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November 2003

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Reviewed: Kenwood TH-K2E Hand-Held Transceiver

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NEW HEIL QUIET PHONES

Active Noise Cancelling Headphones

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

£99.95 B

NEW YAESU FT-8800E

£299 C



The FT-8800E series
operates as two radios
in one, with independent two channel
operation. Remote
head mounting
capability, wideband
receive on VHF & UHF and
over 1000 memories.

NEW YAESU VX-2E

Dual Band Ultra Compact FM Handie.
The VX-2E is unbelievably small yet
provides 1.5W on 144MHz and 1W
on 430MHz (3/2W with external supply).
General coverage receiver 0.5-
999MHz, which includes AM medium-
wave & FM broadcast bands plus
AM aircraft & UHF TV bands.

IN STOCK £169 B



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ICOM IC-756 PRO II £1999 C



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

ICOM IC-7400 £1249 C



HF/VHF 100W
transceiver. Features
large LCD with
spectrum scope, auto
ATU and same DSP
system as IC-756PRO
II.

ICOM IC-706 IIG DSP £789 C



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

ICOM IC-703 NEW £599 C



HF/50MHz Transceiver 0.1-
10W Portable, Mobile, Base
Station. (9-15.87V DC)
Designed especially for the
Foundation Licence/QRP.
Built-in features auto ATU,
DSP memory keyer. (5W
when using 9.6V batts)

ICOM IC-718 £499 C



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

ICOM IC-910X with 23cm £1249 C



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

KENWOOD TS-2000 £1599 C



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

KENWOOD TS-870S DSP £1399 C



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

KENWOOD TS-570DGE £849 C



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

YAESU FT-1000 MKV £2349 C



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

YAESU FT-1000 FIELD £1749 C



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

YAESU FT-897 NEW £989 C



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

YAESU FT-857 NEW £799 C



HF/50/144/430MHz Mobile
Transceiver HF/6m 100W, 2m
50W, 70cm 20W. (13.8V DC)
Developed on the FT-897 and
FT-817 transceivers. Built-in features
32 colour display, spectrum
scope, AM airband receive, built-
in memory keyer, detachable
front panel, DSP unit supplied.

YAESU FT-847 £1199 C



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

YAESU FT-817 £539 C



160m - 70cms. Up to 5W output all
modes. Ours includes battery
and charger. **Add £110 for DSP ready fitted.**

**bhi DSP Module
now available!**

£89.95



NEW DSP Module

There is NO new FT-817 DSP! The fact is that the UK
manufacturers, bhi, (of whom we are their largest distribu-
tor), have produced a lovely 4-stage DSP module that can
be fitted inside the FT-817. The module costs £89 plus a
fitting charge of £25 for retro-fitting to existing models. This
includes installing a mini switch and LED on top cover.

NEW FT-817 Clip on metal front support stand.
In stock now £19.95 +£1 P&P

LINEAR AMP UK RANGER 811H £895 C



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

AMERITRON AL-811 XCE £799 C



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

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01702 206835/204965
FREEPHONE ORDERLINE:
08000 73 73 88



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

ICOM IC-2725E NEW £309 C



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

ICOM IC-2100H £229 C



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

YAESU FT-8800E NEW £299 C



2m/70cm Mobile
 *144-146MHz, 430-440MHz Tx *108-520MHz, 700-999MHz Rx * 512 memories per band * 6 Hyper memories* tuning steps: 5/10/12.5/15/20/25/50kHz * Audio: 2W output * Supply: 13.8V DC *Size: 140x41.5x168mm Weight:1kg

YAESU FT-8900R NEW £349 C

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



YAESU FT-2800M NEW £159 C

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



YAESU FT-1500M £179 B

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



KENWOOD TMD-700E £449 C



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

KENWOOD TM-V7E £359 C



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

KENWOOD TM-G707E £289 C



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

IC-E208 NEW £319 B

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



YAESU VX-7R NEW £299 B



6m/2m/70cm

Available in Silver or Black



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

YAESU VX-110 £109 B



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

ICOM IC-E90 NEW £269 B



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

ICOM IC-T3H £129 B



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

KENWOOD TH-D7E £319 B



DATA COMMUNICATOR

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

KENWOOD TH-F7E £259 B



WITH EXTRA WIDE RX COVERAGE

• 144-146MHz Tx/Rx: FM
 • 430-440MHz Tx/Rx: FM
 Up to 6W out with Li-ion battery and "scanner" style coverage from 100kHz to 1300MHz including SSB on receive! This is a great radio to have at all times when you are on your travels.

KENWOOD TH-G71E £199 B



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

MOTOROLA T-5512 £69.99 B

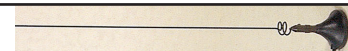


Motorola Dual Pack PMR-446 Recreational 2-Way radio
 •No Licence Fee or Airtime Charges
 •8 Channels and 38 Codes
 •3km Range
 •Lightweight
 •Water Resistant
 •Handsfree use (VOX) (with optional accessory)
 •Supplied with 2 belt clips

MOBILE ANTENNAS

WATSON ANTENNAS (PL-259 base type)

Comes with coax & BNC



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

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

MOBILE BASES

WATSON



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

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

BASE STATION ANTENNAS

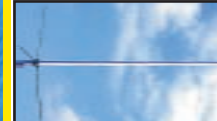
DIAMOND



X-50	2m/70cm colinear 6/8dB 2.5m	£54.95 C
X-50N	2m/70cm colinear 6.5/9dB 3.1m	£59.95 C
V-2000	6m/2m/70cm 2.15/6.2/8.4dB 2.5m	£89.95 C

CHECK OUR WEBSITE FOR FULL DIAMOND RANGE

WATSON



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

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

WATSON SAFE-2-WAY NEW £89.95 B

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



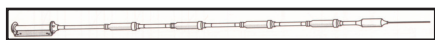
*Widely used commercially *Approved to Pan-European Standards *True Hands-Free *Noise Reducing *Acoustic Tailored Mic *Remote (3m) Latching PTT *Boom mic (3m) with Velcro *Adjustable gain *Adjustable Time-Out *Powered from rig mic socket *Ready made rig leads (£14.95 extra) *Also matches handhelds.

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

CHECK OUR WEBSITE WWW.WSPLC.COM FOR MORE DETAILS OF THESE PRODUCTS

VERTICAL ANTENNAS

HUSTLER



6-BTV. HF 6-band vertical

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

CUSHCRAFT

MA5V HF 5-band compact vertical.



MA6V NEW	20-17-15-12-10-6 250W PEP	£289.95	C
MA5V	20-17-14-12-10m 250W PEP	£229.95	C
R8	40-30-20-17-15-12-10-6m 1.5kW	£529.95	C
R6000	20-17-15-12-10-6m 1.5kW PEP	£349.95	C

HORIZONTAL BEAMS & DIPOLES

CUSHCRAFT



MA-5B - Best Selling 5 band Mini-beam

Cushcraft prices increasing soon - Buy now!

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

RADIO WORKS



A choice of quality wire antennas available to fit almost any circumstances.

CW-160	160-10m 76.8m long	£139.95	C
CWS-160	160-10m 40.5m long	£134.95	C
CW-80	80-10m 40.5m long	£99.95	C
CWS-80	80-10m 20.1m long	£119.95	C
CW-40	40-10m 20.1m long	£94.95	C
CW-20	20-10m 10.36m long	£84.95	C
CW-620	20-6m 9.7m (32ft) long	£94.95	C

MOBILE ANTENNAS

HUSTLER

Standard Resonator 400W (mast sections not included)



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

ALL HUSTLER ACCESSORIES IN STOCK - PHONE FOR QUOTE

MFJ-902 **NEW** £69.95 B



*3.5-30MHz (80 - 10m)
*150W
*Mobile and portable use
*SO-239 sockets
*Size w112xd77xh58 mm
*Weight 450g

The MFJ-902 uses real air

variable capacitors (600V, 322pf) and three stacked powder iron toroids especially designed to handle power - not just QRP!

It is ideally suited for use with the IC-706MKIIG, FT-100D and FT-817 and other small rigs. Its got to be the world's smallest 150W, 80-10m antenna tuner. Operate anywhere, anytime with a quick easy set-up. The possibilities are endless. Tune out SWR on your mobile whip from inside the car. Operate with an antenna from within an apartment or a wire dropped from a hotel window. Its just as great for DXpeditions or Field Day. You can rely on it wherever you go! Its easy to pack away in your briefcase, suitcase or backpack.

MANSON EP-925 PSU £99.95 C



A general purpose 3-15V DC, 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver.

*Dual analogue meters *Over current protection *Large power terminals for rigs *Quick snap connectors for ancillaries

WATSON FC-130 Frequency Counter £59.95 B



SPECIAL PRICE

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

MFJ-461 Morse Code Reader £84.95 B



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

bhi NES10-2 & NES-5 DSP Speakers



NES10-2

£99.95 B

*Speaker with built-in DSP noise filters *Dip switches for 8 filter settings (NES10-2) *DSP settings preset, no user adjustment (NES-5) *Plugs directly into 3.5mm speaker socket *Handles up to 5 Watts input *Max 2.5 Watts output *Requires 12V at 0.4 Amps max



NES-5

£79.95 B

bhi NEIM1031 £129.95 B



NOISE ELIMINATING IN-LINE MODULE
* Noise attn - 9-30dB (typical) * Noise Attn levels 8
* Audio output power 2.5W RMS max (8 Ohms)
* Audio connections: Line level in/out (RCA Phono),
Audio in/out 3.5mm mono jack * Line in impedance 10K
* Line out impedance 100 Ohms * Line in sensitivity 300mV -2V RMS * Headphone socket 3.5mm mono jack * Power 12-24V DC 500mA

bhi 1042 SWITCH BOX £29.95 B



Connect more than one piece of equipment to your bhi noise eliminating speaker with the 1042 Switch Box.

Allows 6 pieces of equipment to be connected, 3 inputs loaded at 8 Ohms and 3 unloaded inputs (for low level signals). Two audio leads provided.

WEST MOUNTAIN RIGBLASTERS

RIGblaster pro Data interface 8-pin/mod, Cd & cables £229.95 B



The RigBlaster Pro

RIGblaster Plus	Data interface 8-pin/mod, Cd & cables	£139.95	B
RIGblaster M8	Data interface 8-pin, software & cables	£109.95	B
RIGblaster M4	Data interface 4-pin, software & cables	£109.95	B
Rigblaster RJ	Data interface RJ45, software & cables	£109.95	B
RIGblaster nomic8P	Data interface 8-pin, software & cables	£59.95	B
RIGblaster nomicRJ	Data interface RJ, software & cables	£59.95	B
FT100-CBL	Adapts all units to FT100 input	£12.95	A

AUDIO ACCESSORIES

HEIL



HCL-5/4



GM-4/5



HST-817



PROSET+

Desk Microphones

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

Hand Microphones

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

Headsets & Boom microphones

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

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

Headphones & Boom Microphones

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

WATSON



WM-308



WEP-300B



QS-112

Base Microphones

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

Earpieces

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

Speaker Microphones

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

TRANSMITTING LOGBOOK £4.99 A



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

LDG Electronics : Discontinued Products

All Brand New with 12-month W&S Warranty - LDG only available from Hockley



Z-11 Auto ATU

Matches FT-817

£209.95 £125

Z-11 Kit

£95

AT-11MP Kit

£129

Z-1000 Budget ATU

All Sold

Z-11 DC cable

£5

AT-Remote unit

£29

AT-Remote kit

£25

MP-IC or MP-AL cable

£10

RT-Remote unit assembled

£30

RT-Remote unit Kit

£25

RT-IC or RT-AL cable

£15

RBA-1 4:1 balun

£25

RBA-1 4:1 balun Kit

£20

HD-1 Headphone adaptor

£13

LDG AC PSU

£10



AT-1000 Auto ATU

750W CW 1.8-40MHz

£599.95 £399

RT-11 Auto ATU

5-500W 1.8-40MHz

£189.95 £129



AT-11MP Auto ATU

5-150W 1.8-30mHz

£2269.95 £169



AT-897 Auto ATU for FT-897

1.8-40MHz powered from radio

£229.5 £169





HFC 2003

International HF & IOTA Convention
31st OCTOBER - 2nd November 2003



**Britannia Country House
Hotel, Didsbury, Manchester**

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SAVE
£10 a head on HFC
bookings before
31st August 2003

THE WORLD'S PREMIER HF 6m & IOTA EVENT

The event covers all interests between
50MHz and 136kHz and will appeal to all
amateur licence holder and SWLs

Many Open Forums

Major Technical Lectures

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Covered this year

IOTA, Contest, 5MHz, 6m, 136kHz & G-QRP topics

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WA6HHQ* and Cédric Demeure

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radio Mondiale, Digital radio technology, 6m Propagation & Aerial Optimisation

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November 2003

On Sale 9 October
Vol.79 No.11 Issue 1160
(December Issue on sale 13 November)

Published by
PW Publishing Limited
Arrowsmith Court
Station Approach
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Dorset BH18 8PW
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Cover subject



Cover Subject

The impressive antenna array on this month's cover is made up of a 144MHz beam antenna, an h.f. beam and a nest-of-dipoles and is located outside the radio shack at the Amberley Technology Museum, which is part of the Chalk Pits museum at Amberley, West Sussex. The inset photograph shows the Kenwood TH-K2E hand-held transceiver.

Design: Steve Hunt
Photographs: Tex Swann
G1TEX/M3NGS

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Published on the second Thursday of each month by **PW Publishing Ltd.**, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 9PW. Tel: 0870 224 7810. Printed in England by Warners Midlands PLC, Lincolnshire. Distributed by Seymour, 68 Newman Street, London, W1P 3LD. Tel: 0207-396 8000, Fax: 0207-396 8002. Web: <http://www.seymour.co.uk>. Sole Agents for Australia and New Zealand - Gordon and Gotch (Asia) Ltd., South Africa - Central News Agency, Subscriptions INLAND E3, EUROPE E39, REST OF WORLD E43 (Arawser), REST OF WORLD E44 (email, payable@seymour.co.uk). WIRELESS, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 9PW. Tel: 0870 224 7830. **PRACTICAL WIRELESS** is subject subject to the following conditions, namely that it shall not, without written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover, and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised form or by any means or in any other manner whatsoever. **Practical Wireless** is Published monthly for \$50 per year by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 9PW. Royal Mail International, c/o Yellowstone International, 87 Burfords Court, Hackensack, NJ 07601. UK Second Class Postage paid at South Hackensack. Send USA change requests to Royal Hackensack International c/o Yellowstone International, 87 Burfords Court, Elk Grove Village, IL 60007-5937. The USPS (United States Postal Service) number for **Practical Wireless** is 007070.



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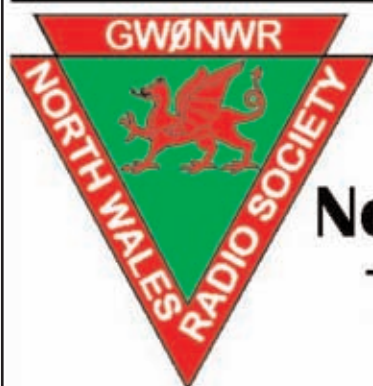
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rob mannon's keylines

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

This month I'm delighted to be able to start my Editorial with some excellent news...a venue has been found for the hoped-for show to replace the lamented Longleat Rally. And in passing this news on to *PW* readers...the most pleasing aspect is that the new **West of England Rally** is to be held in Frome, Somerset, just 6 kilometres or so (4 miles) from Longleat.

The old Longleat rally was one of the most important 'regional' events of the year. In fact, speaking personally, the annual trip to Longleat was looked forward to every year...and was my firm favourite...providing a marvellous opportunity to meet *PW* readers.

Apart from the good news of the replacement rally, the other item of good cheer is that the organisers have managed to arrange for the same slot. In other words...it will be held on the last **Sunday of June - the 27th - 2004.**

My heartfelt thanks go to **Shaun O'Sullivan G8VPG**, the Rally Manager for the **Severnside Television Group**...who have taken over from the previous organisers. And I hope that Shaun G8VPG (for many years he was one of the **Bristol RSGB Group's** committee members for the Longleat Rally) and his colleagues will be supported in their efforts by the Amateur Radio fraternity.

So, I look forward to seeing you at the West of England Rally on Sunday 27 June 2004!

The 70MHz Activity Afternoon

Although the *PW* 70MHz activity afternoon did not result in any DX being worked....or indeed very many QSOs - for those of who took part...it was deemed to be a great success. Indeed, everyone who has reported back to me said just how much they enjoyed the event.

Even though I only had 10 QSOs on n.b.f.m. using my whip antenna...it was a beautiful afternoon out with enjoyable chats with friends on the band. So, I hope you'll join me on page 32 for an in-depth report.

Club Spotlight Delay

I'm very pleased indeed to say that the *Practical Wireless* & Kenwood UK Club Spotlight Magazine Competition is still receiving much support from clubs, both local and national. However, I'm afraid that due to circumstances beyond our control this year...the adjudication process has been delayed.

Normally the adjudicating team (**David Barlow G3PLE**, **Dave Wilkins G5HY**, **Jim Bacon G3YLA** with assistance from **Tex Swann G1TEX/M3NGS**) and myself plan to have the competition entries judged and evaluated in time **Practical Wireless, November 2003**



- The chairman of the Warrington & District Amateur Radio Society Mike Isherwood G4VSS making a 'traditional' presentation to Rob G3XFD on the occasion of his latest visit to the club on Tuesday 26 August. If you want to find out what was in the bottle and to read some interesting 'Vintage *PW*' feedback...Rob invites you to 'visit' Topical Talk page on page 77.

for the presentations to be made at the **Leicester Show**. Unfortunately though, this year it's not been possible because at the last moment Jim Bacon G3YLA was unable to assist due to the pressure of his work.

I take this opportunity to gratefully thank Jim for his time and effort ever since the competition began. So, good luck Jim...and thanks again.

Our new adjudicator is **John Goodall G0SKR**. He often writes for *PW*, is a very keen club supporter, instructor and a very great asset to Amateur Radio. He also has an amazing sense of humour and will bring a sparkle to the adjudication process. Welcome John!

Price Increase

Unfortunately, despite all our efforts, our production, distribution and printing costs are rising. As a result the cover price of *PW* will be going up to £2.95 with the **December** issue. However, our subscription prices will remain unchanged until **21 November 2003**. (Existing subscribers can take advantage of the offer too by renewing at the old rates and adding the new sub on to the old one...clever eh?).

Nobody enjoys a price rise - and like you I'm also a magazine reader...enjoying specialist titles which concentrate on my other interests. None of these magazines are under £3 nowadays...and indeed I pay £3.75 each for several of my railway titles. Because of this I think that *PW* is still good value for money...and you can be sure I'll strive to ensure it becomes even better.

Thank you for your support - and you can be assured of the best efforts of everyone here at *PW* Publishing to bring you the best magazine possible. Cheerio for now.

Rob G3XFD

practical wireless services

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

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

Components For *PW* Projects

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

Photocopies & Back Issues

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

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Technical Help

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

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



● **Dear Sir**

then got me thinking as follows.

The problem comes when reaction is below this threshold. In this case, it increases gain and selectivity by the 'Q multiplier' effect and the receiver can be used for a.m.

Why not, I thought, bring the receiver into oscillation briefly, say once a second for 10 milliseconds and count the pulses of oscillation? It should not be noticeable to the listener and the counter circuit would be no more complex than normal as the timer for switching the receiver in and out of oscillation would simply replace the normal timed gating circuit in a counter.

Next, I thought that the receiver should generate noise around its frequency due to the feedback (regeneration) even though this is set below the oscillation threshold. However, estimating a frequency from the middle of this narrow band of noise is probably beyond the technology of the average Amateur (it might be beyond the technology of NASA!).

More promising, I finally concluded, would be to use the frequency of the received signal itself. In a simple one transistor t.r.f. the transistor functions as r.f. amplifier and detector. The r.f. signal is easily separated from the audio. If this r.f. output is buffered, amplified and fed into a counter it might do the trick.

Of course if there is no signal to be received, it would mean no output and hence no measure of frequency. Perhaps the old 'crystal calibrator' idea could be used where 'blips' are generated every 25kHz or so. As the RX was tuned to each one, the counter would read the frequency of that particular 'blip'.

For the ultimate t.r.f. frequency measurer why not stick a crystal across the tuned circuit to make a single signal receiver for, say, the 7.030MHz QRP channel? This would appear to have the potential for very good performance, albeit only on a fixed frequency.

Ian Butterworth G4BZO
Stalybridge
Cheshire

Editor's admiration: A really fascinating idea Ian! Any further suggestions readers (However, I think we're in danger of making the frequency measurement side twice as big as the t.r.f. itself!).

● **Dear Sir**

May I please have the benefit of your advice? In the past, when I have operated /M, usually as a rear-seat passenger, I have used a 144MHz transceiver with coaxial feeder to a quarter wave antenna in a mag-mount on the car roof.

I have recently had a heart pacemaker implanted and advised to keep well clear of magnets and antennas, or, indeed, from any form of EM radiation - this includes mobile telephones or the earpieces of ordinary telephone handsets - these to be held to the ear on the opposite side to the pacemaker.

My query is this. Will the car body act as a Faraday shield against the mag-mount and antenna or act as part of the antenna system and affect the pacemaker? Has any research been undertaken on this matter which must, I feel, be of importance to many people? I would welcome any information.

Charles Trippett G0VKO
East Looe
Cornwall

Technical Editor Tex Swann G1TEX/M3NGS, who uses a pacemaker himself, replies: I can fully understand the worries of Charles Trippett, as when I had my own pacemaker 'box' fitted a little over a year ago: "Can I operate my Amateur Radio gear"?...was one of the first questions I had for the cardiologist. He then explained that the modern pacemaker, although not immune to r.f. entry, was quite resilient against it. In the handbook for my fitted unit, it says that a level of 100W, as long as the radiation point is 10m or more away would not cause problems. In terms of magnetic disturbance, it takes quite a strong magnet to bring about a change of

the pacemaker's rate. It will probably be set to bring the pacing to around 85 beats per minute (b.p.m.), in the presence of a very strong magnetic field. Part of the regular checking (usually the first one carried out) is to put a strong magnet over the 'box' and check that the pacing changes. I think I can set G0VKO's mind at rest, and say that neither a mag-mount antenna, nor the usual levels of mobile transmitter power will cause any problems while he is in the car. There has only been one instance when I had a slight 'scare' while passing through a fixed radio beam (from Rugby when travelling on the A5), but G3XFD and I were unable to replicate the effect a few days later when passing the same spot on the return journey. I belong to a radio club, where two of us are fitted with a pacemaker, and neither of us has noticed any unusual symptoms, although the club's antenna is fed and passes about eight metres above our heads. I feel that it's unlikely for there to be any adverse effects from 'normal' r.f. radiation, though sadly visits to Woofferton are now 'out-of-bounds' for me! Tex.

The Feminine Touch

● **Dear Sir**

I don't know about you, but as a male reader, have you noticed over the years, that is if you have been reading any of our hobby magazines, in particular *Practical Wireless*, that we seem to be lacking in the female input.

What has prompted me to write is that a friend of mine who is 40 years of age is looking for a woman. Not just any woman, but someone to understand and share his radio

Woofferton's Wireless History

● Dear Sir

I was fascinated to read your well-presented article in this month's *Practical Wireless* about the Diamond Jubilee of the Woofferton wireless station on the Herefordshire/Shropshire border. I can confirm that a warm welcome has always existed there for visiting parties with a technical interest in such matters.

I lived in the area for a long time and had always been fascinated by the massive aerials seen best from the Tenbury Wells approach. I once had occasion to visit a nearby house and wondered why the kitchen fluorescent lights were on at midday on a bright summer's day. I was told that they could not be switched off and it was believed the secret power came from the aerials, but no complaint had been made, because it appeared to be cost free!

Later, and many years ago, in my capacity as chairman of a local respected Radio Society, I was able to arrange a Sunday visit for a small party of members and we had a wonderful time. We were shown in detail very much as you were, by the then station manager, who guided us through the transmission chain.

The hall appears much more modern, I recall a concrete floor. The old RCA transmitters had just been removed for

scrap by the contractors. I recollect the appearance of the newly installed transmitters and the term 'SENDER' on the front, but I thought they were by Siemens.

As the clock ticked by into mid-afternoon, the manager announced it was time to change wavelengths. I was given the honour of changing bands. First the coil cage was opened and the coupling coil had to be manhandled to be plugged in. Then came the exciting bit, the transmitter had to be properly loaded.

As you say in your article, it was exactly like handling an Amateur transmitter. I think it was a high powered tank circuit which had to be loaded and dipped. Instead of knobs, there were huge polished spoked wheels. The procedure was entirely familiar to the Radio Amateur. I forget what the final valves were, but the modulator stage was a pair of 813s, which were taken out of service after a stated period.

We were then invited to see where our signal was going. It was to the Baltic with enormous gain from the curtain aerial arrays. We followed the multi-wire feeder line past the cycle-sheds and we were astonished to hear the corrugated iron roof of the shed twittering with programme sounds at high volume as rectification took place at the corrugated joints. The whole place was alive with r.f. radiation. The sheep were gently grazing -

as I understand they still are - and we walked around looking at the different arrays.

As we were leaving, the manager told me that there were cupboards of RCA transmitter spares which were going in the skip next day and the club could have them if they wished. I filled my Land Rover the next day and the contents were distributed amongst ourselves and a few visitors from other clubs.

I still have a few pieces left. I have a couple of Millen split-stator capacitors. A few people opted for the huge ones for antenna matching. There were masses of RCA plug-in coils the small ones and many smaller capacitors. We distributed the 813s which were still fit for Amateur service and their filament 10V transformers.

These well researched articles are of considerable interest to some of your readers, especially those who have taken 'PW' from the 1930s. Thank you.

John Clarke G4FFD
Near Kirkham
Lancashire

Editor's comments: A wonderful series of memories John. Thank you too. Has anyone got memories of Daventry and the pre-1939 Droitwich transmitters please?

passion. Is that such a tall request?

Now Bill, as I will call him, was married for 20 years but then she, the XYL, had enough not just with radio, but with a combination of things. There were faults and problems on both sides, and don't worry, I'm not going to turn our sacred publication into a dating agency.

There have been many surveys in female publications that can be quite enlightening. My wife of 25 years tests me all the time with them, as to my personality, so many points means you are loving and generous, while other points mean you are mean, etc. What I would like to see is some input from you the ladies, as to just what you have to put up with, and what you see in us as radio enthusiasts. I'm sure this will help my friend Bill in possibly changing his ways.

Imagine ladies that you could put 20 questions to us males as to what you would like to find in a man that is interested in radio, be it

Amateur Radio, short wave listening or any other electronic hobby that takes your man away from your attention. As you know, we males can be at our radios for as much as 18 hours a day, we live our lives around them, tuning these knobs, you ladies hear the noise, the splatter of sideband and to top it all, we the males are blinkered as to what else is going on around us!

Is tolerance the key word? Or do you just shut yourself off, or even share his hobby? Are you pleased he is down the shed out of your way and not under your feet? Or are you looking for a male that has radio with all its variants as his hobby?

