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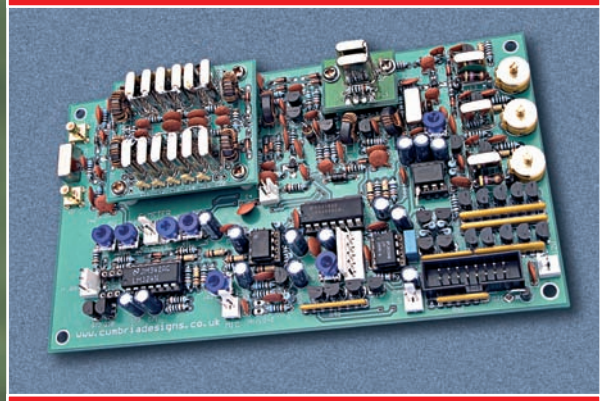

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Yaesu VX-6E Reviewed

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WSMA-881	As above but with SMA fitting	**£19.95**
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W-889 BNC	Telescopic Gainer 25-1900MHz 40cm	**£14.95**
WSMA-889	As above but with SMA 13 - 40cm L.	**£14.95**

Icom HF Transceivers

ICOM IC-756 PRO III

Top of its range of HF transceivers. HF & 50MHz, features large colour LCD with spectrum scope, auto ATU and 32-bit floating point DSP unit. **£2099 C**

IC-7800 £6400 C
Icom' Flagship HF 200W transceiver. 200W max. The ultimate receiver - the ultimate design! AC psu built in.

IC-7800-PACK £6995 C
The superb transceiver as above plus 17" flat screen, keyboard and SM-20 base microphone.

IC-7400 £1299 C
HF/VHF 160m - 2m transceiver 5 - 100W. SSB CW FM AM. 12V DC. Nice big display. Lovely price.

IC-706 MkIIGDSP £769 C
It's unbeatable. 160m - 70cm (up to 100W HF) yet so small with detachable head. The ultimate mobile..

IC-718 £449 C
This is a budget class radio HF 160 - 10m at a price that belies its performance. Beautiful display.

IC-703 *FREE IC-703 Logbook* £539 C
Take an IC-706, reduce power to 10W max and get rid of VHF/UHF. 160 - 6m of pure QRP joy!!

Going HF Mobile?

Then check out the great 80m - 6m SIDEKICK magnetic mount whip from USA. No hassel and great performance. £249.95 C

Kenwood HF Transceivers

KENWOOD TS-2000

Top-of-the-range Kenwood transceiver. The Station in a box. 160m-70cm with every feature imaginable inc. DX Cluster. Kenwood fans dream rig. HF/VHF/UHF or up to 23cm with the optional module. Built-in auto ATU, DSP and its unique TNC. **£1389 C**

TS-2000X £1799 C
Take the TS-2000 and add a superb 23cm module. The best 23cm we know of plus all other bands!

TS-B2000 £1299 C
Designed for the 21st century. You get HF - 70cm with PC software for direct PC control. It works great.

TS-570DG £839 C
The best budget radio at the price. Superb 100W from 160m to 10m. As used by Peter Waters, G3OJV

TS-480HX £1049 C
Take the TS-480SAT, remove the auto ATU and offer a beefy 200W output. That's a really potent package!

TS-480SAT £899 C
HF 160m - 6m with remote front panel. Large enough for base use, small enough for mobile. Big display

Buy a TS-480SAT & get Free Of Charge a Heil Microphone Package. To claim send a copy of invoice to Kenwood

Yaesu HF Transceivers

YAESU FT-1000 MKV

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. **£2099 C**

FT-1000 FIELD £1699 C
The HF choice for DXers. With this rigs reputation on DXpeditions what more persuasion do you need?

FTV-1000 £729 C
6m 200W module for the FT-1000 range. Probably the ultimate for 6m DXing.

FT-897D £649 C
160m - 70cm self-contained portable. 100W and up to 20W from optional internal batts.

FT-857D *SPECIAL LOW PRICE* £579 C
160m - 70cm mobile with up to 100W output. Lovely tuning control from remote head unit - and great price!

FT-847 £999 C
Complete station in a box! 160m - 70cm - up to 100W (50W 2m/70cm). Great for satellite work.

FT-840 £399 C
Is there any other radio that comes close to this price? One of our all-time best sellers. 100W 160m - 10m

FT-817ND *SPECIAL OFFER* £489 C
The ultimate QRP self-contained radio. Up to 5W output 160m - 70cm. New low price. UK warranty.

FT-817DSP *SPECIAL OFFER* £589 C
FREE CSC-83 CARRYCASE WITH FT-817ND/DSP

Warning - as a regular advertiser you can be sure all our stock is genuine UK warranted. Check serial numbers!!

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Icom
VHF/UHF Mobile/Base

ICOM IC-E208

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* **£239 C

IC-910H £1099 C
2m / 70cm 100W Base station all - modes with option for 23cm module (**UX-910 £359**)

IC-910HX £1249 C
As above but with 23cm module ready fitted and a big saving as well.

IC-2725E £269 C
Icom's new dual band 2m / 70cm radio. Very easy to operate and install and a lovely detachable head.

Kenwood
VHF/UHF Mobile/Base

KENWOOD TMD-700E

2m/70cm dual band mobile transceiver with APRS. Does not need extra high cost boards to function. Only extra if required is a compatible GPS receiver. **£439 C**

TM-G707E £269 C
Dual Band 2m & 70cm with detachable front

TM-V7E £359 C
Dual Band 2m & 70cm with 50/35W output

TM-271E £189 C
Single Band 2m FM 60W mobile transceiver

Yaesu
VHF/UHF Mobile/Base

YAESU FT-7800E *SPECIAL OFFER*

**2m/70cms Dual Band Mobile *High power 50W 2m /40W 70cms *Wide receive inc. civil & military airband *CTCSS & DCS with direct keypad mic. *Detachable front panel *1000 memories plus five one-touch*
FREE YSK-7800 SEPERATION KIT **£229 C**

FT-2800M *FREE MLS-100 SPEAKER* £159 C
*2m FM Mobile transceiver * High power 65W * Capable of VHF wideband receiver

FT-8800E *LOW PRICE* £269 C
*2m/70cmDualband FM Mobile transceiver * 50W 2m, 35W 70cm * Wideband receiver

FT-8900R £339 C
*2m, 70cm, 6m & 10m Quadband FM Mobile transceiver * Independent dial for each band

Watson
On-Glass Antenna

WGM-270

Dual Band 2m/70cm mobile whip. 2.5dB gain and 1.5:1 VSWR. 0.8m long. Complete system including 3.5m cable. No drilling involved. Antenna sticks on glass and interface assembly sticks on inside. Simple and very effective.

£29.95 B

Icom
VHF/UHF Handhelds

NEW
IC-V82 Digital Handy
2m FM Handheld **£159 B**

IC-2E SPECIAL! £199.95

IC-T3H £129 C
2m FM handheld 5.5W c/w BC-01 & BC-146

IC-T22A £149 C
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Kenwood
VHF/UHF Handhelds

KENWOOD TH-F7E

• 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. **£239 B**

TH-D7E £299 C
2m/70cm dualband FM handheld transceiver with data communications

TH-G71E £179 C
2m/70cm dualband FM handheld transceiver

TH-K2E £139 C
2m FM 5W portable transceiver c/w Ni-MH battery/charger

TH-K2ET £145 C
2m FM 5W portable transceiver c/w Ni-MH battery/charger

TH-K4E £139 C
70cm FM 5W portable transceiver c/w Ni-MH battery/charger

Yaesu
VHF/UHF Handhelds

YAESU VX-7R

SPECIAL OFFER
Totally waterproof, wide frequency coverage 500kHz-900MHz AM/FM. 132x64 dot matrix display providing easy-to-read frequencies and information plus pictorial graphics. **£249 C**

NEW VX-6R 2m /70cm
Submersible 5W £199 B

FT-60E See top of page £179 C
VX-2E 2m/70cms min £119 C
VX-110 2mhandheld £94 C

Alinco
VHF/UHF Handhelds

DJ-V5E £159 C
2m/70cm FM 5W dualband handheld transceiver

DJ-193E £91 C
2m FM transceiver no keypad, Ni-Cds & charger

DJ-195E £99 C
2m FM transceiver with keypad Ni-Cds & charger

DJ-C7E £124 C
2m, 7cm credit size FM handheld

Linear Amp UK
HF Linear Amplifiers

RANGER 811H

**1.8 - 29.7MHz*
**800W CW or SSB, 400W RTTY*
**Uses 4 x811A vertically mounted*
**Drive 10 - 100W*
**Toroidial AC Power Transformer*
**6:1 Reduction Drive on Tuning Controls *"Near Silent" Papst Cooling fan *Front-panel ALC Adjust Control *Built-in AC 230V @ 8A Supply*
£945 B

CHALLENGER III £1795 C
HF linear amplifier 10-160m WARC 100W in 1.5kW out

W3FF
NEW Mini Buddipole

Portable 40 - 2m Ant
Just 14" long packed!

£199

Comes in a case **just 14" long** yet extends to a **highly efficient 4.6m long rigid rotatable dipole.** Great for camping and back-packing. Handles 200W and band changing is just a coil tap away. Supplied with 25' of coax and balun. Centre has standard 1/2" plumbers pipe thread. Optional telescopic mast and tripod available.

SGC
HF Linear Amplifiers

SG-500 £1399.95 C
"Power Cube" 1.6-30MHz 500W solid state

Yaesu
HF Linear Amplifiers

VL-1000 QUADRA £3795 C
HF + 6m linear amp. 1kW comes with PSU

Super Antennas
40 - 2m Screwdriver

A very efficient portable vetical 185cm long when fully extetended approx 40cm packed down. Coil is continuously hand adjusted for resonance. Covers 80 - 10m plus 6/2/70 with just whip. Supplied with universal base table clamp and SO-239 plus radials. 100W Max. "Superb performer" says G3OJV

Order MP1-SA £139.95 B
Mini tripod support £22.95 A

NEW STOCK & OFFERS

YAESU FT-60E *NEW*

**Wide band Reception 108-520MHz & 700-999.990MHz (Cellular blocked)*
**New Emergency Automatic ID System*
**High 5W Power Output*
**Ni-MH Long-Life Battery FNB-83 (7.2V,1400mAh)*
**Programmable Keys for user convenience*
Split CTCSS/DCS and DCS Encode-Only Capability.* **£179 B

MFJ-936B "Magic Circle" Loop Tuner *NEW*

This is the most amazing antenna we have seen in years. For optimum results take a wire around 1/5th wave long, bend into square loop (14ft on 20m = 3.5ft square) and attach to MFJ-936B. Result: Ultra low indoor noise and VK, ZL & W all on SSB! That's what we achieved in one day's operation! 20m loop works on 15m as well. Now In Stock. Great for QRP and portable as well. **£229.95 B**

bhi
DSP Equipment

bhi NES10-2 MkII

NES10-2 Combined speaker and programmable DSP unit. Offers dramatic noise reduction, even reduces annoying hetrodynes. Power On/Off switch with audio bypass, 8 Ohms, 8 filter settings, 3.5mm plug, 12-24V DC. **£99.95 B**

NES-5 £79.95 B
DSP Speaker Basic Plug & Go model

NEIM-1031 £129.95 B
Noise Eliminating In-Line Module with DSP

1042 £19.95 A
Switch box allowing up to 6 items to connect to one bhi speaker/module.

NEDSP-1061 £89.95 B
Small DSP PCB module for retrofitting into rigs

NEDSP-1062-PCB £89.95 B
Amplified DSP module to insert in speaker path

NEDSP-1062-KBD £99.95 B
As NEDSP-1062 but with small keyboard

NCH £34.95 B
ANR Noise Cancelling headphones

ANTENNAS

W-2LE	1/4 wave 2m 0.48m 200W	£9.95 B
W-285	5/8th 2m 1.33m long 200W	£14.95 B
W-77LS	2m/70cm 0.42m 50W	£14.95 B
W-770HB	2m/70cm 1.1m 200W	£24.95 B
W-7900	2m/70cm 2m/70cm 1.58m	£32.95 B
WSM-270	Dual band mini magnetic	£19.95 B

BASES

WM-08	8cm diam magnetic	£9.95 A
WM-14B	14cm diam magnetic	£12.95 A
W-3HM	Hatch mount	£14.95 A
ECH	Cable kit	£10.95 B

NOTE: All antennas have PL-259 ends. Mag mounts have cable attached. Hatch mount needs ECH cable.

Watson
Mobile Antennas

Carriage Charges: A=£3, B=£6, C=£10

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NEW

£9.95 A

* Cigar Plug-in DC adaptor
* 1.5 - 12V DC 1.5 Amps
* Stabalised and protected.
* 7 - way DC adaptor set.
* Matches most Yaesu / Alinco sockets.
* Works from 12 V or 24 V vehicle systems.

POCKET MORSE READER

MFJ-461

Reads CW
Just hold near receiver speaker

£79.95 B

That's right - just hold this self-contained decoder near your speaker and see the text scroll across the screen. Absolutely amazing

SG-2020ADSP QRP 20W HF Radio

160m - 10m
0.1 - 20W
Full DSP
Diecast Chassis

Perfect for QRP. SSB / CW and DSP processing. Passband down to 100Hz. Built-in SWR meter and electronic keyer. Max Tx drain 4A. Size 15 x 6.5 x 18cm. 680g.

£589.95 B

Antenna Accessories

Dipole Bits

Kevlar	Strong 400lb strain line 200ft	£22.95	A
FW-PVC-50	50m clear PVC 2mm wire	£39.95	A
Flexweave	50m multi-strand 2mm wire	£29.95	A
HDCW	50m hard drawn 16g copper	£14.95	A
Insul-8	Black ribbed insulator	£0.99	A
WDC-50	SO-239 dipole centre insulator	£6.49	A
Egg-l	Large ceramic egg insulator	£4.99	A
Egg-s	Small ceramic egg insulator	£1.75	A
WS-2580	25pcs 3" ladder line spacers	£9.95	A

Diamond 50 Ohm Balunas

BU-50	1:1 1.7MHz 40MHz 1.2kW	£26.95	A
BU-55	1:1 3.5MHz - 75MHz 500W	£34.95	A

Antenna Traps (pairs)

TR-200-14	200W bands 10m - 20m	£44.95	B
TR-200-10	200W 10MHz	£47.95	B
TR-200-7	200W 7MHz	£49.95	B
TR-200-3.6	200W 3.6MHz	£53.95	B
TR-1000-14	1kW bands 10m - 20m	£59.95	B
TR-1000-10	1kW 30m	£61.95	B
TR-1000-7	1kW 40m	£64.95	B
TR-1000-3.6	1kW 80m	£73.95	B

German Made High Quality Baluns

HB-1-200	1:1 3.5 - 30MHz 200W	£25.95	B
HB-4-200	4:1 3.5-30MHz 200W	£25.95	B
HB-6-200	6:1 3.5 - 30MHz 200W	£25.95	B
HB-1-1	1:1 3.5 - 30MHz 1kW	£34.95	B
HB-4-1	4:1 3.5 - 30MHz 1kW	£41.95	B
HB-6-1	6:1 3.5 - 30MHz 1kW	£41.95	B

Remote 4:11.5kW Balun

REM-BAL	For coax to ladder line match	£45.95	B

Patch Leads

WPL-70	V low loss 75cm PL-259	£6.95	A
WPL-50	Standard 50cm PL-259	£2.99	A
WPL-50BNC	BNC version of above	£2.99	A
HQ-66	66cm RG-213 PL-259	£4.99	A
HQ-10m	10m long PL-259	£14.99	A

SGC External Auto ATU's

SGC SG-231

1 - 60MHz. 3 - 100W pep (50W CW). Min wire length, 7m. 50 Ohm feed. Needs 12V at approx 900mA.

£349.95 C

SG-239 £189.95 C
Mini auto ATU 1.8 - 30MHz 1.5 - 200W PEP primarily for long wires - non waterproof. 12V DC

SG-231 £349.95 C
1.8 - 60MHz 100W PEP. A great random wire tuner that you can use outdoors. 12V DC

SG-237 £299.95 C
1.8 - 60MHz 100W PEP. Great for mounting outdoors and feeding long wire. Waterproof. 12V DC

SG-230 £339.95 C
1.8 - 30MHz 200W PEP. The original design that handles end fed or coax unbalanced. Waterproof. 12V

SG-235 £749.95 C
3.5 - 54MHz. A hunky 500W PEP tuner that handles long wires. Great outdoor design. Waterproof.

Icom External Auto ATU's

AH-3 £479.99 C
1.8 - 28MHz. A hunky 120W PEP tuner that handles whips or wire longer than 2.5m. Waterproof.

Alinco External Auto ATU's

EDX-2 £289.95 C
1.8 - 30MHz 150W long wire tuner designed for use with DX-70 transceiver. Waterproof.

MFJ Internal Auto ATU's

MFJ-993

*Auto ATU with digital data display *1.8-30MHz *Long wire, coax & balanced line *300W SSB, 150W CW *Cross needle metering

£209.95 C

MFJ-991 £179.95 C
1.8 - 30MHz auto ATU. Similar to MFJ-993 but no digital display. Works with any HF transceiver. 150W PEP

MFJ-994 £299.95 C
1.8 - 30MHz high power auto ATU. 600W PEP / 300W CW. Tunes wire, coax and balanced feed.

SGC Internal Auto ATU's

MAC-200 £259.95 C
1.8 - 60MHz 200W PEP. Wire, coax and balanced feeder. Features auto antenna switching.

SG-237PCB £279.95 C
1.8 - 60MHz 100W PEP. Same as SG-237 but without housing for building into your own housing.

SG-211 £189.95 C
1.8 - 60MHz works off internal dry cells. Zero drain wait state. 60W PEP. Ideal for portable (Min 1W).

Yaesu Internal Auto ATU's

FC-20 £249.95 C
1.8 - 60MHz 100W matched for FT-100/Ft-847. Desk top unit to match transceivers. Coax systems only.

FC-30 £249.95 C
1.8 - 60MHz 100W. Designed for use with FT-857/FT897. Coaxial input / output.

FC-40 £239.00 C
1.8 - 60MHz 100W. New waterproof ATU designed for use with FT-897 / FT-857 and mobile operation.

Icom Internal Auto ATU's

AT-180 £349.95 C
1.8 - 54 MHZ ATU designed for IC-706. Plugs directly into transceiver for seamless operation. Coax only.

Kenwood Internal Auto ATU's

AT-50 £319.95 C
1.8 - 30 MHZ 100W ATU specifically designed for use with TS-50 transceiver. Coaxial only.

Cushcraft HF Antennas

MA5V £239.95 C
Vertical 5-band 20m - 10m. No separate radials needed. 250W. Self-supporting. 4.48m tall.

A3-S £469.95 D
The classic 20, 15, 10m 3-el beam. 2kW 8dB gain. 8.45 el. Turn radius 4.72m. F/B ratio 25dB.

A3-WS £379.95 D
Dual Band 3 el. beam for 17m & 12m. 2kW. El length 7.66m. Turn radius 4.4m. Gain 8dB. F/B ratio 25dB.

A4-S £569.95 D
Tri-band 4 element Yagi. for 20m - 10m. DXers delight. 2kW . 8.9dB gain F/B 25dB. Turn radius 5.49m

R-8 £469.95 C
8-band vertical 40m - 6m. No separate radials needed. 1.5kW. Height 8.7m

R-6000 £329.95 C
6-band vertical 20m - 6m. No separate radials needed. 1.5kW. Height 5.8m. Great small garden ant.

MA5B
£369.95 C

5-band 2 El mini beam. 20m - 10m 2kW. Elements 5.2m Turn radius 2.7m. (Dipole on 17/12m) 5dB gain

Diamond HF Antennas

DIAMOND CP6

Covers five popular HF bands and the 6m band. Low angle radiation makes it ideal for DX work. Outperforms dipoles for long distance contacts and compares favourably with beams located 10m+ above ground.

*Bands: 3.5 -50MHz *Power: 200W *VSWR: Better than 1.5:1 *Socket: SO-239 *Height: 4.6m *Radials: 1.8m rigid adjustable

£239.95 C

Radio Works HF Antennas

CW-160 £129.95 C
8-band 160m - 10m dipole with 22ft vertical radiating feeder. 1.5kW. Balun fed. 265ft long.

CWS-160 £119.95 C
Compact 8-band 160m - 10m dipole with 22ft vertical radiating feeder. 1.5kW. Balun fed. 133ft long.

CW-80 £89.95 C
7-band 80m - 10m dipole with 22ft vertical radiating feeder. 1.5kW. Balun fed. 133ft long.

CWS-80 £109.95 C

Compact 7-band 80m - 10m dipole with 22ft vertical radiating feeder. 1.5kW. Balun fed. 133ft long.

G5RV Plus £59.95 C

Rugged 2kW balun matched G5RV with 102ft element and 31ft ladder line. Requires ATU. Made in USA

Hustler Base Antennas

6-BTV £229.95 C
80 - 6m 6-band vertical. 7.3m tall 1kW. Can be used at ground level with earth stake. Ideal small gardens

5-BTV £199.95 C
80 - 10m 5-band vert. 7.64m tall 1kW. Can be used at ground level with earth stake. Ideal small gardens

4-BTV £169.95 C
40 - 10m 4-band vert. 6.52m tall 1kW. Can be used at ground level with earth stake. Ideal small gardens

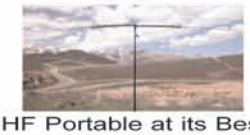
Butternut Antennas

HF-2V £229.95 C
80 / 40m high performance vertical. 1kW PEP 9.75m tall. Self supporting for ground mount use.

HF-6V £299.95 C
6 band vertical 80-40-30-20-15-10m. 2kW. 7.9m tall. Use own radials or ground mount.

HF-9V £349.95 C
9-band 80 40 30 20 17 15 12 10 6m vertical 1kW 7.9m tall. Use radials or ground mount

Buddipole Products



HF Portable at its Best

W3-BP £199.95 B
40m - 2m adjustable dipole. 250W and max length of 4.65m. Packs down to 65cm approx.

W3-MBP £199.95 B
Sames as W3-BP but packs even smaller.

W3-BS £134.95 B
40m - 2m vertical is half a Buddipole. Ideal for QRP and rucksack - as used by Peter Waters G3OJV.

Peter Waters says: *I think these products are great. Superbly engineered and very efficient.* Options include adaptor for dipole to decorators pole £6.95, Field tripod £89.95, 2.45m telescopic mast £49.95, mini tripod for Buddistick.

Super Antennas

MP1-SA £139.95 B
Screwdriver style adjustable HF QRP whip 40m - 70cm. 150W PEP. Max extended 185cm approx

MP2-SA £199.95 B
Electrically tuned version of the above. Requires around 9V - switch control box not included.

MP-80M £29.95 A
Add on 80m coil to extend the LF coverage of the MP1 and MP2.

High Sierra Mobile Whips

HS-1800/PRO
£379.95 C
The ultimate mobile whip. Electrically tuneable 80m - 6m 1kW PEP Includes switch box and 12V cable. Massive 2" coil. Made in USA. Superb!! Available in Black or Grey.

SIDEKICK As used by Peter Waters G3OJV/M
£249.95 C
Get mobile on all bands from 80m to 6m in minutes. This compact screwdriver antenna comes with cables and control box. Designed to go on our 3-way magnetic mount (£39.95 extra) it is an amazing performer and only 1.37m maximum! Available in Black Only.

Carriage Charges: A=£3, B=£6, C=£10

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Listen to the Future

High-end radio technology doesn't mean a high-end budget anymore — Kenwood delivers it today with the TS-570DG. With 16-bit DSP technology, untouchable digital filtering, heavy-duty transmitter design, a Central Frequency Control System for near-perfect stability, and a large LCD display section coupled with an ergonomically-optimized human interface, the TS-570DG provides a clean and powerful operating experience. All of this wrapped up in a compact and efficient package makes the TS-570DG the perfect choice for home or mobile operating.

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HF ALL-MODE TRANSCEIVER

TS-570DG

100W Model

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- 13.8 volts operation

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e-mail comms@kenwood-electronics.co.uk

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Cover subject

It must be British summer time - it's raining! On this occasion though it was handy that it was raining, as it meant that **Richard G0RSN** could really test out just how waterproof the Yaesu VX-6E was. It turned out to have better weather protection than Richard! Find out more by reading his review. There's also lots of offer this month so, settle down and enjoy!

Design: Steve Hunt
Main Photograph: Diane Newton

october features

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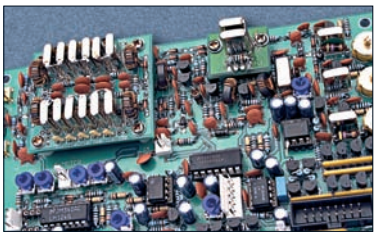

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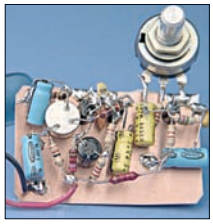

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october regulars

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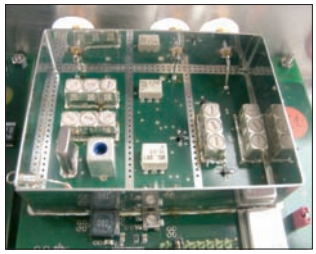

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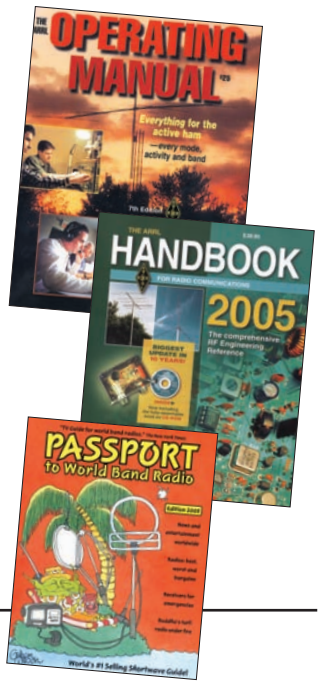
book store

Page 60 - The biggest and best selection of radio related books anywhere!



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practical wireless services

Just some of the services *Practical Wireless* offers to readers...

Subscriptions

Subscriptions are available at £33 per annum to UK addresses, £41 Europe Airmail and £50 RoW 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. See page 72 for details.

Placing An Order

Orders for back numbers, binders and items from our Book Store should be sent to: **PW Publishing Ltd., Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling. Credit card orders (Access, Mastercard, Eurocard, AMEX or Visa) are also welcome by telephone to Broadstone **0870 224 7830**. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Broadstone **0870 224 7850**. The E-mail address is **clive@pwpublishing.ltd.uk**

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.

rob mannion's keylines

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

I enjoy the solitude and the lack of EMC problems when working /P from a hill top. Whether it be on h.f. or v.h.f.- it's a great way to enjoy Amateur Radio. Of course, we're not usually really alone when we operate outdoors in this way because (hopefully!) we end up chatting to friends all over the country and perhaps around the world on h.f.

Despite enjoying the adventure, complete with the variable weather experienced in this group of Islands - how often do we think about safety? Not very often I fear and my own lack of safety precautions was clearly demonstrated during the last *PW* 70MHz activity afternoon, Saturday 30 July, when my portable mast fell on me!

Working alone has its pleasures and drawbacks. Unfortunately, for me the drawback was when my portable mast - a 5.5m (18ft) aluminium alloy scaffold pole, plus a short stub mast - fell on me when I slipped when raising it. I wasn't hurt much but my pride was truly dented and while trying to get up off the ground I realised just how silly and avoidable the incident had been!

My favorite /P site is on a triangle of grassy ground just off a busy B road, at a junction, which provides access to the road leading to Compton Abbas Airfield. It had been raining steadily and the grass was slippery, the mast equally so. The disaster struck when I had the mast set into the Tenna-Tourer drive-on mast base, at about 45°. I'd attempted it in one movement, whereas I normally use a pair of folding props joined with a bolt. Normally I open out the two legs and crutch support the mast above ground level, to allow assembly of the antenna and erection of the mast.

I slipped, and the mast came crashing down on my back and my left shoulder, partly demolishing the Sandpiper 3-element 70MHz delta beam. My problems then really began because of my arthritis, sheer bulk and having only one arm to pull myself upright. Passing motorists were probably amused to see what must have looked like a large three-legged bearded bear crawling through the wet grass!

In fact, I was still trying to find the strength and will to pull myself upright when a car drew up alongside me on the road. Because the grassy strip my car was parked on was above road height, my head was about level with their door. The window lowered and a head popped out - the person behind the glasses seemingly completely oblivious that the man she addressed was on all threes. I heard the enquiry; "Is this the way to Compton Abbas Airfield please"? I replied "Yes" - and they drove off without a backward glance!

I was still wondering if they thought it was odd to see a middle aged, one-armed man crawling along when I managed to pull myself up. After a restorative cup of tea from the flask I had enough energy to re-rig the Sandpiper 3-element delta beam. As the director loop wire was well and truly shredded by the fall, I had to rig it as a driven element and reflector array. It performed well and I worked into Wales on s.s.b.

Over an hour later than planned I called on 70MHz and fortunately many *PW* friends had waited patiently. There was some concern about my accident, but at the time I thought only my pride had been dented. However, I slowly stiffened up over the next few days and had to rely on even more liberal applications of Voltarol Emulgel than usual to keep me going! (Thanks for your kind help **Tex G1TEX**).

Safety First

The painful lesson I've learned is that **we must always put safety first,** especially when we're operating alone. When working with portable masts - take care! Watch out for any hazard - particularly if you are in unfamiliar territory. And perhaps most importantly when erecting a mast - ensure you are well clear of overhead power lines. Don't forget a Radio Amateur was killed in recent years when erecting a portable antenna system, after it touched an overhead line.

Activity Afternoons

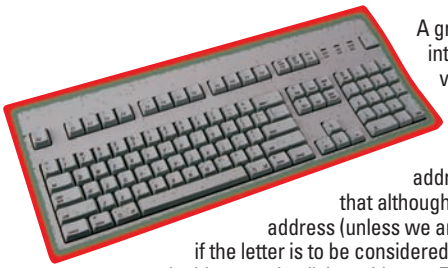
Despite the accident, I thoroughly enjoyed the Activity Afternoon on 70MHz. I'm now aiming to be /P on the air on 70MHz for several hours after 1200 hours (clock time) on the last Saturday of each month. This is the easiest time for me, as work on *PW* will have been completed. So, I look forward to working you - from a proper sitting position - not in the grass!

