF RIG 160-6m

Similar concept to the TSB-2000, but much smaller. **AVAILABLE AUTUMN**



## NEW YAESU VX-2R

World's smallest dual band HT with WB Rx up to 3W output!

**COMING SOON**



## NEW YAESU FT-8800R

Dual Band Mobile 50/35W

**AVAILABLE SOON**



## NEW IC-703

### HF/50MHz Transceiver

0.1-10W Portable, Mobile, Base-Station. (9-15.87V DC) Designed especially for the Foundation Licence/QRP.

Built-in features auto ATU, DSP memory keyer. (5W when using 9.6V batts)



**£599 c**

## NEW FT-857

### HF/50/144/430MHz

#### Mobile Transceiver

HF/6m 100W, 2m 50W, 70cm 20W. (13.8V DC)

Developed on the FT-897 and FT-817 transceivers.

Built-in features 32 colour display, spectrum scope, AM airband receive, built-in memory keyer, detachable front panel, DSP unit supplied.



**£799 c**

**HEAD OFFICE • 22 MAIN RD, HOCKLEY • ESSEX • SS15 4QS**  
**ENQUIRIES: 01702 206835/204965 FAX: 01702 205843**  
**MIDLANDS STORE • W&S @ LOWE • BENTLEY BRIDGE**  
**• CHESTERFIELD RD • MATLOCK • DERBYSHIRE • DE4 5LE**  
**ENQUIRIES: 01629 580800 FAX: 01629 580020**  
**SCOTTISH STORE • W&S @ JAYCEE • 20 WOODSIDE WAY**  
**• GLENROTHES • FIFE • KY7 5DF ENQUIRIES: 01592 756962**  
**FAX: 01592 610451-CLOSED MONDAYS**

## ICOM IC-756 PRO II £1999 C



Flagship of the Icom range of HF transceivers. HF & 50MHz, features large colour LCD with spectrum scope, auto ATU and 32-bit floating point DSP unit.

## ICOM IC-7400 SPECIAL OFFER £1449 C



HF/VHF 100W transceiver. Features large LCD with spectrum scope, auto ATU and same DSP system as IC-756PRO II. Supplied with free SP-21 speaker & SM20 desk mic.

**COMES WITH FREE SP-21 & SM-20**

## ICOM IC-706 IIG DSP £799 C



HF/VHF/UHF mobile DSP transceiver. Its relative small size not only makes it a great mobile rig but also for fixed station use as well. HF general coverage Rx and VHF & UHF.

## ICOM IC-718 £499 C



HF 100W transceiver. Covers all HF bands plus wideband receive. C/w auto notch, dual VFO, SWR meter etc. Options include extnl ATU DSP & filters.

## ICOM IC-910X with 23cm £1249 C



Icom's all mode VHF/UHF transceiver with 23cm. Large clear LCD with lots of facilities. 100W on VHF and 75W on UHF, 10W on 23cm. IC-910H version £1149

## KENWOOD TS-2000 £1549 C

### SPECIAL OFFER

Ends 31/7/03



Top-of-the-range 100W Kenwood transceiver. HF/VHF/UHF or up to 23cm with the optional module. Built-in auto ATU, DSP and its unique TNC.

## KENWOOD TS-870S DSP £1399 C



HF DSP 100W base station. Excellent all round rig great for DX working with its ability to winkle out weak stations using its true IF DSP. No filters to buy.

## KENWOOD TS-570DGE £799 C

### SPECIAL OFFER

Ends 31/7/03



HF 100W base station with built-in auto ATU. Very popular rig, excellent performance on SSB and CW. Two fitted antenna sockets - very handy.

## YAESU FT-1000 MKV £2349 C



200W HF transceiver, EDSP, Collins filter, auto ATU, 220V AC PSU - Acknowledged as one of the finest DX rigs on the market. Superb tailored audio and the ability to select Class A bias for dramatic signal purity.

## YAESU FT-1000 FIELD £1749 C



100W HF transceiver, EDSP, Collins filter, auto ATU, 220V AC / 13.8V DC - Building on the success of the FT-1000MKV, the Field has become a respected leader in its class.

## YAESU FT-897 NEW £989 C



100W HF rig plus 2m and 70cms (50W/20W) 13.8V external supply / internal optional FP-30V AC power supply / self powered portable using optional Ni-MH pack at 20W output. Compatible with FC-30 auto ATU and ATAS 120/100 antennas. The "must have" radio for 2003.

## YAESU FT-847 £1199 C



1.8 to 440MHz, this all-in-one transceiver offers unbeatable value. 100W on HF plus 6m, and 50W on 2m and 70cm. You get genuine RF clipping on SSB for up to 6dB gain and there are 4 separate antenna sockets.

## YAESU FT-817 £569 C



All bands & All modes gives you a totally portable HF DX or VHF/UHF station. **Ours includes battery and charger.**

## LINEAR AMP UK RANGER 811H £895 C



HF linear amp 160-10m including WARC bands. Drive 10-100W, output 800W (max) CW. Soft start on switch-on. Compatible with all modern 100W HF rigs. Silent running Papst fan.

## AMERITRON AL-82XCE £2595 C



1.5KW HF Linear amplifier 160-10m inc. WARC. Uses 2 Eimac 3-500Z. Built-in power supply with in-rush current limiting for greater valve life. Designed to give you years of trouble free operation.

## AMERITRON AL811 XCE £799 C



Ideal 600W HF Linear more than enough for the full UK limit. 160-10m including WARC bands. Uses 3x 811A low-cost valves. Matches all modern 100W solid state HF rigs. Silent running cooling fan.

## HY-GAIN HDR-300AX NEW £1595 C



Mega rotator for large HF beams and antenna arrays up to 2.3m<sup>2</sup> (25sq ft). Heavy duty self-centring steel mast clamp and hardware. Control box with digital display accurate to one degree. North or South centred calibration.

## FD-7021 POWER TANK £24.95 B



12V DC 4Ah supply, ideal for FT-817 and the new IC-703. \*2x 12V, 12A Cigar lighter sockets \*+3/6/9V outputs \*Computer controlled battery state \*Built-in lantern \*AC charger & cigar lighter power cord included \*Shoulder strap \*Compact size: 180 x 85 x 210mm \*2.3kg

**PHONE FOR EXPERT ADVICE ON ANY ITEM**



**GENERAL ENQUIRIES:**  
**01702 206835/204965**  
**FREEPHONE ORDERLINE:**  
**08000 73 73 88**



**carriage charges: A=£2.75, B=£6, C=£10**

**ICOM IC-2725E NEW £309 C**



The Icom IC-2725 dual band FM transceiver is proving very popular. Easy to install, the controller is separated from the main unit - great where space is limited.

**ICOM IC-207H £249 C**

**SPECIAL OFFER**



Great budget price dual band FM 50W/35W transceiver. Simple band operation. Front panel detachable from main unit if required.

**ICOM IC-2100H £229 C**



2m 55W FM mobile. Commercial grade, rugged construction. One piece die-cast aluminium chassis. Selectable green or amber display.

**YAESU FT-8900R NEW £369 C**

Want the best of all worlds then the FT-8900R is just the ticket! A rig with four of the most popular mobile bands - 10m/6m/2m & 70cm. Detachable head. Airband Receive.



**YAESU FT-2800M NEW £159 C**

The FT-2800M 2m FM 65W High Power mobile transceiver. Rugged construction, excellent receiver performance and direct keypad entry.



**YAESU FT-1500M £179 B**

Remarkably small and compact, yet built like a Battleship! Should last for years.



**KENWOOD TMD-700E £449 C**



Certainly the best dual band mobile transceiver with APRS. Does not need extra high cost boards to function. The only extra if required is a compatible GPS receiver.

**KENWOOD TM-V7E £359 C**



A lovely cool blue display, easy with 50/35W output. 50W/35W plus 280 memos and five storable operating profiles.

**KENWOOD TM-G707E £289 C**



If you are looking for simplicity and low cost, here's the answer. 2m & 70cm with detachable front panel and "Easy operation mode." GREAT!

**IC-E208 NEW £319 B**

VHF/UHF FM Dual Band Mobile Transceiver \*Freq range 144-146MHz, 430-440MHz Tx \*55/50W (3 pwr steps each band) \*Wideband Rx 118-173, 230-549 & 810-999MHz \*512 memories \*FM narrow capability \*104x2 DTCS, 50 CTCSS tone squelch \*16 DTMF channels \*HM-133 remote control mic \*Packet ready for 9600/1200bps-mini DIN or 1200bps-mic socket \*Supply 13.8V



**YAESU VX-7R NEW £319 B**

6m/2m/70cm

Available in Silver or Black



The VX-7R is the best outdoor handie ever. The case, keypad, speaker and connectors are all sealed against water damage. Wide Frequency coverage from 500kHz to 900MHz the VX-7R is ideal for monitoring a variety of broadcasts. The display is a dazzling 132x64 dot matrix providing easy-to-read frequencies and information plus pictorial graphics.

**YAESU VX-110 £109 B**



Combining the ruggedness of the VX-150 with the simplicity of 8-Key operation, the VX-110 is a fully featured 2m handheld ideal for the most demanding of applications. It has a die-cast case, large speaker and illuminated keypad.

**ICOM IC-E90 NEW £269 B**



The new E-90 offers triple band coverage of 6m, 2m and 70cm. Up to 5W output and rx coverage from 495kHz - 999MHz makes this a very attractive rig.

**ICOM IC-T3H £129 B**



The IC-T3H 2m handheld features tough quality but with slim looks. Its striking green polycarbonate case has been ergonomically designed. The rig is capable of providing a powerful 5.5W output with either Ni-Cad or Ni-MH battery packs. Supplied with charger and rechargeable battery.

**KENWOOD TH-D7E £319 B**

**DATA COMMUNICATOR**



One of the most successful handhelds over the past few years. It has a built-in TNC for Packet use. You can also use it for APRS operation in conjunction with an external GPS unit. Plus NMEA, 200 memos, and up to 5W output.

**KENWOOD TH-F7E £259 B**

**WITH EXTRA WIDE RX COVERAGE**

- 144-146MHz Tx/Rx: FM
- 430-440MHz Tx/Rx: FM

Up to 6W out with Li-ion battery and "scanner" style coverage from 100kHz to 1300MHz including SSB on receive! This is a great radio to have at all times when you are on your travels.

**KENWOOD TH-G71E £199 B**



If you want an excellent 2m/70cm dual-bander then you can't go wrong with the TH-G71. Fully functional with three power levels, 200 memories, CTCSS tone encoder/decoder, illuminated keypad and backlit LED.

**MOTOROLA T-5512 £69.99 B**



**Motorola Dual Pack PMR-446 Recreational 2-Way radio**

- No Licence Fee or Airtime Charges
- 8 Channels and 38 Codes
- 3km Range
- Lightweight
- Water Resistant
- Handsfree use (VOX) (with optional accessory)
- Supplied with 2 belt clips

**MOBILE ANTENNAS**

**WATSON ANTENNAS (PL-259 base type)**

Comes with coax & BNC



**WSM-270.** 2m/70cm, 2.5dBi, 6.15dBi, 50W max, micro-magnetic 29mm base, length 0.46m. **£19.95 A**

<b>W-2LE</b>	2m quarter wave 2.1dBi 0.45m	<b>£9.95</b>	<b>A</b>
<b>W-285S</b>	2m 3.4dB 0.48m (fold over base)	<b>£14.95</b>	<b>B</b>
<b>W-77LS</b>	2m/70cm 0/2.5dB 0.42m	<b>£14.95</b>	<b>B</b>
<b>W-770HB</b>	2m/79cm 3/5.5dB 1.1m	<b>£24.95</b>	<b>B</b>
<b>W-7900</b>	2m/70cm 5.6/7.6dB	<b>£32.95</b>	<b>B</b>
<b>W-627</b>	6m/2m/70cm 2.15/4.8/7.2dB 1.6m	<b>£34.95</b>	<b>B</b>
<b>WGM-270 NEW</b>	2m/70cm On glass 3.7m coax 50W	<b>£29.95</b>	<b>B</b>

**MOBILE BASES**

**WATSON**

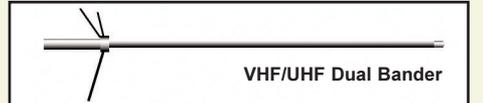


**WM-14B.** Large diameter 14cm magnetic mount SO-239, c/w 5m RG-58 & PL-259

<b>W-3HM</b>	Adjustable hatch mount	<b>£14.95</b>	<b>A</b>
<b>WM-08B</b>	8cm mag mount, 5m cable PL-259	<b>£9.95</b>	<b>A</b>
<b>WM-14B</b>	14cm hvly duty mag mount+cable	<b>£12.95</b>	<b>A</b>
<b>WSM-88V</b>	BNC mag mount plus 3m cable	<b>£14.95</b>	<b>A</b>
<b>W-3CK</b>	5m 5D-FB cable assembly+pigtail	<b>£18.95</b>	<b>A</b>
<b>W-ECH</b>	5m standard cable kit assembly	<b>£12.95</b>	<b>A</b>

**BASE STATION ANTENNAS**

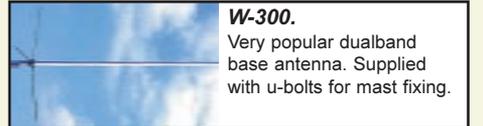
**DIAMOND**



VHF/UHF Dual Bander

<b>X-200</b>	2m/70cm colinear 6/8dB 2.5m	<b>£79.95</b>	<b>C</b>
<b>X-300</b>	2m/70cm colinear 6.5/9dB 3.1m	<b>£99.95</b>	<b>C</b>
<b>V-2000</b>	6m/2m/70cm 2.15/6.2/8.4dB 2.5m	<b>£89.95</b>	<b>C</b>

**WATSON**



**W-300.** Very popular dualband base antenna. Supplied with u-bolts for most fixing.

<b>W-30</b>	2m/70cm colinear 3/6dB 1.15m long	<b>£39.95</b>	<b>C</b>
<b>W-50</b>	2m/70cm colinear 4.5/7.2dB 1.8m long	<b>£49.95</b>	<b>C</b>
<b>W-300</b>	2m/70cm colinear 6.5/9dB 3.1m long	<b>£64.95</b>	<b>C</b>
<b>W-2000</b>	6m/2m/70cm 2.15/6.2/8.4dB 2.5m	<b>£69.95</b>	<b>C</b>

**WATSON SAFE-2-WAY NEW £89.95 B**

**AT LAST !! A HANDS FREE SYSTEM THAT REALLY WORKS!**

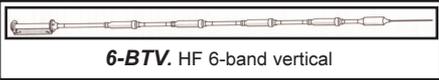


\*Widely used commercially \*Approved to Pan-European Standards \*True Hands-Free \*Noise Reducing \*Acoustic Tailored Mic \*Remote (3m) Latching PTT \*Boom mic (3m) with Velcro \*Adjustable gain \*Adjustable Time-Out \*Powered from rig mic socket \*Ready made rig leads (£14.95 extra) \*Also matches handhelds.

The Safe-2-Way mobile Interface is made for Watson in the UK by the same company that equips UK Police and Emergency services with similar units. Purchase the ready-made lead to match your radio and tuck the unit out of sight. The plug-in PTT and boom mic both have 3m leads for dressing around vehicle. Don't risk your Licence or people's lives! Drive with Safe-2-Way.

## VERTICAL ANTENNAS

### HUSTLER



<b>6-BTV NEW</b>	80-40-30-20-15-10m 1kW PEP	<b>£239.95</b>	C
<b>5-BTV</b>	80-40-20-15-10m 7.64m 1kW	<b>£209.95</b>	C
<b>4-BTV</b>	40-20-15-10m 6.52m 1kW PEP	<b>£169.95</b>	C

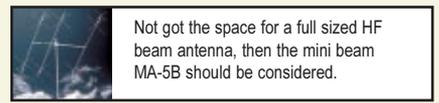
### CUSHCRAFT



<b>MA5V</b>	20-17-14-12-10m 250W PEP	<b>£229.95</b>	C
<b>R8</b>	40-30-20-17-15-12-10-6m 1.5kW	<b>£529.95</b>	C
<b>R6000</b>	20-17-10-6m 1.5kW PEP	<b>£349.95</b>	C

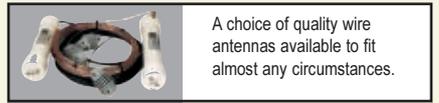
## HORIZONTAL BEAMS & DIPOLES

### CUSHCRAFT



<b>MA-5B</b>	10-12-15-17-20m 4 el. Yagi 2kW	<b>£349.95</b>	C
<b>A4-S</b>	10-15 & 20m 4 el. Yagi 2kW	<b>£599.95</b>	C
<b>A3-WS</b>	12 & 17m 3 el. Yagi 2kW	<b>£399.95</b>	C
<b>X-7</b>	20/15/10m 7 el. Yagi 2kW	<b>£699.95</b>	C
<b>TEN-3</b>	10m 3 el. Yagi 2kW	<b>£219.95</b>	C

### RADIO WORKS



<b>CW-160</b>	160-10m 76.8m long	<b>£139.95</b>	C
<b>CWS-160</b>	160-10m 40.5m long	<b>£134.95</b>	C
<b>CW-80</b>	80-10m 40.5m long	<b>£99.95</b>	C
<b>CWS-80</b>	80-10m 20.1m long	<b>£119.95</b>	C
<b>CW-40</b>	40-10m 20.1m long	<b>£94.95</b>	C
<b>CW-20</b>	20-10m 10.36m long	<b>£84.95</b>	C
<b>CW-620</b>	20-6m 9.7m (32ft) long	<b>£94.95</b>	C
<b>G5RV PLUS</b>	80-10m with balun 31m (102ft) long	<b>£64.95</b>	B

## MOBILE ANTENNAS

### HUSTLER

Standard Resonator 400W (mast sections not included)



<b>RM-10</b>	10m 150-250kHz	<b>£19.95</b>	B
<b>RM-11</b>	11m 150-250kHz	<b>£19.95</b>	B
<b>RM-12</b>	12m 90-120kHz	<b>£19.95</b>	B
<b>RM-15</b>	15m 100-150kHz	<b>£19.95</b>	B
<b>RM-17</b>	17m 120-150kHz	<b>£24.95</b>	B
<b>RM-20</b>	20m 80-100kHz	<b>£24.95</b>	B
<b>RM-30</b>	30m 50-60kHz	<b>£26.95</b>	B
<b>RM-40</b>	40m 40-50kHz	<b>£26.95</b>	B
<b>RM-80</b>	80m 25-30kHz	<b>£29.95</b>	B

Super Resonator 1kW (mast sections not included)

<b>RM-10-S</b>	10m 250-400kHz	<b>£24.95</b>	C
<b>RM-15-S</b>	15m 150-200kHz	<b>£26.95</b>	C
<b>RM-20-S</b>	20m 100-150kHz	<b>£31.95</b>	C
<b>RM-40-S</b>	40m 50-80kHz	<b>£37.95</b>	C
<b>RM-80-S</b>	80m 50-60kHz	<b>£51.95</b>	C

### Lower Mast Sections

<b>MO-1</b>	54" (FOLD @ 22")	<b>£33.95</b>	C
<b>MO-2</b>	54" (FOLD @ 27")	<b>£33.95</b>	C
<b>MO-3</b>	54" (NON FOLD)	<b>£26.95</b>	C
<b>MO-4</b>	27" (NON FOLD)	<b>£22.95</b>	C

### Mobile Mount Accessories

<b>SSM-1</b>	Ball mnt stainless steel spring&stud	<b>£45.95</b>	B
<b>SSM-2</b>	Ball mount	<b>£28.95</b>	A
<b>SSM-3</b>	Stainless steel spring & stud	<b>£24.95</b>	A
<b>HOT</b>	Trunk lip mount	<b>£24.95</b>	A
<b>RSS-2</b>	Stainless steel resonator impact spring	<b>£10.95</b>	A
<b>QD-2</b>	Quick disconnect adaptor	<b>£19.95</b>	A
<b>VP-1</b>	Multi-band adaptor	<b>£7.95</b>	A

## LOWE SPS-8400 PSU

**£99.95 C**

### SPECIAL OFFER



A general purpose variable 3-15V DC, 25A (30A peak) power supply. Modern design, dual analogue meters, front power terminals. More than enough for 100W transceivers.

## MANSON EP-925 PSU

**£99.95 C**



A general purpose 3-15V DC, 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver. \*Dual analogue meters \*Over current protection \*Large power terminals for rigs \*Quick snap connectors for ancillaries

## LDG RT-11 Asm ATU

**£239.95 B**



\*1.8-54MHz \*5-150W \*6-800 Ohm loads \*Remote Autotuner \*RF sensed \*Dipoles, Verticals, Beams \*Water resistant enclosure \*built-in Icom and Alinco connectivity \*Supply 11-15V DC \*Size 216 x 140 x 76mm \*Weight 1.14Kg

## MFJ-969 ATU Deluxe Versa Tuner II

**£199.95 C**



\*1.8-54MHz \*300W PEP \*T-match network \*Internal 4:1 balun \*Built-in dummy load \*X-needle meter \*3-way ant switch One of the most popular 300W models.

## WATSON FC-130 Frequency Counter

**£59.95 B**



### SPECIAL PRICE

The FC-130 is an ideal frequency counter for the shack, mobile or portable use. Supplied complete with Ni-Cads, charger and telescopic whip.

## AVAIR AV-20 VSWR/Power Meter

**£39.95 B**



Two cross-needle VSWR/PWR Meters ideal for any shack. \*AV-20 3.5-150MHz \*AV-40 144-470MHz \*FWD/RFLD VSWR + PWR \*150W \*Sockets SO-239 \*50 Ohms \*Size 85x87x95mm \*Weight 280g

**AV-40** X-needle VSWR/PWR 140-525MHz **£39.95 B**

## WATSON W-CRI Morse Key

**£46.95 B**



- Metal parts brass
- Hardwood base
- Size 145 x 80 x 50mm
- Weight 375g

## MFJ-461 Morse Code Reader

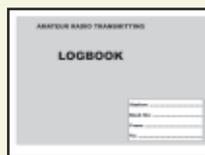
**£84.95 B**



\*Stand alone unit \*Built-in mic \*32char high contrast LCD \*Automatic speed tracking \*Serial port \*Built-in speaker \*9V PP3 (not included) Simple PC program available (user supplies disk)

## TRANSMITTING LOGBOOK NEW

**£4.99 A**



Traditional Logbook for Radio Amateurs, A4 size, spiral bound for ease of use plus updated Prefix List and room for extra notes. A log is a legal requirement for any radio station.

## WEST MOUNTAIN RIGBLASTERS

RIGblaster pro Data interface 8-pin/mod, Cd & cables **£299.95 B**



RIGblaster Plus Data interface 8-pin/mod, Cd & cables **£139.95 B**

RIGblaster M8 Data interface 8-pin, software & cables **£109.95 B**

RIGblaster M4 Data interface 4-pin, software & cables **£109.95 B**

Rigblaster RJ Data interface RJ45, software & cables **£109.95 B**

RIGblaster nomic8P Data interface 8-pin, software & cables **£59.95 B**

RIGblaster nomicRJ Data interface RJ, software & cables **£59.95 B**

FT100-CBL Adapts all units to FT100 input **£12.95 A**

## AUDIO ACCESSORIES

### HEIL



### Desk Microphones

**HCL-5/4** Classic retro-look HC-5/4 desk mic **£259.95 B**

### Hand Microphones

**GM-4/5** Goldline HC-4/HC-5 hand mic **£129.95 B**

### Headsets & Boom microphones

**HST-817** Traveler single side headset for FT-817 **£89.95 B**

**HST-706** Traveler single side headset for IC-706 **£89.95 B**

### Headphones & Boom Microphones

**PRO-SET-PLUS** Large H/phones with HC-4 & HC-5 **£199.95 B**

### WATSON



### Base Microphones

**WM-308** Desk electret mic c/w ML-308 **£59.95 B**

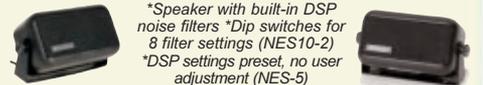
### Earpieces

**WEP-300B** Over the ear, 3.5mm mono jk-plug **£2.95 A**

### Speaker Microphones

**QS-112(Y,K,I,M)** H/held spkr/mic (state which model) **£16.95 A**

## bhi NES10-2 & NES-5 DSP Speakers



**NES10-2**

**£99.95 B**

**NES-5**

**£79.95 B**

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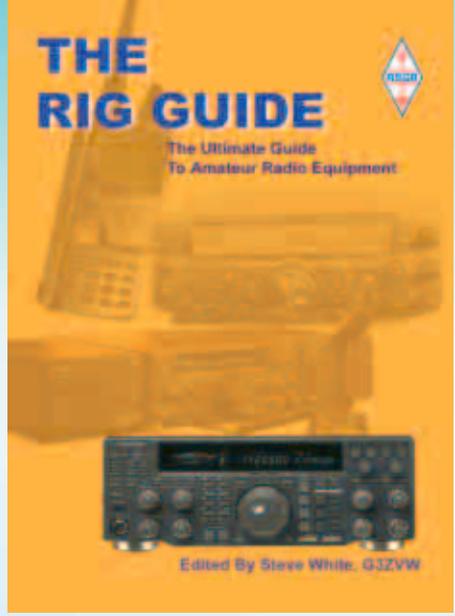
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# PW

**AUGUST 2003**  
**(ON SALE JUNE 12)**  
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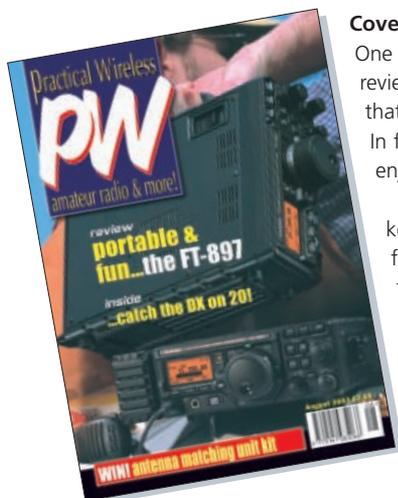
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## Cover Subject

One of the latest offerings from the Yaesu 'stables' - the FT-897 is reviewed in this issue by **Roger Cooke G3LDI**. His review shows that this comprehensive rig proved to be both portable and fun. In fact Roger says if you decide to buy an FT-897 you'll certainly enjoy using it!

The team hope you enjoy the issue too! Don't forget to keep the feedback coming in - we're always pleased to hear from you and enjoy receiving your comments and suggestions for topics you'd like covered in *PW*.

**Design:** Steve Hunt

**Photograph:** Courtesy of Yaesu UK Ltd.

## August features

### 22 Tex's Tips & Topics

A bumper selection of useful hints and tips from *PW* readers are presented by **Tex Swann G1TEX/M3NGS**.

### 24 Radio Basics

This month **Rob Mannion G3XFD** concludes the design for the Basic-4 crystal controlled front-end receiver and in doing so offers some ideas for modifications so you can tailor the project to suit your needs.

### 26 Yaesu FT-897 All-mode Transceiver

**Roger Cooke G3LDI** takes time out from writing his regular columns to review the FT-897, which he describes as a "super little rig" and one that he thoroughly enjoyed the opportunity to test.

### 30 The MM5WIG 14MHz Antenna

Catch the DX on 20 metres with **Ian Macdonald MM5WIG's** single band antenna design. Why not have a go at building one yourself? And if you do, Ian would like to hear from you!

### 33 Competition Time!

Enter our wordsearch competition and you could be in with a chance of winning a Walford Antenna Matching Unit kit. So what are you waiting for? Post your entry today!

### 36 Bert's Seventy Practical Years

**Bert Knott G3CU** reflects on the seven decades that he's enjoyed with the hobby of Amateur Radio.

### 38 Antenna Workshop

Planning your antenna system is the subject of this month's Antenna Workshop. **Roger Cooke G3LDI** takes you through the physical aspects of 'antenna farming'.

### 42 A Practical Antenna Electrometer

Because of the problems associated with atmospheric static, and the renewed interest in this often annoying natural occurrence, we're re-publishing **Tony Hopwood's** original 1988 article. **Albert Heyes G3ZHE**, who built and used his own version also contributes.

### 46 Carrying On The Practical Way

This month **George Dobbs G3RJV** describes a 20-component 'Lollipop' receiver.

### 50 The Band Police

Meet the Band Police! **Chris Carrington G0IYZ** introduces us to those 'helpful' Amateurs who patrol the bands and says you should try not to let them scare you off the air!

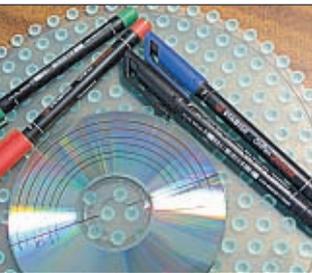


### 54 Belt & Braces Portable Operating!

Following a disaster while operating portable from his caravan... **Colin Jones G4HHU** describes his 'belt & braces' battery management system that he now uses.

### 56 Valve & Vintage

**Ben Nock G4BXD** has been trawling the rally bargains, and as is usual with Ben, several 'new' vintage sets seem to have found their way into his ever growing collection!



Page 22



Page 26



Page 33



Page 38



Page 56

# August regulars

## 9 Rob Mannion's Keylines

Topical chat and comments from our Editor **Rob G3XFD**. This month he reports of Irish TV coverage of our hobby, needs your help in replacing his Zetagi meter and extends an invitation for you to join him in a 70MHz activity afternoon.

## 10 Amateur Radio Waves

You have your say! There's a varied and bumper selection of letters this month as the postbag's bursting at the seams with readers' letters. Keep those letters coming in and making 'waves' with your comments, ideas and opinions.

## 12 Amateur Radio Rallies

A round-up of radio rallies taking place in the coming months.

## 13 Amateur Radio News & Clubs

Keep up-to-date with the latest news, views and product information from the world of Amateur Radio with our News pages. This month there's a bumper selection for you to enjoy. Also, find out what your local club is doing in our club column.

## 58 VHF DXer

**David Butler G4ASR** says it's been an excellent start to the summer DX season on the v.h.f. bands - read his reports to find out more.

## 60 HF Highlights

Judging by **Carl Mason GW0VSW's** postbag of your reports and letters the h.f. bands are fizzing again this month.

## 62 Data Burst

**Tex Swann G1TEX/M3NGS** takes his turn in giving you a 'burst of data', this time he's been looking at Echolink - an interesting system that could cause controversy among Radio Amateurs.

## 64 In Vision

In his bi-monthly round-up of the ATV scene **Graham Hankins G8EMX** looks at home video capture and repeater licensing.

## 67 Tune In

**Tom Walters** has all the latest broadcast band news and details of when and where to listen for your favourite programmes.

## 68 Bargain Basement

The bargains just keep on coming! Looking for a specific piece of kit? - Check out our readers' ads, you never know what you may find!

## 70 Book Store

Check out our new look Book Store pages - we think you'll agree they look brighter and better than before. So, if you're looking for something to compliment your hobby, check out the biggest and best selection of radio related books anywhere!

## 76 Subscribe Here

Subscribe to *PW* and/or our stable-mates in one easy step. All the details are here on our easy-to-use order form.

## 77 Topical Talk

This month the team chat in the *PW* offices has been about editorial balance among the pages of the magazine. Find out how you can help achieve a harmony in the hobby.



Page 58



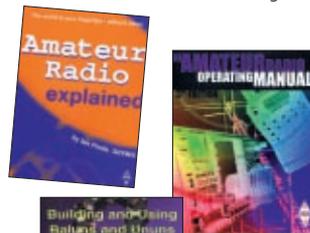
Page 60



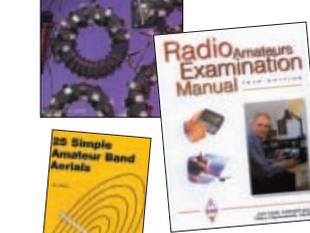
Page 62



Page 67



Page 70



Page 77



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# radio ACTIVE

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**Tried & Tested** - Celeste MkII stereo portable radio  
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## rob mannon's **keylines**

Welcome to 'Keylines'! Each month Rob introduces topics of interest and comments on current news.

Very often, to our embarrassment, Amateur Radio rarely seems to receive good, factually correct coverage in the media. This is not due to poor efforts on the behalf of clubs and individuals, but in my opinion is directly due to the lack of even the most basic technical knowledge displayed by newspaper, TV and radio journalists who (for example) insist on calling the bright orange coloured aircraft flight data recorders as "Black Boxes". Their understanding begins and stops at that point and nothing can persuade them that the General Public are able to understand the correct terminology and realise that a Flight Data Recorder is just that!

However, things can get much worse. I have in mind the infamous BBC2 *Arena* programme (hosted by **Joan Bakewell**) which seemingly promoted an individual's 144MHz repeater abuse in the West Midlands during the 1990s just as though it was an Art form!

Occasionally though...our media-misunderstood hobby manages to achieve excellent 'one off' publicity and to my delight this happened recently to the **Mayo Radio Experimenters Network** (MREN) in Ireland. The MREN's success was on nation-wide RTE (Ireland's national broadcaster) television at peak time! Appropriately enough the programme which carried the feature on Amateur Radio is called *Nationwide* and is similar in format to the much lamented BBC programme of the same name.

### Superb Editing

The eight minute peak time TV feature was recorded in April and broadcast on 12 May. It featured members of the club, including **Padraic Baynes EI9JA**, and **John Corless EI7IQ**. Club chairman **Frances Taheny EI5IJ** was very impressed and she said..." It shows what can be achieved when clubs make an effort".

The superb effort by the Mayo Club was backed by the equally superb editing of the video footage by RTE. With an interview with **Declan Craig EI6FR** and shots from one of his DXpedition videos, it was success for promoting Amateur Radio.

The setting up of an 'instant' station in a field...with simple antennas and portable equipment (including an Ellecraft transceiver built and operated by **Brendan Minish EI6IZ**) didn't look contrived. In fact it showed what we can do 'instantly' and is in fact an excellent representation of what Amateur Radio can do when emergency communications are needed.

I was immensely impressed by the joint effort! Well done Mayo. Let's hope more intelligent publicity like this is achieved by other clubs...wherever they are.

### Meter Problems

Recently I foolishly dropped my revered and reliable AEA antenna tuning unit...not once but twice! Unfortunately the main moving coil

Practical Wireless, August 2003



● Fig. 1: Can you help find a replacement Zetagi meter? (see text).

double meter unit, **Fig. 1**, is now open circuit (reflected power side).

Can you help or point me in the right direction for a replacement? The meter unit - made by Zetagi - is undoubtedly a standard unit and I would be pleased to repair it...although I understand AEA are no longer in the Amateur Radio business.

### Play Fair Please!

Very often nowadays we offer extra information to readers which can be obtained either free, or at minimal cost in return for a specified envelope size, stamped and addressed for return. This system works to readers' advantage and ours. You get the extra information and we can get a good idea of how much interest there is for the different project and article.

Normally, the 'Send an A5, or A5 envelope' system works well. However, we're now getting requests in without the minimal payment and sometimes there's no stamp either. There's no point in trying to re-cycle previously used stamps on the envelopes either...the Post Office spot them, and surcharge automatically...very quickly.

**Please play fair** - we want to continue the service to help you. Just send in the envelope size we specify, and we'll do the rest. No stamp, no envelope (or wrong size) could mean you won't get the information you need. Help us to help you.

### A 70MHz Activity Afternoon?

I'm writing this the day after enjoying operating in the 2003 PW 144MHz QRP contest (It was a wonderful day). With this in mind I'm wondering...would readers like to join me on a 70MHz Saturday activity afternoon later this year?

If you're keen on 70MHz...I would value your feedback. So, let's hope we can get together on 4 metres very soon!

Rob G3XFD

Just some of the services  
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Subscriptions are available at £31 per annum to UK addresses, £39 in Europe and £49 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both Practical Wireless and Short Wave Magazine are available at £61 (UK) £74 (Europe) and £94 (airmail).

### Components For PW Projects

In general all components used in constructing PW projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article.

### Photocopies & Back Issues

We have a selection of back issues, covering the past three years of *PW*. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for *PW* are £3.35 each (inc. P&P) and photocopies are £3.00 per article. Binders are also available (each binder takes one volume) for £6.50 plus £1.50 P&P for one binder, £2.75 for two or more, UK or overseas. Prices include VAT where appropriate. A complete review listing for *PW/SWM* is also available from the Editorial Offices for £2 inc. P&P.

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### Technical Help

We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. Any technical queries by E-mail are very unlikely to receive immediate attention either. So, if you require help with problems relating to topics covered by *PW*, then please write to the Editorial Offices, we will do our best to help and reply by mail.

Make your own 'waves' by writing into *PW* with your comments, ideas, opinions and general 'feedback'.

The Star Letter will receive a voucher worth £20 to spend on items from our Book or other services offered by *Practical Wireless*.