To start you ladies off, if I as a male was to ask a few questions, they would go something like this:

Unbeknown to you, your man has won £200 - would he:

- (a) Give you half without thinking.
- (b) Take you to a

- restaurant for a slap-up meal and keep the change.
- (c) Keep all the cash to himself without saying a word.
- (d) Buy a bit of radio gear, telling you it was only £50.
- (e) Take you for a day out or save it for your holiday together.

Your man loves his radio.

- (a) He spends more time with it than with you.
- (b) He would sooner miss a meal than leave his radio.
- (c) He leaves the radio and comes to your aid without being called twice.
- (d) You have more rows over the radio than anything else.
- (e) You wish he had never seen a radio.

Your man belongs to a radio club.

- (a) Do you go with him

- every week joyfully.
- (b) You never go to the club.
- (c) You only ever go to the club when there is a special occasion, e.g. a barbeque.
- (d) You wish he had married the club not you.

I could go on and on and I expect you could too. Come on you ladies out there, let's hear your point of view and maybe 'Bill' will get lucky.

Roger Lloyd
Dublin 3
Ireland

Editor's comment: Thanks Roger, Zoë (who typed your letter in) and I enjoyed your comments. So, let's hear it from the ladies - and as the letter came from Dublin and I know of several very keen YL operators in Ireland....I hope they respond too! Incidentally, even though I've noticed that there seem to be a surprisingly low number of ladies attending clubs...those who are

My QSO With JY1

● **Dear Sir**

Having more time for my hobby now that I am retired. I

John Cassar 9H4M
Gozo
Malta

Editor's comments:
Congratulations John...the

Marconi Receiver In VK Needs Help!

● **Dear Sir**

I wonder if you or any reader knows of a Marconi address or site where I may obtain service information or circuits for this model. There is plenty of information available on the CR100/B28 (which I would have liked also). Thank you for a great magazine. Sorry there are so few of we VKs on c.w. these days....there are many reasons!

Rob Gurr VK5RG
35 Grandview Ave.

Headphone Advice From Mr HAC

Dear Sir

One could have a four penny haircut or a two penny 'all over'. A three course lunch at Hills restaurant in London for one shilling and three pence. I then came across some notes on headphone which I thought might be of some use for anyone searching for vintage headphones.

Lightweight (ladies') Phones ST 3515402A	R = 45Ω	L = 40mH
Brown F	R = 140Ω	L = 60mH
Army phones APW 62	R = 83Ω	L = 85mH
D L R 5	L = 57Ω	L = 100mH
Sterling	L = 2kΩ	L = 1.3H
Brown F	R = 3.0kΩ	L = 2.2H
Metropolitan Vickers	R = 2kΩ	L = 1.4H

I look forward to reading the article on headphones in Radio Basics.

**Charles Lindars
Crewkerne
Somerset**

Editor's comments: Thanks for your correction and information Charles! I've been experimenting with different ceramic magnets from different sources. However, although the home-brew headphones have been quite successful because small magnets abound...suitable thin ferrous metal sheet for the diaphragms is a different matter. Annealed (and blunted!) razor blades have been tried, but the most successful material has been the paper-thin sheet steel used for recycleable soft drink cans. Does anyone have any suggestions please? The diaphragm must be both thin, fairly stiff and easy to work with. Finally, I must say that the project has been thoroughly enjoyable and I'm looking forward to sharing it with readers very soon.

Editor's comment:
Someone's bound to be able to help you Rob. So, it's over to you readers (please contact VK5RG direct).

Voting For 75Ω Twin Feeder

● **Dear Sir**

I'm writing with reference 'Mike Votes for 75 Ohm twin' (Letters column September 2003 issue). The usual rule is that if the load is balanced then it should be fed in a balanced manner. This can mean via balanced feeder, as advocated by G4MJA, or via a suitable balun and coaxial cable - the balun being located at the load. Both approaches have disadvantages: the balanced feeder arrangement can be difficult to implement in many circumstances and the coaxial cable plus balun concept runs into problems if the load impedance varies over a wide range.

What is not a good idea at all is to feed a balanced load via coaxial cable without the use of a balun: this arrangement almost guarantees that the outer of the coaxial cable will radiate. Two problems result from this sort of set up. Firstly, the radiation

from the outer will create the potential for TVI or other forms of breakthrough; and secondly, the radiation pattern of the antenna will not be as expected owing to the unbalancing effect of the coaxial cable feed on the antenna itself and because of the radiation from the coaxial's outer copper sheath.

Some people, for quite erroneous reasons, advocate that a feeder should be a half wavelength long or an integer multiple of this. If using a coaxial cable to feed a balanced load without the use of a balun, such a length actually represents the worst case situation. This is because the outer of the coaxial cable will, of necessity, be connected to a low impedance point to earth at the rig end. A half-wave line acts as a 1:1 impedance transformer, so a low impedance to earth at the rig end will translate to an effective low impedance to earth at the load, hence maximising the out-of-balance current.

Having warmed up the keyboard, perhaps I could also now comment on the article Just How Accurate by **Walter Farrar G3ESP**, also in the September issue. I most certainly agree with his comments, about unnecessary accuracy in calculations but must add a warning!

With the simple type of example quoted by Walter, using approximations at the

start of the calculation is fair enough. However, problems can creep in, though, when the calculations become more complicated and have to be carried out in stages. Over-enthusiasm for rounding in these cases can often result in a final answer a long way away from the correct one. I always prefer to use the maximum accuracy available from the calculator for all the intermediate stages and leave any rounding to the very end.

Another source of inappropriate accuracy comes from not understanding the difference between resolution and accuracy. A digital frequency meter, for instance, might well display frequencies down to 1Hz when measuring 144MHz, **but this does not necessarily mean that the reading is accurate to 1Hz.**

The accuracy of the instrument is governed mainly by the accuracy of the clock generator. If this is, for instance, quoted as 1 part in a million then the frequency measurement accuracy at 144MHz will be plus or minus 144Hz. To this must be added the measurement uncertainty which, in the example quoted, is likely to be plus or minus 1Hz.

The moral is: don't believe all that you read on digital instruments!

Anthony Plant G3NXC
South Yardley
Birmingham

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.

October 12

The Great Lumley AR&ES's Rally

Contact: Nancy Bone
Tel: 0191-477 0036 or mobile (07990) 760920
E-mail: nancybone2001@yahoo.co.uk

Held at the Community Centre, Front Street, Great Lumley, Chester-le-Street, Co. Durham. Doors open 1030. This is the biggest and best rally in the North East! There will be free parking, plus easy access, good, inexpensive food and drink. There will be a flying display by Chester-le-Street Model Aircraft Club with a stand. Bring & Buy in two sections, radio, hobbies, electronics, computer, satellite and component stalls. Admission is £2. Free of charge for under 14s if accompanied by adult.

October 19

The Blackwood & District ARS's Rally

Contact: D. Lewis GW6GW
Address: 23 Gelligroes Road, Pontllanfraith, Blackwood, Gwent
NP12 2JJ

Held at the Newport Centre, Newport, one mile from Junction 25A of the M4 Junction 26 when travelling West to East. Doors open at 1045 (1030 for disabled visitors), admission is £1.50. There will be a free car park, Bring & Buy, Talk-in, trade stands, specialist interest groups, bar, catering, disabled facilities and a raffle.

November 2

The South Yorkshire Repeater Group's 13th Great Northern Hamfest

Contact: Ernie Bailey G4LUE
Tel: (01226) 716339 or mobile (07787) 546515

This rally is to be held at the Metrodome Leisure Complex, Queen Road, Barnsley, South Yorkshire. Doors open at 1000. The Leisure Complex is in the town centre, just five minutes walk from the train and bus stations - (follow the brown Metrodome signs from all directions). The venue is all on one level and has excellent disabled facilities. Features include all the usual trade stands, component and specialist interest groups with a large Bring & Buy. Admission is £2.50.

November 9

The Bishop Auckland Radio Amateurs Club (BARAC) 2003's Rally

Contact: Mark G0GFG or Brian G7OCK
Tel: (01388) 745353 or (01388) 762678

Takes place at Spennymoor Leisure Centre. This venue is ideally suited for both trader and disabled as it boasts good parking and access to a large ground floor hall. There will be the usual radio, computer and electronics, plus a Bring & Buy stall as well as catering and bar facilities. Morse tests will be available on demand. Doors open 1100 (1030 for disabled visitors) and admission is just £1, under 14s free of charge with adult. Talk-in on S22

November 16

The Midland ARS's 15th Radio & Computer Rally

Contact: Norman G88HE
Tel: 0121-422 9787
E-mail: nlutteridge@aol.com

Held at King Edwards Grammar Camp Hill School, Vicarage Road, Kings Heath, Birmingham. There will be trade stands, local clubs, special interest groups, large free car park, refreshments and a Bring & Buy stall. Doors open 1000 and admission is just £1.

November 16

The Mayo Radio Experimenter's Network's (MREN) Mayo Rally

Contact: John McDonnell E61R
Tel: (00 353 from UK) 094 60127 .
Held at the Belmont Hotel, Knock, County Mayo with doors opening at 1100 Remembering the success of the first Mayo rally last year, and the club are already hard at work to ensure a repeat success and *PW* Editor Rob Mannion E15IW/G3XFD will again be visiting.

November 22

The Rochdale & DARS's Traditional Radio Rally

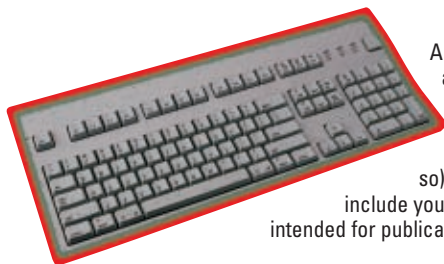
Contact: John G7OAI
Tel: (01706) 376204 (evenings)
E-mail: radars@mbc.co.uk

Held at St. Vincent de Paul Catholic Church Hall, Caldershaw Road, off the A680 Edenfield Road, approx two miles west of Rochdale. Follow the orange arrows from M62, J20. Open from 1015/1030 - admission just £1. There is ample free parking, plenty of trade stands, a Bring & Buy stall and a large chat/refreshment area. Talk-in on S22.

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

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

Letters Received Via E-mail



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

● Changes to Bandplan Allocation

Livening Up Dutch HF

Robert van der Zaal PA9R has notified the newsdesk that the Dutch Telecom Agency is now allowing their Class C operators (CEPT II, like the British former Class B) to operate h.f. with the same allocations as Class A operators. However, this only applies to use within the country only, officially the CEPT class is still II (above 30MHz). So, don't be surprised if you hear stations with a PE prefix livening up the h.f. bands!



The Falkirk Amateur Radio Society in Central Scotland are no exception in supporting the Foundationers and have recently had success in getting a candidate through the Foundation Licence. The photo shows **Ken Elliot GM4NTX** (Senior Instructor) with **Melanie Dutton MM3XMM** aged 11 years. Melanie passed the Foundation Licence Course held last month at the Falkirk Amateur Radio Society and the *PW* 'team' offer our congratulations.

☒ Australian News

New Website from ABC



The screenshot shows a web browser window with a blue header bar. The main content area has a light blue background with a grid of small images. A sidebar on the right contains a search bar and a list of links. The browser's address bar shows a URL starting with 'http://www...'.

Understanding Australia contains information about how Australians live, work and spend their leisure time, how they view their institutions and civic responsibilities and how they see their

- Extensive background information and analysis about life in Australia today.
- A Frequently-Asked Questions page, which answers queries about everything from public transport to socialising.
- Comprehensive on-line learning materials from Monash University's 13-week Australian Studies course.
- Audio files and transcripts of Radio Australia's *Australia Now* radio series, currently being aired across Asia and the Pacific.

So, next time you are 'surfing' the world-wide web take a look at Understanding Australia and find out a little more about the country that brings ABC Radio Australia and a comprehensive broadcasting schedule.

Diary News

West of England Radio Rally

E-mail: shaunosullivan@breathemail.net.



Published by Newnes, Ian Poole's latest book is designed to provide an up to the minute and user-friendly guide to the technology and applications of modern radio and communications equipment.

Newnes *Guide to Radio and Communications Technology*, is published in paperback and among its 32 pages encompasses basic principles and the latest applications. Each topic is covered in a style that makes it an invaluable foundation read for college students and technicians looking for an an update on the latest technology. Key areas associated with radio are covered, starting with an overview, history and the basic fundamentals of radio waves and their propagation.

There are also chapters devoted to the different types of modulation, from a.m. through f.m. and phase modulation to pulse modulation and details on frequency hopping, direct sequence

spread spectrum used for CDMA and OFDM.

Several chapters are devoted to the elements of radio systems including receivers, transmitters and antennas. In addition, many important radio and wireless applications are explained in detail, including broadcasting (with information on a.m. f.m., stereo, RDS and DAB Digital Radio), satellites (basic principles, broadcasting, GPS, etc.), Private Mobile Radio (basic systems, trunking/MPT1327 and TETRA), cellular telecommunications (basic principles, analogue systems and short-range data wireless data communications (Bluetooth. 802.11).

Newnes Guide to Radio and Communications Technology costs £16.99 and is available from all good bookshops (ISBN: 0750656123). Alternatively it can be published direct from Newnes at www.newnespress.com or from the author's website at www.radio-electronics.com



☐ New Venue

The Wythall Radio Club hold their annual radio and computer rally in March and would like to draw your attention to the fact the 2004 event will be held at a different venue.

Wythall Radio Club's annual radio and computer rally organisers have announced that the rally will be held at a different venue in 2004. The new site will be at the Woodrush Sports Centre in Shawhurst Lane, Wythall, approximately one mile from the old venue in Silver Street.

Rally organiser, **Martin Moyes**, said, **"The main reason for changing the venue is to provide on-site parking for visitors to the rally. The new venue also has two much larger halls doing away with the need for a marquee, which in the past has left us at the mercy of the weather, and is far superior from the point of view of access for traders. I am convinced that both traders and visitors alike will see that the new venue is far better for all, and is just round the corner from our old rally venue".**

Wythall Radio Club's Radio and Computer Rally is taking place on **Sunday 14 March 2004** for more details ring the organisers.

Martin Moyes

Tel: 0121-474 2077

E-mail: enquiries@wrcrally.co.uk / Website: www.wrcrally.co.uk



● Irish Amateur Radio

Following the World Radio Conference (WRC) 2003 Irish Radio Amateurs no longer have to sit a compulsory examination for Morse code.

The Commission for Communications Regulation (ComReg) in Ireland is pleased to announce that in line with the outcome of WRC 2003 they have removed the compulsory requirement for an examination in Morse Code Signals for the Irish Experimenters Licence with effect from 15 September. There is now no longer a need to pass a Morse code test to operate on the high frequency bands as listed in *Part IV Particulars of Experimenters Station 02/77R3*. All Class B Licences now have Full Licence Privileges. So, listen out for more EIs taking to the bands and give them a report!

● On Air From Iraq

Radio Amateur OM2DX is currently working at the Slovak Embassy in Baghdad... and as he's there for three years he's applied for a licence to operate.

Having obtained the callsign **YI/OM2DX** and the special call Y12X for contest working, OM2DX, is currently running 100W to wire antennas, but he has organised for higher power and more beams to be sent to him in Iraq. Active on c.w., s.s.b., RTTY and PSK31 on 1.8 to 50MHz, OM2DX has organised QSLs for both callsigns and his activity from the Y11BGD club station to go via his father, **OM3JW**.

● New from SGC

Would you like to be able to tune any antenna easily? Well, if the new SGC master antenna controller lives up to its reputation you'll be able to do just that!

The new SGC MAC-200 multiple antenna controller is billed as a sophisticated control unit, which incorporates a built-in smart tuner to fast tune up to five antennas. First seen at the Friederichshafen Exhibition in June the SGC MAC-200 incorporates built-in memories to provide fast tuning and even remembers which antenna to use on each band once its been programmed.

Constructed in the same styling as other 'members' of the SGC Smartuner 'family' this unit is bound to be popular among antenna enthusiasts. The Mac-200 is priced in the region of £339.95 and is available from Waters & Stanton PLC.

Waters & Stanton PLC

22 Main Road, Hockley, Essex SS5 4QS

Tel: (01702) 206835/204965

E-mail: info@wsplc.com / Website: www.wsplc.com



Go On - Have A Go!

Construction Competition

The West Manchester Radio Club announces a construction contest which is open to all!

The Construction competition being run by the West Manchester Radio Club is taking place on Sunday 7 December at the Red Rose Christmas Rally, Lowton Civic Centre at Lowton, near Warrington. Book prizes and certificates will be awarded to the winners in two categories, which are:

- Any item for use in connection with Amateur Radio
- Any Amateur Radio item, but utilising opto-electronics (of any type) as a major feature

There is no restriction on the number of entries per person and no charge for entries. The entry need not be complicated or even original, but should be accompanied by a brief description or construction notes.

You don't need to book to take part, just take your entry along on the day and state which category you'd like your entry to be judged in. So start building now; there's not long to go! Further information can be obtained from:

Les Jackson G4HZJ
1 Belvedere Avenue
Atherton, Manchester M46 9LQ
E-mail: g4hzj@ntlworld.com

Digital TV News

Goodbye Analogue

After six months of dual standard transmission the German capital, Berlin and the surrounding state Brandenburg have switched off analogue and moved to digital television broadcasting.

Berlin is the first region in Europe to make the digital switch, and was able to do so because of the high penetration of cable and satellite television, meaning that fewer households needed to invest in additional set-top boxes. The **Berlin-Brandenburg Media Authority** believes that of the 170,000 households that needed to purchase a box, 150,000 had done so by the deadline of 0800hours on a Monday morning!

A total of 21 channels are currently available, including the German public and commercial channels and BBC World, in a continuation of its service previously available to analogue viewers. Saxony, Saxony-Anhalt, Thuringia and North-Rhine Westphalia are expected to commence digital transmissions over the next 12 months ahead of the final switch-off in 2010.

Open Day

Open Day at Matlock

Ian Brothwell G4EAN recently took a trip to Derbyshire and while he was there, he looked in on the Waters & Stanton @ Lowe Open Day.



This year's W&S @ Lowe Open Day took place on 6 September and as **Ian Brothwell G4EAN** discovered is a 'must' if you are in the Matlock area around that time. Boasting a marquee housing stands from Icom, Kenwood and Yaesu, as well as several tables of bargains, this annual event offers plenty of variety and a great opportunity to view a selection of Amateur Radio products.

The bargains sale was run by **Peter Waters** of Waters & Stanton and **Richard McLachlan** of Lowe Electronics and Ian couldn't resist buying a Lowe SRX-50 receiver at a real bargain price! Also on offer were plenty of Amateur Radio accessories and the Lowe shop had plenty of variety, as well as more bargains for those keen 'hunters'. There was something for everyone and Ian's companions, who are not Radio Amateurs found the selection of Garmin GPS units of interest.

It was a thoroughly enjoyable day and Ian says he's definitely making a note in his diary for next year's event!

Event Update

Record Lighthouses

The ever popular International Lighthouse/Lightship Weekend took place in August and as in previous years proved to be a great success....

The weekend of Saturday 16 & Sunday 17th August was the International Lighthouse/Lightship Weekend for 2003. A total of 369 stations were established at lighthouses and lightships in 48 countries. The total number of participating stations and the countries taking part was a record number for the event and the official list of entrants can be found at http://ilw.net/2003_list.htm

If you missed out on the event this year and would like to prepare for next year's event make a note in your diary that lighthouses and lightships around the world will be 'taking to the air' on Saturday 21 August from 0001UTC until 2359UTC on Sunday 22 August 2004. So, start thinking and planning ahead and as soon as you have firm details of your station please let **Mike GM4SUC** know via the new website at <http://ilw.net>

amateur radio clubs

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

LINCOLNSHIRE

Lincoln Shortwave Club

Contact: Pam Rose G4STO Club Secretary

Tel: (01427) 788257

Website: www.lswc.co.uk

The Lincoln Shortwave Club meet every Wednesday, at 2000hours at the Lincoln Railway Social Club, Ropewalk, Lincoln LN6 7DQ.

They are hosting a Foundation course beginning Saturday **Nov 8** at 1000hours, and for the three following Saturdays at the same time. All are welcome, please contact the club secretary (details above), the club activities manager: **Baz Matthews M3DMV, Tel: (01636) 612440, E-mail: m3dmv@btopenworld.com** or the lead instructor **Bob Shaw G3VRD** on **(01522) 858714** for further details.

The Lincoln Shortwave Club HAMFEST 2004 is to be held at a new venue. For many years the event was held at Lincoln Showground, however next year it will be taking place at Newark Showground in Nottinghamshire. For more details look at:

www.hamfest2004.secretbunker.org.uk



NORTHERN IRELAND

Bangor & District ARS

Contact: Mike G1XSF

Tel: 0284-277 2383

Website: <http://www.bdars.com>

The Bangor and District Amateur Radio Society meet on the 1st Wednesday of every month in The Stables, Groomsport at 2000hours. On Wednesday November 5 they are holding their annual Surplus Sale. This excellent event is always a popular way to make some space in your shack. There will be a small admission charge, but there is no charge for tables. The sale will be held at the **Crawfordsburn Country Club - please note this is not the usual venue**. Visitors and new members are (as always) most welcome.

MIDDLESEX

Radio Society of Harrow

Contact: Jim Ballard.

Tel: (01895) 476933

E-mail: g0aot@blueyonder.co.uk

The Radio Society of Harrow meets every Friday at The Harrow Arts Centre, Uxbridge Road. Hatch End. Middlesex. Forthcoming meetings include: **Oct 17:** Hungarian Evening, **31st:** Newcomer's Programme: Soldering workshop with old hands and **Nov 14:** **Bill Pechey G4CUE** 'Radio Direction Finding'.

SOMERSET

West Somerset ARC

Contact: Bob Bonar G1ONV/M3ONV

Tel: (01643) 863462

E-mail: info@westsomerarc.co.uk

Website: www.westsomerarc.co.uk

The West Somerset ARC meet on the first Tuesday of the month at the West Somerset Community College in the Gibbs Block room 7. Meetings open at 1930 for 2000 hours start. Each month there is something different of interest, for example every January there is a social evening for the 'better half's' to say thankyou to them for putting up with the Amateurs during the year! And in June each year a Fox Hunt around West Somerset takes place. The club also run Foundation, Intermediate and Full Licence Courses and are also a Registered Exam Centre. All classes and Exam's are held on demand. There is also a club website where all details of what the club is doing is posted regularly.



By Roger Western G3SXW

Some may call **Roger G3SXW** a masochist...and others may consider him to be an admirable adventurer in Amateur Radio. Although the DXpedition isn't for me (I enjoy a far more restful form of the hobby!) this book provides fascinating reading. It's brim full of exciting stories - and sometimes from dangerous places. Forgetting the 'ordinary' risks in operating from remote sites...just imagine how much more danger there must have been when operating from

This book begs to be read - and by doing so you'll get a valuable insight into the hard work, determination and sheer 'drive' which is necessary for success. And on a purely personal note - I was struck by the humanity expressed in Roger's opinions and observations on some of the living conditions in the terribly poor nations where he's operated from. To me, Roger's reactions to these conditions show that he's not just a driven adventurer on an ego trip...instead he's an enlightened traveller with a grip on reality. In fact, I think the comments and observations make the book extremely effective and worthwhile.



A fascinating read, and thoroughly recommended. You won't say "What a bunch of nut" and complain about late-arriving QSLs so readily after enjoying this book!

G3XFD

**Roger Western, 7 Field Close,
Chessington, Surrey KT9 2QD**

17

Avoidance of Transmitter Interference

Gordon King G4VFFV continues with his bi-monthly series, this time he concentrates on the avoidance of transmitter interference.

Avoiding interference to other services must be of primary concern to the Radio Amateur when transmitting, for persistent interference to other receiving systems or equipment could lead to an enforced reduction in power or, indeed, to the eventual withdrawal of the transmitting licence. Transmitter interference of which the Amateur will mostly be aware will be that which affects the television and radio receivers

of near neighbours!

Radio or TV interference (TVI), however, may not always be the result of an out-of-band emission from the Amateur station. It's possible that a strong Amateur signal from a correctly operating transmitter might cause a nearby receiver itself to generate spurious, 'self-interfering' signals. This can happen even when the frequency to which the affected equipment is tuned is well removed from the frequency of the Amateur transmission.

Imagine a TV receiver working at maximum sensitivity in an endeavour to resolve a reasonable picture from an antenna signal of a mere hundred microVolts, suddenly encountering a massive input of a Volt or more from the r.f. signal of a nearby Amateur station! The TV receiver would suddenly be pushed hard into 'overdrive', causing the automatic gain control (a.g.c.) system to turn down the gain of the small-signal stages in an effort to accommodate such an unnaturally strong antenna signal.

However, because the signal level would probably be beyond the normal operating range of the a.g.c. system, the small-signal stages would suffer from severe overload. This would encourage the production of unwanted signals, which would tend to 'mix' in a rather complicated way with the wanted signals, and generate a multiplicity of spurious signals in harmonious and non-harmonious relationships, one or more of which would almost certainly interfere with the picture and sound.

With analogue TV, this kind of interference generally causes patterns or wriggles on the picture, and buzzes or heterodynes on the sound. With digital TV, however, the picture is more likely to 'freeze' on the screen or to split into horizontal strips.

Over recent years TV and

radio receivers have been designed to accommodate relatively strong, out-of-band signals. Indeed, there is an Radio Authority test standard nowadays for electromagnetic compatibility (EMC) that requires radio and TV receivers to operate with minimal degradation in a signal field of 1.78 Volts per metre (V/m), modulated 80%.

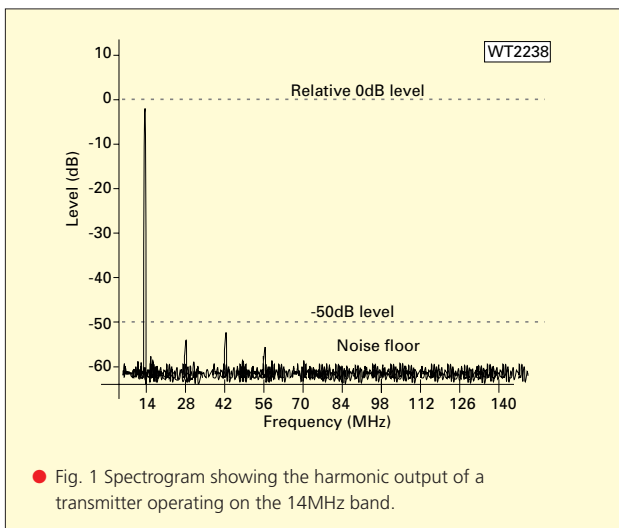
More information on the subject of interference can be found in leaflet RA414 of the Radiocommunications Agency (RA). However, it's worth bearing in mind that at a distance of 15 metres from an antenna radiating an effective power (ERP) of only 100W, the signal field could be as high as 4.6V/m!