Rob G3XFD

amateur radio waves

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**

Topical Talk & RSGB

● **Dear Rob**

Having bought *Practical Wireless* for a great number of years now, I was particularly interested in two items in the July 2005 edition; your article in Topical Talk, especially with reference to long letters and the Guest Keylines by **Peter Kirby G0TWW**.

Regarding long letters: The length of a letter is determined by how much explanation is necessary to put over the main theme, being concise does not mean that the letter has to be cut to a couple paragraphs, it could take a whole page, or even more, of *Practical Wireless*. The Editor then has to decide whether it's important enough to be printed in its entirety.

The next point is the article by Peter Kirby G0TWW who, as stated in the magazine, is the **General Manager of the Radio Society of Great Britain**. I became involved in the RSGB - but not as a full member - just over 40 years ago when I was a listener. I went in for and passed, both my written and Morse examinations, and got my ticket. By this time, my membership to the RSGB had elapsed.

A few years later, I was pressed by some of the local Amateurs to rejoin the RSGB, pointing out the extra benefits open to me now that I was licensed. So I applied. I received no answer, bearing in mind that my address had not been changed since my previous membership. I let it slide for a few years then decided to have another try - the result was the same, not even an acknowledgement. To say that I was annoyed is a gross understatement.

After a few more years, and being a person of true grit, I applied once again. Again, nothing arrived from the RSGB. I think that any person would agree with me that 30 years of silence from the RSGB is a no vote for the flagship of a society, which supposedly has the interests, not only of licensed operators, but also of the short wave listeners at heart. I decided to call it a day with the RSGB. But was this a sign of uneven times to come?

Observing the demise of Amateur Radio over the years, it did not come as a surprise to me when things began to go badly wrong. Cracks appeared with the use of bad language, not only on the repeater frequencies but also on the simplex channels. But this unforgivable language is now heard by everyone, including women and children. What a disgraceful example of the English language is being portrayed to the younger generation who are trying to set foot on the ladder of Amateur Radio. And what has happened to the repeaters with their constant misuse?

The main topic of conversation these days is banal and reduced to computers and antennas. But thankfully, on a few isolated occasions, the wider subject of radio is brought up.

I was even told by one member of the RSGB that this was the way forward! Perhaps he would like to look up the word retrograde. He even had the audacity to ask me if I wanted an application form to reapply for membership to the RSGB!

I hope that the RSGB listens to all the adverse comments put out almost every day on the air, as I do. They should not just heed to a select few who sit around a table in their ivory towers.

So, before outlining the 'benefits' of the RSGB, I suggest that Peter Kirby puts his own house in order (the RSGB, of course) by making the Amateur Radio movement the once proud hobby that it used to be. Failing that, there could always be complete deregulation of the Amateur Radio whereby it could then be free for all.

Ron Hague
Barnsley
Yorkshire

Editor's note: From this issue the correspondence on the RSGB 'Grim Reaper Advert' and Peter Kirby's Guest Keylines is closed. I thank everyone for their input into the important debate.

Kernow Kalling!

● **Dear Editor**

In West Cornwall the **Trewellard Radio Group (M0TRG)** is unique in that the club shack is located at Tin Mine!

A few times each year the members activate the special event call **GB2TIN** but in October this year they will be operating as **GB4BOT – "Battle of Trafalgar"**. (20 - 30th October).

It is generally accepted that the news of the victory at Trafalgar and Nelson's death first reached these shores at Falmouth. "Not so", say the Burghers of Penzance who claim that distinction for their town!

The full story is recorded on the reverse of the GB4BOT QSL card. Listen for them, especially on Friday 21 October, the 200th anniversary of the 'Battle'.

Thanks for a great mag! Andy 'the light'!

Andy Bluer G3UUZ
Penzance
Cornwall

Editor's comment: Nice to hear from you Andy 'the light' in Kernow (Cornwall)! For those readers who may not know Andy was a very active Radio Amateur who served in the Lighthouse Service for many years and received a deserved Honour for his dedication. Good luck to GB4BOT.

Missed the Kit Point

● **Dear Rob**

I believe **Tony Jaques G3PTD** has missed the point completely (*PW* Aug 05). The articles written by Messrs **Tony Nailer G4CFY** and **Tim Walford G3PCJ**, provided readers with the opportunity to construct projects in the knowledge that a complete kit of parts was available and where necessary backed up by technical support for any queries that may arise.

I applaud your efforts to obtain good constructional articles for *PW* and long may you continue to develop and expand this thinking to other suppliers of kits in the future.

In attempting to achieve a balanced publication for your readers you say there are times when there is no balance of opinion. Should this prove to be the case with these articles, the overwhelming support you have will more justify your actions. Mr. Jaques represents a very small minority. I believe his views are contrary to the positive aims and objectives that *PW* have established over many years.

My thanks to all at *PW* for a really splendid practical magazine. Kind regards

Tony Watkiss
Cardiff
South Wales

Editor's acknowledgement: Thank you for the support Tony. I also acknowledge the kind support from many other readers on this subject. However, I should mention that Tony Jaques wrote his original letter in a polite way, without malice to express his opinion and I thank him for his original letter. The new approach will form part of my *PW* talks on Friday and Saturday at the Leicester Show in September. I look forward to meeting readers there. (Thanks to the LARS organisers for the invitation)

Keeping AM Alive

● **Dear Rob**

I applaud the aim of keeping amplitude modulation (a.m.) alive, but I am worried about the chosen frequency on 144MHz. It seems that the a.m. group has inserted itself into the 2 metre band plan without either considering or consulting any other users. Surely the days of band planning by fait accompli are long gone?

The immediate problem is the great popularity of SSTV. The calling frequency for SSTV is 144.50MHz and (I would hope)

people QSY h.f. in search of an open channel. This, by the way, is currently done in 25kHz steps, and from memory this segment is subject to a bandwidth limit of 20kHz, though perhaps that needs to change with such pressure on this band segment

Since the SSTV people use frequency modulation (f.m.) for speech they will be unaware of weaker a.m. stations, probably regarding them as one of the plethora of 'birdies' that infest 144MHz today (I have an average of over 50 birdies capable of lifting the S meter between 144.200 and 144.400MHz of an evening.) Any a.m. station finding themselves being walked all over by f.m. stations with SSTV should be aware, therefore, that the QRM is inadvertent and without malice. As there is the potential for conflict in the current situation, and since the a.m. movement is not negligible and is growing, I think the RSGB needs to address the need for a band segment devoted to this mode. The problem then will be of making Amateurs in general aware of any changes. Incidentally, I write this with a wry smile on my face: last night in the early evening there was more f.m. activity in the beacon sub-band (144.400 - 144.500) than there was in the simplex channels above 145MHz. Why on earth do they do it?

Brian Carter G8ADD
Hall Green
Birmingham

Editor's comment: I've invited keen exponents of a.m. on 144MHz to reply to Brian's concerns and encourage anyone with an opinion to get writing!

Heritage & History

● **Dear Rob**

Having just received *PW* September I'm writing to say I particularly enjoyed the Heritage & History article. Thank you very much.

I think I've written to you previously about visiting my paternal grandmother in West Ayton, near Scarborough, from whose house I could see the Chain Home masts at RAF Staxton Wold, and I remember them being dismantled. There is now just a huge rotating radar scanner visible.

I've also seen the remains of the Marconi station at Caernarfon, it's now a country pursuits centre; and there are also a few large concrete foundation blocks at Braich y Pwll on the Lleyn Peninsula, just opposite Bardsey Island. They might be of a radio station and masts, but I have never heard of one being sited there.

You mentioned **Sefton Delmer** in your article, and the Black Propaganda programme he oversaw. I have an ex-library copy of *Black Boomerang*, which he published in 1962, some of which subject remained secret long after his book was published. The work they did is now decried, but I believe it was very valuable at the time. Regards

Geoff Theasby G8BMI
Sheffield
South Yorkshire

● **Dear G3XFD**

This is to say how much I enjoyed reading your very interesting Heritage & History story in the September issue of *PW* magazine. I think you are doing a great job and am looking forward to reading future articles on this subject.

I was involved in GPO/BT HF TX maintenance and operations throughout my 43 years working life, 23 of which were spent at the well known world-wide maritime "Portishead radio" station and I'm wondering if you are intending to mention it in a future article, if so, I may be able to help with a brief history of that station from 1927, when the first services started until 1978 when the station finally closed. The site has since been developed into a housing estate and there is no real evidence that an important communication link with ships at sea worldwide ever existed there. That's progress! Incidentally, I knew **Stan Brown G4LU** and have great respect for him - for a while I was one of his many underlings!

Amateur Radio wise, I've been QRT since March 1949 until March this year. So I find it wonderful to hear and QSO with so many extremely competent Morse operators. Music to an old uns ears'! I look forward to receiving my *PW* magazine. All the very best, 73s

Rex Gowing G3BNP
Witney
Oxfordshire

Editor's comments: Thank you Geoff and Rex - pleased you both enjoyed the introductory article,. This month's article with Stan G4LU and John EI7IQ is fascinating too! We've got some exciting things in store - so watch this space. Thank you to the many readers who've been in contact - your encouragement is much appreciated by everyone here. Rob G3XFD.

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.

September 11
The Lincoln SWC Hamfest
Contact: **Roger**
Tel: **(01522) 693848.**
Website: **hamfest2005@mail.com**
The Lincoln SWC Hamfest will be held at the Newark Showground, at jn of A46, A1 and A17 at Newark, Nottinghamshire. Doors open at 1000. There will be all the usual rally favourites, plus craft, classic cars and possibly a fly-in by a Second World War Auster V reconnaissance plane.

September 18
Great Northern Hamfest
Contact: **Ernie Bailey G4LUE**
Post: **8 Hild Avenue, Cudworth, Barnsley, South Yorkshire, S72 8RN**
Tel: **(01226) 716339 or (07984) 191873 between 1800 & 2000**
The South Yorkshire Repeater Group will be holding the Great Northern Hamfest today. This is a move from its usual November slot. The rally will take place in the Metrodome Leisure Complex, Queens Road, Barnsley, South Yorkshire, Doors open at 1100, 1030 for disabled visitors. The leisure complex is in the town centre and is less than two miles from junction 37 M1 motorway, five minutes walk from train and bus station, (follow the brown Metrodome signs from all directions). The venue is on one level with excellent disabled facilities. Features will include all the usual trade stands, component and specialist interest groups and a large Bring and Buy. Plus tables allocated to Radio Amateurs to sell their own equipment at a nominal charge.

***September 30/October 1**
Leicester Amateur Radio Show
Contact: **Geoff G4AFJ**
Tel: **(01455) 823344**
Website: **www.lars.org.uk**
The Leicester Amateur Radio Show will be held at the Donington International Centre, Castle Donington, Leics, close to junctions 23A and 24 of the M1. Doors will be open from 0930 to 1530 on Friday and 0930 to 1630 on Saturday. (Look out for the PW Publishing stand where there will be some great offers).

October 7/9
The RSGB HFC2005
Website: **www.rsgb-hfc.org.uk**
The RSGB HFC2005 will be held at Gatwick Worth Hotel, Crabbet Park, Turners Hill Road, Crawley, West Sussex RH10 4ST. There will be multiple lecture streams covering topics from l.f. to v.h.f. with sessions aimed at beginners, improvers as well as the more experienced. There will be a large bar and lounge area in which to mingle with the other delegates.

October 9
Blackwood & DARS Rally
Contact: **George 2W1JLK/Dave GW4HBK**
Tel: **(01495) 724942/(01495) 228516.**
The Blackwood & DARS are holding their rally at the Newport Centre, Newport. Newport Centre is one mile from J25A of the M4 (J26 travelling west to east). Doors open 1030 for disabled visitors and 1045 for everyone else. There will be the usual attractions, including trade stands, special interest groups, Bring & Buy, talk-in on S22, prize draw, catering and bar facilities. Entrance fee is £1.50.

October 9
Exeter ARS Rally/Table-Top Sale
Contact: **Steve Webber M3WRS**
Tel: **(01392) 498934/495690**
The Exeter Amateur Radio Society are holding their Rally/Table-Top Sale at the Moose Hall, Spinning Path, Blackboy Road, Exeter. Entrance is just £1 and tables are £10. Doors open 1000 till 1500.

October 9
Great Lumley AR & Electronics Society Rally
Contact: **Nancy Bone G7UUR**
Tel: **0191-477 0036**
Great Lumley Amateur Radio & Electronics Society Rally will be held at Great Lumley Community Centre, Front Street, Great Lumley, near Chester le Street, County Durham - just off the A1(M). Doors open 1030. There is free parking plus easy access as well as good, inexpensive food and drink. There will be a Bring & Buy in two sections - junk and good buys. Admission £2, free of charge to under 14s accompanied by an adult.

*** PW Publishing Ltd. will be in attendance.**

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.

amateur radio news & products

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

New Icom High Power Hand-Held!

The latest offering for the UK market from the Icom stables has just been announced - The IC-V82.

The IC-V82 offers 7W - packaged in a v.h.f. hand-held transceiver with the option of digital capabilities. The introduction of an optional UT-118 digital unit provides users not only digital voice and data communication with other compatible IC-V82 and IC-2200H v.h.f. mobile units, but position exchange as well.

In their press release Icom state that the IC-V82 features a durable, modern design and is an ideal transceiver for newcomers to Amateur Radio or those users seeking an easy-to-use 144MHz handportable. The IC-V82 has a five character alphanumeric l.c.d. to show a variety of functions including S-meter, output power, power save, key-lock, tone and duplex.

The IC-V82 has 207 memory channels complete with the capability of programmable features for each, such as subaudible tone encoding, tone squelch, repeater offset and the ability to give channels names for easy identification.

Perhaps the most exciting new feature of the IC-V82 is its digital capability.

These features include:

* Position exchange that allows the exchange of information with other stations when connected to an external GPS receiver (NMEA 0183 format) and computer.

* Callsign function that displays your callsign and the received callsign in each transmission.

* Callsign squelch giving you the option to choose an incoming call selected by callsign.

The suggested retail price of the IC-V82 is £176.19 (inc.VAT). The price includes a charger, rechargeable NiCd battery, antenna, belt clip, comprehensive handbook and two-year warranty. A comprehensive list of accessories is also available.

Look out for a review of the IC-V82 in next month's *PW*, which is on sale on 13 October.

For more information on the IC-V82 or any of the Icom range of radios contact:
Icom (UK) Ltd,
Unit 9 Sea Street,
Herne Bay,
Kent CT6 8LD.
Website: www.icomuk.co.uk

Annual General Meeting of RAOTA

The Radio Amateur Old Timers' Association (RAOTA) will be holding its AGM during this year's Leicester Show.

The AGM will take place on Friday 30 September at the Tudor Inn in Castle Donington. Starting at 1300 hours there will be the option of a buffet lunch. These arrangements have proved very popular for RAOTA's last few AGMs and so the committee are certain that this year's AGM will be another popular, enjoyable and friendly event.

The Tudor Inn is just a couple of miles from the Leicester Show and transport will be provided for anyone who needs it. The Tudor Inn can also provide overnight accommodation for RAOTA members who wish to stay for both days of the Show. If you wish to book you should contact the Tudor Inn directly on **(01332) 810875.**

There will be the usual RAOTA stand at the Leicester Show and visitors to the show should bear in mind that the stand maybe closed on the Friday afternoon if all of its staff are attending the AGM.

The aim of RAOTA is to maintain the pioneer spirit and traditions of Amateur Radio. Membership is open to anyone (licensed or listener, young or old) who shares the aim of RAOTA. For details on how to join contact:
Edward Rule G3FEW, 15 Norwich Road, Lenwade, Norwich NR9 5SH
Website: www.raota.org
E-mail: edit@raota.fsnet.co.uk
Or make sure you visit the stand at the Leicester Amateur Radio Show on Friday 30 and Saturday 1 October.

ISS Repeater Switched On

The International Space Station cross-band or u.h.f./v.h.f. f.m. voice repeater has recently been switched on.

The downlink is 145.800 f.m. ±3kHz doppler shift and the uplink is 437.800 f.m. ±10kHz doppler shift. Please bear in mind that the crew members John and Sergei may be listening and pick-up the microphone to talk to you.

The *ISS* repeater can be worked with very simple equipment. To receive it on 145.800, an f.m. hand-held with a quarter-wave whip is all that's required. On 430MHz you need to be able to transmit about 2 or 3W f.m. into a quarter-wave whip

To find out when the *ISS* is within range go to the Online Satellite Predictor at **www.amsat.org/amsat-new/tools/predict/** Select Show Predictions for *ISS* and enter your approximate Latitude and Longitude co-ordinates or IARU QTH Locator.

Send all your news and club info to Donna Vincent G7TZB at the PW editorial offices or e-mail donna@pwpublishing.ltd.uk

Icom UK Support Battle of Trafalgar Celebration

In commemoration of the bi-centenary anniversary of the Battle of Trafalgar, Icom will be supporting a special event station, which is being run by the Cray Valley Radio Society.

The battle of Trafalgar is considered by many as one of the most decisive naval battles, both tactically and strategically, in history. It not only eliminated Napoleon's plans to invade England, but also destroyed French naval power and ensured the dominance of the British Navy throughout the world.

The Cray Valley Radio Society (CVRS) are hosting a special event station to commemorate the bi-centenary of the battle, with Icom supporting the event by providing some of the main operating systems. The station will operate from the National Maritime Museum at Greenwich, South East London for an eight day period from Monday 17 to Monday 24th October 2005.

Icom UK Ltd. will be providing four base radio stations for the event, which will include the latest models to the range, the IC-7800 and the IC-756PROIII, as well as the IC-7400 and IC-910H. They will also be supplementing their sponsorship by providing a 'hands-on' exhibit of the latest marine communications equipment.

The special event station to commemorate the bi-centenary of the Battle of Trafalgar is to be held at the National Maritime Museum in Greenwich, London

The Cray Valley Radio Society is no stranger to high profile special event stations. The club manned the highly successful Millennium special event station (M2000A), making 48 000 QSOs in two months. A further 24 000 QSOs were made in 10 days for HM Queen Elizabeth II's Golden Jubilee in conjunction with the Radio Society of Great Britain and the Burnham Beeches Radio Club in 2002 (GB50). Icom were proud to sponsor both of these stations too. This time the club expects to make at least 10 000 QSOs during their eight day period of operation.

During the event the club will be active on all bands from 3.5-430MHz on s.s.b., c.w. and digital modes using the Icom transceivers and an Acom 1010 linear amplifier loaned by Vine Antenna Products. Operation will be from 0800 to 2200 hours daily. At the time of going to press (August 2005) the Cray Valley Radio Society were still waiting for a special event callsign to be issued.

The National Maritime Museum will be open to the public from 1000 to 1700 hours daily and entry will be free. Visitors will be able to see Amateur Radio first hand and interact by passing a 'greetings message'. The Royal Naval Amateur Radio Society (RNARS) will be providing a static display.

There will be an award scheme for those contacting the station. Full details will be available through a specially designed website (to be announced). Special QSL cards will be available from the CVRS QSL Manager, **Owen Cross G4DFI.**

The members of CVRS will not be alone in celebrating the bi-centenary as the RNARS will be active using the callsign **GB200RN**. There will also be Trafalgar activity from **GB2OOT** at HMS *Belfast,* moored on the River Thames at London Bridge. In addition **ZB2TRA** will be operating from Gibraltar at the same time as CVRS.

So, listen out for the celebrations taking place and keep an eye on these pages for details of the special event callsign and website address announcements.

Attention! Past & Present Members

Calling all past and present members of the West Bromwich Central Radio Club.

The West Bromwich Central Radio Club (WBCRC) are calling all past and present members of the club (1980-2005) to join them on Saturday 1 October 2005, to celebrate their 25th Anniversary. A reunion will take place between 1200 and 1800 at the Horse & Jockey, located between Stoney Lane and St Clements Lane, West Bromwich, not far from Dartmouth Park.

So, if you are a lapsed or potential member, WBCRC would like to hear from you to make or re-make your acquaintance and hopefully find out what you have been up to in recent years. You may have news about other members who have lost touch over the years for a variety of reasons or just be curious to find out more yourself.

In order to make proper arrangements regarding numbers, if you are able to attend the reunion, please contact **The Secretary, Ian Leitch G0PAI** via E-mail: **info@gx4wbc.co.uk** or **Tel: 0121-561 2884**, no later than Sunday 18 September.

The Great Erg Race

Please note that the forthcoming Great Erg Race has had to be postponed.

Owing to a change of venue and the necessary relocation of equipment, the Verulam Amateur Radio Club has found it necessary to postpone The Great Erg Race until spring 2006. This relocation also means that details of regular club meetings are not as previously published.

Contact: **Norman (07773) 628 912**, **Ralph (01923) 265 572** or **E-mail: g1bsz@aol.com** for up-to-date information.

Torbay Echolink

The Torbay Echolink has a new callsign, MB7ITB.

The Torbay Echolink is run by **Bob G0AZX** and can be found on 145.2875MHz in locator. IO80F. It operates between 1000 - 0000hours. The success of the links with G0AZX is aided by **G7HIK**, **G3PCT** and **G3VOF.** A fact sheet about the MB7ITB echolink station and how to use it is available from Bob G0AZX by E-mail at **bobazx@blueyonder.co.uk**

Fifty Years of the GB2RS News Service

The Radio Society of Great Britain (RSGB) is planning to celebrate the 50th Anniversary of the GB2RS News Service, which was launched originally on Sunday 25 September 1955.

The RSGB have obtained the agreement of Ofcom that newsreaders may use the callsign **GB50RS** immediately before and/or after they read the GB2RS news on Sunday 25 September 2005 and on the five following Sundays the 2, 9, 16, 23 and 30th October, after which the special event callsign, GB50RS will expire.

Ofcom have agreed that each operator who is reading the news on one or more of these days may use the call sign GB50RS during a pre-news or after-news net. Once the pre-news net comes up to the news reading time, the operator will change to the regular broadcast-only callsign GB2RS in the normal way.

After the news reading, the operator may then adopt the communicating callsign GB50RS in order to conduct an after-news net. If it is appropriate to conduct the after-news net on a different frequency, in order to avoid clashing with a following newsreader, then the newsreader who QSYs may continue to employ the callsign GB50RS until the after-news net terminates. Once this happens the newsreader must revert to his/her personal callsign. This is an unusual facility that the RSGB have been granted, because it means that at certain times there will be more than one newsreader using the callsign GB50RS - albeit on different frequencies. It is important that no newsreader of the day should meet up on the same frequency with another news reader - both using the callsign GB50RS.

If you would like the opportunity to use the GB50RS callsign, you must arrange with your colleagues in your news reading team that you will read the GB2RS news on one of the afore-mentioned Sundays. Newsreaders who are not reading the news on a given Sunday may not therefore use the callsign GB50RS on that day. It is hoped that there will be a greetings message from the RSGB patron HRH The Prince Philip, Duke of Edinburgh, KG, KT.

The RSGB are working on the design of a special 50th Anniversary Golden Microphone QSL card, which may be employed by news readers to acknowledge reception reports in respect of transmissions made using the GB2RS, the GB50RS or their own personal callsigns.

New Summits On The Air Association

A new SOTA Association was recently launched in Switzerland.

On 1 August 2005 Switzerland became a SOTA Association bringing the number of SOTA associations around the world to 13.

The first activation was carried out on Lagern HB/ZH-010 (866m a.s.l.), using the special callsign **HB9SGS/P** (SOTA Group Switzerland). The first summit-to-summit QSOs between Switzerland and a UK association were made by **Richard Newstead GW3CWI/P** and **Tom Read M1EYP** using **MC1SWL/P**, the club callisgn of the International Short Wave League.

Richard and Tom were activating Arenig Fawr GW/NW-011, 854m a.s.l., and the contacts were made on 7MHz s.s.b. using a Yaesu FT-817, 40W linear amplifier and an inverted-V dipole antenna.

Errors and Updates The PW Avon, PW August 2005 p33

The *PW* Avon transmitter project, published on pages 33-39 of the August 2005 issue of *PW* needs a few corrections to the component lists on p39. Refer to the list for Board 1 first where a full list of the fixed resistors is:

220Ω	1	R17
330Ω	1	R3, R16
820Ω	3	R4, R10, R12
1.5kΩ	3	R6, R7, R8
2.2kΩ	1	R15
4.7kΩ	3	R2, R9, R13
10kΩ	1	R11
15kΩ	1	R5
22kΩ	1	R1
68kΩ	1	R14

Now look at the component list for Board 2: amend the value of 55Ω to read 56Ω and add R13 to the list with R14. Add R4 against the list value of 10kΩ and remove the 56kΩ line entirely. In the list of capacitors, the decoupling capacitor C3, an 0.1µF disc ceramic was left out of the list.

Finally, on the overlay diagram of Fig. 3 on page 35 of the August issue, capacitor C18, 220pF, should be added in parallel with R15 in the top right hand corner of the p.c.b.

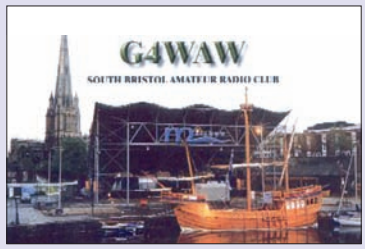
My thanks go to PW *reader Allen Collinge from Dublin for his help. I apologise for these errors.* **Editor**.

amateur radio clubs

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

BRISTOL

South Bristol ARC
Contact: **Len Baker**
Tel: **(01275) 834282**
Website: **www.sbarc.co.uk**



The South Bristol Amateur Radio Club meet on Wednesday evenings from 1930 hours a the Whitchurch Folkhouse, Bridge Farm House, East Dundry, Whitchurch, Bristol BS14 0LN. The club offer a varied programme of events for members to take part in, which includes: **September 21:** On the Air evening; **28th:** Old Domestic Radio's - working! **Sam Lowe M0DIL** demonstrates his collection of radio sets from the 1930s and 1940s and **October 5:** Computer & Software Clinic.

HAMPSHIRE

Andover Radio Amateur Club
Contact: **Terry Cull**
Tel: **(01980) 629346**
Website: **www.arac.co.uk**
Meetings take place at the Village Hall Wildhern, just North of Andover on the first and third Tuesday of each month at 1930hours. Forthcoming meetings you may like to go along to include: **October 4:** Interfacing HF Rigs by **G4UET** and **18th:** Fireworks By John Perry.

KENT

Hilderstone Radio and Electronics Club
Contact: **Ken Smith G3JIX**
Tel: **(01304) 813175**
Website: **www.g0hrs.org.uk**
The Hilderstone Radio and Electronics Club meet at the Hilderstone Adult Education Centre St.Peters Road, Broadstairs on the second and fourth Friday of the month at 1930 hours. Forthcoming meetings include: **September 9th:** Top band DF RX construction and **23rd:** Talk on communication in tunnels and leaky feeders!

STIRLING

The Stirling & District ARC
Contact: **Brendan GM0BWR**
Tel: **(01259) 761299**
E-mail: **gm0bwr@yahoo.com**
The Stirling & District Amateur Radio Club (SADARC) meet every Thursday night from 1900 until 2130hours at Bandeath Industrial Estate, Throsk by Fallin. The club holds the reputation as one of Scotland's premier Radio Contesting Clubs. The club's callsign is GM6NX. If you are interested in Amateur Radio, Short Wave Listening or Computing why not go along and meet up with fellow enthusiasts?

Technical FOR THE TERRIFIED!

If you wish to correspond regarding this article or previous ones subscribe to the list **pw-g4cfy-on@pwpublishing.ltd.uk** by sending a blank E-mail with the word subscribe in the subject box. When you receive confirmation from the server you can send an E-mail to **pw-g4cfy@pwpublishing.ltd.uk** and your comments will be answered by myself or the *PW* team.

In the previous articles in the series I've concentrated heavily on the manipulation of inductive and capacitive reactance and resonance. Each of these areas have involved much use of powers of ten and must have been quite demanding to the technically terrified!

This month I'm going to give you an easier time by considering how to run various devices which run on low voltages when the main supply is 13.5V d.c. This will require the application of Ohm's Law.

The diagram, **Fig. 1**, shows a composite circuit with three separate supply requirements, and three solutions.

Tony Nailer G4CFY says he's going to give you an easier time this month. Have a go - it's fascinating once you know how!

Supply Problem

The integrated circuit (i.c.), IC1, is the SA602 front-end mixer oscillator i.c. which requires a supply of 4.5 to 8V at a typical supply current needs of 2.4mA. However, in this case there's great flexibility with the actual voltage which can be anything between 4.5 and 8V. How about 6 or 6.5V? With 6V at the IC1 positive pin there will be 13.5V - 6V = 7.5V across R1.

Applying Ohm's Law:- $R = {}^{V}/_{I}$, R1 = 7.5/2.4mA
R1 = 7.5/(2.4 x 10^-3) = 7.5 x 10^4/2.4 = 3125Ω

If we choose 3.3kΩ then the voltage across R1 will be;
V = IR1 = 2.4 x 10^-3 x 3300 = 7.92V.
The IC1 will then have a supply voltage of 13.5 - 7.92 = 5.58V
If we choose 2.7kΩ then the voltage across R1 will be;
V = 2.4 x 10^-3 x 2700 = 6.48V.
The IC1 will than have a supply voltage of 13.5 - 6.48 = 7.02V.

The power dissipated in a 2.7kΩ resistor with 6.48V across it and 2.4mA passing through it will be 2.4 x 10^-3 x 6.48 = 15.5mW.

Either value of resistor can be used and it doesn't matter provided the supply is within the operating range. Capacitor C1 is required to provide a low impedance for signal currents at the operating frequency of the device. Choose a capacitive reactance of 1 ohm at the operating frequency then C = 1/(2 x π x f). Typical values could be 1nF to 100nF.

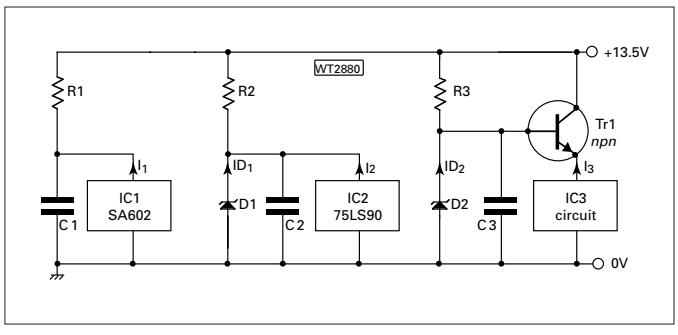


Fig. 1: A composite circuit with three separate supply requirements, and three solutions (see text).