## Toroids In Canada

● Dear Sir

As a *PW* reader living on the Pacific Coast side of Canada I've followed with interest people's likes and dislikes about toroids. I remember being hesitant about them myself!

Somewhere, I seem to remember a suggestion that a company put out a selection of toroids as a kind of starter pack. This came to mind as I have a habit of buying old parts boxes at flea markets (the contents might be useful one day!) and inside the latest "bargain" I found that one company had already produced such a kit. Unfortunately the rusting state of the old box and the price of \$7.50 US probably means that the kit has passed into history.

However, just for your information, and for the guidance of any company who might like to take up the idea, I've listed the contents below.

### Experimenter's Iron Powder Toroid Kit, from Palomar Engineers.

Includes; 1 each T25-12, T80-2, T106-2

2 each T25-6, T37-6, T50-2, T50-6

3 each T68-2

Coil calculator chart, core specifications and application information.

I'm not an expert so I am not sure how useful the selection is but the one remaining T68-2, although not quite as large as specified, was wound up ready for the Reverend George Dobbs G3RJV's Welsh Z- match! Thanks to all of you for a great magazine, I look forwards to each issue.

**Ron Metcalf VE7IBR**  
Mission  
British Columbia  
Canada

**Editor's comment: Nice to hear from you Ron! Let's hope someone will take up the idea again. Does anyone know if Palomar Engineering are still involved in the hobby? Any information would be appreciated.**

## Enjoyable 7MHz Contact

● Dear Sir

I thoroughly enjoyed my s.s.b. contact with the Editor (working as EI5IW) on 7MHz recently when he was in Ireland on holiday again. Enclosed is a QSL card for the contact, also a couple of pictures of my caravan 'shack' on site at Belford, near Berwick-on-Tweed, Northumberland.

Incidentally, I've got a few comments regarding my /P operation, which may be of interest to you and your readers, should you wish to publish them!

I bought the Yaesu FT-817 very soon after they first came on the market. Colleagues were very sceptical at the time, thinking I'd bought a very expensive 'toy', but I have used it daily ever since - as a mobile shack in the car, with

amplifier for v.h.f./u.h.f., hands free microphone, etc., as well as mobile h.f. with Hustler antennas (I don't like h.f. mobile unless stopped, however...even with the hands free microphone).

The transceiver works brilliantly in the role described. My Microset dual-band 30W all-mode linear provides me with the required power for good v.h.f. simplex and repeater operation. (The memories on the rig are filled with around 80 repeaters, CTCSS/name, etc., for ease of use).

I use the rig with a 144MHz linear and collinear on the caravan for simplex and repeater use (I have made a lot of friends in the Berwick/Borders area over the past few years). I have also got the Tokyo 50W h.f./6m linear which is excellent, but did not have it with me on this trip, so QRP rules!

There's also a switch mode p.s.u. to run it all. The h.f. used at the site vary. I have a selection of mobile verticals for most bands, also wire dipoles for 7 and 14MHz, and a random wire (around 15m) together with a small MFJ-J901 tuner. With this set-up, I have worked QRP all over, on all bands.

However, two memorable QSOs worked with the 817 and its Walkabout whip antenna (both of which would qualify for 'miles per watt' status) are as follows:

**1:** 5W from the car with the Walkabout whip screwed onto an adapter on the hatch mount, from a lay-by on the way to work I worked **VK3CML**. It was a 15 min 18MHz s.s.b. QSO - my report being readability 5 and strength 1 (5&1)1 all the time, but not a word was missed (see enclosed copy of QSL card).

**2:** 1W from home on internal batteries with the 'Walkabout' whip attached to the rig...**PT7WA** (Brazil) on 28MHz s.s.b. (see enclosed copy of card).

Unbelievable? No - **anything is possible** - it's all a question of timing - being on the right band at the right time, calling at the right time, having the time to persevere and then going for it - great fun! Don't get me wrong, it's very hard at times, but so very, very satisfying when it all comes together.

Incidentally, I run QRO from home as well, with TS-440, IC-706 and h.f. and v.h.f. amplifiers - there's a place for both I believe, at the right time. There we are again - time!

I have no connection with any communications companies. I'm just an ordinary Amateur who enjoys radio whenever possible and however possible. I hope this is of interest and will encourage people to 'give it a try' - anything is possible!

**Colin Shackleton M5AEH**  
Queensbury  
West Yorkshire

**Editor's comment: Operating as EI5IW I had an enjoyable QSO with Colin from Westport in County Mayo, which is now my 'base' in the west of EI...thanks to generous husband and wife team Oliver and Briege Norris. Their delightful home, set in beautiful countryside, is ideal for Amateur Radio. The keen Mayo Club also extends a**

**welcome to all which has to be experienced to be appreciated!**

## The Right Stroke?

● Dear Sir

I am writing about the article Using The Right Stroke - in *PW* July 2003. I have been enjoying *PW* since 1960 - long may it continue! But I'm concerned that some of the advice on the use of 'M' suffix may be unsound in law. Consider the following:

**1:** The matter is required by statutory instrument under the *Wireless Telegraphy Act 1949*.

**2:** Statutory instruments are strictly construed - this is trite law.

**3:** 'Mobile' is defined in regulation 1 (ii) (c) of the regulations as 'located in the UK. In any vehicle as a pedestrian or on any vessel in inland waters'. The regulation does not specify that the vehicle, etc., must be moving.

**4:** The word 'mobile' is defined in the *Oxford English Dictionary*, *Collins Dictionary* and *Chambers Dictionary* (much favoured by the Scottish courts) as 'capable of movement'. It is not synonymous with 'moving'.

**5:** If the authorities intended that the vehicle should be in motion, they could easily have said so, they did not do so.

**6:** So if a person is operating from a parked motor car, with an installation completely self-contained within the vehicle, then I contend that the only correct? Is 'M' provided that the vehicle is capable of motion. It is not being operated in a fixed position.

**7:** If I am wrong, does this mean that, while out walking with my hand-held, if I put my feet up or sit on a park bench, I then must work '/P' (I'm not moving!). Or if 'MMM', if my yacht (if I had one!) is ? to, or at anchor, is 'MMM' incorrect?

**8:** Two things fortify me in my argument.

(a) The general trend on road safety is against using radio or phone equipment while driving. As a matter of public policy, would a court interpret a regulation requiring an operator to be in motion?

(b) **Peter Dodd G3LDO** - in his excellent *Amateur Radio Mobile Handbook 2001* - published by the RSGB no less, states (p1) "If you are in a vehicle but stationary, then you still sign 'M'. Perhaps as a service

to your readers, you could ask the authorities for an official view.

Best wishes and keep up the good work!

**W. J. Gay GM0VCO**  
**Edinburgh**

**Editor's comment: Thanks for the comments on PW. However, let's not get too deeply concerned about the 'stroke' business! The last thing we want in Amateur Radio operating is the involvement of the law or the legal profession...we can't afford the fees or the complications they necessarily bring as anyone involved with planning permission will understand. The article was intended to give general advice, and as officials at the RA have confirmed in the past, provided we do our best to comply in an accepted manner...they don't want to complicate the situation either. Correspondence on this matter is now closed.**

## Walford Electronics AMU

### Dear Sir

I was interested to read the July *PW* with the article by **Tex Swann G1TEX/M3NGS** on the Walford Electronics Antenna Matching Unit (AMU), because I had bought one only a few days before *PW* came through the post.

Whilst I understand how Tex managed it, I have to say that I experienced none of the problems which he reported in his article, possibly because I read through all of the instructions before starting, and kept to them whilst I was building the kit. Mind you, I have to admit to having made similar mistakes to the one Tex made with kits which I have built in the past!

I should also say that I found **Tim G3PCJ** at **Walford Electronics** to be very helpful. He was awaiting a delivery from one of his suppliers which meant my kit had to be delayed, but he kept me informed of the expected date of delivery and, in the end, the kit arrived before he initially thought it would be ready.

One tip that I would like to pass on (apart from reading the instructions!) is to separate the diagrams from the written instructions and keep them in front of you whilst you work. This helps you when you want to check a part position whilst reading about how it should be installed.

I'm now getting used to using the AMU, and intend to get a suitable box to put it into. Probably a plastic one with a metal front, which I will connect to the AMU 'earth' (remembering that this is not

necessarily true earth as the output floats - as per the description in the instructions) to help avoid the hand capacitance effect.

I may also mount a double-pole switch which will short out the balun, to use with very unbalanced antennas such as end-fed wires. Thanks for the review.

**Dave Ackrill G0DJA**  
**Bolsover**  
**Derbyshire**

**Editor's comments: Thank you for the feedback Dave. Tex G1TEX, was so pleased with the completed AMU kit...he bought it! However, there's a chance for readers to win an AMU kit in our simple competition on page 33 this issue. Good luck!**

## Articles & Features

### Dear Sir

The *PW* Editor amazes me! Not only is he the Editor, but...he seem to produce the majority of articles and features too! I can only assume that is what happens when someone like him really enjoys the job he does?

It's not realistic to expect every article to be of interest to all readers, but *PW* does a great job in providing a variety of topics that will satisfy the greatest number of readers. This month, there were more topics than usual that caught my attention:

I was fascinated to read the article on the Eddystone 750, especially the background history to the company and the logo. I never owned that particular model but at the time I decided to take radio seriously, I set-aside my R108 and 1155 and splashed out on the 1960s model 1240 (I think it was) which I continued to use for a while after obtaining my Licence in 1963. Its main drawback for Amateur use was the limited bandwidth for accurate frequency setting but the magnificent dial and silky drive made it a joy to use.

Of course, that was in the good old days, when the airwaves were full of interest - the trawlers on 160 and 80 metres that provided an insight into their rough and wet world were always riveting.

Shortly after, I bought one of the new EA12 amateur bands only receivers which opened my eyes to the benefits of a 'real' radio. It was only the necessity of keeping up with advancing technology in the shape of the new range of self-contained transceivers, namely the KW2000, that made me part with it in order to raise the cash.

The new digital read-out down to the nearest Hertz on today's rigs might be technically impressive...but they don't stir the soul in the same

way as that glorious illuminated 'window on the world' of the EA12.

The article defining the 'stroke portable' was timely - especially with the Summer out-doors activities becoming more popular and will sort out the anomalies that continue to be heard. The confusion about /M or /P will persist as I doubt that any /M station with only an on-board transmitter-receiver and car-mounted antenna will decide to amend their call signs to /P when they park at their scenic destination - especially v.h.f./u.h.f. operators.

I'm unable to operate from my home QTH (antenna problems and restrictive covenants amongst others) and operate under a /P suffix whenever I am fortunate to stay with either of my daughters and can use their gardens to sling up my Window or dipole. However, I would have preferred to continue to be able to use /A as a more accurate definition of my operating condition. It's amazing how many people imagine I am sitting shivering in a rain-soaked tent when they hear my /P call!

As for /MM - can you imagine a newly licensed station operating maritime mobile from Scotland? MM0MMMM/MM would be a possibility - I bet that would be much sought after!

Finally, I was very interested to read the news item about **David Hempleman-Adams'** transatlantic balloon attempt, as my son-in-law is on his support team, currently with him in the USA. I have read very little of this expedition but believe weather conditions are not favourable - nor h.f. radio conditions. My own recent /P week in Chiswick, South London was almost a disaster as 7MHz band was dead! Best regards;  
**John Thexton G3URE**  
**Twickenham**  
**London**

**Editor's comments: Thank you for the feedback John. Please see Topical Talk on page 77 where the PW team's efforts to achieve editorial balance are discussed in depth.**

## Unnecessary Highlighting?

### Dear Sir

I have been a reader of *Practical Wireless*, on and off, for over 40 years. Whilst much preferring the magazine of today to the 'Camm's Comic' of my youth there is one matter of editorial policy that does restrict my enjoyment of your otherwise excellent publication.

I refer to the practice of highlighting certain sentences or phrases in bold text, whether it be

in letters submitted for publication or in the magazine articles themselves. This seems, to me, to be applied somewhat indiscriminately whenever the need is felt for some emphasis.

Whilst I accept that this might be a matter of personal taste I do find the effect to be disconcerting. Where I might not have placed my own emphasis up pops some bold text forcing me to subconsciously do so and I often find the flow of what I'm reading impaired as a result.

I do not know of any other publication that adopts this policy so would ask that you please consider leaving all text as 'normal' and allow your readers to decide for themselves which parts of an article might deserve more attention.

Other than this one grumble I think *PW* is great....so please try and make my reading of it a bit easier. If you do decide to publish my letter....not too many bold bits please!

**Nigel Clarke G8PZR**  
**Sawbridgeworth**  
**Hertfordshire**

**Editor's comment: The Editorial team would be interested to hear other reader's opinions. Any highlighting is done to make letters and editorial as informative and unambiguous as possible.**

## Wayne Kerr Manual

### Dear Sir

I read the Editor's request (June *PW*) regarding a manual for the Wayne Kerr Universal Bridge. I don't actually have a copy of the manual, however I did find a couple of places that may be able to help. They include...

1: REME Museum, Isaac Newton Road, Arborfield, Berkshire RG2 9NJ. You can mail Judy Booth via reme-museum@gtnet.gov.uk or telephone 0118-976 3375

2: Wayne Kerr Electronics, Vinnetrov Business Park, Vinnetrov Road, Runcton, Chichester, West Sussex PO20 1QH, Tel: (01243) 792200, Fax: (01243) 792201. E-mail: [simon.harman@wayne-kerr.co.uk](mailto:simon.harman@wayne-kerr.co.uk)

I don't know if they can help, but the REME Museum actually have a CT530 in their collection. So they may well have the manual for it. Cheers!

**Chris Richmond G0TOO**  
**Morecambe**  
**Lancashire**

**Editor's comments: Thanks to you Chris, along with the many other readers who offered help. I've now got a manual copy courtesy of a kind reader. However, Simon Harman at**

Wayne Kerr was exceptionally helpful too...reflecting the excellence of their products.

### Are The Voltages Correct?

● Dear Sir

I am looking for the reprint booklet of *Are the voltages Correct?* by Roger Lancaster. These were printed in *PW* 1982 to 1983. Can you help? I'm based in Bombay city (now called Mumbai), India and Electronics is a hobby of mine and have two *PW* magazines in which the articles are. They are very well written.

I realise it has been 20 years since the articles were first printed. Sending money to pay for them is not that much of a problem. I assume international bank draft or an international money order would be acceptable? I will be happy to send IRCs, just let me know how many. The last time I bought IRCs was when I was still in school! Warm Regards

**Olavo Caldeira**  
Via E-mail  
Mumbai  
India

**Editor's comment: Olavo and I have had a number of enjoyable e-mail contacts. The Roger Lancaster series was reprinted in *Radio Active* magazine recently - but Olavo would like the *PW* reprint booklet (out of print). If you can help him please contact me at *PW*.**

### Buyer & Seller Beware!

● Dear Sir

Following on from some of the recent letters in *PW* regarding purchases made at Bring & Buy stalls at rallies, etc., I've learned that it's not always Amateurs who are 'fencing off' faulty or poor quality goods.

Several years ago, I discovered a person selling several items of stolen PMR and Amateur equipment at a rally while pertaining to be a radio

amateur. What gave the game away was when I visited the stall and saw an item of test gear that interested me, and I then asked who was selling it. One of the chaps running the stall, looked up the details of the seller from his records and gave the callsign of a friend who I knew was not attending the rally!

This started to ring little alarm bells and I had a word with the organiser. It turned out that the seller was from out of town and using the rally to get rid of 'hot' equipment. The police were duly informed, but I never found out if there was a prosecution. So it might not be the case that all hooky or faulty equipment at B & B stalls is being sold by amateurs.

**Colin**  
Scotland

**Editor: To protect the writer (a known and respected Amateur) from possible repercussions for his public-spirited actions...the full name and partial address is withheld on this exceptional occasion.**

### Museums On The Air

● Dear Sir

I hope you can publish this letter of thanks in your magazine. I was laid up with several broken bones in my foot and ankle when my 12 year old son, **Mike M3CFE**, told me of the Museums On The Air event.

Unfortunately we missed out on the first day but managed nice contacts today with seven others unable to hear our 10W. Despite this we had a great time trying to make the contacts, this event was only spoilt by the constant calling of "CQ Contest" which seemed to wipe out most of the 7MHz band.

We never made enough contacts to get an award but running 10W into a G5RV at 35-40 ft high but did well.

More importantly we both enjoyed ourselves. I would like to say a **BIG** thank you to the organisers and operators

especially those who were patient enough to pull our weak signals out of the QRM. Please keep up the good work and we look forward to the next time the Museums are on the Air again!

**Dave Shorten G7SRB/M3RBN**  
Caterton  
Oxfordshire

### Higher Club Profiles

● Dear Sir

I am a recently joined member of my local radio club. Incidentally I heard of its existence by pure good luck, and am most grateful to them for their guidance.

The point I want to raise is probably not unique to our club! But, with ever increasing costs of premises rental coupled with static or declining membership, the costs may eventually be too high to justify the club's very existence. This problem can in the longer term only be resolved by increasing membership in order to spread the costs to a reasonable level.

In an attempt to resolve this problem we need a higher local profile, which we are trying to address by creating a web site [www.blythamateurradioclub.co.uk](http://www.blythamateurradioclub.co.uk) and putting posters in local shops. In addition the Local Radio Station paid us a visit and the interviews should be broadcast soon.

On to the final, and probably, the most important way to make fellow radio enthusiasts aware of our own, and other clubs, existence is via the pages of *Practical Wireless*, perhaps with an occasional list of local clubs who could use the publicity. Over to you Mr Editor!

**Peter Dunn M0TWO**  
Blythe  
Northumberland

**Editor's comment: A pleasure to help Peter! We've extended our news pages to assist. All you have to do is to keep us informed by sending us information, although we don't have time to search individual websites for information.**

# amateur radio rallies

Radio rallies are held throughout the UK. They're hard work to organise so visit one soon and support your clubs and organisations.

### July 12

#### Cornish Radio Amateur and Computer Rally

Contact: John/Ken

E-mail: [g4ljj@qsl.net](mailto:g4ljj@qsl.net) / [ken@jtarry.freereserve.co.uk](mailto:ken@jtarry.freereserve.co.uk)

The Cornish Radio Amateur and Computer Rally will be held at Penair School, Truro. Doors open at 1030. There will be trade stands, a Bring & Buy and refreshments, etc.

### July 13

#### Northampton Radio, Electronics & Computer Fair

Contact: Andy M3AMF

Tel: (07970) 187529

To celebrate 90 years of Amateur Radio in Northampton, the Northampton Radio Club are holding a Radio, Electronics and Computer Fair at Northampton County Cricket Club in Northampton. Doors open 1030 till 1630. There will be lots happening throughout the day.

### July 20

#### Lincoln SWC Hamfest

Contact: John G8VGF

Tel: (01522) 525760

E-mail: [scoop-g8vgf@ntlworld.com](mailto:scoop-g8vgf@ntlworld.com)

The Lincoln SWC Hamfest is being held at a new venue - the Lincoln University Sports Centre at Brayford Pool, Lincoln. Contact the organisers for more details.

### July 27

#### Colchester Amateur Radio & Computer Rally

Contact: Gary/James

Tel: (01621) 818620

The Colchester Amateur Radio and Computer Rally will be held at St. Helena's School, Colchester. Further information can be obtained by 'phoning on' or on (01255) 242748 or E-mail: [cra2003@garycavie.com](mailto:cra2003@garycavie.com) or [cra2003@mcginty.net](mailto:cra2003@mcginty.net)

### July 27

#### Vintage Valve Technology Fair

Contact: Trevor M0TAN

Tel: (01274) 824816

Website: [www.myciunka.supanet.com/vvtf2003](http://www.myciunka.supanet.com/vvtf2003)

The Vintage Valve Technology Fair takes place at Haydock Park Racecourse, Junction 23 M6. Doors open at 1000 and admission is £2.50. There will be plenty on offer with up to 120 stalls to browse.

### August 9

#### The Rugby ATS Rally

Contact: Tony Humphries G0OLS, QTHR

The Rugby ATS Rally is to be held at Stanford Hall - please note this is a new venue. Stanford Hall is signposted from the M1 North and South - brown signs.

### \* August 10

#### Flight Refuelling ARS Hamfest

Contact: Mike M0MJS

Tel: (01202) 883479

E-mail: [hamfest@frars.org.uk](mailto:hamfest@frars.org.uk)

The Flight Refuelling ARS are holding their Hamfest at the Cobham Sports & Social Sportsground at Merley, Wimborne, off the A31 (signposted). Doors open at 1000 and admission is just £3. Talk-in on S22 from 0800. Overnight camping on Saturday.

At rallies marked with \* look out for a representative from *PW Publishing Ltd.* at this rally. Go along to the stand for great deals on subscriptions to *Practical Wireless*, *Radio Active* and *Short Wave Magazine*, clearance books and a selection of back issues.

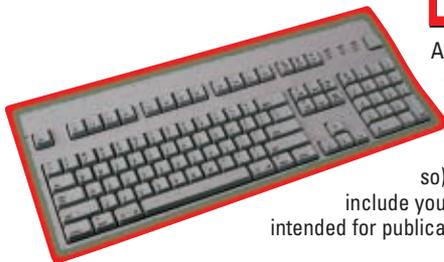
If you're travelling a long distance to a rally, it could be worth 'phoning the contact number to check all is well, before setting off.

Keep your letters coming to fill *PW's* postbag

## Letters Received Via E-mail

A great deal of correspondence intended for 'letters' now arrives via E-mail, and although there's no problem in general, many correspondents are forgetting to provide their postal address. I have to remind readers that although we will not publish a full postal address (unless we are asked to do so), we require it if the letter is to be considered. So, please

include your full postal address and callsign with your E-Mail. All letters intended for publication must be clearly marked 'For Publication'. **Editor**



A comprehensive look at what's new in our hobby this month.

● Competition Fun!



**First Prize winner Anthony M1FDE.**



**CARS Secretary David Bradley M0BQC with his QRP Oxo transmitter that earned him 2nd Prize.**

## Chelmsford Constructors

*The ever active and very keen Chelmsford Amateur Radio Society recently held a constructors competition, here's how they got on.....*

The first prize in the Chelmsford ARS Constructors competition was won by **Anthony Martin M1FDE** who gave a very professional presentation of the design and development of a CTCSS tone oscillator for his £5 rally acquired v.h.f. hand-held. The Club Secretary **David Bradley M0BQC** produced a first class 14MHz QRP OXO Transmitter, which won him the honour of 2nd Prize.

That wasn't all! **Colin Page G0TRM** constructed a pair of paddle type Morse keys using round pin old style mains plugs, a 15A and a more compact 5A version. They were upturned on a wooden base and the paddle, slotted into the earth pin was a nail file which had a convenient insulated plastic finger pad. This was quite ingenious on Colin's part as the original concept, from a copy of a *PW* article, by G4BXD used a piece of hacksaw blade or a small steel ruler. He won 3rd prize.

As a newcomer to the Constructor Competition, **Denis Lewis M3BIA's** entry was also notable, as he produced a superbly crafted Morse key. The contacts on the key were from a spare set of points from an old Peugeot motor car! Denis was awarded the First Time Entrant prize.

Well done to all who took part and the *PW* team look forward to hearing more about other Chelmsford 'challenges' that are set for their members. Further information on the Chelmsford ARS may be obtained from the Secretary:

**David Bradley M0BQC**  
Tel: (01245) 602838

E-mail: [info@g0mwt.org.uk](mailto:info@g0mwt.org.uk) Website: [www.g0mwt.org.uk](http://www.g0mwt.org.uk)



**This superbly crafted Morse Key was produced by First Entrant Prize Winner Denis Lewis M3BIA.**



**Colin Page G0TRM with his pair of paddle type Morse keys.**

● Digital Broadcasting

## Crystal Clear Celeste

*For crystal clear, fade free programmes in digital stereo look no further than the BPL Celeste MkII.*

The Celeste MkII is a new stereo portable radio that receives digital programmes from the Worldspace satellite system as well as a.m. and f.m. terrestrial radio. The WorldSpace programmes are broadcast from a network of satellites 34,000km out in space without fading or interference.

Reception is possible almost anywhere in the UK, Europe, Africa, the Middle East and Asia. There are over 40 stations broadcasting on the satellite 24 hours a day, including the BBC World Service, CNN News, International News, Bloomberg, multi-lingual, educational, sport, weather, plus specialist music stations such as 'the original' Radio Caroline.



The manufacturer's press release states that "The Celeste provides 70W of crystal clear stereo sound" (The editorial team agrees this probably refers to 35W per channel of 'music power'). It's powered from an internal battery with the option of using an external 12V power supply or mains.

Available now from UK stockists Nevada, the Celeste MkII costs £129. For more details on the range of Worldspace radios check out the website at

**[www.worldspaceradios.co.uk](http://www.worldspaceradios.co.uk)**  
**Nevada Communications**  
Tel: 0239-231 3090

● Wireless Waves Around Bletchley

## Celebrating The Y Service

*Bletchley Park, one of Britain's best kept secrets during the Second World War welcomes you this summer in celebration of the Y Service.*

The aptly named Wireless Waves Around Bletchley event celebrates the importance of the Y Service at Bletchley Park during the Second World War. Bletchley Park was provided with information by a number of wireless receiving operations whose prime role was to intercept the enemy's radio communications.

The event taking place over the weekend of **16-17th August** will commemorate the significance of the Y Stations and explain their contribution to the war effort.

During the weekend visitors will be treated to a special display of Y stations and spy sets in the Mansion which will explain the use of the information supplied from Y Stations. Vintage radios and communications equipment will also be on display dating from wartime to the present day.

There will also be a temporary radio station in operation as well as special lectures on both days: John Pether will speak on: "The History of the Y Service from WWII" and David White, curator of the Diplomatic Wireless Hut, will talk about the "Secret Intelligence Service and their communications".

The Diplomatic Wireless Service Museum in Hut 1 will be open for viewings and visitors will be able to see original wireless and landline communications equipment as used at Bletchley Park during the Second World War. The wireless stations received and transmitted secret Bletchley Park ULTRA and DIPLOMATIC messages to our overseas outposts and bases. The Radio Society of Great Britain's mobile radio shack GB4UN will also be on hand with practical demonstrations of Amateur Radio.

For more details on the secrets surrounding Bletchley Park together with admission prices, openings times etc., take a look at the Bletchley Park website.

**Bletchley Park**

**The Mansion, Wilton Avenue, Bletchley, Milton Keynes MK3 6EB**

**Tel: (01908) 640404**

**Website: [www.bletchleypark.org.uk](http://www.bletchleypark.org.uk)**

**Practical Wireless, August 2003**









www.amateurantennas.com

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**AMPRO 6** mt .....**£16.95**  
 (Length 4.6' approx)  
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 (Length 7' approx)  
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 (Length 7' approx)  
**AMPRO 40** mt .....**£16.95**  
 (Length 7' approx)  
**AMPRO 80** mt .....**£19.95**  
 (Length 7' approx)  
**AMPRO 160** mt .....**£49.95**  
 (Length 7' approx)  
**AMPRO MB5** Multi band 10/15/20/40/80 can use 4 Bands at one time (Length 100").....**£69.95**

**VHF/UHF MOBILE ANTENNAS**

**MICRO MAG 2** Metre 70 cms Super Strong 1" Mag Mount (Length 22") .....**£14.95**  
**MR700** 2m/70cms, 1/4 wave & 5/8, Gain 2m 0dB/3.0dB 70cms Length 20" 3/8 Fitting .....**£7.95**  
 SO239 Fitting .....**£9.95**  
**MR 777** 2 Metre 70 cms 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (3/8 fitting).....**£16.95**  
 (SO239 fitting) .....**£18.95**  
**MRO525** 2m/70cms, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cms Length 17" SO239 fitting commercial quality.....**£19.95**  
**MRO500** 2m/70cms, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8dB 70cms Length 38" SO239 fitting commercial quality .....**£24.95**  
**MRQ750** 2m/70cms, 6/8 wave & 3x5/8, Gain 2m 5.5dB/8.0dB 70cms Length 60" SO239 fitting commercial quality .....**£39.95**  
**MRQ800** 6/2/70cms 1/4 6/8 & 3 x 5/8, Gain 6m3.0dB/2m 5.0dB/70 7.5dB Length 60" SO239 fitting commercial quality .....**£39.95**  
**GF151** Professional glass mount dual band antenna. Freq: 2/70 Gain: 2.9/4.3 Length: 31" .....**£39.95**

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**MR 214** 2 Metre 1/4 wave (3/8 fitting) .....**£3.99**  
 (SO239 fitting) .....**£5.00**  
**MR260S** 2 Metre 1/2 wave 2.5 dBd gain Length 43" SO239 fitting .....**£24.95**  
**MR 258** 2 Metre 5/8 wave 3.2 dBd Gain (3/8 fitting) (Length 58") .....**£12.95**  
**MR 650** 2 Metre 5/8 wave open coil (3.2 dBd Gain) (Length 52") (3/8 fitting) .....**£9.95**  
**MR268S** 2 Metre 5/8 wave 3.5dBd gain Length 51" SO239 fitting .....**£19.95**  
**MR280S** 2 Metre 6/8 wave 5.8dBd gain Length 58" SO239 fitting .....**£29.95**  
**MR 614** 6 Metre loaded 1/4 wave (Length 56") (3/8 fitting) .....**£13.95**  
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 (SO239 fitting) .....**£15.95**

**SINGLE BAND END FED BASE ANTENNAS**

**70 cms** 1/2 wave, length 26", gain 3.5dB .....**£24.95**  
**2 metre** 1/2 wave, length 52", gain 3.5dB .....**£24.95**  
**4 metre** 1/2 wave, length 80", gain 3.5dB .....**£34.95**  
**6 metre** 1/2 wave, length 120", gain 3.5dB .....**£44.95**  
**6 metre** 3/4 wave, length 150", gain 5.5dB .....**£49.95**  
 (All above end fed antennas are DC grounded, so are radial free!)

**VHF/UHF VERTICAL CO-LINEAR FIBREGLASS BASE ANTENNA**

**SQ & BM Range VX 6 Co-linear- Specially Designed Tubular Vertical Coils individually tuned to within 0.05pf (maximum power 100 watts)**  
**BM100 Dual-Bander** .....**£29.95**  
 (2 mts 3dBd) (70cms 6dBd) (Length 39")  
**SQBM100 Dual-Bander** .....**£39.95**  
 (2 mts 3dBd) (70cms 6dBd) (Length 39")  
**BM200 Dual-Bander** .....**£39.95**  
 (2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")  
**SQBM200 Dual-Bander** .....**£49.95**  
 (2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")  
**SQBM500 Dual - Bander Super Gainer** .....**£59.95**  
 (2 mts 6.8dBd) (70cms 9.2dBd) (Length 100")  
**SQBM800 Dual - Bander Ultra Gainer** .....**£129.95**  
 (2 mts 8.5dBd) (70cms 12.5dBd) (Length 200")  
**BM1000 Tri-Bander** .....**£59.95**  
 (2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")  
**SQBM1000 Tri-Bander** .....**£69.95**  
 (2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")  
**SQBM 100/200/500/800/1000 are Polycoated Fibre Glass with Chrome & Stainless Steel Fittings.**

**SINGLE BAND VERTICAL CO-LINEAR BASE ANTENNA**

**BM33** 70 cm 2 X 5/8 wave Length 39" 7.0 dBd Gain .....**£34.95**  
**BM45** 70cm 3 X 5/8 wave Length 62" 8.5 dBd Gain .....**£49.95**  
**BM55** 70cm 4 X 5/8 wave Length 100" 10 dBd Gain .....**£69.95**  
**BM60** 2mtr5/8 Wave, Length 62", 5.5dBd Gain .....**£49.95**  
**BM65** 2mtr 2 X 5/8 Wave, Length 100", 8.0 dBd Gain .....**£69.95**

**MINI HF DIPOLES (length 11' approx)**

**MD020** 20mt version approx only 11ft .....**£39.95**  
**MD040** 40mt version approx only 11ft .....**£44.95**  
**MD080** 80mt version approx only 11ft .....**£49.95**  
 (aluminium construction)

**ROTATIVE HF DIPOLE**

**RDP-3B** 10/15/20mtrs length 7.40m .....**£99.95**  
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**RDP-6B** 10/12/15/17/20/30mtrs boom length 1.00m. Length 10.0m .....**£199.95**

**HF DELTA LOOPS**

**DLHF-100** 10/15/20mtrs (12/17-30m) Boom length 4.2m. Max height 6.8m. Weight 35kg. Gain 10dB .....**£399.95**

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**MRW-232** Mini Miracle TX 2 Metre 70 & 23 cms RX 25-1800 Mhz Length just 4.5cm BNC fitting .....**£19.95**  
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**MRW-200** Flexi TX 2 Metre & 70cms RX 25-1800 Mhz Length 21cm SMA fitting .....**£19.95**  
**MRW-210** Flexi TX 2 Metre & 70cms Super Gainer RX 25-1800 Mhz Length 37cm SMA fitting.....**£22.95**  
 All of the above are suitable to any transceiver or scanner.  
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**70cms** (Boom 12") .....**£15.95**  
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**10 metre** (Boom 52") .....**£64.95**  
**6/2/70 Triband** (Boom 45") .....**£64.95**

**CROSSED YAGI BEAMS All fittings Stainless Steel**

**2 metre 5 Element** (Boom 64") (Gain 7.5dBd).....**£74.95**  
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**70 cms 13 Element** (Boom 83") (Gain 12.5dBd).....**£74.95**

**YAGI BEAMS All fittings Stainless Steel**

**2 metre 4 Element** (Boom 48") (Gain 7dBd) .....**£24.95**  
**2 metre 5 Element** (Boom 63") (Gain 10dBd) .....**£44.95**  
**2 metre 8 Element** (Boom 125") (Gain 12dBd) .....**£59.95**  
**2 metre 11 Element** (Boom 185") (Gain 13dBd) .....**£89.95**  
**4 metre 3 Element** (Boom 45") (Gain 8dBd) .....**£49.95**  
**4 metre 5 Element** (Boom 128") (Gain 10dBd) .....**£59.95**  
**6 metre 3 Element** (Boom 72") (Gain 7.5dBd) .....**£54.95**  
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**ALL FITTINGS STAINLESS STEEL**

**2 metre 5 Element** (Boom 38") (Gain 9.5dBd).....**£39.95**  
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**2 metre 12 Element** (Boom 126") (Gain 14dBd) .....**£74.95**  
**70 cms 7 Element** (Boom 28") (Gain 11.5dBd).....**£34.95**  
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 Above antennas are suitable for transceivers only

**HALO LOOPS**

**2 metre** (size 12" approx).....**£12.95**  
**4 metre** (size 20" approx) .....**£18.95**  
**6 metre** (size 30" approx) .....**£24.95**

**G5RV Wire Antenna (10-40/80 metre)**

**All fittings Stainless Steel**

	FULL	HALF
Standard	£22.95	£19.95
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Flex Weave	£32.95	£27.95
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Flex Weave	£37.95	£32.95
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TS1 Stainless Steel Tension Springs (pair) for G5RV		£19.95

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Convert your half size g5rv into a full size with just 8ft either side. Ideal for the small garden.....**£19.95**

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4-Way Pole Spider for Guy Rope/ wire	£4.95
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2" Mast Sleeve/Joiner	£9.95
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Pole to pole clamp 2"-1.5"	£4.95
Di-pole centre (for wire)	£4.95
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Dog bone insulator	£1.00
Dog bone insulator heavy duty	£2.00

## 5ft POLES H/DUTY (SWAGED)

### Heavy Duty Ali (1.2mm wall)

1 1/4" single 5' ali pole	£7.00
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1 1/2" single 5' ali pole	£10.00
1 1/2" set of four (20' total approx)	£34.95
1 3/4" single 5' ali pole	£12.00
1 3/4" set of four (20' total approx)	£39.95
2" single 5' ali pole	£15.00
2" set of four (20' total approx)	£49.95

(All swaged poles have a push fit to give a very strong mast set)

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11/2" Diameter 2 metres long	£16.00
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MGR-6 6mm (maximum load 140 kgs)	£29.95

## CABLE & COAX CABLE

RG58 best quality standard per mt	35p
RG58 best quality military spec per mt	60p
Mini 8 best quality military spec best quality per mt	70p
RG213 best quality military spec per mt	85p
H200 best quality military coax cable per mt	£1.10
3-core rotator cable per mt	45p
7-core rotator cable per mt	£1.00

PHONE FOR 100 METRE DISCOUNT PRICE.