Strive for the Cleanest Signal

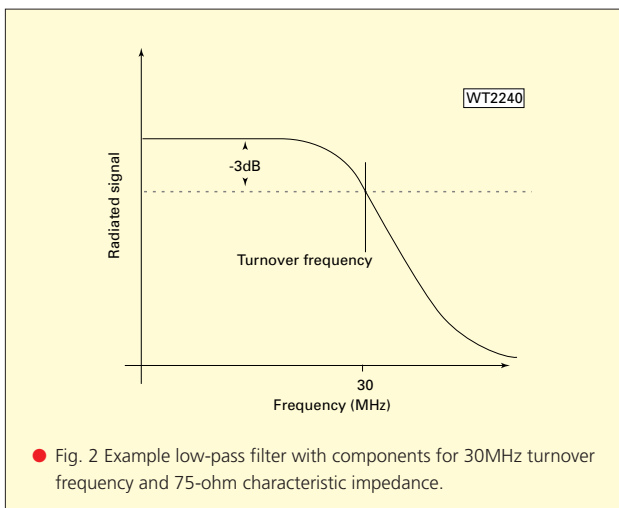
No matter how sophisticated the design of an Amateur transmitter, spurious emissions are virtually unavoidable, though, hopefully, they will be many hundreds or thousands of times below the power of the fundamental emission! The power of a harmonic (or other spurious signal) relative to the power of the fundamental signal delivered by a transmitter is given as a decibel (dB) ratio. If the maximum continuous wave output of a transmitter is, say, 110W at 7.03MHz, and the 3rd harmonic at 21.09MHz is -55dB, then the power output of the harmonic works out to:

$$3.48 \times 10^{-4} \text{W} \\ \text{(e.g., (antilog of } -55/10) \times 110)}$$

It's unlikely that the signal resulting from such a small output power would be unduly troublesome to a fellow Amateur working in the 21MHz band unless, of course, the two stations were pretty close to each other. However, a harmonic of -20dB would be a different 'kettle of fish', for relative to a 100W this represents 1W, and as QRPers will vouch, this is enough for encouraging ionospheric DX!



● Fig. 1 Spectrogram showing the harmonic output of a transmitter operating on the 14MHz band.



● Fig. 2 Example low-pass filter with components for 30MHz turnover frequency and 75-ohm characteristic impedance.

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

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300m roll "club special buy".....£135.00 P&P £10.00

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10 mtrs Traps	(a pair)	£25.00 P&P £4
15 mtrs Traps	(a pair)	£25.00 P&P £4
20 mtrs Traps	(a pair)	£25.00 P&P £4
5.35MHz Traps	£25.00 (a pair)

Practical Wireless, November 2003

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£24.95 P&P £2.50

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BNC - BNC	1.5m	£8.99

+ £2.50 P&P

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Enamelled (50m roll)	£12.95 P&P £5
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PLT-80	80m mobile whip (64" long)	£24.95
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Pulley will hang freely and take most rope up to 6mm. (Wall bracket not supplied).

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Wall bracket, screws not supplied. Simply screw to outside wall and hang pulley on

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A simple to fit but very handy mast pulley with rope guides to avoid tangling. (Fits up to 2" mast).

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Del £10.00

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

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

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Telescopic mast lengths are approx.

Tripod for telescopic masts.....**£89.95**

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

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20ft BARGAIN MAST SET

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

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

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

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12"	T&K Brackets	£12.00 P&P £8
18"	T&K Brackets	£18.00 P&P £8
24"	T&K Brackets	£20.00 P&P £8
10mm	fixing bolts (needs 8mm hole)	£1.40 each
U bolts (1 1/2" or 2")	£1.20 each	
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2" - 2" cross over plate	£10.95	
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4-way guy ring	£4.95	
2" mast sleeve	£9.95	
1 1/2" mast sleeve	£8.95	
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Heavy duty guy kits (with wire)	£29.95 P&P £6	
Ground fixing spikes (3 set) powdered coated	£24.00 P&P £8	
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132m roll nylon guy (4.4mm)	£40.00 P&P £7.50	
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28A at 13.8V yet under 2kgs. (H 57mm, W 174mm, D 200mm approx). Fully voltage protected. Cigar socket & extra sockets at front/rear. Ultra slim. RRP £79.95

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- Volts adjust (9-15vdc)
- Light in weight: 2.1kg
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- Over volts protection

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30 AMP/12 VOLT PSU
£119.95 Del £10

hf no problem

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

OUR PRICE £779.00

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

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

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

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SP-21 optional extension speaker.....£74.99

SM-20 optional desk microphone.....£129.95

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

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'706' technology in a QRP version designed by experts to be used by same HF + 6m (up to 10W O/P). ATU

built-in DSP as standard. The only thing limited is the price. Ideal for M3.

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

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hf specials

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100W HF + 6m transceiver. RRP £699.99

LATEST UK VERSION

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1.8-60MHz "Roller coaster inductor". 300W PEP. Internal: 4:1 balun, 6-way antenna switch. Will handle long wires/vertices and almost any others!

Excellent performer.

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- 1.8-30MHz 300W ATU
- Large cross needle meter
- 30/300W PEP power meter
- VSWR ● 3-way antenna selector ● Internal balun

Picture for reference only. Latest version is in black.

OUR PRICE £149.95

AR788 NEW MODEL



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

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

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Extra heavy duty rotator for large HF beams, etc. Supplied with circular display control box and 25mtr of rotator cable.

OUR PRICE £359.00

G-450C.....£315.00

G-1000DXC.....£499.95

GC-038 Lower mast clamps.....£25.00

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

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SGC-231 HF + 6m.....£339.95

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

ONLY £249.95 P&P £6

MFJ-269 160-70cm analyser.....£315.95

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MFJ-784B DSP filter.....£229.95

MFJ-901B 200W "versa tuner".....£75.95

MFJ-260C 300W dummy load (600meg).....£39.95

MFJ-16010 Random wire tuner.....£56.95

BARGAIN WINCH



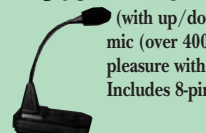
500kg brake winch. BARGAIN PRICE

OUR PRICE £59.95 del £8.50

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Extra heavy duty "hanging pulley".....£14.50

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

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IM-08 Modular phone "Icom".....£9.95

KM-08 Kenwood modular lead.....£9.95

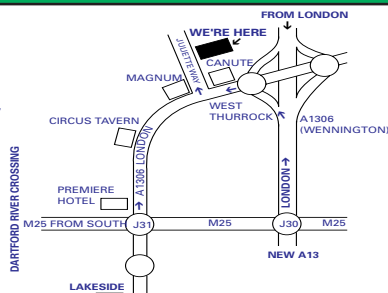
Spare foam wind guard (M.C.) D-308 mic cover.....£2.00 each

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high power (25W) as standard. Includes
charger.

OUR PRICE **£299.00**

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Dry cell battery box£20.50
Spare battery£39.95
Cigar lead£21.50

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

'BEST VALUE HANDIE 2003'

OUR PRICE **£249.00**

Optional case£19.99
PC lead£32.95
Cigar lead£19.95
Remote function mic£32.95
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ALINCO DJ-596

2m + 70cm Handie.
Includes: (NIMH) Battery/Charger.
High + narrow switchable. High power
(4.5W) OP as standard. Alpha Numeric
channeling.

SUPERB VALUE

OUR PRICE **£169.95**

Optional case£15.99
Dry cell battery box£14.99
Cigar lighter lead£19.99
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ICOM IC-910H



100W on 2m 75W on 70cm. All
mode - top performance
transceiver.

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With 23cm: "IC-910X"£1199.00

NEW ICOM IC-2725



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

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Optional extended receive available which includes AM airband



G-707E

2m/70cm dual bander. Alpha/
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+ tone burst. 1200/9600bhps
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SANGEAN ATS-909



A superb performance portable/
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with true SSB and 40Hz tuning
for ultra clean reception. The
same radio is sold under the

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include RDS facility, 306 memories and "FM stereo".

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The short wave receiver for
the true enthusiast. Incl's
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(all mode) ● Synchronous
AM detection ● PC control
capability.

OUR PRICE **£589.00**

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REALISTIC DX-394



★ Superb performance
SW receiver ★ 0.2-30MHz
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tuning steps (down to
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Digital S-meter ★ Attenuator ★ Key pad entry ★ 160
memories ★ Noise blanker.

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HD-1010 optional headphones£9.99



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ALINCO DJ-X10

Full-featured handy. 100kHz-2GHz all mode.
Includes SSB/CW band scope, alphanumeric
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battery/drop-in charger).

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Optional case£15.00
Optional dry cell battery box£14.99
PC interface£42.95
Cigar lighter lead£19.99



ALINCO DJ-X2000

The intelligent scanner! 100kHz-2.15GHz. All
mode incl's SSB, "Flash Tune" reads frequency
of nearby signal & tunes the handie
for you. Incl's battery, charger & antenna.

Includes 8.33kHz spacing **£419.95**

Optional case£15.00
Optional battery box£14.99
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PC interface£42.95



UBC-780XLT

New comprehensive
scanner (25-
1300MHz)/slight gaps.
Alpha Tag, PC

cloning control. Smart scanner + trunk track facility.

NEW EUROPEAN VERSION

OUR PRICE **£299.99**

Optional software (for UBC-780)£34.99
BC9000XLT£249.00



YAESU VR-5000

0.1-2.6GHz all mode
receiver with DSP
(optional) plus
bandscope/world clock and
too much more to print

OUR PRICE **£549.99** (INCL' PSU)

Optional DSP unit£79.99
VR-500 (all mode hand-held scanner)£199.99



AOR AR8600MKII

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

£599.00 Del £10

Optional power supply/8600£19.95
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KENWOOD HS-5



Superb padded professional communications
headphones. Designed specifically for SWL.
1/4" jack.

PRICE **£56.99** Del £5.00

KENWOOD HS-6



A professional lightweight pair of dedicated
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3.5mm jack.

PRICE **£36.99** Del £5.00

MFJ-126



12/24hr clock.
Inner dials gives
12 hour. Outer
dials gives 24
hour. "Highly
visible" screen.

£24.95 P&P £5.00

RM-983



Radio controlled
clock. (Synchronised
from rugby). Double
line display, user
selectable, time
format 12/24hr, back
illumination, indoor
temperature.

OUR PRICE **£12.95**
P&P £3.00

SANGEAN QSR-1



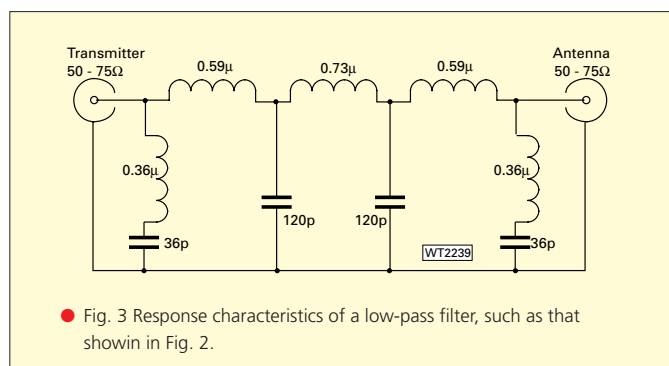
Voice activated
desktop recorder
with quarter speed
record. (Sold for
more under
Roberts name:- C-9950). Superb
accessory for the radio enthusiast.

OUR PRICE **£69.95** Del £10.00

Low-Pass Filtering

Happily, the vast majority of commercial rigs boast excellent harmonic and spurious output suppression, and these days of computer-designed p-networks and low-pass filters (l.p.f.) it's not all that difficult for the home constructor to match the commercial boys with such band-tailored filters. The spectrogram in **Fig. 1** gives a fair impression of the least that should be expected. With the fundamental output at 14MHz referred to 0dB, the 2nd harmonic is -53dB at 28MHz, the 3rd harmonic -52dB at 42MHz and the 4th harmonic -54dB at 56MHz.

Relative to 100W, these correspond respectively to $5 \times 10^{-4}W$, $6.3 \times 10^{-4}W$ and $4 \times 10^{-4}W$. The remaining spurious outputs are virtually down to the noise floor at around -60dB. It would be possible to improve upon these attenuation ratios by including a separate LPF assembly between the r.f. output of the



rig and the antenna. The filter should be well screened and capable of handling the full r.f. output power of the transmitter.

An example filter of this kind for a transmitter working in the 14 MHz band is shown in **Fig. 2**. The component values indicated would provide a turnover frequency around 30MHz, as shown in **Fig. 3**, and 75Ω characteristic impedance.

To avoid power loss and overheating, l.p.f.s should be constructed for the least possible insertion loss, using suitably large-gauge wire for the inductors, along with low-loss, high-Q capacitors.

Additional rejection at a specific frequency is sometimes achieved by resonating one of the inductors with a parallel capacitor.

The Old Maxim

In the days of Band I TV, TVI was much more of a problem for the Radio Amateur than it is today in the u.h.f. channels of Bands IV and V. Even so, problems can still arise. The 5th harmonic of 144MHz at 720MHz, for example, falls within the frequency range of TV channel 52. The old maxim of keeping harmonic radiation down to at least 30dB below the field strength of the local TV

station is still well worth aiming for. In the early days of TV there were many more fringe reception areas, which often called for the harmonic radiation to be reduced by as much as 120dB. Oh, happy days!

On the v.h.f. and u.h.f. Amateur bands, the use of a band-pass filter between the transmitter and antenna may be a better bet. Unwanted emissions on the h.f. bands can be further reduced by using a well-designed antenna tuner (a.t.u.), with a LPF inserted between the transmitter and the a.t.u.

A resonant antenna might also help, but should not be relied upon to quell all unwanted outputs sufficiently! It also pays to use good quality feeder, and to ensure that all connections are 100 per cent r.f. efficient. Remember, too, that excessive drive to any stage will significantly raise the harmonic yield.

So, keep your output clean and enjoy your radio!

PW

Britain's No.1
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SHORT WAVE
Magazine
& Scanning Scene



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October 2003
SWM

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November 2003 Issue On Sale 23rd October - £3.25 - Miss it! Miss out! SWM - The ONLY choice!

How do you keep record of your QSO contacts? John Worthington GW3COI has some hints and tips for you all - so take note next time you hear and work dear old Ernest!

The Importance of Saying Ernest

It's a well known fact that us old folks mostly have a bad memory, and I've now forgotten why I thought I should mention that! No matter...the main reason for writing this piece is to stress how important it is for Radio Amateurs to remember names...and this can be very difficult whatever age your brain is!

Why bother to try to remember names? Well, many of us try and quite a few folk go to the trouble of keeping some sort of rapidly revealed record.

If you don't have 'instant retrieval' or some form of record in your shack, it can be very embarrassing if you can't reply with the other operator's name when they use yours when passing the initial report. It could be seen as implying how rude you are to forget such a memorable previous contact...even if it wasn't!

Essentially I think that the most important thing about retrieving the name...is the pleasure it gives to anyone to be 'remembered' (even if the cynical would say 'what a good index!'). However, even the cynic must experience a frisson of warmth as a result of having their existence acknowledged from the current thick callbook.

Memory For Names

There are four practical ways of achieving efficient name recall when in a QSO and first of these is having a memory for names. I don't doubt there are such people, and with practice I think most operators, even including GW3COI, could find it possible to recall a short list.

But if you are an active operator over numerous bands on a daily basis, then you would need to be in the 'Brain of Britain' or 'Who Wants To Be A Millionaire' class...and no...you can't "Phone a friend"!

The other three options are: **A** the computer, **B** the card file and **C**, the small book which has several pages for each letter of the



"...Yes Ernest....I see we have worked before and my notebook reminds me it was a boring QSO..."

alphabet. So let's look at the options mentioned.

In my case the computer's out! I can't even programme the video recorder! In other words....I'm computer illiterate!

Firstly, even though I know the shack computer is a splendid way of indexing QSOs - if you can afford to keep it 'on the boil' while working new stations, etc. Even so, I doubt whether it beats the simple notebook for speed in looking up a callsign and station detail. Remember that basically...all I need to do is confirm whether or not I've worked a station in the past and if so, what the operator's name is, together with other brief details.

Secondly, the card index file takes up a fair amount of space and is fiddly for people like me with podgy fingers which are also used to keep my pipe topped up with St. Bruno. So...I'm left with the little A to Z notebook which I don't think can be beaten for unobtrusiveness, speed of checking and cheapness!

Masterpiece Book

My current book was started in 1983 and is a masterpiece of controlled disintegration in its Sellotape binding. Despite this, and being active on the bands every day (and being famous for short overs) there's still plenty of space for

blokes (and ladies) I've never worked before.

All I enter is the callsign's suffix, first name and QTH. I then put a dot next to the entry each time I work the same station and if he's a Lid*, I put an L there.

**Polite translation: This term basically means 'Idiot'. The deeper colour the ink I use...the bigger the idiot!*

Incidentally, I also use the book for other things such as all the VKs (Australians) I've worked, although it's quite a small list so there's plenty of room on that page. I keep a page for Malapropisms (Not yet a DXCC country) I've heard on the bands and these were always a source of lasting humour to my late XYL.

Finally, I also enter technical hints gathered from various clever clogs I QSO with and put them in the book under 'H'. I don't get many of them, but I'm always on the look out for them.

However, the main purpose of the Worthington Encyclopaedia is to be able to come back with a formerly worked station's name before it's offered. I may have a scruffy shack, but at least I can polish someone's ego and I look forward to shining yours next time you work me on 7MHz c.w. All I ask is that you don't forget my name!

pw

There are four practical ways of achieving efficient name recall when in a QSO...

Radio Basics

This month, continuing the v.h.f. theme...Rob Mannion G3XFD looks at some of the techniques used to generate a local oscillator signal for a v.h.f. down-converter. He hopes some harmonic 'multiplier practice' sessions might help you gain confidence!

One of the projects to appear in Radio Basics (RB) quite soon is a simple 70-to-28MHz down converter. This little project will enable anyone with an h.f. transceiver/receiver with 28-

Despite this, I'm very confident that most RB readers will cope very well when building a v.h.f. converter especially as I intend guiding you with care.

In the block diagram shown

The conversion - as you'll remember from the 3.5MHz to medium wave converter featured in RB - is obtained by using the 'difference' signals produced by the 'mixing' of the incoming signal frequency and that of the local oscillator. In the case of the 3.5MHz to medium wave converter the 'difference' signals produced (the intermediate frequency) were in the range 930kHz (corresponding to the down-converted 3.5MHz) - (remember that the tuning was reversed because the local oscillator was on the high frequency side of the input) and 630kHz (corresponding to the down-converted 3.8MHz).

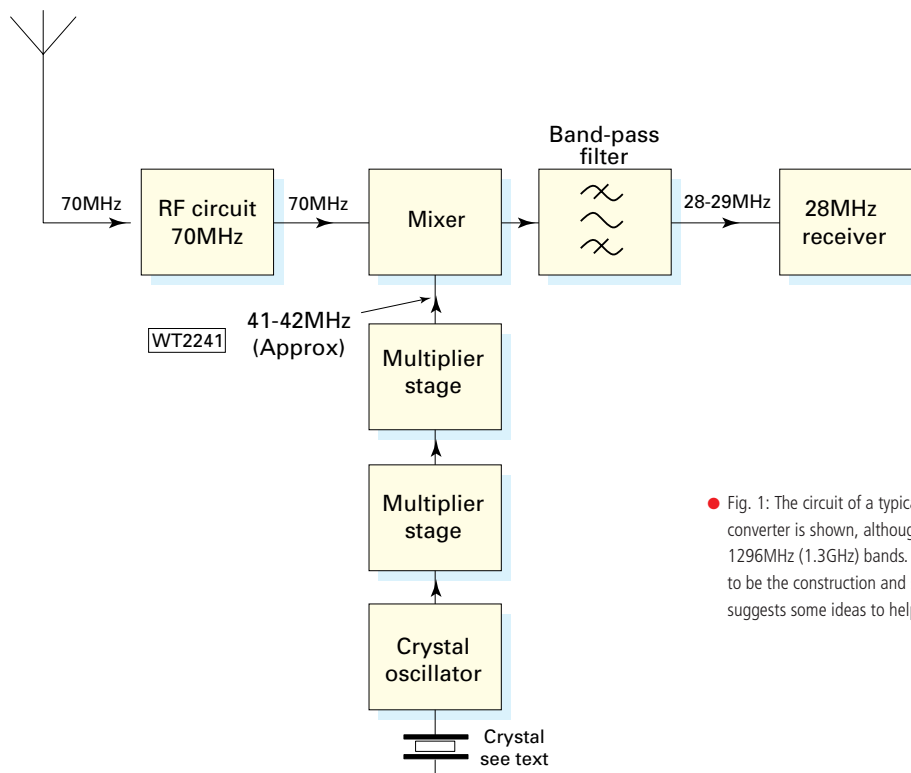
Forgive the pun...but it's the method used to obtain the required local oscillator

into the mixer stage.

However, the oscillator signals used in v.h.f. converters are usually generated at much lower frequencies. They are then multiplied by extra stages where the harmonics are amplified and tuned to advantage. But I must stress that the only real difference between the h.f. and v.h.f. down converters is that although we're dealing with very much higher frequencies...the basic theory still applies.

Rare Receivers

When I first came on the air as G3XFD down-converters for v.h.f. use were extremely popular. Dedicated v.h.f. receivers were rare - and not very portable.



● Fig. 1: The circuit of a typical basic v.h.f. to h.f. down converter. In this case a 70 to 28MHz converter is shown, although the same techniques are used for 50, 144, 430 and the 1296MHz (1.3GHz) bands. The most difficult section for the less-experienced constructor tends to be the construction and set-up of the crystal oscillator multiplier stages. In the text G3XFD suggests some ideas to help familiarise yourself with the techniques involved.

30MHz coverage to tune across the down-converted 70MHz (4m).

A basic block diagram of a typical converter unit is shown in **Fig. 1**. In essence they're very simple indeed - but care has to be taken building such circuits.

in Fig. 1, there's a single stage of radio frequency (r.f.) amplification which then feeds the amplified incoming signal from the antenna onwards for 'mixing'. This is of course where the down conversion takes place.

'injection' frequency which is 'different' from what we've already discussed in the RB series. This is because in the 3.5MHz to medium wave converter it was possible to use the output of a crystal controlled 4.43MHz local oscillator direct

My first attempts at getting on to 70 and 144MHz were achieved by using superregenerative receivers. I boldly (as a v.h.f. novice) used designs from our sister publication *Short Wave Magazine*. Although one or two

ideas came from *PW*.

Incidentally, with the kind co-operation of *SWM* Editor **Kevin Nice G7TZB** I'm planning in the near future to resurrect one or two 'superegen' projects.

Shock, horror! Sitting here in front of my computer...I can't help but imagine the look of horror on the faces of some of the Amateur Radio community! "Super-regens...on a modern Band?...G3XFD must be off his trolley (bus) again!"

Despite the expected reaction...before anyone writes to criticise the suggestions I'll say this: if you sit back and think a bit, you'll realise that **with the appropriate precautions** a superegenerative detector could be used effectively.

chain...to try! But I must warn you...this is again one of those times where a dip meter would be **very useful**.

Additionally, if you can afford one (and they're not very expensive nowadays) a 'no frills' frequency counter would also prove extremely helpful. The combination of the dip meter - to indicate resonance and approximate tuning point - and the frequency counter (to indicate the frequency accurately), is absolutely ideal in my opinion.

If you're a complete novice when it comes to using oscillator harmonics to advantage (which is what we're doing in a multiplier chain) I suggest the following ideas: The first is that you make up a simple oscillator

common terms for them - will appear. Despite this difficulty - with practice - you'll very soon learn to differentiate between the clean, strong signal of the oscillator, and the somewhat weaker 'Birdies'.

Locating Harmonics

Locating the harmonics (multiples of the original signal) is quite easy to do on a receiver. All you have to do is to tune to twice the fundamental frequency and with your basic crystal oscillator coupled closely to the receiver...you should find the second harmonic signal very quickly.

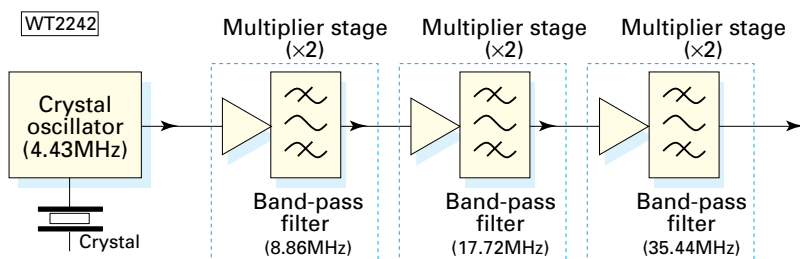
If you discover any signals apparently coming from the oscillator between the

tunes across the fundamental signal.

Next, tune the dip meter (still in the wavemeter mode) through where you expect to find the first harmonic (twice fundamental - 8.86MHz for the 4.43MHz crystal). Note that the signal (as measured on the wavemeter or dip meter) is not as strong. You'll find that the higher the multiplication frequency - the less strong (generally) the signal will be.

Note: If you don't have a dip meter - you can make up a simple wavemeter (you should already have one if you're a transmitting Amateur in any case!) from one of the many circuits published in *PW* and elsewhere. They are very crude...but they work!

The wavemeter doesn't have



● Fig. 2: Circuit of a simple crystal oscillator and multiplier chain. In the text G3XFD suggests that experience with an oscillator working on 4.43MHz (PAL system colour burst reference frequency) will prepare the constructor to build and manage the h.f. to v.h.f. oscillator/multiplier chains required for down converters (see text).

One of the first precautions would be to fully isolate the (supersonically) oscillating detector stage from the antenna. This would immediately clear the risk of the comments of vintage v.h.f. pioneers who reputedly often reported... "Can't hear your transmitter Old Man...but your receiver is 5 & 9...just try keying it for a c.w. QSO".*

***Note: For the uninitiated the superegenerative detector can also act a very effective transmitter on the frequencies it's working on (more of this later). Despite this problem and the fact it's not very 'selective', the superegen' can be an amazingly sensitive amplitude modulation (a.m.) detector/receiver and is capable of providing enormous gain. (You'll be reading more of this pioneering system soon!).**

Make A Chain

What I'm hoping to do this month is to encourage those of you who haven't had a go at making an oscillator/multiplier

using the 4.43MHz crystal we've used in previously published RB projects. Set it up, running from a convenient 9V battery supply and then tune for its signal on your receiver.

It's best to either have the oscillator very close to the receiver antenna or to (gently) wind several loops of wire around or near the transistor. This length of wire (about 60mm will do) will act as a crude antenna for the oscillator.

Don't forget that when you tune the receiver to detect the simple oscillator...you'll only hear a 'swish' as you tune through the carrier. This is because there's no modulation on the signal. So, to make it easier to detect I recommend that you switch in the receiver's beat frequency oscillator. Depending on the strength of the oscillator's signal you should then hear a strong whistling tone as you tune through the signal.

By tuning for the 4.43MHz fundamental signal you should receive the signal in that vicinity! However, there's a chance (depending on the design of your receiver) that other signals - 'sprogies', 'Birdies' are

fundamental frequency and the point where you expect to find it - ignore it for the time being! (It's probably the oscillator getting into the receiver somewhere and producing the 'birdie'.)