Supply Problem IC2

Let's now consider IC2, which is a low power Schottky TTL i.c. used as a frequency divide by 2, 5 or 10. This device requires a supply voltage range between 4.5 and 5.5V at currents between 9 and 15mA.

In order to fix the voltage at around the middle of the supply range, a zener diode of 5.1V rating is used, so that if the i.c. doesn't need its full supply current the zener diode will absorb it. The minimum diode current ID1 should be about 4mA. Choose I2 to be the maximum 15mA. The total current flowing through R2 will then be 19mA.

With a 13.5V supply and 5.1V at the supply pin of IC2 there will be 13.5V - 5.1V = 8.4V across R2. Then R2 = 8.4V / 19mA = 442Ω, (use 470Ω). The power dissipated by R2 will be 19 x 10^-3 x 8.4 = 159.6mW.

If IC2 only draws 9mA then the zener will continue to hold the voltage at 5.1V and R2 will still have 8.4V across it. The current through R2 will still be 19mA and the zener will have 10mA flowing through it.

Capacitor C2 absorbs the noise created by the zener operation as well as supplying the transient currents of the logic device. Again it is chosen to be 1Ω at the maximum frequency the IC is working on. (Typical values would be from 10nF to 1μF).

Supply Problem IC3

Now it's on problem three. This application is for complex ICs or even several stages of a circuit where the change of current consumption may be greater than can be absorbed by a zener diode. Let the current I3 be 50mA minimum and 75mA maximum.

The voltage at the supply pin of IC3 has to be related to standard values of zener diodes minus the voltage drop between the base and emitter of Tr1 (V_{be}). Small signal transistors running low collector currents have a V_{be} typically 0.65V.

It is often assumed this is the same for high power transistors running high collector currents, this is a misconception. Power transistors running several amps collector current can have base - emitter voltages as high as 2V. Even a BC337 or a BFY51 running 75mA collector current may have a V_{be} of between 1.0 and 1.2V.

To achieve a supply voltage of about 9V on the supply pin of IC3 will require a zener diode of 10V. Allowing for a V_{be} of between 0.8 and 1.2V for Tr1 will give between 8.8 and 9.2V to IC3. Current variations from say 30mA to 100mA by IC3 will only result in a change of supply of up to 200mV to IC3.

If Tr1 is chosen to be BFY51 it will have a current gain factor of over 100 at a collector and emitter current of 75mA. This means that the base current will be less than 0.75mA.

Now R3 will have 13.5V at one end and 10V at the other, i.e. 3.5V across it. The base current of Tr1 is 0.75mA and the zener diode current ID2 is say 5mA, total 5.75mA.

$R3 = {}^{V}/_{I}$ = 3.5/5.75mA, R3 = 3.5/5.75 x 10^-3 = 608Ω Either 560 or 680Ω could be chosen. My choice is to give the zener a little more rather than a little less current so use 560Ω for R3.

The power dissipation of R3 will be P = VxI = 3.5 x 5.75 x 10^-3 = 20mW. The power dissipation of Tr1 will be (13.5 - 9) x 75mA = 4.5 x 75 x 10^-3 = 337.5mW. This is quite a lot of heat and though in most application it would not matter if Tr1 ran hot, in some applications it might be necessary to use a TO5 push-on 'crinkle' heat sink.

I hope that you now understand better how to determine the correct supply feeds for a variety of application and that you won't be too terrified to have a go yourself! **PW**

News From The Radio Society Of Great Britain

Just as this issue of *PW* was going to press (late August) the following statement was issued by the Radio Society of Great Britain.

Amateur Radio has its say!

The RSGB sums up the Licensing consultation inputs

The 18 August 2005 saw the end of one of the longest and most comprehensive consultative periods in the history of the Amateur Radio. Ofcom's consultation on a proposal to reform Amateur Radio licensing engaged the Amateur community not just with Ofcom's own consultation but also the targeted MORI consultation on the same subject, which Ofcom also commissioned. From the outset of the consultation, as the national organisation representing all UK Radio Amateurs, the RSGB's intention has been to ensure the maximum numbers of radio amateurs had their say in the future licensing debate.

The RSGB undertook a programme of public meetings right across the UK, some 15 in all starting in Northern Ireland on the 8 June and ending in Swansea on 28 July. From Aberdeen to Camborne, Manchester to Bristol, Exeter to Peterborough and many more locations across the nation, Radio Amateurs have had their say and the RSGB teams have had a chance to hear first hand what Radio Amateurs want from their licence now and in the future.

Alongside of the public meetings the RSGB's Regional Teams also carried out over 70 club visits. Amateurs themselves, both members and non-members have written and E-mailed the Society with their view for the future. So, it is fair to say we now have a clearer view and understanding of what the Amateur Radio community would like to see if Ofcom do carry out any changes to the current licensing regime.

Generally, Radio Amateurs are comfortable with the concept of an 'electronic' licence. If such a licence was introduced they would wish to see adequate security measures built-in to ensure that fraudulent applications could not be made and that the integrity of the licence is maintained.

The majority of Radio Amateurs we believe are not in favour of a 'lifetime' licence. There is much concern about the degradation of the amateur radio database and they believe that an out-of-date listing of radio amateurs would lead to an increase in callsign piracy and more interference on the bands.

The message was loud and clear a 'free licence' would not receive widespread support. Amateurs feel strongly that a free licence would devalue the Amateur Radio service and weaken the position of Amateur Radio in any future consultations. There is also a strong fear that a free licence would enable Ofcom or any future administration to withdraw Amateur Radio spectrum without consultation.

A large number of inputs queried why there needed to be any change at all. Most Radio Amateurs in the UK do not see the current licensing arrangements burdensome, however if there was to be change, then a licence for a longer period of time was the preferred option. The most popular proposal was for a 'five year' licence.

Any proposals to make Amateur Radio WT licence exempt, now or anytime in the future received a big 'NO' from the Amateur Radio community. This view was also supported by a number of interested outside agencies. A large number of Amateurs voiced their concern over the lack of understanding within Ofcom of Amateur Radio and the part it has played and continues to play in the development of radio communication and the role of Amateur Radio in the community and as a National asset.

Payment for NoVs and any licence changes would not raise any opposition because Amateurs understand that the hobby should be financially self supporting just like any other hobby or leisure interest.

Summing up, the message that the RSGB received from the 'grass roots' of Amateur Radio was: **Radio Amateurs in general would welcome a 'five year' licence, retaining the fee. A move to make the delivery of the licence an electronic process would also be welcomed. However, for those Amateurs who wish to continue to receive a paper licence, this type of licence should continue to be available without any financial penalties being incurred. At no time should any attempt be made to make Amateur Radio WT licence exempt.**

The RSGB would like to take this opportunity to thank Ofcom for their commitment to the consultation. It has given all Radio Amateurs the opportunity to have a say in their future. The RSGB is confident that Ofcom will take note of the majority voice before coming to any decision regarding the future processing of the licence.

We now all eagerly await the official announcement from Ofcom on the results of the consultation and any proposals for change that Ofcom may make.

RSGB
August 2005

Please note all comments regarding this statement should be sent directly to the Radio Society of Great Britain.

Radio Basics

This month Rob Mannion G3XFD tries a different approach to encourage Radio Basics readers. In the first of several articles he's recommending you try simple building blocks - but they're not made from wood!

There's no doubt about it - practice makes perfect in anything we do. And if, along with the practice you're willing enough to try some ideas in a different context perhaps - in our case circuits - the practice session be very useful. You can learn new circuits and being more confident in radio construction.

The long established Amateur Radio author the **Rev. George Dobbs G3RJV**, is a past master in using circuit building blocks. Mainstay of the **G QRP Club**, he edits their excellent club journal *Sprat*. George is in an admirable position to share tips and circuit ideas from all over the world with *PW* readers via his Carrying on the Practical Way column.

George collects and then collates these circuits and this month I'm aiming to encourage you to do the same. You don't need a computer, just a pile of magazines, enthusiasm and some patience!

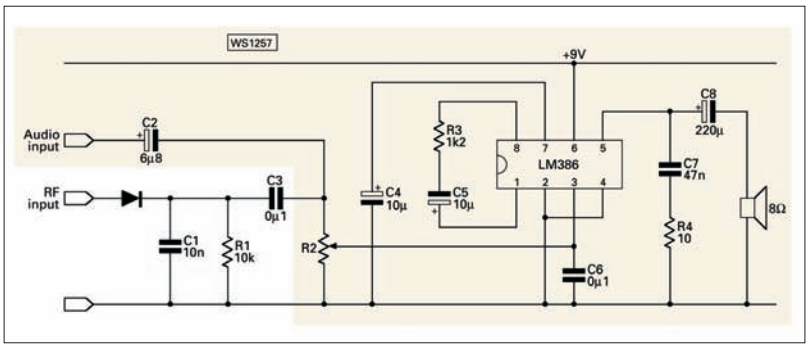


Fig. 1: This amplifier circuit - very useful and flex ble - can be isolated and used as a 'building' block (see text).

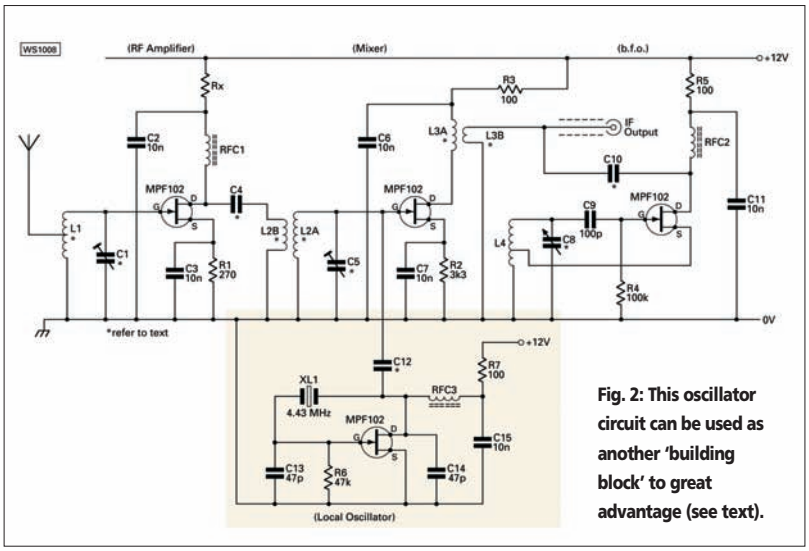


Fig. 2: This oscillator circuit can be used as another 'building block' to great advantage (see text).

My Building Blocks

For many years I carefully copied circuit ideas into a book from *The Radio Constructor, Practical Wireless* and *Short Wave Magazine*. Unfortunately, later on I sometimes found errors (inevitable when transcription is involved). It's all too easy to make mistakes as any technical journalist could confirm! So, I strongly recommend you thoroughly check anything you copy - you'll not regret the extra work.

The circuits I've highlighted (**Figs. 1** and **2)** will give you an idea of what I mean. Using the highlighted part of a complete project you might think to yourself - "That looks simple and interesting, I'll use it". In this way you'll soon learn how to 'cherry pick' the most useful circuits and incorporate them into your own combinations and projects.

To call such an exercise designing is a step too far- but at least by doing this we can take advantage of the work other people have done on our behalf.

For instance, you might like the simple audio amplifiers I've used in the RB projects (as Fig. 1). If so, all you have to do is to isolate the circuit from the main circuit, and identify the various connections (power, earthing, coupling, decoupling etc., and re-use it where you wish as I've highlighted in Fig. 1.

The oscillator circuit, Fig. 2, can be handled the same way. Although in the circuit shown the oscillator is used to generate a local oscillator circuit for a down converter, you might wish to substitute another crystal, and use it (let's say) as a band edge marker for 3.5MHz.

All you have to do then is highlight the circuit connections and output - substitute a 3.5MHz crystal for the 4.43MHz crystal (used for the down converter in the original project) and off you go! As you build up a collection of circuits you're familiar with (and familiarity is the important bit) you can then start using them to 'design' your own projects.

Suggested Project

Let's now look at a suggested, simple project. Readers who've been following the RB series will remember the down converter, which 'mixed' and frequency shifted the 3.5MHz Amateur band to the medium wave band. Once down converted - using a 4.43MHz local oscillator to produce the 'difference signal' ranging form 630 to 930kHz - 3.5MHz was receivable on a car radio.

The project I'm going to suggest is a converter for the 6MHz (49 Metres) broadcast band. All you'll need to do is to get a 7MHz crystal for the oscillator (1MHz above the band to produce a 'difference signal around 1MHz on the car radio/receiver with a screened antenna input)), and using your dip meter - **you do have a dip meter don't you?** - wind a new coil (inductor) got tune the 6MHz band.
Note: If you've not got a dip meter (shame on you) I suggest you add about three-four turns to the original (7MHz) coil to lower the frequency. (More turns - more inductance, lower frequency).

Next month I'll be talking about one the best (simple) collection of building block circuits available. They come from the **American Radio Relay League** (ARRL) *Electronic Data Books* (editions 1 and 2. Although, I've been unable at time of going to press to get permission from the ARRL to reproduce sample circuits to show you how useful they are - I thoroughly recommend the books. And of course, you'll see some other (exceedingly useful circuits in the ARRL *Understanding Basic Electronics Book* - recommended reading for RB readers to accompany this series.

See you next time- enjoy using your building blocks!

PW

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The Yaesu VX-6E Dual-Band Heavy Duty Waterproof Hand-Held Transceiver

Richard Newton G0RSN is a keen outdoor man both professionally and while enjoying the hobby. Despite the Gilbert & Sullivan quote that his duty is difficult and "...has to be done"- he's really enjoyed using the rugged Yaesu VX-6E in the rain!

● **"I'm pleased it's raining, really, so I can give the rig a thorough test!" Richard Newton G0RSN on a wet caravanning holiday!**
(Photographs of Richard courtesy of Diane Newton M3HJN).

The Yaesu VX-6E is a dual-band f.m. transceiver offering full coverage of the 144 and 430MHz Amateur radio bands and a lot more besides! It's compact in design, excluding antenna, knobs and belt clips it only measures about 58 x 89 x 28.5mm. With antenna and battery pack and only weighing 270g, you hardly know when it's clipped to your belt!

The rig is very rugged and is clearly built with an outward-bound life style in mind. The rig looks fit for anything and finished in a matt finish black plastic it follows in the tradition set by the VX-5 and VX-7.

The Yaesu VX-6E is waterproof, **Fig. 1**, being manufactured to a specification that allows it to be submersed to a depth of three feet for a period of 30 minutes. The fact that the rig was waterproof was to prove invaluable while I was testing it out, more on that later!

The rig is supplied with a FNB-80LI 7.4V d.c 1400mAh lithium ion battery pack. It has a 50Ω helical antenna with SMA type fitting. Also supplied is a wall charger, belt clip and hand strap and a well-written owner's handbook.

Packed With Features

So, let's now take a detailed look at the transceiver. Firstly, the Yaesu VX-6E is packed with features and I would highly recommend a good read of the manual to get the most out of what's on offer. The manual is essential reading!

Although it's a multi-band rig, the Yaesu VX-6E will only display one band, **Fig. 2**, at a time. The display is extremely clear and has a very effective backlight. This backlight also illuminates the keys and their primary functions, however the secondary and tertiary functions are not illuminated - but are clearly labelled on the external casing.

Like most modern transceivers, accessing a set-up menu enables the user to configure the more advanced functions on the Yaesu VX-6E and tailor it to their particular needs. The set-up menu on The VX-6E is very user friendly, being very easy to navigate.

Considering the VX-6E is feature-packed radio it's quite straightforward in appearance. The rig has two main control knobs on the top of the unit, **Fig. 3** (also showing charger for size comparison) and these are ordinarily used to control the tuning and volume. However, the use is determined by the current function of the radio. For example, the same knobs are used to navigate the menus or step through memories.

The Yaesu VX-6E has a four-conductor, single jack socket on the top of the unit. This provides for the connection of an optional speaker/microphone.

Optional accessories can be purchased and these are designed with this specific type of four

● **Fig. 1: The sturdy Yaesu VX-6E shrugs off the rain - unlike G0RSN!**

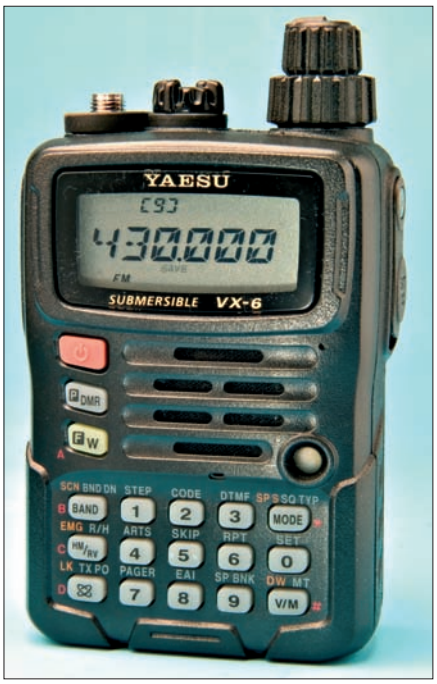

Fig. 2: The Yaesu VX-6E although a dual-band transceiver, displays one band at a time (see text).

conductor plugs or you can purchase an adapter so that more conventional two times stereo plugs can be used. The Yaesu VX-6E also has the facility to connect an external 13.8V d.c. supply via a socket in the side of the rig.

Versatile Design

The Yaesu VX-6E offers versatility in almost every aspect of its design. Even the transmit deviation and microphone gain can be adjusted! The latter feature may be useful if you are connecting a TNC for packet radio to the microphone line, as it is easy to over drive such a device.

The squelch threshold is factory set but is easily adjustable via the set up menu. The VX-6E also offers advanced squelch control by use of full CTCSS and DCS operation and features paging and selective calling facilities.

Facilities for adjusting output power on the transmitter follows the general attention to detail. This is because the Yaesu VX-6E has the ability to adjust between a full 5 (even on the supplied battery pack), **Fig. 4**, a lower 2.5, 1W or an extra low 300mW setting. The lowest setting would be for really close communications at a rally perhaps, a great energy saving facility!

Separate transmit powers can be selected for each of the transmit bands. For example, you could have a low power setting for the 144MHz band because you are using a near-by repeater. And when you select the 430MHz band the rig can be set to automatically change to a high power setting to gain more distance on the higher frequencies.

Switching On

When the VX-6E is switched on, it provides a momentary display of the voltage being supplied to the rig. This is a useful check for battery power.

Incidentally, the transceiver can display other useful information such as temperature, although this is the internal temperature of the rig. With an optional extra the rig will even tell you the barometric pressure and your altitude! (Very useful for /P work - much easier than trying to read a flapping paper map and contours and spot heights!).

The operator can also set the power on message to be whatever is desired up to six characters. I was intrigued and as this feature seemed to lend itself to a bit of self indulgence - I just had to programme in my callsign! But seriously if you lose the rig and you are lucky enough that a kind person recovers it what better way to assist it's safe return to you? That's my reason and I'm sticking to it!

The l.e.d.s on the front of the rig illuminate in the same way as many others - but with a slight difference. It glows red on transmit and green on receive. However, this l.e.d. can also be set to be a lamp and it becomes a high brightness l.e.d. glowing white.

Fig. 3: The rig has two main control knobs on the top of the unit - also showing the charging unit for size comparison - and these are ordinarily used to control the tuning and volume.

The other feature where the high brightness white l.e.d. comes into its own is that the rig has an emergency feature. When activated the rig will emit a loud noise and the high brightness l.e.d. will flash in a strobe style. It can even be set to continuously flash out SOS!

Is the SOS a bit of a gimmick? Maybe, but if carried by a walker, or when considering the waterproof feature for use on a small boa (for example), I'm sure this light would be better than nothing if you were in trouble in the pitch black and wanted to attract attention or indicate your location - the light would come into its own.

General Coverage

The rig not only offers transmit and receive coverage of two very popular Amateur bands but also a general coverage receiver. The modes and memory allocations more akin to a wide band scanning receiver than a dual band Amateur rig.

The Yaesu VX-6E offers a double conversion superheterodyne a.m. receiver, a narrow frequency modulation (f.m.) reception, and triple conversion superheterodyne receiver with wide f.m. receive modes across a wide coverage.

The rig has 11 bands in all.
504kHz – 1.8MHz
1.8 – 30MHz
30 – 88MHz
88 – 108MHz
108 – 137MHz
137 – 174MHz
174 – 222MHz
222 – 420MHz
420 – 470MHz
470 – 800MHz
800 – 999MHz

Each band has its own **Home** channel, a simple memory where you can store your favourite channel. Perhaps the one for 144MHz band would be 145.500 (the calling channel). Alternatively your local repeater, with the Home channel on Air band the tower at the local airport maybe? Whatever you decide - you can be programmed into the receiver.

The VX-6E's 900 standard memory channels augment the impressive frequency coverage and 50 sets of programmable band edge scan limits (programmable band scan) are also provided! There are 24 separate banks available so that the standard memories and programmable band scan limits can be organised into banks. Each of the 24 banks is able to take a maximum of 100 memories. As if that was not enough, the rig comes pre-programmed with Short-wave radio and vhf marine frequencies!

There are 89 short wave broadcast stations pre-programmed, covering the whole globe from Voice of America to BBC world service, from China to Finland and many, many more. All the v.h.f. Marine channels are also pre programmed, all 280 of them!

The Yaesu VX-6E has the ability to vary the tuning steps; the steps available are 5, 10, 12.5, 15, 20, 25, 50 and 100Hz. Additionally, 9kHz tuning is available on the medium wave broadcast band, the channel spacing for this band. However, Yaesu have not included the 8.3kHz tuning steps for the Air Band.

Amateur Bands Transmit

The Yaesu VX-6E will obviously only transmit on the recognised Amateur Radio bans of its coverage. But I have to say that when you are camping or just travelling and have an interest in radio - it's great to be able to take your hobby in one useful little package.

I was particularly interested with how The Yaesu VX-6E would fair on a caravan trip with my family, so off we went to Cirencester for a week.

● **Fig. 4: The transceiver can provide a full 5W output using the supplied battery pack (see text).**

Well, we were going anyway to tell the truth, but it was an opportunity to put the VX-6E through it's paces.

No doubt, you'll be amused to know that we chose to camp in the Cotswolds during the week that the Tornado hit Birmingham! But the wet weather did give me an opportunity to try out the waterproof qualities of the VX-6E, and the efforts I go to for *PW* were kindly captured on film by my wife **Diane M3HJN,** who I have to say found the whole thing quite hilarious! And I can now confirm that the VX-6E is more waterproof than I am!

Once on the site I'd rigged up a small mast and put a Watson W30 collinear antenna on top. I purchased an SMA to SO239 coaxial adapter, so I was able to connect the rig to the mast antenna when necessary

Smart Search

Having settled in, I decided it would be a good time to try out the VX-6E's **Smart Search** facility. New to this feature? I'll explain; when you use Smart Search the rig tunes above and below the current operating frequency and automatically stores any busy frequency it finds in a special bank of 31 memory channels.

The VX-6E will store 15 frequencies above and 15 below the current working frequency, and the current working frequency itself - if activity is found. This is a great way to identify where the local activity is with no pain at all. In fact you can set the rig to just do this continuously or just a single sweep!

In fact I used this great feature to wonderful effect by putting the rig on a frequency 145.7MHz, and setting the steps to 12.5kHz I was able to search the entire repeater allocation and very quickly found the local repeaters the receiver could hear. From my caravan site location I could hear about five repeaters, but by far the best signals received were from **GB3WH** and **GB3VA**.

Using the rig on the main antenna I spoke to **Bob G0VTA/M** through GB3WH and had a very enjoyable chat with him while he was on the way to his radio club in Swindon. Bob reported the signal from the VX-6E as having "Very nice, smooth modulation, good clarity". He went on to say it was just what was needed for mobile operators.

My brother, **William G7GMZ** and his family came up to visit us and I worked him using simplex on the way in. I used both the main antenna and the helical whip. William said; "Sounds fine Rich, good signal, very crisp".

Conventional Twiddling

Although extremely impressed with the VX6-E's Smart Search facility I thought it best to go back to more hands-on conventional twiddling to find some aircraft frequencies to listen into. Being so close to Fairford and the former RAF airfield at Kemble (now a civil airfield) there was no shortage of traffic to hear.

I was extremely impressed with the receive quality of the a.m. air band transmissions I listened to on The Yaesu VX-6E. I have to say that it was just as good, in fact may even have had the edge, over my AOR 8200 wide band receiver that I normally use for Air band listening.

It's worth mentioning that I've looked and tried many hand held radios that purport to offer air band receive. I don't exaggerate when I say the VX-6E is one of the best I have ever used on the band.

Another useful feature on the transceiver was the rather impressively named **Automatic Range Transponder System**, ARTS for short. This is useful where two radios carrying this feature can be set to poll one another and bleep or just display whether the two radios are in communications range.

My boys, **Fig. 5**, **Tom M3TJN** and **Oliver M3ORN** are 12 and 10 years old. I own a VX1, which also has the ARTS feature and it struck me that it would be a great opportunity to trial ARTS there and then!

A good test idea seemed be if I could get the boys to carry my VX1 - set to low power - and I used the VX-6E set to 300mW. I would then have early warning of them wandering too far on their bikes!

If the VX-6E gave the out of range warning it would be just a case of putting up the power or popping the rig on the main antenna and giving them a shout to make sure everything was okay. The other benefit of this system is that if you are calling on the radio and getting hoarse and no reply - at least you know that the radios are in range and working fine, so the break down in communication is due solely to human error (or the boys don't want to come back for lunch!).

Not Enough Room!

I honestly don't have room in the article to tell you about everything this rig will do. However, just as I was thinking that I'd discovered everything the VX-6E did, I was flicking through the manual during the holiday and discovered the rig is also a Morse tutor! It worked extremely well, and I had great fun brushing up on my Morse.

Well, as you can now judge it was great fun using the VX-6E. It really did do well, provided great company at night for the family when tuned to BBC Radio 2, gave excellent audio and much better reception than the portable radio I'd taken designed for the task!

Finally, it's worth mentioning that the l.e.d on the front, set to light mode, gave enough light to read by in the caravan! And the automatic power-off and power-on features made sure it kept us company at night and woke us in the morning. It's a truly versatile radio!

PW

● **Fig. 5: Tom Newton M3TJN and Oliver Newton M3ORN are 12 and 10 years old. Richard owns a VX1, which also has the ARTS feature and decided to trial the ARTS there and then to keep track of his sons (see text)!**

● Product

Yaesu VX-6E dual-band hand-held transceiver

● Company

Yaesu UK Ltd.

● Contact

Sales: Tel: (01962) 866667, FAX: (01962) 856801. E-mail: sales@yaesu.co.uk

● Pros

Well, as you can now judge it was great fun using the VX-6E.....It really did do well....It's a truly versatile radio!

● Cons

Yaesu have not included the 8.3kHz tuning steps for the Air Band and displays one band at a time (see text).

● Price

£229

● Supplier

Thanks for the loan of the review unit go to **Yaesu UK Ltd, Unit 12, Sun Valley Business Park, Winnal Close, Winchester, Hampshire SO23 0LB.**

Heritage & History

part 2

Two well known Radio Amateurs take a further look at our radio heritage and history. Stan Brown G4LU concentrates on Rugby, while on behalf of *PW* John Corless EI7IQ has travelled deep into County Galway to find what's left of the pioneering Marconi site at Clifden.

The Editor introduces this month's first article: Stan Brown G4LU provides some fascinating background on the historic Rugby long wave radio site, which won't be with us for much longer. Some of this material has previously been published, but is used again as it's so important, to introduce a much more detailed record of Stan's extensive experience in the communications field - particularly Rugby. **G3XFD**.

Rugby - The Beginnings & Towards Pre-Second World War

The governmental thinking that culminated eventually in the building of GBR had its origin before the first World War. Great Britain had been outpaced by both Germany and France, in possessing high powered telegraphy stations that enabled them to communicate with their distant colonies.

All that Britain possessed for long distance communication was the Marconi station near Caernarvon and the Company's other station at Clifden in Ireland - before the Irish Civil War put it out of action. These stations were privately owned and, then as now, the prime service is to shareholders and the public service comes a good second. In the event the Government set up a Wireless Committee, comprised of the foremost wireless engineers and academics of the day, who (to ensure an independent report) were not connected with the Marconi Company.

The committee's first report proposed a chain of spark/arc transmitters, each capable of communicating over, at least, 4800km (approx. 3000 miles). The first hop was to be from Leafield in Oxfordshire to Abu Zabul in Egypt. From there a link would be established to India and South Africa and on to Australia.

Unfortunately, the outbreak of the war scuppered the plan and only the Leafield buildings were erected, together with the masts and the Abu Zabel station. It's not known whether the Egyptian station was equipped at that juncture but both it and Leafield were completed and were working after the war. Then Leafield was equipped with an Elwell arc transmitter.

Because of its broad frequency spread, the Leafield transmitter was fitted with an intermediate circuit between the arc and the antenna which, in effect, was what would be called a tank circuit today. The terminology came down into the valve era at Rugby, where before the second World War, GBR's (and for that matter the slightly later telephony transmitter's), tank circuits were always referred to as Inter-circuits. Furthermore the transmitter room was always referred to as the 'valve' room as distinct from the arc room at other stations.

Thermionic Valves

The First World War developments had made the relatively high powered thermionic valves (10kW) capable of mass production. It was now possible to avoid the arc - by using many valves in parallel - to build a transmitter capable of world wide communication. This was the conclusion of the Wireless Commission in their report of 1920.

Building was not put out to tender but was given to the Post Office to build. The prime requirements for such a station would, of course, be sufficient clear land. Two sites were considered, one near Bourne in Lincolnshire and the other near Rugby in Warwickshire.

At the Centenary Celebration for the Institution of Electrical Engineers (IEE), held at the Station in 1972, **Sir Archibald Gill** (then Engineer in Chief of the Post Office), said that he'd made the decision because he had remembered from his days as an apprentice at the British Thomson-Houston (BTH) works, the disused airfield at Hilmorton just on the outskirts of the town. What he didn't say was that his wife was a native of the town and since the work occupied two years, personal reasons could also have swayed the decision!