## CONNECTORS & ADAPTERS

PL259/9	£0.75 each
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PL259/7 for mini 8	£1.00 each
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N TYPE for RG213	£2.50 each
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SO239 double female	£1.00
N-type double female	£2.50
SO239 double female	£1.00

## YAGI COUPLERS

YC-6m For 2 x 50MHz Yagi	£29.95
YC-2m For 2 x 144MHz Yagi	£24.95
YC-7m For 2 x 70cm Yagi	£19.95

## 10/11 METRE VERTICALS

G.A.P.12 1/2 wave aluminium (length 18' approx)	£24.95
G.A.P.58 5/8 wave aluminium (length 21' approx)	£29.95

## BALUNS

MB-1 1:1 Balun 400 watts power	£24.95
MB-4 4:1 Balun 400 watts power	£24.95
MB-6 6:1 Balun 400 watts power	£24.95
MB-1X 1:1 Balun 1000 watts power	£29.95
MB-4X 4:1 Balun 1000 watts power	£29.95
MB-6X 6:1 Balun 1000 watts power	£29.95
MB-Y2 Yagi Balun 1.5 to 50MHz 1kW	£24.95

## TRI/DUPLEXER & ANTENNA SWITCHES

MD-24 HF or VHF/UHF internal duplexer (1.3-225MHz) (350-540MHz) SO239/PL259 fittings	£22.95
MD-24N same spec as MD-24 but "N-type" fittings	£24.95
MD-25 HF or VHF/UHF internal/external duplexer (1.3-225MHz) (350-540MHz) SO239 fittings	£24.95
MX2000 HF/VHF/UHF internal Tri-plexer (1.6-60MHz) (110-170MHz) (300-950MHz)	£49.95
CS201 Two-way di-cast antenna switch. Freq: 0-1000MHz max 2,500 watts SO239 fittings	£18.95
CS201-N Same spec as CS201 but with N-type fittings	£28.95
CS401 Same spec as CS201 but 4-way	£49.95

## ANTENNA ROTATORS

AR-31050 Very light duty TV/UHF	£24.95
AR-300XL Light duty UHFVHF	£49.95
YS-130 Medium duty VHF	£79.95
RC5-1 Heavy duty HF	£349.95
RG5-3 Heavy Duty HF inc Pre Set Control Box	£449.95
AR26 Alignment Bearing for the AR300XL	£18.95
RC26 Alignment Bearing for RC5-1/3	£49.95

## MOBILE MOUNTS

Turbo mag mount 7" 4mtrs coax/PL259 3/8 or SO239	£14.95
Tri-mag mount 3 x 5" 4mtrs coax/PL259 3/8 or SO239	£39.95
Hatch Back Mount (stainless steel) 4 mtrs coax/PL259 3/8 or SO239 fully adjustable with turn knob	£29.95
Gutter Mount (same as above)	£29.95
Rail Mount (aluminium) 4mtrs coax/PL259 suitable for up to linch roof bars or poles 3/8 fitting	£12.95
SO259 fitting	£14.95
Gutter Mount (cast aluminium) 4mtrs coax/PL259 3/8 fitting	£9.95
SO259 fitting	£12.95
Hatch Back Mount 3/8 4mtrs coax/PL259	£12.95
Roof stud Mount 4mtrs coax/PL259 3/8 or SO239 fitting	£12.95

## ANTENNA WIRE & RIBBON

Enamelled copper wire 16 gauge (50mtrs)	£9.95
Hard Drawn copper wire 16 gauge (50mtrs)	£12.95
Equipment wire Multi Stranded (50mtrs)	£9.95
Flexweave high quality (50mtrs)	£27.95
PVC Coated Flexweave high quality (50mtrs)	£37.95
300Ω Ladder Ribbon heavy duty USA imported (20mtrs)	£15.00
450Ω Ladder Ribbon heavy duty USA imported (20mtrs)	£15.00

(Other lengths available, please phone for details)

## HF BALCONY ANTENNA

BAHF-4 FREQ:10-15-20-40 Mtrs LENGTH: 1.70m HEIGHT: 1.20m POWER: 300 Watts	£129.95
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## MISCELLANEOUS ITEMS

CDX Lightning arrestor 500 watts	£19.95
MDX Lightning arrestor 1000 watts	£24.95
AKD TV1 filter	£9.95
Amalgamating tape (10mtrs)	£7.50
Desoldering pump	£2.95
Alignment 5pc kit	£1.95

## TELESCOPIC MASTS (aluminium & fibreglass options)

TMA3 3" to 1 1/4" heavy duty aluminium telescopic mast set, approx 40ft when erect, 6ft collapsed	£199.95
TMA2 2 1/4" to 1 1/4" heavy duty telescopic mast set, approx 40ft when erect, 9ft collapsed	£149.95
TMA1 2" to 1 1/4" heavy duty aluminium telescopic mast set, approx 20ft when erect, 6ft collapsed	£99.95
TMAF-1 2" to 1 1/4" heavy duty fibreglass telescopic mast set, approx 20ft when erect, 6ft collapsed	£99.95
TMAF-2 2 1/4" to 1 1/4" heavy duty fibreglass telescopic mast set, approx 40ft when erect, 9ft collapsed	£189.95

## HF YAGI

HBV-2 2 BAND 2 ELEMENT TRAPPED BEAM FREQ:20-40 Mtrs GAIN:4dB BOOM:5.00m LONGEST ELEMENT:13.00m POWER:1600 Watts	£329.95
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## ADEX-3300 3 BAND 3 ELEMENT TRAPPED BEAM

FREQ:10-15-20 Mtrs GAIN:8 dBd BOOM:4.42m LONGEST ELE:8.46m POWER:2000 Watts	£269.95
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## ADEX-6400 6 BAND 4 ELEMENT TRAPPED BEAM

FREQ:10-12-15-17-20-30 Mtrs GAIN:7.5 dBd BOOM:4.27m LONGEST ELE:10.00m POWER:2000 Watts	£499.95
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## HF VERTICALS

### VR3000 3 BAND VERTICAL

FREQ: 10-15-20 Mtrs GAIN: 3.8 dBd HEIGHT:3.80m POWER:2000 Watts (without radials) POWER: 500 Watts (with optional radials)	£89.95
OPTIONAL 10-15-20mtr radial kit	£34.95



### VR5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs

GAIN:3.5 dBd HEIGHT:4.00m RADIAL LENGTH:2.30m (included). POWER: 500 Watts	£169.95
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### EVX4000 4 BAND VERTICAL FREQ:10-15-20-40 Mtrs

GAIN:3.5 dBd HEIGHT:6.50m POWER:2000 Watts (without radials) POWER:500 Watts (with optional radials)	£99.95
OPTIONAL 10-15-20mtr radial kit	£34.95
OPTIONAL 40mtr radial kit	£12.95



### EVX5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs

GAIN:3.5 dBd HEIGHT:7.30m POWER:2000 Watts (without radials) POWER:500 Watts (with optional radials)	£139.95
OPTIONAL 10-15-20mtr radial kit	£34.95
OPTIONAL 40mtr radial kit	£12.95
OPTIONAL 80mtr radial kit	£14.95



### EVX6000 6 BAND VERTICAL FREQ:10-15-20-30-40-80 Mtrs

HEIGHT:5.00m RADIAL LENGTH:1.70m(included) POWER:800 Watts	£249.95
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### EVX8000 8 BAND VERTICAL FREQ:10-12-15-17-20-30-40 Mtrs

(80m optional) HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included) POWER: 2000 Watts	£269.95
80 MTR RADIAL KIT FOR ABOVE	£79.95



(All verticals require grounding if optional radials are not purchased to obtain a good VSWR)

## TRAPPED WIRE DI-POLE ANTENNAS

(Hi Grade Heavy Duty Commercial Antennas)

UTD160 FREQ:160 Mtrs LENGTH:28m POWER:1000 Watts	£44.95
MTD-1 (3 BAND) FREQ:10-15-20 Mtrs LENGTH:7.40 Mtrs POWER:1000 Watts	£39.95
MTD-2 (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000 Watts	£44.95
MTD-3 (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts	£89.95
MTD-4 (3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER: 1000 Watts	£44.95
MTD-5 (5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m POWER:1000 Watts	£79.95

(MTD-5 is a crossed di-pole with 4 legs)

## PATCH LEADS

### STANDARD LEADS

1mtr RG58 PL259 to PL259 lead	£3.95
10mtr RG58 PL259 to PL259 lead	£7.95
30mtr RG58 PL259 to PL259 lead	£14.95

### MILITARY SPECIFICATION LEADS

1mtr RG58 Mil spec PL259 to PL259 lead	£4.95
10mtr RG58 Mil spec PL259 to PL259 lead	£10.95
30mtr RG58 Mil spec PL259 to PL259 lead	£24.95
1mtr RG213 Mil spec PL259 to PL259 lead	£4.95
10mtr RG213 Mil spec PL259 to PL259 lead	£14.95
30mtr RG213 Mil spec PL259 to PL259 lead	£29.95

(All other leads and lengths available, i.e. BNC to N-type, etc. Please phone for details)

## CS401 4-WAY ANTENNA SWITCH



- ★ 2.5kW power ★ 0-1000MHz
- ★ Lightning surge protection
- ★ Unused connections grounded

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unit, the MO20 a dual channel 20MHz unit, the MO40 a dual channel 40MHz unit and the MO60 is a dual channel 60MHz unit.

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Signal delay lines and Z modulation inputs are provided as standard on the 20MHz, 40MHz and 60MHz models and all units include X1/X10



probes. Prices start at just £119.00 for the MO10, £299 for the MO20, £489 for the MO40 and £689 for the MO60.

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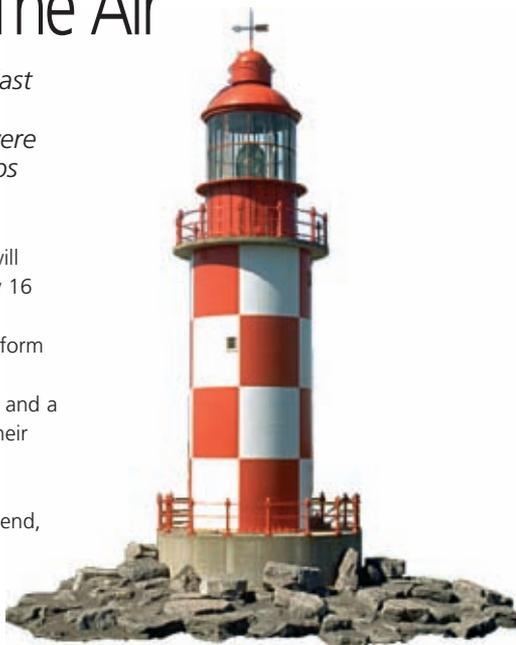
# Lighthouses On The Air

Almost a year has passed since the last International Lighthouse/Lightship Weekend when over 385 stations were active from lighthouses and lightships throughout the world.

This year's Lighthouse/Lightship event will take place from 0001UTC on Saturday 16 August until 2359UTC on Sunday 17 August. Full details of the rules and an entry form can be found at

<http://lighthouses.net.au/illw/index.html> and a list of stations who have already confirmed their participation can be found at <http://lighthouses.net.au/illw/2003.htm>

So, why not join in the fun over the weekend, listen out for QRP, newly licensed and other lighthouses/lightships, and give them a call.



# Can You Help?

## Can you help find Grandad?

Mr Woodham M3YHO would like your help in tracing any history regarding his late Grandfather Eric C Taylor G5XW. Eric became an Amateur in 1930 with the callsign 2AUQ and in 1936 became G5XW.

When he died in 1975 Eric lived in 23 Bonnar Road, Selsey, West Sussex and following his death, his wife called the RSGB (of 18

which Eric was a member) and asked for a representative to come round and take away all of the radio equipment and associated paperwork. All Mr Woodham has left is a blank QSL card which was forwarded to him by an Uncle.

So, the trail has gone dead and Mr Woodham would appreciate any information on his Grandad that you may have, perhaps you have QSL card from G5XW in your collection or perhaps you were the RSGB representative who cleared out the shack? If you can help please contact Mr Woodham direct at 2 Keepers Cottage, Hampton, Dorchester, Dorset.

# amateur radio clubs

Keep up-to-date with your local club's activities and meet new friends by joining in!

## DORSET

### Bournemouth Radio Society

**Contact:** Chris R Ellis M5AGG  
**Tel:** (01202) 893126  
**Website:** brswebstie.freemove.co.uk

The Bournemouth Radio Society meet on the 1st and 3rd Fridays of every month at the Kinson Community Centre, Milhams Road, Kinson, Bournemouth. Doors open at 1930hours with meetings starting at 2000hours. The next meeting takes place on **July 18:** 'Understanding h.f. Antennas & Propagation' a talk by **Peter Clifford M0PTR.**

## ESSEX

### Chelmsford ARS

**Contact:** David Bradley M0BQC  
**Tel:** 01245 602838  
**E-mail:** info@g0mwt.org.uk  
**Website:** www.g0mwt.org.uk

The Chelmsford Amateur Radio Society meet on the 1st Tuesday of each month at the Marconi Social Club, Beehive Lane, Chelmsford, Essex. The doors open at 1915 hours and meetings starts at 1930hours. A bar is available for refreshments. Future meetings include

### Sept 2:

- Amateur Television by **Paul Prior**

### G8IXC, Oct 7:

Annual General Meeting and

### Nov 4:

Radcom Editor **Steve Telenius-Lowe G4JVG.**



## NORTHAMPTONSHIRE

### Kettering & District ARS

**Contact:** Andy Clements G0SOP  
**Tel:** (07971) 835048  
**E-mail:** secretary@g5kn.org  
**Website:** www.g5kn.org

Kettering and District Amateur Radio Society, meets at the Lilacs Public House, 39 Church Street, Isham NN14 1HD, every Tuesday at 2000hours. All short wave listeners and Licensed Radio Amateurs are always welcome. The club have a shack for Licenced members to use and an additional site at the Harrington Aviation Museum with access to beams for h.f. 144 and 430MHz.

## STAFFORDSHIRE

### St. Leonards ARS

**Contact:** Derek Southey G0EYX  
**Tel:** (01785) 604904  
**E-mail:** g0eyx.derek@ntlworld.com  
**Website:** www.slars.org.uk

The St. Leonards Amateur Radio Society meet every Thursday at Alstom Protection & Control, St Leonards Works, Stafford at 2000hours. Why not go along and join in the fun? **July 10:** Shack night; **11th:** Chairman's Social Evening with YLs, XYLs & friends; **17th:** Talk by **Dr Roy Clarke**, RSGB Regional Manager; **24th:** Shack night and **31st:** Visit to Rugeley Power Station



# HAYDON

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★ 1.8 - 60MHz HF vertical ★ 15 foot high ★ No ATU or ground radials required ★ (200W PEP).

ONLY **£179.95** delivery £10

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2m	5ele (boom 45"/9.9dBd)	£49.95
2m	7ele (boom 60"/12.5dBd)	£54.95
2m	12ele (boom 126"/14.5dBd)	£79.95
70cm	7ele (boom 28"/12.5dBd)	£39.95
70cm	12ele (boom 48"/14.5dBd)	£59.95

### Q-TEK YAGIS

Delivery £10.00

2m	5ele (boom 63"/10.5dBd)	£49.95
2m	8ele (boom 125"/13dBd)	£64.95
2m	11ele (boom 156"/13.5dBd)	£94.95
2m	5ele crossed (boom 64"/10.5dBd)	£79.95
2m	8ele crossed (boom 126"/13dBd)	£99.95
4m	3ele (boom 45"/8.5dBd)	£56.95
4m	5ele (boom 128"/11.5dBd)	£69.95
6m	3ele (boom 72"/8.5dBd)	£59.95
6m	5ele (boom 142"/11.5dBd)	£79.95
70cm	13ele (boom 76"/14.9dBd)	£46.95
70cm	13ele crossed (boom 83"/14.9dBd)	£79.95

### NEW DOUBLE DELUXE G5RV

160-10M double length (200 foot). **£84.95** del £8.50

### DELUXE G5RV

P&P on either full/half size £6.50

Multi-stranded heavy duty flexweave wire. All parts replaceable. Stainless steel and galvanised fittings.



Full size - 102ft (80-10m) .....£42.95  
Half size 51ft. (40-10m) .....£36.95

Choke Balun Inline balun for G5RV .....£24.95 P&P £3

### STANDARD G5RV

Full size 102ft (now includes heavy duty 300Q ribbon) .....£28.95 P&P £6  
Half size 51ft (now includes heavy duty 300Q ribbon) .....£24.95 P&P £6

### Q-TEK INDUCTORS

80mtr inductors + wire to convert 1/2 size G5RV into full size. (Adds 8ft either end) .....£24.95 P&P £2.50 (a pair)

### DIPOLE CENTRE PIECES

Open wire .....£5.99  
SO-239 .....£5.99

### 300Ω HEAVY DUTY FEEDER

5m length .....£5.00 P&P £3.00  
10m length .....£10.00 P&P £3.00

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1.1 Balun	£25.00 P&P £2
4.1 Balun	£25.00 P&P £2
6.1 Balun	£25.00 P&P £2
40 mtrs Traps	(a pair) £25.00 P&P £4
80 mtrs Traps	(a pair) £25.00 P&P £4
10 mtrs Traps	(a pair) £25.00 P&P £4
15 mtrs Traps	(a pair) £25.00 P&P £4
20 mtrs Traps	(a pair) £25.00 P&P £4
5.35MHz Traps	(a pair) £25.00 (a pair)

### CUSHCRAFT ANTENNA

MA5V	New vertical 10, 12, 15, 17, 20m	£229.95	£215.00
MA5B	Mini beam 10, 12, 15, 17, 20m	£249.00	£299.95
A3S	3 ele beam 10, 15, 20m	£499.95	£449.95
A4S	4 ele beam (10-20m)	£599.95	£529.95
R-6000	Vertical 6, 10, 12, 15, 17, 20m	£349.95	£315.95
R-8E	Vertical (40-10m)	£499.95	£449.95
X-7	7 ele 10, 15, 20m	£699.00	£599.95

Practical Wireless, July 2003

### Q-TEK COLINEARS

P&P £10.00

QT-100 GF 144/70, 3/6dB (1.1m) glassfibre	£39.95
QT-200 GF 144/70, 4.5/7.2dB (1.7m) glassfibre	£54.95
QT-300 GF 144/70, 6.5/9dB (3m) glassfibre	£69.95
QT-500 GF 144/70, 8.5/11dB (5.4m) glassfibre	£149.95
QT-627 GF 50/144/70, 2.15/6.2/8.4dBi (2.4m)	£69.95

### MOBILE ANTENNAS

P&P £8.50

DB-770M	2m/70cm (3.5 - 5.8dB) 1m PL-259	£24.95
DB-7900	2m/70cm (5.5 - 7.2dB) 1.6m PL-259	£39.95
PL-62M	6m + 2m (1.4m) PL-259	£19.99
PLT-20	20m mobile whip (56" long)	£24.95
PLT-40	40m mobile whip (64" long)	£24.95
PLT-80	80m mobile whip (64" long)	£24.95
PLT-259	PL-259 converter for above	£5.95

### COPPER ANTENNA WIRE ETC

Enamelled (50m roll)	£12.95 P&P £5
Hard drawn (50m roll)	£13.95 P&P £5
Multi-Stranded (Grey PVC) (50m roll)	£10.95 P&P £4
Flexweave (H/ duty 50 mtrs)	£30.00 P&P £5
Flexweave H/ duty (18 mtrs)	£15.95 P&P £5
Flexweave (PVC coated 18 mtrs)	£18.95 P&P £5
Flexweave (PVC coated 50 mtrs)	£40.00 P&P £6
Special 200mtr roll PVC coated flexweave	£99.00 P&P £10
Copper plated earth rod (4ft)	£13.00 P&P £6
Copper plated earth rod (4ft) + earth wire	£18.99 P&P £6
New RF grounding wire (10m pack) PVC coated	£12.50 P&P £5

### NEW NOISE FILTER!

A superb TDK 'snap fix' ferrite clamp for use in Radio/TV/ Mains/PC/Phone etc. Simply close shut over cables and notice the difference! Will fit cables up to 13mm diameter. Ideal on power supply leads/mic leads/audio leads/phone leads. *On this cable simply wind cable round clamp 1-to-2 times. Simple yet effective!*

OUR PRICE: **2 for £10** (p&p £2.50)

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RG-213 Mil spec x 100m.	Genuine high quality coax
ONLY <b>£69.95</b> P&P £10	
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### SP-350 STATIC PROTECTOR

Designed to reduce static build-up during electrical storms. (Gas discharge fuse is replaceable). DC-500MHz (SO-239 sockets). PWR up to 400W. **£24.95** P&P £2.50

### NISSEI PWR/SWR METERS

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RS-402 125-525MHz (200W)	£59.95 P&P £5
RS-3000 1.8-60MHz (3kW) Incls mod meter	£79.95 P&P £5
RS-40 144/430MHz Pocket PWR/SWR	£34.95 P&P £2

### CAROLINA WINDOW

CW-160S (160-10m) 40m long	£139.00 P&P £8.50
CW-160 (160-10m) 80m long	£134.95 P&P £8.50
CW-80 (80-10m) 40m long	£99.95 P&P £8.50
CW-80S (80-10m) 20m long	£119.95 P&P £8.50
CW-40 (40-10m) 20m long	£94.95 P&P £8.50

### DOUBLE THICK FERRITE RINGS

A superb quality ferrite ring with incredible properties. Ideal for "R.F.I.". Width 12mm/OD35mm. **6 for £12.00 12 for £20.00** P&P £3.50

### LOW LOSS PATCH LEADS

Connectors	Length	Price
PL-259 - PL-259	0.6m	£5.99
PL-259 - PL-259	4m	£9.99
BNC - BNC	1m	£6.99
BNC - BNC	1.5m	£8.99
+ £2.50 P&P		

### CAR BOOT MAST SET

Once they've gone, they've gone! 5 section (15') 4.5m 1 1/4" slot together mast set. Collapsed length 0.92m (3') makes this ideal for travelling out with.

**£24.95** Del £10.00 2 for £44.95 del £10.00  
3 for £64.95 del £10.00

### 20ft BARGAIN MAST SET

4 x 5' lengths of approx 2" extruded (16 gauge) heavy duty aluminium, swaged at one end to give a very heavy duty mast set. **OUR PRICE £44.95** Del £10

**TWO FOR £79.95** 2 for £79.95 Del £12.50  
**THREE FOR £109.95** 3 for £109.95 Del £15.00

### NEW 20' (approx) SLEEVED SLOT TOGETHER MAST SET

A heavy duty-sleeved, mast set that will tightly slot together. 4 x 5' (2" dia) 16 gauge heavy duty aluminium tubes (dim. approx).

**£49.99** Del £10.00. **TWO FOR £90.00**

### TELESCOPIC MASTS

6 section telescopic masts. Starting at 2 1/2" in diameter and finishing with a top section of 1 1/2" diameter we offer a 8 metre and a 12 metre version. Each mast is supplied with guy rings and steel pins for locking the sections when erected. The closed height of the 8 metre mast is just 5 feet and the 12 metre version at 8 feet. All sections are extruded aluminium tube with a 16 gauge wall thickness. **8 mtrs £109.95 12 mtrs £149.95** Carriage £12.00. Telescopic mast lengths are approx.

Tripod for telescopic masts .....£89.95

### FIBRE GLASS POLES

Del £10.00

1m	1 1/2" £8.50	1 3/4" £10.50	2" £12.50
2m	£16.00	£20.00	£24.00

### NEW EASY FIT WALL PULLEY

Pulley will hang freely and take most rope up to 6mm. (Wall bracket not supplied). **PULLEY £8.99** + P&P £2.50

Wall bracket, screws not supplied. Simply screw to outside wall and hang pulley on **WALL BRACKET £2.99** P&P £1.00

### MAST HEAD PULLEY

A simple to fit but very handy mast pulley with rope guides to avoid tangling. (Fits up to 2" mast). **£8.99** + P&P £2.50

### METAL WORK & BITS

P&P available on request

2" Mast base plate	£12.95 P&P £5
6" Stand off	£6.95 P&P £5
9" Stand off	£8.95 P&P £5
12" T&K Brackets	£12.00 P&P £8
18" T&K Brackets	£18.00 P&P £8
24" T&K Brackets	£20.00 P&P £8
10mm fixing bolts (needs 8mm hole)	£1.40 each
U bolts (1 1/2" or 2")	£1.20 each
8 nut universal clamp (2" - 2")	£5.95
2" - 2" cross over plate	£10.95
3-way guy ring	£3.95
4-way guy ring	£4.95
2" mast sleeve	£9.95
1 1/2" mast sleeve	£8.95
Standard guy kits (with wire)	£24.95 P&P £6
Heavy duty guy kits (with wire)	£29.95 P&P £6
Ground fixing spikes (3 set) powdered coated	£24.00 P&P £8
30m pack nylon guy 4.4m/B/load 480kg	£10.00 P&P £2
30m pack (3mm dia) winch wire	£16.00 P&P £4
Self amalgamating tape (roll)	£6.50
'Nylon' dog bone insulators	£1.00 each
Chimney lashing kit	£12.99

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power supplies

### NISSEI PS-1020



New 25A. PSU.

- Volts adjust (9-15vdc)
- Light in weight: 2.1kg
- Automatic shutdown on load fault
- Ultra quiet cooling fan
- Over volts protection ~~£89.95~~

OUR PRICE **£89.95** Delivery £10.00

### NEW NISSEI MS-1228



'Smallest version to date' now with cigar socket. Save £15.00

ULTRA QUIET FAN  
28A at 13.8V yet under 2kgs. (H 57mm, W 174mm, D 200mm approx). Fully voltage protected. Cigar socket & extra sockets at front/rear. Ultra slim professional power supply.

RRP £79.95  
OUR PRICE **£64.95**  
Del £10.00

### NISSEI PS-300



30 AMP/12 VOLT PSU

Features: ★ Over voltage protection ★ Short circuit current limited ★ Twin illuminated meters ★ Variable voltage (3-15V) latches 13.8V ★ Additional "push clip" DC power sockets at rear.

One of the only power units in this magazine that has "over-voltage protection".  
**£119.95** Del £10

hf no problem

### KENWOOD TS-570DGE



In our opinion, the best HF Tx below £1200.

OUR PRICE **£795.00**

- INCLUDES ATU
- PS-53 matching power supply .....£229.00
  - MC-60A Desk mic .....£119.95
  - MC-80 Desk mic .....£72.95
  - SP-23 matching speaker .....£68.95

### YAESU FT-857 NEW



The ultimate HF excitement in a small package. HF + 6m + 2m + 70cm

OUR PRICE **£779.00**

FC-30 auto antenna tuner .....£219.95

### ICOM IC-706II G



Now on its 3rd generation, this classic all-band transceiver is still our No. 1 best seller. HF + 6m + 2m + 70cm.

OUR PRICE **£789.00**

AT-180 auto ATU .....£349.00  
AH-4 Remote wire antenna .....£299.00

### KENWOOD TS-870S



TRUE IF DSP TRANSCIVER When only the best will do! Incl's ATU.

OUR PRICE **£1279.00**

- STILL OUR No1 SELLER!
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  - MC-60A Desk mic .....£119.95
  - MC-80 Desk mic .....£72.95
  - SP-31 matching speaker .....£79.95

### YAESU FT-817



100kHz-440MHz (with gaps). All mode transportable. Includes nicads/charger. O/P:- up to 5W. £799.00.

OUR PRICE **£549.99**

Optional case .....£20.00

### NEW IC-7400



HF+6m+2m, All mode, 32bit DSP for outstanding signal enhancing. £1549.00

OUR PRICE **£1249.00**

SP-21 optional extension speaker .....£74.99  
SM-20 optional desk microphone .....£129.95

IC-756 PRO II .....Our price £1999.00

### KENWOOD TS-2000



New all mode multibander: HF/50/144/430 optional 1200MHz. Optional UT-20 (1200MHz module) £299.00

OUR PRICE **£1549.00**

- Or with 23 cm fitted £1749.00
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  - SP-23 matching speaker .....£68.95
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  - MC-60A desk mic .....£119.95

### YAESU FT-100D' NEW VERSION



Superb mobile/base TVCR for HF/VHF/UHF, all mode. Now includes: TXCO/CW filter (narrow), larger speaker + loads more!

OUR PRICE **£699.99**

FT-847 now in stock .....£1149.00  
FT-897 new model now in stock .....£975.00  
FT-8900 new model .....£349.00

### ALINCO DX-70TH



100W HF + 6m transceiver. RRP £699.99

LATEST UK VERSION OUR PRICE **£595.00**

EDX-2 Remote ATU ... OUR PRICE £269.00

h/helds

### YAESU VX-7R



Yaesu heavy duty tribander 50/144/430MHz. (Lithium ion battery) high power (25W) as standard. Includes charger.

OUR PRICE **£299.00**

### KENWOOD TH-F7E



Transceiver & scanner 2m/70cm Tx (5W). Rx:- 0.1-1300MHz, all mode (incl SSB). Incl:- Lithium ion battery & charger. + FREE REMOTE MIC

'BEST VALUE HANDIE 2003'

OUR PRICE **£249.00**

### ALINCO DJ-596



2m + 70cm Handie. Includes: (NiMH) Battery/Charger. High + Narrow switchable. High Power (4.5W) OP as standard. Alpha Numeric Channeling. + FREE REMOTE MIC

OUR PRICE **£169.95**

vhf mobiles

### NEW ICOM IC-2725



2m/70cm dual bander. Includes multi-function D.T.M.F. mic + loads more.

OUR PRICE **£305.00**

IC-207H 2m/70cm .....£249.00

### G-707E



2m/70cm dual bander. Alpha/numeric display. CTCSS included + tone burst. 1200/9600bpps packet terminal facility. Optional ext'd Rx:- 118-170-400-470. 2m - 50W, 70cm - 35W.

OUR PRICE **£249.00**

D-700E .....£399.99

### ICOM IC-207H



2m/70cm mobile. 50W 2m/35W 70cm. Fully selectable power levels. CTCSS as standard. RF attenuator (aids against break-through).

OUR PRICE **£249.00**

Icom IC-2725 .....our price £305.00

shack accs

### D-308B BLACK DELUXE DESK MIC



(with up/down). Many amateurs using this mic (over 4000) have expressed extreme pleasure with it's performance. Includes 8-pin round "Yaesu" mic lead.

**£49.95** P&P £6.00

- Yaesu 8 pin round to modular adapter (FT-100, etc.) .....£17.99
- A-08 8 pin "Alinco" round .....£9.95
- K-08 8 pin "Kenwood" round .....£9.95
- I-08 8 pin "Icom" round .....£9.95
- AM-08 Modular phone "Alinco" .....£9.95
- IM-08 Modular phone "Icom" .....£9.95
- KM-08 Kenwood modular lead .....£9.95
- Spare foram wind guard (M.C.) .....£2.00 each

### MFJ PRODUCTS

#### MFJ-259B

HF digital SWR analyser + 1.8-170MHz counter/resistance meter.

ONLY **£249.95** P&P £6



- MFJ-269 160-70cm analyser .....£315.95
- MFJ-949 300W ATU + dummy load .....£149.95
- MFJ-949 HF + 6m ATU .....£179.95
- MFJ-969 1.5kW versa tuna .....£249.95
- MFJ-962D DSP filter .....£229.95
- MFJ-784B 200W "versa tuner" .....£75.95
- MFJ-901B 300W dummy load (600meg) .....£39.95
- MFJ-260C Random wire tuner .....£56.95

### YAESU G-450C



Heavy duty rotator for HF beams, etc. Supplied with circular display control box and 25m of rotator cable. GC-038 Lower mast clamps £25.00 GC-065 3" Thrust bearing £48.00.

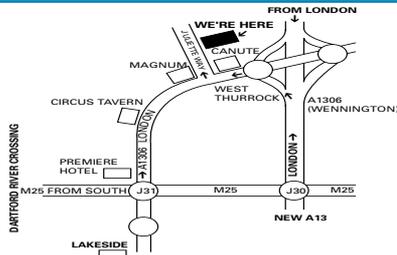
SAVE £60

OUR PRICE **£315.00** P&P £10

- G650C .....£359.00
- G-100DXC .....£499.95
- GC-038 .....£25.00
- GC-065 .....£48.00
- G-5500 Azimuth/elevation .....£535.00

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24 hour quartz clock. Full 24 hour dial, separate day/month and 12 hour movement.

OUR PRICE **£37.95** P&P £5.00

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24 hour quartz clock. Major cities shown on rim. World map on face. "Know what time it is around the world"

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**BA-888**



ELECTRONIC BAROMETER/CLOCK.  
 ● Temp/ weather/ forecast/ pressure barometric trend ● 24hr bargraph ● 12/24hr clock & alarm ● Humidity ● Table/wall mount

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**NEW SANGEAN QSR-1**



Voice activated desktop recorder with quarter speed record. (Sold for more under Roberts name: C-9950).

Superb accessory for the radio enthusiast.  
 OUR PRICE **£69.95** Del £10.00

**AR788 NEW MODEL**



Quality rotator for VHF/UHF. Superb for most VHF-UHF yagis, 3 core cable required. 3 core cable 50p per mtr.

OUR PRICE **£44.99**

AR-201 .....Thrust bearing for above only £13.99

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500kg brake winch. BARGAIN PRICE

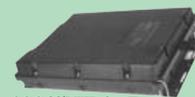
OUR PRICE **£59.95** del £8.50

Winch wall bracket.....£19.99  
 Extra heavy duty "hanging pulley" .....£14.50

**SGC SALE**

**SGC-230**

200W instant auto ATU. Tune any length of wire with this superb ATU. (Minimum length applies.)



OUR PRICE **£329.95**

SGC-237 HF+6m Tuner .....£289.95  
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**SUPER-GAINER RH-9090**

SMA 40cm flexible whip that is ideal as replacement.

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**SUPER-GAINER RH-9000**

BNC 40cm flexible whip for the ultimate in gain. (Rx:- 25MHz-2GHz).

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A high quality superb 'police style' earpiece that hangs over the ear. (3.5mm straight plug fitted).

**£9.95** P&P £2.00

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A superb "BNC" black telescopic whip. Ideal for scanners. Folds neatly away. (0.1-2GHz).

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**ICOM IC-8500**



Next generation wideband receiver. 0.1-2GHz. (All mode)

Latest UK version

FREE PSU

OUR PRICE **£1149.95**

SP-21 extension speaker .....£74.99  
 UT-102 speech synthesiser.....£34.99

**AOR AR8600MKII**



Extremely versatile all mode receiver (100kHz-3GHz). "Superb HF performance".

OUR PRICE **£599.00** Del £10

Optional power supply/8600 .....£19.95  
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**ICOM PCR-1000**



100kHz-1300MHz. AM, FM, WFM, SSB, CW. Superb short wave performance. Real-time bandscope now "XP"

compatible. (Requires suitable PC). Software included on CD ROM.

OUR PRICE **£329.99**

Optional DSP unit .....£85.00

**AR-8200 SERIES-3**



Never before has one hand portable offered so much. ★ Covers 100kHz-3GHz (all mode) ★ Computer control capability ★ 8-33kHz steps for the new airband spacing ★ Reaction tune capability ★ Includes nicads/charger/antenna and car lead.

OUR PRICE **£385.00** Del £10

Optional case .....£19.99  
 CC-8200 PC interface.....£79.99

**ALINCO DJ-X3**



Micro-handy scanner. 100kHz-1300MHz. 700 memories/stereo FM (earphones)/attenuator/bug detector. AM/FM/WFM/Selectable tuning steps (incl's 8.33kHz).

**£99.95**

Soft case .....£15.99  
 Cigar power lead .....£19.99

Optional battery pack and drop in charger £39.99

**ICOM IC-R5**



New pocket hand-held scanner (0.1-1310MHz) AM/FM/WFM. Superb high-speed scanning featuring alpha tag and much more. Includes nicads & charger.

OUR PRICE **£149.99** Del £10

Optional soft case .....£17.99

IC-R3 with TV screen .....OUR PRICE **£329.99**

**SANGEAN ATS-505**



NEW! Wins Dutch "Automobile" award. Excellent small short wave receiver (digital). 0.15-30MHz (AM, USB, LSB, CW). 88-108MHz FM stereo. Includes carry case.

BEST BUY

**£79.95** P&P £10.00

**SONY SW-100E**



★ Miniature portable all mode SW receiver ★ Station presets for 50 frequencies ★ Single side band system ★ Synchronous detector ★ Tuning in 100Hz + 1kHz steps ★ Incl's compact antenna/earphones/case.

**£159.95** Del £10

ACE-30 Power supply unit for above.....£26.95  
 AN-100 Active antenna .....£64.95

**SANGEAN ATS-909**



A superb performance portable/base synthesized world receiver with true SSB and 40Hz tuning for ultra clean reception. The same radio is sold under the Roberts name at nearly twice the price. Other features include RDS facility, 306 memories and "FM stereo".

OUR PRICE **£139.95** Del £10

Optional power supply.....£16.95  
 HD-1010 optional mono/stereo h/phones .....£9.99

**EVOKE-1**



Using the latest third-generation D.A.B. technology, Evoke-1 delivers outstanding digital sound quality at an affordable price. A stylish, mains powered receiver without the normal hiss, crackle and fade of old AM/FM broadcast. Transform your listening.

OUR PRICE **£99.95**

Evoke 2 .....£159.99

**JRC NRD-545 DSP**



The ultimate short wave receiver with DSP - for the real perfectionist. (Incl's PC software).