Those constructors lucky enough to have a 1MHz crystal can build a test oscillator which will then produce harmonics all the way up to 30MHz and beyond (if the receiver tunes higher in frequency you'll be able to prove it yourself!) Incidentally, this useful property can also be a nuisance - because the same harmonics (if let loose and radiated very far) can cause the dreaded television interference (TVI). However, with care...we can keep the harmonics tamed - and use them to advantage.

Getting Weaker?

As you tune up in frequency the harmonics from your test oscillator (whether it be on 1, 4.43MHz or whatever you've got from your junk box, etc.) will become weaker. If you've got a dip meter you can use it as a simple wavemeter (usually with the power off) and obtain a strong deflection on the meter as it

any circuitry which can 'fool' you by producing 'Birdies'. The downside is that they can only indicate what's being detected...and as you go up in frequency...it can prove difficult to identify any weak harmonics.

Tuned Circuit

The next stage of the experimentation is to make up a simple parallel tuned circuit (you insert this in the collector or drain circuit of the oscillator) to 'extract' the harmonic you want. In other words...if you want to get the most r.f. energy at 17.72MHz (4th harmonic) the tuned circuit you make should be tunable to that frequency.

You should then tune for 'maximum smoke' (most deflection on your wavemeter). Next, you should check (on your receiver) to make sure it's the harmonic you require...and not another frequency or 'birdie'.

In finishing off this month, I urge you to build, experiment and become familiar with the techniques I've described. Whatever you learn will become very useful in the next few months!

PW

Last month
Katherine Taylor
2E1HFX appeared
in one of her
Father's equipment
reviews... 'modelling'
a special rucksack.
This time
however... she's
writing her own
review and enjoying
the experience!

It was a nice surprise to receive a telephone call from PW's Editor G3XFD - he normally calls to chat to my Dad, Neill G4HLX about the 144MHz QRP Contest. However, it was me he wanted to talk to this time....and I was asked to review the TH-K2E - a new hand-held from Kenwood. The invitation came just in time...as I was due back in College very soon after the summer break.

The TH-K2E hand-held is a 144MHz f.m. transceiver promoted by the people at Kenwood as being "User friendly and technically sophisticated". In their list of features is included an aluminium die-cast chassis, high

Friendly & Uncomplicated

The manual for the Kenwood TH-K2E is written in friendly, uncomplicated terms - in fact so much so that it may seem a little patronising to some operators. I say this because a more experienced operator would be aware what many functions were, and wouldn't need half a page of instructions on how to turn the volume up and down. Although I realise some of these things may be useful to first time Amateurs.

The manual's pictures and diagrams are first rate - including one that shows what a

Capacity, CTCSS and 1750Hz tones. There's also a **VOX** function, **Repeater Offset** frequency, and **Narrow FM** mode.

Clear & Crisp

I soon found out that a QSO on the radio is a pleasure and the receive audio from the loudspeaker is clear and crisp. There's also plenty of volume for use if you are in a noisy environment.

The transmit audio is also very good quality, according to the reports from the people I worked. The flexible rubber antenna is sturdy, although of course may

Kenwood TH-K2E Review



● Katherine Taylor 2E1HFX enjoyed using the Kenwood TH-K2E and it's her opinion that the hand-held is a good 'entry level' transceiver.



● The TH-K2E's 144MHz 'Rubber Duck' antenna is provided with an SMA type connector (see text).

output power and long operation periods.

First Impressions

When the box arrived I had no idea what I was expecting, which made my first impressions of the TH-K2E more vivid. They really were my first impressions.

At first I thought the transceiver was quite bulky. But then I discovered that the large Ni-MH battery pack has a capacity of 1.1AH, allowing an impressive 5W r.f. power output, so the size seems unimportant (in fact, from my experienced female point of view, it fits perfectly into an average sized handbag!).

The design of the hand-held, finished in a navy blue, is really quite standard - Kenwood have obviously kept to a 'no frills' idea. This lack of unnecessary embellishments is quite refreshing, and the design seems to concentrate on solid performance.

I also found that the transceiver is menu operated, which is not as tedious as I first thought. The lack of a keypad on this version is no great loss when you get used to using other methods.

repeater is useful for. The section covering the repeaters pictures two cars separated by a hill - and I think this is an indication of the target audience!

Simple Menu

The menu operated system is simple to get to grips with. The display is clear and there's a bright green backlight for use in the dark.

In use, you just press **Menu** to access it, **Menu** to choose an item and **Menu** again to confirm. It's that simple! For example, when I programmed a few repeaters into the memory, the selection of letters to assign a name to each one was done with the tuning control and became a 'doddle' after one go.

The menu **Functions** list is simply numbered and uses a variety of shorthand terms for items on the display. Because of this... suggest that the first few times you use it, you may want to consult the operating manual.

There's a list of 37 functions, on the TH-K2E which includes: **Frequency Step** size, (repeater) **Shift Direction**, **Programmable VFO**, **Priority Scan**, **Memory Channel**

not be as 'sensitive' as a longer one.

However, I easily worked my Dad G4HLX when he was operating as a fixed station from about 6 miles, and when he was mobile from about 3 miles. The antenna connection is a standard SMA type, so alternative antennas could be connected.

The simplicity of this hand-held shows how well thought out and constructed it was - with ease of use being a top priority (that succeeded). It has no trappings such as 'mosquito repellent' as in a hand-held that I've reviewed previously, but has all the features that you need for effective 144MHz f.m. operation, simplex or through a repeater. The transceiver is quite rugged and robust - I think you could drop it without too much of a panic (not that I have of course!).

Battery Capacity

The transceiver's battery has a capacity of 1.1 amp-hour, which means it can run 5W for about 5.5 hours, according to the manual, assuming a transmit/receive/stand-by time ratio of 1/1/8. It has the (sometimes) useful function of

Automatic Power Off, which saves battery power....but also beeps loudly when you don't expect it!

The TH-K2E holds an amazing 100 memories – or 50 if you want to include an alphanumeric name for each channel. Incidentally, these I used to label repeater frequencies with the repeater call signs – although this number of memories of course far exceeds

seemed to cut out the '2E' part of my call sign!

Also, I found that if you were to



● Katherine Taylor needed assistance from Dad G4HLX's test meter to check the charging unit. This was because there is no 'On Charge' indicator on the supplied battery-charging unit (see text).

inadvertently talk with the VOX on, then of course it would get transmitted. This however, is a personal dislike and many people may find the VOX useful.



● The battery pack is large on the TH-K2E, as can be seen from the photograph. However, Katherine 2E1HFX found the high power output to be useful.

the requirement, especially in this country. They were simple to write and read – I programmed four in about a minute.

Settings & Facilities

The TH-K2E has settings for 5 and 2.5kHz n.b.f.m. deviation, the latter being appropriate for the 12.5kHz channel spacing now in use. It also has a 1750Hz tone for those repeaters that still need it.

I found that the CTCSS, tones, used for accessing most repeaters, are very easy to programme in. Helpfully...if you don't know the correct tone for a repeater you're receiving, you can use the function to scan through all the tones and find which one the repeater is sending. As well as CTCSS, there are DCS and DTMF tone capabilities, but I didn't try these out.

The transceiver has VOX capabilities, although I found this to be a bit annoying to use, because the delay in transmission starting means that the first part of your speech is cut off. It always

When you're using repeaters...the **Automatic Repeater Offset** comes into play, which makes using it even easier. Simply speaking when tuning to the part of the band used for repeater outputs, the necessary transmit offset is automatically switched on.

I was also glad to find that TH-K2E has an **Automatic Simplex Check**. This means when working someone through a repeater it will periodically check if their signal can be heard directly, and gives an indication in the display that simplex operation may be possible..

On Charge?

One dislike I have is that when connected to a charger or an external supply, there's absolutely no indication of whether the battery is charging or not. This may sound petty....but without the assistance of my ever-patient father and his multi-meter, I would have been lost (although this wouldn't trouble most of you

practical constructors, I think that the kind of young person this radio would be suitable for might not have one lying around).

If there was an indicator light that came on, or even better a display showing the remaining battery capacity, this would be so much easier. To be fair to Kenwood though...on closer inspection, the remaining capacity **can** be found by switching to low power and holding down the push-to-talk (PTT). On the other hand....this has to be searched for in the manual (page 83!) and obviously you won't know this when you first use the transceiver.

Scanning Included

Full scanning capabilities are included, either scanning the v.f.o. or memory channels looking for a signal. I easily set up a programmed **VFO Scan**, so it would just check the popular simplex frequency range and repeater channels. There's also a **Priority Channel Scan** to repeatedly check your favourite channel.

There are sockets for an external speaker and microphone, and also for an optional PC interface cable. This would allow setting of all the memories, etc., from a computer using software 'down-loadable' from the Kenwood website. (I didn't try this out).

Useful Features

So as you can see...this transceiver has a lot of useful features, without being 'gimmicky' or complicated. Indeed....I think that the TH-K2E would be ideal for two types of user – the first being the young, less experienced amateurs who need an uncomplicated and 'unfussy' hand-held at a reasonable price. Kenwood probably agree with me on this front, as their manual is quite obviously geared towards the less experienced.

I think that the second user group would (with its increased power and simplicity) ramblers, or members of RAYNET or other rescue groups. This is because it's not fancy, but is robust and strong and hopefully quite reliable.

So, in my opinion I think the Kenwood TH-K2E has everything anyone would need in a 144MHz hand-held. Without going over the top!

PNW

Product

Kenwood TH-K2E

Company

Kenwood Electronics UK Ltd

Contact

Sales & Marketing -
Communications Division
Tel: (01923) 655284

Pros and Cons

Pros: The simplicity of this hand-held shows how well thought out and constructed it was....with ease of use being a top priority.

Cons: (When charging the battery)...there's no indication of whether the battery is charging or not

Price

£159.95 K2E and K4E (430MHz)
£169.95 K2ET keypad version.

Summary

I think the Kenwood TH-K2E has everything anyone would need in a 144MHz hand-held....without going over the top!

Thanks

My thanks go to **Kenwood Electronics UK Ltd., Kenwood House, Dwight Road, Watford, Hertfordshire WD18 9EB**, for the loan of the review transceiver.

Update From Kenwood Electronics UK Ltd

David Wilkins G5HY of Kenwood Electronics UK Ltd writes: Thank you for the courtesy copy of the review. There are of course three radios in the 'K2E' family...the non-keypad 144Hz version that Katherine had, plus a keypad equipped 144MHz version radio and a non-keypad 430MHz model.

Regarding Katherine's comment about keying in memory channels, I can now tell you that the Memory Control Program (RCP) for the rig has now been added to the main Kenwood website at

<http://www.kenwood.com/i/products/info/amateur.html>

This also enables easier changes to some menu settings. The download is free of charge and requires an interface such as our PG-4P or PG-4Y (25-way d-sub or 9-way d-sub respectively).



is out you may have 500m to walk from the roadway to the water, then have to wade another 250m until you are in water up to your chest!

Safe Beaches

The beaches on South Australia, as well as being large, they're really marvellous and safe for kids, as when the tide's out, you also get

set for another couple of hours.

It's quite pleasant paddling along the shore line, and the water is pleasantly cooling. There are many other couples strolling and paddling and pleasantries are often exchanged. One of the happy sights is to see

Life's A Beach-

In South Australia (VK5 call area) during our antipodean summer of December to March, the

long shallow pools between sand bars. These beaches all have jetties (piers to UK folks). They are also popular places for a stroll in the evening. The Largs Bay jetty, has a historical tie with the UK. Some

very young children, babies almost, experiencing their first try at the beach, often 'starkers', after all it is still 30°C, splashing in the shallows and squealing with delight!!

Many Kilometres

We often stroll many kilometres along the shore, returning after

Transmissions From The Water's Edge!

**Steve Mahony
VK5AIM,
often strolls
along to the
ocean's edge to
cool his feet
and heat up his
Amateur Radio
station!**

daytime temperature can go over 40°C for several days. When it does, it becomes a bit trying for all, people as well as the power generating authorities. It's when it gets this hot that my wife and I like to cool off in the evening by going for a paddle at a local beach. And when we do, I try and combine this with a little Amateur Radio activity.

Adelaide, in South Australia, has a wonderful stretch of metropolitan beaches, starting from Largs Bay and going to Marino. There's room for everyone, the beaches are wide white sandy stretches, many kilometres long. When the tide

100 or so years ago, the jetty was much longer and had a railway running down it to carry freight. Steam trains carried bags of grain down the jetty, to be loaded onto boats (ketches, or lighters), that took the grain out to the big sailing ships to be exported to the UK.

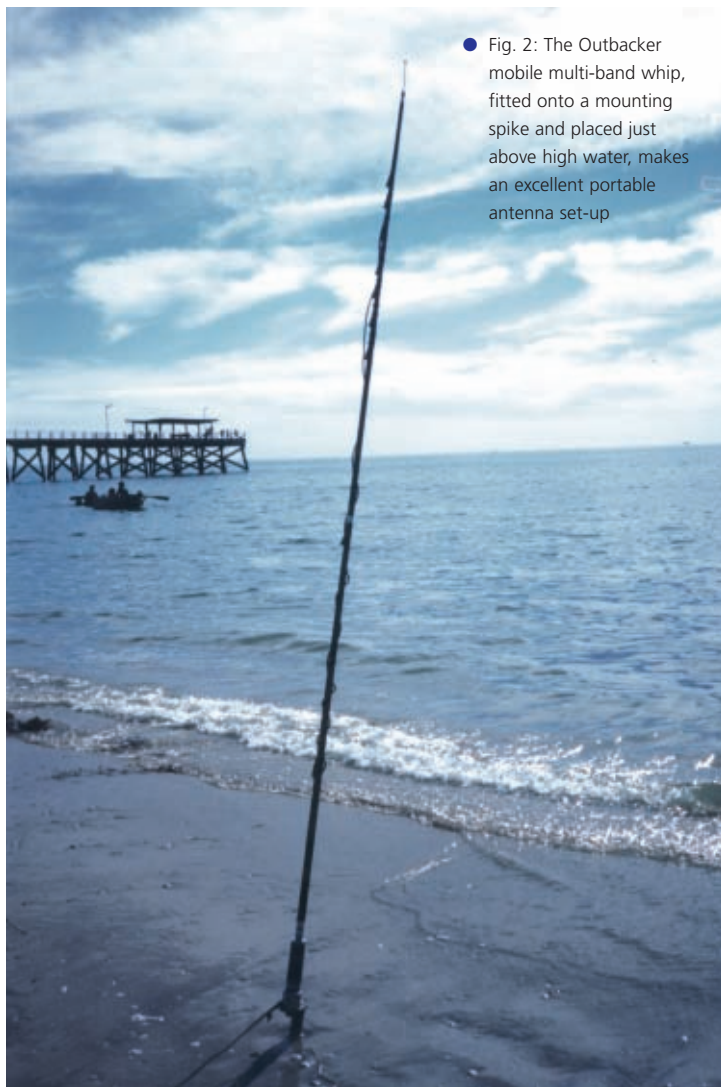
Now on hot summer nights, the XYL and I often take a picnic tea, (evening meal) down to the beach. We usually arrive by 5:30pm, earlier than most when parking is easier. Leaving the food and Amateur Radio gear in the car and shedding our sandals, we go for our paddle first. During, summer's daylight saving, the sun doesn't



● Fig. 1: Steve's portable station on a box, the IC-706 and a.t.u. plus battery all fit into an easy-to-carry box.

for our picnic tea. We find that the sea air sharpens the appetite. One of the delights is to have a bowl of stewed fruit with a scoop of ice cream from the nearby kiosk. It's quite pleasant sitting on a picnic rug, eating and watching the passing parade.

But back to Amateur Radio! My station set-up consists of the following ... an IC-706 h.f. transceiver, an older Kenwood



● Fig. 2: The Outbacker mobile multi-band whip, fitted onto a mounting spike and placed just above high water, makes an excellent portable antenna set-up

TS-120 and an a.t.u. that just matches the IC-706 for size, a 12V, 24AH battery in a carry box **Fig. 1**, a Turlin Outbacker 9 ft. mobile whip, and a home made mounting spike, along with around 5m of RG-58 coaxial cable.

The transceiver, a.t.u., and other bits and pieces all pack in a foam lined wooden box, for transport. As the evening sun sets I set up the portable station, first the mounting spike with spring antenna mount attached is pushed all the way into the damp sand just at the high water line, **Fig. 2**.

Then the Outbacker whip is screwed in with the wander lead set at the 14MHz tap and the coaxial cable is attached, running back across the dry sand to the equipment. The IC-706 can be set up on the grey carrying case, using it as operating bench. The 12V battery in its box and can be used as a seat. It also has a



● Steve VK5AIM, with the shortened Largs jetty running behind him. Now used solely for pleasure, the jetty once had a steam train running along taking grain out to ships for export.

small light for seeing the log book in the dark.

Quiet Spectrum

It's surprising how quiet the r.f. spectrum is once you get away from houses and roads. No TV line time-base buzz, computer squiggles, or ignition noise - lovely!

So far I haven't had to use a 'real' earth spike, I believe the mounting spike in the wet sand does the job well enough.

I have had 'sticky beaks' (visitors) and a few who stay ... especially if I explain what's going on.

I often hear a few voices from the speaker with a foreign accent (a JA, a European accent, or an American drawl to the 'W' callsign) often captures the visitor's interest. Although, I haven't worked any G stations after sunset.

Most visitors who stay and ask questions are older folk, very few teenagers seem interested! Some of the 'older oldies' are amazed at the lack of size of the equipment, in comparison to the big and heavy

turning down the volume and chatting a while.

Signals Come Up

On 3.5MHz once the sun goes down, signals come up, but I don't think there is enough wire in the air with the mobile whip, for strong signals! So far, I've not had anyone do anything silly, although I have to let go of the p.t.t. and speak to anyone who tries to handle the antenna.

The most amazing QSO was late one evening on 21MHz with JA station, located just across the bay from Tokyo. We chatted for about 30 minutes, though he couldn't grasp the fact that I was sitting on a metropolitan beach, in 30°C temperature (it was -2°C and snowing in Tokyo) at 10pm, running a portable Amateur Radio station!

The JA station even took time out to obtain an atlas to give him some idea where I was located! I capped it off by saying that when I finished the QSO I would go and buy an ice cream at the nearby kiosk. I did send him a QSL card along with a post card showing the beach and jetty. He replied with a QSL Card, a post card and a thankyou note.

I have used the same set-up on my holidays at various beach side and other locations. One location, a place called Corney Point, so named by **Captain Mathew Flinders** on his exploration of the new Australian coast almost 200 years ago.

The point is located right on the toe of Yorke Peninsula, in South Australia. (Have a look in your atlas and you'll see why he gave it that name).

equipment they may have used during their service time.

Some even enquire "Is Morse Code still used"? That's when I'll try to find a slower Morse signal on the bands and many visitors are delighted when they can read it ... even after 50 years or more! Occasionally someone will sit down on the sand, and with head tilted on one side (like the HMV dog), listen to the Morse. I usually then end up

Quiet Beach

Again some DX stations found it hard to grasp the fact that I was operating portable on a quiet beach a long way from the big towns! It's delightful sitting on the beach, under a starlit sky, wiggling your toes in the sand and chatting around the world by Amateur Radio, signing - Steve VK5AIM. I look forward to working you!

PH


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 (Length 7' approx)
AMPRO 160 mt.....**£49⁹⁵**
 (Length 7' approx)
AMPRO MB5 Multi band 10/15/20/40/80 can use 4 Bands at one time (Length 100").....**£69⁹⁵**

VHF/UHF MOBILE ANTENNAS

MICRO MAG 2 Metre 70 cms Super Strong 1" Mag Mount (Length 22").....**£14⁹⁵**
MR700 2m/70cms, 1/4 wave & 5/8, Gain 2m 0dB/3.0dB 70cms Length 20" 3/8 Fitting.....**£7⁹⁵**
 SO239 Fitting.....**£9⁹⁵**
MR 777 2 Metre 70 cms 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (3/8 fitting).....**£16⁹⁵**
 (SO239 fitting).....**£18⁹⁵**
MRO525 2m/70cms, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cms Length 17" SO239 fitting commercial quality.....**£19⁹⁵**
MRO500 2m/70cms, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8dB 70cms Length 38" SO239 fitting commercial quality.....**£24⁹⁵**
MRQ750 2m/70cms, 6/8 wave & 3x5/8, Gain 2m 5.5dB/8.0dB 70cms Length 60" SO239 fitting commercial quality.....**£39⁹⁵**
MRQ800 6/2/70cms 1/4 6/8 & 3 x 5/8, Gain 6m3.0dB/2m 5.0dB/70 7.5dB Length 60" SO239 fitting commercial quality.....**£39⁹⁵**
GF151 New low price.....**£29⁹⁵**

SINGLE BAND MOBILE ANTENNAS

MR 214 2 Metre 1/4 wave (3/8 fitting).....**£3⁹⁵**
 (SO239 fitting).....**£5⁹⁵**
MR260S 2 Metre 1/2 wave 2.5 dBd gain Length 43" SO239 fitting.....**£24⁹⁵**
MR 258 2 Metre 5/8 wave 3.2 dBd Gain (3/8 fitting) (Length 58").....**£12⁹⁵**
MR 650 2 Metre 5/8 wave open coil (3.2 dBd Gain) (Length 52") (3/8 fitting).....**£9⁹⁵**
MR268S 2 Metre 5/8 wave 3.5dBd gain Length 51" SO239 fitting.....**£19⁹⁵**
MR280S 2 Metre 6/8 wave 5.8dBd gain Length 58" SO239 fitting.....**£29⁹⁵**
MR 614 6 Metre loaded 1/4 wave (Length 56") (3/8 fitting).....**£13⁹⁵**
MR 644 6 Metre loaded 1/4 wave (Length 40") (3/8 fitting).....**£12⁹⁵**
 (SO239 fitting).....**£15⁹⁵**

SINGLE BAND END FED BASE ANTENNAS

70 cms 1/2 wave, length 26", gain 3.5dB.....**£24⁹⁵**
2 metre 1/2 wave, length 52", gain 3.5dB.....**£24⁹⁵**
4 metre 1/2 wave, length 80", gain 3.5dB.....**£34⁹⁵**
6 metre 1/2 wave, length 120", gain 3.5dB.....**£44⁹⁵**
6 metre 3/4 wave, length 150", gain 5.5dB.....**£49⁹⁵**
 (All above end fed antennas are DC grounded, so are radial free!)

VHF/UHF VERTICAL CO-LINEAR FIBREGLASS BASE ANTENNA

SQ & BM Range VX 6 Co-linear- Specially Designed Tubular Vertical Coils individually tuned to within 0.05pf (maximum power 100 watts)
BM100 Dual-Bander.....**£29⁹⁵**
 (2 mts 3dBd) (70cms 6dBd) (Length 39")
SQBM100 Dual-Bander.....**£39⁹⁵**
 (2 mts 3dBd) (70cms 6dBd) (Length 39")
BM200 Dual-Bander.....**£39⁹⁵**
 (2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")
SQBM200 Dual-Bander.....**£49⁹⁵**
 (2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")
SQBM500 Dual - Bander Super Gainer.....**£59⁹⁵**
 (2 mts 6.8dBd) (70cms 9.2dBd) (Length 100")
SQBM800 Dual - Bander Ultra Gainer.....**£129⁹⁵**
 (2 mts 8.5dBd) (70cms 12.5dBd) (Length 200")
BM1000 Tri-Bander.....**£59⁹⁵**
 (2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")
SQBM1000 Tri-Bander.....**£69⁹⁵**
 (2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")
SQBM 100/200/500/800/1000 are Polycoated Fibre Glass with Chrome & Stainless Steel Fittings.

SINGLE BAND VERTICAL CO-LINEAR BASE ANTENNA

BM33 70 cm 2 X 5/8 wave Length 39" 7.0 dBd Gain.....**£34⁹⁵**
BM45 70cm 3 X 5/8 wave Length 62" 8.5 dBd Gain.....**£49⁹⁵**
BM55 70cm 4 X 5/8 wave Length 100" 10 dBd Gain.....**£69⁹⁵**
BM60 2mtr5/8 Wave, Length 62", 5.5dBd Gain.....**£49⁹⁵**
BM65 2mtr 2 X 5/8 Wave, Length 100", 8.0 dBd Gain.....**£69⁹⁵**

MINI HF DIPOLES (length 11' approx)

MD020 20mt version approx only 11ft.....**£39⁹⁵**
MD040 40mt version approx only 11ft.....**£44⁹⁵**
MD080 80mt version approx only 11ft.....**£49⁹⁵**
 (aluminium construction)

ROTATIVE HF DIPOLE

RDP-3B 10/15/20mtrs length 7.40m.....**£99⁹⁵**
RDP-40M 40mtrs length 11.20m.....**£139⁹⁵**
RDP-6B 10/12/15/17/20/30mtrs boom length 1.00m. Length 10.0m.....**£199⁹⁵**

HF DELTA LOOPS

DLHF-100 10/15/20mtrs (12/17-30m) Boom length 4.2m. Max height 6.8m. Weight 35kg. Gain 10dB.....**£399⁹⁵**

HAND-HELD ANTENNAS

MRW-300 Rubber Duck TX 2 Metre & 70 cms RX 25-1800 Mhz Length 21cm BNC fitting.....**£12⁹⁵**
MRW-310 Rubber DuckTX 2 Metre & 70 cms Super Gainer RX 25- 1800 Length 40cm BNC fitting.....**£14⁹⁵**
MRW-232 Mini Miracle TX 2 Metre 70 & 23 cms RX 25-1800 Mhz Length just 4.5cm BNC fitting.....**£19⁹⁵**
MRW-250 Telescopic TX 2 Metre & 70 cms RX 25-1800 Mhz Length 14-41cm BNC fitting.....**£16⁹⁵**
MRW-200 Flexi TX 2 Metre & 70cms RX 25-1800 Mhz Length 21cm SMA fitting.....**£19⁹⁵**
MRW-210 Flexi TX 2 Metre & 70cms Super Gainer RX 25-1800 Mhz Length 37cm SMA fitting.....**£22⁹⁵**

All of the above are suitable to any transceiver or scanner.
 Please add £2.00 p+p for hand-held antennas.