On Air 1926

The station was completed and went on the air on 1 January 1926 and was capable of producing 1000A to the antenna. For this power it required five power panels in parallel, each using 18-10kW valves in parallel. Such a multiplicity of paralleling was an invitation for parasitic oscillation and preventative measures had to be incorporated between each valve and its neighbour and between the power panels.

Further suppression was required because of the long connections to the main output tuned circuit which required large oil-cooled mica capacitors on the first floor above the transmitter proper and the tuning coils and the coupled antenna coil on the third floor.

The coils were wound with Litzendraht cable on American whitewood spiders. The individual wires (of quite thin gauge) were twisted in threes, then in three of that assembly and so on until the finished cable had 6561 strands - all insulated from each other by enamel and silk covering.

The output frequency was generated by an Invar tuning fork delivering an output at

1777.77Hz. From this a harmonic of 16kHz was generated.

Incidentally, it was rare for all five power panels to be in service together. One was used as a test bed for other types of valve, and one was used as a spare. With three panels the antenna current was about 720A - equivalent to half power.

Power Supplies

All the individual power supplies were derived from motor generator sets. The filaments were supplied from a frequency changer set, which supplied 416V at 100Hz to the filament transformers on each power panel - so as to reduce carrier hum. The main high tension (h.t.) supply for the power amplifiers came from motor generator sets housed in a separate part of the building. Three sets were provided with provision for connecting them in series if a higher voltage were required. (Normally only one set was used).

Incidentally, the generator sets were virtually unique at that time. They consisted of two 3kV generators mounted on a bedplate either side of the driving synchronous motor. At one end of a common shaft was the generator exciter and at the other the field exciter for the alternator.

Since the bedplate was at the mid potential of the two generators it was set up on insulators. And if one generator set was used in series with others the bed plates of the machines could be at a variety of voltages! This gave rise to problems with the 2kV 3-phase supply to the synchronous motors which were solved by supplying their input power direct from the 11kV a.c. mains via a transformer whose secondary was insulated to cope with any bedplate voltage likely to be encountered.

The rotors of the motors were of the salient pole type and the outer faces of each pole were fitted with an 'amortisseur' or 'damping grid' of bars. This was to prevent the motor speed swinging too seriously as the load was applied when the transmitter was keyed. This grid of conductors actually served a dual purpose for it was also used a squirrel cage for starting up the motor to which end the windings of the stator were put in a star connection.

When the motor had reached near synchronous speed the windings were switched to a delta connection. Because the rotors of the machines had a considerable inertia the manual switching could be quite a leisurely procedure. Usually, however, when new staff were being trained they rushed the practice. This resulted in a short across the mains, if the arcs on the switches had not cleared, thereby tripping the supply switches in the power company's sub station in the town and removing the supply from many of their customers!

Commercial Press Traffic

Traffic on the Rugby GBR pre-war was mainly commercial press traffic much of it directed to shipping normally at about 22w.p.m. Occasionally, a higher speed (of about 70w.p.m.) was used for Halifax (Nova Scotia) Press.

Time signals produced by Greenwich Observatory and later Hurstmonceux (Sussex) were transmitted at 1000 and 1800 hours. Post-Second World War, the time signals were locally generated as was the transmitter carrier frequency from a Rubidium oscillator periodically corrected as required by the National Physical Laboratory (NPL). This was done by checking the Rugby signal with the NPL standard using the signal from a TV station roughly half way between the two sites as a transfer standard since its time bases were also Rubidium generated.

Occasionally if a submarine disaster, such as that of HMS *Thetis*, occurred the transmissions would involve operation 'Subsmash' to keep in touch with the fated vessel.

Demountable Valves

The development of low vapour pressure oils and greases by Metropolitan-Vickers enabled them to go ahead with the design of demountable valves. These could be broken apart and have elements renewed without the low temperature vapour traps used with mercury pumping systems.

First a 30kW demountable valve was tried in the exciter stage which drove the final amplifiers of GBR. This was quickly followed by a 500kW version, which could replace all of the normal amplifiers.

The valve required the h.t. generator sets to be put in series to provide an anode voltage of 18kV. Whilst this giant was moderately successful, it suffered from the same failing that occurred with the sealed-off valves of the period and that was the 'Rocky Point' effect or flash arc. This effect was a spontaneous discharge within the valve, which amounted to a full short circuit across the anode supply.

However, if the anode circuit was broken sufficiently quickly no damage to the internal electrodes of the valves ensued. (The GBR transmitter had been fitted from the outset with rapid opening h.t. d.c. switches and the generator sets were similarly equipped.

But, putting all your eggs in one basket was not a good idea from a traffic point of view. If the valve failed it could mean a lengthy shut down whereas with a multiplicity of valves in parallel restoration of service could be done more quickly. The big demountable valve remained in situ until the fire in which it was lost (more later on this topic).

Single Sideband

A year after GBR was commissioned the MF single sideband transmitter was brought into use for a telephony service to the USA. The receiving station was originally at Wroughton in Wiltshire (probably where the Science Museum now has its large exhibits) but then went to Banbury.

Initially it was intended to use the same frequency of 60kHz both ways but 'singing' round the Rugby-Banbury loop could not be avoided, so Rugby moved to 68kHz.

An alternative receiver was also installed at Cupar in Fife, Scotland where a Beverage antenna was employed. Later when the Baldock receiving station was opened for the h.f. services an assembly of four large loop antennas on wooden masts was employed, and these could be phased to give a directional effect.

The technology of the sideband transmitter was interesting. A double modulation process was used to generate the s.s.b. Firstly the audio was modulated onto a 30kHz carrier in a balanced modulator, then the required sideband was filtered out and applied to a second balanced modulator with a carrier input of 90kHz from which the lower sideband was selected at 60kHz.

The carrier oscillators were similar, simple valved self oscillators working in the same local environment so that any drift was cancelled out. One other interesting feature was the filtering of the ripple from the motor generators providing h.t. and bias supplies. Here simple LC filters were used but the 'C' components were open tank electrolytic capacitors looking rather like an accumulator. This is the only occasion I've seen these used and they were identical to an illustration in Moorecroft's tome on radio.

Later, as the h.f. services to the USA came into use, the MF transmitter was rarely used except to allow the terminal operators to keep in touch during Dellinger fade-outs on h.f.

A MF telegraphy transmitter was also installed to provide European traffic to places such as Prague and other Balkan countries. But the Second World War, now looming over the horizon, was to bring dramatic changes.

(To be continued)

PW

Radio history in Ireland

I'm sure that readers will enjoy **John Corless EI7IQ's** engaging account of his visit on behalf of *PW* from his home in County Mayo, to the pioneering Marconi site at Clifden. Located in the far west of County Galway it's a stunningly beautiful but remote area. And despite his local knowledge - John had to work hard to find much evidence of the station. Along the way he provides an insight to the destruction of the Marconi site in the upheaval following the First World War. So, it's over to you John! **G3XFD.**

The Marconi Station At Clifden

The Marconi site near Clifden in County Galway, Ireland is actually quite difficult to find with no road signs whatsoever to hint at its whereabouts. It's a pity really, given the historical significance of the site from the radio history enthusiast's viewpoint. And ironically, it was historical reasons that led to its abandonment, though the history is of a totally different flavour normally covered in *PW.*

Marconi opened the Clifden station in 1905, and in October 1907 transmitted to a sister station in Glace Bay, Nova Scotia to provide the first reliable transatlantic telegraphy service. The development consisted of radio rooms, a peat-fired (peat is known as 'Turf' in Ireland) power station and staff accommodation along with numerous antennas. Also included in the project was one and a half miles of railway of two foot narrow gauge, which was in use from 1906 to 1922.

Connemara Mountains

The Clifden station was located in a beautiful part of the west of Ireland – an area famous for Na Beana Beola (The Twelve Bens, or Connemara Mountains). It's also well known as the landing site of the first transatlantic flight in 1919 when **Captain John Alcock** and Lt. **Arthur Whitten Brown** landed their modified Vickers *Vimy IV* in a field, a few miles from the town of Clifden and very close to the Marconi site, **Fig. 1**.

In fact, many people believe that the destination for the flight was chosen due to its close proximity to Marconi's wireless station. Alcock and Brown took off from Lester's Field, near St. Johns, Newfoundland on 14, June and landed the following day in a time of 16 hours and 27 minutes.

The fliers claimed Lord Northcliffe's £10,000 prize from **Winston Churchill** for their efforts. And since others were believed to be attempting the transatlantic crossing at the time perhaps landing near a radio station did have its advantages!

Irish Civil War

Marconi's Station was burned, allegedly by three local men, on the night of 25 July 1922, on the same night as the Oughterard Barracks and Workhouse were also destroyed. This was at the height of the Irish Civil War and the station was completely destroyed in the fire.

Initially it was claimed that the Marconi station was a British concern and then that it had been used to call for assistance by the RIC (Royal Irish Constabulary) in 1921. However, given that railway lines, roads and usable barracks and buildings (that could be used for billeting troops) were destroyed in the process, it seems more likely that it was part of a general policy of making the area unusable before fleeing into the hills to carry out Guerrilla warfare.

The destruction of the station put several hundred local people out of work and remained a sore spot in the locality for a long time afterwards. This may explain the failure to draw attention to it in later years.

Local politicians concerned by the job losses, appealed to Government Ministers to intervene, and lobby the Marconi Company to have the station re-opened. On 29 November 1922 **Mr. J. J. Walsh**, The Postmaster-General, in reply to a question put by a local politician in Dáil Eireann (the Irish Parliament) said: "As the Deputy is already aware, the Clifden Wireless Station was, on more than one occasion recently, the target for Irregular activities, resulting in considerable demolition of highly technical instruments, the replacement of which must necessarily take some time. I understand that work is now in progress in this direction. The usual channel of communication with Clifden from its London base is by an overland wire passing through Dublin. This wire has been constantly cut in the Connemara district, and until normal conditions obtain there is little hope of the resumption of services".

Today all that remains are broken bricks and mast foundations, **Fig. 2**, from the station's many buildings, which are scattered all around the land and are conspicuous in the wilderness of the area. The (Irish) Land Commission divided the land amongst local farmers in the 1930s, after Marconi had abandoned the site. Cattle and sheep graze the lands of the famous site totally - oblivious to the history beneath their feet.

A plaque on what remains of a wall recalls events:

"Princess Elettra Marconi Giovanelli unveiled this plaque on the 28th June 1995 to commemorate the 100th anniversary of the development of wireless by her father Guglielmo Marconi. This site was used by Marconi as the first commercial transatlantic wireless station between 1907 and 1922".

A mile or so away a monument to Alcock & Brown commands much greater prominence.

John Corless EI7IQ, August 2005 **PW**

Fig. 1: The Memorial commemorating the first transatlantic flight by Alcock and Brown is near the Clifden radio station site although the Marconi station's remains are difficult to find although John EI7IQ persevered!

Fig. 2: John EI7IQ found the Clifden site to be littered with old bricks, all that was left of the station's destruction during the Irish Civil War. Apart from the bricks, the foundations of the mast bases can still be seen. The area is beautiful, remote and desolate nowadays, belying the nature of this historic site (see text).

Fig. 3: Map of Ireland showing location of the Marconi station at Clifden. Many UK Amateur Radio visitors drive through the Connemara region in County Galway without realising the significance of the area (see text).

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NewsFlash!

General Electric Rangr 6Mtr

The GE Rangr was designed jointly between the General Electric Company (USA) and the Japanese Radio Company (Japan). The main radio unit was manufactured by JRC to the highest standard as the majority of the radios we destined for the internal security forces of the USA. The radio is available in three bands Lowband 50Mhz Midband 150Mhz and UHF 440Mhz. The Rangr is available in two models (The Rangr and the Rangr 89) with two versions in each band (60w and 110w) Radios with 50 within the serial number are earlier than those with 51 within the serial number (Rangr and Rangr 89 respectfully). P7 denotes 60w P8 denotes 110w.

All of the units that we are supplying are the following type P19C852051P8 110w model with 32ch (The radios will be set at 50w ONLY) The radio is in fact a 64ch however the control head has only the facility for 32ch. I am sure that before very long some brainy person will find a modification to throw a switch to give the extra 32ch (We will keep you informed) These radios are ALL USED with only one owner and have been removed fully operational from New York Police Department Vehicles mainly Police Cars (95%). FYI They have gone to 800Mhz (!!!)

We have learnt our lesson on the supply of the FM1200 4Mtr radios, so the price of the Rangr on any 32ch of your choice with in the 6Mtr band is £75.00 plus £7.50P & P you send us a cheque or ring with your card details (you may visit and we will accept cash) we will then select your radio give it a number and by means of a post card or E-Mail send you a confirmation. We will also keep your name and address & call sign (Data Protection Thingy) with your permission so that we may update you on delivery and also any modifications that the brainy person comes up with.

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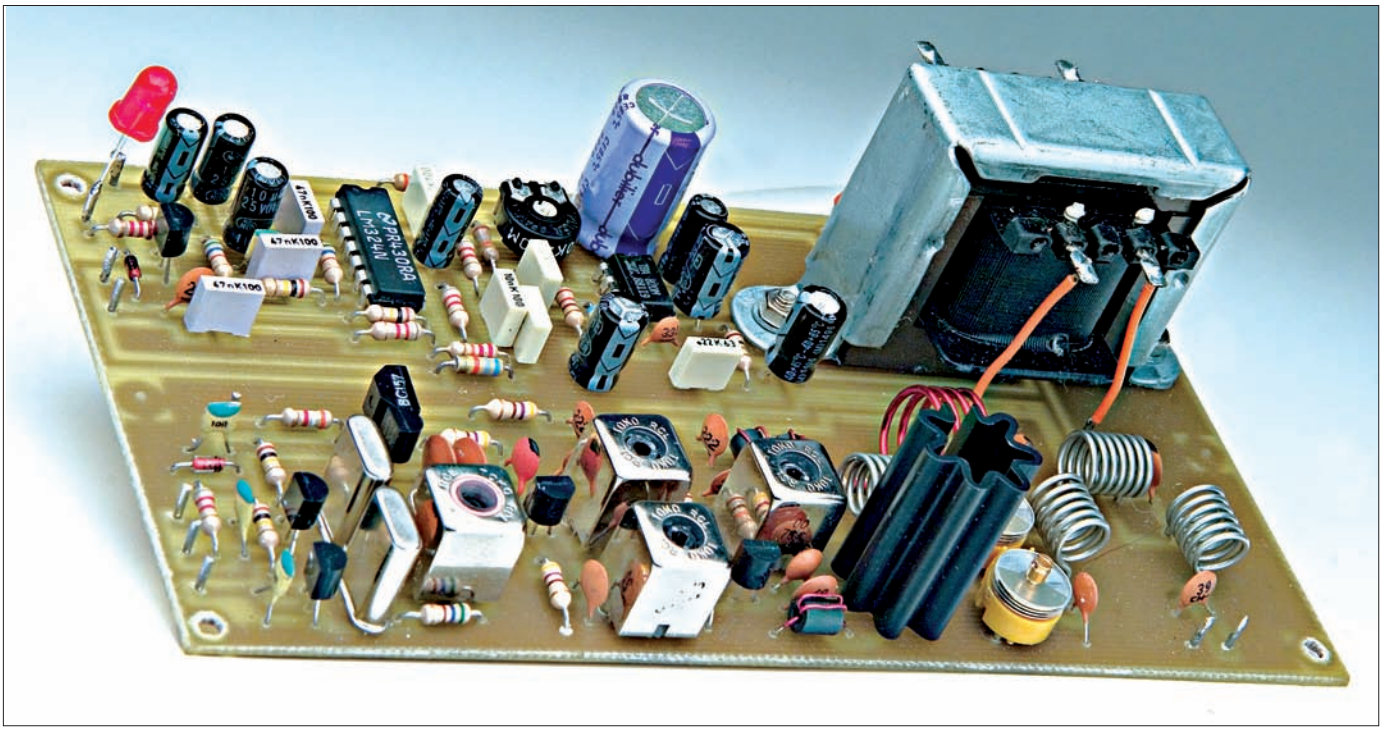
If you have any questions regarding the above then you are welcome to give me a ring on
01604 234333 or 07836 600700 Gary G6NYH
TETRA Communications Ltd, Victoria Chambers, 1 Victoria Road, Northampton, NN1 5EB
Or by the written word to G6NYH@AOL.COM www.tetra.tv

The PW Mellstock 70MHz 1W AM Transmitter Part 2

Tony Nailer G4CFY presents the concluding part of the PW Mellstock project and includes the construction alignment and measurements. Commissioned especially for *PW* it's an ideal introduction to v.h.f. QRP operations.



The Complete Mellstock 70MHz 1W a.m. transmitter. This month's article completes the transmitter project, and also includes an add-on unit providing the option of the c.w. mode (see text).

I'll start part 2 with the assumption that you have all the Mellstock parts available or have the kit. I would advise you start by fitting the components in order of profile height. Start with the resistors and diodes, following the track and overlay diagram of **Fig. 2.1** these can be fitted and have their leads bent over to hold the part in place. Do all the fitting of these parts and solder them as a group and crop them off.

Next, fit the pins by pushing them into the board from the underside. Use pliers to force them into position until the head is flush against the board. The two pins for the transformer connections (along the centre line of the board) can be forced into final position using your hot soldering iron. Then solder all the pins as a group.

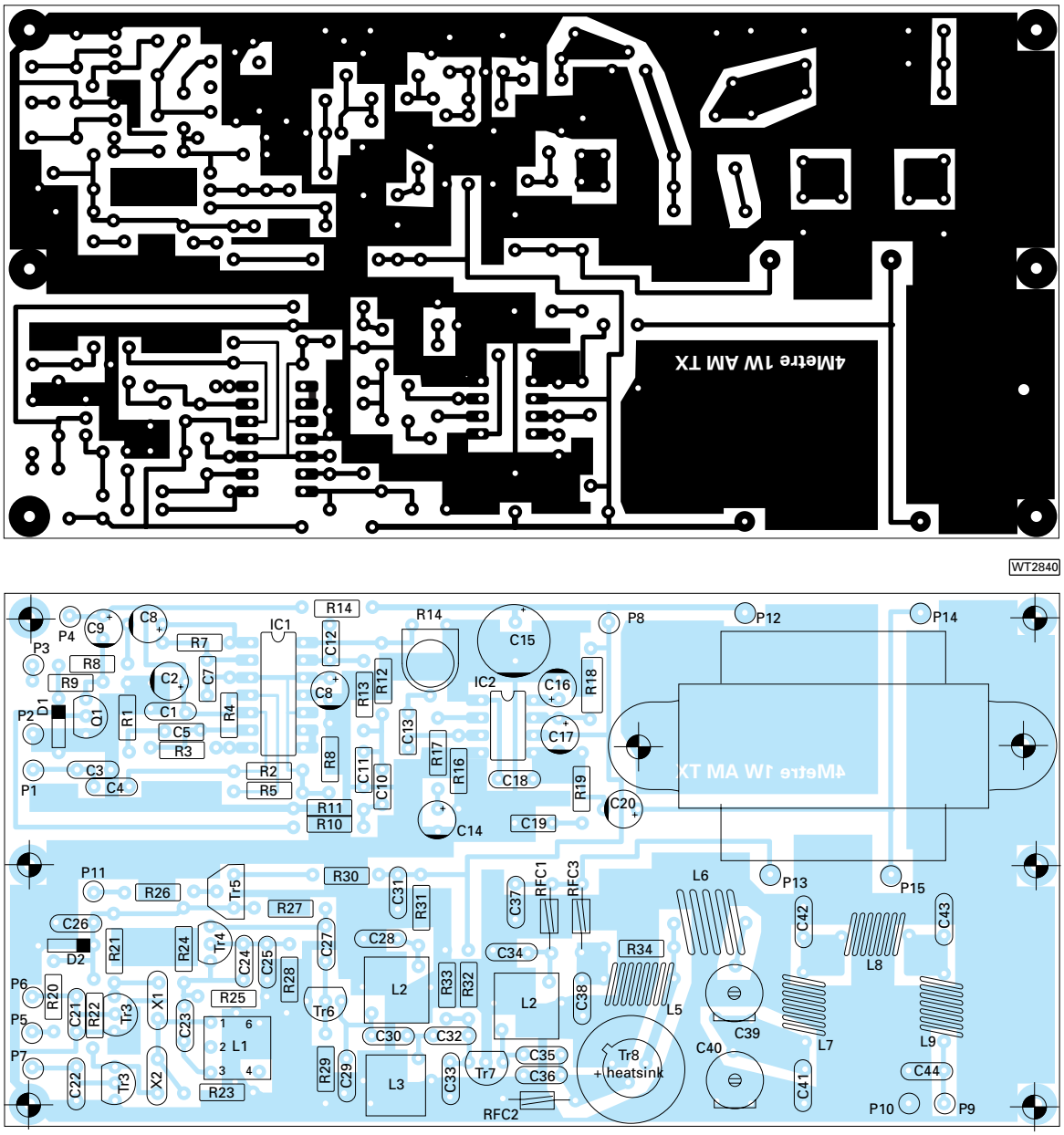
You should then find the three ferrite bead chokes and cut the leads about 15mm long. Use the soldering iron and solder to pre-tin these before fitting. The enamel is a type, which dissolves at soldering temperatures so it's not necessary to scrape them first. While soldering hold them individually in position to keep them tight to the board.

Align The Legs!

Next, select the LM324 (IC1) and carefully align the rows of legs so they are parallel by pressing them gently against the work bench. Fit the device into the board and hold in place while soldering a pin at opposite corners. Then proceed to solder all the other pins, and if necessary re-doing the corner pin connections. Then do the same with the TBA820M (IC2).

Fit the trimpot, R14, into place and hold while soldering. Be careful to keep your fingers off the exposed metal of the rear tabs which will - of course - get very hot.

Then fit the ceramic capacitors and bend their leads to hold them in place. Again, do all the fitting of these parts



and solder them as a group and crop them off. The poly block capacitors, and electrolytics should be fitted individually and held in place during soldering to keep them upright and close to the board.

Next, you should fit the transistors by gently pushing the BF and BC types into the board so their legs gently splay until they are tightly held and reasonably close to the board. Solder them as a group and crop off but don't fit the 2N4427 yet.

The four TOKO coils are quite a tight fit and can be fitted and soldered as a group. The open wound coils have to be fitted and held in place while soldering. This is a tricky job as the turns of the coil should be 1.5 to 2mm above the p.c.b.

Note: A scrap piece of p.c.b. material can be used as a spacer between the turns and the board while soldering.

The next job is to fit the 2N4427, the crystals, and the trimcaps, C39, 40 to the board. Don't forget to hold each in place - tight to the board - while you're soldering.

Then you should fit the transformer to the board using the screws fitted from the underside of the board, securing them with a crinkle washer and nut. Wire the terminals of the transformer to the corresponding pins using straight pieces of tinned copper or pvc covered equipment wire.

Finally, fit the TO5 heat sink to the 2N4427 with the aid of a screwdriver to hold it open.

Checks & Alignment

After checking for solder bridges and less-than-perfect solder joints you'll then be ready for checking and alignment. Before applying power to the board, again carefully examine all the joints using an eyeglass to ensure good connections have been made and there are no solder bridges between adjacent pads or tracks.

Fig. 2.1: The combined track pattern and component overlay diagram for the PW Mellstock transmitter.

The PW Mellstock 70MHz 1W AM Transmitter Part 2

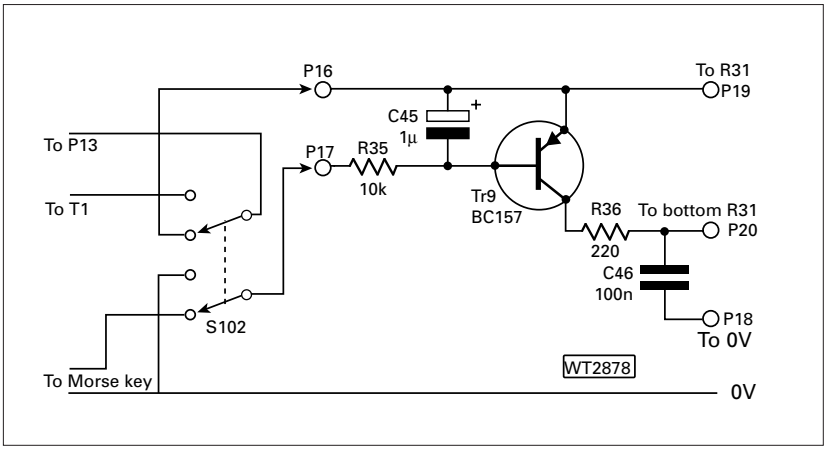


Fig. 2.2: A suitable small Morse keying circuit, see text for an explanation and fitting details.

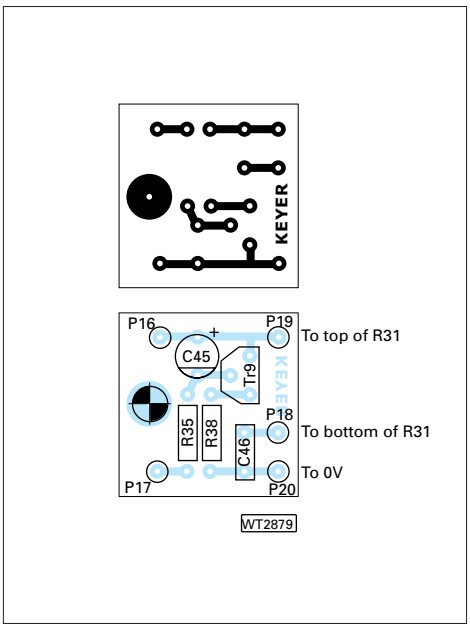
Solder a patch lead to the radio frequency (r.f.) output pins and connect the other end to a power meter with a dummy load. If possible have a low power r.f. sniffer in line or as a take-off from the meter to an oscilloscope.

Connect a piece of equipment wire between the push-to-talk (p.t.t.) pin and the ground pin of the microphone input, P1. Then connect three pieces of equipment wire between P6, P5, and P7 and corresponding pins of the single pole double throw (SPDT) toggle switch. Temporarily solder the light emitting diode (l.e.d.) to pins P3 and P4 with the large metal section in the l.e.d. to J3.

Using a flat blade trim tool, you should then set trimcaps C39 and C40 to half mesh. Next, connect your bench 13.5V supply to P8 and P2 and observe the power meter. If you see no power reading at all - you've probably done something wrong. This needs to be solved before proceeding.

If you observe some output from the transmitter adjust C39 and C40 again for maximum output. Using suitable trim tools adjust L2, L3, and L4 for maximum output, then re-adjust C39 and C40. **Note:** It's worth repeating the tuning of these coils and trim caps to ensure maximum output is achieved.

Fig. 2.3: The combined keying circuit p.c.b. and overlay diagram. See text for fitting instructions.



Frequency Counter

With the aid of a frequency counter attached to the r.f. sniffer you can then adjust L1 to put the frequency exactly 70.26 and 70.28MHz. Because only one coil is used to tune two crystals there may be a small error (of no more than 100Hz) which should be equalised between the two channels.

If you have an audio signal generator it is worth applying a signal at 600Hz to pins P1 and P2 and observing the envelope via the sniffer on the oscilloscope. Increase the audio level from zero until the l.e.d. just glows about two thirds full brightness.

You should then adjust the modulation level with trimpot R14 until the envelope is just above 'pinch-off'. Re-adjust trim caps C39 and C40 for maximum peak excursion and then re-adjust the trimpot R14 until pinch-off occurs. This will then correspond to 100% modulation and measurements can be taken of both carrier power and peak power.

Prototype Testing

To help constructors I'm sharing the results of tests on my transmitter. Using a Telewave power meter with dummy load the power read 1W unmodulated and 1.25W modulated.

However, I now suspect the modulated power was not the average but a partial peak reading. The output observed on a Tektronix 465B oscilloscope from the sniffer on the meter was an unmodulated envelope of 30mm and a modulated one of 45mm.

My observed measurements means the voltage peak due to modulation was 1.5 times the unmodulated output level. On the proviso that the modulation envelope was close to a perfect sine wave, this would mean the peak power would be 1.5 x 1.5 x carrier, which is 2.25W.

Power measured on a Bird Thruline power meter with an 060-2 60-80MHz 2.5W full scale deflection plug-in was 1.08W unmodulated and 1.01W modulated.

Technical books on amplitude modulation power clearly show that a fully upward modulated a.m. transmitter at 100% modulation has an average power 1.5 x carrier. In such a case the peak voltage envelope will be twice the unmodulated level, then peak power will be 2 x 2 x carrier, which would be 4W.

Although I follow the mathematical method, it's difficult to reconcile this with the logic of the observations! It looks like a fully modulated carrier is a constant carrier plus and minus half cycles of power due to the modulation. This is not the case and a Spectrum Analyser clearly shows that the carrier exists at all times.

The positive excursion from the mean level is a half cycle of power added, whilst the negative excursion, whilst anti-phase with the carrier, is still power added. This means that a fully modulated carrier with equal positive and negative excursion of envelope should give an average power 1.5 times the unmodulated carrier.

On a 13.5V supply the transmitter draws exactly 200mA unmodulated and 330mA modulated. The d.c. input power to the whole transmitter is then 2.7W unmodulated, 4.6W modulated.

In terms of overall transmitter efficiency the results are exceedingly good for a circuit so complex. It represents an efficiency of 37%. My original 144MHz valve transmitter drew a total of 120W with heaters and high tension (h.t.) and delivered 6W r.f. output, an efficiency of 5%!

The Morse Option

Earlier in the project I mentioned that the switch-on carrier envelope showed a cycle and a half of low frequency 'bounce'. This was originally thought to be the oscillator.

However, since producing the transmitter I have evaluated keying it for Morse code. But when I tried keying the tripler stage this bounce was at the leading edge of each envelope of r.f.

I then began to suspect that the bounce was due to the inductance of the modulation transformer limiting the current flow to the driver and output stage. To investigate, a link of equipment wire was connected from the positive supply pin P8 to P13, shorting out the transformer. The leading edge bounce then disappeared leaving sharp rise and fall edges.

A simple circuit was developed to replace R31 on the transmit strip to key the supply to the tripler stage. The keying circuit is shown in **Fig. 2.2**. A small printed circuit board (p.c.b.) has also been created for the keying unit with the track artwork and overlay shown in **Fig. 2.3**.