OUR PRICE **£1299.00**

**ICOM IC-R75**



The short wave receiver for the true enthusiast. Incl's free power unit. ● 0.03-60MHz (all mode).

OUR PRICE **£589.00**

**REALISTIC DX-394**



★ Superb performance SW receiver ★ 0.2-30MHz (all mode) ★ Selectable tuning steps

OUR PRICE **£199.95**

gizmos

special interest

scanners

desktop receivers

# TEX'S

## TIPS & TOPICS

Hello and welcome to the occasional column that, although it's called Tex's Tips and Topics, is really about your ideas, tips and any 'tricks' you may use in the hobby. So, here's a few suggestions from readers seeking to win book vouchers for every tip published!

I'll start this month with a computer related idea from **Bill Kitchen G4GHB**. Bill obviously dislikes throwing away the CDROMs that seem to come with many magazines, and as promotional deals these days. He thought that the shiny items would make ideal circular or semi-circular dials for home-brew rigs. The photograph of **Fig. 1**, shows a CDROM that has been marked out with semi-circular scales, using special pens and an old pair of compasses.

Bill suggested using tin-snips to cut the CDROM, though I've never had much success with that method. I normally score a straight line across the CDROM with the **back edge**, of a sharp knife, using a metal rule as a guide. Then clamp the CDROM to the edge of the table, with the break-line along the edge.

Now keeping **your eyes and face averted**, gently apply pressure to the free side of the CDROM until it breaks, leaving you with something like the CDROM shown in **Fig. 2**. The edges just

needs cleaning up with emery paper on a flat surface to make a good-looking dial!

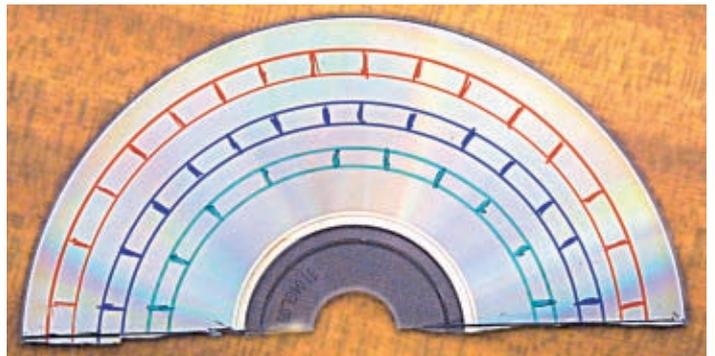
### Table-Top Microphone

For those of you who run several rigs, you'll be familiar with the problem of getting a table-top

another one of the rigs ... and so, it goes on! So, if you're fed-up with the wrong plug being on the microphone, when it's needed, **Mike Evans M3EMB**, may have the perfect answer for you.

The illustration of **Fig. 3** should be self evident - an adapter for each radio! The 4-pin socket came

● Fig. 1: A marked out CDROM showing the marker pens used with a pair of compasses to create concentric scales in one, or more, of the four colours that the pens are available in.



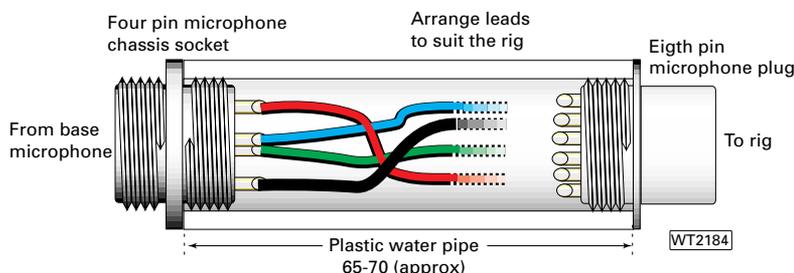
microphone wired up for one of them. After you've done one, you need to use the microphone on

from an old CB set that effectively cost less than a new socket, leaving only a little wire, a suitable microphone plug for each rig, and a short length of plastic water pipe to build the adapters into.

● Fig. 2: After scoring quite deeply with the point of a sharp edge, the CDROM can be snapped by bending over the edge of a table. See text for cautionary detail.



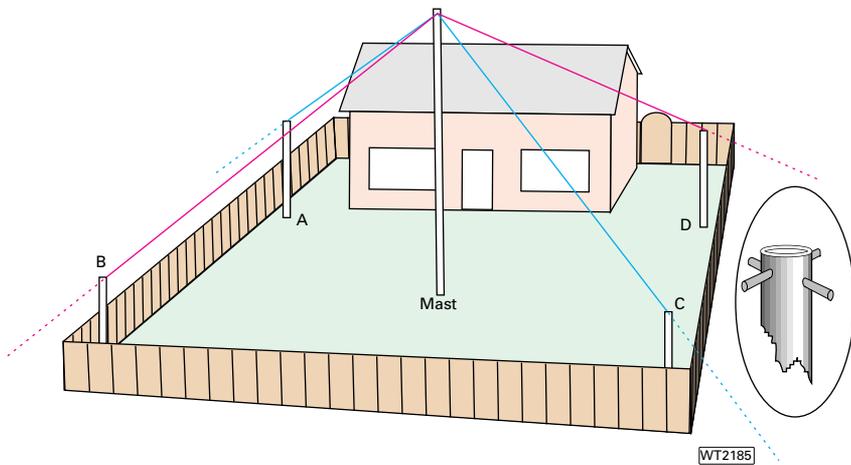
● Fig. 3: Simple adapters allow one microphone to be used on several rigs, with differing microphone sockets.



### Buttering Up

From **Peter Leybourne MM5PSL**, comes a good way of 'buttering up' the XYL and getting some useful antenna related items into the garden. The items are just ordinary washing posts. But I'll let Peter's E-mail tell the story, as he wrote it! "Anyone who has a small garden will know the problem of pegging out guy ropes at a reasonable and safe distance from the antenna pole. I have that problem and something occurred to me that would in effect extend the guy ropes into the next door neighbours garden without actually doing so.

"Shift the clothes poles! The type often seen concreted into the ground. They're designed to take the weight of heavy wet washing, the kids swinging on them etc. and I've never seen a bent one yet! With one pole in each corner of



● Fig. 4: Adding four washing line support poles could, not only be popular with the XYL, but become perfect support point for your antenna systems. The inset drawing is of a typical top for these posts.

the garden the guy ropes are attach to the the top, almost two metres off the ground. If the guy ropes were to be extended at the same angle, they would peg into the ground well into next door's garden.

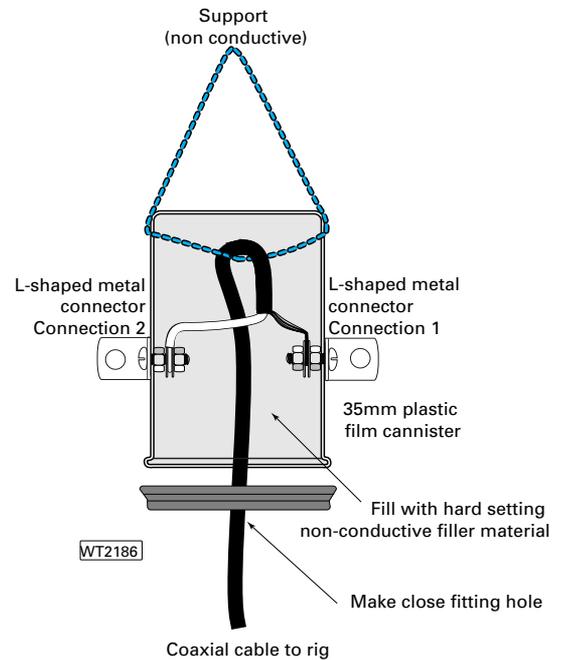
"As you can see from the illustration, Fig. 4, the type of clothes post used has ready made tie off lugs, so that guy ropes are raised above head height and the XYL gets a longer clothes line! I've

been using the tops of clothes poles for a while and it's never a problem. Maybe not recommended for heavy duty support, but it certainly makes for pegging out some extra height."

A splendid idea Peter! Now, the final tip comes from Roy Underwood MW0DRU and it's a coaxial to dipole centre made out of an unwanted plastic 35mm film canister. I think that the idea is a useful one, and could be used with the Tip from Peter, to create an

inverted V antenna in the garden.

"Well I've run out of space again. These are all splendid ideas, and a good cross-section of some of the simple, but useful tips that readers keep sending in. Many thanks for the tips that you've all sent in, they're all very useful. Book



● Fig. 5: Utilising an otherwise unwanted 35mm film canister makes a great and cheap coaxial cable to dipole centre adapter.

vouchers on the way for all published. **So, if you want a book voucher for an idea - you've got to write in first! - What are you waiting for?** *Tex*

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# Radio Basics

Personally, I'm quite happy with a single band transceiver or receiver because performance can be optimised. But I appreciate that nowadays, many hobbyists prefer to get as much as they can for their efforts.

So, making a receiver able to operate multi-band is often a priority, or a deciding factor when a project is being considered for construction. And to this end...I'm pleased to say that the Basic-4 concept lends itself to working on any single h.f. band and is also capable of working as a multi-band receiver when plug-in front end units are used.

The plug-in front-end has been very popular over the years. I have no doubt that

plug-in technique, or even by the use of switching. However, although switching (let's say for two favourite bands) can be done - it's not so straightforward as plug-in band changing. I speak from experience...and if you can avoid switching r.f. circuitry...please do so!

Although I've not made any of the **final prototypes** of the Basic-4 receiver into dual or multi-band types yet, I did successfully modify one of the breadboard versions. So, I can suggest the following methods. Firstly though, you have to decide how much of a plug-in facility you require!

## Separate Units

Two of the choices open to you when modifying the Basic-4 receiver are shown in **Fig. 1**.

This month Rob Mannion G3XFD concludes the series dealing with the Basic-4 crystal controlled front-end receiver with some suggestions on modifications. You can tailor the project to fit your needs!

version...when the original front end is removed...in effect you'll be left with a mixer input (Tr2) ready to receive the incoming r.f. to 'convert' it to the i.f. frequency you've chosen. And, depending on the crystals you've got, and the i.f. you've chosen...this could be a down or up-conversion (please see Building The Receiver section, 4th column, page 22/23 in the June 2003 PW for full explanation).

In practice, the modifications are very easy to do - so don't be overwhelmed by the idea! I can back this up by mentioning that the breadboard version I built on a piece of pine flooring...proved very successful. And

using it. I might be surrounded by modern transceivers and sophisticated equipment...but that successful wooden board and drawing pin layout seemed special!

## Four Contacts

By arranging the 9V supply for the local oscillator to be connected to the mixer supply rail, only four contacts are needed for connecting the detachable p.c.b./ r.f. and local oscillator (l.o.) stage to the inputs of the Tr2, the mixer unit on the main assembly. To test out the idea I used five drawing pins...and then realised I could get

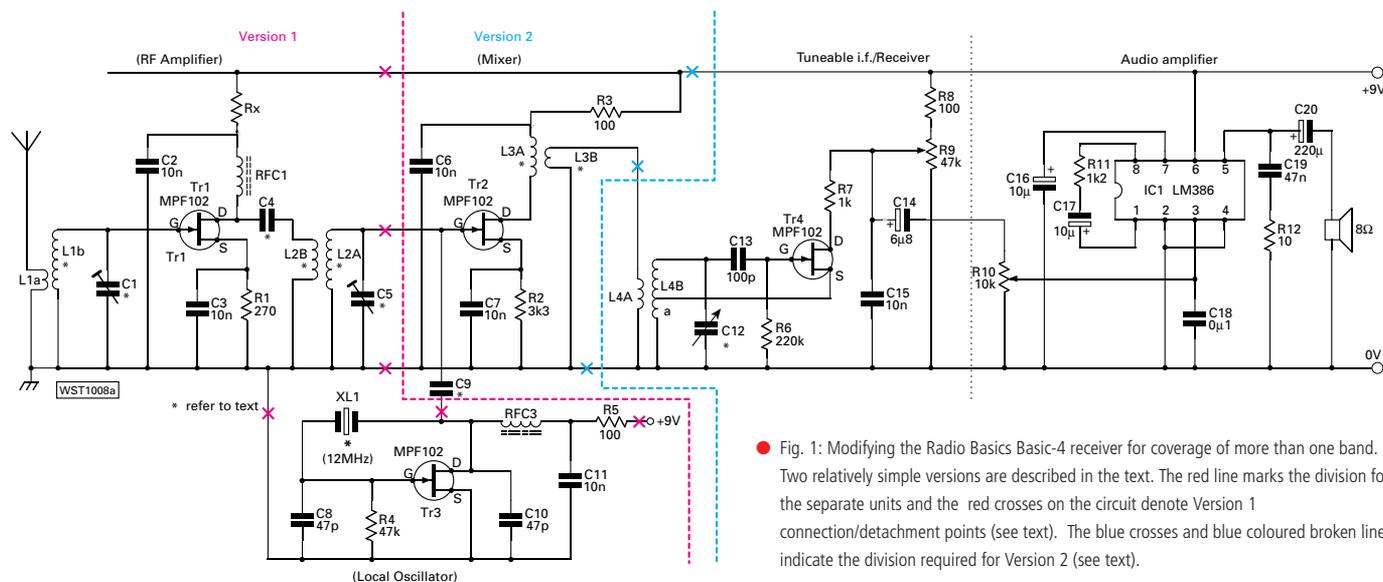


Fig. 1: Modifying the Radio Basics Basic-4 receiver for coverage of more than one band. Two relatively simple versions are described in the text. The red line marks the division for the separate units and the red crosses on the circuit denote Version 1 connection/detachment points (see text). The blue crosses and blue coloured broken line indicate the division required for Version 2 (see text).

many readers will know of, or have used the excellent multiband White Rose Receiver project designed by John Hey G3TDZ. This excellent and deservedly respected project has earned a good name for itself over many years.

The Radio Basics (RB) design can also be made multi-band easily, with the

Here, **Version 1** (all circuitry to the left of the red dotted line) requires to be on a separate board/chassis/unit to provide coverage on different bands.

The crosses on the circuitry indicate where the connections points will be made, including that for the 9V supply to the local oscillator. With this

although I had originally intended to build a finalised version using a printed circuit board (p.c.b.) the performance of the crude drawing pin and wire-linked system was perfectly adequate.

Incidentally, I might be odd - but it seems as though the simpler a project is in practical physical terms...the more pleasure I get from

away with four.

The plug-in unit I fabricated used a piece synthetic resin paper board (SRPB) as a male connector strip. Readers will no doubt remember how keen I am to use this material. In practice the final etched copper track (to form the links to the drawing pins) is mounted upwards (when used as an

ordinary p.c.b. the components are soldered surface-mount component style on the copper track side).

All I had to do was to make five contact pads (I realised later four would have done) so that when slid into position under the contact drawing pins...good contact was made. With short guides (made from very small off-cut strips of SRPB) to keep the plug-in unit from sliding laterally and possibly breaking contact...the system worked well. However, on reflection I think that this method should have been called a 'slide in' technique rather than plug-in!

Obviously, there are various ways of enabling the plug-in technique to be used. Indeed...if you opt for professionally made p.c.b. type board-to-board connectors, even the wooden baseboard method can be used.

The same method can be used if you wire up a Perf board type layout, as preferred by **George Dobbs G3RJV**. I

project you'll recognise the circuit as being the same as used on page 23 of the June issue *PW*.

Version 2 is probably the simplest and easiest to set up and work with. However, simplicity comes at a price because whereas Version 1 only requires duplication of the stages associated with Tr1 and 3 (in Fig.1)...Version 2 requires complete duplication of the unit. The number of duplications depends of course on how many bands you want to cover.

The r.f. feed points/power interconnections are marked in red in Fig. 2. And I think this approach...despite the added costs of components (and crystals)...will appeal to the majority of constructors.

## Important Considerations

Now it's time to point out the important considerations you'll have to take into account if you modify the

consideration.

I'm also going to include more-than-one band use of the local oscillator crystal under the heading of 'Important Considerations'. This is because, you may, with some careful thinking, be able to use crystals you've got to hand...on more than one band! And that little bit of unintentional poetry acts as a reminder we can use harmonics to our advantage.

Crystal oscillators - particular the circuits popular in Amateur Radio use - are rich in harmonic output. This effect - if not adequately controlled by effective filtering...can cause problems (TVI for example). However, harmonics can also be used...very much to our advantage.

One example of using harmonics means that a 4.43MHz crystal (the very cheap PAL colour TV crystals) produces harmonics on 8.86MHz and upwards. So, with a little bit of ingenuity...you could use a

side...3.8MHz appears at 630kHz).

The same 4.43MHz crystal can be used to provide coverage of the 7MHz band too...by using the harmonic on 8.86MHz. Suitably tuned (making sure the harmonic is being utilised...not the fundamental) this will provide a down conversion of 7MHz between 1.86 and 1.76MHz.

However, to utilise the one crystal oscillator on the two bands you'll then have to arrange for the tuneable i.f. receiver to cover both 930 to 630kHz for 80 metres, and 1.86 to 1.76MHz for 40 metres. Fortunately, with the simple inductor tuning on the tuneable i.f. - it's not that difficult to do.

## Modified Tuning

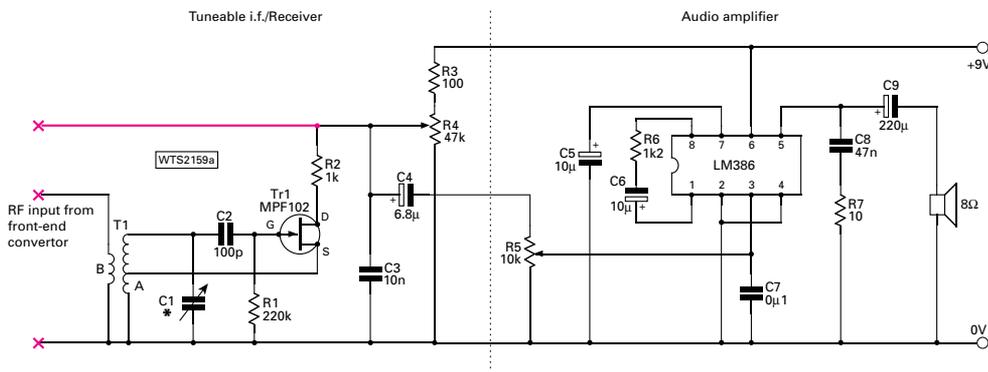
Coverage of the two bands with one crystal can be easily achieved with modified tuning on the tuneable i.f. The easiest method is to wind L4B (input winding on L4A won't change) to cover 1.86 to 1.76MHz for 40 metre band coverage. Don't forget also that L3A will have to be wound for the broader coverage between 630kHz and 1.86MHz - or itself made tuneable).

For coverage of the 80 metre band (utilising one front-end) you'll then have to arrange for L1B and L2B to be tuneable to the lower band. This can be achieved either by switching in extra inductance (turns) on the toroids - not so easy to do as I found out! Or more effectively by switching in two different toroids, specifically tuned for 3.5MHz.

Whatever you decided to do - there's enormous scope for experimentation with the Basic-4 receiver. I've had a great deal of fun with the project. I have...and I hope you do too! My next idea is to provide the tuneable i.f. with a ganged r.f. stage...but that's another story.

Please let me know how you get on with your version of the receiver. My final job is to put mine into a nice little box and start on a matching transmitter! Cheerio for now.

*PW*



● Fig. 2: If Version 2 is adopted for multi-banding the Basic-4 receiver, this circuit, originally published in the June issue of *PW*, is what's required to provide the tuneable i.f. receiver/detector with an input at the correct frequency (See text). **Please note: component numbers are unchanged from the original publication.**

mention this because I realise (and can understand the reason) that there will always be a reluctance with some constructors to build using home-brewed p.c.b.s. So, hopefully you'll be encouraged now that you know that there's a choice of methods open to you.

## Version Two

Another option, Version 2, is shown in **Fig. 2**. If you've been following the Basic-4

receiver for coverage on more than one band. **Firstly, and most importantly is the requirement that each separate crystalled controlled front end actually provides the same i.f. output!**

It might seem an obvious requirement to ensure you've got the same i.f. outputs...but in fact it's easily overlooked. So, unless you want to make L4A and B plug-in units too...make sure you take the tuneable i.f. needs into full

crystal of this type on a Basic-4 receiver to provide coverage on more than one band.

Readers who have followed this series for a number of years will remember the 3.5MHz to medium wave converter project which I presented several years ago. For coverage of the 3.5MHz band, the project used a 4.43MHz crystal, this then provided the local oscillator to produce an i.f. of 930 to 630kHz. (Don't forget as the l.o. was on the high

# Yaesu FT-897 All-mode

Regular author  
Roger Cooke  
G3LDI takes a  
look at the new  
all-mode  
transceiver from  
Yaesu. He's been  
busy putting his  
extensive Norfolk  
'Antenna Farm'  
to work...and  
enjoying the  
process very  
much indeed!

When I was asked to review this transceiver by the Editor, I told him I was looking forward to doing just that as I was toying with the idea of replacing my Icom 271/471 combo with this rig to run my Satellite Gateway. Such is the profusion of transceivers made by Yaesu these days, it's really difficult to keep up with it all!

I was thinking of the FT-847 of course. However, it's always good to look at a new transceiver in the comfort of your own home to compare and test it with friends on the air.

As I do not now have access to sophisticated test equipment, I cannot verify the figures and specifications quoted in the manual. I can, however, compare it to my FT-1000MP and also give subjective opinions.

## Rugged Construction

When I opened the 897's box, the first thing that struck me was the weight and rugged construction of this transceiver. It weighs in at around 4kg (about 8.6lbs) and is aptly suited to portable operation, and I think it will stand up to transit quite nicely.

The transceiver reminded me of something that the military would have designed. The other



● Roger Cooke G3LDI says that the Yaesu FT-897 (shown here fitted with the optional automatic antenna tuner) provides everything you'll need for an Amateur Radio holiday!

thing that I was surprised at was the minimal number of controls on the front panel.

Ergonomically, the FT-897 is quite an attractive rig, and would be ideal for holidays or for business trips to fill up the evenings. I set up the rig on a table in my garden and cheated slightly by taking a coaxial lead from the main antenna tower\* at my QTH. Despite my large antenna system... and running on batteries, it's possible to work some DX on simple portable antennas.

\*Note: Roger has his station

set up in a former horticultural nursery not far from Norwich in Norfolk, in Eastern England. His antenna, which many of us can only dream of, includes towers over 30 metres high!

**Editor.**

## Vital Statistics

The FT-897's vital statistics are 220 x 80 x 262mm (7.87 x 3.15 x 10.3 inches). It will sit on a desk and tilt up for easy view and the rubber feet will not mark the desk. It also has a rubber handle for comfortable portability.

For review purposes the transceiver arrived with the FC-30 Automatic Antenna Tuner Unit (a.a.t.u.) already attached. This optional accessory bolts neatly onto the left-hand side of the rig.

On the rear panel four SO-239 antenna sockets are provided: the main h.f. antenna connects into the antenna tuner and a link then connects to a socket on the rig. An N-type connector is provided for 144 and 430MHz operations.

Provided with the rig are the MH-31 hand microphone, a d.c. power cable, operating manual and warranty card. The FNB-78 Ni-MH battery pack was also fitted on the review unit and a battery charger was included in the box. However, these are all



● The FT-897 with the optional automatic antenna tuning unit detached. The easy-carry 'rubberised' handle can be seen on the right.

# Mode Transceiver



labelled as optional accessories in the manual. The optional list contains no less than 19 items...which can push up the purchase price of the transceiver considerably.

## Menu Driven

The rig is not quite as simple as the front panel would have you believe as it's menu driven...much like any rig these days. And of course it's a really good idea to spend several hours reading the manual with the rig switched on in front of you before trying to use it on the air!

If you have had a menu driven rig before...this will seem like a refresher course, but if it's your first introduction, it will take some time to master the various functions. The controls double up in function and together with the huge menu selections that are available, the transceiver functions can be set up and memorised for all modes.

Looking at the front panel, alongside the main tuning knob is a control marked **F**. The **F**-key gives access to the menus. A short press initiates a display at the bottom of the liquid crystal display (l.c.d.) which shows 17 separate menus, selected by the **MEM/VFO** knob on the right-hand side of the front panel. Below the display there are three buttons, **A B** and **C**. Above

these, on the display, there are labels which are selectable from the three buttons.

Pressing the **F** key for 1 second provides entry the main menu. Again the various settings are selectable using the **MEM/VFO** knob and on this menu there are a total of 91 to choose from. When I first used this setting-up procedure, I had difficulty in selecting the menu I wanted. It was not available.

I spent quite some time trying to sort out why I could not access the menu I wanted and on reading the manual more closely, I noted that menu 1 says **EXT MENU**. This was off, by default, and on switching it on, all the menu pages became available. So it is possible to exclude those that you don't want to see. This was not explained in the manual!

Setting the parameters in the main menu pages is achieved by rotating the main v.f.o. dial, much like the FT-1000MP, so this was quite straightforward. However, it does pay to take some time and study the sequence needed to set up the parameters correctly, so I'll provide an example by supposing you wanted to operate c.w. for a contest. Starting from scratch the sequence of setting up would be:

- 1: Press **F** for one second.
- 2: Turn the **MEM/VFO** knob to select menu No.1, labelled **EXT**

**MENU**. Rotate main v.f.o. to show **ON**.

3: Using **MEM/VFO** knob, select menu 24, **CW DELAY**. Again use the main v.f.o. control to select the required parameter.

4: As in step 3, select menu 27, **CW PITCH**. I prefer 400Hz, but this is adjustable to 800Hz. (The default is 700Hz).

5: Select menu 30, **CW SPEED**. For contesting, I use around 25-30w.p.m. Select the speed you require.

The other c.w. parameters can be used as default, assuming you are using an external keyer. Then check through the list in the manual to make sure you have finished. Then press the **F** key again for 1 second to store.

Now, if you wish to use split operation (the transceiver does have two v.f.o.s) this facility will have to be selected using the **ABC** buttons, and the short press on **F1** (These select **MFa** on the bottom left of the display) then pressing button **C**.

When you tune in a c.w. station, an l.e.d. lights up on the front panel as soon as you have tuned the station in correctly and the signal is in the centre of the pass-band. To finalise the c.w. settings, you can then also adjust the DSP setting on the main menu to give you a choice from 60 to 240Hz selectivity.

**Note:** The process described actually takes longer to explain

### Product

Yaesu FT-897 all-mode transceiver.

### Company

Yaesu UK Ltd.

### Contact

Sales  
(01962) 866667

### Pros and Cons

**Pros:** The Yaesu FT-897 is a super little rig. It's well designed and constructed, performing functions that 30 years ago we all dreamed of! The transceiver is ARTS equipped (Auto Range Transponder System)... ideal for RAYNET operators.

**Cons:** It's a really good idea to spend several hours reading the manual with the rig switched on in front of you before trying to use it on the air! Pity the list of optional extras is so long

### Price

£1099

### Summary

If you buy the FT-897 you'll enjoy using it. I certainly did!

### Thanks

My thanks go to **Yaesu UK Ltd., Unit 12, Sun Valley Business Park, Winnall Close, Winchester, Hampshire SO23 0LB**, for the loan of the review transceiver.



● Rear panel view of the FT-897. This transceiver provides portable 'Amateur Radio in one unit' from 1.8 to 430MHz, with many built-in features. You don't even have to carry a keyer for c.w. use...as it comes complete with a built-in version!

than to actually perform! But setting up all the menus for the various modes will enable you to select any mode and be confident that it will work as you would expect. All the parameters will be correct for that mode and if you wish to start from the beginning again, you can return to the default parameters.

## Tuning A Pleasure

Tuning the transceiver is a pleasure. The dial has a good solid feel to it...typically Yaesu I think, as it's much like the design of the FT-1000MP, only smaller.

There's no shuttle jog tuning, but for a quick move up the band, you can use the MEM/VFO/CH control again, and the main dial has two settings, coarse and fine. The coarse setting is 20Hz/step for

● Top inside view of transceiver showing auto antenna tuning unit.



● Inside view of main chassis showing optional Collins filters fitted.

s.s.b./c.w. and 200Hz/step for a.m. and f.m.

Fine tuning takes it down to 10Hz/step for s.s.b./c.w. and 100Hz/step for a.m. and f.m. Here I had a problem because when I received the

rig, I could not get it down lower than 100Hz per step no matter what I did. I thought either the manual was wrong...or I had a faulty rig!

Tuning c.w. was awful and on s.s.b. it was not much better, although you could compensate

on the **IRT** control. However, when I reverted back to default, the problem disappeared. I later noticed a button on the microphone labelled **FST**. This has the effect of doubling the tuning rate, and so does a quick press of the power switch. You will then notice a little 'running man' in the bottom right-hand corner of the display which appears when you increase the tuning rate....I could find no reference to him in the manual either!

The microphone jack is a square-pin Molex-type connector. I cannot see why the standard metal DIN socket was not used here as it would make changing microphones a whole lot easier. (I don't know of any other rig using a Molex-type connector for a microphone).

The phone jack is a standard 0.25inch jack. This will accept either mono or stereo plugs.

The **AF** control is a centre control of two. The outer control is a **Squelch** control which can also be programmed as an r.f. control...much more useful in my opinion. The clarifier **RIT** control doubles as an **IF shift** control, and again this is programmable. The **BAND UP** and **BAND DOWN** controls are self explanatory.

The **MEM/VFO/CH** control is used for v.f.o. frequency tuning, memory selection and also function selection as previously described. The **DSP** button provides instant access to the digital signal processing selection menu.

The **HOME** button is programmable to a favourite frequency or group of four. The **V/M** key switches control between the v.f.o. and memory.

Battery indicators **A** and **B** indicate status for the Ni-MH battery pack when it's installed. The l.e.d. blinks orange when a charge is necessary.

## Rear Panel

Let's now look at the rear panel. Firstly there's a power input jack for the d.c. supply and the ground terminal...a very important feature which should not be overlooked. A good ground **is essential** and if you're ever operating portable...please don't forget to take a suitable ground stake along with you.

The rear panel's 8-pin DIN socket is used for interfacing to

a PC, connection to the FC-30 Automatic Antenna Tuner, or to a linear amplifier. It's unlikely that all three would need to be connected if this rig is used for portable operation, but you can't anyway!

The rear-panel mounted 6-pin DIN socket is for connection to a TNC. There are also three jack sockets, one for the ALC connection on the linear amplifier, a second for a Morse key, and the third for an external speaker.

Finally, there are two antenna sockets: One, an SO-239 type, is for h.f. and the second, an N-type is for 144/430MHz. The h.f. socket is linked to the FC-30 (when used) and the antenna connected to a socket on the a.a.t.u.

## Comprehensive Memory

The FT-897 is provided with a comprehensive memory facility. Again, it's a similar arrangement to the FT-1000MP, with a **Quick Memory Bank** (QMB) and then 200 regular memory channels.

The QMB information can be transferred to the regular memory channels if you wish to save it. Operational parameters can be stored in the 200 regular channels, you can then use those to change quickly...and start tuning.

Even split frequencies can be stored. So again it's a very versatile operating system and much will have to be learned before the operator becomes completely familiar with it.

Memories can also be partitioned into groups and very fast mode/band changes can be accomplished this way. When you start operating on a memory channel, tuning the main v.f.o. places **MTUNE** into the display. However, the regular memory is not lost.

The operator can have four **'Home'** channel memories. These are modes/frequencies (for example) are used a lot and quick access is required to one on each of h.f., 50, 144 and 430MHz. It's also possible to label the memories with alphanumeric tags for identification.

## Built-In Keyer

The FT-897 has a built-in keyer, with both weight and speed adjustments. The speed range is

quite large at 4-60w.p.m. Three 40 character memories are available, which can be programmed to use as a beacon if required.

Personally I prefer my external keyer, but an internal facility means one less piece of gear if you're using this transceiver portable.

Incidentally...just in case you feel in need of some tuition, there is a built-in c.w. trainer too!

## The Package

Let's now look at the 'package' provided by the FT-897...and in short the transceiver could provide most of what you need while on holiday! The receiver covers from 100kHz to 470MHz in sections. The first section is 100kHz to 56MHz, then 76 to 108MHz. This section is for wide band broadcast f.m. only and will provide your 'easy listening' when you're relaxing.

The next section is 118 to 164MHz and finally 420 to 470MHz. Transmit functions are allowed in Amateur bands only. The received is a double conversion superhet with i.f. frequencies of 68.33MHz and 455kHz. The DSP is at audio, but works very well.

I found the selectivity quite adequate as the transceiver came, and using the DSP and audio tailoring it performs very well, even on a crowded band. Unfortunately propagation was not at its best when I tried the rig, but if you want even better performance there's provision for two extra Collins filters, 500Hz for c.w. and RTTY and 2.3kHz for s.s.b.

I quite like the FT-897's manual's description of use of the Intercept Point Optimisation (IPO) on h.f. This sounds very technical and is jargonese for switching a pre-amplifier on and off! There's also an attenuator for use on the l.f. bands, something that's essential at night on those bands.

The transmitter power output is 100W on h.f. and 50MHz, 50W on 144MHz and 20W on 430MHz. The power level drops to 20W when battery power is employed.

Audio reports were not the best I have received, most said that it lacked brilliance, even with the speech processor on, and the audio tailoring set for



● Microphone and rapid charger unit and interconnecting leads.

maximum high lift. I was unable to use a Heil insert due to the Molex type microphone connector, but I would think this would improve the transmit audio a huge amount.

## On The Air

Using the transceiver on the air was very easy and a pleasure to operate, once I had all the parameters set correctly. As mentioned the audio reports were adequate, my voice instantly recognisable, but not the quality of the FT-1000MP with a Heil insert. I would have been upset had it been so anyway! The receive audio is good, and even better when used with the external speaker, not essential for portable use.

For c.w. operations I used my external keyer and again the rig was a pleasure to use. Setting the timing to overcome relay chatter is essential, and also using DSP with 60Hz width and 400Hz peak makes for easy reception.

I had a report of key clicks from a local station. But in fairness we were well over S-9 with each other, and some of this could have been due to being not so far away from each other.

## Tone Search

I was intrigued by the manual's description of CTCSS tone search. I've always used tone access to the repeaters so I accessed the local repeater with a traditional whistle and then invoked the search.

The CTCSS tones were found in seconds! A little bleep confirmed this, then I saved it

with the F key. Both 12.5 and 25kHz channel spacings are available, together with various repeater shifts.

## Digital Modes

Most digital modes can be used with the FT-897, and a TNC can be connected to the DIN connector on the rear panel. Alternatively computer and soundcard operation can be used, enabling most of the

digital modes to be employed. The rig employs s.s.b. audio frequency shift keying (AFSK) and frequency shift keying (FSK) is not possible.

Levels can be adjusted in the menu and the main thing to remember is that RTTY and the like are 100% duty cycle modes. (This means you shouldn't transmit for long periods). Both 1200baud and 9k6baud packet operation are possible.

## Full Scanning Features

Full scanning features are provided, with skipping of certain channels possible. Priority scanning is also available as is the programmable memory scanning of 10 special purpose memory pairs. The operator can also have dual watch of the two v.f.o.s where every five seconds the transceiver will switch to the second v.f.o. and then back again.

The display can also be programmed so that the operator can have a different colour display for different operating conditions. For example, you could have a different colour for c.w., s.s.b., certain memory groups HOME frequency and so on.

The transceiver is ARTS equipped (Auto Range Transponder System). This system uses a DCS signalling to inform you when you and another similarly ARTS equipped station are in range of each other. This can be useful during search and rescue operations to maintain communications...ideal for Raynet operators.

As I've already briefly mentioned...the rig can be used for broadcast reception on short wave or broadcast stations on Band II v.h.f. or on medium wave. A complete package!

Automatic power-off function is provided and it's programmable. If you leave the rig for a certain period while using battery power it will switch off.

A spectrum scope is available too, and this monitors activity either side of the operating frequency. Channel size is selectable and the display is a bar-graph type. Unfortunately, receiver operation is disabled while this is implemented.

The Yaesu FT-897 is a super little rig. It's well designed and constructed, performing functions that 30 years ago we all dreamed of! Pity the list of optional extras is so long.

If you buy the FT-897 you'll enjoy using it. I certainly did!

*PW*

**H**aving tried, both a Carolina Windom and a W3DZZ as my Amateur Radio station multi-band antennas, I've found that they both performed very well. However, I also found that they were much more suited to the 3.5 and 7MHz bands. They also tended to produce some local TVI below 7MHz.

Multi-band antennas are always a compromise, some better than others. After I'd spent some time trying to cure the TVI problems, I decided that what was really needed was a dedicated dipole to work on 14MHz allowing the XYL to watch TV of an evening without picture patterning.

I love making wire antennas so I thought what I'd like would be an effective dipole that would stand up to the strong winter winds experienced at my coastal QTH. It also had to be reasonably cheap to build - and of course give minimum TVI problems. It should also be usable over the entire 14MHz Amateur band with good matching and low loss.