HB9CV 2 ELEMENT BEAM 3.5 dBd

70cms (Boom 12").....**£15⁹⁵**
2 metre (Boom 20").....**£19⁹⁵**
4 metre (Boom 23").....**£27⁹⁵**
6 metre (Boom 33").....**£34⁹⁵**
10 metre (Boom 52").....**£64⁹⁵**
6/2/70 Triband (Boom 45").....**£64⁹⁵**

CROSSED YAGI BEAMS All fittings Stainless Steel

2 metre 5 Element (Boom 64") (Gain 7.5dBd).....**£74⁹⁵**
2 metre 8 Element (Boom 126") (Gain 11.5dBd).....**£94⁹⁵**
70 cms 13 Element (Boom 83") (Gain 12.5dBd).....**£74⁹⁵**

YAGI BEAMS All fittings Stainless Steel

2 metre 4 Element (Boom 48") (Gain 7dBd).....**£24⁹⁵**
2 metre 5 Element (Boom 63") (Gain 10dBd).....**£44⁹⁵**
2 metre 8 Element (Boom 125") (Gain 12dBd).....**£59⁹⁵**
2 metre 11 Element (Boom 185") (Gain 13dBd).....**£89⁹⁵**
4 metre 3 Element (Boom 45") (Gain 8dBd).....**£49⁹⁵**
4 metre 5 Element (Boom 128") (Gain 10dBd).....**£59⁹⁵**
6 metre 3 Element (Boom 72") (Gain 7.5dBd).....**£54⁹⁵**
6 metre 5 Element (Boom 142") (Gain 9.5dBd).....**£74⁹⁵**
70 cms 13 Element (Boom 76") (Gain 12.5dBd).....**£49⁹⁵**

ZL SPECIAL YAGI BEAMS ALL FITTINGS STAINLESS STEEL

2 metre 5 Element (Boom 38") (Gain 9.5dBd).....**£39⁹⁵**
2 metre 7 Element (Boom 60") (Gain 12dBd).....**£49⁹⁵**
2 metre 12 Element (Boom 126") (Gain 14dBd).....**£74⁹⁵**
70 cms 7 Element (Boom 28") (Gain 11.5dBd).....**£34⁹⁵**
70 cms 12 Element (Boom 48") (Gain 14dBd).....**£49⁹⁵**

MULTI PURPOSE ANTENNAS

MSS-1 Freq RX 25-2000 Mhz, TX 2 mtr 2.5 dBd Gain, TX 70cms 4.0 dBd Gain, Length 39".....**£39⁹⁵**
MSS-2 Freq RX 25-2000 Mhz, TX 2 mtr 4.0 dBd Gain, TX 70cms 6.0 dBd Gain, Length 62".....**£49⁹⁵**
IVX-2000 Freq RX 25-2000 Mhz, TX 6 mtr 2.0 dBd Gain, 2 mtr 4dBd Gain, 70cms 6dBd Gain, Length 100".....**£89⁹⁵**
 Above antennas are suitable for transceivers only

HALO LOOPS

2 metre (size 12" approx).....**£12⁹⁵**
4 metre (size 20" approx).....**£18⁹⁵**
6 metre (size 30" approx).....**£24⁹⁵**

G5RV Wire Antenna (10-40/80 metre)

All fittings Stainless Steel

	FULL	HALF
Standard	£22⁹⁵	£19⁹⁵
Hard Drawn	£24⁹⁵	£22⁹⁵
Flex Weave	£32⁹⁵	£27⁹⁵
PVC Coated		
Flex Weave	£37⁹⁵	£32⁹⁵
Deluxe 450 ohm PVC Flexweave	£49⁹⁵	£44⁹⁵

TS1 Stainless Steel Tension Springs (pair) for G5RV.....**£19⁹⁵**

G5RV INDUCTORS

Convert your half size g5rv into a full size with just 8ft either side. Ideal for the small garden.....**£19⁹⁵**

SHORT WAVE RECEIVING ANTENNA

MD37 SKY WIRE (Receives 0-40Mhz).....**£39⁹⁵**
 Complete with 25 mts of enamelled wire, insulator and choke Balun Matches any long wire to 50 Ohms. All mode no A.T.U. required. 2 "S" points greater than other Baluns.

Shop 24hrs a day on-line at www.amateurantennas.com

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just £6.00 max per order****E&OE****MOUNTING HARDWARE ALL GALVANISED**

6" Stand Off Bracket (complete with U Bolts)	£6.00
9" Stand off bracket (complete with U Bolts)	£9.00
12" Stand off bracket (complete with U Bolts)	£12.00
12" T & K Bracket (complete with U Bolts)	£11.95
18" T & K Bracket (complete with U Bolts)	£17.95
24" T & K Bracket (complete with U Bolts)	£19.95
36" T & K Bracket (complete with U Bolts)	£29.95
Chimney lashing kit	£12.95
Double chimney lashing kit	£24.95
3-Way Pole Spider for Guy Rope/ wire	£3.95
4-Way Pole Spider for Guy Rope/ wire	£4.95
1.5" Mast Sleeve/Joiner	£8.95
2" Mast Sleeve/Joiner	£9.95
Earth rod including clamp (copper plated)	£8.95
Earth rod including clamp (solid copper)	£14.95
Pole to pole clamp 2"-1.5"	£4.95
Di-pole centre (for wire)	£4.95
Di-pole centre (for aluminium rod)	£4.95
Dog bone insulator	£1.00
Dog bone insulator heavy duty	£2.00

5ft POLES H/DUTY (SWAGED)

Heavy Duty Ali (1.2mm wall)	
1 1/4" single 5' ali pole	£7.00
1 1/4" set of four (20' total approx)	£24.95
1 1/2" single 5' ali pole	£10.00
1 1/2" set of four (20' total approx)	£34.95
1 3/4" single 5' ali pole	£12.00
1 3/4" single 5' ali pole (20' total approx)	£39.95
2" single 5' ali pole	£15.00
2" set of four (20' total approx)	£49.95

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

**REINFORCED HARDENED FIBRE
GLASS MASTS (GRP)**

112" Diameter 2 metres long	£16.00
134" Diameter 2 metres long	£20.00
2" Diameter 2 metres long	£24.00

GUY ROPE 30 METRES

MGR-3 3mm (maximum load 250 kgs)	£6.95
MGR-4 4mm (maximum load 380 kgs)	£14.95
MGR-6 6mm (maximum load 620 kgs)	£29.95

CABLE & COAX CABLE

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

PHONE FOR 100 METRE DISCOUNT PRICE.

CONNECTORS & ADAPTERS

PL259/9	£0.75 each
PL259/6	£0.75 each
PL259/7 for mini 8	£1.50 each
BNC (Screw Type)	£1.50 each
BNC (Solder Type)	£1.50 each
BNC for 9mm (RG213)	£2.50
N TYPE for RG58	£2.50 each
N TYPE for RG213	£2.50 each
SO239 to BNC	£1.50 each
PL259 to BNC	£2.50 each
N TYPE to SO239	£3.50 each
BNC to N-type	£2.50
SMA to BNC	£3.95
SMA to SO239	£3.95
SMA to PL259	£3.95
SMA to BNC (male)	£3.95
SO239 chassis socket round	£1.00
N-type chassis socket round	£2.50
SO239 double female	£1.00
N-type double female	£2.50
SO239 double female	£1.00

10/11 METRE ANTENNAS

G.A.P.12 1/2 wave aluminium (length 18' approx)	£24.95
G.A.P.58 5/8 wave aluminium (length 21' approx)	£29.95
S27-3 3-element yagi. Freq: 27-28MHz. Length: 2.5mtrs. Gain: 8.5dB	£59.95
S27-4 4-element yagi. Freq: 27-28MHz. Length: 3.8mtrs. Gain: 10.5dB	£69.95

BALUNS

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

TRI/DUPLEXER & ANTENNA SWITCHES

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

ANTENNA ROTATORS

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

MOBILE MOUNTS

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

ANTENNA WIRE & RIBBON

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

HF BALCONY ANTENNA

BAHF-4 FREQ: 10-15-20-40 Mtrs LENGTH:
1.70m HEIGHT: 1.20m POWER:
300 Watts

£129.95

**MISCELLANEOUS ITEMS**

CDX Lightning arrestor 500 watts	£19.95
MDX Lightning arrestor 1000 watts	£24.95
AKD TV1 filter	£9.95
Amalgamating tape (10mtrs)	£7.50
Desoldering pump	£2.99
Alignment 5pc kit	£1.99

TELESCOPIC MASTS (aluminium & fibreglass options)

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

HF YAGI

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

FREQ: 10-15-20 Mtrs GAIN: 8 dBd BOOM: 4.42m LONGEST ELE: 8.46m POWER: 2000 Watts	£269.95
ADEX-6400 6 BAND 4 ELEMENT TRAPPED BEAM FREQ: 10-12-15-17-20-30 Mtrs GAIN: 7.5 dBd BOOM: 4.27m LONGEST ELE: 10.00m POWER: 2000 Watts	£499.95
40 Mtr RADIAL KIT FOR ABOVE	£99.00

**HF VERTICALS****VR3000 3 BAND VERTICAL**

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

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

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

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

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

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

**EVX6000 6 BAND VERTICAL FREQ: 10-15-20-30-40-**

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

30-40 Mtrs (80m optional) HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included) POWER: 2000 Watts	£269.95
80 MTR RADIAL KIT FOR ABOVE	£79.00



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

TRAPPED WIRE DI-POLE ANTENNAS

(Hi Grade Heavy Duty Commercial Antennas)

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

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

PATCH LEADS**STANDARD LEADS**

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

MILITARY SPECIFICATION LEADS

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

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

COAX SWITCH SALE

CS201 Two-way 3 X SO239 £18.95this month just	£12.99
CS201N Two-way 3 X N-type £28.95this month just	£18.99
CS401 Four-way 5 X SO239 £49.95this month just	£39.99

Plus £6.00 P&P



Rob Mannion
G3XFD reports
on the first PW
'Activity
Afternoon' he
organised on
the 70MHz
band. Our
Editor enjoyed
it so
much...he's
bought himself
a transverter!

When I first suggested the idea of a *PW* 70MHz Activity Afternoon (AA), the Saturday I chose (30 August) seemed such a long time ahead. But as usual in my work...the weeks flew by and it was literally upon me before I fully realised it had arrived!

In recent years my only 70MHz activity had been operating mobile with my AKD 4001 channelised f.m. rig. Despite this I had often had QSOs on the way to club visits, and on occasions late at night on the way home to Dorset.

Then I changed my car, and didn't get round to installing the AKD transceiver again until late in 2002. That was when I rediscovered the joys of operating on 70MHz and realised what I was missing.

A full reminder came when I was chatting to a friend on 144MHz...when he remembered we'd actually first worked each other on the 70MHz band over 30 years ago. What was so delightful on the band in those days were the many opportunities to talk to friends over a very wide area.

The 70MHz band lends itself to exceptionally good vehicle-to-vehicle QSOs and anything up to 32km or so (20 miles) can be expected. However, longer distances are often achieved nowadays with s.s.b. and better antennas.



● Fig. 1: Bob Palmer M3DPQ operated from the Dunstable Downs in Bedfordshire. His friend Allan M3ORB is hidden behind the camera!

conversation continued for another three hours until I arrived at my Hotel ready for the Leicester show...in the days when it was held at the dear old (grubby!) Granby Halls.

Jack, perched high up on the Leicestershire Wolds in the aptly named Houghton-on-the-Hill village, was always a tremendous signal on the band. Our long QSO made my 200 mile journey very pleasant indeed. His voice on 70MHz was one I missed when he became a Silent Key. Mind you...he often enjoyed reminding me that we'd inadvertently published a

70MHz band. All I had to do was to publicise the 'AA' idea...and the support came flocking in. In fact, I was delighted at the response.

Eventually, over 100 interested Amateurs either contacted me directly or mentioned on the 70MHz website that they hoped to join in...and many of them eventually managed to find time to join the event. So, let's now take a look at some of the reports which active stations were kind enough to send in.

Small Is Beautiful!

If I were to evaluate the 70MHz Activity Afternoon purely by the number of stations worked (ten in my case)...I don't think it could be rated as a roaring success. However, I think the complimentary term 'small is beautiful' can certainly apply as it was a truly wonderful afternoon out.

At my /P site in Northern

Saturday on Seventy... The First *PW* Activity Afternoon on 70MHz

An example of the longer distance QSO came when I worked the late **Jack Hum G5UM** from his famous site in Houghton-on-the-Hill in Leicestershire when I was on the A34, just south of Newbury in Berkshire. The

letter saying he'd died...some three years before his actual time was up! Yes...G5UM was a great four metre character.

However, although Jack's no longer with us...many others have inherited his keen support for the

Dorset, right on the Wiltshire border near Compton Abbas Airfield, not far from Shaftesbury...the weather was delightful. We were then still enjoying the late summer weather.

I had some immediate QSOs

using my Sandpiper 70MHz mobile whip but was unable to use the Sandpiper 3-element 70MHz beam because I lost a vital component! However, it will be used next time!

Phil Cadman G4JCP

(Dudley, Worcestershire) the PW author behind the Radio Basics 70MHz project said: "I was only operating on f.m. and a whip antenna...but was surprised to work a number of locals on the band...and I was pleased to hear how keen they were on the activity afternoon".

Albert EI6AS (Tallaght, Dublin 6) E-mailed saying "Hi Rob just a note....sorry but nothing heard last Saturday afternoon. I hope I got the date right!! Only heard the packet digi signals on 70.325. Anyway

(**Brian in Penarth**) and **G3FYX** (**Roy in Bristol**). The number of stations I worked was not high, but the quality of the conversations more than made up for that. I operated a Pye MX290 running 10W into a home-brew horizontally polarised half-wave dipole about 20ft off the ground.

Derby's 70MHz Derby!

The **Derby & District ARS** really had a go according to their report (well done Derby)! **Dave Goodwill G1VAB** writes..."Having seen Rob's idea of a 4m activity afternoon fellow members of the Derby & District ARS met up at a site about 7 miles North West of Derby and ran a station using **GX3ERD/P**. A 20 foot mast with a 4-element

session on Saturday was a big success. For my part, I was unable to get out on a hilltop as usual, but was constrained to operating from a field at Eynsham Hall in Oxfordshire. I was able to set up my 2-element beam, running 50W from my FT-817 and the Andover transverter. I first switched on at 1120UTC, and worked **MX5HDF/P** from Staffordshire, on one end of a pile-up on 70.45MHz. After working them, I later worked **G00IWP** in South Oxfordshire. Working s.s.b. I spoke to **Phil G3TCU** in Surrey for a few minutes. I really enjoy these opportunities to work more stations on 4m f.m. and a.m. on from hilltop sites most Sundays, with up to 50W and both vertical and horizontal aerals...so I hope to catch you then?

Les G6UBM (Tonbridge, Kent) reports that he: "Did not have much time to operate...but found little activity, I hope it was better at your end! I worked **G8SRL** (aka **G0GCI/G1WKS**) **M0WYE** and **G0VGX/P** on s.s.b. and **M0WYE** and **G0KZT** on f.m. Equipment was a Yaesu FT-847 + 5-element Sandpiper horizontal beam at 50ft with 20W - station at 120ft a.s.l. Looked towards Dorset but could not hear anything.

Kevin G1HDX (home QTH near Axminster, Devon) E-mailed to say: "Very nice to work you on Saturday - hope you had some luck with your beam and worked a few more stations. As you know I started operating from Coney's Castle in West Dorset (approx 222m a.s.l.), but the only QSO from there was with your good self. I then moved to Combe Beacon in Somerset (about 250m a.s.l.), a few miles NW of Chard. I arrived here at 1425 (local) and almost immediately worked

Brian GW0GHF in Penarth, South Wales. Signals were 56 each way on 70.425MHz with Brian's aerial being a horizontally-polarised 2-element yagi. I did hear **G3FYX** over in Bristol on 70.475MHz working **M3RNA/P**, but could not hear the latter. Thanks for promoting this event - good idea, we definitely need more like it!

David G14FUM

(Muckamore, County Antrim) kindly passed on an e-mail with a report from **Frank G13ZTL** and **Paschal G14BGB**. The friends were operating portable close to Magherafelt and report:

"Here is a list of stations which we worked this afternoon...**G11MTF**, **G14BWM**, **G14FUM**, **M1ORTX**, **G18AIR** on f.m. One station - **G14DCC** - was worked on a.m. No G, GW, GM, or EI stations were heard. We didn't hear any beacons and there were no contacts on s.s.b.

Joe Fadden EI3IX provided his support from the West Of Ireland and wrote: "Hi there Rob, Just to let you know I was on frequency for the 4 metre activity period. I was set-up on s.s.b. and f.m. using a 5-element Moonraker (horizontal), from IO53IS in County Clare. Unfortunately nothing heard from the UK, my location may not have been the best. Heard nothing either from EI land, but 70MHz is on the up and up over here. There are a few new operators from Tipperary & Cork just up on air. So, better luck next time!"

Hugh M0WYE (in the village of Wye near Ashford in Kent) E-mailed his report: "Hi Rob, I was on 4m from 1239-1520UTC Operating from my home at 43m a.s.l. Using an FT-847, using a choice of a 1/4 wave vertical or home-made HB9CV horizontal. (Antennas at about 9m a.g.l.). We had a nice little net going on 70.190MHz s.s.b., with myself, **G0VGX/P**, **G8SRL**, and **G6UBM**, for about 50 minutes from 1245UTC. David **G0VGX/P** had gone up onto Wye Downs, above the village, with his HB9CV and FT-847 (at 178m he had a height advantage over me!). I couldn't seem to raise anything else, although I heard a weak station on s.s.b. calling around 1425UTC, I think the call was G3ECU, but he didn't hear me. I think conditions were pretty flat, it might have been better to go for a morning or evening in August to get the tropo".

Next Time!

Thanks for your support everyone! I'm so encouraged after my own enjoyable afternoon out on 70MHz that I'm now the proud owner of a Spectrum Communications 28 to 70MHz transverter.

The date of the next PW 70MHz activity session will be announced in the New Year...and I look forward to working you...and it will be my way of further acknowledging your support. See you on the band!

PW



Fig. 2: The Antennas used by M3DPQ/P included a folded dipole and an interesting discone antenna, possibly made by the well known J-Beam company, once world famous for Amateur Radio antennas.

thanks for the effort, 73 till next time...I'll be there!"

Bob M3DPQ (Bedford)

operated from the Dunstable Downs, **Fig. 1** and **Fig. 2**. Bob reported: "Alan M3ORB joined me at the 900ft a.s.l. site. We thoroughly enjoyed the afternoon, working nine stations, furthest was Corby, 48 miles away. Stations worked included **M0DFW**, **G8ABB**, **G4LKF**, **G8BQH**, **G4PFR**, **G6OHM**, **G00IW**, **M3MGC** and **M1NEC**. We're looking forward to the next event!"

Steve M3RNA (a research biologist based in Bristol) stepped aside from his microscope for a while to report: "I'm sorry that we were not able to work each other. I was positioned on Dundry Hill (IO81QJ) (233m a.s.l.) and was QRV on f.m. from about 12pm to approximately 4pm local time. I managed to work five stations: **GW0KIG** (**Kevin** in Cardiff), **MX5HDF/P** (**Mark** in South Staffordshire), **GW4UMX** (**Alan** in Barry, Wales) **GW0GHF**

beam was used - vertically polarised as we only had f.m. as a mode - was erected and the station set up in a gazebo. We went on air for the whole afternoon and made 13 contacts, best DX being **Geoff G4YAH/P** at Romsley Hill, a distance of about 45 miles. Although it's not a fantastic number of contacts we were able to have a good old 'rag-chew'! We also agreed it had been fun...which was the point of the afternoon anyway. The weather even came up trumps for us Thanks for coming up with the idea - you **ARE** proposing we have another one, aren't you Rob?"

Stewart G1HHO (New Milton, Hampshire) was the first station worked by G3XFD/P and reported..."Hello Rob nice to work you on Saturday on 4m, only had one other contact using s.s.b. (My receiver needs a pre-amplifier!). Here's looking forward to the next event!"

Well known 70MHz stalwart **Ross G6GVI** (based in Bristol) wrote: "I hope that the activity

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As Tex Swann
G1TEX/M3NGS already has
an LDG autotuner - we
thought he was the ideal
operator to try out the LDG
AT-897 ... dedicated to the
Yaesu FT-897 transceiver.

The LDG AT-897



Fig. 1: Similar holes in each corner of the p.c.b. allow the AT-897 to be bolted to the side of the Yaesu FT-897 rig.

The LDG AT-897 auto antenna tuner/matcher unit (a.a.t.u.) is a dedicated unit designed to become part of your Yaesu FT-897 h.f. to u.h.f. transceiver. The unit is however, only effective on the h.f. and 50MHz bands and couples to the output socket dedicated to those bands.

You can use the a.a.t.u. standing alongside your FT-897, or you can attach it to the left hand side of the rig, as a replacement for the Yaesu auto a.t.u. To install the unit you will need some bench space to work on, and a medium sized cross-head screwdriver. It couldn't be easier.

First remove all power and cables from the rig, then remove, and retain the four feet on the left hand side of the rig - they go on the outside of the a.t.u. later. Next take off the top cover of the a.t.u. then locate the four mounting holes through the p.c.b. **Fig. 1**, and fit one of the supplied screws in each hole and firmly attach it to the rig.

Re-affix the LDG's top cover and carefully fit the four feet on the outer side of it. Follow the supplied diagram for reconnecting the various wires **Fig. 2** and you're ready to go. The a.a.t.u. derives all its power from the FT-897 via the CAT cable. As I said, it could hardly be simpler!

Unit operation

Now let's look at the operation of the unit, which uses an 'L'

match form, where seven inductors are relay selected to give 128 combinational values of inductance. Combine this with a similar number of relay selected capacitors and you have a possibility of 16,384 combinations. Some of these components are shown in close-up in **Fig. 3**.

The relays latch into their last position ... so allowing power to be removed, without losing the setting. Power requirements under these conditions drop to only a few microwatts, making the a.a.t.u. ideal for use when working from batteries. No power is needed until you change frequency or band.

To further increase the number of combinations the whole capacitor bank may be 'shifted' from the input side of the series inductor, to the output side. This allows the unit to match unequal impedances in the range of 6-800Ω, which although it's not symmetrical, means that if the s.w.r. is less than 10:1 it should manage to give a good match.

Simple Controls

Controls are simple - there's only one button with two functions. Press it and release before the red l.e.d. comes on and the unit is by-passed. Key up with a carrier, then press and hold the button, this time until the l.e.d. comes on and the unit quickly hunts for the best match it can manage. After the l.e.d. has gone out, unkey, select your mode and away you go with a well matched system.

Bearing in mind that just because the a.t.u. has maximised the forward power into the antenna feeder, like all rig-based a.a.t.u.s **it hasn't really done much for the actual antenna!** But it has however, optimised your antenna system as best possible. It tunes most antennas in a few seconds and LDG claim it tunes faster than the Yaesu FC-30 a.a.t.u.

So, let's now have a look at what I found on two simple h.f. antenna systems. I carried out a series of tests on each of the nine h.f. bands when coupled to my own antenna system as described back in the July 2002 issue of *PW* (Antenna Antics). This is a simple nest of dipoles (two 'live' and three 'earthly').

In all the graphs of **Fig. 4**, the blue line is with the LDG AT-897 in by-pass mode, and the red line is with it in operation. As the lowest band antenna I have room for is the 7MHz band, the antenna is not particularly good on 3.5MHz (and positively abysmal on 1.8MHz). But I've shown these two bands for completeness.

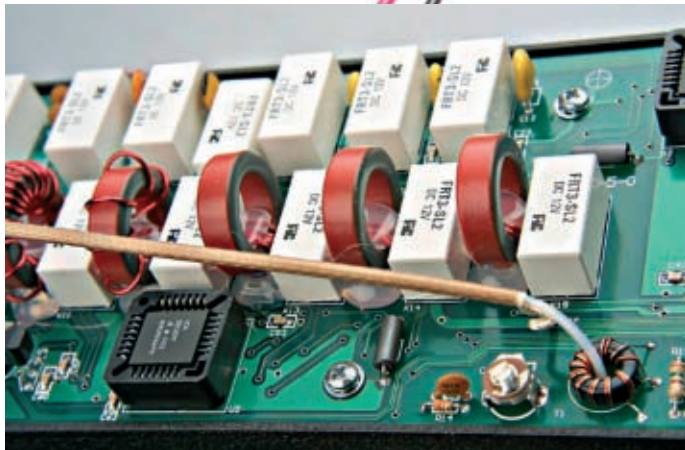
As you can see I would be able to work at the middle of the 3.5MHz band as the LDG can bring the s.w.r. down to an acceptable level. On the 7MHz band, little difference is noted, as that's the basic band for the antenna. However, I then found that I could use 10MHz, where before the s.w.r. had been too high to work properly.

Up to 14MHz now: Where I found that I can use the full band, whereas previously I've

only been able to use the upper section. The 18MHz band is also available, as is an improved matching on the 21MHz and the 24MHz bands. But the 28MHz band turned out to be peculiar!

Useable At Both Ends

It turned out, that the antenna system is useable at both ends of the 28MHz band, but the AT-



● Fig. 3: Seven switched inductors, and seven switched capacitors, can be brought into play to give many thousands of values of impedance matching.

897 failed to deal properly with the very complex impedance presented by my antenna around 29MHz, at the rig end of the cable. Ahh well! You win some and lose at the same time.

I carried out the same series of tests on our radio club's trapped 80/40m dipole, the results are shown the graphs of Fig. 5. With this antenna on the 1.8MHz band, I was unable to get meaningful readings. Both in by-pass and 'match' states, as the s.w.r. readings were so high.

However, with the exception of the 24MHz band which was unworkable, all other bands were more than adequately useable. Being unable to set up other tests, that I felt would be repeatable - or typical, I came to the conclusion that the add-on LDG AT-897 performed equally as well as my own LDG AT-11MP auto tuner.

Although neither is a good substitute for a resonant and matched antenna, the LDG tuners did at least allow adequate operation on more bands than a simple antenna would normally allow.

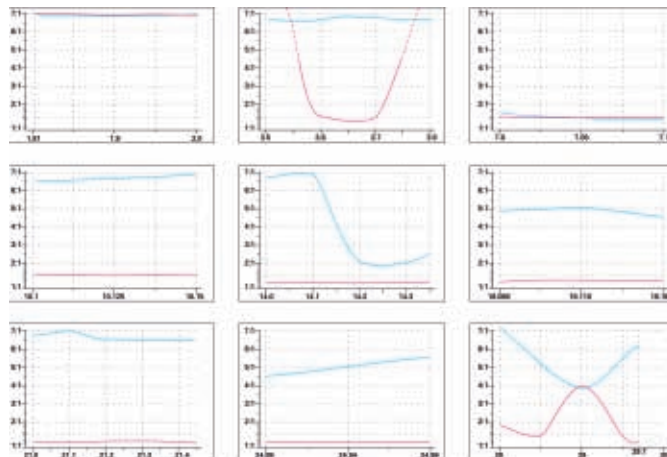
I also tried the AT-897 on a delta loop antenna for 50MHz



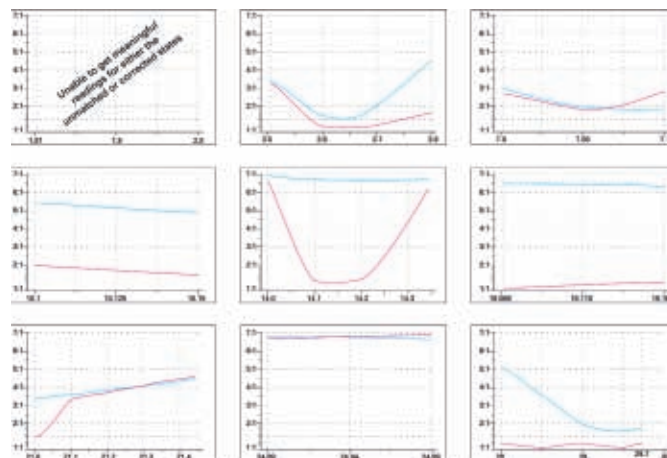
● Fig. 2: The cables at the rear of the rig and a.t.u. follow the layout shown in the manual.

and it worked quite well. It matched quickly and simply, needing little in the way of retuning over the band. My conclusion is, that if I had a Yaesu FT-897, the LDG AT-897 is a worthy unit to compliment the rig.