To interface the keyer option with the main board, remove R31 and also the link from P13 to the transformer. Ideally fit pins to the holes left by R31. **Note:** I suggest the keyer board is located at the crystal end of the main board and wires run along the centre of the main board.

A double pole switch is wired as shown on the keyer diagram. One pole and two ways will connect P13 either to the transformer for a.m. transmission or directly to the positive supply when in the Morse mode.

The other pole and two ways will either ground the keyer input when in a.m. mode or take it to the key for Morse mode. However, not being a Morse man myself - I haven't tried listening to the tone to check for any chirp yet!.

The output from the oscillator is taken from the collector of Tr4 and is therefore already partly isolated from the base-emitter oscillatory circuit. The tripler stage is grounded base and hopefully will provide some further isolation from the oscillator.

If there is chirp, then the keyer could be moved to replace the radio frequency choke, RFC1, in the collector of the driver transistor. Otherwise it might be necessary for me to design a keyer to wire in place of R33 to key the input of the driver.

I hope you have enjoyed the two articles, that you would enjoy building the transmitter, and will enjoy using it on air. Good 70MHz a.m. DX! **PW**

Shopping List

Resistors

Fixed Film 0.25W

1Ω	1	R19
56Ω	1	R18
120Ω	1	R17
330Ω	1	R15
390Ω	1	R8
470Ω	6	R27, R28, R29, R30, R31, R33,
560Ω	1	R23
1.2k	2	R9, R34
3.9k	1	R26
5.6k	2	R1,R4
8.2k	4	R5, R6, R13, R20
10k	1	R32
15k	1	R25
18k	2	R12, R24
22k	1	R11
68k	2	R10, R16
100k	5	R2, R3, R7, R21, R22

Variable

47k	1	R101

Preset

10k	1	R14

Capacitors

Polyester

2.2n	1	C12
10n	2	C11, C13
47n	3	C4, C5, C7
100n	1	C10
220n	1	C19

Disc Ceramic

1.2p	1	C30
22p	1	C29
39p	2	C32, C44
47p	3	C27, C35, C41
56p	1	C33
68p	1	C36
82p	3	C23, C42, C43
150p	2	C24, C25
330p	1	C18
2.2n	7	C3, C28, C31, C34, C37, C38, C101
10n	4	C1, C21, C22, C26

Electrolytic 25V

10µ	4	C2, C6, C8, C9
47µ	1	C16
100µ	3	C14, C17, C20
220µ	1	C15

Foil Trimmer

65p	2	C39, C40

Semiconductors

IN4148	1	D1
2N4427	1	Tr8
BC157	1	Tr5
BC548	3	Tr1, Tr2, Tr3
BF199	3	Tr4, Tr6, Tr7
LM324	1	IC1
TBA820M	1	IC2 (wrongly labelled U2 in the circuit diagram)

Zener Diodes

9V1	1	D2

Inductors

33µ	1	L101

Toko

3335R	1	L1
0764	3	L2, L3, L4

Other

RFC1, 2 and 3 are two or three turns on a ferrite bead
L7, L9 are 6t (spaced) of 0.92mm (20s.w.g.) copper wire on a 6mm mandrel
L5, L8 are 7t (spaced) of 0.92mm (20s.w.g.) copper wire on a 6mm mandrel
L6 is 4t (spaced) of 1.2mm (18s.w.g.) copper wire on a 10mm mandrel.

Miscellaneous

A suitable box, and interconnecting wire, a 1-pole 2-way switch a suitable 1:1 audio transformer, two crystals (see text), one or more l.e.d.s colour to suit, sockets and plugs. and another hardware are required.

Kits & Bits

The Mellstock p.c.b. is available on its own for £15 including p&p. The transformer is available on its own £9 including P&P.

The complete kit with p.c.b. and all components including the modulation transformer, microphone gain potentiometer, channel switch, microphone chassis plug, l..e.d. and holder, microphone filter capacitor 2n2 and choke 33µH costs £57.50 including P&P. The keyer p.c.b. parts and the DPDT switch £4 including P&P.

Cheques should be made payable to:
A. J. & J. R. Nailer, Spectrum Communications,
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Reader & Constructor Feedback

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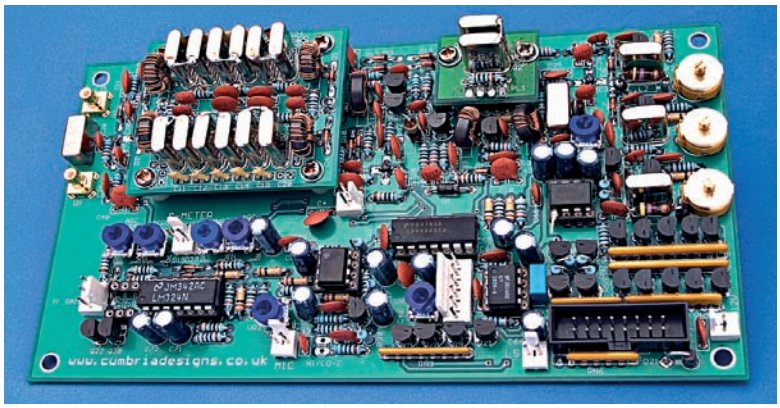
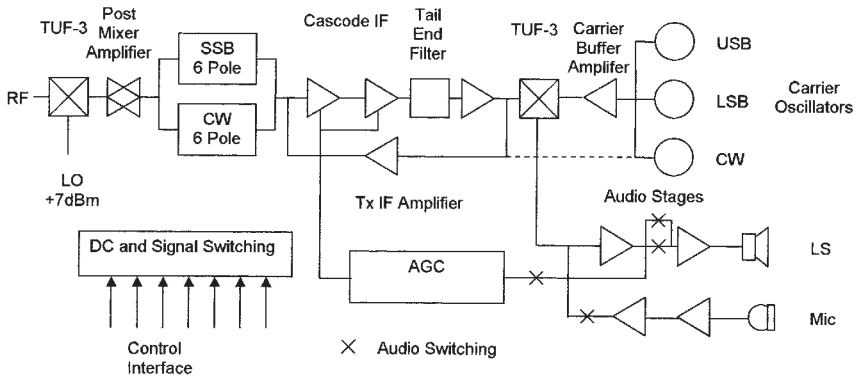
Review - Cumbria Designs T-1

The Cumbria Designs T-1 s.s.b./c.w. sub-system really could be at the heart of your next transceiver! Our technical editor 'Tex' Swann G1TEX gets his soldering iron out again to build the kits.

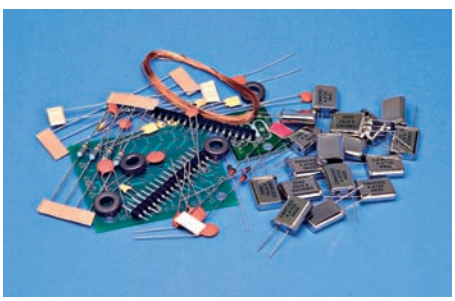




● **Fig. 1 (right): The basic diagram of a transceiver system to be found in the main part of the T-1 kit.**

● **Fig. 2: All the components for the main p.c.b. are separately and well packed in their respective bags.**

● **Fig. 3 The retro-fit or modification kit.**



● **Fig. 4: The crystal filter p.c.b.s and other components.**

I suppose that many of us have had the dream of creating the best transceiver possible, and that's as far as it's been possible to go for most of us! The most likely cause of the shelving of the plans may have been a lack of design knowledge or of building skills. But with the arrival of Cumbria Designs' T-1 kit these two limitations may have been overcome.

Well not quite completely overcome, as you still need to follow the comprehensive instructions and be able to solder reasonably well. There may even be a couple of stages that you need to get someone else to do but that shouldn't stop you.

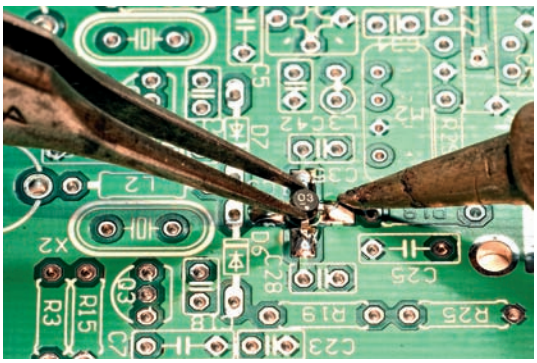
The diagram, **Fig. 1**, that is taken from the instruction sheet of the T-1 kit shows the basic heart of most, if not all modern transceivers. The diagram shows that the filter circuits at the heart of a modern s.s.b. and c.w. rig, are used in both receive and transmit, with the various signals being routed around and through the filters and mixers, to arrive at the required location without the operator having to do anything other than press the transmit button at the right time.

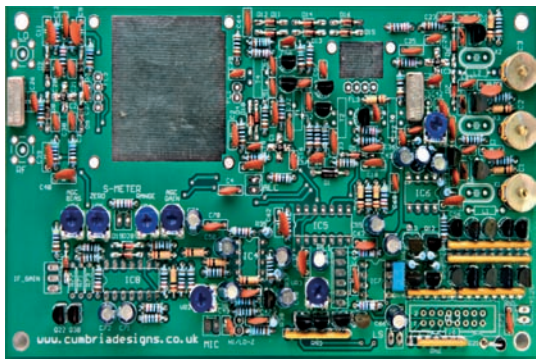
The T-1 High performance SSB/CW Transceiver Sub-System kits from Cumbria designs are designed to take over all the tasks of these signal controls of an high-end transceiver and I shall look at the main mixer board and the crystal filters kits this time. The two kit modules came separately, as the basic sub-system and the s.s.b/c.w. 4.9152MHz crystal filter kits.

Professional Quality

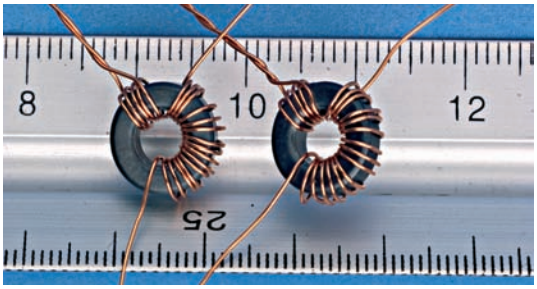
The sub-system project, **Fig. 2** consists of a professional quality p.c.b. measuring 160¥90mm a bag of fixed and variable resistors, a similar bag with various capacitors and a further bag of hardware and wire. To complete the components, a black conducting bag with all the semiconductors, diodes, transistors, monolithic chip amplifiers and two TUF-3 mixer modules was supplied.

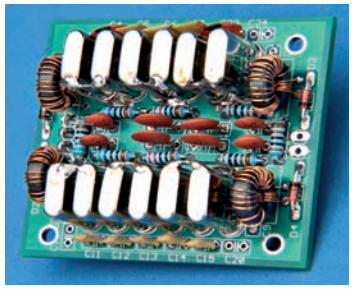
A small 'retrofit' (modifications) kit, **Fig. 3**, with its single A4 instruction sheet, accompanied the main module. By comparison the s.s.b./c.w. filter kit, **Fig. 4** was rather smaller, consisting of a pair of smaller p.c.b. some resistors and capacitors and 17 4.9152MHz crystals.





- **Fig. 5 (far left): Soldering one of the three monolithic i.c.s into place - a job that can be difficult because of their small size. The tweezers are needle-pointed!**
- **Fig. 6 (left): So far so good - most of the individual components fitted onto the main p.c.b.**





- **Fig. 7 (far left): Two of the seven toriodal transformer that have to be wound when making the kits. The markings above the toroids are millimetres.**
- **Fig. 8 (left): The larger daughter-board, completed with the s.s.b. and c.w. filter crystals and other components fitted.**

Six of the crystals in the kit form the s.s.b filter, and a further six, the narrower c.w. filter. Two make up a simpler subsidiary filter and three are to be used as the reference and sideband oscillators on the main board.

As with previous kits I've looked at from Cumbria Designs, the A4 sized documentation that comes with the kits is excellent and comprises 20 pages. Within the pages are comprehensive instructions covering the circuit description, on preparing to build, and building the kit, then followed by a self-help on testing and fault finding.

The complete circuit diagram is an A3 sized sheet and I found it invaluable in helping to identify the locations of various components as they are placed on the board. The instructions for the filter kit, as you might guess, have fewer pages, but are no less comprehensive. As mentioned earlier, the retrofit kit instructions comprise a single-sided A4 sheet and should be read alongside the main T-1 kit instructions.

I suspect, though that when construction starts, the vast majority - myself included - need a good magnifying glass or lens system. I've found the ideal type is a circular fluorescent light, augmented by a small desktop Halogen light. The magnifying lens is some 125mm diameter and mounted on a flexible arm to allow me to set it at the optimal height and angle.

The sequence of building instructions starts with soldering in the three monolithic amplifier i.c.s. These are surface mount devices that - because of their shape (a tiny pill with legs) - they can be difficult to deal with unless you have a fine-tipped soldering iron, a bright source of light, and very good eyesight **Fig. 5**. These must be correctly orientated and so you should follow the instructions to the letter.

Large Sheet

The instructions recommend that a large sheet of white paper be used as a background to the work-surface, to help find components that skid away while being soldered. To be honest, I'd suggest sweeping the floor and putting an even larger sheet of paper down, because if any of these first three components go 'walk-about' they'll be a devil to find again in the average workshop.

But by following the sequence and installing components in general height-above-board order, you'll arrive sometime later with a populated p.c.b. similar to mine shown in **Fig. 6**. I made sure I checked the position and orientation of each component before I soldered it in place. Mistakes made at this early point will be very difficult to rectify later on, as there's little space available after the board is fully populated (see heading photograph), as component density is high.

It's worth double checking each component, it's markings and orientation before placing it, likewise, ticking each stage or component placing as you complete it. It's too easy to do something in the wrong order or solder it in the wrong place, as I found to my frustration on placing the wrong transistor in one location.

My least favourite stage on this board was making and placing the three toroidal transformers. So, you can imagine my horror on finding four more on the crystal filter board. It's not that I dislike these devices, it's just that my fingers are not as nimble as they once were! Neatly winding four or five turns then a further 16 or 20 turns of fine wire on T37 cores I find isn't the easiest thing in the world.

Toriodal Transformer

For each of the toriodal transformers, I took anything up to half an hour to make and place each transformer. Two of the transformers are shown in the photograph of **Fig. 7**. Although the wire appears as if the coating might be self-fluxing, I still find that gently scraping the enamel off is the best way of starting the process off. The orientation of the windings of each transformer was carefully checked before soldering them in place. And as a further check, each joint was checked under a stronger magnifying glass to ensure that it was a good one.

On completing the main board, it was time to turn to the two smaller p.c.b. for the crystal filters. After separating out the selected crystals for the various oscillators, twelve crystals were carefully soldered into place, on the main filter board and two on the smaller board. Winding and placing the four toriodal transformers completed the task, leaving the to be fitted and fixed into position with the pin and socket arrangement.

The third kit that makes up the transceiver sub-system is the Cumbria Designs C-1 Controller kit, which I will have to deal with in a later article, as space is not available here. This kit couples directly top the larger connector to be seen in the lower right are of the heading picture. It;s designed to produce the transmit/receive sequencing. power and signal routing, hang time adjustment and to present the user control inputs in an easily interfaced format.

The kits are of the same high quality that I have found in several other kits from Cumbria Design, with a high quality p.c.b.s, good instructions and an explanation of how the circuit actually is designed to work - an important part of the self-teaching side of our hobby.

My thanks go to **Cumbria Designs, The Steading, Stainton, Penrith, Cumbria CA11 0ES (www.cumbriadesigns.co.uk)** for the supply of the kit, which is available for **£89.95** + **£1.50** P&P.

PW

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Antenna Workshop

The Windom antenna was so popular in the early days of radio and it seemed to have almost mythical properties. So, Martti Nissinen OH4NV set out to find out more about it, read on to share his findings!

The Windom - Myth Or Magic Antenna?

After reading the interesting article The Windom Antenna – is it any good? by **John Share G3OKA** (*Practical Wireless,* February 2003), I went and researched through my old radio papers trying to find some original design facts about this antenna. I found no new work on the antenna so, there's almost no new information. But from the articles and papers that I found, the original Windom antenna design is always based on a l/2 horizontal wire fed by single wire feeder tapped at the one-third point of the horizontal antenna wire.

The asymmetrically tapped single-wire feeder is the 'heart' of the Windom antenna and with just that, perhaps, the antenna rose and fell to become a myth later on. So, I reasoned, let's see what modern day tests can reveal about the antenna, then we can judge if there's anything other than the myth still left to explain.

For my experiments, I constructed a Windom antenna by following the old directions for 14.05MHz. The velocity factor is 0.974 for the wire's diameter of 2.2mm . The horizontal antenna wire itself has a length of 10.4m (λ/2 at 14.05MHz) and the feeder is also the same half-wave long. As described in the 'recipe' the feeder is tapped at 3.46m from one end of the antenna, **Fig. 1**.

The height of my test Windom antenna is 12m and it's erected between two trees so that the feeder comes down into shack at an angle. There are some other antennas and a beam on a tower nearby, but not too near. Of course I wanted to know as many of the tested details as possible about this mythical radiator, which seems to have lost its earlier glory.

The set-up for the Windom feed-point's relative impedance

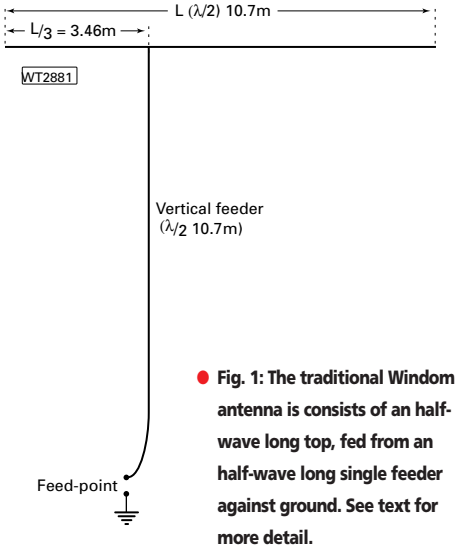
● **Marrti and his bridge. The signal source and bridge were used to investigate the ins and outs of the Windom antenna descr bed here.**

measurements was complete. The items of equipment I used are: an HP-bridge 803A, an HP-receiver 417A and a Fluke generator 6061A. Measurement results were calculated by a substitution method (see Note 1) at the design frequency of 14.05MHz.

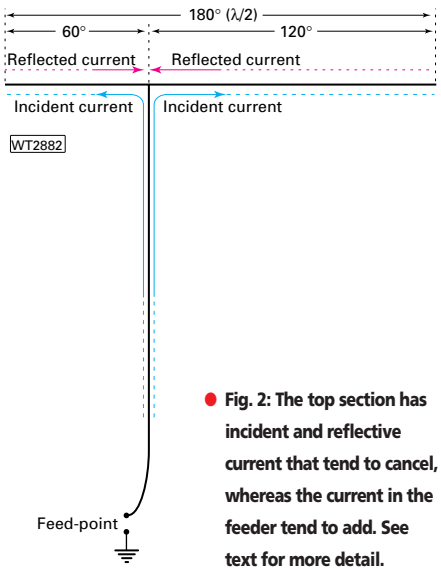
Note: The Windom antenna system includes the radiating feeder, but in this case however, the exact half-wave long feeder repeats the proportional antenna impedance (to be found at the tapping point) on the horizontal section without further transformations.

Because the feed-point impedance is repeated along the length of the feeder, it's easy to show if the antenna impedance is reactive or not. The impedance of the Windom's shack-end impedance (14.05MHz) was measured as 330Ω with a phase angle of 0° (HP-bridge and substitution method), equating to (330±j0)Ω using the more usual j-notation. Also, measurement results were calculated by a substitution method.

For comparison purposes, I measured the Windom-system impedance at the second harmonic of 28.1MHz, where the impedance was measured as 340Ω at a phase angle of +14° (HP-bridge). This value translates as (330+j82)Ω. The results were far better than my low (perhaps even negative) expectations. When using the Windom antenna at the design fundamental frequency, the shack-end impedance is purely resistive. And what a surprise, in the second harmonic band it's nearly resistive while the real part (resistance) magnitude is the same value of 330Ω!



● **Fig. 1: The traditional Windom antenna is consists of an half-wave long top, fed from an half-wave long single feeder against ground. See text for more detail.**



● **Fig. 2: The top section has incident and reflective current that tend to cancel, whereas the current in the feeder tend to add. See text for more detail.**

The Bandwidth

But what about the bandwidth? To my surprise it was very wide giving an s.w.r. of 1.2:1 at the edges of the band, but as with any antenna design, does the thing work? Well to answer that, there was a European pile-up going on, trying to work **VK3EGN** so I called him once. He immediately came back

with a report of '559' - wonderful! So, the antenna system works, and I was only running 40 Watts!

As a receiving antenna, the Windom works very well. All the weaker exotic signals were found on the band. After a short test-period it became clear that the original Windom type is a different antenna. The bandwidth, for example, is so wide that only a lossy circuit behaves similarly. But there's little or no extra lossy resistance in the Windom design. The whole construction is so simple that I cannot find very lossy parts in the design.

Some readers may suggest that the grounding of the antenna (Note 2) as the source of the wide bandwidth. It's a good argument, but if it were dependent mainly on the ground, then weak sky-wave DX-signals should be very attenuated - but they aren't! On the contrary they sound the same as when I'm using my beam. Even, after this relative short test-time I find that my own signals from the Windom are heard quite well at DX.

Positive Difference

So, we have to find other reasons to explain the positive difference of the Windom. We understand and we agree (as it is said many times) that the normal resonant half-wave antenna wire is resistive at any point along its length. This means that we are able to measure and use quite a large range of resistive impedances for matching. But can we access into and use those resistance with the single wire feeder?

The answer to the above question is no. The single wire feeder feeds the resistive nature of the resonant length as a parallel (voltage) drive. If we want to 'get' inside the resistive feed-point with a current drive, then we would have to cut the antenna wire and connect a two-wire line in series. But such a connection cannot be made in the original Windom antenna, because, the antenna is no longer a Windom. A funny thing, isn't it?

So, we have a perplexing question to answer! It seems that the single wire feeder can't meet the requirements of the resonance mode of the Windom element (except via the cut ends). If this is so, what mode does it utilise? Look at the **Fig. 2**, noting the directions of the currents.

If we start by looking at the top loading mode consideration. Then the single wire off-centre feeder alters the feed-principle completely. When the feeder is joined with the un-cut Windom wire, it will 'see' two unequal length (60° and 120° at the design frequency) horizontal extensions, or top loads against ground, and starts to feed them with in phase opposite currents. These currents will reflect back and all summarise (as vectors) at tap-point.

Generally, the horizontal current-vectors tend to cancel and vertical currents (feeder) tend to add. If the horizontal section forms a complete 180°, as with Windom, there is resonance against ground. In fact the horizontal element, with ground, form parallel open-ended wide spaced lines (Note 3). The final result is the feeder's shack-end impedance what was just measured. The wide-band flatness and constant resistivity (330Ω±0°) of this impedance (also on the harmonic) generates suspicions, naturally, but in my opinion it's true!

Generally, antenna top loading offers an advantage often forgotten. It tends to shift the maximum current point to the upper parts of the antenna and feeder. This has often been all antenna designers' goal since the early days. Imagine a vertical having highest current at the top! In my view the top-loading mode can be well applied to Windom.

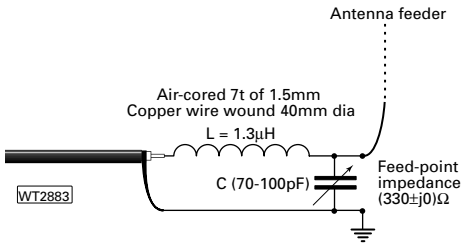


Fig. 3 (above): As the feed-point impedance of the single feeder is around 330Ω a matching unit will be needed for most installations.

Fig. 4 (left): An experimental LC tuner for the Windom antenna, the meter indicates r.f. current flowing in the vertical feeder.

As an extra feature we can see that at the same time the Windom antenna still maintains a horizontal polarisation mode. Therefore the Windom is a mixed polarisation antenna. With its mixed mode and with occasional problems feeding the Windom antenna, it has often been put aside. But this very fact has also moved it into the group of antennas that have become myths.

But is there anything that can bring the Windom antenna back from the place of myths? The measurement and experiments that I've made, on the Windom, reinforce the top-loading mode for the Windom.

Some may say that the story above is unbelievable. How can we start from the perfect half-wave horizontal Windom and arrive at top-loaded vertical antenna? But who can say which of these modes is better? I can't find an error in my measuring set-up and I don't think anyone else will.

Perhaps it's time to take the Windom from the myth-category and put it back to its well-earned place in the backyard again. To really appreciate how effective this antenna is, you should build your own Windom! It's a most simple low-angle radiator and a simple LC impedance matcher is shown in **Fig. 3**. Remember a good quality r.f. ground connection must be to the chassis side of the matcher.

I've found that the best place for this small tuner is on the wall near or above your shack's window. It doesn't even have to have continuous tuning, the antennas bandwidth is so good!

A Warning

The original Windom antenna belongs to the group of directly-fed antennas or the grounded antennas. A disadvantage of all these antennas is that part of the antenna is often within the shack and gives some r.f.-radiation inside the shack. So, the best place for the matching unit is as far as possible from the operator, near or above the exit-point of the shack. Even with this limitation, only a relative low power is recommended.

A better idea still, is to mount the matching unit outside the shack and use a separate coaxial feeder for the Windom. The correct tuning setting is easily obtained and doesn't need re-tuning on changing frequency. This design gives the possibility of running a higher power with Windom and this design is mostly recommended.

Have fun with your Windom. This 'magic' antenna takes you back to early times and the early feelings of radio! **PW**

Notes

- In the substitution method the antenna is removed and substituted with tunable lumped components. Then, by adjusting the components, the equal antenna matching is reached (s.w.r. of 1:1). Now, by measuring the values of the lumped components, one can calculate the antenna's complex impedance.
- We shouldn't underestimate the ground-effect. Especially with small antennas, fed by a coaxial cable the ground resistance intrudes easily into the antenna circuits. Such lossy antenna has excellent s.w.r. and wide bandwidth response. But they are often quiet antennas due to high losses. The Windom, as described, doesn't belong to this group. It often competes successfully with my beam.
- For the more complete analysis one can form two parallel open-end feedlines (60° and 120° electrical length) and then calculate the existing reactance trigonometrically. This proves the additional loading resonance.

"Didn't we have a lovely time..."

The rest of the song line, as **Peter Lewis G4VFG** reminds us was "*the day we went to Bangor*". But before anyone wonders if he's had too much r.f. near the brain, we'll let him explain how he enjoyed his holiday using low power equipment and simple antennas!

So, I'll start explaining! I had a holiday in 2003 and stayed with my sister in Worthing and my FT-817 went as well. I was due to set off on the Saturday of the Lighthouse on the Air weekend of that year. Early in the morning I managed to work a few stations on 7MHz before the masses descended and the band became the Amateur Radio equivalent of the M25. Now here's a thing - it's great that many more operators are allowed on to the high frequency (h.f.) bands these days, and being a long time champion of the code free licence I cannot criticise recent developments.

However, I can criticise the conduct of an increasing number of thoughtless operators. Yes folks 'Liddery' is alive and well and can be found on a band near you, especially on 7MHz. The ancient and noble art of listening using the ears is not employed properly when someone finds a frequency occupied by a QSO and cranks up the linear, whacks up the processor, and proceeds to utter grunts and burps!

Equally, it's not where someone keys up on full power, leave the transmitter on air, and leave the shack to make a cup of tea, water the Begonias. Yes, I'm having a bit of fun, but Ball's hypothesis dictates that with an increase in usage there will come an increase in idiots. Anyway, back to the story - the Lighthouses on the Air activity.

Shoreham Lighthouse

One of the Lighthouse stations I had worked was **GB8SL** in Shoreham, West Sussex. So, I thought it would be interesting to pay them a visit, but first I had to find them. Upon reaching my destination at my sister's home, the first antenna I put together was my dual-band 144/430MHz co-linear, which was stood on the bedroom floor and leant against the window.

With this antenna I could access the local repeaters **GB3BR** and **GB3SR** with no bother, and had one or two local chats. It was, after catching one local simplex QSO I discovered that the Shoreham lighthouse operation was run by the local Worthing radio club.

The next day, in the afternoon I set off with the trusty folding pushbike in the boot of the car. This came in handy for travelling around town, doing window-shopping and lighthouse finding!

Fig. 1: The lighthouse at Shoreham, West Sussex. Peter G4VFG was able to track down the Worthing Club and met the Radio Amateurs who put the lighthouse on the air (see text).

I duly found the Lighthouse and introduced myself and met the lady with whom I had had the QSO from my home QTH in South Devon. I stayed long enough to help with taking down the station and sent the last Morse QSO truly. (I remembered to send GB8SL and not my own call by mistake! Yes been there, done that and got the T-shirt).

Chalk Pits Museum

One of the operators to whom I had been talking told that two of the club members went to the Chalk Pits Museum near Amberley, on Fridays to operate the station in the Wireless museum. I had an enjoyable hour or two with them later in my holiday, it was a very good set-up and visitors were shown how to send their name in Morse and were then presented with a certificate.

The Morse training opportunity was a hit with the younger generation and business was brisk. It was a good 'fun' way to demonstrate Morse to the uninitiated.

While at the museum I was let loose on the airwaves. I managed to work a couple of UK stations using **GB2CPM**, the museum's special callsign, on short skip on 14MHz,

which was interesting for the visitors to hear. I enjoyed my chance to play radio at GB2CPM.

Holiday Equipment

Apart from the FT-817 and a little power supply all of 20 years old, for my holiday radio equipment I took a home-brew Pi match antenna tuning unit (a.t.u.) and a strap box, which could convert my dipole into a Marconi T top.

I also 'knocked' up a 14MHz dipole and in the T mode it works okay on 7MHz. Next, an old camera tripod was used together with an added short section aluminium pole.

The antenna could be erected as an inverted V with the aid of some tent pegs and a couple of bungee type hooked straps to steady the tripod, during its assembly.

Although only about 4.25m (14ft) high it got a few contacts and only occupied 8m (26ft) of lawn space. It was good fun sitting in the sun chatting to my relatives and enjoying a QSO on the bands as well.

wire was threaded through the plastic gutter outside the buglaow for as much of the wire I had. The end being connected into the a.t.u. as before (the station earth was achieved via the mains on the power supply unit (p.s.u.), breaking all the rules!