## Resultant Antenna

The 'MM5WIG' as I have called the resultant antenna, is the result of my experiments and I have found to perform better than first expected! Basically it is a 'fat' dipole, a type which has been around for many years but is now largely forgotten.

The MM5WIG 14MHz twin dipole has been designed to meet the following criteria.

- No BCI or TVI
- Good s.w.r. over the entire 14MHz band.
- Good efficiency.
- Medium power rating. (50-100W)
- Robust construction to withstand high winds.
- Easy to obtain components.
- Low cost assembly.
- Easy to construct.
- Easy to feed from any rig.

The type of twin dipole I've made gives much better results all round than the straight single wire variety. When I was a student pilot, they used to say two wings

## Drilling Holes

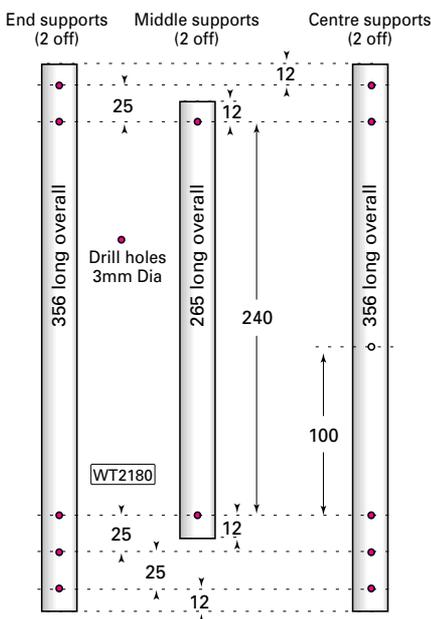
Now refer to **Fig. 1** for drilling holes in the pipe lengths. Carefully draw a straight pencil line with the aid of a ruler down each pipe length. Now measure and mark the holes to be drilled. Holes are all drilled right through the pipes. Use a 3mm wood drill with a hand drill.

The second step is to strip out the red and black insulated wires from the twin cable and measure out four lengths of about 5.2m of the single insulated wire. You'll have two lengths of black and two lengths of red insulated wire. The reason for this start length, is to allow for adjustment during setting up.

The actual theoretical length of each dipole arm is 4.75m from connecting terminal to end of antenna. Though the final length is decided with trial and error testing. Construction is simple and should take around two hours.

Loop one end of your first wire through the second hole from the top of an end pipe and

# The MM5WIG 14MHz Antenna



● Fig. 1: The drilling details for the three types of support spacers, all made from 22mm diameter plastic tubing (see text for more details).

## Ian Macdonald MM5WIG describes the reasons behind his single band antenna, and how he achieved the parameters required.

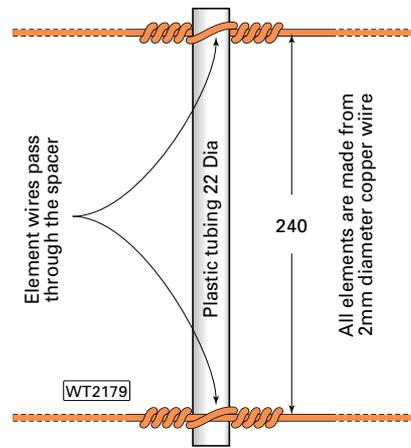
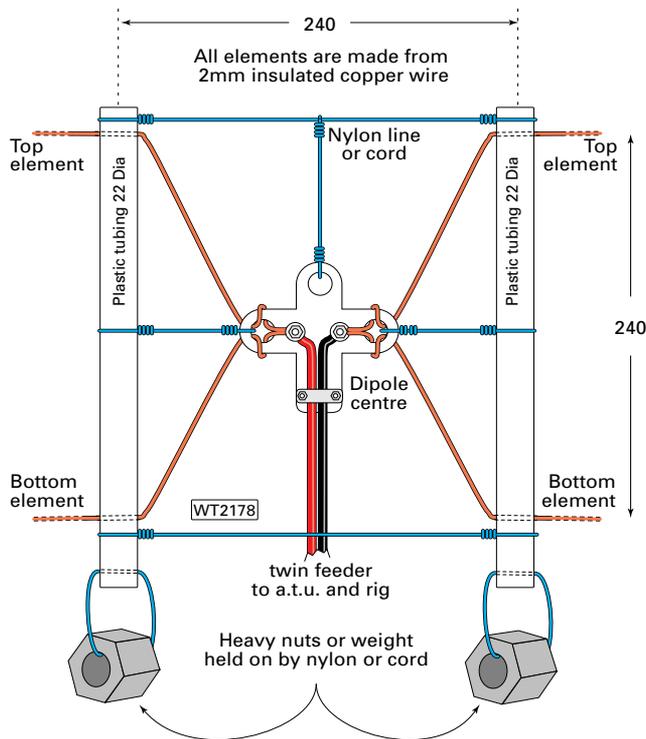
were better than one. (I flew Tiger Moth Biplanes so I agree!).

The antenna is best used with an antenna tuning unit (a.t.u.) but will work happily on most rigs without one but giving slightly less efficiency. If you want a first time low cost 14MHz antenna for that most popular of DX bands then the MM5WIG is for you. It is easy to construct and not expensive.

The first task is to cut the 22mm plastic pipe into the required lengths. From a two metre length, begin by cutting off four lengths of 356mm long (end spacers) and the two of 265mm long (middle spacers). You should only have less than 50mm left as scrap. Cutting is easy with a good hacksaw, but try and cut it square across. File or sand the rough edges.

twist to fix. Now slip on your first middle spacer. Finally, the wire goes through the second to top hole of the centre spacer. The end should now be put through the appropriate hole in the 'T' connector mount before you solder or fix a tag to the wire. If you don't have solder or tags do not worry. It will be okay with the nut/washer on the connector.

Now fix the other three wires in a similar fashion. See **Fig. 2** for details of how to construct the centre area. You should hold the middle spacers on the wires as shown in **Fig. 3**. The supporting ties for the antenna and centre mount should be of good strong line or cord. **Do not use wire as a support, as this can react with the antenna itself or cause arcing.**



● Fig. 2 (left): Detail of the central area of the MM5WIG antenna. Almost any weight may be substituted for the suggested wheel nuts (see text for more details).

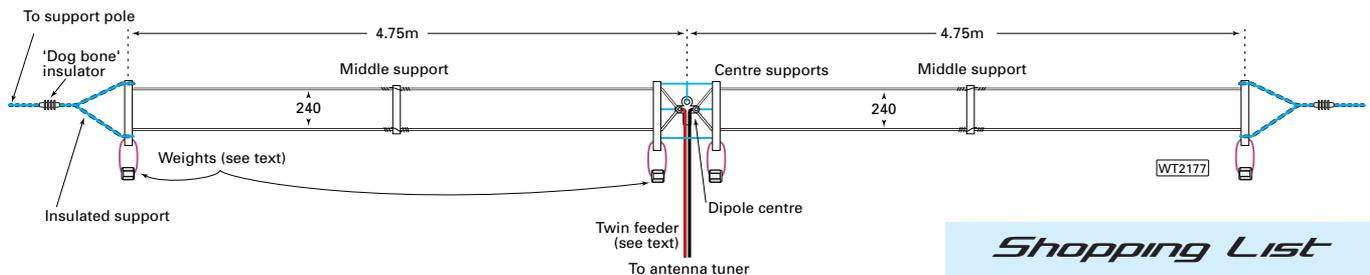
● Fig. 3 (above): Detail of the supporting middle spacer and how it is secured in place.

● Fig. 4 (below): The overall look of the MM5WIG antenna.

station. During tests with the German station, I had much better reports when using the MM5WIG antenna, compared to my signals with the Carolina Windom, which I used as a reference antenna.

The MM5WIG makes an ideal 14MHz QRP dipole if you have limited space. It can even be mounted as an inverted 'V' if you have a small garden. I am looking forward to a happy winter now on 14MHz with the MM5WIG and the XYL says she now loves me again, now the TVI has gone! So, that can't be bad.

The MM5WIG antenna has been used for some months now and worked my first VK in Australia using it with only 30W,



## Shopping List

- 12m of 1.5mm<sup>2</sup> flat twin electric mains cable. You may have to buy 'twin & earth' (T&E cable) just strip out the bare Earth wire. You can use 2.5mm<sup>2</sup> for higher power handling.
- One antenna 'T' centre piece (for twin feed connection).
- Two 'dog bone' insulators (100mm).
- A 2m length of 22mm white plastic overflow pipe.
- Nylon line or venetian blind cord.
- Some old heavy nuts (the type used for motor car wheels are ideal).
- Required Length of 75Ω heavy duty twin feeder. I've found the soft polythene flexible Black/Red twin used for 12V power supplies is ok.

North American stations have been workable with only 10W of transmitter power. So, come along all you M3s ... this is proof of the pudding! The antenna does work well and could improve your station if you were to use this antenna on 14MHz!

When you've completed your MM5WIG antenna and have had time to try it out, I'd appreciate hearing your results. You can contact me by E-mail at: [weebooks@globalnet.co.uk](mailto:weebooks@globalnet.co.uk) with your reports. Good DX!

## Wheel Nuts

The small wire rings with heavy motor wheel nuts or similar to the bottom holes of the spacers to help the antenna hang vertical to the ground the overall look of the antenna can be seen in the illustration of Fig. 4. A 75Ω Twin Feed Line is preferable over coaxial cable, as the feeder from the rig to the antenna.

You can use 50Ω coaxial cable as an alternative, but you must fit a 1:1 Balun if this method of feeding is employed. Please note that TVI problems and poor s.w.r. might persist if coaxial cable is used, as well as adding needlessly to the cost.

The ideal height for the antenna is about eight to 10m above ground but mine works a treat at a little under five metres up. The connecting terminals were coated in petroleum jelly and taped up with pvc electrical tape.

So, having constructed the antenna, how well did it work? The proof of any antenna design is in the operating and use of it! The MM5WIG works very well for such a simple type of antenna.

I used an MFJ-949E antenna tuning unit and the Tuner settings remained the same over the whole band. The 'settings' on my

MFJ-949E were at: 'Transmitter' = 10, 'Inductor' = H and 'Antenna' = 9. The tests were carried out at a transmitter output power set to 50W. Setting the s.w.r. at band centre to 1:1, it remained there throughout most of the band, except at the low end where it rose very slightly.

## Received Signals

Received signals proved to be very perky and much better than either the Carolina Windom or the W3DZZ antennas. If the s.w.r. varies more than described, above try altering the length of the arms a little at a time to see if it improves. Normally the actual length, when set to 4.75m does the trick and seems to work reasonably well in all cases.

Now for some real 'on-air' tests, rather than just a simple 'how-well-does-it-match' test! My first contact using the MM5WIG antenna was with a G station in Dover. My location is in South West Scotland so, I could work down the length of England well enough.

The second contact using the antenna was with a DL station in Munster, in the middle west of Germany. I had the opportunity to carry out some comparative tests with this

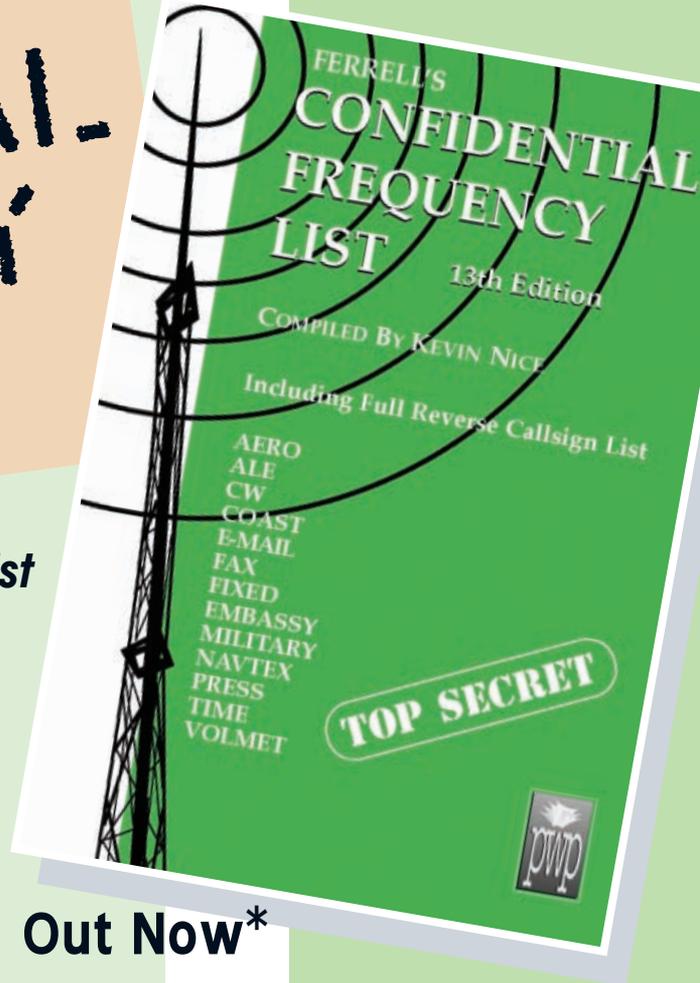
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The Walford AMU kit was reviewed in PW July by **Tex Swann G1TEX/M3NGS** and he was so impressed by it, he kept the review kit which was supplied by **Tim Walford G3PCJ**, and kindly donated by him as the original prize. Tex then purchased a replacement kit for the prize and you’ve now got a chance to win it!

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To be in with a chance of winning you need to find all the words that have been hidden in the letter grid, mark them, answer the tie-breaker question and then send in your completed entry. **So what are you waiting for? Post your entry today!** If you’re not lucky enough to win you can buy the AMU kit for **£32 plus £1 P&P** from Walford Electronics on **(01458) 241224**.

**WORDS TO FIND**

<b>Antenna</b>	<b>Matching</b>
<b>Balun</b>	<b>Solder</b>
<b>Bridge</b>	<b>Toroidal</b>
<b>Coil</b>	<b>Transformer</b>
<b>Electronics</b>	<b>Unit</b>
<b>Kit</b>	<b>Walford</b>

## WORDSEARCH RULES

Twelve different words have been hidden in the letter grid. They have been printed across (forwards or backwards), up and down, diagonally, but they are always in a straight line without odd letters between. You can use the letters in the grid more than once for different words. Once you have found all 12 words, mark them on the grid and send it, along with your name and address (photocopies accepted with the corner flash) to **Walford AMU Competition, Practical Wireless August 2003, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW**. Editor’s decision on the winner is final and no correspondence will be entered into.

## TIE-BREAKER

**Q:** How many soldered joints did Tex G1TEX/M3NGS make on the underside of the board when he built the AMU?

**A:** .....

Name .....

Callsign .....

Address .....

Postcode .....

T	W	T	P	I	L	K	G	E	T	S	D	N	K
R	U	S	A	Y	H	Q	A	I	U	Z	R	V	D
A	D	K	C	M	A	X	K	L	F	S	O	O	K
N	T	T	E	I	O	N	A	W	O	A	F	G	T
S	G	I	O	O	N	E	N	L	G	M	L	F	V
F	H	X	N	R	O	O	D	E	G	F	A	E	L
O	S	M	T	U	O	E	R	N	T	D	W	T	X
R	Q	R	N	X	R	I	I	T	U	N	K	E	G
M	B	A	L	U	N	H	D	T	C	T	A	F	T
E	B	Q	H	J	C	Y	J	A	M	E	W	L	C
R	A	C	A	T	Z	C	M	Z	L	D	L	H	V
M	T	J	A	N	O	A	X	E	S	P	K	E	C
A	N	M	F	I	E	G	D	I	R	B	N	E	G
Z	C	D	L	Z	T	T	E	I	P	B	S	E	E

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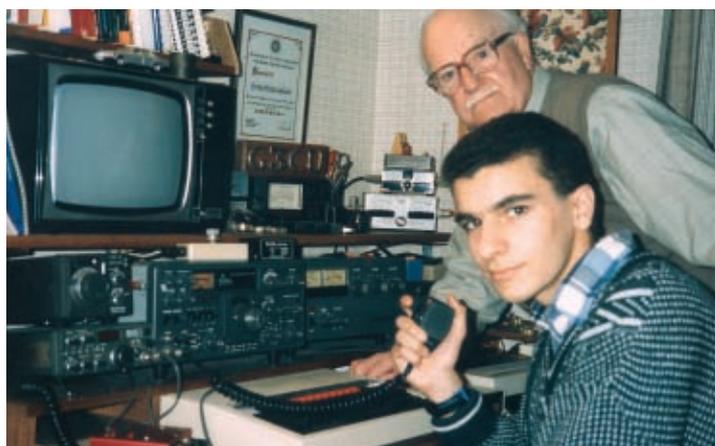
# Bert's Seventy Practical

**Bert Knott  
G3CU reflects  
on the seven  
decades he's  
enjoyed with the  
Amateur Radio  
hobby and  
Practical  
Wireless. And as  
you'll read...he's  
had a  
fascinating  
career too!**

**W**hen the Editor telephoned me to talk about specific parts of my article, I told him that it hardly seems possible that it's 70 years since I first took *PW* in the early 1930s, then on a weekly basis and at the princely sum of 3d! I'm not sure whether I bought a No. 1 copy, but I know my first purchase was probably about that time. I was still at school then...but quite happy to spend my meagre pocket money on this new and exciting publication.

In the same way as many other readers I carefully saved my earlier copies of *PW*, but due to the prospect of enemy fire bombs raids on London during the Second World War, my collection had to be removed. It had been stored in the roof space of my parent's home, together with a number of copies of *Short Wave Magazine*.

Unfortunately, I was away from home at that time in the Army and unknown to me...the whole collection was disposed of...including a 3-element 5 metre band beam antenna! Nowadays I ensure my copy of *PW* is well read, after which I send it to my Grandson **Paul 2W1BIC**, **Fig. 1**, (photographed under tuition alongside his 84 year-old Grandfather) who also enjoys the magazine's content.



● Fig. 1: Nowadays, following the experience of losing his pre-War copies of *PW* and *Short Wave Magazine*, G3CU ensures his copies are well read, after which they are sent to his Grandson Paul 2W1BIC who also enjoys the magazines. Paul is photographed under tuition alongside his 84 year-old Grandfather.

## Newnes Books

Despite the loss of my pre-war collection I'm pleased to say that I still have copies of the Newnes *Everyman's Wireless Book* together with *Television & Short Wave Handbook* which proved to be excellent references in those early days. Both were published in 1934, which was when I bought my copies.

The books, photographed recently, **Fig. 2**, are still in very good condition. Photographed with them are two of the set of three BA spanners (the larger of the three seems to have been mislaid) which were a complimentary gift in *PW*\* (**See note**).

*\*Note: It seems as though Bert somehow missed getting the free cover-mounted tool kit issued to celebrate the 1st anniversary of *PW* in 1932. The spanners were additions to this kit. Editor.*

## Crystal Set Era

Apart from my listening to the family set in the crystal set era during the late 1920s, my interest in wireless was first aroused at the age of 12 years. This was when I built a broadcast receiver as a school science exhibition project.

I was first motivated when I saw a photograph of a two-valved

set in the *Meccano Magazine*, although there was insufficient information to build from the article. Fortunately, I had an Uncle who was a keen constructor and when he learned of my enthusiasm for the idea, he kindly produced a blueprint and the necessary components for me to construct my first true radio receiver.

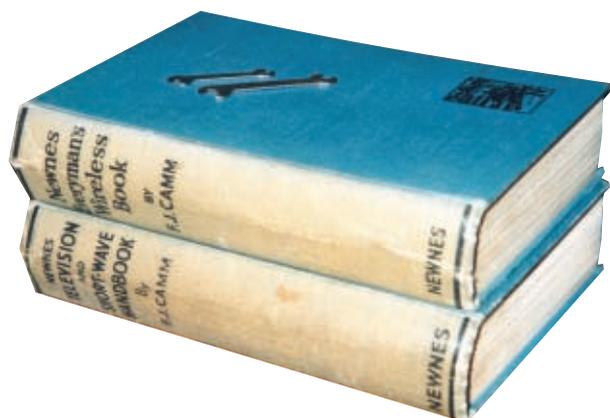
After leaving school I joined Via Imperial (International Telegraph & Communications-later to become Cable & Wireless). Appropriately enough I started work at Marconi House in The Strand London, moving later to Electra House, a new building on the Victoria Embankment.

## Listening & Licensed

After a couple of years listening on the short waves I first became an Artificial Aerial (AA) Licence holder with the callsign **2BKB** in 1936 and my full call **G3CU** in January 1938.

Subsequently, apart from the War years, I was employed in both radio and electronics. Over the years I've seen many changes - from valves through to integrated circuits - which has been a most rewarding experience.

Although now 84 and retired, I still enjoy Amateur Radio very much indeed. I spend some time



● Fig. 2: Despite the loss of his pre-War collection Bert G3CU still has copies of the Newnes *Everyman's Wireless Book* together with *Television & Short Wave Handbook*. He says they: "proved to be excellent references in those early days".

# Years

operating but prefer the experimental and constructional aspects of the hobby. Particular, I enjoy systems involving v.h.f./u.h.f. and microwaves and to some extent QRP. Many items built in the past are still in use in my shack.

## Five Metres

Prior to the Second World War I very much enjoyed the challenge of the old Five Metre band. And although Radiolocation (later to be called Radar) was not talked about in those terms at that time...the presence of flying aircraft, by their effects on signals between communicating stations were often a source of speculation.

Oh for that bit of foresight...great events had cast their shadows before! Further to this, while operating portable at Tattenham Corner near Epsom in the early summer of 1939, the reception of two Italian stations was logged.

Following the reception of the Italian stations, independent reports were received, two from Italy and one from Czechoslovakia, each giving R5-S9 reports of G3CU/P. Unfortunately however, no cross-contacts were made at the time.

With hind-sight, the recorded events would suggest that Sporadic-E conditions were present. A phenomenon not fully understood at the time I believe...it occurred during a period of minimum sunspot activity and was an interesting experience.

## Ultra High Frequencies

Post War, after the 5 metre band was withdrawn, I was attracted to the problems associated with the higher frequencies...above 144MHz and developed equipment for 432MHz. The work was done in co-operation with G2FKZ and G3FZL involving new techniques in which disc-sealed triodes and concentric lines



● Fig. 3: In the article Bert G3CU describes his many years of activity in home construction...and his particular interests in v.h.f., u.h.f. and microwave construction and operating.

played an important part...'Plumbing' as it became known!

On 70 centimetres, soon after its use was authorised, G2FKZ and I made the first reported two-way contact on the band in the United Kingdom.

## Single Side Band

When suppressed carrier, single side band - usually referred to as 's.s.b.' - had developed to the stage where it was suitable for practical use, I was very much involved with its introduction to the Amateur fraternity in the country. For this, in 1952/53 I was awarded the **Radio Society of Great Britain's** Courtenay Price Trophy for my technical contribution.

Indeed, I was one of the first of five Amateurs to make the headlines using the system in the British Isles. This was in the late forties and early fifties...in the last century of course!

## Practical Articles

Over the past 70 years I've immensely enjoyed the many

new practical articles in *PW*. I have especially enjoyed projects such as the Marchwood power unit (June 1983), The Meon 50MHz transverter (October 1985) and the Sprat 3.5MHz QRP c.w. rig in 1996. And although the latter project wasn't fully developed at the time...it offered a basis on which further development could be achieved.

As readers will now know...I have always considered that home construction in Amateur Radio to be an interesting part of our hobby. It's certainly an important aspect of the self-training.

Although nowadays I do own some 'Black Boxes' I certainly still enjoy building equipment and getting it operational.

In recent years I've made a number of microwave projects, **Fig. 3**,...including a wide band f.m. transceiver, followed by a narrow band transverter, for 10GHz. (These were based on the **G3WDG** module kits).

Even more recently, I have been involved in the assembly of units for transmission and reception on the relatively new 136kHz band. At the other end

## Potted Biography - G3CU

Before the Second World War Bert G3CU was a member of the South London & District Radio Transmitting Society, and became the RSGB's representative for that area.

He joined the St. John's Ambulance Brigade (St.JAB) in 1927, during the War he served with the Royal Army Medical Corps (RAMC), meeting his wife Margaret (An Army Nursing Sister) in 1943. They married in

Brussels immediately after hostilities ceased in 1945 and together, while raising a family, they've fully supported each other's activities and interests (A real team effort Bert says!). After many years service with St. JAB in various locations he retired at 68, as Oxfordshire Deputy Commissioner in 1987. He

was responsible for the introduction of PMR radio to the St.JAB service. Admitted to the Order of St. John in 1967, he was promoted to Commander in 1974.

Following a request from the Royal National Institute of the Blind to the RSGB in 1952...Bert told me he has also enjoyed over 50 years of Servicing and Repairing of Talking Books for the Blind machines! **Editor.**

of the spectrum my latest efforts are being directed at getting together the necessary bits and pieces for a 2.4GHz down-converter for the reception of AO-40 satellite signals, along with similar devices. So, as you can tell...construction isn't dead...at least at this QTH!

## Help & Encouragement

There's no doubt that *Practical Wireless* has certainly helped me, both in my earlier days, first as an Amateur prior to becoming involved professionally in radio and electronics and finally (some 18 years ago) following retirement, back to Amateur status once again.

I still look forward to my monthly read, photocopying any specific articles I wish to keep. Then the magazine is sent off to offer more encouragement to yet another youngster finding his way into the hobby...my Grandson Jonathan!

*PW*

# Antenna Workshop

Roger Cooke  
G3LDI takes  
you through the  
aspects of  
physically  
planning your  
antenna system.  
All you need is  
the space and  
time!

# Antenna Farming

## Part 2

**T**he planning of an antenna system covers two scenarios. First of all, you have to look at the space available. If you have a small garden, then obviously a 30m tower is out of the question. However, this does not mean that you cannot erect a tower at all. But there are several factors to take into account and these all have to be considered very carefully.

In my case, I have a large piece of ground and few neighbours, bought with the hobby in mind, as well as a great place to live. It also allows my enthusiasm for gardening and wildlife. If you look at the plan of my space, **Fig. 1**, you can see the towers that I plan to erect this year for my rhombic, mentioned in a

smaller gardens than mine! Talk to your family, and the neighbours, and let them know what you would like to do.

A smaller tower or mast, say a two section crank-up one, will still get your beam up to around 13m and you can hang a few wires off the head unit to cover the l.f. bands. Show them a few pictures of the type of thing you are considering and see what the reaction is. Perhaps a few boxes of chocolates for the wife, and a BBQ and wine for the neighbours might help the cause here!

### On Your Side

Once you have the family and neighbours on your side, then approach the local council for planning permission. Your case has to be very plausible, as they will write to your neighbours to ask them if they have any objections, hence the talk! I suggest that you also contact the RSGB and ask for their planning advice booklet.

The RSGB booklet will give you all the information needed for your planning application, which has to be paid for so, make sure you have it right first time. Their booklet is available for members as is the advice of the planning advisory committee. If you are not a member of the RSGB, now would be a good time to join!

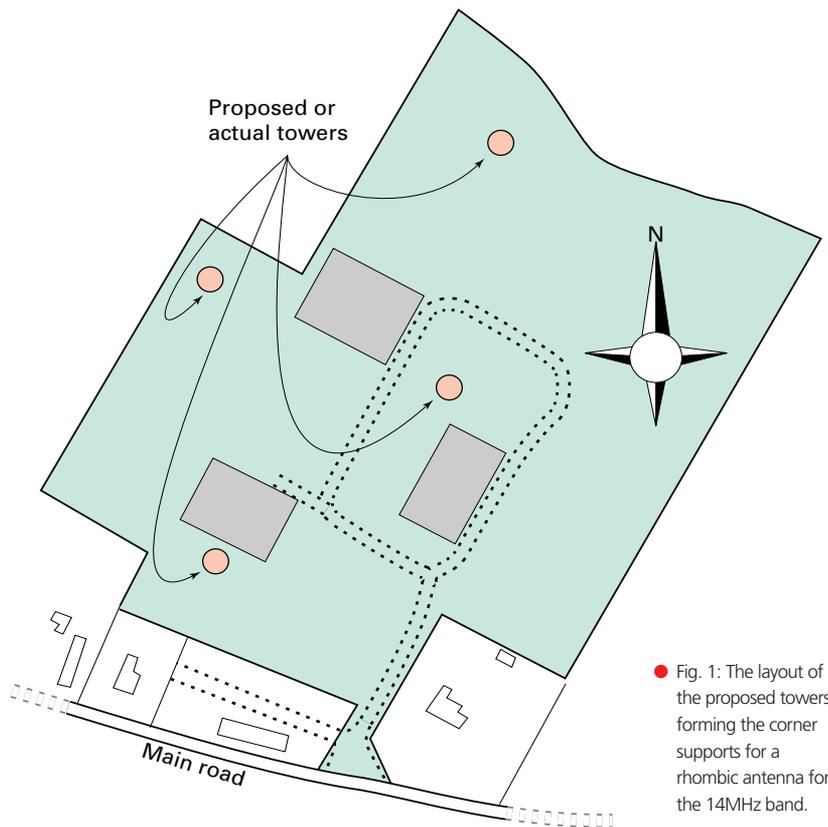
The importance of obtaining the booklet and following the steps set out cannot be over estimated. Feedback obtained at rallies and exhibitions suggests that most amateurs who do this, and have a reasonable expectation of what they want to put up, obtain permission or otherwise get the antennas they want.

Depending on the density of the housing in the area in which you live, together with the relationship between you and your neighbours, and last and by no means least, the size of your garden, you may be lucky. You will have to judge whether you can go for a three section crank-up tower, such as those made by Strumech, or a pump-up mast, such as the one by Hilomast.

### Tower Impact

Your local council will be looking at the impact of the tower on the visual amenities of the area, so if you can provide photographs of similar installations in your area, you'll stand a better chance. However, if you have another 20m tower two doors away from you, you had better consider moving!

Towers are expensive items, but you can make one yourself if you can weld, or have a friend who can. I



● Fig. 1: The layout of the proposed towers forming the corner supports for a rhombic antenna for the 14MHz band.

previous Antenna Workshop column (*PW* April 2003)

Now, let's look at something more average and realistic. Most people are married and have a family to consider. Placing a tower in view of the sitting room may not appeal to them, or your neighbours for that matter and most modern properties have rather

had two damaged sections of an old Strumech 4-section tower that had collapsed. I had the two sections repaired by the local blacksmith, then my son made up the base unit, **Fig. 2**. With a secondhand head unit and an aluminium pole in the top, this can lift an average tri-bander to about 13m, and it can be lowered ... if required by local planning conditions.

The two winches came, at a very reasonable cost, from Machine Mart, and I was pleasantly surprised at the quality and price. The ropes can be obtained from a Builders' equipment suppliers and they will even splice the ends if you measure the length required accurately. They also supply the pulley wheels needed on the tower itself.

Placing the tower in the garden will have to be a negotiated procedure, but bear in mind that you may require to hang some l.f. dipoles or long wires from the top and be able to keep them within the curtilage of your property. You may be even luckier and have a co-operative neighbour who will allow you to anchor a wire in their garden.

## Higher Is Better

Your interests will determine what you wish to install on the tower of course, but whatever frequency you are interested in, the higher the antenna is, the better the results. If you are only interested in v.h.f./u.h.f./s.h.f., the antennas will be less obtrusive and will look just like another TV antenna when the tower is cranked up.

Smaller antennas have a lot less windage, and smaller turning circle than an h.f. tri-bander. Bear in mind that the antenna should not overhang the neighbour's property so think very carefully about the position of the tower. It's worth remembering here that beauty is in the eye of the beholder. What to you will be a very desirable object of beauty is a potential eyesore to a neighbour!

The tower should be earthed properly to protect it against a lightning strike. If you have mounted the tower on a concrete block, as is normal, then the earth lead should be a very thick copper strap attached to the bottom of the tower. This should be connected to the earth stake, which should be a 1.5-2m copper rod, driven into the ground about 250-500mm away from the concrete block.

In some reports, that I've seen, where the earth rod was incorporated as part of the concrete foundations of the tower, a direct lightning strike has caused the block to shatter. This may even bring the tower down. Be warned!

## Control & Cables

You will then have feeders for the antennas and control cable for the rotator, all of which have to be fed down the tower and into the house. It is possible to feed these underground in a plastic water pipe and into the house so they are not seen. I have tried this method myself but would not recommend it!

I tried installing a 100mm pipe covering the 20m from the house to the tower. I also installed a drawstring, with which I managed to draw two or three cables through without much trouble. But after that it was a real pain and I found that despite the drawstring, the whole bunch managed to get into a muddle.

I now use a catenary wire from the tower to the house although I've used a 100mm pipe from the outside wall, through into the loft and down into the shack. It's only about 2.5m in total, but even this can be a problem, although I have



● Fig. 2: Waste not - want not! Utilising the top two sections of a failed Strumech tower on a home-made ground post. Roger is shown cranking up his 'little' mast.

managed thus far.

After you have installed the rotator and antenna on the top, the various cables have to be hung with a drip loop. I've found about 500mm of droop is usually sufficient and allows the cable to rotate around the tower. It is also worthwhile installing a thrust bearing at the top of the head unit to take the weight of the antennas off the rotator. It will also aid the rotation and give a longer life to the rotator.

The type of rotator will depend on what sort of antenna or antennas you intend using. Generally speaking, however, it's like buying a refrigerator. (When I bought my first 'fridge', I was advised to buy the biggest I could afford

and could fit in the kitchen.) Although the advice sounded strange at the time, it really is sound advice. The same advice applies to rotators too! Buy a large rotator with the best attributes that you can afford. If you opt for the cheapest option, you'll be limited as to what antennas you can install.

## Safety Belt

If you climb your tower for maintenance, remember to always wear a safety belt. I have one with belt, braces and support under the legs. It has chains with climbing snatch clips to clip onto the tower. The belt also has two pockets for storing tools, **Fig. 3**. A belt of this sort allows both hands to be free and gives an enormous amount of confidence and security.

Also, if yours is a crank-up tower and you are climbing with it partly or fully cranked up, **place a piece of very thick oak or similar above you as you climb**. If for some reason the tower did fail, it would stop at that piece of wood instead of taking your fingers and toes off. This has happened, so be warned!

For wire antennas, I've installed a cross arm on the bottom of the head unit with four pulleys for various wire antennas, **Fig 4**. You'll have to install the halyards before you crank up the tower! The pulleys I use now are the fairly large plastic marine type. These don't rust, unlike the metal types. The only problem with all the feeders and halyards and so on, is the muddle when taking the tower down. No matter how much trouble I take, the wires and ropes always seem to beat me!

I have also installed a six metre metal post either side of the garden, about 90m from the tower on each side, also with pulleys at the top and halyards, to support my wire antennas. This keeps the ends of the wires off the ground, which may be a problem when cutting the grass. So, getting them off the ground, above head-height, prevents that. You should bear this in mind when erecting any dipoles you want to use.

Once the tower has been installed and has been in situ for a while, it becomes part of the garden and does not seem so much of an intrusion.

People soon accept it as part of the surroundings and providing you do not cause TVI or BCI, you should be able to live in harmony with your family and neighbours. Maybe a nice rose garden at the bottom of the tower would help? You can also attach a nest box on the tower.

So, that wraps it up for the mechanical side of things. Next time I'll suggest a few things for the h.f. enthusiast.



● Fig. 3: When climbing towers, a good quality safety harness is a must. It gives security and somewhere to put your tools that you may need when aloft.



● Fig. 4: A cross-arm gives separate attachment point for long wire antennas, keeping them apart.



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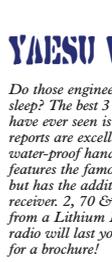
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**Renewed Interest:**

Because of the problems associated with atmospheric static, and the renewed interest in this often annoying and sometimes useful natural occurrence, we're re-publishing Tony Hopwood's original 1988 article. Please see the special panel (at the end of the republished article) for information from **Albert Heyes G3ZHE**, who built and used his own version of the Electrometer. **Editor.**

The innovative Practical Antenna Electrometer project, designed and built by Tony Hopwood, featured in this article - was originally published in the November 1988 issue of *PW*. Its re-appearance is directly due to the interest in, and increasing problems of atmospheric static!

# A Practical Antenna Electrometer

Static is a fact of life for radio enthusiasts. Not only does the background fizz and crackle of a storm blanket DX reception, it can also become a real hazard when an antenna takes a kilo-volt charge from a passing thunder-storm or unusual atmospheric conditions. A well insulated wire antenna is an efficient collector of the atmospheric electric charge and monitoring that charge gives a fascinating and accurate insight into present and future local weather conditions.