PW



● Fig. 4: The s.w.r. readings on the G1TEX simple nest of dipoles antenna for the h.f. bands. (See text for more details.)



● Fig. 5: Similar to the test shown in Fig. 4, but this time on a trapped 3.5/7MHz dipole. (See text for more details.)

Product

LDG AT-897 Auto antenna tuner

Company

LDG
1445 Parran Road,
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MD 20685 USA

Pros

"... it has however optimised your antenna system as best possible."

Cons

"... Although not a good substitute for a resonant and matched antenna, the LDG tuner did at least allow adequate operation on more bands than a simple antenna would normally allow".

Price

£169 + £6 P&P (Inc. VAT)

Summary

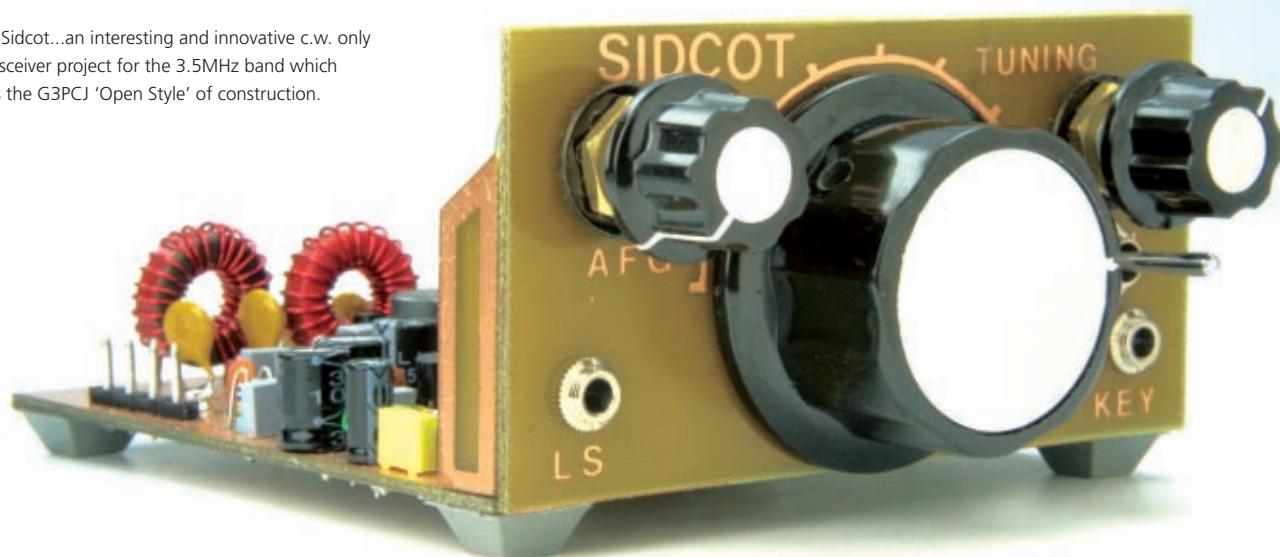
"...It matched quickly and simply, needing little in the way of retuning over the band."

Thanks

My thanks go to **Waters & Stanton, Spa House, 22 Main Road, Hockley, Tel: (01702) 206835 / 204965**, for the loan of both the LDG AT-897 and the excellent Yaesu FT-897 to which it's dedicated.

The Sidcot 3.5MHz CW Transceiver Part 1

- The Sidcot...an interesting and innovative c.w. only transceiver project for the 3.5MHz band which uses the G3PCJ 'Open Style' of construction.



Tim Walford G3PCJ is well known for his kit designs for both c.w. and s.s.b. h.f. transmitter and receivers. Here he introduces us to the Sidcot receiver...a neat little design for the c.w. operator...with some clever extras!

The Sidcot - named after a village near my home in Somerset - is a 3.5MHz only c.w. transceiver, with a direct conversion (DC) receiver and a nominal 1.5W output transmitter. It has a number of unusual features that have permitted a small design, **Fig. 1**, without many of the classic defects of simple rigs. It can run off a very wide range of supply voltages (9 to 18V) so is suited to portable or base station use.

Split into two articles, this first part explains the general concept and the receiver. The second will cover the transmitting aspects. Complete kits, with detailed instructions, are available - see the side panel for details. And in my opinion I think the performance is good for its cost!

The part numbering follows that of the kits, so it will not follow in strict sequence for these articles! The parts, which are related to operating frequency, are numbered from 100.

Ceramic Resonators

The relatively recent development of ceramic resonators has

transformed simple rigs. Their moderate Q (roughly 3000), coming between very high Q fixed frequency crystals and low Q variable frequency L/C tuned circuits, permits the main advantages of both to be had!

Using a ceramic resonators with a nominal frequency of 3.58MHz, the receiver can be easily made to cover the top (QRP) portion of the 80m band c.w. section. This can be achieved with just a variable capacitor and without chirp or stability problems, but they do like a steady temperature!

Small metal oxide semiconductor (m.o.s.) transistors are now very cheap and capable of high frequency operation...they can also be connected directly in parallel for increased power output! Just two of these BS170 devices, costing tens of pence each, can be made to work throughout the h.f. bands and produce 1.5W on nominal 12V supplies! Their low gate control 'turn on' voltage (about 2V) makes them eminently suitable for direct driving with 5V digital signals.

Hence the third novelty is a genuinely digital v.f.o. using part of a quad NOR gate high speed

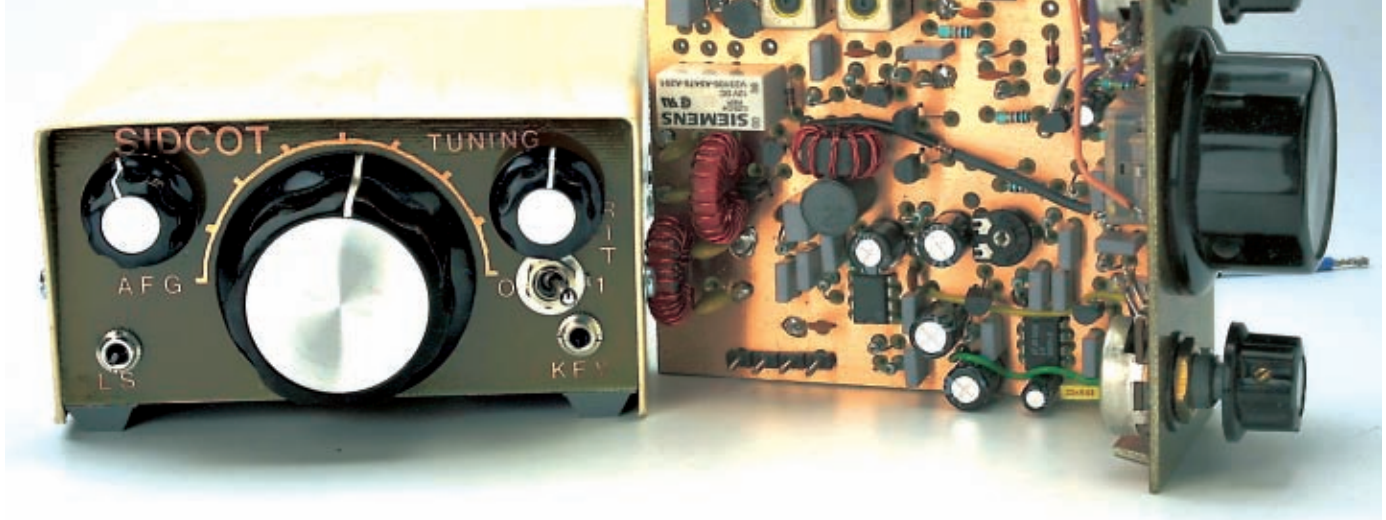
c.m.o.s. logic chip. The other gates are used for T/R control, for keying of the drive to the transmitter output stage, and to drive the 'switching' mixer in the receiver. (The latter also uses the ubiquitous BS170s!). This mixer design is relatively strong and is thus more immune to unwanted Broadcast Interference (BCI) from the troublesome 4MHz broadcast stations.

Block Diagram

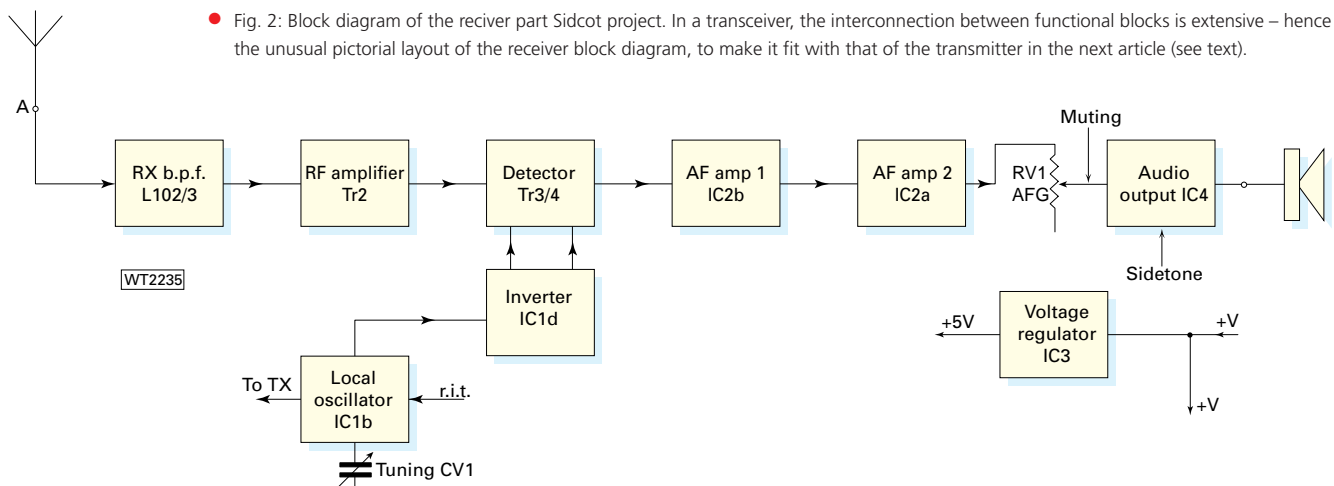
In a transceiver, the interconnection between functional blocks is extensive - hence the unusual pictorial layout of the receiver block diagram, **Fig. 2**, to make it fit with that of the transmitter in the next article. The receiving circuits are shown in **Fig. 3**.

A 5V regulator provides the critical r.i.t. tuning voltage, the supply for the digital chip and sidetone oscillator, and bias for the audio stages. All other stages run off the incoming nominal 12V. Functionally, the receiver is a fairly conventional direct conversion (DC) design. To reduce the chances of BCI, which is the most common defect of simple

• Fig. 1: The Sidcot - named after a village in Somerset close to G3PCJ's home - is a direct conversion (DC) receiver and a nominal 1.5W output transmitter. It has a number of unusual features that have permitted a small design (see text).



• Fig. 2: Block diagram of the receiver part Sidcot project. In a transceiver, the interconnection between functional blocks is extensive - hence the unusual pictorial layout of the receiver block diagram, to make it fit with that of the transmitter in the next article (see text).



designs, you need good r.f. filtering followed by limited r.f. gain ahead of a 'strong' product detector or mixer, which can handle high signal levels.

In this design, received r.f. signals are actually routed through the transmitter output low pass filters first to the T/R relay contacts (although neither are shown on the receiver block diagram for clarity) and then to an r.f. 'gain' preset and the double tuned r.f. bandpass filter associated with L102/3. This r.f. filter is the first line of defence against troublesome BCI!

The r.f. gain preset RT1 can be used to introduce a small amount of attenuation if required for big antennas at night. A

small amount of r.f. attenuation will hardly affect the wanted signal, but will usually eliminate the BCI.

The provision of some gain at r.f. (followed by a strong mixer) avoids the risk of instability if all the gain were to be at audio frequencies. The r.f. stage also prevents leakage of the local oscillator (l.o.) mixer drive signal back to the antenna during reception. This approach reduces the chance of microphony, which occurs when there is very high audio gain and/or l.o. radiation, coupled with poor mechanical rigidity.

Up to about 20dB of power gain is available from the r.f. amplifier Tr2 which is run with

a fairly high standing current for good large signal handling performance. It feeds the balanced switching mixer using the two m.o.s. switches Tr3/4 which are driven by anti-phase signals from the l.o. (the gate IC1d doing the inversion for the second switch Tr3). This strong mixer design provides the second line of defence against BCI!

Good balance of the secondary windings of L1, and matching of the transistors Tr3/4, enhances strong signal performance. The mixer has a small attenuation, but this is compensated for in the first audio filter, which is arranged for an impedance step up.

Being passive, the mixer is able to handle big signals and is inherently low noise. It also protects against large unwanted signals (from adjacent channels) that might overload subsequent stages.

The passive filter is followed by the first a.f. amplifier IC2b (half of a low noise TL072 op-amp) having a nominal voltage gain of 50, with a bandpass response centred on 725Hz due to the feedback network R8/9 with C8/9.

The second a.f. amplifier (IC2a using the other half of the TL072) is a 'lumped' low-pass filter. This provides a little more gain at 725Hz but its main purpose is to highly attenuate

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That "Record Breaker"

I did have a chuckle to myself after flicking through RadCom September issue. Inside, one of our competitors went on and on about how much more they sell than any other dealer and even cited a Radio Amateur that set new records on both 2 and 70 using his recently purchased Kenwood transceiver. What they didn't tell you was that the record breaker, Reg. G8VHL, actually purchased his TS-2000 from his preferred dealer, ML&S. Even more amusing was the fact that they didn't even seek his permission in using his details in their trumpet blowing promotion. Don't forget you always have a choice in who you buy from. We may not sell more bits per day than any other dealer but we like to think quality, rather than quantity shines through.

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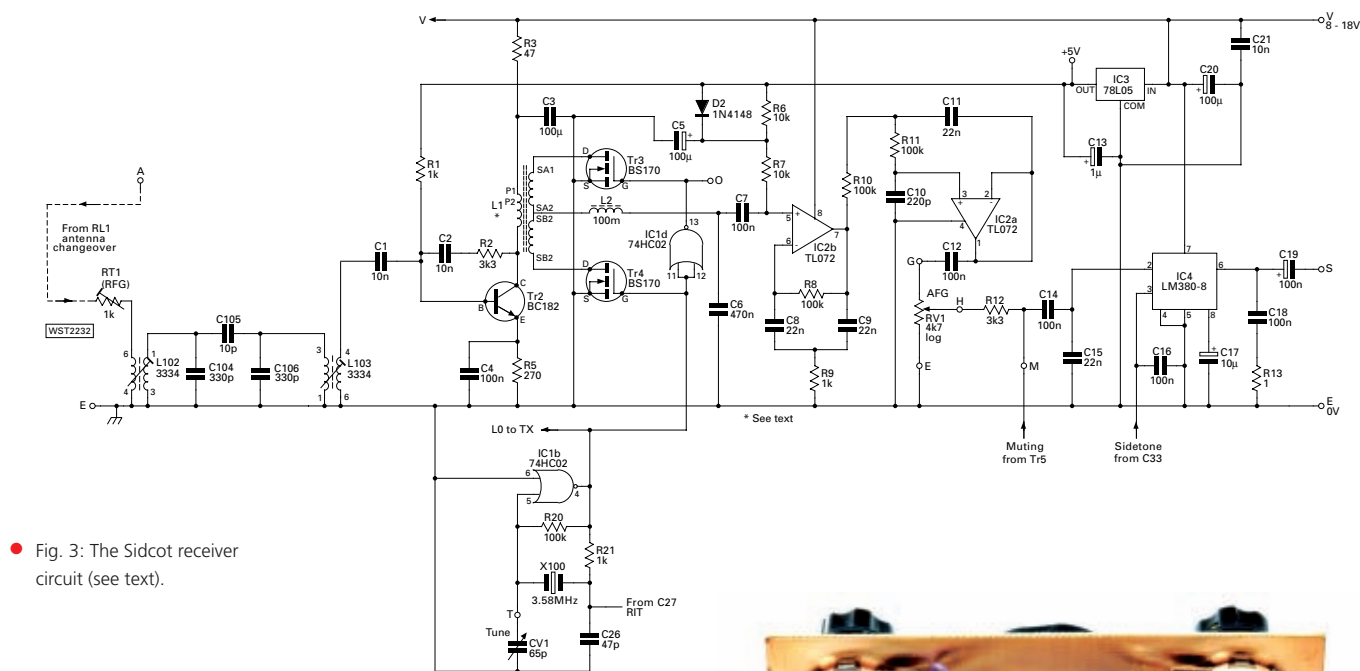


Fig. 3: The Sidcot receiver circuit (see text).

interfering signals at frequency above 1kHz.

A logarithmic audio gain control pot RV1 follows and drives the LM380-8 output stage. This also has a voltage gain of 50 and can drive either a loudspeaker or modern portable cassette player headphones.

Reasonable Antenna

The overall gain is such that when you plug in a reasonable antenna, the noise level should just increase because the electrostatic noise (from distant thunderstorms, etc.) is stronger than that generated internally from the receiver's front-end ...indicating the rig has sufficient sensitivity.

The remaining essential component of the receiver is the tuneable variable frequency local oscillator, which drives the switching mixer. This uses the gate IC1d of the 74HC02 quad NOR gate.

The oscillator runs continuously with the feedback resistor R20 biasing the output nominally to mid supply voltage. This is arranged so that there's sufficient gain for oscillation in the resonant feedback loop through R21 and X100. The tuning capacitor CV1 working with C26 and the capacity of the r.i.t. tuning diode (see part 2) determine the operating frequency. Using just the 65pF section of the

polyvaricon tuning capacitor, the frequency range covers the important QRP section from 3.6 down to around 3.53MHz; this gives a reasonable tuning rate without a slow motion drive.

Note: The tuning will go lower in frequency with more capacity, but the tuning rate will then be excessive. However, if you feel like experimenting, you can add a switch, which will then connect a trimmer (and perhaps the other unused section of CV1) to point T so that there are two sub-bands. See what you can do and send the details into PW!

The output of the oscillator is a squarewave signal between 0 and 5V at the desired operating frequency; this drives one switch Tr4 of the mixer directly and gate IC1d inverts the l.o. signal for the other switch Tr3. You can connect a counter, or other readout device, to point O.

Direct Conversion

Because the Sidcot is a direct conversion receiver design, a c.w. signal can be heard at two places on the tuning dial. These are 725Hz on each side of 'zero beat' – this is the point at which the l.o. frequency is the same as that of the wanted station.

So, as you tune steadily across a station, it is first heard weakly with high pitch, then strongest at 725Hz due to the audio filters, continuing with decreasing pitch and getting



Fig. 4: Rear view of the receiver. This is built using a small printed circuit board (p.c.b.) front panel, which is soldered directly to the main printed circuit board itself. All are part of the standard kit (See information panel).

weaker until it's inaudible at zero beat. This is followed by increasing pitch to its strongest again at 725Hz and then finally disappearing with high pitch!

While the 'double signal' effect does appear to make the band more crowded...it also provides an advantage. This is because you can then use either tuning position (or sideband to use the correct term) with the r.i.t. to avoid a strong interfering signal on an adjacent channel.

Small PCB Panel

The photograph, Fig. 4, shows the rear view of the receiver.

This is built using a small printed circuit board (p.c.b.) front panel, which is soldered directly to the main printed circuit board itself.

The front panel, with two strengthening side braces, is part of the standard kit. This approach is easy to build, cheap and makes assembly and testing almost a doddle! I call it 'open construction' since you have easy access to everything. It's perfectly good for base station use with the rubber feet sitting on a table.

However, when operating portable, you might wish to add extra protection. To provide

this...you can easily install the main p.c.b. in a box of your choice, with your own front panel layout. Alternatively you can make a simple U-shaped cover that is attached by self-tapping screws to the front panel side braces.

Essential Ground Plane

You can build the Sidcot using 'ugly' or 'dead bug' construction....**but it is**

output stage and perform the 'screwdriver hum test'!

Screwdriver test: To carry out this check (**on this safe, battery-powered equipment!**) you should place your finger on the shaft of a metallic screwdriver, which you then apply to the input of the audio stage being tested - point H at this stage. Your body will pick up enough 50Hz from the mains to be able to hear a weak rough hum from the

signal with an ordinary d.c. meter (or listen for it on another receiver).

The meter will show the average value, which should be half the chip's supply voltage, i.e. 2.5V. If it shows 0 or 5V, then it's not working!

After this you add the mixer parts and wind the transformer L1. Many builders dislike winding coils but toroids are much easier since the turns stay in place of their own accord and

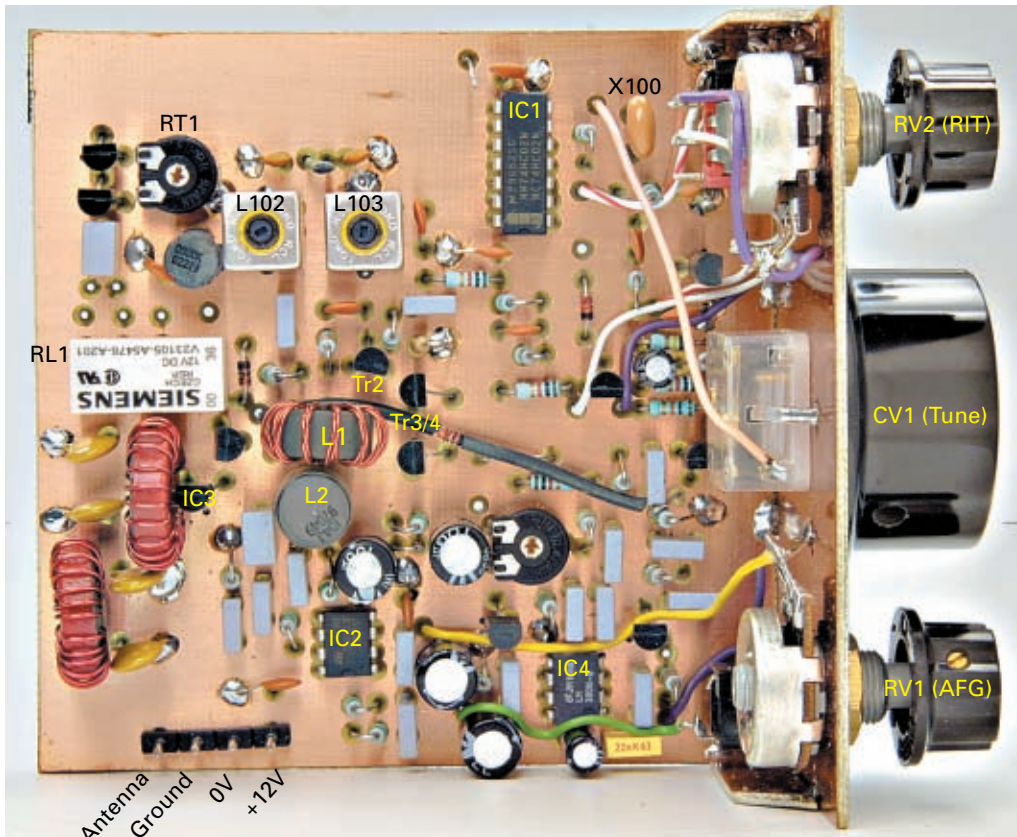
adjustment is the r.f. filter. This is done by carefully adjusting the cores of L102 and 103 for highest output while listening to a steady signal. Ideally this would come from a signal generator or a grid dip oscillator; but it can be done with an 'off air' signal or that from another Sidcot if you have several for a club construction project!

Listening Out

With the r.f. gain preset **RT1** set clockwise, you'll then be able to listen to hear what stations are active. There's generally plenty of activity at night; but do remember this is a specialist c.w. receiver. The bandwidth is narrow....so you'll need to tune slowly across the band to avoid missing signals!

Should there be untuneable 'mushy' sounding background noises - due to BCI - perhaps at night, then I suggest you increase the r.f. attenuation very slightly with **RT1** until the unwanted noises are just disappearing (even if the wanted signal is slightly weaker it will be more readable without the mush in the background). Next month I will describe the transmitter aspects and you'll soon be ready to chase those c.w. QSOs!

PW



● Fig. 5: Annotated photograph indicating major components on the completed and assembled Sidcot project (See text).

essential to have a ground plane for all the 0 volt connections. Additionally, using a ready made p.c.b. will look rather tidier and avoids the risks of poor placement of different sections which might lead to unwanted oscillations or other nasty effects!

The sensible construction approach is to always test and get each section of the circuit working before moving onto the next section. The building sequence is fully described in the kit - the following is an outline of the steps and tests.

You should start with the supply aspects taking care over the polarity since there is no reverse protection provided. Then fit the parts of the audio

loudspeaker **if it's working!**

Next you add the earlier audio stages and repeat the hum test. Although not designed for 50Hz, there's just enough gain for the 'finger signal' to be heard and so indicate if those stages are working.

The next job is to get the i.o. working which is easy because there are so few parts involved. A few other resistors are installed now to make certain that no gate inputs are left unconnected.

Due to the ceramic resonator, there's nothing to adjust to get the oscillator in band. If it's working, it will be correct! You test that it is working by measuring the average value of the oscillator's digital output

it only has 10 turns!

Here twisted triple wire is used in trifilliar form (three separate sections twisted together) is used so that the two secondary windings can be connected as a centre tapped secondary - for driving the mixer switches Tr3 and 4 in anti-phase. The kit has detailed instructions on how to make this item and identify its leads is shown in the annotated photograph, **Fig. 5**, where it is shown mounted on the main p.c.b.

At this stage you might be able to hear your first signals. However, adding the r.f. amplifier and the r.f. bandpass filter will complete the receiver. The only thing that needs

Buying The Sidcot Kit

A complete kit for the Sidcot transceiver is available from Walford Electronics. This includes the fully detailed instructions, all electronic components, knobs, sockets, switches, the main double-sided p.c.b.s, together with a p.c.b. front panel which will permit construction as shown in the article. The price is £44 plus £1 for UK P&P. Please send your orders with a cheque for £45 direct to **Walford Electronics, Upton Bridge Farm, Long Sutton, Langport, Somerset TA10 9NJ**. The Walford website and details of the optional kits can be seen at www.users.globalnet.co.uk/~walford

Antenna Workshop



The SLINKY-HULA

John Heys G3BDQ creeps out of his local toy shop, feeling a right 'charlie', as he describes his latest compact experimental indoor antenna made up from two toys!

Assembled Loop

The assembled loop had a measured inductance of $7\mu\text{H}$ which would resonate on 7MHz when tuned with about 75pF. I selected a suitable variable capacitor having a maximum capacitance of around 120pF with wide vane spacing, which came from a Second World War surplus item (an American tuner unit).