Again, I achieved good results - this little bit of wire achieved 11 contacts on c.w. - 10 on 7MHz and one on 18MHz. Although this particular length of wire wouldn't load up on 14MHz, I noted that there was a horrendous amount of hash at this location and this was noticable on both antennas. This is, I fear an ever increasing problem in built-up areas. At

Fig. 2

Fig. 3

Fig. 4

With 5W and simple wires it goes without saying that to stand much chance of being heard - the use of Morse is an advantage. Frankly, in my view when using low power - c.w. is the only choice.

However, I'll bet that there's someone out there saying, "Oh but some people do very well on 10 Watts". But my answer is this; " Do drivers always stick to the speed limit - I don't think so"!

Second Antenna

The second antenna I used during my holiday was made up from 9m (30ft) of connecting wire. For a bit of late night listening I ran the wire along the curtain rail in the bedroom and out of the window, dropping to the ground outside the bungalow.

At the receiver end I connected in the back of the a.t.u. By means of a wander plug pushed into the centre hole of the S0239 socket. It's crude, but good enough for listening.

Wondering if the very basic system would load up, I tried it out. To my surprise - not only did it load up, but I managed to work an OK station (Czech Republic) with a 539RST report on 7MHz c.w.

With my enthusiasm fired up by the success - the Mark II home in Devon we get rain and gales, and jackdaws on the roof, but 14MHz is as clear as a whistle, for the present anyway!

The FT-817 On CW

The FT-817 was fine on c.w. I got a paddle key from from Waters & Stanton recently. Being a let-handed side swiper operaotr, I set the automatic keyer at 15w.p.m. and could keep ahead of the iambic action (I've never managed to get my head round what happended there!). I can only suppose since I'm operating the paddle in the reverse mode - the thing is Da Ditting instead of Dit Daaaing! Confusing eh?

Despie my dificulty I got used to the key and can now set the '817 to 19w.p.m., which is top speed for me. I ended up - after a week of casual operating, - with 32 contacts in 18 countries. The furthest being 5B4 (Cyprus) , with all the rest being mainland European.

It was a tuppeny ha'penny operation, but good fun none-the-less. I look forward to erecting my antenna on another holiday. Taking the radio away also highlights the main thing about the hobby - it's possible, even in a new place, to contact and meet people with whom you share an interest. That for me is what Amateur Radio is all about. **PW**

- **Fig. 2: Peter G4VFG enjoyed a visit to the Chalk Pits Museum (GB2CPM) in Amberley, West Sussex and was impressed by the station and the way visitors were encouraged to 'have a go' at Morse (see text).**
- **Fig. 3: During his holiday in Worthing, Peter G4VFG enjoyed using his FT-817, FT-747. two home-brewed a.t.u.s and three home brewed recivers (see text).**
- **Fig. 4: It's remarkable how well you can operate on the bands using an old camera tripod as an antenna support! With this arrnagmenet Peter G4VFG enjoyed many QSOs on the h.f. bands (see text).**

Before Yaesu, Trio & Icom

Ben Nock G4BXD looks back to the days before the influence of the major Japanese manufacturers. Showing his own enthusiasm for surplus military equipment he looks at some interesting Japanese equipment, including one with some remarkable miniaturisation.

Many Radio Amateurs started out by filling their shacks with ex-military equipment, certainly way back in the 1950s and 1960s. I started in the late 1960s with the standard former RAF R1155 and Army Wireless set No 19.

Many of us used the large numbers of USA made equipment to be found, including the AR88, HRO, BC-348 etc., but what of far away lands? Did other country's Amateurs start off in the same way - and if so, what with?

The Japanese military during the Second World War had a good supply and variation of communication equipment. Luckily a few examples have survived and now make very interesting items. I'm fascinated in the research as to their origins, to how they performed and were used back in those days. Happily, my collection here has a few of these sets and it's these I'd like to describe to you now.

● **Fig. 2: The 94 Mk V set, transmitter on the left, receiver on right (shown for size comparison).**

● **Fig. 3: Close up of the Type 32 transmitter showing the meter and various tuning controls. The crystal is inserted under small cover lower left (see text).**

Model 94 Mark III

The first set on parade, the Model 94 Mark III,was produced between 1934 and 1944 and was type approved by the Imperial Japanese Navy Department. The set, **Fig. 1**, is a low power transmitter-receiver designed for field use, transported by three or four men or as a mule-carried pack.

The frequency range is 450kHz to 5.7MHz for the transmitter, 350kHz to 6MHz for the receiver. The transmitter uses a single valve, UY510B, giving some 15W of output and powered from a hand-cranked generator. The receiver is a five-valve superhet with regenerative detector

● **Fig. 1: The 94 Mk III transmitter receiver, transmitter at the top, receiver in the middle with the receiver battery tray at the bottom. A fold down Morse key is on the right of the transmitter panel.**

powered from dry batteries carried in the set case.

The standard antenna was a 20m long wire centre tapped, with an 8m feeder. In operation it was tuned against a counterpoise wire with an extensive tuner arrangement in the transmitter. This was needed because of the wide frequency coverage and short antenna lengths employed.

The transmitter and receiver chassis sits in a metal cabinet, which has connections between the units to facilitate transmit-receive operation. The dry batteries for the receiver sat in the bottom of the case in a pull-out drawer and are connected by banana type plugs.

The identity plate on my example was kindly translated into English by my friend **Ikuo Fujimura** in Japan. However, even he had a little difficulty, as the characters used then, are different from modern Japanese! The transmitter plate states Communication Set 36D, serial No. 581, Showa (date) 14 - 5, which translates to May 1939 and Tokyo Works for Military. Another plate on the transmitter states "Military Secret".

The receiver plate describes my set as Communication Set 36D, serial No 1008, shows (date) 13 - 12 which translates to December 1938. Then follows a trade mark and the name of the manufacturer, Nippon Communication Industries Co, Ltd, Ohmori Branch Office, Sanyo Works. Obviously the receiver or transmitter unit has been replaced at some time in the set's life.

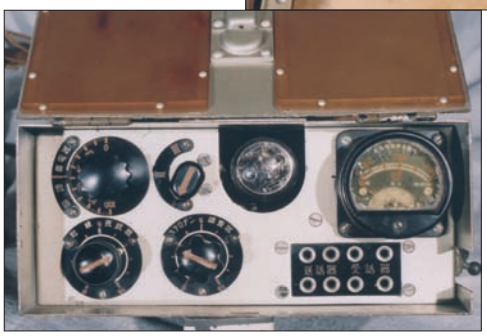
In use the receiver is surprisingly good for such a simple

design. The regenerative detector takes some getting used - to but once mastered provides reasonable reception of c.w. signals.

The transmitter can be either variable frequency oscillator (v.f.o.) controlled, or crystal controlled. On higher frequencies the v.f.o. is not recommended so crystal control is important. There's a slight pulling of the crystal frequency as the power amplifier (p.a.) circuit is tuned and the antenna loaded, but a compromise can be reached between output power and stability sufficient for operation on the Amateur Bands. The 36D is really nice and quite usable even today.

Model 94 Mark V

The next unit is the Model 94 Mark V. The equipment comprises Type 32 receiver and Type 32 transmitter units, **Fig. 2**, and forms a compact station covering 850kHz to 5.1MHz on transmit, 400kHz to 7.6MHz on receive. My sets are dated February 1940.



The transmitter, **Fig. 3**, is again a single valve, a UZ12C double triode, both sections operate in parallel on c.w. and as an oscillating p.a. and modulator on 'phone working. Power output is around 1.6W on c.w. falling to less than half that on 'phone. The transmitter can be v.f.o. operated or crystal controlled (a tuning chart for the v.f.o. dial is held in a plastic cover attached to the lid). Power for the unit is again from a hand generator.

The receiver, **Fig. 4**, is a three valve set, radio frequency (r.f.) amplifier, regenerative detector and audio amplifier. A 0-100 calibrated dial sets the tuning; the frequency read-out chart is again carried in the lid. The set carried its own dry batteries in the same case.

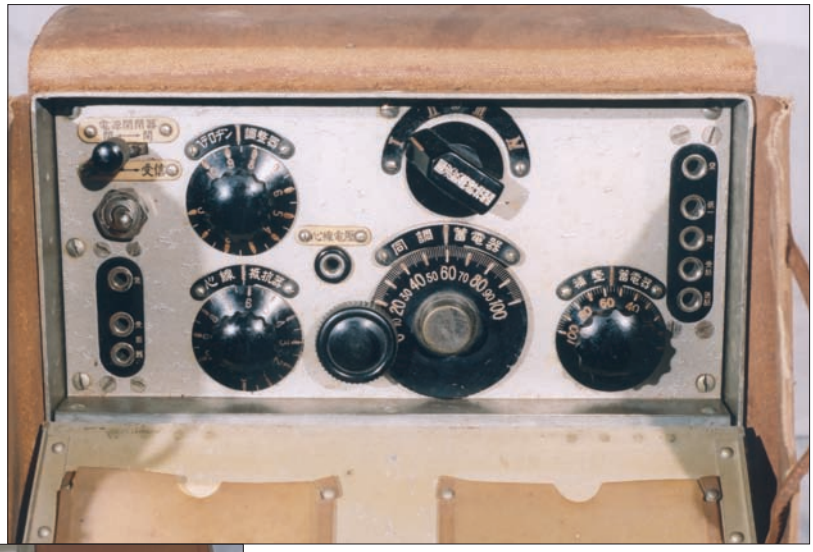
The complete station comprised the two units as described, two lengths of 15m of wire as antenna and counterpoise, headphones, throat microphone, Morse key and connecting leads. The transmitter and receiver are on aluminium chassis, and the cases and are covered with either canvas or leather.

As the transmitter can be crystal controlled I have actually had this unit on the air on 3.5MHz and received good reports from various stations around Europe. The transmitter is easy to load up and chirp free (at least on a standard bench supply), but I'm not sure what the hand cranked generator supply would sound like!

Model 94 Mark VI

Let's now look at the Model 94 Mark VI. This little infantry transmitter-receiver gives an early insight into the Japanese obsession with miniaturisation. The set, **Fig. 5**, is a single valve transmitter receiver.

In the receiving mode, the double triode UZ30MC valve, acts as super regenerative detector and audio amplifier. In the transmit mode it acts as a self oscillating p.a. and modulator on a.m, or strapped together as an self oscillating p.a. for c.w. working. My set has a date of 14-10 or October 1939.



The unit has frequency coverage between 25 and 45.5MHz and provides an output of around 200mW on modulated c.w. (m.c.w.) or 'phone working. The receiver is again powered from dry batteries, carries externally and the transmitter is powered from a hand-cranked generator supplying 3V and 135V h.t. The hand generator is actually bigger than the radio!

Although the Mark VI will cover the 28MHz Amateur band I have not tried it on the air. The super regenerative detector could radiate quite a signal from a good antenna, and the transmitter, being v.f.o. controlled, would not really be suitable today.

In use the transmitter-receiver would have had a 1.5m whip antenna with a 500mm counterpoise whip. It could just about have been used 'on the go', the operator carrying the set and another soldier walking next to him cranking the generator. (The range was quoted as around 2km).

Just A Few!

The models I've described are just a few of the many different sets the Japanese military had. But it's unknown if any of them where used by the fledgling Radio Amateurs out there after the Second World War. The occupation of Japan by the USA must have meant that there was a supply of their equipment that the Japanese could have obtained. And, as it was much better, certainly in Amateur Radio terms, would probably have been preferred.

Construction standards of the equipment, while mechanically sound, did leave a lot to be desired electrically. Additionally, there's no trace of any treatment to prevent moisture or fungus (a problem in the Far East).

The soldering also seems rather poorly finished. Surprisingly, the wiring can even be cotton covered. Given the geographical areas this equipment was designed to work in it's amazing any of it survived at all Still, it's nice to think that some beginner out in the suburbs of Tokyo or Kyoto might have been doing just as I did back in the 1960s and firing up bits of history once again. **PW**

- **Fig. 4 (above): Close-up photograph of the Type 32 receiver, main tuning lower centre, and band switch upper centre (see text).**
- **Fig. 5 (left): The 94 Mark VI v.h.f. set, single valve centre panel with microphone and headphone connections lower right (see text).**

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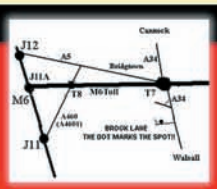

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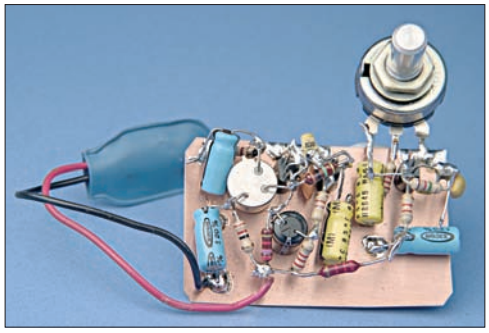


● **This month George G3RJV described how he rediscovered a simple amplifier he first used over 20 years ago in *PW*.**

This month the Rev. George Dobbs G3RJV looks back at an amplifier he enjoyed using in the past and puts it to work again in a new project. There's certainly much to do this month in COTPW!

One of the joys of electronic construction is 'circuit browsing'. There's real pleasure to be had on a winter's evening simply browsing through a book or magazine looking at the circuits. That is why I would advise beginners to learn circuit diagram symbols and come to know the more common circuit configurations.

I think that others might regard us as odd deriving pleasure from a batch of symbols on a page. But then, I guess a knitting pattern may make interesting reading in the right hands!

However, I must confess to not enjoying digital circuits as much as analogue circuits. Apart from having too many wires, the symbols on digital circuit drawings are less artistically pleasing. (I now have the feeling that someone is probably going to send me a particularly pleasing digital circuitry diagram!).

A few weeks ago I was sorting through some of my radio books in a vain attempt to bring more order to my life. (I do that from time-to-time). It usually falls sort of restoring order, although it does save me from complete chaos.

During the sort out, in corner of a bookshelf was a copy of *Introducing QRP: the challenging world of low power transmission* published by *Practical Wireless* in 1985. The QRP reprint was a compilation of *PW* articles including several written by me. (Was it really 20 years ago when I wrote them?).

One of the circuits in the re-print booklet was the PW Severn; a 7MHz QRP transceiver I designed in 1983. Trips down memory lane can be interesting - because the project was not how I thought I remembered it!

The mixer, using three field effect transistors (f.e.t.s) in a 'Y' configuration brought back happy memories; I may try that again. The audio amplifier, a discreet three transistor circuit, reminded me of several projects I built around that time.

The Severn

The PW Severn was based on an original circuit by **Norman Spivey G3GWI**, used in his 'Abor Transceiver' first published in *Sprat*, the journal of the **G QRP Club**. I used it several times because after building it for the first time, I was pleased with the results so, for a while, the audio circuitry became my standard audio amplifier circuit for simple receivers.

My CD ROM with *Sprat* archives revealed that the Ebor appeared in the summer issue of 1979. The Ebor was a popular design, which also appeared in the *G QRP Club Circuit Handbook* and was built by many members of the club.

Norman described the amplifier as providing good low noise performance while requiring few components. It's a complementary pair of *npn* and *pnp* transistors feeding a simple output stage. Output is taken from the collector of the final stage and is suitable for driving medium or high impedance headphones.

The CD archive also showed me that there had been an update of that amplifier by **David Limmer** in the *Sprat* issue for winter 1991. (I'd forgotten that article). David had used the circuit and found it rather noisy. Being unhappy about the gain distribution, he re-configured the circuit and found the results very satisfying. I hadn't tried this version, so to complete my trip down memory lane; I thought I would give it a try.

Modified Circuit

A version of the modified circuit is shown in **Fig. 1**. In this version a high gain *npn* stage precedes the complementary pair of *npn* and *pnp* transistors. The 1.2MΩ resistor (R1) between the collector and base of Tr1 enables high gain pre-amplification.

Feedback in the complementary pair adjusts the gain distribution and aids stability. Again, the output is taken from the collector of the final stage.

I built the amplifier using 'ugly' construction techniques with 2N3904 and 2N3906 devices. Almost any similar *npn/pnp* complementary devices would probably work just as well.

The circuit is very simple to fabricate 'ugly' style on a piece of blank printed circuit board (p.c.b.). The copper acts as a ground plane for the grounded components and there's no need for any further stand-off mountings as the other parts merely join on from one another. (My version fitted easily on a piece of board measuring 50 x 30mm).

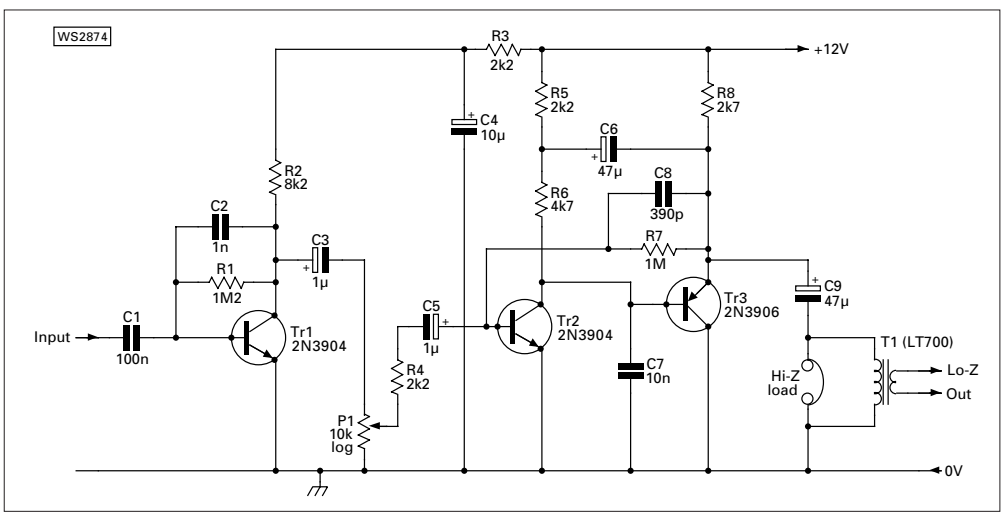
The next job was to test the little amplifier, so I pulled out my ancient pair of high impedance headphones. These days, high impedance headphones are difficult to find and I'll deal with alternatives later.

The amplifier performed very well. A wet finger on the input produced a loud hum in the 'phones and the background noise was minimal. So the Ebor amplifier, or at least this update of it, is back in my repertoire.

High Impedance

As I mentioned, the amplifier as shown in Fig. 1, has a high impedance output, and for many constructors a suitable pair of headphones may not be available. Some surplus headphones with an impedance in the hundreds of ohms range would work quite well but, again, these are not common. Thankfully the David Limmer article suggested a couple of alternatives.

The first approach, shown in Fig. 1 is simply to add a matching transformer in place of the high impedance headphones The classic choice would be the LT700 with a centre tapped primary of some 2kΩ impedance and a secondary output of 8Ω.



● **Fig. 1: In this version of George G3RJV's favourite amplifier, a high gain *npn* stage precedes the complementary pair of *npn* and *pnp* transistors (see text).**

This component comes from the days of discrete push-pull audio amplifiers in transistor radios and is still available from some traders including **Bowood Electronics** (see advert in this issue).

The centre tap on the primary is left unconnected and low impedance headphones are connected to the secondary. The results were good using a higher quality pair of portable cassette type headphones.

The second approach is to add another transistor stage and use an emitter follower output, Fig. 2. It requires a fairly beefy *npn* transistor. I used a BFY51 but a lot of other devices would do the job.

In this case the 47µF output capacitor (C9 in Fig. 1) is omitted and the base of the output transistor is directly coupled to the final transistor of the amplifier. The emitter follower output matches nicely into a pair of low impedance phones, and it will even drive a small loudspeaker. Although to be fair, this circuit is not really designed to drive a loudspeaker.

Practical Application

Having built and proved the new version of the audio amplifier, I decided to try it out in a practical application. It was designed for use in direct conversion receivers - so that was the way to try it out!

Fortunately, I have lots of little boards around from former projects. So I rummaged around for the makings of a small receiver and pulled out a diode mixer board used many times for simple receivers.

The diode mixer circuit is shown in **Fig. 3**, in this example it's shown for 7MHz. It's simple to build and uses a moulded radio frequency choke (r.f.) for the input filter.

The capacitors C1 and C2 provide some matching for the antenna and form a tuned circuit with the 100µH choke (L1). This is coupled via C3 and a trifilliar wound transformer to a pair of diodes (D1 and D2).

The local oscillator is fed to the centre of the two out-of-phase output windings that lead to the diodes. Resistor R1 and C4 provide a load and rudimentary r.f. filtering. The output can be fed directly to the audio amplifier. An alternative 7MHz filter is shown in the inset in Fig. .3. Replacing the inductor L5 with 3.9µH and C5, C8 with 22pF would allow tuning on 10MHz.

Note: Germanium diodes are best for D1 and D2, although my version used common silicon diodes (1N914 etc.).

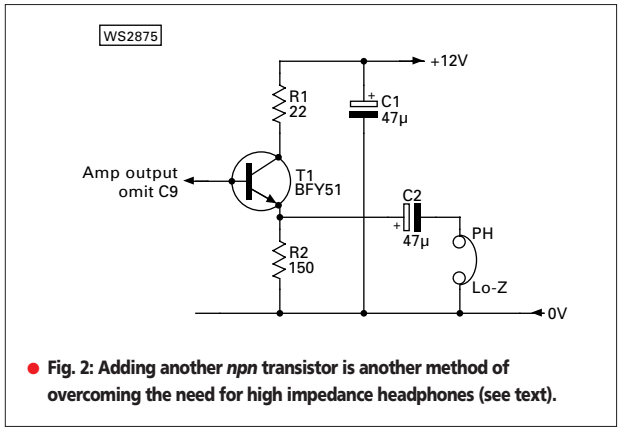
The Dreaded Trifilliar

Some constructors shy away (in dread?) from winding tri-filar transformers and I'm encouraging you to have a go! I wound this one on an FT37-43 core and it wasn't difficult.

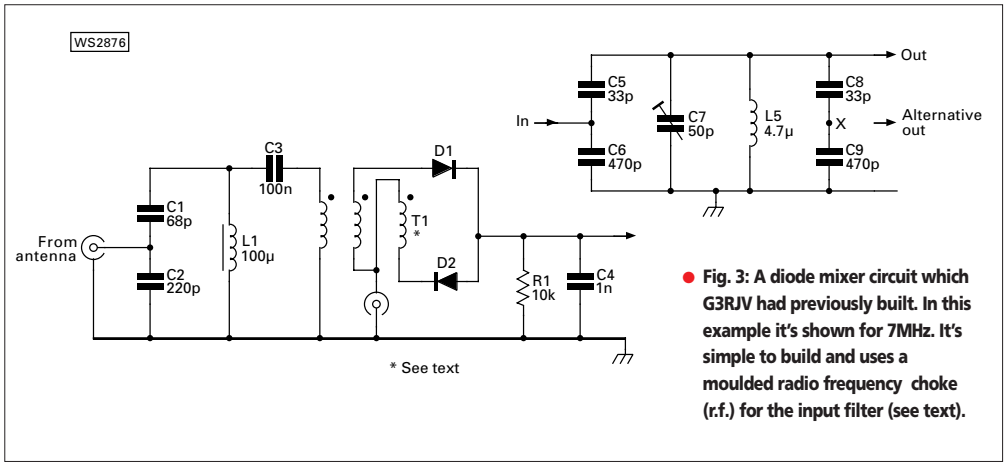
The transformer uses 10 trifilliar turns of a small gauge wire; 32s.w.g. is simple to get on the core. In practice almost any ferrite (not iron dust) core would serve the purpose with a similar number of turns.

The method used has been described many times in this column. In summary – three lengths of the wire are twisted together, until there are about four twists per 100mm, and wound on the core as if they were one wire. All six ends are cleaned of enamel and tinned with a soldering iron.

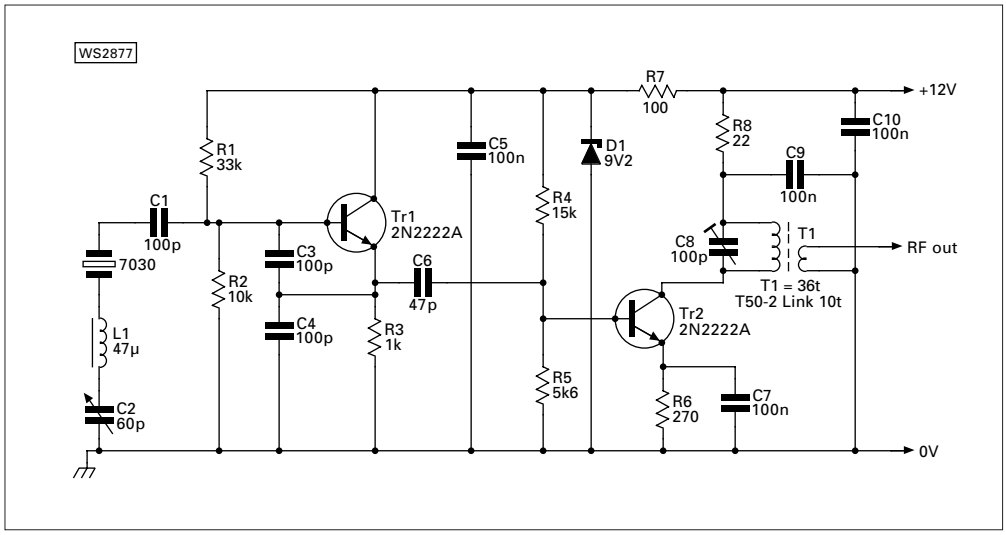
A multimeter' ohms range is used to identify the end of each wire. The dots on the transformer in the circuit diagram indicate three wires that emerge at the same end of the windings. One winding forms the input (C3 and ground). The other two windings are connected, the beginning of one to the end of the other, and connected as shown in Fig. 3.



● **Fig. 2: Adding another *npn* transistor is another method of overcoming the need for high impedance headphones (see text).**



● **Fig. 3: A diode mixer circuit which G3RJV had previously built. In this example it's shown for 7MHz. It's simple to build and uses a moulded radio frequency choke (r.f.) for the input filter (see text).**



● **Fig. 4: The previously built (and described in COTPW) variable crystal oscillator (VXO) used by G3RJV (see text).**

Basic Input Tuning

The input tuning is very basic, so I've offered an alternative. This comes from the excellent work of **Miguel Bartié PY2OHH**, on simple direct conversion receivers.

The circuit is a basic band-pass filter using a single moulded choke. The paralleled capacitors on the input and output provide low impedance inputs and outputs. In this case I took the output from the top, rather than the lower impedance point at 'X'. This should improve the input tuning.

The receiver only requires a local oscillator for completion. Many readers will no doubt have a 7MHz oscillator from a previous project, so this can be used.

Note: The passive mixer does require quite a high level of drive so I turned to a previously built 7MHz variable crystal oscillator (VXO) circuit. This is shown in **Fig. 4**. It uses a Colpitts oscillator with inductance and capacitance to allow a reasonable frequency swing. The oscillator is followed by a tuned buffer amplifier. (I described this VXO fully in COTPW for March 1999. That article included values for a range of amateur bands).

The mixer and oscillator circuit are just shown as possible applications for the audio amplifier. And I'm sure that readers will have their own uses for this useful little discrete amplifier project. Enjoy the project!

PW

VHF DXER

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REPORTS & INFORMATION BY THE LAST SATURDAY OF EACH MONTH.

I'm glad to report that it's been another excellent month for the v.h.f. DXer with many types of propagation modes being reported during July. The highlights of the month include Sporadic-E (Sp-E) openings on the 50MHz band, which occurred throughout much of the month. The majority of these were single-hop events with contacts being made around Europe although multi-hop paths regularly formed, enabling QSOs to be made with stations in the Middle East area and beyond.

The transatlantic path also opened up on at least 11 days during the period with contacts being made into the North American continent. Many Sporadic-E openings reached the 70MHz band during July with numerous low-power f.m. and s.s.b. contacts being completed. Disappointingly though there were only six days during the month when the ionisation was sufficient to support Sp-E communication on the 144MHz band.

Other ionospheric events during July include the daily meteor scatter (m.s.) contacts accomplished on the 50, 70 and 144MHz bands by scattering signals from meteor trails to stations up to 2000km away, trans-equatorial propagation (t.e.p.) on the 50MHz band with contacts being made with stations in the African continent and field-aligned irregularities (f.a.i.) propagation on the 144MHz band with suitably equipped operators in southern Europe. Although we are now on the slippery slope to sunspot minimum, the Sun was quite active during July and as a consequence there were 10 days during the period when auroral (Au) backscatter openings were reported on the v.h.f. bands.

Tropo conditions on both the 144 and 430MHz bands during July were quite good with many days when contacts could be made over distances of up to 1000km or so. Some operators also reported hearing the low-power 144MHz beacon CU8DUB in the Azores at a distance in excess of 2500km but there was better than this as the regular marine path to the Canary Islands (EA8) was open on at least five occasions during July. That made it the third month in a row that tropo contacts over this 3000km path could be achieved on the 144MHz band!

THE 50MHz BAND

Although the Sp-E activity during July didn't seem as intense as in previous years there were still some very good openings during the month. It's very easy to work around Europe with low power and a reasonably small antenna during Sp-E openings as shown by the report from **Martin Andrew GM6VXB** (Aberdeenshire IO97).

Martin reports that there were Sp-E openings at his QTH nearly every day during July the only exception being when there was auroral activity. Recent s.s.b. contacts have included stations in Austria (OE), Belgium (ON), Croatia (9A), Cyprus (5B), Czech Republic (OK), Finland (OH), France (F), Germany (DL), Greece (SV8RV) at 2768km, Holland (PA), Italy (IG9/I2ADN), Luxembourg (LX), Madeira (CT3FT) at 2951km, Norway (LA), Poland (SP), San Marino (T77EB), Slovakia (OM), Slovenia (S5), Spain (EA) and Sweden (SM). Martin has also been active during openings when the skip distance has reduced considerably (a sure sign that the maximum usable frequency is rising) and reports that a contact with the station of G3NAP (IO92) was his shortest ever distance at 588km.