Because the atmospheric

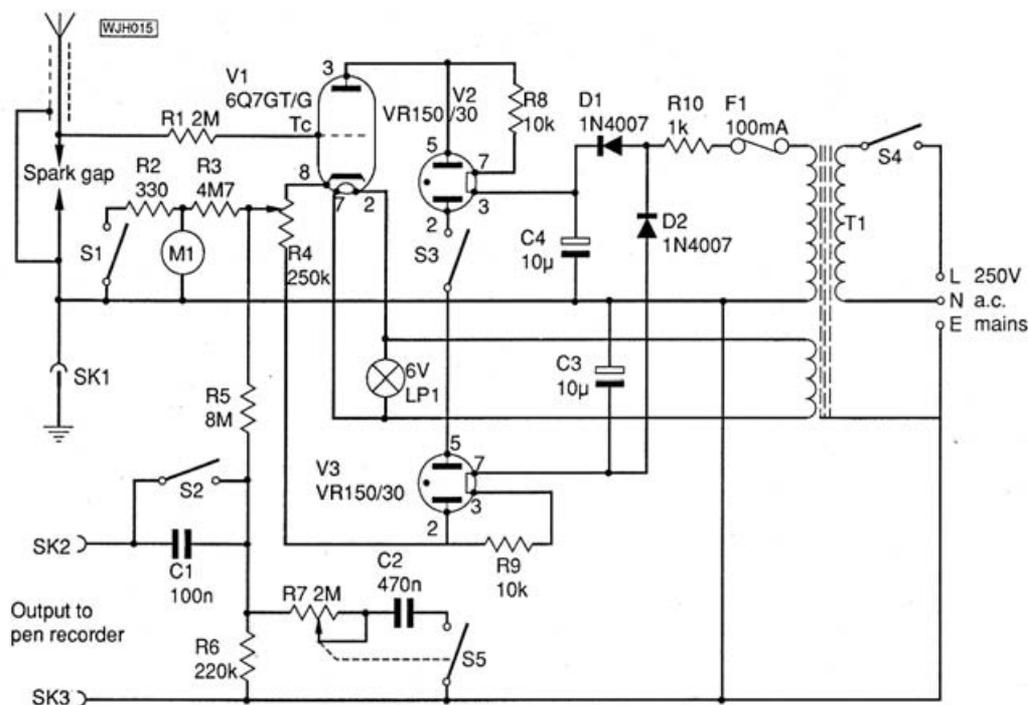
may overload when the antenna takes a charge of more than a few volts.

A practical antenna electrometer must have a high input impedance and be able to follow an input that can swing hundreds of volts positive or negative with respect to earth. It must also read accurately and be immune to damaging transients from nearby lightning strikes.

A single triode valve operated in cathode-follower mode, hung between stabilised positive and negative h.t. (high tension) rails will do all this. This it does along with providing a self-calibrating

impedance. However, any indirectly heated, top cap grid triode or triode strapped pentode would service.

Transformer T1 has two secondary windings, a 250V which supplies the h.t. and a 6.3V used to power the heater of V1. Two silicon diodes D1 and D2 are connected as half wave rectifiers across the h.t. winding of T1, providing both positive and negative rails. Two gas-filled stabilisers, V2 and V3 (VR150/30) are fed from the two half wave rectifier networks, D1/C4 and D2/C3, providing 150V positive and negative supply rails. **A**



● Fig. 1: Circuit of the 1988 Electrometer project by Tony Hopwood (See text).

electrical field has a fair weathered source impedance of

over  $10^{12}\Omega$  (a Teraohm is  $10^{12}$  ohms) it can only be monitored by a high input impedance device. However, it's easy to build a portable and sensitive low voltage electrometer using m.o.s.f.e.t.s, but unless a stable gigohm input bias resistor is used, the instrument will only show relative field measurements and

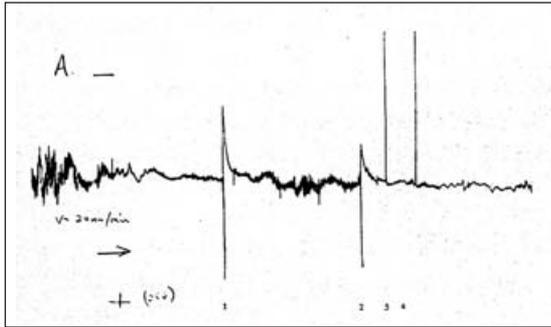
read-out of most atmospheric conditions.

## Simple Circuit

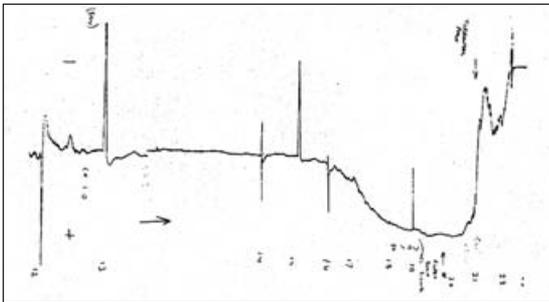
The circuit shown in Fig. 1, is very simple and uses three valves, one triode and two stabiliser tubes. My choice of valve was a 6Q7GT type, mainly because it is still available new\*, plus it has a top cap grid connection making it easy to maintain a high input

stabilised supply is not essential, but does improve the small signal sensitivity and accuracy.

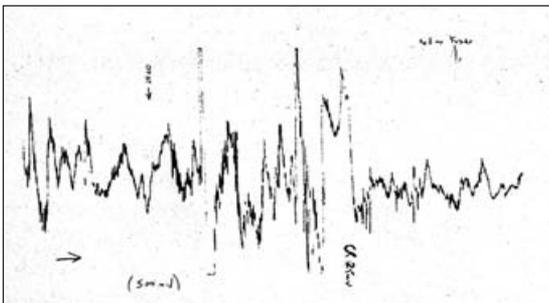
Other power supply arrangements could be tried if a surplus transformer is to hand, such as the type that can be salvaged from an old valved radio. These generally have a 300-0-300V h.t. winding plus one or two heater windings. This higher h.t. voltage is permissible...provided



● Fig. 2: Trace from the original 1988 article. The author's electrometer indicates two thunderstorm centres. Strikes 1 and 2 are about 24/32km away and show distance effect overshoot, while 3 and 4 are about 16km away and are of unusual negative polarity. (Spikes clipped at 25V, although they peak at well over 100V).



● Fig. 3: Trace from original 1988 article showing passing of a positive charge centre overhead accompanied by heavily attenuated lightning spikes. It also shows characteristic voltage swing which often accompanies the onset of rain. Again the change is unusual, being from 250V positive to 250V negative in less than a second as a cloudburst started.



● Fig. 4: Original 1988 trace showing the Perseids meteor shower on their morning of August 12th, the f.s.d. being 250mV, indicating at shower at 0735. Meteor contacts with the atmosphere show a very definite +/- pulse, almost sinusoidal in nature. The large off-scale pulses are from low flying aircraft...which also carry a large static potential.

the heater cathode insulation of the valve used is adequate and the heater circuit is left floating.

A 300-0-300V supply is about the maximum that most ordinary valves and bases will take without the risk of insulation failure. In addition, with more than 600V across the valve, the small signal background noise level will rise due to the supply variations and the internal leakage of the valve.

**\*See note regarding valves and components in the information panel at the end of the article. Editor.**

## Cathode Load

The valve is wired with a cathode load resistor chosen to set the current at full positive input of 1-2mA. The cathode voltage, and hence the antenna charge, is read by a centre-zero microammeter arranged as a volt-meter, scaled to suit the power supply voltage.

I used a 250k $\Omega$  potentiometer as the cathode resistor so that zero could be set with the grid of V1 earthed. Switch S1 is used to select the 200V range resistor, R3, by disconnecting the 20V range shunt resistor R2.

Switch S3 is included to give the instrument the option of an extra high voltage range. Another worthwhile refinement was to provide an output attenuator giving a 5V peak-to-peak signal for driving a pen recorder. The attenuator also includes an additional variable CR damping or integrating circuit for trace averaging, as well as a switched series capacitor to give an a.c. output signal for lightning transient recording.

## Bread Board Construction

Both the instruments made by the PW staff, and my prototype were constructed using the old bread boarding technique. There are two good reasons for this, the first being that the design, as it stands, might be termed as a semi-experimental instrument.

Additionally, the shape and form of the instrument will depend on each individual's requirements and component sources. The second reason for the rather exposed layout is partly due to the sensitivity of the instrument being disturbed by earth loops. This means that the use of a metal case is rather difficult and the use of a plastic or a wooden case is not available, due to their potential risk.

## Good Quality Components

Good quality new components for use in valved equipment are rather difficult to come by, particularly high voltage working electrolytic capacitors. However, there is plenty of leeway, within reasonable limits, on most of the values of capacitors and even resistors, but the component working voltages must be adhered to. A good source of

these components may be your local radio and TV repair shop, they do still exist!

The centre-zero meter used in the PW prototype is not as sensitive as that used in the author's original, the choice being limited by availability and price of components. The 50-0-50 $\mu$ A originally used, often went full scale, so it shows there's some room for improvement.

The values of resistance shown will support most moving coil meters up to 250 $\mu$ A f.s.d. If, after a period of use with a less sensitive meter it seems the usable scale is rather small, try experimenting with the values of R3 and R4.

When the read-out is by moving coil meter and servo-pen recorder with a sharp frequency cut-off above 10Hz, the induced 50Hz mains wave riding on the antenna is integrated to zero and ignored, although it may be many volts peak-to-peak. This 'invisible' waveform will cause problems if the output is measured by d.v.m. or any instrument using switched sampling. It will have to be removed by additional signal conditioning, particularly if the electrometer output is to be recorded on a computer.

## Ideal Characteristics

A cathode follower valve has ideal characteristics for electrical field monitoring. Although the normal 'fair weather' field potential is some +100V/m from earth, the source impedance is so high that a 15m long antenna 8m above ground gives a cathode follower d.c. output signal of less than 10V positive, from a true ionic potential of nearly 1kV.

The inherent signal compression is useful, as the study of electric field is more concerned with change rather than actual potential. However, the equipment is still sensitive enough to permit the recording of small field changes as well as the more dramatic events associated with convective cloud building, thunderstorms and solar flares.

Although an ordinary well-insulated wire antenna works well in dry weather, sensitivity falls dramatically when it gets wet. This is no bad thing in thunderstorms, but if true all-weather insulation is wanted, then additional insulators designed to preserve a dry surface must be used.

One simple method is to provide a rain hood made from either plastic drain pipe with the insulator secured with resin spread up inside the tube. Alternatively, you could use the top half of a washing-up liquid bottle to shield the insulator, as in Fig. 2.

Lastly, experience showed that the readings were less prone to variations caused by bodily movement near the instrument, if the antenna was brought into the shack via good quality coaxial cable (UR67).

## High Voltage Spikes

Although the valve will tolerate high voltage lightning spikes, the antenna can still take a charge of several kV, so some precautions are advisable. It's a moot point whether it is safer

to earth an antenna during a storm, or to fit a spark gap to earth it where the system enters the building.

**Note:** On the PW prototype, a small stand-off insulator was not available to terminate the antenna to R1, so a new, but surplus, petrol engine spark plug was used. It was mounted on the base board by a Terry clip bolted to a right angle bracket. If the spark plug's outer metal case it earthed through the clip, it will serve not only as a cheap stand-off insulator, but also double as a spark gap.

**Editor.** (1988 comment).

Lightning tends to strike the highest earthed object, and earthing the antenna may turn it into a more attractive target than nearby trees, power lines or TV antennas!

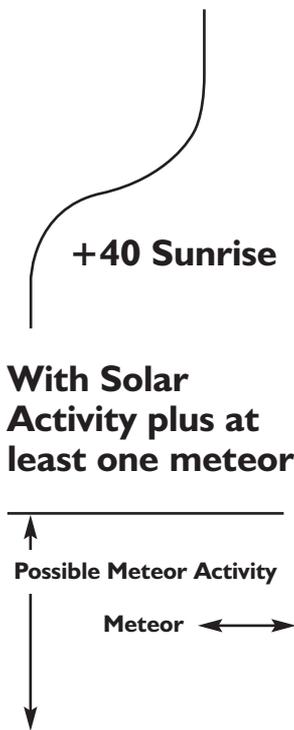
If lightning does strike, anything connected to outdoor wiring is at risk, no matter how remotely connected, including radios, TVs and telephones. Even if it appears to be a relatively poor path to earth, it will be at risk.

Remember, the most likely outcome of a lightning strike is fire. Fortunately, this type of thing doesn't happen all that often, but be sure to keep clear of the antenna when the sparks start to fly!

As a further point of safety, it may be wise not to rely just on the mains to earth to ground the 0V line of the instrument. A second local earth should be provided if possible, by some stout wire and an earthing spike driven into moist ground.

The fact is, if you shut down

● Fig. 5: Direct 'off the paper' scan of G3ZHE's own chart recording showing cloud, solar and meteor activity (See text).

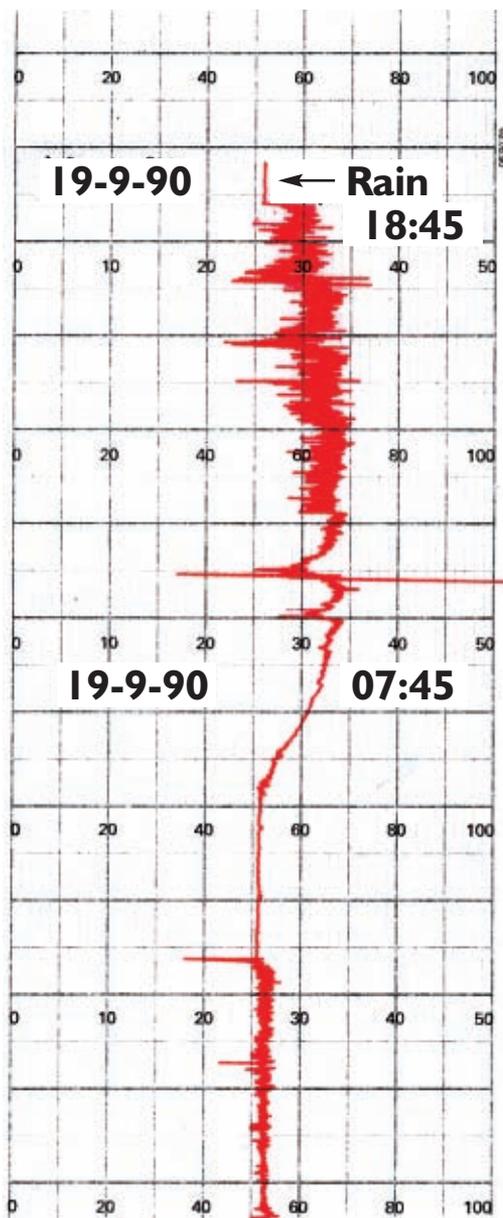


the station while the storm is overhead, you will not miss much, because the field variations will be way beyond the range of the instrument. (I find the most interesting recordings come from approaching and receding storms, where the field changes are attenuated by distance and become more readable).

Individual lightning strokes

can be recorded up to 80km away and changes in amplitude and frequency give excellent early warning of an approaching storm. It's also possible to detect whether an approaching squall contains lightning and by its decreasing stroke frequency, to see when lightning activity ceases in a dying storm.

PW



Cloudy/Rain Sets Track to Zero

Solar Activity

Meteor Trail

Clear Sky Sunrise Charge

**Building The Project In 2003**

Building this project in 2003 should not be a problem. All the valves are available from the specialist suppliers. Many established Radio enthusiasts will have many of the components to hand. Old chart recorders often appear on sale at rallies - or you could advertise in Bargain Basement in PW (A very effective method!). **Spark Gap:** Please see the 1988 Editorial note within the text regarding this essential item.

Editor

**Albert Heyes G3ZHE provides feedback on his own version of the project:** The idea of re-publishing the Practical Electrometer article came about during the Rochdale QRP Convention when I was chatting to **Rob G3XFD**, the Editor. In conversation I mentioned how useful I've found my own version. Tony Hopwood's original 1988 article was republished in another version in *Astronomy Now* in April 1990, in conjunction with meteorite detection.

From my own version I used a 6BS7 valve, an electrometer valve from a pH meter with a very low leakage on the grid. My antenna was plastic coated wire and was treble-insulated at tie-off points. The antenna system would hold a charge of 1kV when disconnected from the grid (I then had access to some very good test gear through my work as an Instrument Engineer for the old CEGB). For recording I used a Chessel chart recorder which was calibrated to provide 150V + or - the centre line, in other words a 300V span.

Although I'm not sure they'll reproduce very well...I've provided PW with one of my recordings (see fig.5). In use I checked the time every day, and the calibration occasionally. The system provided some interesting results!

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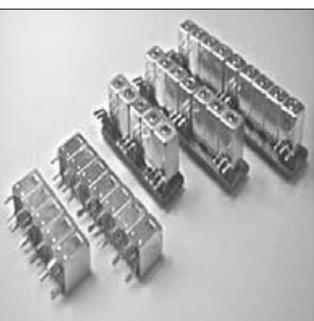
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# Carrying On The Practical Way

The Rev. George Dobbs G3RJV provides a 'Lollipop' receiver with (almost) only 20 parts. Intrigued? The PW team were, so dive in and take a look...after reading the quotation!

"A good engineer is a person who makes a design that works with as few original ideas as possible. There are no prima donnas in engineering". **Freeman Dyson**, b. 1923, British-born physicist and author, (from *Disturbing the Universe* (1979))

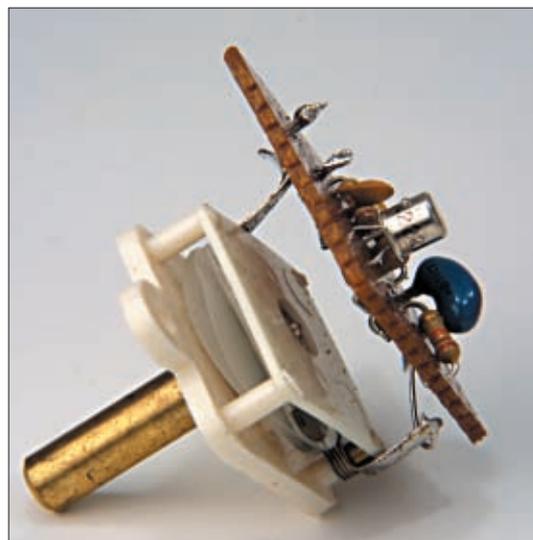
Two issues ago, in the June 2003 *PW*, I described a simple direct conversion (DC) receiver using a passive mixer. The mixer could serve to 'conjure up' a whole range of receivers or be an item to keep on the test bench.

Sometime just after publication, I was sitting in my workshop area musing on ideas for simple Amateur band receivers, because over the years, I've played with many circuits that can form the basis of simple, but viable, designs.

As the result of the musing...I set myself the task of building a worthwhile receiver with 20 parts or less, based upon ideas I've used before and have been proven in their use. Ideally the construction should be compact and the variables minimal.

To achieve the low component count, I decided to leave out the audio stages. That decision may appear to be odd, since the audio stages provide a simple direct conversion receiver with its gain.

However, my excuse is that audio amplification is usually available from other sources, so why build



● This month's receiver project gets its name from the fact it looks like a lollipop. This one comes in the 7MHz 'flavour'....G3RJV's favourite band!

what already exists? Many of us have audio amplifiers available for use don't we?

In the case of the receiver featured this month, I used amplifier speakers designed for use with a computer. Mine have large speakers and quite a lot of gain. **The smaller, cheaper types may not be so suitable.**

## Lollipop Construction

The construction method might be called 'lollipop' construction. This is because there are two controls with control shafts. These are the radio frequency (r.f.) gain control and a variable capacitor for tuning.

The parts are all mounted on the back of the two controls, rather like a lollipop – the shaft being the stick! Once completed, the receiver could simply be a panel with two holes to mount the two controls. The rest of the parts 'hang on' the back. I opted to build the receiver for the 7MHz (40 metre) Amateur band.

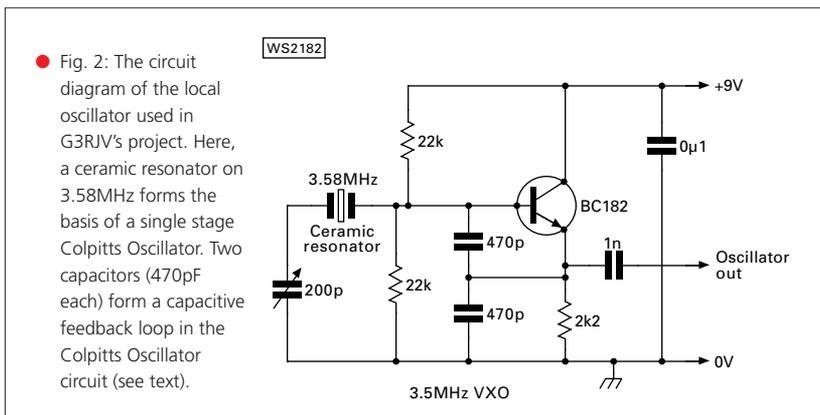
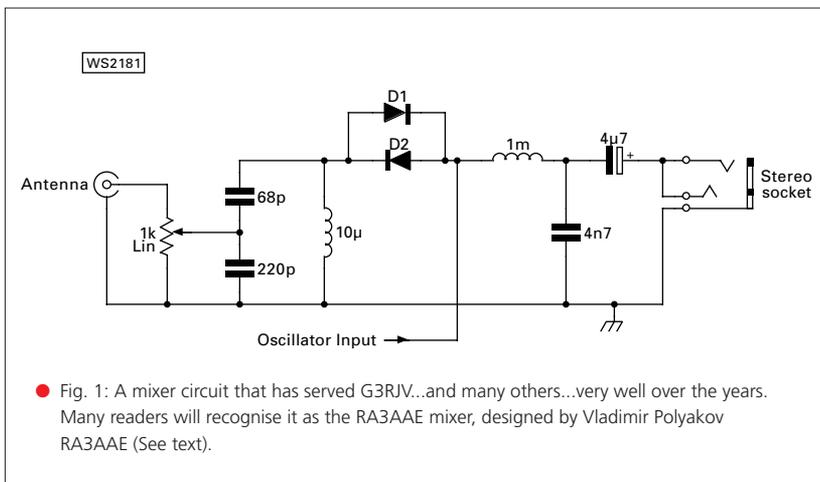
Following the fine advice of **Freeman Dyson** (see this month's quotation), I turned to a mixer circuit that has served me...and many others...very well over the years. The r.f. and mixer section is shown in **Fig. 1**.

Some readers will recognise it as the RA3AAE Mixer designed by **Vladimir Polyakov RA3AAE**, which I have described in previous projects in this column. The idea dates back to 1976 and has appeared in numerous disguises, not always attributed to RA3AAE!

The circuit has the distinct advantage in that the two counter-polarity diodes serve as a mixer and a doubler. So, the local oscillator feeding the mixer is **at half the frequency** of the desired band and the lower the frequency, the easier it is to build a stable oscillator.

## The Circuit

The circuit in Fig. 1 begins with a very basic r.f. attenuator; a 1kΩ linear potentiometer placed ahead of the input tuning. This is a wise approach in a simple DC receiver.



Given a choice of places to insert a gain control in such a receiver, the r.f. attenuation option has the advantage of helping to eliminate break-through from strong adjacent broadcast stations. It can also serve very well as a 'stand-alone' gain control without the need for an audio gain (volume) control.

The input tuning is rudimentary and uses an off-the-shelf moulded inductor (10µH) with two capacitors. These capacitors are arranged in a divider circuit to enable a low impedance input to match most types of amateur band antenna.

The diodes D1 and D2 ought to be types with a low forward voltage drop such as germanium versions such as the OA81 or 1N34A. I used a pair of Schottky diodes, mine were unmarked surplus types but the common BAT82 or BAT83 are ideal. Having said that, in the past I've used this circuit and had good results using common silicon diodes.

A 1mH moulded choke and a 4.7nF capacitor provide the r.f. decoupling after the mixer. The audio product from the mixer is coupled to the output through the 4.7µF electrolytic capacitor.

**Please Note:** The wiring of the stereo jack socket has to be taken into account. I fed my r.f./mixer board into amplified speakers designed for computer use and very often, the input to such speakers is through a stereo jack plug.

Connecting the stereo socket as shown in the diagram will enable the audio signal from the mixer to go to both sides of the stereo system. The system I used claims an output of 40W per channel and appears to have a fair amount of amplification. If using some other form of audio amplifier, something in the order of 60-100dB of gain will be required.

## Small Board

The photographs show how the r.f. and mixer stages were built on a small (25mm by 25mm) scrap of printed circuit board (p.c.b.) material using 'ugly' construction techniques. The grounded lead of the 1kΩ r.f. gain potentiometer was soldered to the metal casing of the potentiometer.

The square of p.c.b. material was then soldered to this grounded lead. This secures the board on the back of the potentiometer and connects it to ground. We now have the first 'lollipop'!

The illustration, **Fig. 2**, shows the circuit diagram of the local oscillator. Here, a ceramic resonator on 3.58MHz forms the basis of a single stage Colpitts Oscillator. Two capacitors (470pF each) form a capacitive feedback loop in the Colpitts Oscillator circuit.

A BC182 transistor was used in the oscillator circuit because it came to hand. Many other similar npn bipolar devices would do the job just as well. I was aiming to use a 2N2222A transistor, because I have lots of those...but I came upon the BC182 first!

## Variable Crystal Oscillator

The oscillator is a VXO (Variable Crystal Oscillator) using the resonator as the crystal element. These are very easy to 'pull' in frequency. I put a polyvaricon variable capacitor, of the type found in cheap a.m. radios, in series with the resonator.

Since the mixer doubles the local oscillator signal, the VXO needs to tune from 3.5 to 3.55MHz to cover the whole of the 40 metre Amateur band. Incidentally, the polyvaricon capacitor provided a range far in excess of this requirement.

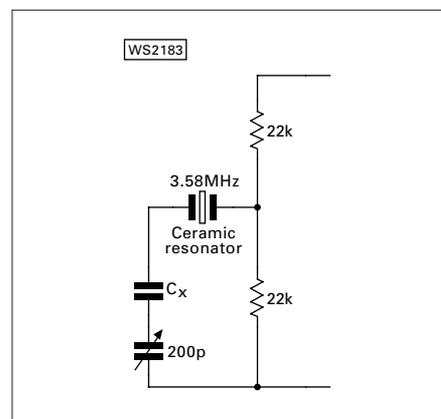
A more dedicated constructor could add a series capacitor to limit the range. This is shown in **Fig. 3**. **Note:** The value of C<sub>x</sub> would have to be determined by experiment and would depend upon individual examples of the ceramic resonator.

As seen in the photograph, **Fig. 4**, the oscillator was built on a small (30mm by 30mm) piece of Perfboard. The leads to the variable capacitor are used to secure the board to the capacitor, as in the close up photograph in **Fig. 5**, forming the second lollipop!

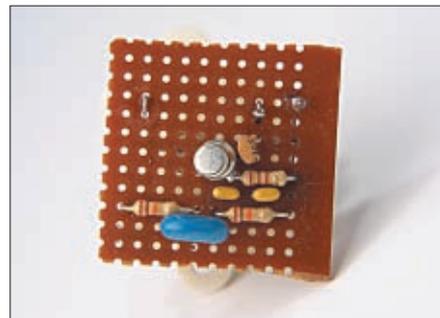
## Two Controls

The two controls (the r.f. 'gain' control and oscillator tuning) can be mounted in two holes drilled in a metal panel, or even a scrap piece of double-sided p.c.b. material, to complete the receiver. However, I suggest that you use a screened leads between the oscillator and the mixer and between the antenna input and the r.f. attenuator potentiometer.

I was amazed at just how well this diminutive receiver worked. With a good



● Fig. 3: A series capacitor can be added to limit the range of the VXO (See text for comments on frequency coverage). The value of C<sub>x</sub> would have to be determined by experiment and would depend upon individual examples of the ceramic resonator.



● Fig. 4: The project built on to a section of Perfboard (see text).

external audio amplifier, it will yield a lot of 7MHz signals. It depends if you include the stereo socket, or C<sub>x</sub>, but the receiver does use less than 20 parts! Try it for yourself...you won't be disappointed. *PW*



● Fig. 5: A close-up photograph of the 'business' end of G3RJV's 'lollipop' project (see text).

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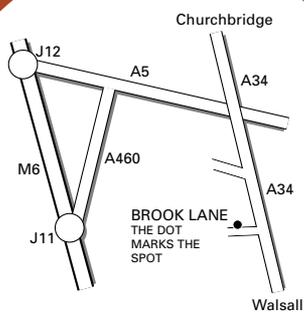
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Cybernet	BETA-3000	Original 40 Channel CB.....	£40.00	Kenwood	TH-F7E	Dual Band Handheld.....	£199.00	Yaesu	FC-700	Tuner - AS BRAND NEW (BOXED).....	£129.00
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.... Up, Up!!

Using home

Chris Carrington  
G0IYZ introduces  
us to the Band  
Police and explains  
how he thinks their  
existence could be  
scaring off  
newcomers to  
Amateur Radio.

# The Band

**M**y interest in radio began some 32 years ago at the age of 10. My Uncle was an avid short-wave listener and, following the death of his wife had moved back in with my Grandma.

My Uncle bought his radio equipment with him and established a station in his bedroom. Sunday morning visits to Grandma's would never be the same again.....

Each time we visited Grandma, my Uncle would allow me to listen as he tuned around the bands. What I heard didn't mean a lot... but it sparked an interest in me.

I began listening and remained a listener for 13 years. In 1983 I finally took and passed the RAE. I was going to be a Radio Amateur and I eagerly awaited my Licence.

My Licence arrived on a Friday morning. Annoyingly I

needed to leave for work within minutes of the post arriving so I had to wait until the afternoon before I could finally make my first call.

When I got home from work I switched on my Trio TR-2300, doubled checked the callsign on the Licence document, tuned to S20 and called "CQ" and it wasn't long before I was in QSO with my first station.

We QSY'd onto S21 and continued to chat. In the excitement I'd forgotten what I'd learnt about procedures and had unintentionally omitted my callsign at the end of a couple of overs. A disembodied voice came from the speaker, "Let's hear some Callsigns", it said, followed by "Don't you know the procedures?".

I panicked and froze! Luckily my contact came to the rescue. "Don't worry," he said "it's just the **Band Police**... ignore them". Nervously I continued the QSO. However, the thought that

someone was monitoring and just waiting for me to make a mistake, put me on edge. It took a while before I entered another QSO and it took even longer before I was comfortable on-air.

Over 18 years have elapsed since my first on-air experience and in that time my experience and operating practices have improved many times over. The licence conditions have changed, as has the equipment. However, the one constant that seems to have remained is the **Band Police**.

I've heard the 'Police' pop-up on 144, 430MHz, h.f., l.f. and on my Packet screen. I've even caught them lurking on the local DX Cluster. Sometimes they are useful **and** helpful but, sadly, more often than not they are rude and ignorant.

They interrupt QSOs, block out DX stations and make unwanted, sarcastic remarks about your operating. But before we go any further let me just say



brew DF.....

Why don't you get a proper Licence?

# Band Police

that I appreciate that members of the Band Police can be from either sex and that, in this Politically Correct world, the proper term should be Police Person!

## The Band Policeman

So, what is a Band Policeman? Basically it's a self appointed individual who has decided to spend some, if not all, of their operating time monitoring the bands. They look for other operators who, in the opinion of the Policeman, are not using the bands or operating in the 'correct way'.

The correct way is a set of criteria which is usually only known to the Policeman. Band Policemen, with very few exceptions, transmit without identification ensuring their anonymity. It allows them to move unseen and strike at will against some poor unsuspecting

operator who just happens to fall outside of the correct way.

Band Policemen appear to be well equipped. They can transmit on their desired frequency of operation with powerful signals to ensure that their target is fully aware of their presence. They also appear to be quite skilled, being able to drop a comment in with such precision timing as to make the best DX hunter jealous.

In my experience the Band Police fall into three, quite different and well defined categories: The Good, The Bad and The Ugly. Each category has its own specific role and, as you would expect, its own specific type of Policeman.

## The Good

You would be quite justified in asking 'How can there be Good Band Police?' Well... let's take

the example of a local repeater.

Night after night someone playing music or, even worse, using bad language is disrupting QSOs. Mobile and portable operators can no longer look upon the repeater as a reliable means of communication. Complaints are registered with the repeater keeper and the Radiocommunications Agency (RA).

Unfortunately, a considerable amount of resource is required if the RA is to act and prevent this problem continuing. The problem is that the RA, like a lot of other organisations, is lacking both in funding and resources. Consequently, in an effort to alleviate the problem, the repeater is closed down either temporarily or permanently by the authorities or by the keeper.

If we take the example of the repeater interference, but

substitute the complainants for the Band Police a whole different scenario unfolds. This time a few interested parties (Band Police) regularly monitor the signal from the perpetrator.

Over a period of time, using home-brew Direction Finding (DF) equipment, the Band Police locate the source of the interference. Correlating their information they build up a unique profile of the individual involved. This profile is brought to the attention of the local RA officers who, using the supplied information, only have to verify that the information is correct and act with the full power of the law. Therefore the interference is removed, the perpetrator is punished and the repeater remains on air for all to enjoy.

Many operators who transgress the Wireless Telegraphy Act have been brought-to-book by the actions of like-minded Amateurs who

don't want to see their hobby ruined by mindless behaviour. These like-minded Amateurs, inadvertently, form part of the ranks of The Band Police.

Other examples of Good Band Police are those Amateurs who call into an established QSO to tell a particular station that they can be heard several kHz up the band or that there is an intermittent fault with the microphone and the signal is unintelligible, etc. Callsigns are exchanged and, quite often, the caller remains in the QSO. In fact that's the way that all responsible Amateurs should act so, in effect, all responsible amateurs, from time-to-time, fall into the ranks of the Band Police.

How we choose to act when we take on the role of Policeman is down to the individual. And it's this choice that determines which category of Policeman we become.

## The Bad

The Bad Band Police tend to specialise in annoying other band users without actually realising they're doing it. Their role in the Band Police Force (BPF) is trying to prevent band chaos whilst inadvertently causing even more chaos by their own actions!

Take the example of the Bad Policeman monitoring the activities of a DXpedition that's operating from a very rare island or DXCC entity. The DXpedition has been carefully planned and every effort has been made to ensure that the majority of Amateurs will get a chance at working the expedition.

Propagation has been studied and antennas sited for best operation. Pilots have been arranged in different countries to control the flow of traffic on the frequency and to issue reports and information to the waiting populous.

Finally, the DXpedition gets on-air, working split on both s.s.b. and c.w. After a few contacts the DXpedition begins to draw a crowd and some Amateurs, who don't realise a split is in operation, start to call-in on the transmit frequency. The uninitiated caller's block the occasional important detail transmitted by the DX station but it can be tolerated. After all, the details can always be caught next time around.

Regrettably it is at this time that the Policeman interjects. Winding the power

up to **full** the Policeman reaches for the microphone and shouts "Up, Up, Up, he's listening Up, Up, Up"! "He's listening **up** old man".

What the policeman doesn't seem to realise, or doesn't want to realise, is that **his** transmission is compounding the very problem he's trying to eliminate. Because the Policeman only transmits when the 'offending' stations transmission ceases he effectively **doubles** the length of QRM on the band! More often than not he demolishes the information coming from the DX station and any other information being transmitted.

Other members of the BPF call in to tell the first Policeman to 'QRX'. Meanwhile stations continue to call in, the Policemen continue to shout "UP UP" or "QRX QRX".

Eventually the chaos is so great that no one actually knows what's happening.

Then you'll hear the pilot calling in to say that the DX station has gone QRT (away) due to QRM (interference). Messages appear on the cluster 'gone QRT European idiots' or 'complete Zoo!' or 'US animals'.

The whole thing falls into disarray due to one Band Policeman who thought he was doing everyone a favour. Had he decided to leave things alone the likelihood is that the 'offending' stations would have eventually noticed that the DX station was working split especially as most good DX operators will say phrases such as "listening 3 to 5 up" or "working split". Once the 'offender' has realised their error they usually fall into line and set up the split.

Another example of Bad Policing has come about with the advent of DX Clusters. That is the art of 'Passing Comments'. If you take the time to watch the spots appearing on the DX Cluster you will notice that sometimes, in the comments section, there is a remark. These remarks are usually kept to QSL info or split info but more recently, there has been an increase in the use of this section for derogatory comments.

Sometimes the comment is directed at the operators of the DX station, sometimes it's directed at the spotter. I've seen comments like: "Get some better headphones", "Poor operators", "Are you all Deaf?" and "Only working JA again LID's".

Luckily, a by-product of the system, is that the callsign of the station making the

comment is automatically given and consequently the station is immediately identified. It's probably a good job as it's almost a certainty that these comments would be much worse and more venomous if the station could remain anonymous.

The Policeman will also go as far as to make remarks about the validity and worthiness of someone else's spot. The interesting thing is that if you note the Callsigns of these Band Policeman you'll notice that their calls do not appear in the operators lists of DXpeditions, nor do they appear against any DX spots on the Cluster. They simply pass comments.

## The Ugly

Last but by no means least is the Ugly Band Police. These, in my opinion, are by far the worst of the bunch by far.