I later discovered that a capacitor, with such wide spacing was not needed, for unlike magnetic loops the antenna does not have a very high Q . Some ideal variables are those which were used in the ex RAF 1153 aircraft transmitters which still appear in junk sales and on the surplus market.

The circuit for the antenna is shown in **Fig. 1**. All the wiring was made with flattened copper screening from odd lengths of coaxial cable found in the 'odd bits' box. An output socket connects to a short length of 50 Ω coaxial cable which terminates in a crocodile (croc) clip. This wire was a temporary expedient to be replaced later, with a soldered connection, when the correct tapping point has been found.

In Fig. 1 the coaxial cable which leads via an s.w.r. meter to the transceiver is shown with a current balun close to the antenna. I personally like using the 'clamp-on' ferrite stoppers as they are so easy to place and remove. (Other current baluns which prevent r.f. currents running back to the transceiver on the outer surface of the coaxial cable shield can be used instead of the 'clamp ons').

High Resistance

The metal used for the manufacture of the Slinky toys has a higher ohmic resistance than copper, but the 30 turns used for this antenna, which have a collective length of approximately 6.4m, show a d.c. resistance of 1.2 Ω .

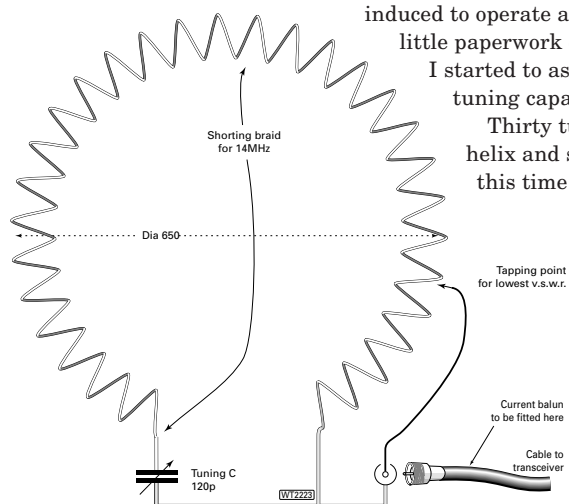
The November 2001 issue of *PW* had an article showing how to use the metal Slinky toys as antenna elements ... so allowing standard designs such as dipoles or ground planes to be greatly reduced in size. The Slinky is a helix made from a rust-free metal which has 87 complete turns each with a diameter of 69.5mm. Each turn therefore is about 218mm long if straightened.

Being blessed with more than a little natural curiosity I wondered if a loop of manageable diameter and made with Slinky turns could be induced to operate as a magnetic antenna. A little paperwork exercise followed and then I started to assemble the loop and its tuning capacitor.

Thirty turns were cut from the helix and slipped over the other toy, this time a plastic Hula Hoop. The turns were held in position with several nylon cable ties. I can now admit that I did feel a bit of a 'charlie' as I carried the bright green hoop from the town centre store to the car park, but it was all in the cause of science!

The hoop itself, was cut and its end pulled together to overlap, so making a 650mm (25.5in) diameter circle which could then be screwed down to a timber base (see photos). A vertical wooden strut was added to give the structure rigidity.

Fig 1: The Slinky-Hula is a tuned, air/plastic cored, toroidal antenna with a remarkably wide band when tuned and matched.



Being blessed with more than a little natural curiosity I wondered if a loop of manageable diameter and made with Slinky turns could be induced to operate as a magnetic antenna

Antenna

An s.w.r. meter set to its lowest power range and the station transceiver adjusted to low power and switched to 7MHz are the first steps in setting up. The output coaxial cable which connects to the helix (initially by croc clip) should be connected about six turns from the end of the helix winding.

The antenna should be positioned on a non-metallic surface within reach, **Fig. 2**, so that it can be tuned, **Fig. 2**, whilst keying the carrier and simultaneously watching the s.w.r. meter. A 'Slinky-Hula' made as described will work on the 7MHz band and adjusting the tuning capacitor 'C' will show, at resonance, a fall in the s.w.r. reading.

If unity s.w.r. is not found, the tap of the helix can be moved to discover the ideal setting. I connect a tiny neon lamp as is used in power sockets and plug to a position close to 'hot' end of the helix by the tuning capacitor.

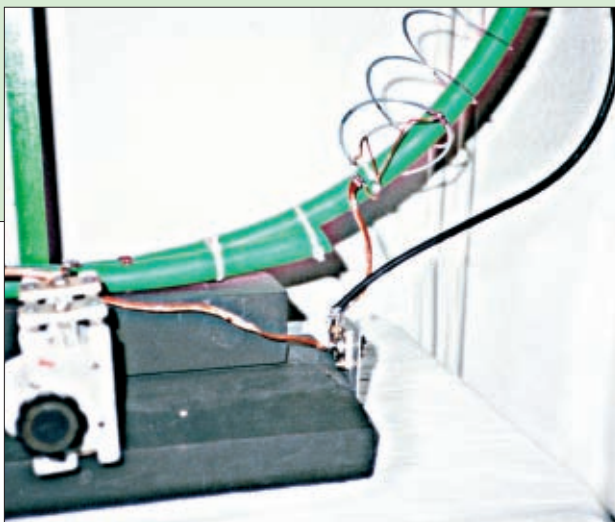
When using between 50 and 100W of power, this lamp gives a good indication of correct tuning (especially when the antenna is located well away from the operating position).

The Slinky-Hula design is unusual in that unlike magnetic loops which use a very thick tube as the single turn coil, it does not have very high r.f. voltages across its tuning capacitor. Even more surprising is the really enormous bandwidth of the antenna. Magnetic loops must be re-tuned every time you change your frequency of operation, even with just a few kilohertz of frequency change.

Broadband Characteristic

The Slinky-Hula on the other hand exhibits a very broadband characteristic. When tuned up for the minimum s.w.r. on 7.05MHz there is no need to retune on any frequency over the band. My version gives an s.w.r. between unity and 1.2:1 right across the 7MHz band.

When using the dimensions described the antenna will also tune 10MHz and



● Fig. 2: A close-up shot of the connection point, no earthing is needed for this antenna (see text for details).

when set-up at mid-band, will allow operation over the whole band without re-tuning. On 10MHz the tap point for the output coaxial cable may require some slight adjustment.

To allow working on 14MHz I made up a shorting wire from coaxial cable braid with croc clips at each end. This, when connected from the 'hot' end of the helix and the tap centre point of the loop allowed operation on 'twenty'.

On the 14MHz band the bandwidth (with an s.w.r. of 1.2:1 or better) is an amazing 250kHz. Should a Slinky-Hula be planned for the 18 and 21MHz and higher bands, I'd suggest that a loop using fewer coil turns but having the same loop diameter be used. It will be noticed in **Fig. 1** that the antenna has no earth connection.

The fact that the antenna is not earthed is important, for earthing was tried, but then I found the antenna became almost impossible to tune up. The only earth connection should be at the transceiver. I then discovered that once the correct tap point on the helix is found, it remained as best on the other bands.

I tried positioning the antenna either on the upstairs landing close to a window which looked southeast or instead in the 'spare' room which has a large double glazed 'picture' window looking northwest. This window was found to be best for working up country on 7MHz to UK stations (my QTH is on the southeast coast near Hastings).

Many European

When the antenna was on a small table on the landing many European and more distant stations were easily worked on

14MHz. Magnetic loops are quite directional and have deep nulls in two directions, but the Slinky-Hula may be rotated or even laid horizontally with little or no effect upon signal strengths.

Much of the radiation does seem to be mainly mid and high angle, but even so, some stations outside Europe have been contacted. To date, my best DX has been a QSO with **VU3BKY** in Bombay on 14MHz c.w. one afternoon.

Working all over Europe has been possible on 14MHz on s.s.b. and c.w. and with 100W power reports usually lie between S6 and S9. On 7MHz (40m) I have had many c.w. and a few s.s.b. contacts with stations over the UK and into Europe. I have also had no problems in working stations when using 10MHz.

In the autumn of 2002 I, along with others, obtained an Notice of Variation (NOV), which allowed operation on five spot frequencies around 5MHz. I found that my adding an extra 50pF capacity (from an outboard variable) I could tune the antenna to that band with **G3YFN** giving me a '5/7-5/8' report from Newcastle.

Certainly Versatile

The Slinky-Hula is certainly versatile. But **I really have to admit I do not know why** such a single design allows operation without re-tuning over a wide range of frequencies! Additionally, why is it not directional, or why it is so efficient I'm not entirely sure. I have always maintained that antennas with enormous r.f. voltages on them may not be radiating all the energy fed to them.

My Slinky-Hula antenna is most certainly not a magnetic loop and perhaps might best be described as a pvc-air cored toroid. If the variable capacitor could be enclosed and the antenna thoroughly waterproofed, it would be very effective, with remote tuning, when used high up out-of-doors.

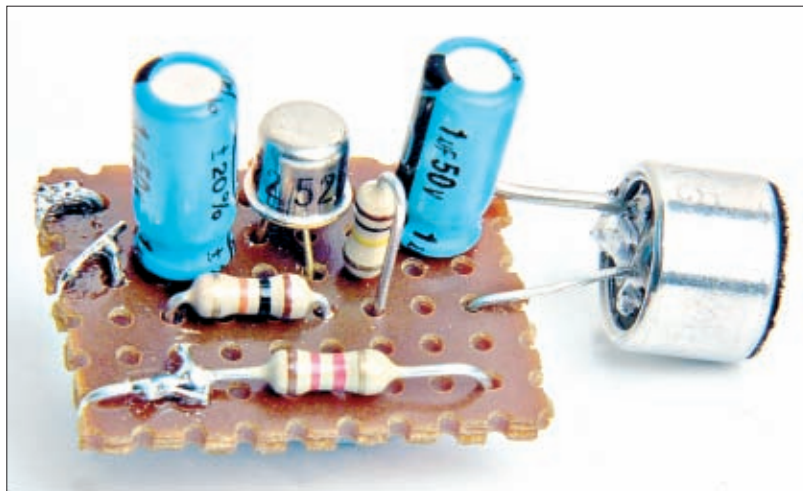
Why not nip out to your local toy shop, and grab a couple of toys to make a Slinky-Hula for yourself? See you there!

Carrying On The Practical Way

This month the Rev. George Dobbs G3RJV pays tribute to those readers who provide valuable feedback resulting from his column. It seems that mixed in with requests for help and technical critiques...an occasional really useful idea emerges!

"Out of clutter, find Simplicity. From discord, find Harmony. In the middle of difficulty lies opportunity".

Albert Einstein



● This month's project - suggested to G3RJV by a reader's questions - can provide you with a very simple electret microphone. Extremely cheap and simple in concept...these little units are found in many forms of electronic equipment.

Welcome to November's COTPW and my opportunity to acknowledge your welcome feedback! Regular readers will remember I've often commented that..."Contact with PW readers is usually a pleasant outcome of writing this column". The feedback often includes notes from those who ask..."Can you do a simple circuit for a single sideband transceiver to cover three or four Amateur bands". Those letters can arrive together with those who ask me the whereabouts of supplies of the commonest electronic components!

Unfortunately though...there's a limit to what I can get into two pages. But when it comes to complex ideas and sourcing parts...like me...you're on your own.

Then I get the occasional technically astute reader who rips my theory and circuits apart, usually pointing out that by doubling the number of parts in a particular circuit, I could do the job better. My reply to that is..."I'm not really a technical author...just a Vicar who enjoys soldering little circuits in his spare time and sharing that enjoyment with others".

The most enjoyable letters are from those 'responding readers' whose ideas and suggestions inspire me to write things for the column. This is very helpful...because when I'm gleaning my tired old brain for fresh ideas...along comes a reader with a really good suggestion.

A particularly useful idea arrived a few weeks ago when I was telephoned by a reader with a question about microphone inserts. He'd noticed the inexpensive 'electret' microphone inserts and wanted to know about their use.

Some of the electret inserts mentioned during the conversation have two connections and some three connections. The questions were....how are they

connected and do they need extra pre-amplification for communications use?

My reaction was...yes they're certainly inexpensive and thankfully also easy to use. So, thanks to the reader's questions which prompted the idea I've prepared a quick primer on the use of electret microphones this month.

Small & Rugged

Electret microphones are used in many applications where a small rugged microphone with good performance characteristics is required. Video recorder microphones, computer microphones and any clip-on microphones are likely to be electret types. Their wide spread use has led to mass production with the resultant low cost.

The electret microphone is a later version of the classic capacitor microphone or condenser microphone as they were usually called, from the time of their inception. The condenser microphone used changes in capacitance due to the mechanical vibrations of sound to produce voltage variations in sympathy with the sound waves.

A condenser microphone required an applied voltage across the plates which 'picked up' the sound impulses. The electret microphone also requires a few volts to power a built-in field effect transistor (f.e.t.) amplifier, rather than to create an electrical field.

The diagram, **Fig. 1**, shows what's inside a typical electret microphone capsule. Two charged plates form the transducer which converts the sound waves into electrical signals. The resulting electrical signal is amplified by a built-in f.e.t. amplifier which requires a working voltage.

In the modern electret microphone everything is housed in a small cylindrical capsule. One end will

have a felt covering for the sound to enter, while the other end has two or three solder pad connections.

Two Connections

The commonest electret microphones have two connections usually configured as shown in **Fig. 2**. These are simply a ground connection and an output connection.

As with all microphones, screened lead should be used between the output and the circuit in use. Naturally, the ground connection goes to the braided screen wire.

In the two connection version, the voltage to power the f.e.t. amplifier is passed through the output connection. The ground connection can usually be identified by a small bridge linking this connection to the outer casing of the capsule.

Also shown in **Fig. 2** is the three connection version. In this case the connections are **Ground (Gnd)**, **Output** and a separate connection for the voltage to power the f.e.t. amplifier.

The arrangement shown in which the output is to the right and the voltage input to the left appears to be universal. It's the only one I can find...but doubtless some reader will point out examples of microphones connected the other way round!

The usual circuit for powering an electret microphone is shown in **Fig. 3**. The internal f.e.t. amplifier is current fed via a resistor R1. The load resistor sets the impedance of the output and is usually in the order of 1 to 10kΩ.

Most microphones are fed with a voltage in the 1.5 to 10V range. The amplifier consumes a current of half a milliamp or less.

In practice, the amplifier not only amplifies the weak signal from the element plates...it also converts the very high impedance of the element to a more manageable impedance. The output capacitor used to couple to the circuit in use is in the order of 1 to 10μF.

Circuit Applied

The diagram, **Fig. 3**, shows the circuit applied to a two connection microphone. In this example, the biasing voltage for the amplifier is fed along the output connection. The arrangement for the three connection microphone is the same, except that the biasing voltage is fed to the separate (+V) connection.

To be honest...**Fig. 3** is really all there is to know about using an electret microphone and this basic circuit will serve for most purposes. However, for some Amateur Radio applications a little extra amplification may be required.

Many Amateur Radio transceivers are designed for dynamic microphones with greater output and they can also

be used with the lips pressed right up to the microphone's casing.

Electret microphones on the other hand, are at their best when not too close to the sound source. Holding the element too close to the lips distorts the signal, sometimes with 'explosive' sounding bursts of air.

When using electrets myself, I've often wrapped a stiff wire around the outside of the screened cable to fabricate a 'goose-neck' support. In some cases this has been a length of heavy gauge copper wire with the end soldered or fastened to a metal box to form a microphone base. The base can house a small pre-amplifier, a battery and a push-to-talk switch.

Many Choices

There are many choices of circuit for a microphone pre-amplifier and **Fig. 4** shows a very simple circuit based on a single bipolar transistor. Once again I turned to my stockpile of 2N2222 transistors, but any similar device will do the job.

The power source is in the range 3 to 9V. In practice I found I had plenty of gain using 3V and a couple of AA cells will last for a long time in this circuit. The heading photograph shows how this can be built on a tiny scrap of perf-board.

I've found that the circuit in **Fig. 4** should give plenty of gain for most Amateur Radio applications. In use, the integral microphone gain control of many Amateur transceivers should enable the user to adjust the gain to produce a good quality audio signal speaking a small distance from the microphone.

The gain of the amplifier can be modified by adjusting the 10kΩ resistor (decrease the resistance to reduce the gain). However, a gain control could be added to the amplifier as shown in **Fig. 5**, with the full track (the two outer connections) of the potentiometer wired across the input to keep this at a constant value.

Electret microphones are cheap, easy-to-find and give good results in Amateur Radio applications. I offer my thanks to the reader who in asking his questions suggested this article!

PW

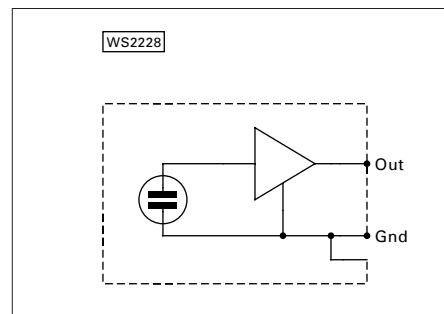


Fig. 1: Inside a typical electret microphone capsule. Two charged plates form the transducer which converts the sound (acoustic pressure waves) into electrical signals. The resulting electrical signal is amplified by a built-in f.e.t. amplifier which requires a working voltage (see text).

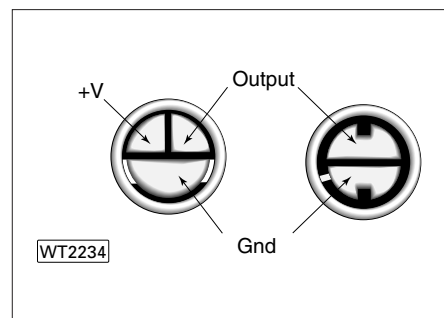


Fig. 2: The commonest electret microphones have two connections usually configured as shown in the diagram. These are simply a ground connection and an output connection (see text), also shown is the commonest three connection type. Note: the ground connection is connected to the casing in both types.

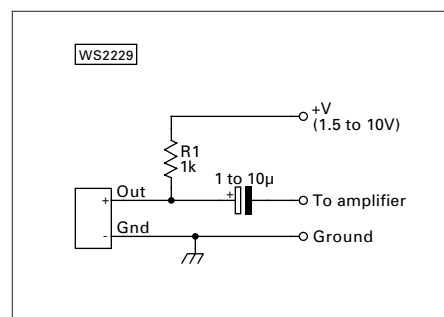


Fig. 3: Diagram illustrating the usual circuit for powering an electret microphone. The f.e.t. amplifier is current fed via a resistor R1. The load resistor sets the impedance of the output and is usually in the order of 1 to 10kΩ (see text).

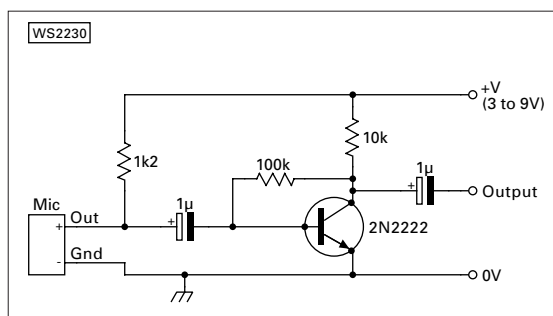


Fig. 4: Many choices of circuits for a microphone pre-amplifier exist. The diagram shows a very simple circuit based on a single bipolar transistor, G3RJ/V uses 2N2222 transistors, but any similar device will do the job (see text).

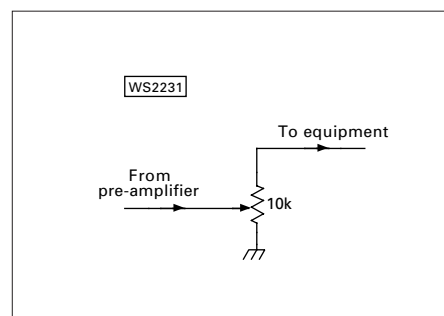


Fig. 5: A gain control could be added to the amplifier as shown in the diagram. The full track (the two outer connections) of the potentiometer should be wired across the input to keep it at a constant value (see text).

Like many great ideas for DXpeditions, this one started over a pint. Glyn Jones GW0ANA takes up the story in Part 1 of his Tale of Two Islands...

The idea for a DXpedition to St. Helena (ZD7) first came about when **Richard Mortimore GW4BVJ** and I were enjoying a chat with **Johnny Clingham ZD7WRG** in the **Barry Amateur Radio Society's** club house at Sully, South Wales. At the time Johnny was a crew member on the RMS *St. Helena* which was in port at Cardiff for a refit and he'd dropped in to see us.

During the evening the topic moved to Johnny's homeland of St Helena (ZD7) and the Amateur Radio activity on the island. He said most bands and modes were active except c.w., following it with an invitation to visit him, and give c.w. a good 'airing'. Not realising at the time that we would end up visiting two islands!

I, being retired and having more time jumped at the offer, but Richard GW4BVJ our c.w. man ran a busy communications company and had to think about the offer for a bit longer, but not much longer! By the end of the evening a germ of an idea was formed, which was to fly to Cape Town and then sail onboard RMS *St Helena* to the island of St. Helena for some great DXing.

In reality the arrangements were not as easy as I had first thought they would be. It wasn't until we attended an RSGB h.f. Convention almost 18 months later that the subject of the ZD7 trip was raised again and things started to



● Doug G0WMW amid a 'pile-up'!

get moving. A few of the other delegates showed interest in our trip, especially when we said we would be concentrating on c.w. and data modes on l.f. with a special effort on 'Top Band'.

Doug Roberts G0WMW then suggested that as we were going all the way to St. Helena why didn't we operate from Ascension Islands (ZD8) as well and if we did... he'd be interested in joining us. So, following all the support and encouragement we received from the h.f. convention the planning began in earnest!

The Team

The Team consisted of Richard

GW4BVJ, Doug G0WMW, myself GW0ANA, **Sherri** the XYL of Richard also agreed to join us as logistical support. Then **Keith Orchard G3TTC** an ex-BBC engineer who had worked on Ascension Island for many years asked if he could join us as he wanted to go to St. Helena, as in all his years working on ZD8 he never got the chance. Of course, the team welcomed Keith aboard and we got down to more detailed planning.

In brief, the positions we held were as follows: Doug G0WMW was Chief Engineer & Freight Manager, Richard GW3BVJ was Morse Man & Web Page designer, Sherri Mortimore s.w.l. became Logistical support & Public

A Tale of Two Islands



● Ascension Island, the view from Green Mountain.

Relations, Keith G3TTC was appointed the antenna farmer with myself Glyn GW0ANA as Team Leader.

Planning Meetings

With the team assembled monthly meetings were held at the Magor Motorway Service Area on the M4 in South Wales. Doug took charge of the fine detail using his design engineering skills to the full, while I was detailed to write to potential sponsors for support and Richard detailed to design a webpage.

Equipment lists were drawn up and various software requirements discussed such as logging and data modes. The list of things to do seemed endless.....

With Richard busy working on the website, which would include a 'Log Search', I thought maybe we should try and get a 'Pilot Station' to help us collate the log search and help with collating information on band conditions and propagation in real time as well as collating reports from stations around the world. **Rob Ferguson G3YTS** (GM-DX Group) suggested that maybe **Ken Dons GM0AXY** could help. So, without further ado I contacted Ken who agreed to act as our Chief Pilot.

Having costed the expedition we discovered that by visiting both ZD7 & ZD8 we were in fact mounting two expeditions to remote places and it was going to be very expensive. So, after discussions the team agreed to try to get some sponsorship.

I wrote around 50 letters and not one replied within a month. I began to think that maybe ZD7 & ZD8 were not in demand and thought we were wasting our time. But I was just too impatient! As the days turned into weeks on a cold winter's morning a letter dropped on the mat from **Chiltern DX Club** offering advice and encouragement together with financial support.

More help followed from the RSGB and the GMDX-group, as well as BARTG who pledged support followed by our EUDXF friends who wrote in with their help. With others following like the GDXF, the Danish DX Group and the Arkansas DX Association. We were also very appreciative of **Dave G3VFP**

who kindly donated his superb interface unit for our soundcard Data modes for use on the expedition

The next stage was to try to get some commercial support. Cable & Wireless, together with an amazing team effort from the RAF then came to the rescue. The RAF agreed to help with our logistics to Ascension in recognition of the part c.w. has played on Ascension Island during the past 100 years.

Equipment Requirements

The equipment requirements were met by the very kind



● Doug G0WMW and Keith G3TTC unloading the gear on ZD8.

sponsorship of Kenwood Electronics UK Ltd. who loaned us two TS-570Ds with power supplies and a brilliant TS-60S for 50MHz. On the specialist equipment side, **Ron Stone GW3YDX at Vine Antennas** gave us his time and expertise in antennas and amplifiers. He also supplied us with the new Acom Amps (serial number 0001, yes, the first one the UK). It was so good that Doug G0WMW purchased it!

A 50MHz antenna together with technical support was given by **Chris GW6MKR of Sandpiper Communications** followed by **Dave G1LBE of Radioworld** whose generous support with coaxial cable was very much appreciated. Software sponsorship came from all quarters in the commercial Amateur Radio community.

The DXpedition team would also like to express our thanks to **Cromapix, WinPix32, Turbolog, WF1B, MTTY &**

RCKrtty for making our life so much easier. The links to these software sponsors can be found at www.dxpedition.co.uk so check them out.

Members of the team also supplied equipment. Richard GW4BVJ supplied a Force12 Tri-bander (14/21/28MHz and WARCS). Doug G0WMW took his fantastic GAP Titan for 7 to 28MHz plus WARCS, which worked well to the far corners of the world, with constant reports of 5/9 plus. I had my trusty Butternut HF2V for 3.5 & 7MHz and also used the R7000 with great success on 12 & 17m when Richard went on 7MHz c.w.

The ultimate antenna 'gun' in our arsenal was Doug

ranging from the top of the range Pentium3 to the humble 486. We used them for station logging, Morse keying, E-mailing our logs to our pilot Ken GM0AXY and last but not least transmitting data, which was either RTTY or SSTV and PSK31.

Off To Ascension Island!

With everything in place it was time to set off on our adventure. The day of Monday 19 March we gathered at RAF Brize Norton, in the Oxfordshire countryside waiting to board an RAF VC10 en-route to Ascension Island. The snow was blowing around us as we all dreamt of our forthcoming adventure in the South Atlantic sunshine.

After eight hours of flying the doors of the plane doors opened and the heat welcomed us. Once we cleared the terminal our friends **Johnny Clingham ZD8KW** and **Lenny Duncan ZD8LJD** were waiting to greet and take us to our very nice beach bungalows in Georgetown.

Once we arrived, after a coffee and 'rag' chew, it was off to the authorities to get our licences (ZD8K). This had previously been arranged by Johnny ZD8KW... so was straightforward. Then we picked up a hire car, loaded up with provisions and headed off up the mountain road to our radio QTH the 'Garden Cottage' on top of Green Mountain.

Green mountain is 859m (2800ft) high and our shack was at the top of the road from Georgetown to the summit of Green Mountain and it wasn't a road for the faint-hearted. Once at the top we relaxed, until we found all our gear waiting to be unloaded, which Johnny and Lenny had brought up for us a couple of days before.

At this point we would like to say how indebted we all were to the management and all the staff of Ascension Island Services for allowing us to use 'their cottage' as a radio shack for the duration of our stay. This wonderful gesture towards us was typical of the hospitality shown to us.