A number of Sp-E openings on the 50MHz band have been towards the North and Martin reports that during one evening he heard the JW9SIX (Svalbard), JX7SIX (Jan Mayen), LA7SIX (Norway), OH9SIX (Finland), OY6SMC (Faroe Islands) and TF3SIX (Iceland) beacons but no other DX stations on the band. It was particularly frustrating to copy the JW and JX beacons at 599 for over an hour, as these would be new countries.

On July 15 GM6VXB worked the station of TT8M (Chad) for a new DXCC country and possibly a first GM-TT8 contact. This QSO was probably accomplished by the Sp-E ionisation in Europe linking to a southerly trans-equatorial path with propagation into Africa.

By analysing reports on the DX Cluster it appears that a total of 11 multi-hop transatlantic openings were reported during the period on July 1, 2, 3, 4, 6, 7, 8, 15, 16, 23 and 31. However, unlike other years when the majority of contacts are made with stations in Canada (VE) and USA (W) this time around it was mainly with stations situated in the Caribbean and Central America area.

Contacts on c.w. and s.s.b were made from the UK with the stations of CY9SS (St. Paul Island), FM5JC (Martinique), J3/K5AND (Grenada), J68AS (St.Lucia), KP2A and NP2/W9UI (Virgin Islands), NP3CW, WP3UX, KP4EIT, KP4TB and WP4NIX (Puerto Rico), PJ2BVU (Netherlands Antilles) and 9Y4AT (Trinidad and Tobago). This contrasted sharply with a few contacts made into Canada and the USA where it appears only the stations of VE1YX, VE1ZZ, VO1AU, K1TOL, K7BV/1 and W1JJ were worked.

Multi-hop Sp-E openings also occurred in other directions and amongst the DX worked from the UK during July were the stations of A45XR (Oman), A61Q (United Arab Emirates), A71A beacon (Qatar 50.007MHz), TA2MW/0, TA2RC/P and TA7KA (Turkey), ZC4LI (UK bases, Cyprus), 4Z5LA and 4Z5MT (Israel), 5B4AHQ (Cyprus), 5D6MC (Morocco), 5T5SN (Mauritania), 7X0AD and 7X2RO (Algeria) and 9Q0AR (Democratic Republic Congo).

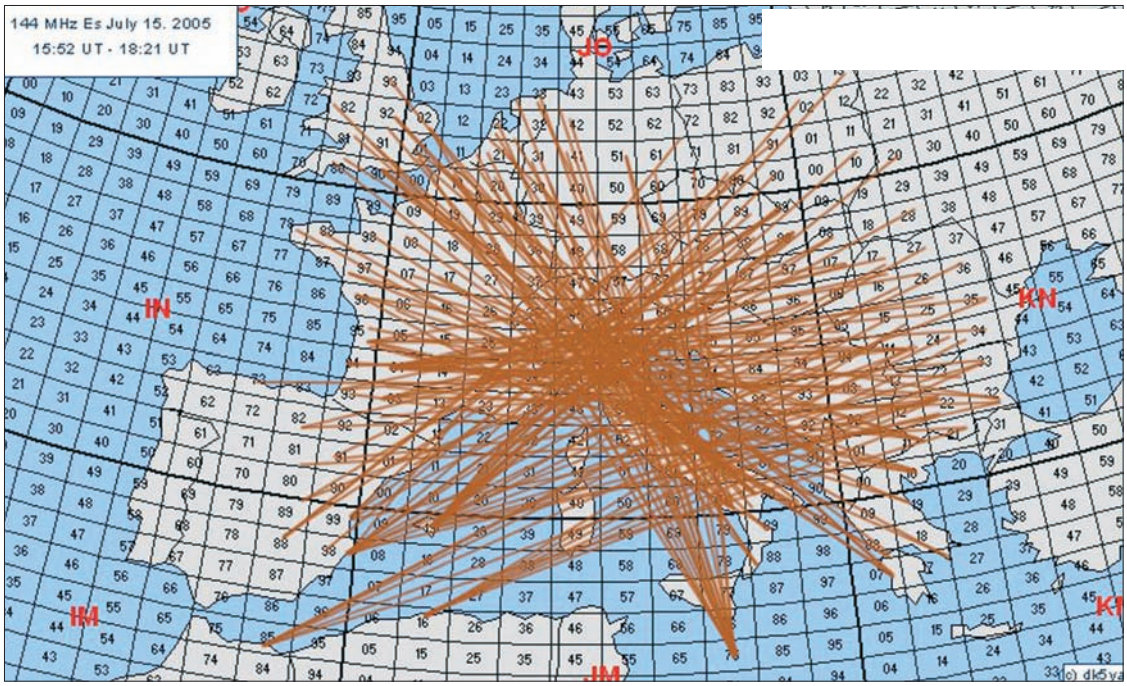
THIS MONTH DAVID G4ASR HAS REPORTS OF RECENT SPORADIC-E OPENINGS ON THE 50, 70 AND 144MHz BANDS

144MHz SPORADIC-E

Although there have been a total of 19 Sporadic-E openings that reached the 144MHz band this summer the results have been slightly disappointing insofar that the majority of good events occurred quite early in the season. It kicked off on April 28 with an excellent opening to HA, IS0, IT9, OE, OK, SP, S5, T9, YU, 9A, 9H and I. In the following month there were seven openings, on May 19 (CT, EA, EA8), May 21 (YO), May 23 (LZ, SV, Z3), May 25 (CT), May 29 (CN, CT, EA, EA8, EA9, ZB), May 30 (CT, DL, EA, HB9, I, OK, SP) and May 31 (SP, SV).

In June, normally one of the best months for Sp-E openings at 144MHz, there were only five openings, June 1 (DL, HA, HB9, I, IT9, LZ, OM, S5, 9A, UA, UB), June 3 (EA), June 11 (DL, HA, LY, OE, OK, SP, S5, UB, YO, 9A), June 22 (9H) and June 29 (CT, EA). During July there were a further six days when Sp-E reached the 144MHz band and I'll now look at those in more detail.

The first 144MHz opening of the month took place on July 2 between 1800-1830UTC with stations in Cornwall and southern Ireland making contacts into Italy. It was a fairly brief affair and although it occurred during the



● Fig.1: The 144MHz Sporadic-E opening on 15 July.

RSGB v.h.f. National Field Day contest it didn't appear that contest stations in southwest England realised that a Sp-E opening was under way. The station of **Francesco IK0WGF** (JN52) reports working G4LOH (IO70) at 1807UTC, EI9GQ (IO51) at 1810UTC and G4ALY (IO70) at 1824UTC, all with strong 59 signals.

Colin G4ZFJ (JO01) was the only station to report a very short opening at 1802UTC on July 5. He mentions hearing two Spanish stations chatting together on 144.300MHz the s.s.b. calling frequency and after a few calls Colin managed to get their attention. He then went on to work EA5AAJ (IM99) and EB5AYG (IM99) in an opening lasting less than two minutes.

Sporadic-E propagation on the following day July 6 was excellent with five periods of activity being reported by UK stations. The 144MHz openings were between 1015-1045UTC to Spain (EA7), 1140-1200UTC again to the EA7 call area, 1220-1230UTC to Portugal (CT), 1545-1610UTC a larger event to Croatia (9A), Germany (DL), Italy (I), Sicily (IS0), Slovenia (S5) and Switzerland (HB9) and finally between 1800-1830UTC to Russia (UA3).

In the first opening of the day the station of **Antonio EA7DUD** (IM76) reported s.s.b. contacts with G4RRA (IO80) at 1015UTC and GW8ASA (IO81) at 1020UTC. The next opening that was also to southern Spain seemed to favour stations located in southwest England and Wales.

Nacho Carballo EA7TN (IM66) reports that between 1144-1154UTC he contacted the stations of G3ZYY (IO70) who was running 10W into a vertical antenna, G4RRA (IO80), GW3NDB (IO81), GW3MFY (IO81), GW4BVE (IO82) at 1800km, GW4GTE (IO83) his best DX of the opening at 1855km, GW8ASA (IO81) and GW8ASD (IO83) at 1842km. After this opening faded out the E-layer 'cloud' reformed enabling stations in southeast England to make contacts into Portugal.

Joe CT1HZE (IM57) mentions making s.s.b. contacts with a number of UK stations between 1220-1230UTC including G3NVO (IO91), G4RGK (IO91), G4ZFJ (JO01), G7RAU (IO90) and G8IZY (IO91). The 144MHz band then remained relatively quiet for the next three hours before a much more widespread event started.

Paul G4RRA (Devon IO80) made eight s.s.b. contacts between 1559-1610UTC working the stations of DK7DR (JN47), HB4FE (JN47), HB9ZCV (JN47), IS0GQX (JM49), IV3DXW (JN65), IW3QTG (JN65), S53VV (JN65) and 9A8A (JN86). The day ended with an opening to Russia, which favoured stations located on the eastern side of England.

However, it was a very frustrating opening for G4ZFJ who was hearing all Russian operators with 59 signals - but he couldn't get through the wall of Dutch and German stations that were also calling. Between 1803-1831UTC he heard the s.s.b. stations of RA3EL (KO82) at 2389km, RA3XAL (KO84) at 2379km, UA3ARC (KO85) at 2446km and UA3PC (KO84) at 2379km. Colin runs 100W from an Icom IC-275H transceiver and a 9-element Yagi but now threatens to get more power and bigger antennas for next year!

The station of **David Johnson G4DHF** (IO92) runs 250W into an array of four 7-element Yagis and this was sufficient to enable s.s.b. contacts to be made with RA3EL (KO82) at 2410km, UA3ECA (KO82) at 2411km and UA3YKK (KO73) at 2296km. According to reports received the best DX of this event may have been a QSO between the stations of G8LHT (IO93) and RA3WDK (KO81) over a 2500km path.

The maximum usable frequency (m.u.f.) remained high throughout the night and in the early morning of July 7 the 144MHz band opened up to Hungary, Italy, Sicily and Malta. The station of G1AAR (JO00) mentions that as the 50MHz band was still wide open when he went to bed the previous night he decided to get up early on the following morning. He was rewarded by making 144MHz QSOs between 0624-0645UTC with the stations of IW0GPN, IC8FAX and I7CSB.

The Italian station I7CSB (JN71) was running an FT-847 transceiver into a 9-element Yagi and he mentions that between 0626-0651UTC he made s.s.b. contacts with G1AAR, G1WUU, G3WZT, G4FNI, G4TIF, G4LOH, G4ZFJ, G7RAU, G7WZT, GW8JLY and M0RHS.

LARGE SCALE OPENING

There was a large-scale opening between 1655-1745UTC on July 15 as shown in the diagram **Fig. 1**. Stations in southern England and Wales had propagation into Italy and Greece at what was probably the maximum distance for single-hop Sporadic-E.

Dave Edwards G7RAU (Isle of Wight IO90) running 400W into a pair of 17-element Yagis reports making s.s.b. QSOs with the stations of I6BQI (JN72), IK7UXU (JN81), I8MPO (JN70), I8TUS (JM89) at 1878km, I7IWN/7 (JN90) 1919km, SV8AQY (KM08) 2217km, SV3CYM (KM08) 2283km and SV0XAJ (KM07) for best DX of the event at 2289km. The opening at the QTH of SV3CYM lasted for over one hour with contacts being made into Belgium, France, Italy, England and Wales.

Dave G7RAU's UK contacts included the stations of G4DOL (IO80), G4EAT (JO01), G4IGO (IO80), G7RAU (IO90) and possibly GW8JLY (IO81) who faded out into the noise before a final confirmation was received. The final Sp-E of the month was reported on July 17 although it only lasted less than one minute! A few contacts were made into southern Italy at 1812UTC but to some operators the opening seemed more like meteor scatter than Sporadic-E.

DEADLINES

The summer Sporadic-E season is now over but there are always the autumnal tropo openings to look forward to. Good luck with your DX contacts and please let me know what you managed to work or hear. Send any reports or news, preferably by E-mail, to reach me by the last weekend of the month.

73, David G4ASR

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Yaesu FT 8 00R 2m 70cm FM Mobile Transceiver, 50/35W Full Duplex £229
Kantronics KAM plus Multimode Dual Port Data Controller + Pactor ..... £ 99
Nevada TM- 000 8 30MHz Roller Coaster 1kW ATU ..... £ 69
SGC SG 211 8 60MHz Microprocessor Controlled Automatic ATU 60W £139
GRE PSR 282 66-512MHz (with gaps) AM,FM Hand Held Receiver 200ch. £69
Icom IC-R75 30kHz-60MHz All Mode Receiver 12V with psu £499
SGC SG 231 8 60MHz Microprocessor controled ATU 00W £259
Alinco DJ- 91 2m FM H/Held with DTMF keypad £1 9
Alinco DJ-580 2m/ 0cm FM H/Held Full Duplex Airband RX £129
Icom IC 821H 2m, 70cm All Mode Base Transceiver 45/40W 12V £799
Kenwood AT-50 1 8-30MHz 00W Matching Automatic ATU £2 9
Icom IC-706 Mk II HF,6m,2m All Mode + Gen.Cov.RX, 12V DC £549
Kantronics KAM Multimode Data TNC £99
ADI AT 200 2m FM H/Held Transceiver with Nicad & Charger £89
Alinco DJ 480E 70cm FM H/Held Transceiver + Nicad & Charger £99
Yaues MD- 00A8X Desk microphone £79
AOR AR-3000A 00kHz-2036MHz All Mode 400Ch. 12V with PSU £499
Yaesu VX-7R 6m,2m,70cm FM Transceiver + 5W, Fu l CTCSS, Wide RX & W RES £ 99
Yaesu FT 2600M 2m FM Mobile 60W + CTCSS £129
AOR AR-8600 II 500kHz 2040MHz All Mode Mob le/Base Receiver 000Ch. 12V £429
Yupiteru MVT-7 00 00kHz- 650MHz All Mode Hand Held Receiver 000Ch £1 9
Microset SR- 00 2m 4-25W in, 00W out a l mode + GaAsFET Pre amp £1 9
MFJ MFJ 993 1 8 30MHz Auto ATU + meter, Balun & Display 300W ..... £ 89
Ameritron ALS 600XCE 0- 60m Solid State 600W Amplifier £849
Icom IC-746 HF,6m,2m All Mode Base Transceiver + DSP, ATU & Gen.Cov. RX 12V £899
MFJ MFJ 969 60 6m 300W Roller Inductor ATU + Dummy Load & Meter £1 9
Roberts R 861 Portable 150kHz-30MHz SSB , FM stereo RDS £139
Icom IC-7 8 HF SSB,AM,CW Transceiver with Gen.Cov. 00W 12V £329

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HF HIGHLIGHTS

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SKEWEN
WEST GLAMORGAN
SA10 6DZ
Tel: (01792) 817321
E-MAIL: carl@gw0vsw.freeserve.co.uk

REPORTS, INFORMATION AND PHOTOGRAPHS TO ME PLEASE BY THE 15TH OF EACH MONTH.

CARL GW0VSW LOOKS AT GERMAN PREFIXES, DX NEWS, NEW IRCS AND YOUR REPORTS IN HIS HF BANDS ROUND-UP

The well-known antenna designer and experimenter the late **Les Moxon**, held the callsign **G6XN** and was the author of the very popular book *HF Antennas for all Locations*. Many of his designs and experiments appeared in the pages of *RadCom*, *QST* and other well known Amateur publications world-wide and he was posthumously inducted into the CQ Amateur Radio Hall of Fame in May this year.

The G6XN callsign has now been re-issued, with permission of his family, to the **Wey Valley Amateur Radio Group**, which is a brand new radio club launched in May 2005 and based in Guildford. Meetings are held on the first and third Friday of every month at the Guildford Rowing Club and the premises are normally open from 1930 onwards and they regularly have guest speakers attending. The group aim to have an operational station up and running most evenings and members are also encouraged to bring along any current construction projects or equipment they think will be of interest to members.Visitors are most welcome and further details can be found on their website at **www.weyvalleyarg.org.uk**

NEW GERMAN PREFIXES

You may now be working or hearing several 'new' prefixes from The Federal republic of Germany as they have begun issuing **DQ** and **DR** callsigns. Also, club stations can now apply for 2x1 callsigns such as DK2A. All numbers 0-9 mean the call is a 'club station' and there will be no 2x1 callsigns for individuals. One more important change is that while all DP-prefixes used to be for extra-territorial areas before like **DP0POL** in Antarctica and **DP0EPO** the call for the Munich European Patent Office, now only the prefixes **DP0-DP2** will be used exclusively for extra-territorial areas. It is worth mentioning that currently there are still no **DI** Amateur radio callsigns issued.

DX NEWS

The **SKY Contest Club** from the State Union of Serbia And Montenegro (SUSAM) will celebrate their 10th anniversary on the air using three special callsigns until December 31. Look for the following stations, **YT310SKY** (c.w.), **YZ610SKY** (s.s.b.) and **4O310SKY** (RTTY). These stations are expected to be active on all h.f. bands and in most major contests. Favourite bands at the moment appear to be 10MHz c.w., 14MHz s.s.b. and RTTY. If you work any of the stations you can QSL via **YT6A**.

Ernie Gray **KC4/W1MRQ** is remaining at McMurdo Station based on Ross Island AN-011, which is K-09 for the Antarctica Award until November. Currently the station is having very bad weather so operations may be limited for a time and have to fit in with work commitments.

Ernie is active on h.f. but is particularly fond of 144MHz EME. Check out **www.home.planet.nl/~pa0jmv** for further information. You can QSL via **Laurent J. Blouin K1CA, 52 Warner Hill Rd, Derry NH 03038, USA.**

Members of the **Tennessee Valley DX Association** (TVDXA) will activate St. George Island NA-085 using the callsign **W4I**. This island is part of the Florida State group (FL007s) and the team plan on being active about 1900UTC on Sunday 2 October and will go QRT sometime Sunday morning on 9 October.

The group will use 100W transceivers and plan to be active on 3.5 to 28MHz using s.s.b., c.w., with some PSK and RTTY. QSL will be via WA4AA direct (s.a.s.e.) or via the bureau and additional information and updates will be added to their website during and following this activation at **www.tvdxa.com**

Ricardo Martins CT3KN is the QSL manager for CQ3A, CQ3T, CQ9T, CT9KN, CS94KN, PP6ZKN, CT3KN/CT1 and CT/CT3KN/P. QSLs are OK via the bureau or direct to **Rua Levada dos Barreiros 10 4 X, 9000-161 Funchal, Portugal.**

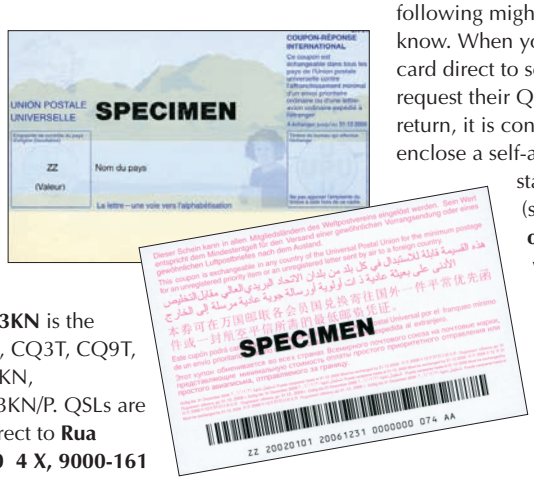
NEW IRC ONLY!

The New Zealand Post is no longer accepting the old style International Reply Coupons (IRCs) and will now only accept the larger type with the bar code printed on the reverse side. This is a policy decision made by the New Zealand Post effective as of 31 December last year.

Those of you who still require QSL cards from any New Zealand based station or New Zealand QSL Manager please only send the new style IRCs, which have an expiry date of five years from the date of issue. It's worth mentioning that for the ZL8RI DXpedition in 1996, the ZL9CI DXpedition in 1999 and the ZL7C DXpedition to the Chatham Islands in 2002 the above information becomes effective immediately.

All cards received that have been postmarked after 13 July will be replied via the Bureau if the 'old' style IRCs have been enclosed with the direct requests. The same applies for cards sent to ZL2HU, ZL4HU and ZK1KH.

The subject of IRCs has been mentioned before in this column and for those of you who are not aware of what they are I thought the following might be useful to know. When you send a QSL card direct to someone and request their QSL card in return, it is considered polite to enclose a self-addressed stamped envelope (s.a.s.e). This **only** works well when both of you live in the same country. However, if you are from different countries the



● The new style International Reply Coupon.

● Martyn Medcalf M3VAM/G1EFL operating /P from the summit at valley Rocks, Lynton in Devon. Equipment was a Yaesu FT-897 on battery power and the antenna a PBX Multi bander.

enclosed postage stamp will not be valid. This problem was solved in 1906 when the **Universal Postal Union** (UPU) during its Congress in Rome introduced the International Reply Coupon service. As the service began before the days of airmail the earliest coupons could only be redeemed for a single-rate ordinary postage stamp to a foreign country.

In terms of today's UPU Convention IRC's are exchangeable in all member countries for the **minimum** postage of an unregistered airmail letter sent to a foreign country. The UPU's International Bureau processes several million coupons each year and does not sell IRCs directly to customers. You must buy them from your local post office although they are not obliged to sell them to you. It is however mandatory for Post Offices of the UPU member countries to exchange the coupons.

The design of International Reply Coupons has changed over the years and so has its value. The new IRC is larger than the previous version and has been printed in a new colour to make it more distinct to previous coupons in the series.

The theme of the new coupon, 'La lettre, une voie vers l'alphabétisation' (The letter - a path to literacy) has been printed in French between the name of the country of origin and the date stamp of the exchanging country. It has also been printed on heavier paper, which is now commonly used for bank cheques and allows the coupon to be machine processed.

The cost of the new IRCs is set by each issuing country in accordance with the cost of postage corresponding to an unregistered overseas priority airmail letter weighing 20g or less. If you would like to read up some more on the UPA then take a look at the UPA website at **www.upu.int/irc/en/**

YOUR REPORTS

On to your reports now and first off again is **Ted Trowell G2HKU** on the Isle of Sheppy, Kent who was using his Ten-Tec Omni V at 70W c.w. to a Butternut HF-6 vertical antenna on 7MHz working 7X2AB (Algeria) at 2100 and a 5W QRP contact with EC2AHL (Spain) who was also QRP running just 200mW to a dipole. Moving to 10MHz Ted found LU7HN (Argentina) and CY9SS (St. Paul Island) NA-094 once again around 2100UTC. Ted mentions that "band conditions have been very strange at times with Scottish stations at S9 on 14MHz! It is also noticeable when a contest is on there is a sudden increase in activity worldwide. If only those stations would show up outside the contests we would all have a good deal more interesting contacts in our logs".

In East Finchley, North London **Martin Addison M3JUQ** had a busy second month of operating on the h.f. bands working DK7OS (Germany) 0640 and several French special event stations including TM0GP (French Grand Prix) at 0815, TM6ACO (Le Mans 24 Hour Race) 1036 and TM1TF (The Tour de France) at 1237.

THE 14 & 18MHz BANDS

Moving to 14MHz Martin found IU7SCT (Italy) (The 80th anniversary of Taranto Catholic Scouts) 0637, EA2CHL (Spain) 0740, 9A10KC (Croatia) (10th anniversary of Community for Technical Culture, Koprivnica) 0812, DK0ALC (Germany) 0917, HB9ABX (Switzerland) 1516, SV1FH (Greece) 1954, LY4A (Lithuania) 1955 and T77EB (San Marino) at 2145UTC.

In Chelmsford Essex **Martin Medcalf M3VAM** uses a Icom IC-746 and long wire antenna with auto tuner for his DX activities and worked F5HPY/P (France) at 0921 on EU-032, OH2LU (Finland) 1315, UT7DK (Ukraine), ZA/SP5EAQ (Albania) 1439 and SV2CXI (Greece) at 1652UTC. Martin also operated /Portable with a Yaesu FT-897 on battery power, running 20W to a PBX Multi Band ground mounted antenna on the Summit at the Valley of Rocks at Lynton Devon approx 260m above ground. He used his other callsign **G1EFL** and worked 10 different countries in 1 hour - Austria, Bulgaria, Estonia, European Russia, Finland, Hungary, Italy, Poland, Spain and Sweden.

Owen Williams G0PHY in Biggleswade, Bedfordshire made 100W s.s.b. contacts with UK8AJ (Uzbekistan) at 1911 followed later by CY9SS (St. Paul island) at 2357UTC using his Yaesu FT-747 and a back up sloping dipole antenna cut for the 14MHz band.

The s.s.b. mobile log of **Mark Taylor G0LGJ**, Dereham showed contacts with 4U1ITU (ITU Geneva) 1057, EY7/N8CEY (Tajikistan) 1905 and LU9MBY (Argentina) 2156UTC using a Kenwood TS-480 and his DK3 Screwdriver antenna.

Moving on to 18MHz Mark found RX9FM (Asiatic Russia) 1730, 5N8NDP (Nigeria) 1942, YV5YMA (Venezuela) 2240 and HK3AK (Columbia) at 2310UTC. Ted G2HKU also operated here and had contacts with A61Q (United Arab Emirates) 1900 and TA3AX (Turkey) at 2110UTC.

THE 21 & 28MHz BAND

The 21MHz band provided just two contacts for Ted G2HKU, ZS1EL (Republic of South Africa) 1500 and 9K2HN (Kuwait) at 2110UTC all on the key once again.

Finally to **Peter Lowrie MI5JYK** in Newtonabbey, Northern Ireland who has not had much time to get active on h.f. this month but has managed a little hill topping for v.h.f. contests together with the odd foray onto 28MHz f.m. Simplex QSOs included DL6HWF and DL1SGH (Germany), PA3FAO and PA6FI (Netherlands), RA3DGH (European Russia) and HB9DWN (Switzerland) between 1804 and 1820 followed by OK1BYR during a late opening at 2207UTC. All contacts were made using an Albrecht AE-485S and 10W to a dipole antenna at 8m above ground.

SIGNING OFF

That's it for another month! As usual my thanks go to all our reporters and to **Tedd Mirgliotta KB8NW** editor of the *OPDX Bulletin* for the DX information. Until next time have a good DX filled month.

73, Carl GW0VSW

DATA BURST

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SWANSEA SA3 3BA
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E-MAIL: robin@broadmead.eclipse.co.uk

ROBIN GW3ZCF TAKES A LOOK AT DIGIPAN, A QSL LABEL PRINTER AND SPYWARE TOOLS

One of the most ground-breaking events in the six years that PSK31 has been used on the Amateur bands was the introduction of *Digipan*. The first software to be freely available to Amateurs was the basic program written by the original developer of PSK31, **Peter Martinez G3PLX**. Rejoicing in the name p31sbw108, this was the program on which I cut my digital teeth, and although very basic, it worked very well.

The explosion in popularity of PSK31 spawned a number of new programs, one of the best being the original 16-bit version of *Logger*, by **Bob Furzer K4CY**. But it was the introduction of Digipan, which really made PSK31 accessible to everyone. Written by **Skip Teller KH6TY** and **Nick Fedoseev UT2UZ**, its most striking feature was the multicoloured panoramic waterfall display of the entire audio spectrum.

All the PSK31 signals within the receiver passband were displayed as vertical lines on the waterfall, the colour and density of the traces indicating the strength of each signal. But the real innovation was the method of tuning. All that was necessary was to use the mouse to bring the arrow onto the required signal, left click and you were automatically tuned onto the station for transmit and receive. Many software writers have now adopted the same system and we tend to take it for granted, but at the time of its introduction it was a revelation.

Over the years various refinements have been added to *Digipan*, the most significant of which was the linked logging program, which enabled information to be transferred from the screen to the log with key clicks. This had been pioneered by Bob Furzer with his interlinked programs *Logger* and *Zakanaka*, and is an elegant way of logging your digital contacts without having to use pencil and paper.

The latest incarnation of *Digipan*, version 2.0, has a new feature. The screen grab, **Fig. 1** shows a typical display. *Digipan* will lock onto every readable signal within the receiver passband, assign it a letter from A to Z and show the text in the corresponding labelled horizontal rows on the right of the window. You can choose to have the text continuously scrolling across the screen or, as is my own preference, have it stay still until the line is full and then start again.

As soon as you see a signal that interests you, for example the CQ call appearing in Row F, you click on the row and are immediately tuned to that station for transmission. The text now appears in the main receive window, upper left in Fig. 1.

To transmit you type your text into the full width window just above the waterfall and, as you send it, it will also appear in the main receive window. A neat feature is that any row that contains a CQ call will be highlighted in yellow to draw your attention to it. Clever, or what?

The horizontal rows will soon become cluttered, but there is a user selectable facility to clear them automatically after a predefined period of inactivity – I use 30 seconds. You can clear the decks completely – all 26 channels plus the main receive window – by clicking on the Clear button.

LOGGING WITH *DIGIPAN*

As with earlier versions of *Digipan* you can log directly from the screen. Double click on a callsign and it's captured in the log bar at the top of the screen. Then double click on the name and that's recorded too. By double clicking on the appropriate 3 figure group RST is then recorded.

Finally, you can log the QTH by holding Shift and double clicking on the text. A nice feature is that if the QTH contains more than one word you can double click on each word in turn and they will all appear in the QTH box.

At the end of the contact the Save icon must be clicked and when the contact has been safely filed in the log an asterisk to the left of the icon will disappear. You can search through the log for a given text string (name, callsign or whatever you wish), print it for a hard copy logbook or export it in ADIF format.

Altogether, the latest version of *Digipan* works very smoothly. It has a simple but very clear Help file and is a fairly modest download of about 700kB. Whether you are a new or experienced user I strongly recommend this program, which you can download from **http://www.digipan.net/**

LABEL PRINTER

Now that many people are using computer logs, it's becoming increasingly popular to print QSL labels (or even full sized QSL cards, though the true costs of this are much greater than most commercially printed cards). For printing QSL labels, one of the most commonly used free programs is *BV7* by **Bernd Koch DF3CB** (**www.df3cb.com/bv/**).

To get tthe *BV7* program to run, you also need to download the Borland Database Engine from the link given on Bernd's homepage. This is widely recognised as the most powerful and versatile QSL printing software around, but I've found it rather difficult to set up – there just seems to be too many parameters to adjust and in changing one of them I seem to mess up the others!

I was therefore delighted when **Charles Sutton W1MCP** and **Joseph Edmonds N4NQY** produced a simplified program called *Log Print*, which does everything I require of a label printing program without any fuss. It was designed to work as an integral part of the *Logger32* suite, and is bundled with *Logger32* if you download it from the web. It is, however, a free standing program in its own right and you can download it separately from the Logger site (**www.kc3elo.com** and follow the link to Support Files).