The Ugly Band Police make a point of targeting newcomers to the hobby, the inexperienced operator, Novices and new Licensees are their prey.

The Ugly Policemen act anonymously striking only at those who are likely to know less than they do. There is no limit to the way in which this animal will try to belittle its target.

Take the example of two Novice licensees who are operating for the first time through the local repeater. Unsure and microphone shy they establish the contact and suddenly a Policeman arrives:

Policeman: "Break please....",  
1st Novice: "Go Ahead"  
Policeman: "Why don't you get a proper Licence you cretin?"

This continues until the Novices eventually move to a simplex frequency only to be found, moments later, by the Policeman. It starts again. Soon the Novices sign off and use the telephone or turn to E-mail.

Unfortunately this type of behaviour is no longer rare and it's not restricted to the f.m. bands. I've heard it on all bands and most modes.

Only the digital modes seem to be free from abuse. Although I stand to be corrected on this, I think this is probably due to the fact that it's difficult for the Policeman to remain anonymous when using a digital mode. Unless, of course, they choose to program a different callsign into the software they are using. It

seems the more we change the licensing structure, offering different routes into the hobby, the more 'prey' we provide for the Ugly Policeman.

## Struck A Cord

I'm sure that as you've read through this article the activities of the Band Police will have struck a chord. When it comes to the Good Police, I think, from time-to-time, we all form part of their ranks. We are there to help others in the hobby and act within our Licence conditions and on the whole we do! Finally we should all spread the word about the hobby of Amateur Radio in a positive way.

However, there is, of course, the Bad and the Ugly. Most of you will have heard them in operation and some of you may even have fallen victim to them. Whether it's a sarcastic remark or the loss of that important piece of information from the DX station that you were working.

It may even have put you off going on-air for life! It's difficult for us, as responsible Amateurs, to accept that these Policemen are out there but we all know they are.

I don't profess to understand why the Policeman do what they do or what possible pleasure they get out of it. What I do know is that they are dangerous to our hobby. They are very difficult stop and almost impossible for the authorities to apprehend and prosecute.

Unfortunately the numbers of Police seem to increase on a daily basis and there appears to be nothing we can do about it. All we can do is ensure that we do **not** join the ranks of the Bad and the Ugly and that we conduct ourselves in a manner befitting a licence holder in one of the most exciting and rewarding hobbies around.

## Encourage & Nurture

We **must** do everything we can to encourage and nurture newcomers to our hobby and have respect for those amongst us who are prepared to go out and operate from rare islands and New DXCC entities. These people are our future.

We suffer enough criticism from the public and press without receiving criticism from our own numbers. Ultimately we **must** act responsibly!

PW

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## NEVADA

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Icom IC-E90 6m,2m,70cm FM + DTMF keypad CTCSS & wide RX.....	£225
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Alinco DJ-X10 x2 100kHz-2000MHz All Mode 1200Ch.....	£199
AOR AR-8200 II 530kHz-2040MHz All Mode 1000Ch.....	£299
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Icom IC-R6 150kHz-1300MHz AM,FM & WFM 1000Ch.....	£235
Yaesu VR-300 100kHz-1300MHz All Mode Receiver 1000Ch.....	£179
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JPS NTR-10 x2 Noise / Interference Reduction Unit.....	£199
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Opto 3000A + 10kHz-30kHz Frequency Counter.....	£289
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Sony AN-1 Active Shortwave Indoor/Outdoor Antenna.....	£49
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MISCELLANEOUS	
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# Belt & Braces Portable Operating!

● Fitting a Battery Management System (BMS) in your caravan or boat...could make your Amateur Radio life much easier says Colin G4HUU.

After suffering a catering disaster...Colin Jones G4HUU takes no chances when operating from his caravan! He now uses what he describes as a 'Belt & Braces' battery management system.

The QSO had started well: a UK to VK mobile-to-mobile we had 5-7 each way. It was certainly one for my record book!

Then however, the displays of my caravan rig began to flutter and the output had obviously descended to f.m. and then to silence. The contact was lost and - to make matters worse - the fridge switched off and I had ruined the ice cream in the freezer compartment!

It had happened before that my Amateur Radio 100W transceiver's output did not agree with my wife's equal need for catering battery power! But that one evening of disappointment sent me into research mode and eventually made me a big fan of proper /M working batteries and also of battery management systems.

## Fit & Forget

A vehicle battery tends to be a fit-and-forget device, until it goes

wrong, when the normal remedy is to buy the cheapest replacement which will fit the available space. This is generally a false economy, inspired by the fact that most of us simply do not understand the characteristics of batteries and what they do.

A relevant fact is that most car batteries are never recharged to more than about 60%-70% of their potential capacity. This is because of the shortcomings of the standard automotive alternator.

In everyday vehicle use, the charging shortfall doesn't matter much, because that level is enough. It only needs a short run for the alternator to replace what starting the vehicle drew from the batter, unless you have a diesel which is a bad starter!

However, when the weather gets cold and nasty, difficulties can develop. Particularly when you wish to have a large power reservoir available for transceivers and other accessories!

With age, a battery also develops sulphation of the plates and shows signs of that poorly

understood phenomenon whereby it develops an actual resistance to charge. If you were to monitor your battery performance according to the table below, you would see a reluctance for it to climb to the highest figure and to stay there for any time.

**12.2V = 50% state of charge**  
**12.4V = 70% state of charge**  
**12.7V = 100% state of charge approx.**

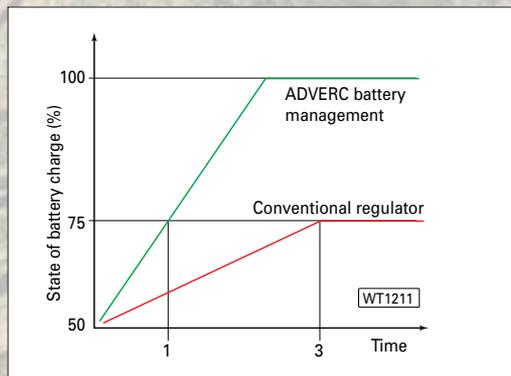
If you have a meter, or the type of circuit monitor which comes with some management systems, the simple table shows the approximate state of battery charge.

## Bigger Battery?

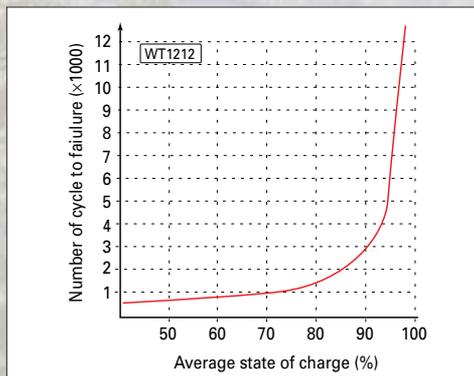
When the power supply performance begins to decline, many laymen, who own mobile rigs in cars, boats and caravans, hit on the solution of buying a bigger battery (or adding a second) and fitting a more powerful alternator. However, this is not a good tactic for the normal motorist and is even worse for the heavy drain of h.f. working. This is because (beyond doubt) a small battery when fully charged, is a much more efficient engine starting tool than a big battery at less than the 'full' level.

A better solution is to stop and to analyse your electrical supply problems and solutions. Firstly, this means taking into account all the unobtrusive development work which is being done on lead acid batteries.

Much battery development has been inspired by the needs of the haulage trade and public service vehicles. Batteries used in these applications suffer the static drain of tail hoists, refrigeration units,



● Fig. 1: Chart illustrating the benefits provided by a battery management system (BMS). This chart refers to the ADVERC system illustrated in the heading photograph and Fig. 3.



● Fig. 2: A non-managed battery can only deliver about 20% of its capacity and has a very short useful life...which is not really much extended by leaving the engine on tick-over (see text).

sleeper cab facilities, quad stereo, TV, flashing lights, power pumps, ambulance defibrillators and so on.

At one time, the solution was to fit (very expensive) so-called deep-cycle batteries. Nowadays though, the trade has moved heavy good vehicle (HGV) batteries a good way along the road towards being 'deep-cycle' without seeing them as special types...therefore avoiding the high prices accompanying that particular label.

## Using HGV Batteries

Fortunately, HGV batteries have many of the qualities needed by recreational users...especially the price! I suggest this because recent, personal research located a 200Ah deep-cycle caravan, or boat battery at £210. However, I purchased - for a total of £230 - two 235Ah HGV batteries for my mobile rigs and other accessories. The price paid also included a 125Ah 'wing' battery, which is separately connected and used only for engine starting.

Put another way, I can afford to replace this vast battery bank every three years and still be in profit over the alternative! With this reserve of power, I can play radio all day and still be certain that my engine will start when I want to move to a new location.

## Battery Management

No matter what you fit, you'll not derive the full benefit from your batteries unless you add a Battery Management System (BMS). But, before we discuss what this will do, let's be quite clear that **we're not talking about** a charge accelerator, or a charge booster. Instead we're discussing but a system which controls the charging environment.

In essence, the best of the several BMS on the market, adjust their working conditions to compensate for the fact that batteries are reluctant to take on charge in cold weather and reverse these bad habits when it gets warm.

Whilst researching this topic, I located several companies offering products under the 'battery management' umbrella name (\***see list below**). Some of these are sealed units which have no repair possibility and others

necessitate the removal of the alternator's own regulator to allow the manager to function.

\*Hella, Kestrel, Sterling, Alpha

## Personal Preference

My personal preference is for a system which can be repaired, should a component fail and, in that rarity, allows the alternator's built-in regulator to take over as a back-up. Some of these companies are a bit cagey about giving much detail about how their 'gizmo' actually work, but happily...my supplier was actually quite open about providing this information.

In action, the BMS device creates an optimum battery charging environment: that's to say that it's not a charge booster, whose brutal 'forced feeding' shortens battery life. Instead it works by toggling the charging voltage on either side of the battery's gassing point.

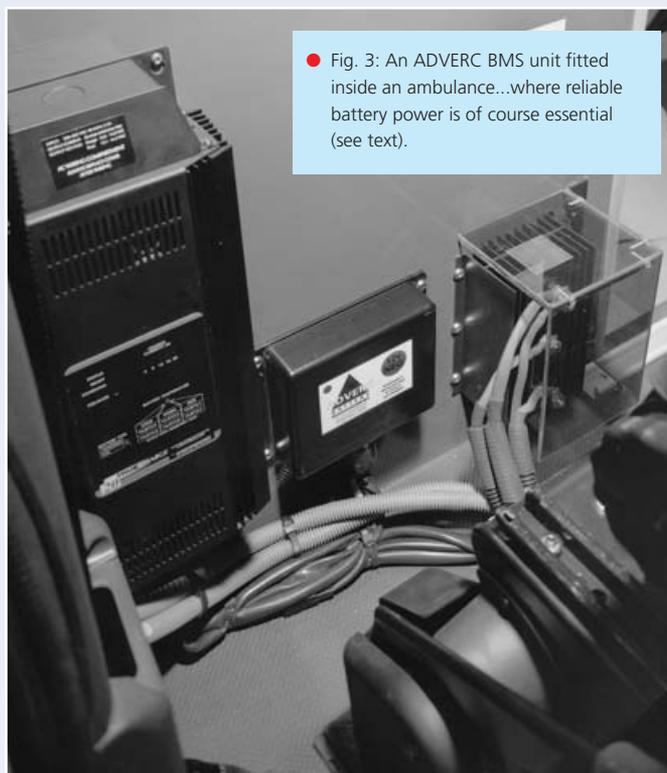
Incidentally, vehicle batteries 'gas' if subjected to a constant 14.25V, so the ADVERC (my chosen BMS unit) is set to cycle between 14 and 14.4V. The unit is programmed to pass and re-pass four times through a routine of five minutes at 14V charge rate, followed by 15 minutes at 14.4V, before defaulting into a 'rest' period of up to 40 minutes at the lower voltage level.

Also of major importance, is the way in which the device senses ambient temperature (e.g. Summer and Winter) and compensates for the variation.

The net result is that the battery is recharged quickly...without the potential damage due to constant, emergency use of an accelerator/booster. It's then kept fully charged, see **Fig. 1**, even coping with the voltage drop which, in a non-managed unit, occurs between alternator and battery.

In the short term, the incorporation of the BMS means that there's much more power available for very reliable cold-weather starting and the operation of the radio equipment and other accessories. This is especially important if you are pulling current when the engine is not running.

Incidentally, in this mode, a non-managed battery can only deliver about 20% of its capacity and has a very short useful



● Fig. 3: An ADVERC BMS unit fitted inside an ambulance...where reliable battery power is of course essential (see text).

life...which is not really much extended by leaving the engine on tick-over, see **Fig. 2**. Even if you have solved all the h.f. interference problems which occur at low engine revolutions!

## In Practical Terms

In practical terms, installing a battery manager has restored the domestic boat and caravan peace...and my own pace of mind. In both shacks, I can play radio for extended periods with no fear of engine starting failure, nor of upsetting the domestic refrigeration, television and lighting requirements.

As soon as the engine has run for 30 to 40 minutes, even our enormous battery bank in the boat is back up to that full charge. It shows 12.9V when I switch off and then gradually sinks to about 12.7, where it seemingly sticks.

Recently I carried the system on step further by the addition of a solar panel. The flexible type sold for boat decks is very light and easy to slide under a mattress, or into a cupboard, but is versatile enough to be constantly moved for best angle to the sun. It turned out to be a good acquisition.

The battery manager gets the batteries up to a very high and stable level, then the solar panel acts as a 'float charger' to keep them there by coping with

the refrigerator, etc. Additionally, if I don't transmit on the full 100W for a day, this arrangement also gets the charge back up to the 12.9V level, without resorting to engine starting.

It seems that I'm in good company, because many fire and ambulance services fit a BMS to ensure absolutely infallible operation of their life-saving pumps and strobes, etc. Additionally, there's scarcely a supermarket delivery HGV which doesn't have one to cope with tail lifts.

The Emergency Service and HGV use of a BMS is probably an even better recommendation than my own. Incidentally, my own estimations indicate that fitting the battery manager was one of the best £200 bills I've ever paid and even the extra similar amount for a big solar panel was radio money well invested.

All the fitting connections are easy, so I can move the system around from boat to caravan. It can even be fitted into my four wheel drive vehicle if I want to put on a couple of difficult to access Worked All Britain (WAB) squares, or give somebody some help with an award.

The Tiger of 7MHz portable working (Me!) is now well prepared...power wise. See you on the bands.

PW

# Value & Vintage

Ben Nock G4BXD has been attending rallies and meeting PW readers. In his column he's looking at an early Australian military radio, an unusual Marconi set, something special from Eddystone Radio and wind-up Morse!

**H**ello once again! I hope you're having a pleasant summer with loads of interesting finds? At the time of writing this month's copy I've acquired a few new additions to the collection here which I will be pleased to bring news of to you in forthcoming columns.

It was good to see one or two of you at the various shows. These included **Great Barr, Luton** and **Drayton**, etc., and receiving your interesting comments on these pages.

## Down Under

For this month's batch I'm suggesting we start 'Down Under' with an Australian set, of very early date, and a copy of what was Wireless Set No 1 in the UK. The set is known as Wireless Set No. 101, see **Fig. 1**, and was made by AWA or Amalgamated Wireless (Asia) Ltd of Sydney, Australia.

The set is a low power transmitter and receiver housed in a single case with an external power supply. Tuning 4.2 to 6.8MHz, it has a similar range to the British TR9. There are two bands for the transmitter, and a single band for the receiver. In use the 101 around 1W in both the c.w. and a.m. modes.

In its original form the 101 would not cover any of the Amateur bands but I added a small amount of capacitance to bring the set onto 3.5MHz. Several contacts were made and although the c.w. note wasn't really T9...no undue comments were received.

An additional unit for the 101 housed the 6V power supply, 6V. The main use of the equipment was mobile or portable operation.

All the set's valves are accessible through the lower front plate which occupies the entire width of the radio and opens for access. A later set of similar design, the FS5, used an 807 as the output stage. However, due to the bigger valve there is a slight bulge in the lower front plate next to the Morse key housing.

## Marconi Items

A couple of items now from the once great Marconi Company before their demise due their entry into the telecoms industry. The first is the CNY 2 transmitter-receiver, of Second World War origin was used in Royal Naval and Army Landing craft and also in other roles.

The CNY 2 set, **Fig. 2**, comprises four units. These are made up from a power supply, transmitter drive unit, transmitter final output unit and receiver unit all housed in a very sturdy, **and very heavy**, metal case. A control unit plugs into the front of the output unit, providing microphone, key and loudspeaker facilities.

The station provided by the CNY 2 covers 1.5 to 9MHz (fully tuneable) or with the provision of four crystal frequencies on transmit. The output was up to



● Fig. 1 (Above): The Wireless Set No 101, transmitter on left, receiver on right. Access to the valves is through the bottom door (see text).



● Fig. 4: The Eddystone 31A receiver with the three tuners visible down left side, with the attenuators and mode switch at bottom centre (See text).

8W, and supply power could be derived from 12 or 24 volt d.c. systems or 200-250V a.c. mains.

In addition to the transmit receive facility the set has a loud-hailer option. This was presumably for giving commands or information to troops embarked on the vessel.

Now it's time to look at a rather unusual little Marconi receiver which was acquired some time ago. It has the designation HR 110. The set, **Fig. 3**, covers 500kHz to 30MHz in five bands and apparently only around 10 were ever made.

The receiver is quite compact and indeed, when opened it has all its electronics mounted on two panels which swing out in book fashion to allow for easy servicing. The receiver uses 16 valves in a double



● Fig. 3 (Above): The Marconi HR110 receiver. The door above the tuning dial gives access to the crystal for fixed frequency operation (see text).



● Fig. 2 (Left): The Marconi CNY 2 transmitter receiver. Looking (from left to right) the power supply, transmitter drive, transmitter power amplifier and receiver can be seen (see text).



● Fig. 5: This really is a Morse wind up photograph! The Morse tape sender, and reel of paper tape with clockwork motor drive (See text).

conversion superhet design on frequencies above 4.1MHz, and as a single superhet on frequencies below this.

I've got a book entitled *Provisional Description* for the receiver which details the specifications for the set including the 3.1MHz and 465kHz intermediate frequency (i.f.) stages. The book quotes that the receiver has a sensitivity of 1-2 microvolts ( $\mu\text{V}$ ) over its tuning range and provides selectivity of 500, 1.5, 4 or 8kHz bandwidth at -6dB.

Though small, measuring only 330 x 210 x 200mm the receiver weighs a hefty 15kg and the power supply another 5.5kg! The technical drawing style circuit diagram I have is dated 1950.

## Eddystone Magic

Next it's time to look at an Eddystone product. I say this because although it's marked Post Office Receiver Radio (PORR) No 31A...this portable field test and measurement set was manufactured by the famous Eddystone Company.

The 31A receiver is a battery powered unit tuning 31 to 250MHz in three bands, actually three separate tuners feeding a common i.f. stage. A calibrated meter allows measurement of signals and interference across this range, whilst it's able to receive c.w., a.m and f.m. transmissions.

In the set I obtained, the internal batteries were no longer usable. These were removed after disassembling half the set and new ones were considered. However, the built-in charger had enough power to operate the set directly.

I installed a small 78 series 12V regulator and the set now operates happily from the mains supply. Although the internal batteries were removed, there's a socket, top right on the front plate, which can be used to feed in an external 12V d.c. supply if portable operation is really needed.

## Morse Code Winding-Up?

Still trying to learn the old Morse code? In the matter of a short while such a requirement will be a thing of the past and another great radio tradition will fade into obscurity, in my personal opinion.

The little gadget, **Fig. 5**, could be just the ticket for those left interested in using Morse. A small clockwork motor drives a ticker tape reel which has the Morse characters perforated in it. These perforations cause a contact to make and break, keying an internal oscillator which is then connected to headphones.

In this model of the American made Instructograph the oscillator is transistorised, although originally it would have been valved. The speed of sending, or playback, can be varied by a small lever.

## And Finally

And finally...help is needed on the following: **Rob M3AHH**, is looking for a manual and information on the Hammlund HQ110A receiver. Contact him direct at his *Callbook* (QTHR) address. Next we have **Jack G3GNK**, who wrote to me commenting on the Type 53 transmitter (covered last time) and mentioning that he had a similar set back in the 1950s.

The set Jack recalls though was a two valved unit (807s) and covered 2.4 to 13MHz with ganged rotary inductors. He believes it had a type number like 19, nothing to do with the WS19 of course, but would be interested if anyone else can remember anything else about the set. Contact him also direct at QTHR.

Incidentally, looking back over the 31 or so 'outings' to the G4BXD 'vintage shop' in this column I see I have covered around 111 different sets and expanded one or two a couple of times. I may have to start looking at the second layer in the store room for the next 100 or so!

Well that's all for now. I'm looking forward to meeting readers at the Cosford and Rugby rallies. As always you can write to me at: **62 Cobden Street, Kidderminster, Worcestershire DY11 6RP**, or via E-mail at **G4BXD@qsl.net** and don't forget to have a look at my web pages at **www.qsl.net/g4bxd** Cheerio for now.

PW

# VHF DXER

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REPORTS & INFORMATION BY THE LAST SATURDAY OF EACH MONTH.

An excellent mix of propagation modes were reported on the v.h.f. bands during May enabling some very long distance contacts to be made. Ionospheric modes were much in evidence particularly on the 50MHz band with trans-equatorial propagation (t.e.p.), auroral back-scatter (Au), auroral-E (Au-Es), Sporadic-E (Sp-E) and meteor scatter (m.s.) all being reported during the month. Propagation on the 144MHz band was equally exciting with aurora, sporadic-E, meteor scatter and tropospheric openings also reported during May.

The highlights of the month included t.e.p. paths to Africa and South America and a multi-hop Sp-E opening to North America on the 50MHz band. On the 144MHz band there were three Sp-E openings deep into Europe and periods of extended tropo propagation which produced contacts with stations in Portugal and Spain and there was a large scale aurora which affected all the v.h.f. bands. More than enough to keep everyone happy!

Now I'll look at the events in more detail starting with contacts made on the 50MHz band via trans-equatorial propagation (t.e.p.). Surprisingly these are still being reported even though the best period for this mode from the

Contacts made during the afternoon opening included the stations of C93FF (Mozambique) and FR1GZ (Reunion Island). Those in the evening included 5T5TN (Mauritania) and 6W/F5VHQ (Senegal), although strictly speaking these shouldn't be classified as t.e.p. as those stations are situated north of the equator.

There were six t.e.p. openings during May with the best of these occurring on May 6 between 1700-1800UTC to Z22JE (Zimbabwe)

propagation swung northwards towards Scandinavia with contacts being made into Norway (LA) and Sweden (SM). This lasted until 1500UTC when the Sp-E path flipped back to the south again with more contacts being made with stations in the Balearic Islands (EH6), southern Spain (EH7) and Morocco (CN). This event faded out around 1900UTC to be replaced at 1930UTC by a 4500km multi-hop transatlantic path to North America.

## DAVID BUTLER G4ASR HAS DETAILS OF AN EXCELLENT START TO THE SUMMER DX SEASON ON THE VHF BANDS

and 9J2GS (Zambia), on May 20 between 1955-2015UTC to PY3ISO and PY5CC (Brazil) and on May 28 to FR1GZ at 1525UTC and later at 1850UTC to PY5CC.

### SPORADIC-E

The summer season has got off to a good start with 50MHz Sp-E propagation being reported on at least 16 days during May. Most contacts made via this mode usually lie in the range between 1000-2000km and these occur with regular monotony during the main Sp-E season which occurs between June and July. This time I'll just take a look at reports of longer distance or the more unusual contacts.

Among the more rare QSOs were the stations of CN8KD (Morocco), ZA3/IK6CAC (Albania), 3A2DD (Monaco) and 4U11TU (United Nations, Geneva). On May 7 between 1630-1900UTC there was propagation into the Middle East with s.s.b. contacts being made with the stations of JY9NX (Jordan), OD5/OK1MU (Lebanon), 4Z4KX (Israel) and 5B4FL (Cyprus).

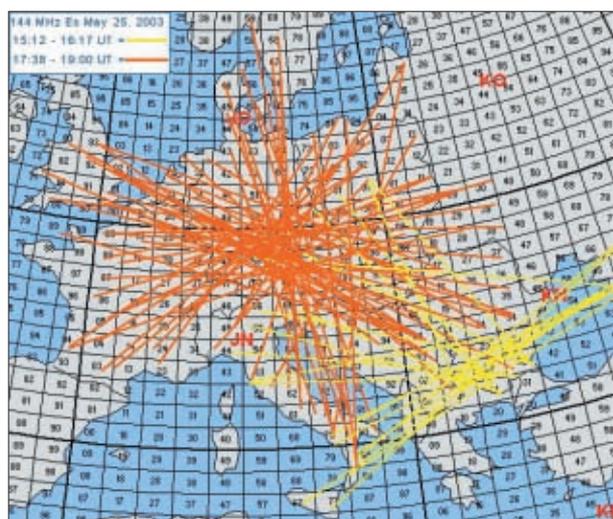
An unusual multi-hop Sp-E opening formed across the Atlantic Ocean during the evening of May 20. The 50MHz band had been open for much of the day since 0900UTC initially to Portugal (CT), Spain (EH) and Gibraltar (ZB). Around 1230UTC the

Although the opening was fairly brief (lasting about 45 minutes) the received signals on c.w. and s.s.b. were quite strong peaking up to S9 at times. Among the stations contacted on 50.110MHz were VE1YX (Canada), KM1E (USA) and W1JJ. The station of VE1RG operating on 50.255MHz also worked a number of UK stations using the JT44 machine generated modulation (m.g.m.) mode.

Propagation was all over the place on May 25 with 50MHz contacts being reported to A45XR (Sultanate of Oman) at 1425UTC, 4Z5AO (Israel) at 1440UTC, ER1FF/P (Moldova) at 1510UTC, D44TD (Cape Verde Islands) at 1540UTC, TF8GX (Iceland) at 1600UTC and TA1AQZ (Turkey) at 1730UTC. At similar times there was propagation throughout much of Europe with UK stations reporting contacts into Portugal (CT), Germany (DL), Spain (EH), France (F), Italy (I), Austria (OE), Czech Republic (OK), Slovakia (OM), Slovenia (S9), Poland (SP), Romania (YO), Yugoslavia (YU) and Croatia (9A). The events reported are typical mid-summer Sp-E propagation when multiple paths open up in many directions. It indicates that there are numerous 'clouds' of E-layer ionisation forming and re-forming somewhere over mid-Europe. Sometimes these ionisation layers can become very intense and Sp-E propagation can reach as high as the 144MHz band.

### THE 144MHz BAND

Last month I suggested some ways of catching those elusive 144MHz Sp-E openings. I mentioned that historical data showed that openings from the UK occurred between 0800-0900UTC, 1200-1400UTC with a larger



● The 144MHz Sporadic-E opening on May 25

UK is around the middle of March. On April 29 there were two openings, the first occurring between 1345-1500UTC followed by a shorter event in the early evening between 1840-1905UTC.

evening peak between 1600-2000UTC and that most events are to countries located south or south-east of the UK in the range 1700-2200km.

During May there were three 144MHz Sp-E openings. The first UK event this year occurred on May 19 between 1800-1830UTC. Stations in England and Wales reported making s.s.b. contacts with the stations of HA5OV (Hungary), LZ5UZ (Bulgaria), YO2LEA, YO2LFP (Romania) and YU7BCL (Yugoslavia) at distances between 1550 to 2300km. All contacts appear to have been made in the frequency range 144.290-144.310MHz.

Another short opening on May 20 between 1700-1810UTC, was reported by stations located in southern England. Contacts were made with stations in southern Spain (EA7) at distances of around 1700-1800km. Again all contacts were made within 10kHz of the s.s.b. calling frequency.

A much better event with considerably higher activity levels occurred on Sunday May 25. It appears to have commenced in eastern Europe around 1515UTC but it wasn't until 1738UTC that Bulgarian and Romanian operators started to work into the Netherlands and the UK. Then the show really started with a big opening from the UK (G, GJ, GU, GW), Belgium (ON), France (F), Germany (DL) and Netherlands (PA) into Bulgaria (LZ), Hungary (HA), Macedonia (Z3), Poland (SP), Romania (YO), Ukraine (UB) and Yugoslavia (YU). At the same time stations in Italy (I) were working into Denmark (OZ), Lithuania (LY), Norway (LA) and Sweden (SM) and stations in southern France (F) made it into the Czech Republic (OK), Slovakia (OM) and Poland (SP). The chart, **Fig. 1**, drawn by **Udo Langenohl DK5YA** ([www.dk5ya.de](http://www.dk5ya.de)) shows the extent of the opening which lasted for 90 minutes before fading out at around 1905UTC.

**Derek Gilbert G0NFA** (Hampshire IO91) reckons that the Sp-E opening was probably the best he has ever participated in. He was active between 1811-1841UTC and made a total of 14 QSOs on c.w. and s.s.b. with stations located in Bulgaria, Hungary, Romania and Yugoslavia. Using an Icom IC271A transceiver and a 9-element Tonna Yagi a total of seven contacts were over the magic 2000km mark with his best DX being the station of YO3DMU (KN34) at 2140km.

Other stations reported very similar results. The station of **G1AAR** (JO00) worked HA5TS, LZ2PI, YU7BCL, YU7EW and four stations in Romania, **G0NNF** (IO92) contacted three Bulgarian and six Yugoslav stations and **G4PCS** (IO91) running an IC-746 transceiver, 100W amplifier and a 2-element HB9CV beam inside the roof space of his house made QSOs with LZ1ZP (best DX at 2157km), LZ2FO, LZ2ZY, YU1GT, YU1IO and YU7EW.

The more experienced v.h.f. DXers fared even better. **John Regnault G4SWX** (Suffolk JO02) had just spent the weekend re-building

his antenna array, fitting new coaxial terminations, feedlines and masthead pre-amplifier. He's using a Yaesu FT-1000D transceiver, transverter and an 8877 power amplifier into a group of four 5-wavelength long (10 metre boom) Yagis at 25M above ground level.

John found it very satisfying to catch the Sp-E opening, which at his QTH lasted for 45 minutes. Twenty-seven contacts s.s.b. contacts were completed with stations in LZ (11), YU (9), YO (4) and HA (3). His best DX was the station of LZ1QB (KN22) at 2090km.

On the Isle of Wight (IO90) the station of **Dave Edwards G7RAU** also had a 'field' day. Active between 1759-1845UTC his s.s.b. contacts included 31 stations situated in HA (12), YO (10), YU (3) and LZ (1) with the longest distance contacts being with YO4ATW and YO4GJH (both in KN35) at 2243km. It's interesting to note the different results between the stations of G4SWX and G7RAU located 200km apart. A similar number of contacts were made but at G4SWX the majority of QSOs (20) were made into Bulgaria and Yugoslavia whereas at G7RAU the majority (22) were made into Hungary and Romania. This clearly demonstrates the geographical selectivity that is experienced during 144MHz Sp-E openings.

## TROPO LIFTS

Staying with the 144MHz band but moving down into the troposphere I'll now take a look at your reports of enhanced tropo conditions. Propagation via this mode was generally quite good on the 144MHz and 430MHz bands during May and many short-haul (around 500km) c.w. and s.s.b. contacts were made throughout the UK and into the Continent. In the period May 22-26 and May 30-31 an area of high pressure formed to the south of the UK enabling contacts to be made with stations in southern France, Spain and Portugal.

Although stations situated near the Welsh or Irish coasts were in the optimum location the lift conditions did spread sufficiently inland to enable stations in the Midlands and further north to participate in the action. Some of the longer distance contacts reported were in the range 1100-1350km. Stations known to have been worked into the UK included EA1BLA (IN53), EA1RX (IN52), EB1EHO (IN73), EB1ENP, EB1EWE (IN53), EA2AWD (IN93), EB2EMZ (IN83), CT1DYX (IN51), CT1EEB (IN50), CT1EKD (IM59) and CT1FAX.

## CQ AURORA!

Finally, it's back up into the ionosphere and from your reports I note that there were at least 14 auroral openings during May. Most of these were very small just reaching the 50MHz band.

Five events though, on May 6, 8, 21, 29 and 30, did make it up to the 144MHz band where some good c.w. DX was to be found. The largest of these auroral back-scatter openings occurred on May 29 following two massive coronal mass ejection's (c.m.e.) from the Sun a few days earlier.



● Well known v.h.f. DXers LZ2US, SV1BTR, GM4JJJ

In the UK the 144MHz band was open from 1400UTC on May 29 through to 0300UTC on the following day. A number of separate phases were observed during this time when signals were either enhanced or disappeared completely as the aurora waxed and waned.

All the long-distance stations worked were using c.w. as this is the most effective mode during aurora. A few stations in Denmark (OZ), Norway (LA) and Sweden (SM) were worked in the late afternoon but it wasn't until after 2200UTC that DX stations up to 1400km away such as HA1FV, HA6NY (Hungary), I1DMP, I2FAK (Italy), LY2AAM, LY2IC (Lithuania), OK2TT (Czech Republic) and 9A2RD (Croatia) started to make contacts into the UK.

**Bob Harrison G8HGN** (Essex JO01) noticed three distinct phases, late afternoon, mid-evening and later from 2200UTC through to 0030UTC. He heard lots of DX on c.w. but very little on s.s.b. which was very frustrating as he doesn't use Morse. (There's a moral in there somewhere!) Running a Yaesu FT-847 transceiver, 150W amplifier and two 15-element CueDee Yagis Bob made a total of 17 s.s.b. contacts with stations in the Netherlands, Germany, England, Ireland and Wales. His best DX was with DL1NB (JN49) at 633km.

## DEADLINES

That's it again for another month. Please forward any news, views, comments or photographs to the address and by the date given at the top of the column.

Thanks for your letters and good luck with the Sp-E DX. See you next month.

*73 David G4ASR*

The DX contacts mentioned in this column are made using either Morse (c.w.) or s.s.b. telephony in the appropriate sub-bands for each mode. On v.h.f. and u.h.f. this equates to contacts being made in the bottom 200kHz or so of each band.

# HF HIGHLIGHTS

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REPORTS, INFORMATION AND PHOTOGRAPHS TO ME PLEASE BY THE 15TH OF EACH MONTH.

It start with a letter from *PW* reader **John Thexton G3URE** who says "I was reading the February issue of *PW* and what caught my eye was the Saudi Arabian station HZ4DZ worked by one of your reporters **Tom Kelly EI2AJ**. What surprised me was that such activities are forbidden except to Princes or Ministers. I lived and worked there for the best part of 25 years and had to keep a very low radio profile.

"The h.f. bands are used for long-range communications within that large land mass and Amateur Radio was proscribed to everyone but the elite. Only ARAMCO, who at the time ran the oil industry and was staffed mainly by Americans, were allowed to operate an Amateur station.

John Continues: "In 1980, a ban was imposed on the sale of any radio receiver capable of receiving single side band. I had just bought a Kenwood R1000 and was immensely relieved that I had beaten this ban. In 1990 I returned after a short break, to live in Riyadh and found the ban still being rigorously enforced. All imported radios had their s.s.b. capability missing. Sony radios were special editions too.

"I did manage to find a Grundig 'Satellite' model, which had escaped the ban, but it was an awful radio and badly designed ergonomically. I was there during the last Gulf War and when it was all over, saw one shop near our compound offering for sale all kinds of exotic infrared equipment and other war surplus items. Amongst the display was a near-perfect complete h.f. Amateur Radio station for which they were asking the equivalent of £10000. Even for me, that was too much! I asked about it of course and was told it was being sold on behalf of a Prince. I would have been interested to learn who the operator of the 'HZ' station had been, as I was just amazed that a station had been heard or worked".

Thanks John for that information. I'd not heard about the restrictions in Saudi Arabia and decided to look on the Internet. I found several references to HZ4DZ on various Packet Clusters around the world but no operator details or QSL information.

Two sites of interest I found included [www.qsl.net/hz1ab/](http://www.qsl.net/hz1ab/) which has details of the club station HZ1AB who's licence was a gift from the Kingdom of Saudi Arabia. It went on the air in early 1947 and has been used by over 160 different operators.

The other site, <http://members.aol.com/k3uoc/saudi.htm> confirms John's information stating 'There is no

Amateur Radio Service in Saudi Arabia. This does not mean Amateur Radio is **illegal**, just that Amateur Radio could best be described here as a **privilege** reserved for members of the ruling family, the Al-Saud, and for several select expatriate groups. Over the past ten years, no individual expatriate or non-royal Saudi has been granted an operating licence here"!

## DX NEWS

Swaziland is a landlocked hilly enclave almost entirely within the borders of South Africa. Mountains in the west of the country rise to almost 2000m (6525ft) and the climate is sub-tropical depending on the altitude. If you need to work this country, usual prefix 3DA0, you

hearing J3/G4BKI at least until 1 May 2004. Paul's station is located in a cupboard at his QTH and contains an IC-706, MFJ-1425 25A Switched Mode Power Supply and Dell Latitude C640 Notebook PC. The antennas at the moment are dipoles for 14, 21 and 28MHz. The QSL information can be found on Paul's Web page at <http://stcgrenada.com/amateurradio.htm>

## ANTARCTICAN DP1POL

Electrical engineer **Felix DL5XL** is currently working in the remote German scientific research base Neumayer in Antarctica (AN-016). He arrived in December last year on board the Russian vessel *Akademic Fedorov* and will be in Antarctica until February 2004.