If you download the full program, version 2.0 at the time of writing, you will also get a Help File in PDF format, which you will need *Acrobat Reader* to view. Most computers have this pre-installed, but if not it is free from **www.adobe.com/products/acrobat/readstep2.html**

Before using *Log Print* you need to create a file of the QSOs for which you want to send a

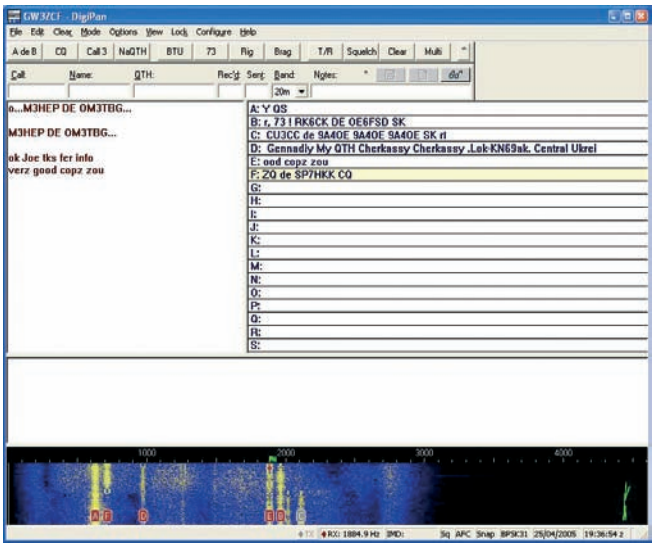

Fig. 1.

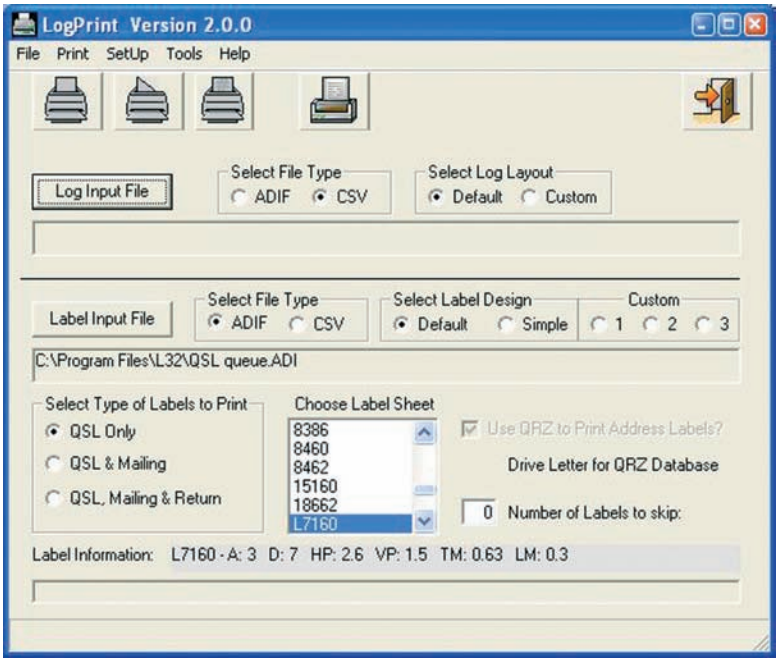

Fig. 2.

CDROM in your computer, you can also print address labels for sending directly to the recipient, and even return labels addressed to yourself!

You then need to enter the size of labels you want to print. Most people buy labels which conform to the Avery format and a wide range of these are available in *Log Print*. If you don't find the size you want, it is a simple matter to create your own customised format – full instructions are in the Help file. I nearly always use Avery 7160, which gives 21 labels per A4 page.

The last thing to select is the number of labels to skip. If, the last time you printed, you did not fill a page, you can start the new print job part way through a page to save wasting the unused labels. This is a very useful feature which is not present on all label printing programs.

Finally, press the **Print** button (the fourth from the left in the top row) or select Print QSL Label from the menu bar and your labels will be printed. The whole process is much simpler than it sounds, and I find the default label design very satisfactory. Again, there are full instructions how to customise your design if you prefer.

You can also print full sized QSL cards and Logbook pages, but I will leave you to read the Help file to find out how to do that. (Please note that there is a later version in beta testing, which may have been released by the time you read this. The main change is that it allows multiple QSOs with the same station to be printed on one label. In the default mode it prints as above, except that a tiny window with OK in the middle must be clicked repeatedly as you send each label to the printer).

QSL. Almost all logging programs allow you to tag these QSOs and then export them in ADIF format.

If your logging program doesn't support this, *Log Print* will also recognise CSV format. Give the file a simple name which you will recognise later.

When you open *Log Print* you will see a display like **Fig. 2**. You first have to tell it the name of the file you have created. Assuming that you exported your file in ADIF format, select ADIF as the File Type and click on the Label Input File button. A *Windows Explorer* window will appear, within which you can browse through your computer until you find the appropriate file to print. Click on the file name and then click on the Open button.

You can then select what labels to print, either QSL only or, if you have the QRZ

SPYWARE REMOVAL TOOLS

I have written before about the need to protect yourself against viruses by firewalls and antivirus software. Neither of these precautions will protect you from many types of spyware, which can infect your computer whenever you access a website on the Internet.

Often the action of clicking on a pop-up window is sufficient to load one of these malicious programs onto your computer. Some are relatively benign, but many track all the sites you visit and record details, which can result in your receiving large amounts of spam or junk-mail. Other, more sinister, variants can record all your keystrokes when entering a password into your bank account, and pass these details to criminals who will try to defraud you of your precious assets.

It's worth scanning your computer regularly to rid it of these spyware programs. There are two highly respected programs, which will remove most known spyware. Each is updated regularly and if you use both, one will catch what the other one misses.

The programs are *AdAware SE Personal* (**www.lavasoftusa.com/software/adaware/**) and *Spybot* (**www.spybot.info/en/download/index.html**). You can use these free of charge, but both welcome voluntary contributions via PayPal to help meet the costs involved in keeping them up-to-date. Both work in a similar way – they scan your computer and report what they have found, then you can remove some or all of the objects. They are kept in quarantine, so you can restore any if you find that is was something you needed to keep.

There is also a beta version of a Microsoft anti-spyware program that works silently in the background and updates itself automatically every day (**www.microsoft.com/athome/security/spyware/product**). Although free at present, it is widely anticipated that when beta testing is complete there will be a charge for this product.

All the three programs I've mentioned are recommended and are totally reputable, but beware of loading an anti-spyware program if you don't know its provenance. There are some programs, which purport to be spyware detection/removal tools but in fact plant spyware into your PC. It's a rough old world out there! Sorry to end on a gloomy note this month but it needs to be said.

Please keep your letters/E-mails coming in, so that I can respond to your requests.

73, Robin GW3ZCF

IN VISION

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ACOCKS GREEN
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GRAHAM G8EMX ROUNDS UP THE LATEST NEWS FROM THE ATV SCENE

One of the Digital Amateur TV (DATV) module sets bought by the British Amateur TV Club (BATC) for 'evaluation' is now in my possession. This had been another "can somebody collect this today" E-mail around the BATC committee and fortunately the previous custodian of the transmitter was in Malvern, just a pleasant Sunday drive away for me in Birmingham!

So - now I've got it, what am I supposed to do with it hi? Even at first glance it's obvious that 'home construction' of such boards, which use a dense population of tiny surface-mounted components and multi-pin processing packages, is clearly out of the question. The transmit module outputs at 435MHz, so we need to either up-convert to 1260MHz to enable reception by a satellite box, or find a repeater equipped with a 430MHz digital input.

The purchase of five of the DATV units by the BATC, at around £500 each, has occasionally drawn some comment, so BATC Treasurer **Brian Summers G8GQS** issued a reminder for clarification around the committee. It had been agreed that the club would buy five units as this would enable the German production to achieve an economical run when added to orders from others; three subsequently were sold to BATC committee members, although one admits that his has never been used – he is in a very poor location where there is almost no Amateur Radio activity at all.

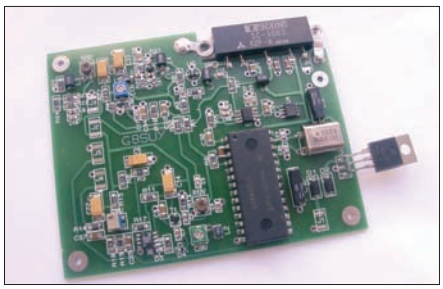
Brian Summers will include the remaining two (one of which is presently with me) as BATC assetts in the accounts. Maybe the DATV units could eventually be sold (or donated) to ATV repeater groups to provide digital outputs?

HOME CONSTRUCTED KIT

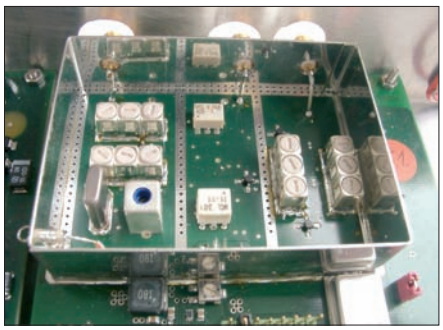
Now I am an enthusiast for the home constructed ATV kit. I have two Solent 1.3GHz transmitters, a couple of **Bob Platts G8OZP**'s 1.3GHz receivers, a G8SUY 1.3GHz transmitter with surface-mounted components with a second of these partially assembled. To build, then see them working, continues to be a thrill.

Now a kit is an etched and drilled p.c.b., component packs, with documentation giving at least a component list and diagrams showing positioning and circuit. The purist could argue that this is more assembly than construction; to some, true 'home-brew' means designing the circuit, sourcing the bits, etch and drill a p.c.b. Well, other than the first stage, I have done the rest! But the Solent became obsolete some years ago and Bob no longer advertises. So was it an admission of something when I decided to order another G8SUY transmitter, but built and tested this time.

I had fully intended to do the Summer Fun ATV contest in June, but didn't get 'a round Tuit' (these are in VERY short supply hi). So, the 'SUY transmitter was ordered ready for the International Contest in September and to have a known working unit as a 'model' when building the kit that still awaits my undivided attention (yeah, right).



● The G8SUY 24cm transmitter, as delivered built and tested.



● Screened 434, 36MHz and local oscillator digital ATV outputs on BATC module (cover removed).

An E-mail to Andy Parnell confirmed that a few were still available, a cheque was sent, another mail from Andy confirmed receipt, a further mail would be sent when the transmitter was posted off. This happened and a padded bag arrived one morning.

The construction of the G8SUY transmitter is immaculate – better than my build of the first kit, particularly the quantity of solder used – this is mostly surface-mount technology of course. But the main, dominant, reason for buying ready-built was to see the component orientation first-hand.

Pin identification of multi-pin devices, even those with a small pinout count (for example Transistors), can be notoriously difficult on these tiny s.m. devices and the 'Pin 1' ident on chips can require a magnifying lens. Of course, none of these – or the surface-mount concept – are designed for manual construction. In production environments components are fed in strips, placed by machine on ready-fluxed pads then instantly mass-soldered. Identifying 'pin 1' is not required at all. I really will have to power this G8SUY transmitter up sometime before September!

SURVEY RESULTS

The August 2005 ssue of the BATC's magazine *CQ-TV* publishes the results of its Readers Questionnaire. This survey had been distributed to establish a better picture of its members' interests in belonging to the club, how happy they were with the present content of the magazine and any suggestions for the future. Members responded by selecting from multi-choice questions and adding their own comments at the end.

The results of the *CQ-TV* survey indicated that the majority of BATC membership held a hobby interest in television, only around a third had ever worked in professional TV. When asked to rate their inclination towards various topics on a scale of 1 (lowest) to 10, a respondent gave 'studio and production' a minus 1 – oh dear!

A very high 85% held an Amateur Radio licence, most of these used ATV at least once a month and could use ATV repeaters. Many of the comments indicated the view of the practical Radio Amateur operating ATV; more practical construction, simple transmitter and receivers, more to encourage younger Amateurs and ATV beginners. So, there's plenty for the BATC committee to consider there!

BI-ENNIAL GENERAL MEETING

Like a recurring headache, the British Amateur TV Club's planning pain begins again - where to hold its next Bi-ennial General Meeting, due in 2006? Historically the BATC has organised a specific event – the BATC Convention and General Meeting – held at various but generally central locations within the UK. But these needed massive organisation for, sometimes, discouraging returns, so the club is presently considering combining with an established rally or event.

Whatever offers are considered, there will be the 'Londoners want a central location' and 'Too far from Scotland' cries! Where's that Paracetamol? Keep an eye on this column for updates.

Graham G8EMX

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Airband

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AIRWAVES SELCAL CIVIL & MILITARY DIRECTORY (Photavia)	176	£11.95	AIRSEL
CALLSIGN 2005 (Photavia)	2005	£10.95	CAL25
CIVIL AIRCRAFT MARKINGS 2005 (abc) Alan Wright	368	£7.99	CIVAIR
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MILITARY AIRCRAFT MARKINGS 2005 (abc) March & Curtis		£7.99	MILAIR
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AN INTRODUCTION TO RADIO WAVE PROPAGATION J.G. Lee (Babani)	116	£3.95	BP293
ANTENNA FILE (RSGB)	285	£18.99	ANTFIL
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ARRL ANTENNA BOOK (inc. CD ROM) 20th Edition	944	£32.00	RRAB20
BACKYARD ANTENNAS Peter Dodd G3LDO (RSGB)	200	£18.95	BYANTS
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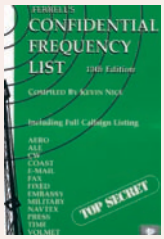
RADIO PROPAGATION PRINCIPLES & DESIGN Ian Poole G3YWX	102	£14.95	PROPPR
RECEIVING ANTENNA HANDBOOK Joe Carr (HighText)	189	£17.50	RXANHB
UNDERSTANDING,BUILDING & USING BALUNS (CQ Publications) Jerry Sevick	125	£18.95	BUBALS
VHF UHF ANTENNAS Ian Poole G3YWX (RSGB)	128	£13.99	VUANTS
WIRE ANTENNA CLASSICS (ARRL)	200	£10.50	WANTC

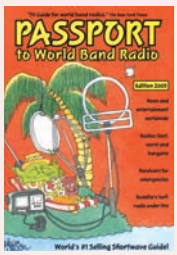
Ferrell's Confidential Frequency List



The 13th Edition of 'The Definitive HF Utility Guide' has been updated and includes MIL-STD-PSK modes, high speed HF E-mail services, extensive callsign listing, international call allocations, utility abbreviations and much more. **£21.50**

Klingenfuss 2005 Guide to Utility Radio Stations

One of the most comprehensive, reliable and up-to-date manuals containing over 11,200 frequencies, 1900 stations, meteo radiofax, radiotelex and NAVTEX schedules, abbreviations, frequency allocations and radio regulations. **£31.50**

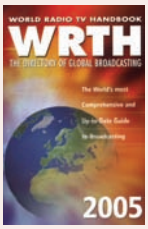


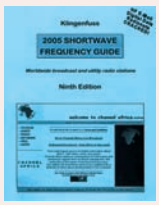
Passport to World Band Radio 2005

This book includes what's on world band radio, what to buy, how to get started and is written to make interesting reading. It contains a mix of articles, from an idiot's guide, to a five-minute start and ten easy catches to best times to listen. It also has a channel by channel guide to what's on the air. Everything the short wave broadcast listener needs to know. **£17.50**

World Radio TV Handbook 2005

A handy reference book that contains the names, addresses, programmes and frequency details of radio stations all round the world. Radio stations are listed under the country and all countries are split up into continents making it much easier to turn to the station you need. Also included are articles on HF broadcasting conditions, radio reviews and a section on how to use the book. **£22.50**





Klingenfuss Shortwave Frequency Guide

This 2005 edition contains a new, clearly arranged alphabetical list of stations and user friendly listings in convenient frequency order. There are over 10,000 entries covering broadcast stations world-wide and 11,000 entries covering utility stations world-wide. **£24.50**

Radio Listeners Guide

This handy annual publication contains radio product reviews and general information for listeners. Frequencies and locations of radio stations all over the UK and Ireland are given for BBC and commercial radio stations, as well as DAB services. All-in-all a very handy reference guide. **£5.45**

25 Simple Tropical & MW Band Aerials

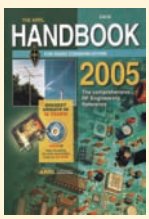
This concise book describes how to build 25 simple and inexpensive antennas for operation on the medium wave broadcast band (550 - 1600kHz) and on the 60, 75, 90 and 120 metre tropical bands. There are also designs for the 49m band. **£1.75**

An Introduction to Radio Wave Propagation

This book provides a broad, yet clear picture of radio wave propagation in a consise way without the use of too much technical language or mathematics. Included are explanations of the phenomena that is propagation dealing with everything from the Sun, through the ionosphere to noise. **£3.95**

ARRL Handbook

Radio amateurs and professionals rely on The ARRL Handbook for current antenna theory and a wealth of practical, how-to construction projects. This 20th edition is extensively revised and includes contributions from leading antenna experts. Many designs are the result of the latest advances in computer modelling. **£32.00**



Antenna Toolkit

This book acts as a miniature antenna manual with very good technical explanations without ever over-doing the maths for the not-so-keen mathematicians! The drawings and illustrations are very clear and the section on instrumentation is very helpful. **£25.00**

RSGB Yearbook

There are almost 500 pages in the 2005 Yearbook, eight more than last year, but only a very small handful are the same. Everything you need is covered within its pages: contact names, addresses, phone numbers, websites and E-mail addresses. A major new feature for this Yearbook is the RSGB Contesting Guide, which was formerly published in *RadCom*. **£16.95**

Receiving Antenna Handbook

Your receiver is only as good as your antenna or so says the author of this book. It is a complete guide to high performance receiving antennas for long wave all the way to the upper end of the short wave spectrum. The designs aren't slightly modified amateur transmitting antennas but ones intended specifically for receiving purposes. **£17.50**

The Amateur Radio Operating Manual

This new edition of the RSGB Operating Manual reflects the huge impact in the past few years of licensing changes and the ubiquity of PCs and the internet. To deal with these, the author has taken a completely new look at the content and approach. For example, some of the traditional demarcations between HF and VHF and between the various operating modes have been overturned, but new and comprehensive chapters on topics such as PCs in the shack and Operating Modes added. **£19.95**

VHF/UHF Antennas

With both the basic theory and constructional details for many antenna designs, the reader is taken through the essentials in an easy-to-understand way. All kinds of antennas are described from dipoles to Yagis and verticals to log periodic designs. **£13.99**

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AN INTRODUCTION TO AMATEUR RADIO I.D. Poole (Babani)	150	£4.99	BP257
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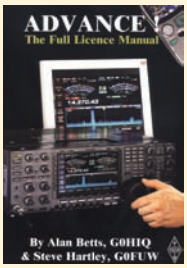
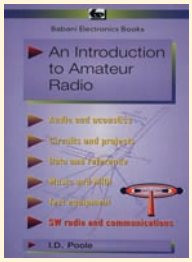
Intermediate Licence Building on the Foundation
The second course book in the RSGB's series, which is structured to progressively obtaining an Amateur Intermediate Licence, this book contains practical exercises, broken down into half-hour worksheets. The ideal companion book for all Amateur Radio Intermediate Licence students. **£6.99**

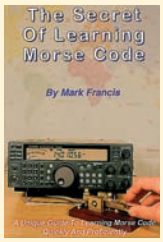


Advance! The Full Licence Manual
This is the third course structured to obtain an Amateur Radio Licence. Advance is the final stage in gaining the full licence and has been updated to suit the new syllabus structure. Broken down into logical sections, it's presented in an easy-to-understand way, making it perfect for home study. **£11.99**

HF Amateur Radio
This could be the considered as the natural 'follow-on' volume to accompany Basic Radio Principles & Technology. Aimed at the more active radio amateur who is just beginning to get to grips with their new HF transmitting station, it will also appeal to the newcomer. **£13.99**

An Introduction to Amateur Radio
Amateur radio can be a fascinating hobby that has attracted many people all around the world. It encompasses a wide range of subjects from the historical to the latest technology and from operating to construction. Perfect for the fledgling enthusiast. **£4.99**





Secret of Learning Morse Code
Don't be fooled, the requirement for Morse may have been removed, but Morse code still has a place in the scheme of things for the radio amateur. It can consistently be used to 'talk' to others around the world, you don't even need to speak their language to hold a conversation. **£6.95**

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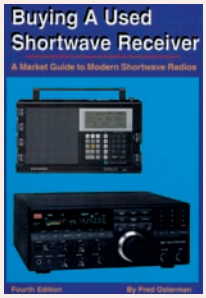
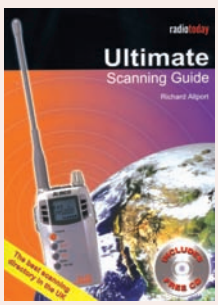
Buying a second hand radio can provide great savings if you have the facts. This book provides the information you need to intelligently select the right short wave receiver at the right price. It contains information on the 100 most commonly traded short wave radios both portable and table top models. **£5.95**



Ultimate Scanning Guide & CD
For those not familiar with Scanning directories, this book provides a simple way to work out exactly who is broadcasting on a given frequency. The reader is provided with clear guidance as to what is available to listen to and what should be avoided. This makes the Radio Today Ultimate Scanning Guide the most accurate and useable directory available. The book also contains a free searchable frequency CD. If you are a long standing scanning enthusiast or new to the hobby then you will find this book a 'must have' for your book shelf . **£19.95**



Scanners 4
Scanning into the Future
Scanners 4 includes radio spectrum changes and frequency allocations so you know exactly where to listen. Chapters are devoted to Low-Earth Orbiting satellites, the use of personal computers digital and computer-controlled radio communications, as well as a comprehensive section on available scanners and acessories. **£9.95**

The Essential Guide To Scanning
Aimed at beginners to scanning this 108 page publication should help you to get the most out of hobby listening. Topics covered include: Choosing a scanner and understanding its features, antennas, accessories, what to listen for and where and much more. **£6.00**

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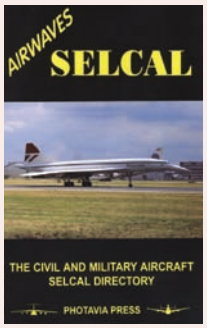
RSGB YEARBOOK. 2005 Edition (RSGB)	488	£16.95	RSYB25

Air Traffic Control 9th edition
Apart from visits to airports, the only contact point between the enthusiast and the actual world of air traffic control is through an airband radio. This book has been written to give the reader an understanding of the voice messages you hear. **£8.99**



Airwaves Selcal
Containing over 13000 civil and military aircraft Selcals this publication is a must for all aviation listening enthusiasts. The information is provided in three different ways: Selcal order, Airline/Operator then registration order and airline or Operator Decode. A handy reference book that should be sitting next to your h.f. receiver - order yours today! **£11.95**

Air Band Radio Guide 6th Edition
Fully updated, this is a comprehensive handbook for the well-informed aviation enthusiast on the subject of air to ground radio. The subjects covered include the legal position of the listener, airband receivers, antenna systems, HF radio, an airfield directory, en route frequencies weather broadcasts and 8.33kHz channel spacing. **£8.99**

Military Aircraft Markings 2005
This annual pocket favourite has been revised with a huge number of changes that have affected military serials over the past year. If you can see it or hear it, MAR 2005 will tell you who runs it or owns it! The accuracy of the contents can be relied on. **£7.99**

Callsign 2005 9th Edition
Civil and military aviation callsign directory, fully updated with over 3000 additions and changes. It's A5 and spiral bound for ease of use and contains over 8000 aviation callsigns. **£10.95**

Civil Aircraft Markings 2005
Now fully revised for 2005 this book lists the UK civil aircraft callsigns alphabetically as well as overseas aircraft too. Details such as the callsign, type of aircraft, the owner or operator and any extra notes that are applicable. **£7.99**

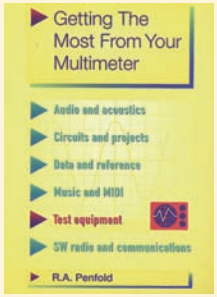
Airwaves 2005 11th Edition
This A5, spiral bound book has been updated with all the latest airband information for the civil and military aviation enthusiast. It contains frequency information, airfield information as well as military frequencies and VOLMET information. **£10.95**

Air Band Radio Handbook
For over 15 years The Air Band Radio Handbook has been regarded as the essential reference source for ground-based air band listeners and flyers. Now fully updated this book is an indispensable guide to every air band enthusiast. **£12.95**

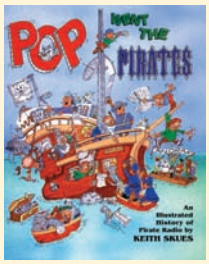
Flight Routings 2005
The A to Z guide to airline flights within the UK. Now in its 15th edition, this book continues to pack its pages with all the information air band listeners could ever wish for. Flight details for airlines including schedules, charter and freight flights. **£10.00**

Back Issues & Photocopies

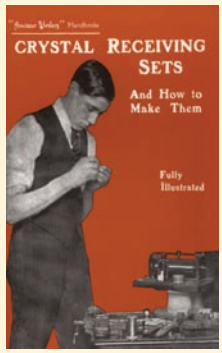
We have a limited selection of back issues. However, if you are looking for an article or review that you missed first time around and we don't have the whole issue, we can supply a photocopy of the article.



Getting the Most from Your Multimeter
The multimeter's capabilities are often overlooked by many owners, there's much they can do other than continuity testing! The book discusses how you can choose a meter, the advantages and disadvantages of analogue and digital types and then leads you through the many tests they can perform. **£4.99**



Pop Went the Pirates
This book sets out to produce the definitive history of pirate radio ships, with a comprehensive account from the earliest pirates in the 1930s to the present day. The text is illustrated with 230 black and white photographs, many of which have never been published before. You can find out about the ships and forts that played such important roles in changing radio broadcasting into the format that exists today. **£14.99**



Crystal Receiving Sets
This handbook deals, in a simple, straightforward manner, with the making of a number of different kinds of crystal sets representative of those in present-day use. Basically, everything you need to know regarding valve and crystal sets and how to make components. **£7.95**

Microwaves

AN INTRODUCTION TO MICROWAVES F.A. Wilson (Babani)	134	£3.95	BP312
INTERNATIONAL MICROWAVE HANDBOOK A. Barter (RSGB ARRL)	474	£24.95	IMWHB

QRP

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LOW POWER SCRAPBOOK (RSGB)	320	£12.99	LPSCRA
QRP BASICS. George Dobbs G3RJV (RSGB)	204	£14.95	QRPBAS

VHF & Higher

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GUIDE TO VHF/UHF AMATEUR RADIO Ian Poole G3YWX (RSGB)	180	£8.99	GTVUHF
VHF/UHF HANDBOOK Dick Biddulph G8DPS (RSGB)	180	£22.00	VUHFHB

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CRYSTAL SETS. The Xtal Set Society Newsletter. Volume 5. Phil Anderson W0XI	88	£7.00	XTNL5
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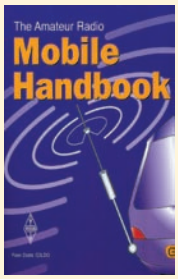

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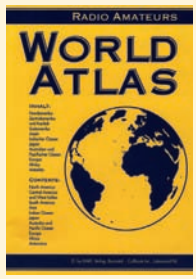

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rob mannion's topical talk

As usual Rob Mannion G3XFD has some topical comment to make. This time he shares his concerns for everyone in the Amateur Radio hobby because of the heightened security following the London Islamic terrorist atrocities.

Amateur Radio is always at the forefront in any emergency situation. For a start - we have a long history of providing emergency communications to help out when the mains supplies are disrupted and commercial communications are 'down'. However, there are other aspects of the heightened security that many Amateurs aren't aware of following the bombing atrocities carried out by followers of an alien culture.

I've recently had a close encounter of the personal kind on security, following the terrorist bombing. The meeting was directly related to my work as a journalist working in Amateur Radio. The security problems raised, reminded me that as Licensed Radio Amateurs we are very easy to trace, whatever suspicions arise from emergencies at the present time. And it's not a new problem either!

Spies On The Beach!

Younger readers may well laugh incredulously when I recall the days - at the height of the so called Cold War - when it was quite possible for Radio Amateurs legitimately enjoying the hobby to find themselves attracting the attentions of the local Police force. I know - it happened to me!

Nowadays, the sight of someone using a mobile telephone in their car, or a commercial private mobile radio (PMR) set-up is commonplace However, less than 40 years ago - anyone seeking out a lonely hill top or isolated beach to try and work some v.h.f. DX on a.m. - sometimes ended up talking to a policeman responding to the 999 call "There's a spy on the beach"!

Usually, when the police were involved everyone ended up laughing. And in several cases I know that the enquiring officers ended up as Amateurs themselves! But as funny as the situations were (looking back) - at the time they weren't so amusing! It was obviously the direct result of heightened tension and perhaps paranoia.

Nowadays, with the ever present threat of suicide bombs, I'm sure radio enthusiasts can help in many ways. We can help provide emergency communications via RAYNET and perhaps informally when there are local problems.

We can also assist by ensuring our hobby doesn't arouse suspicion in anyway by careful use of our equipment and knowledge. Remember, a hand-held transceiver could lead to confusion outside of the Amateur Radio environment. In the confusion, you could even be thought to be a police officer or some form of official!

Finally, it's worth reminding everyone that if you co-operate (especially when travelling by air) with the authorities - in return they can often be helpful too. Always declare any radio equipment and explain its purposes.

Despite the age of technology we live in - you'll be surprised just what mysteries there can be in store for airline/shipping staff! I speak from experience because as insulin dependent diabetics, when travelling to the USA both **Donna G7TZB** and I have had to demonstrate our Glucometers (for evaluating blood glucose levels) to fascinated, slightly suspicious security staff during pre-boarding checks!

So, be prepared to co-operate and remove the mystery of our black boxes and wires. It can only help defuse (couldn't resist it - sorry!) the situation to the benefit of everyone.

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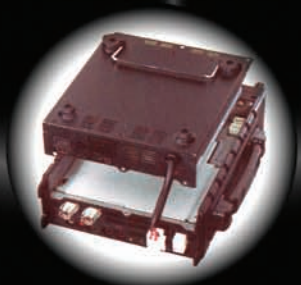

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