## CARL GW0VSW HAS LOTS OF HF NEWS FOR YOU THIS MONTH, THE POSTBAG'S OVER FLOWING!

should be in with a good chance this month.

A group will be operating from Ezulwini from 29 July to 3rd August with activity on all h.f. bands and using all modes between 0300 and 0700 and from 1400 to 2200UTC daily. The group was waiting for its callsign as I was putting the column together.

All QSLs should go via the SARL QSL Bureau or direct to **ZS5WI, PO Box 1064, Eshowe, 3815, KZN, South Africa**. You can get more information from [zs5wi@iafrica.com](mailto:zs5wi@iafrica.com)

Heading for a holiday in the Pacific Ocean is **Ulli DL2AH**, who will be in Western Samoa until 29 July. He plans to be active on s.s.b. only as 5W0AH until the 15th and also between the 25 and 29th July.

Uli also hopes to be active from Ofu Island (OC-077) in American Samoa (KH8) between the 17 and 23rd although the callsign is not yet known. Activity should be on all bands from 7 to 28MHz using a Yaesu FT-897 and GAP Titan vertical antenna.

**Paul Evans G4BKI** has moved to the island of Grenada (NA-024), the most southerly of the Windward Island chain in the Caribbean. He will operate using the callsign J3/G4BKI. Activities will be mainly on 14 and 21MHz c.w. between 2000 and 2330UTC.

As a new resident of Grenada Paul will have to wait a year before getting a J38 callsign (J37 used to be a visitor, J38 is a resident and J39 is a citizen) so you will be

Felix is the operator of Neumayer's h.f. station which uses the calls DB9020 and DLA21 and also looks after the IT network and maintenance of electronic equipment at the base. The Antarctic summer, which runs from December to February, is a very busy time of the year for everyone at the station and there is little time for leisure activities.

However, during the winter Felix will try to be active on the Amateur bands in his spare time using the callsign DP1POL. The prefix DP is issued by the German Telecommunications Authority almost exclusively for stations operating in the Antarctic such as DP0GVN and DP1ANF but has also been used for operations from space including the calls DP0MIR and DP3MIR.

Felix uses a Kenwood TS-850SAT transceiver with a Kenwood TL-922 amplifier and dipole antennas plus a small laptop computer with sound card adaptor for the digital modes. The h.f. conditions in Antarctica can be hard at the best of times so it's not always easy to work stations in this part of the world. If you do make contact then a QSL can be obtained from DL1ZBO either via the bureau or direct to **Rainer Hilgardt, Hans-Sachs-Weg 38, D-64291 Darmstadt, Germany**. Reports from s.w.l.s are welcome, too!

A contact with DP1POL counts as DXCC CE9/KC4 and is also valid for the Worked



- MOIAP QSL worked by Steve Bainbridge with PSK31.

Antarctic Bases Award (DL-03)

[www.ddxc.net/waba.asp](http://www.ddxc.net/waba.asp) and Worked Antarctic Stations Award

[www.ddxc.net/wasa.asp](http://www.ddxc.net/wasa.asp) For those of you who enjoy participating in Nets a new one has been started for Antarctica and will run every Saturday on 14300kHz around 1900 hours. Net Control is Horatio LU4DXU who is in touch with Pavel LU1Z at the Esperanza Base on Peterman Island as well as DP1POL.

## YOUR REPORTS

**John Harris GW0MOW**, Blackwood, Gwent has worked 308 countries so far, mostly on the key, using a Mosley TH3 Yagi and well-used Yaesu FT-101ZD. The rig has been in the shack for over 13 years now and is beginning to show signs of old age. A replacement will be arriving shortly and judging by the poor band conditions at the moment, John will have to work hard to pick up those remaining 'new' countries!

**Roy Walker G0TAK** had a busy time in his role as Communications Instructor for his local Air Training Corps (ATC) Unit 1127 (Kendal) Squadron of the Air Training Corps erected and operated a h.f. station at a Training Day held at Warbreck School, Blackpool on Sunday 11 May. The event was organised by the Cumbria and North Lancashire Wing of the ATC and the station comprised a Kenwood TS-570DGE running 100W and a G5RV in inverted V format that was supported by a six section Clarke pump-up mast.

Although this is the first time that MX0KAC has operated /Portable, the station performed very well and during a hectic day on 7 and 14MHz a total of 110 contacts were made with 18 different DXCC prefixes. The most notable of these DX contacts was with Japan, Malta, Kazakhstan and Kaliningrad.

The station was operated by newly licensed M3s from the Wing, giving some of them their first experience of operating a 'pile-up' under pressure. Over twenty M3 stations were picked up out of the noise and most of them had very strong signals. Contact was also made 10 members of the RNARS, RSARS and RAFARS groups.

**Steve Bainbridge M3SWB**, Liverpool has been spending most of his time decorating but just found time to work M3VMX 1720 and MOIAP 2106UTC on 7MHz PSK using a Kenwood TS-430S, 10W and a vertical dipole tuned with an MFJ-986 a.t.u.

## THE 14MHz BAND

A warm welcome to new reporter **Simon M3BGA** who has just moved to Congleton, Cheshire and has enjoyed building and testing a Walford Electronics 'Bristol' all-band s.s.b./c.w. transceiver. Running just 5W to a 15.5m (51ft) doublet Simon worked TA2ZF (Turkey) 1859, YU8/9X0A (Yugoslavia) and 4L6AM (Georgia) at 1930, ER3CT (Moldova) and S92UN (Sao Tome) around 2000 and C93CM (Mozambique) at 2100UTC all on 14MHz.

**Mark Taylor G0LGJ** was operating mobile near his home in Dereham. Voice contacts included 3XDO2 (Guinea) 2115, S92UN (Sao Tome & Principe) 2132, YB9AY (Indonesia) on Bali Island (OC-022) 2017 and V21BBQ (Antigua & Barbuda) 2101UTC using a Yaesu FT-100 and 100W to a Pro-Am whip antenna.

Short Wave Listener **Geoff Wallis**, Corsham, Wiltshire found the bands in "poor shape" but did hear c.w. stations ZW7AA (Brazil) 0630, HL1W (South Korea) 0730, HC2SL (Ecuador) 0830, SU9NC (Egypt) 1415, 9H3UV (Malta) 1915 and YB0ECT (Indonesia) at 2000UTC. Geoff's equipment includes FT-7700 and AOR-730 receivers with Cushcraft R7000 vertical and G5RV antennas.

## THE 18 & 21MHz BANDS

On 18MHz **Mike Baker G3SUK**, Stowmarket, Suffolk used his IC-746, Carolina Window and 80W s.s.b. to log contacts with VR2MY (Hong Kong) 1826, YI/F5ORF (Iraq) 1915, and S92UN (Sao Tome & Principe) at 2056UTC.

The s.s.b. of **Martyn Medcalf M3VAM**, Chelmsford, Essex found SM0DOU (Sweden) 1610, UA6LGR (European Russia) 1623, EA9AO (Ceuta & Melilla) 1634 and LY2KF (Lithuania) at 1725UTC. Equipment was an IC-746 connected to a SGC-237 tuner and 8.2 metres of wire as the antenna.

In Tongue, Sutherland, **Gary Macleod MM3SCO** operated on 21MHz using a TS-50, MFJ-948 tuner and converted CB antenna but found conditions "Terrible" for most of the time. However, stations worked this month include ZA/UT7DW (Albania) 1551, DU9/G4UNL (Phillipines) 1812, C93CM (Mozambique) 1840, KB2DQE/P/9K2 (Kuwait) 1950, LU1YT (Argentina) 2219 and S92UN (Sao Tome & Principe) at 2316UTC.



- Paul Evans G4BKI's 'cupboard shack' in St. George's, Grenada, West Indies

- A 'Local' featured on the DP1POL QSL card.



Also on 21MHz was **Owen Williams G0PHY**, Biggleswade who used his Yaesu FT-747 with 100W and dipole antenna cut for 14MHz to find RA9LI/9 (Asiatic Russia) on Beiji Island (AS-083) at 1012UTC and received the QSL card from manager DL6ZFG within 7 days! Owen also worked S05X (Western Sahara) at 1014UTC. Both contacts were made using s.s.b.

## THE 28MHz BAND

Finally, to 28MHz and the log of **Mark Hampton M5MDH**, Eastleigh, Hampshire who used his Kenwood TS-2000 and 100W s.s.b. with indoor dipole to work 9K2ZZ (Kuwait) 1301, D44TD (Cape Verde) 1305, OD5NH (Lebanon) 1440 and 9H1DE (Malta) at 1511UTC. One interesting contact in Mark's logbook was with YC4VD (Indonesia) at 1417UTC using just 10W QRP.

The antenna for this contact was a Solarcon 99 vertical mounted just 1 foot above the ground. It just proves what can be done with simple antennas when h.f. conditions are good!

The logbook of **Paul Burgess M0CCQ**, Ellesmere, Cheshire had some fine DX which included 5U7JK (Niger), ZS1RBN (South Africa), SU9NC (Egypt), D2BB (Angola), S05X (Western Sahara) and ZD8Z (Ascension Island) using an Yaesu FT-920 and 300W to a 5-element ZX monoband Yagi.

All c.w. man **Ted Trowell G2HKU**, Isle of Sheppy, Kent used his Ten-Tec Omni V and G5RV which had been repaired after parting company with its feeder! A heavy weight soldering iron solved the problem and D88S (South Korea) and YV1NX (Venezuela) entered his log around 1500UTC.

## SIGNING OFF

My thanks to **Tedd Mirgliotta KB8NW** who is editor of the *OPDX Bulletin* for the DX information. Have a good DX filled month and keep those reports coming.

*73, Carl G2W0VSW*

# DATA BURST

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This time in Data Burst, I'm going to risk the wrath of some readers by looking at a comparatively new form of communication. But why, you may ask is this new means of communications, open only to Radio Amateurs, a cause of contention?

The new mode, though only available for those holding a recognised callsign can, in one mode, be completely carried out without any form of radio whatsoever! This mode is called Echolink, or at least the PC program and system that are used are both called *Echolink* (if italics are used, then the program is indicated - otherwise the system is meant).

Echolink is a system that, loosely described, couples computers, the internet and radios together into one large mixture. If you look back at page 64 of the May issue of *PW*, the portable computer shown in the picture is running the *Echolink* program. So, let me assume that you have installed *Echolink* and are actually running it.

Have a look at the diagram of a basic Echolink set-up, **Fig. 1** and you'll see that it's quite simple. In essence, each end of the communication, is a computer interface using the Echolink system and internet as the coupling medium. What the computer is connected to may be different at each end, in that it could be as simple as a microphone and headphones set-up, or it could be a repeater radio system.

## SIMPLEST SET-UP

Let me assume for the time being that it's the simplest set-up at each end - just a

microphone and loudspeaker. Over the internet connection, *Echolink* has connected to one of the Echolink servers (more of this later too!), and you are in the middle of a conversation with another Amateur.

Your speech is converted into a digital form, it's passed, via the internet, to the Echolink server, which then routes it via the internet to the recipient's computer. At the far end of the 'contact', the incoming stream of data is converted back into audio, for the loudspeaker or headphones. Simple isn't it?

**GB3HD** in Huddersfield, **GB3IE** in Plymouth and **GB3LY** (presently only shown as 'on test'). So, anyone living within range of these repeaters could talk to, or **be called by another Amateur from anywhere the world!**

The number of UK-based repeaters tends to increase in the evenings. One of my early experiments, in trying to link with a local u.h.f. repeater, wasn't that successful, though later tests were more effective. I've not had time to try out repeaters in other areas of the world yet!

## TEX SWANN G1TEX/M3NGS LOOKS AT ECHOLINK

When you're finished speaking, your contact's reply is similarly converted, and their stream of data is routed, again via the Echolink server, to your machine, where it's processed into speech again. But so far it's no more than internet-telephony - so what's the radio connection?

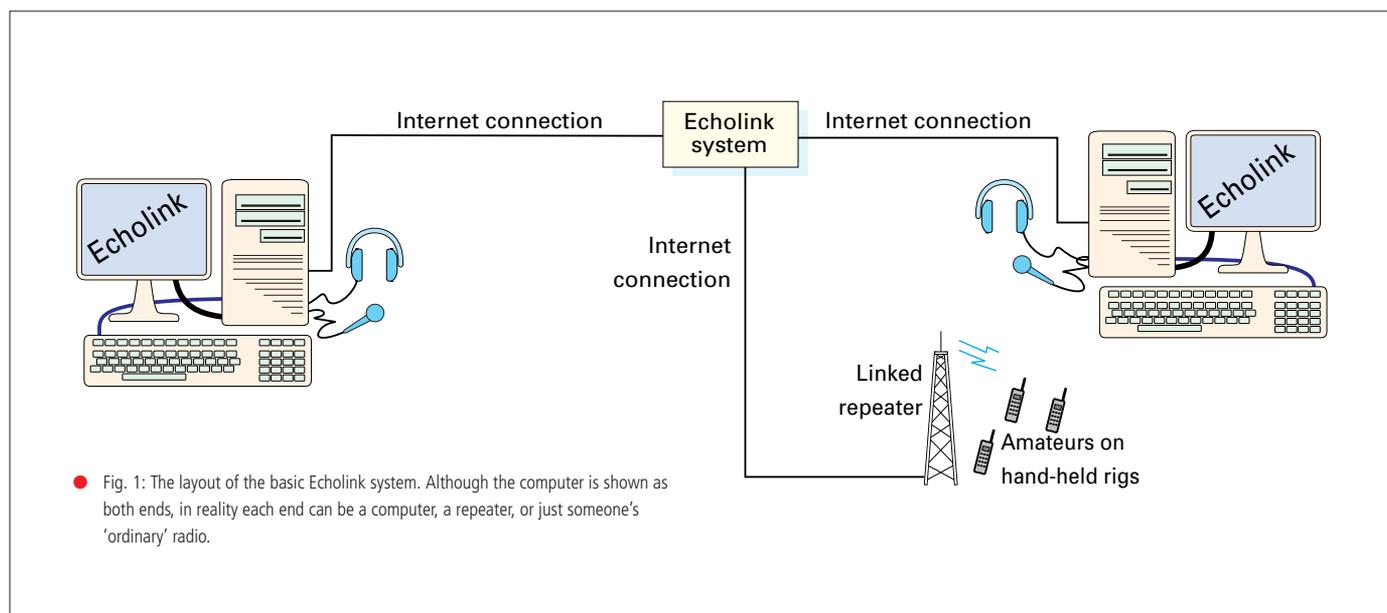
The radio connection is that one (or both) ends of the contact may be replaced with a radio link, such as a repeater. As I write this column there are 396 repeaters around the world available to use via Echolink. These are physically spread around the world, but as callsigns, they range from **4X4ARC** in Tel-Aviv, Israel, to **ZS2CLI** in East London, South Africa.

I counted four UK based repeaters on at the time, and these were **GB3DX** in Birmingham,

## THOUSANDS OF CONTACTS

As I write this there are some 1200 of the 90 000+ registered users logged in at present. As all registered users are Amateur Radio stations, and almost 400 of those logged in are repeaters, there's the potential for many thousands of contacts around the world right now! All you will need as the minimum is a Windows95/98 based PC with a sound card installed and running correctly.

Have a look at the Echolink webpages to be found at: <http://www.echolink.org> as shown in **Fig. 2**. Here you can learn about Echolink, (voice over internet {VoIP}), take a tour of the Echolink capabilities, download the software itself, or just find out who's connected at the present time.





● Fig. 2: One of the main pages available when visiting the Echolink website at <http://www.echolink.org>

To download the software, you must provide a valid callsign, and password as well as a valid E-mail address! After the *Echolink* installer software (just under 2Mb) is downloaded and stored to disk, set about running it. All that you need to do to set-up of some of the parameters, is to enter your callsign, and answer a couple of simple questions.

The first time you run *Echolink*, it may take some time for your callsign to be checked and registered (to verify that it's a valid callsign). The multi-pane windows, **Fig. 3** opens up and you're away! There are two ways of showing the list of connected stations, but please note the list of connected users may not be the most up-to-date list, as it's only loaded every few minutes.

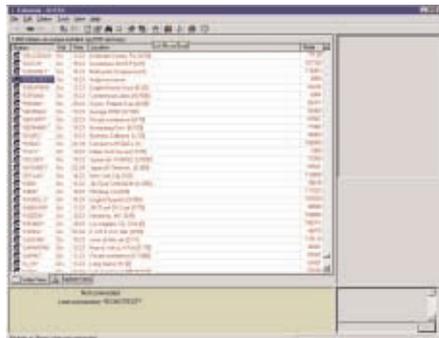
You should begin by connecting to the Echotest repeater server that sends your 'over' back to you to allow checking of audio quality and levels. There's a short delay depending on the type of internet connection you have, and there may be some 'chopping' of received speech signals due to 'packet-dropping' when internet traffic becomes heavy.

### ANOTHER STATION

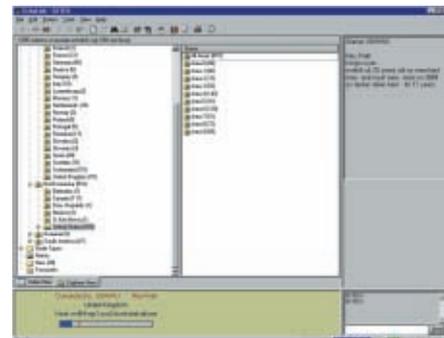
If you're satisfied with the quality of your signal, then it's time to go and find another station to talk to. Change the station list over to the *Windows Explorer* style shown in the screen of **Fig. 4**. Then navigate to **Europe/UK** in the left hand panel and scan down the list of connected UK stations to see if there's anyone's callsign you recognise. If you see G1TEX, in that list please feel free to 'call' me.

Highlight and 'double-click' the callsign, or click on the 'Linked-chain' on the tool bar to connect. At the receiving end, a signal sounds and your station's details pop up in the lower-left panel. A tap on the space-bar starts sending your 'speech' to the other station, routed via an Echolink server.

Another tap of the spacebar when your 'over' comes to an end, and you await a reply. The other station can now reply in the same way, and his (her?) digitised speech is then routed to your machine. So, this part replicates a radio based QSO. And although you may have used the internet this time, remember to



● Fig. 3: When the Echolink program is up and running, this would be a typical screen using a single full listing of all the stations connected at the time. See text for more detail.



● Fig. 4: Alternatively, using an 'Explorer' type of station display, sorts the connected stations into world areas for easier choice.

give your callsign as you would during a normal QSO, as the next time you may be using a repeater and real radio.

### ADDED BONUS

For the direct radio users of an Echolink connected repeater there is an added bonus, if you have a dual-tone multi-frequency (DTMF) keypad fitted to your radio you can cause your repeater to connect to another station. However, you'll need to know the 'Node

I must thank the members of the Echolink organisation for the hard work that they have undoubtedly done (and continue to do) in creating an Amateur Radio mode that's, in the true Amateur way free to use. Also many thanks to **Jack KU4RR**, **Rex ZI2RE** and **Ray G0WWU** and others for the many hours I've spent enjoying using *Echolink*.

Echolink may be the only way some Radio Amateurs can make contacts further away than a local repeater, due to space, planning, or

Callsign	Details	Status	Time	Node
GB3DX-R	Birmingham England (1)	On	09:46	62872
GB3HD-R	Huddersfield West Yorks	On	09:51	114580
GB3IE-R	Plymouth / Devon (1)	On	09:51	27871
GB3LY-R	On test 07:30 to 17:15	Busy	09:47	39437

● Fig. 5: Details of the four UK-based repeaters that were connected as I wrote this column. See the text for reference to the Node Number in the right hand column.

Number' of another station, and this can change with every log-on, making it difficult to find the right station.

The illustration of **Fig. 5** shows the details of the four UK-based repeaters with the Node Number in the final column. A permanently connected repeater may have a fixed Node Number. So, connecting your repeater to the remote repeater, via the internet is a possibility. There have been quite a few repeater users shocked to hear ZLs (New Zealand) on their u.h.f. repeaters.



● Fig. 6.

other restrictions. I think that the Echolink system is justifiably 'Amateur Radio' in the best traditions - but using modern techniques to give new possibilities for communication.

It's an additional Mode - not a replacement for other parts of the hobby. This is a mode that can increase communications with stations around the world. Even though it can sometimes work without radio at all - but that may be ignoring the system's potential.

### NEXT COLUMN

Now for a taster of what I intend to be covering in my next column in the November issue. Take a look at the fine mascot shown in **Fig. 6**. His name is 'Tux' and he's the logo for the Linux operating system.

Many of you may have heard of Linux, but don't know what it is, or how it may be used. So read my next column for an overview of this 'free' operating system and programs from many sources. Many of these programs are just that - free to use and copy! There is probably one that's just right for your purposes.

*Tex G1TEX/M3NGS*

# IN VISION

**GRAHAM HANKINS G8EMX**

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I have been attempting some video capturing using my new computer. The ultimate objective of the exercise was to transfer some of my own analogue videotape of Amateur Television (ATV) onto either a VideoCompactDisc (VCD) or Digital Versatile Disc (DVD) so it could then be replayed on a DVD player with the composite video output going into an ATV repeater for other stations to see.

The idea was that the VCD or DVD disc could be quickly duplicated with no transfer

being saved onto my hard disc (HD) as three segments (or 'chapters' as video editing software calls them) with a few seconds of sound missing. But at least these replayed, with a couple of hesitations, from the HD onto the PC's monitor.

The phase that caused me the most difficulty was transferring the digitalised video from HD to CD and achieve PC replay from the CD. So, I checked out the software that was bundled with the drive first; then the programme that had been on the capture disc.

or advice on this please let me know via e-mail to my **new e-mail address** at **G8emx@tiscali.co.uk**

## LICENSING DIFFICULTIES

There's another 'burning' issue concerning the British Amateur Television Club and its members at the moment - the current licensing difficulties experienced by ATV repeater proposals. The RSGB and its Repeater Management Committee (RMC), the Radio Communications Agency (RA), the Civil Aviation Authority (CAA) and the Home Office are the principal bodies involved or consulted when new voice or TV repeater proposals are submitted.

As at the 28 May 2003 there were 21 repeater proposals in the 'Vetting Status' table on the RMC website; the CAA is primary user of the 24cm (1.3GHz) band, where at this time there were four ATV repeaters awaiting approval and one rejected, Bad luck to GB3FV Wisbech, Cambridgeshire, where dates in the table went from July 2002 to April 2003, so nine months waiting, only to be turned down. As at 28 May the RMC table showed the Crawley proposal for a 1.3GHz ATV repeater as being with the RA for one and a quarter years! All this does of course is make you wonder what is going on!

Applying for a repeater licence is a significantly detailed process and a considerable undertaking for Radio Amateurs who, by definition, are indulging in a spare time unpaid activity. The technical demands on any repeater are considerable, but perhaps the most significant concern when considering applications is the predicted coverage and it could be the latter by which a proposal can stand or fall.

A prediction is, by definition, an 'educated' guess. Any calculation of how far a radio transmission will travel from source and its strength on arrival, can only be an informed estimation, and the uncertainty of this answer becomes particularly significant at microwave frequencies which is of course where the ATV repeaters operate.

The RMC website provides a template for coverage calculations. You enter the transmitter's power, frequency, antenna height and a host of other parameters and an estimated coverage map will be returned. But this might be the start of a very long process....

Time and space has caught up with me, so until next time keep 'in vision' and keep your news, views and reports coming in.

*Graham G8EMX*

● A 24cm (1270MHz) ATV repeater, licensed and operational. But when will more ATV repeaters be cleared through the system?

## GRAHAM G8EMX LOOKS AT HOME VIDEO CAPTURE FOR ATV FOOTAGE AND REPEATER LICENSING

loss and distributed to ATV repeater groups. To ensure that the computer would be adequate for video capture, I had built a PC with a 2GHz processor, 256Mb memory, a Universal Serial Bus (USB2) port and the Windows XP operating system.

Well, I needed a new PC anyway! But as I have since found out - from lots of reading - it's not so much what you have got, as to what you want to do with it!

### POPULAR MEDIUM

Because of its huge capacity, the recordable CD has become the popular medium for storing very large files to pass between computers. And vision files are very big indeed - hundreds of megabytes for every few minutes of footage!

However, there are complications; the differing CD formats e.g. CD-R, CD-RW, DVD-RW, DVD+RW (to mention not all formats, so I won't even attempt to explain them!), plus the several software packages that can capture and write to a disc. There's usually some writing software bundled with a CD or DVD drive, plus many packages are available from computer stores. This can all be tricky to sort out for the first time.

The bottom line to my initial exercise in video capture and editing is that my ultimate end-point - a video CD that would play in a stand-alone DVD player - has not yet been reached. However, I did manage to produce VCDs that would replay on the PC. Although what was by now a second and third generation tape played without problems into a TV, the digital capture process stopped twice with a 'no video detected' message and I don't know why that was.

The single 15 minute video ended up

Both of these told me that data was being written to the CD-R, then eventually - several minutes later - that writing (or 'burning') had been satisfactory.

Although there were files on the CD, these were not .mpg files and neither my DVD player or media player software on the PC recognised the disc. Now, I'm sure there's nothing wrong with any of the software at this stage and the fault lies with me.

But Windows XP came to my rescue. After viewing the .mpg files on the HD, I spotted XP asking the simple question "Do you want to write these files to CD?" I answered "yes" to this!

Two more mouse clicks later and XP was doing the business.

Examining the 'burnt' CD, there were the .mpg files! "Do you want to play these in RealOnePlayer" XP asked - so yes please I typed!

So, I now have just about watchable (hi) video copied to several CD-R discs, which play through the computer with RealOnePlayer. If any readers can offer help



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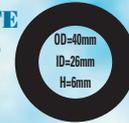
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# TUNE-IN

**TOM WALTERS**  
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At almost the exact time of writing, the historic moment of the launch of DRM was due to take place. On June 16 2003, the first daily, live DRM broadcasts were scheduled to be transmitted across the globe by some of the world's best-known broadcasters, from the World Administrative Radio Conference in Geneva.

The line-up was certainly impressive consisting of: BBC World Service, CBC/Radio Canada International, Christian Vision, Deutsche Welle, DeutschlandRadio, local station Georg-Simon-Ohm-Fachhochschule (Nuremberg), Kuwait Radio/Ministry of Information of Kuwait, Radio France, Radio France Internationale, Radio Netherlands, RTL, Radio Vaticana,

very soon, says David G4DMP: "It's well worth paying for. It's available from [www.drmx.org](http://www.drmx.org) and can be downloaded and paid for by credit card. A 'key' then arrives by E-mail the following day, which should simply be put into the same directory as the DRM programme, and bingo! You're away".

Thanks for the information David. So, let's support DRM and hope for arrival of the radios before too much longer.

## FIFTY YEARS OF PROGRESS

Deutsche Welle Radio had a lot to celebrate in June. Not only were they leading and participating in the great DRM adventure, which throughout has been headed up by DW's

2000-2100 on 9.780, 15.205, 17.810; 2100-2200 on 9.440, 11.865, 15.205; 2200-2300 on 9.720 and at 2300-0000 on 9.890 and 17.860MHz. Generous, as ever!

## INTERNATIONAL SERVICE

Every now and then, usually at the most inopportune moment, the Israeli government tries to kill off its international service (**Kol Israel** in the English version). They tried it a couple of years ago, but were driven away by a chorus of boos.

A few weeks ago, the Israeli government started again. With the war in Iraq over, the Americans were about to switch over to focussing on the 'Road Map to Peace', bringing Israelis and Palestinians together, with a view to solving their problems once and for all.

Surely this was a time for making certain that your views are as widely known as possible. However, 'cuts mania' descended on the domestic networks, with potentially catastrophic consequences for the international services, particularly in Hebrew and Arabic!

Thank goodness, common sense prevailed, the proposed cuts were slashed by more than half, and the overseas service now seems scheduled for a reprieve. So, look forward to continuing to be able to hear Kol Israel in English at 0400-0415 on 9.435, 15.640, 17.600; 1015-1030 on 15.640, 17.525, 17.545; 1630-1645 on 15.640, 17.545; 1900-1925 on 11.605, 15.615, 15640 and 17.545MHz.

## ROUNDING OFF

Time to round things off neatly now, by returning to DRM and other digital matters. All over the world, switch-off dates for analogue TV are being announced, which can never happen to radio, it seems, with so few digital sets available!

Analogue TV switch-off in Sweden has just been set for 1 February 2008 (less than five years away!). At least **Swedish Radio International** may be setting digital targets by then, as they have courageously boarded the DRM bandwagon for launch day.

Perhaps by 2008 some equally courageous Swedish entrepreneur will have hit on a cheap, mass-produceable format for a DRM radio. There's surely big money for someone who can get it right!

*Eye for now  
Tom*

## TOM WALTERS ROUNDS UP THE LATEST NEWS FROM AROUND THE BROADCAST BANDS

Swedish Radio International, Voice of America, Voice of Russia, Wales Radio International, Fraunhofer IIS, Nozema, TDF, Telenor/Norkring, Thales Broadcast & Multimedia, T-Systems Media&Broadcast and VT Merlin Communications.

There can be little remaining doubt that the DRM system works as predicted, transmitting digital programming on frequencies below 30MHz. Professional tests across many different regions of the world all came up with good results. *Practical Wireless* reader **David Pratt G4DMP** has been listening using the DRM Software Radio programme, and is delighted with what he's heard: "I am very impressed by the experiments. It's fascinating hearing f.m. or CD-quality coming over on the normal QSB and QRM ridden short wave bands".

The great trouble remains, as with all new system start-ups, especially with international radio, where are the receivers? The plain truth is that there are no commercially-available DRM-compatible sets marketed at present. And when sets do appear, the price has got to be right.

A lot hinges on the availability of chipsets, as the proponents of DAB have discovered. The DAB sets are coming onto the market, but they are still quite highly priced and not available in large numbers. Only small entrepreneurs are prepared to attempt the challenge. Large manufacturers are not interested because of what appears to them as a low volume.

However, you will be able to hear DRM

indefatigable and ever-optimistic technology boss **Peter Senger**, but they were moving house and looking back at 50 years of progress, all at the same time.

The move from DW's once state-of-the-art premises in Cologne to brand-new cutting-edge accommodation just down the road in the former government quarter in Bonn has been planned for many years. But the timing to coincide with the DRM launch and the celebration of 50 years on-air allowed for some pretty sumptuous festivities.

Today DW is an innovative multi-media enterprise, offering globally-accessible information in over 30 languages via TV, radio and Internet. "Hier ist die Deutsche Welle Bonn" now signals radio programmes from one of Europe's most modern broadcasting centres. (DW-TV mostly comes from Berlin). Radio programmes go out via satellite, short wave (now including DRM digital), m.w. and f.m. to specific regions. In short it's a thoroughly modern radio station for the new century.

The current DW short and medium wave schedule is: 0000-0100 on 15.48m.w., 7.130, 9.505, 9.825; 0400-0500 on 7.225, 11.945, 15.410; 0500-0600 on 9.700, 11.925, 12.045, 13.755; 0600-0700 on 15.410; 0700-0800 on 9.780, 15.275, 17.860; 0800-1000 on 6.140; 1000-1030 on 17.615, 17.715; 1100-1200 on 15.110, 17.820; 1300-1600 on 6.140; 1600-1700 on 15.48m.w., 6.170, 7.225, 17.595; 1900-2000 on 6.180, 7.225, 11.965, 13.590;

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**CB transceiver** for sale, only two weeks old, cost, £130, as new, £750.n.o. Apply evenings and weekends to Chris Redwood, 238 Newcross Road, London SE14 5PL.

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many extras, £300. Going QRT, buyer collects. Peter G2CNN, Norfolk, Tel: (01842) 878326.

**Computer** with modem, monitor, speakers, keyboard, mouse, W95, £30. DX394 h.f. RX mint, manual, AC or 12V, £110. Datong D70 Morse tutor, mint, £40. Will deliver (Woking) London suburbs. E-mail: esquire@fsmail.net

**Datong Active Antenna** model AD-370 boxed new, £15. Shure mic model 507B boxed new, £12. Linear Omni Match 3.5-30MHz, £7. G5RV Choke Balun, £7. All post paid. Tel: GJ3XZE on (01534) 852093 or e-mail: gj3xe@localdial.com

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# Practical Wireless

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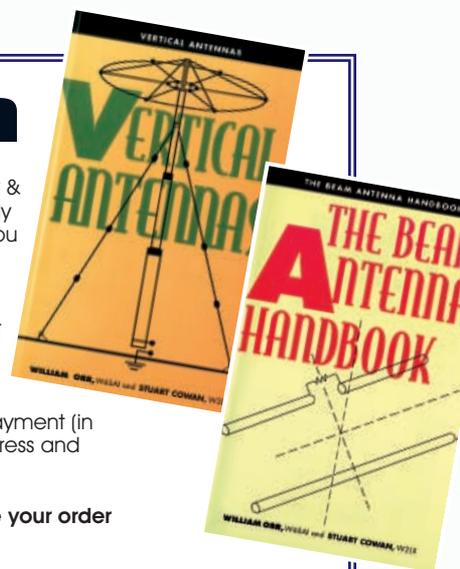
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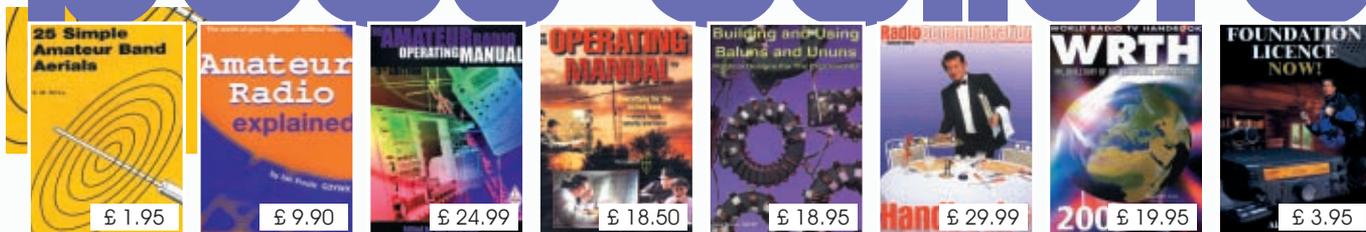
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## Index to Advertisers

Aerial Techniques.....	66	Nevada.....	34, 35
Albion Design.....	66	Practical Wireless.....	77
bhi.....	45	QSL Communications.....	65
Birkett, J.....	65	Radio Active.....	8
Bowood Electronics.....	66	Radioworld.....	48, 49
British Wireless Blind Fund.....	66	RCQ Communications.....	45
Castle Electronics.....	75	RSGB.....	5
Chelmer Valve.....	65	Short Wave Magazine.....	8
Chevet Book Supplies.....	45	Sycom.....	65
Electrovalue.....	66	Telford ARG.....	65
Ferrells Confidential Frequency List.....	32	Temwell.....	45
Haydon Communications.....	19, 20, 21	The Shortwave Shop.....	66
Icom (UK) Ltd.....	79	Vintage Valve Technology.....	65
Leicester ARC.....	23	Waters & Stanton.....	2, 3, 4
Martin Lynch & Sons.....	40, 41	Yaesu UK Ltd.....	80
Moonraker.....	16, 17		

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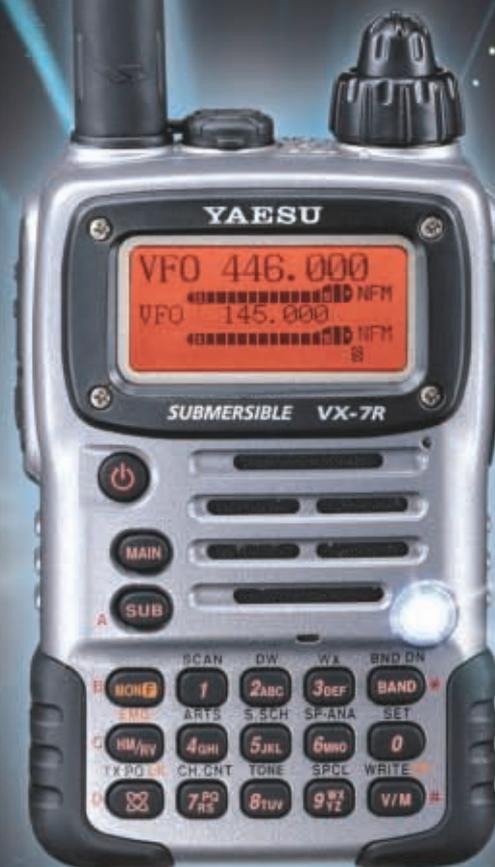
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