The Unpacking!

We then set to with the unpacking of the three very large packing cases full of equipment. It contained the antennas and fortunately they were all in

G0WMW's 1.8MHz 'Dragon Special'. This monster vertical of around 25m (85ft) was built specially for the expedition. Doug made it from fibreglass fishing poles coupled to 2in aluminium 5 sectioned tubular mast with the final radiating section of 40m (130ft) being a very nice piece of silver wire. The matching network at the base was a superb piece of design and construction.

We also took three amplifiers with us. These were the Acom 1000 (as previously mentioned), which worked perfectly from 1.8 to 50MHz. We also had a Yaesu FL2100Z in reserve but didn't have to use it. Richard GW4BVJ was happy to use his Ten-Tec 500 amp on c.w. This little amp also went on forever, as he 'pounded' his key giving ZD7/ZD8 to the world.

And finally, like all expeditions these days computers also found their way into the kit. We took five laptops

perfect condition. Then it was 'all hands on deck' and the team started on setting-up our antenna farm, the Force 12 went up first followed by the Gap Titan and the Dragon Special.

With the Dragon leaning into the wind and the guy ropes taking the strain, we slowly edged the monster antenna higher and higher until the last section was in and the guy ropes made fast. All 22m (75ft) of it went up in the air first time with no mishaps.

We then set out the radial web around the base and felt a smug sense of pride as our little band of DXers had nearly achieved what we had planned - ZD8K on Top Band 1.f.! But that would have to wait a little longer as we still had hundreds of feet of coaxial cable to run out and PL259 plugs to put on plus a couple more antennas to build... not to mention four stations to install!

After a hard days' work it was soon time for supper, but due to lack of water and

Johnny and Lenny looked in to see if we needed anything before they went off to work. Once we had had breakfast... it was off to the local shop for supplies and then back up the mountain to finish building the station and get ZD8K on air.

Soon the antenna farm was complete and it was time to set up the four operating stations. We set up the two h.f. rigs in separate rooms to give as much separation as we could. The data station was in the middle alongside the 50MHz station. We put Dune Star filters on the rigs and they proved to be successful in keeping the intermodulation interference at bay.

Richard GW4BVJ was first on air with his Morse key pounding and very soon the 'pile-ups' began, which was music to our ears! Doug G0WMW was next on air operating s.s.b., followed by Keith on 50MHz. I went on RTTY but alas 'Murphy' struck and I couldn't get any data from the sound card after my second QSO - I had blown the

● The happy team of DXpeditioners!



● Waving goodbye to ZD8 - Glynn GW0ANA at the helm.

● The c.w. 'pile-up' kept Richard GW4BVJ very busy.



sanitation problems we weren't able to stay in Garden Cottage, so Doug drove us back down the mountain to Georgetown for a well deserved feed.

On Air from ZD8

We all got up bright and early the following day and Doug and I were enjoying a cuppa on the veranda at 0700hours when

card! So, it was back to the back-up computer and a keyboard borrowed from Johnny and I was at last QRV in RTTY.

The team worked all day and as night closed in we headed back down the mountain. All that is... except Richard who agreed to work through the night until we relieved him the following morning. This was the pattern that evolved for most of

our time on ZD8.

Contest Activity

Due to the delay in the arrival of our ship RMS *St. Helena* to take us onto St Helena ZD7 we were fortunate enough to still be on Ascension for the CQWW contest. We were also fortunate to be invited by Johnny to join in with the celebrations being held

for Quincentenary Day, this being 500 years to the day of discovering Ascension Island in March 1501. On this momentous occasion everyone on the island was in carnival mood and all going to the big party being held at Two Boats. What a night it turned out to be! And throughout it all Richard stayed at his post throughout the night operating ZD8K.

Sadly, the evening or should I say early morning saw the activities wind down and the happy bands of revellers making their way home. For us, the ZD8K crew, it was an amazing feeling of pride of being part of history knowing that we had had the privilege to be welcomed into the Ascension community and had been part of the 500 year discovery celebrations. Amateur Radio certainly has its pleasures... in many ways.

Pile-Up Problems

By now we are heavy into the ZD8K pile-ups with good openings to the USA and Japan with Europe coming in 5/9 plus. But we had a QRM problem in

the afternoon around 1600 hours. Richard's first thought was, "had the selectivity control gone QRT in the rig" because he was getting 5/9 plus of muffled audio across the bands. However, when the guy gave the football results, we guessed it was coming from the BBC World Service Transmitters, which were 850m (2800ft) below us and over 6km (four miles) away but with 250kW beaming towards us they overloaded our front-end a bit. But it only lasted for 30 minutes and then cleared up. It was the last bit of QRM that affected us during our operating.

Ken, our pilot, E-mailed us with requests and skeds for 1.8MHz and Richard did his best to co-operate but the extremely high static levels made it hard going. Then conditions eventually improved with the static dropping and Richard started to log Top Band DX on c.w., the first being OH7MS followed by VE3ZI, VO1NA and then W8JL, G3SNN.

Soon after Richard became ecstatic as he had worked W6UB in California, West Coast USA, on Top Band! All our hard work had been vindicated the crew had made it to the West Coast USA on 1.8MHz!

So, with the Top Band

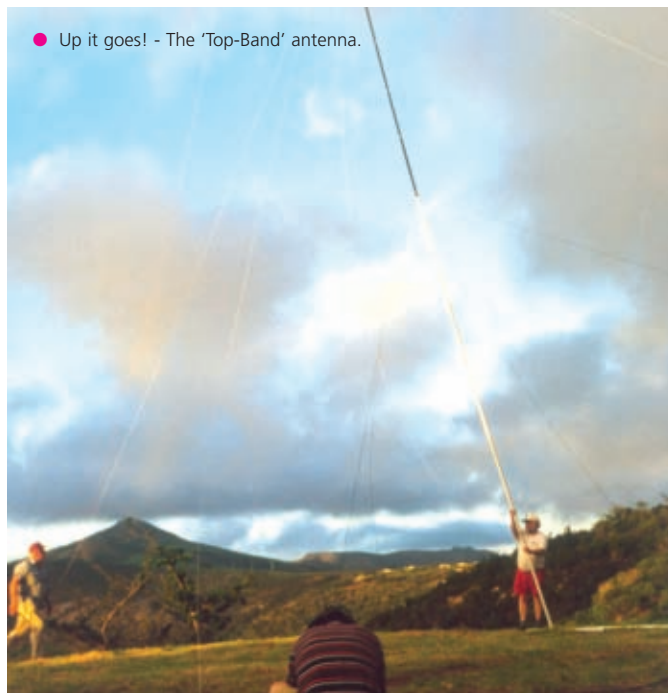
using Slow Scan Television (SSTV). **Danny ON4VT** came back to my call and he sent me a very nice picture. In turn I sent him one of the main volcano on the island. Danny received my picture in Belgium perfectly at 595. There was not a blemish on the picture!

Danny was so impressed that he put the contact on his webpage as the best DX SSTV of the month. By now the cluster had reported our SSTV activity and I made numerous QSOs with G3SZS, JA0SC, F8APM, SP4KM, SM5EEP & ON7GB to name a few. So, yet another goal of our expedition had been achieved, SSTV from ZD8 land.

Other Highlights

Other highlights of our trip, apart from the Amateur Radio operating, was the chance to film and photograph the beautiful island of Ascension and its wildlife. The most interesting for me was the night-time safari to see the Brazilian Green Turtles coming ashore to lay their eggs in the sand having had to swim 6,000 miles plus across the Southern Atlantic.

I saw at least 10 Turtles coming ashore and as I watched in wonderment as they laid their



● Up it goes! - The 'Top-Band' antenna.

on ZD8 had to come to an all too quick conclusion. Soon, we had to break down the station and sail off onto our next adventure to the island of St Helena (ZD7).

Once broken down, all the gear was taken off the mountain ready for shipment on the RMS *St. Helena*. The crated equipment was then hoisted into a barge and towed out to the

we departed for ZD7 land. As we sailed out of the bay we gave a final wave to our friends ashore, looking up just in time to see a pod of dolphins join our ship to escort us out to sea. This made a beautiful sight as we sailed along the coast past the BBC World Service Transmitting Station towards Boson Bird Island and the open Southern Atlantic.

We soon left the island in our wake and headed into the sunset on our way south. Very soon we all retired to the sundeck to enjoy the three day cruise in the warm and balmy climes... yes DXing has its hard times! Next stop ZD7K.....!

To find out how the Barry Amateur Radio Society fared with putting ZD7K on the air read part two of Glynn GW0ANA's story in PW December.

PW



antenna's capabilities proved, Doug felt better. It was now now down to me to meet our next objective... the 'first SSTV from ZD8K'.

SSTV From ZD8K

With great excitement and trepidation I called CQ SSTV de ZD8K on 28MHz. As far as we were aware this would be the first DXpedition to Ascension

eggs before finally crawling slowly back to the ocean. I also saw the dolphins and basking sharks swimming by the island and the wild donkeys that are left to roam after the Marines left around 100 years ago.

The island of Ascension is so beautiful in a raw and savage way. It was a pleasure to have been there, seen it and of course operated radio from the island.

Like all good things, our time



ship.

We then said our goodbyes to our friends on Ascension Island before it was our turn to join the RMS *St Helena* at anchor in the bay.

Once on board we found our cabins and our luggage was soon stowed away. Back up on deck, with the ship's hooters blasting

Statistics for ZD8K

Mode	Contacts Made
CW	3350
RTTY	547
PSK	05
SSTV	024
SSB	4855
DXCC	114

Value & Vintage

Ben Nock
G4BXD seems to have landed a big catch this month...including what he subtitles 'Big Americans'! He's also managed to capture several 'Spies' for his 'Clandestine Radio' collection.

Well here we are once again...manning the V&V store with a mixture of military and commercial sets. There have been a few new additions to my collection here over the summer months. Even as I write this the curator of G4BXD collection is excitedly awaiting the delivery of another Second World War Japanese set. I will of course bring you details - of this most interesting find - in a few months.

Big Americans

The first offering in this edition is a monster of a transmitter...one of the really big Americans! The BC-191, **Fig. 1**, is the ground version of the BC-375 airborne transmitter.

Utilising four large VT-4-C triodes and a smaller VT-25 triode the transmitter has an output around 40-50W of c.w., or slightly less when operating on a.m. A large pull-out drawer in the base of the cabinet houses the tuned circuits for the oscillator and power amplifier (p.a.) stages. Band changing is achieved by removing the pull-out drawer and substituting other tuned circuits.

The numbering system used by the Americans employed numbers for individual sets, receivers, transmitters, etc., and another number for complete installations or stations. The BC-191 formed part of the SCR-177A station along with the BC-189 receiver.

The SCR stood for Set, Complete Radio and later in the Second World War as Signals Corps Radio. The BC-191 could also be paired with the BC-312 or BC-314 receiver to make the SCR-177B station.

Designed around 1935...the BC-191/BC-375 was near obsolete by the outbreak of Second World War. The BC-375 was used airborne in the likes of the B-17 bombers. The designers of the 191/375 were dismayed

to find that the newer, much smaller ARC-5 Command series of sets was able to produce a higher output power and with a far more stable signal.

Trio of Spies!

I've recently 'captured' three little spy-related receivers for my collection. The captives, **Fig. 2**, include the MCR1 'biscuit tin' receiver, the Mk 128 Receiver and the Mk 26 Receiver.

The MCR1 (top-most set in the photograph), is a Second World War set. It was used by agents across Europe to receive the BBC broadcasts sent to the various resistance groups. (You know the sort... *"The cow jumps large over the red moon tonight"* for instance. Band switching is achieved by removing the coil pack at the end of the receiver and fitting another in place.

The receiver uses five miniature valves in a single conversion superhet design, with an i.f. (intermediate frequency) of 1.730MHz. Tuning from 100kHz to 15MHz it uses four plug-in coil packs and operated off a combined high tension and low tension (h.t./l.t.) battery or from a mains supply.

The mains power supply (bottom left) could operate off 97 to 250V a.c. or d.c. The 'biscuit tin' reference is directly due to the fact that many sets were supplied in Huntley & Palmer biscuit tins of the time!

The Mk 128 receiver (part of the Mk 128 station) is a slightly later set. It uses battery type valves and thus requires a 1.5V supply for the valve heaters. The set tunes 2 to 8MHz and has a beat frequency oscillator (b.f.o.) for reception of c.w. signals.

Note: Although the complete station **was used by various special forces**...the use of the term 'spy receiver' may perhaps be a little too over-dramatic!

The Mk 26 however, (lowest of the three sets) is still something of a mystery. Although it has all the appearance of a Waddon made set and the serial number plate is the same design as used on the Mk XV and Parasets...I can find little hard info on it. Of course, if anyone out there can help...you know where to write!

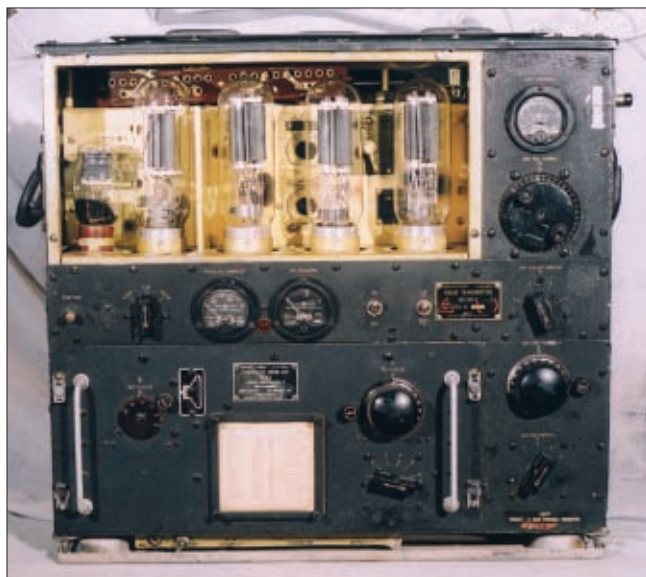
The Mk 26 receiver has a frequency chart in the lid stating (and...what I think to be rather odd) coverage of 5 to 18MHz. This is achieved with two plug-in coil packs, it uses seven battery type valves in a superhet configuration and even sports a neon tube type regulator for the oscillator supply.

Just who made and where this set was used is still unknown to me. Was there a matching transmitter...the Mk 33 perhaps? What other accessories were available with this set? Why the high frequency range? Was this for long range communication, to the far east and back? All these questions still need answering...with your help I hope!

Wartime RAF Receiver

Another 'new' addition to the collection here in

● Fig. 1: The BC-191 transmitter, with the frequency selection components mounted in the plug-in tray at the bottom of the set.



Kidderminster is the R1082 receiver, **Fig. 3**. It was used by the RAF before and during the early years of the Second World War.

The receiver is a five valved tuned radio frequency (t.r.f.) design. Band switching was achieved (as in the previously mentioned BC-191 American unit) by inserting a set of two plug-in coils for the various ranges.

A total frequency coverage of between 111kHz and 15MHz was available using the various coils. A regenerative detector provided reception of both a.m. and c.w. signals but needed careful adjustment of the controls.

The example shown in Fig. 3 came with a rare add-on unit to facilitate direction finding (d.f.ing). I hope that once I can find some time to work on it...the set can be checked over and finally powered up again. I will of course let you know the outcome.

Incidentally, the set was used with the T1083 transmitter and it was interesting to see the pair fitted in a Wellington bomber in the film *One of our aircraft is missing* screened on TV the other day.

Eddystone First

I have supplied a rather evocative picture of the Eddystone set, **Fig. 4**, as it's something of a 'special'. And although it's an Eddystone 730....note the absence of any sub model number, and carries the serial number 0001.

For those camera minded, it was taken using illumination from the receiver's dial lamps and a 25W table lamp situated quite a distance away, all in a blacked out room. Exposure was left to the camera...but the effect is quite pleasing I feel.

Talking with those in the know, namely the **Eddystone User Group** in the guise of **Graeme G3GGL**....it seems that there was only one 730 made (after that they used the /1, /2, etc., designation. Apparently, the 730/4 is the most common example to be found in the UK. So, it could be that this is a rather special little addition (a rare version of a common version!) to the collection here yet again.

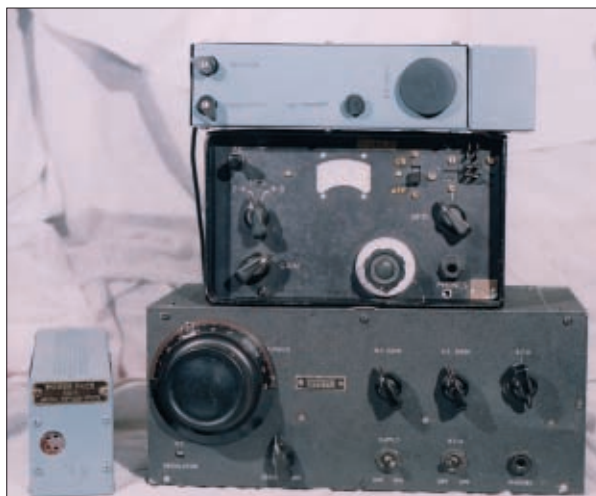
And Finally

And finally...I have a note from **Steve VK5AIM** down there in South Australia. He too rescued a discarded high voltage stabilised p.s.u. similar to the Solartron (*PW* August 2003) from a skip and makes good use of it in repairing the older type valved sets. (Isn't it amazing just what gets thrown out these days?).

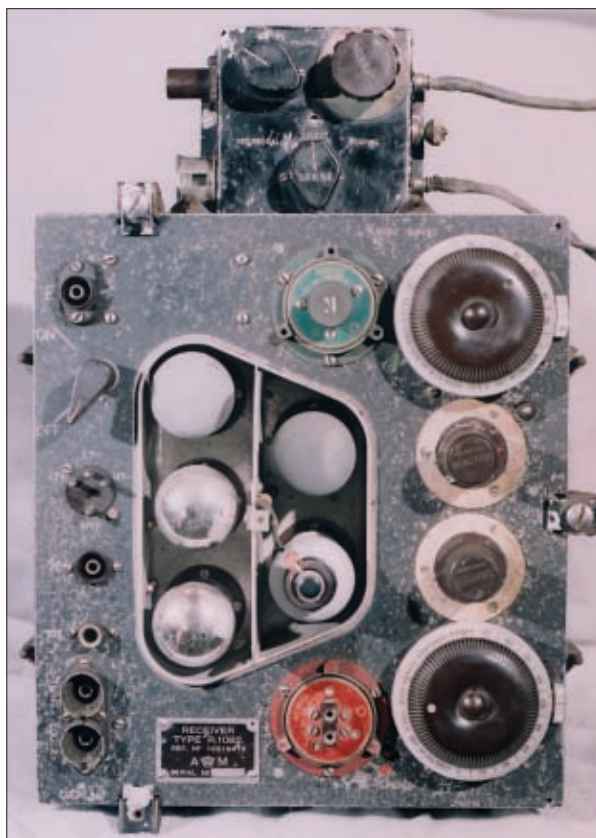
My thanks also to **Ray Kidd** and **Dr. Francis Crossley** for sending me information on the ARI 5206, Type 78 and 53 sets, mentioned in my last outing. Hopefully I can now work on these sets and get bring them back to life.

Well that's all for now. Only 10 weeks to Christmas so best wishes for then. As always you can write to me at **62 Cobden Street, Kidderminster, Worcestershire DY11 6RP**, or via E-mail at **G4BXD@qsl.net** and have a look at my web pages at **www.qsl.net/g4bxd** Cheerio.

PW



● Fig. 2: The three 'Spy' sets, top to bottom, The MCR1, the Mk 128 and the Mk 26, with the MCR1 power supply unit on the lower left (see text).



● Fig. 3: The R1082 receiver with additional Direction Finding unit on top. The green and red plug-in coils select the band tuned (see text).



● Fig. 4: The special Eddystone 730 receiver, serial number 0001 (see text).

Trader's Table

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REPORTS & INFORMATION BY THE LAST SATURDAY OF EACH MONTH.

The summer of 2003 will probably be remembered as one of the best for long-distance activity on the v.h.f. and u.h.f. bands. Throughout June and July many excellent DX contacts were made on the 50, 70 and 144MHz bands via Sporadic-E (Sp-E) propagation. Indeed, this mode produced some remarkable results on the 50MHz band with contacts made throughout Europe and also into Africa, Asia, North America and South America at distances approaching 8000km or so.

The transatlantic path to Canada and the USA was also reported to be open on over 30 occasions. This is an unusually high number as normally one can only expect to record 10 or fewer openings to North America during the summer.

Contacts made via Sp-E on the 144MHz band were equally spectacular with 20 events being recorded in the UK during June and July. Again, this is a very high number compared to other years. Many stations reported contacts with stations around 2000km away and a few even managed to make Sp-E contacts with stations over 3000km away.

Probably one of the longest distance contacts made from the UK this year was between the stations of G8VHI and RB6BN at 3032km. Elsewhere in Europe, other long-distance contacts in excess of 3000km were being made and one Bulgarian station LZ3NY even managed to hear CT3AN over a path of some 3652km. When propagation like that occurs, it's only natural for operators to dream of a transatlantic contact with North America on the 144MHz band and on June 26, it got surprisingly close!

TRANSATLANTIC 100MHz RECEPTION

Reports from listeners indicated that the maximum usable frequency (m.u.f.) for much of the day on June 26 was very high. In the UK, it began early in the morning with an intense Sp-E opening reaching up to the 70MHz band.

Strong signals were received from much of Europe at very good strengths. Later in the morning Spanish f.m. broadcast stations in Band II (88-108MHz) were being heard throughout the UK. This was followed in the early afternoon by a brief Sp-E opening on the 144MHz band to stations in eastern Europe.

Propagation subsided a little later in the afternoon, but shortly after 1730UTC the transatlantic path to Canada and the USA opened up and a huge 50MHz opening commenced lasting over four hours. Many VE,

VO and W stations were making c.w. and s.s.b. contacts into Europe with booming signals.

At the same time, the m.u.f. began rising very quickly to over 100MHz with Band II f.m. broadcast stations from Maine, USA and Newfoundland, Canada being heard in Northern Ireland and Scotland as shown in Fig. 1. Perhaps the m.u.f. reached the 144MHz band, but it's very hard to find an active 144MHz DXer in Newfoundland (VO1).

Paul Logan (Lisnaskea, Northern Ireland)

confirm this however you need us too. Thanks, Michael." The distance from Lisnaskea, Northern Ireland to Watertown, USA is 4906km!

David Hamilton (Cumnock, Ayrshire, Scotland) reports that he was first alerted to the opening at 1800UTC when a member of the British f.m. and TV Circle (www.skywaves.info) posted an alert on their website that transatlantic television signals were being received in the UK. Turning his 4-element Band I Yagi to the NW David received A2

DAVID G4ASR HAS REPORTS OF EXTENSIVE TROPO OPENINGS DURING AUGUST, WITH 3000KM CONTACTS BEING MADE ON THE 144 AND 430MHz BANDS

specialises in the reception of f.m. broadcast stations at long distances. His QTH is located about 45km inland from the Atlantic Ocean in the county of Fermanagh. The takeoff is good to the w.n.w. and it was in this direction that his 4-element Band II Yagi was pointing on June 26 when the unimaginable happened.

At 1810UTC Paul started to hear brief signals of North American speech on 88.5MHz. Another station then came up with a reference to New York. This was followed by a French language station on 88.5MHz which was heard very strongly for 20 minutes before the lady announcer said "Radio Canada". That station faded out to be replaced by another playing light music.

At 1900UTC it gave the station identification WHCF. This broadcast station is located in Bangor, Maine, some 4370km away! Paul reports that he was literally in a state of shock. Between 1900-2130UTC he also received positive ID from Canadian f.m. broadcast stations CBAF (88.5MHz), CBTB (97.1MHz), CBTR (92.9MHz), CBVG (88.5MHz), CKLE (92.9MHz) and USA stations WFRY (97.5MHz) and WHCF (88.5MHz).

Other non-identifiable North American stations were heard on 88.7, 95.9, 97.5 and 99.3MHz. Paul mentions that he has waited 20 years for a transatlantic opening and hopes that the next one doesn't take as long. A few days later he received a reply from **Michael Ring**, the Chief Engineer at WFRY Watertown, New York. "Hi Paul, We are just a bit excited here. That is definitely our station. We recognise two of our announcers, our voice guy plus our identifier. We'll be glad to

(55MHz) and A4 (67MHz) video signals which over the next hour just got stronger and stronger.

Using a Sony ST SB920 tuner and a pair of 6-element stacked Yagis, David then listened for transatlantic Band II f.m. broadcast signals. Initially only a weak TV audio on 87.75MHz and some French speaking stations on 88.3 and 88.5MHz were heard, but nothing was strong enough for a positive identification.

Around 1900UTC though, he heard a weak signal on 97.1MHz which over the next few minutes got strong enough to identify it as CBTB, Baie Verte, Newfoundland, Canada. These are excellent results from two dedicated DX listeners. Well done Paul and David.

So will a two-way transatlantic contact ever be accomplished on the 144MHz band and what propagation modes will it require? The results at 100MHz are very encouraging, especially as they were achieved in a wide bandwidth frequency modulation system.

A contact on the 144MHz band will be made in a communication bandwidth of 3kHz or less, probably using a data protocol such as JT44 or PSK31. One question that needs answering is will the m.u.f. ever reach as high as 144MHz to support such a contact?

Charles EI5FK mentions that he once served with a Radio Officer in the Irish Navy who clearly recalls hearing the United States or Newfoundland Coastguard (Charles forgets which) on 156MHz from a location less than 300km off the Irish coast. This occurred during the summer - about 15 years ago.

It is worth noting that both sides were using vertical antennas of low gain and that

the Coastguard station was probably using less than 25W output. Charles therefore believes that the main problem is more a lack of operators who are willing to put in the hours of effort rather than the technical issues.

Chris Bartram GW4DGU suggests that a simple solution in generating transatlantic activity would be to encourage North American stations to keep an eye on the Internet Chat page run by ON4KST (www.on4kst.info) as it presents a Eurocentric view of the DX cluster. If 144MHz behaves like 50MHz for transatlantic Sp-E, then openings over the Atlantic will usually (but not always) take place after European events.

Chris beams towards VE and VO after European Sp-E opening and transmits a beacon CQ on 144.195MHz. He has posted details to the North American v.h.f. Propagation Logger, but it doesn't seem to have generated any interest. Chris thinks that internet needs to be raised in the possibility of transatlantic propagation at 144MHz on the eastern seaboard of North America.

Experience has already shown that expeditions are unlikely to be successful and ways need to be found of encouraging regular activity by stations with good 144MHz systems located in the Canadian Maritimes in particular. Chris mentions that the comments by E15FK reminds him of something he said in the early 1980s when transatlantic propagation was being discussed. He suggested then that the first transatlantic QSO on 144MHz would be made by someone using a hand-held transceiver whilst walking on a beach in NW Ireland!

CALLING FREQUENCY

Apart from requiring an effective alert system to get operators onto the band when conditions are favourable, it will also be necessary to nominate a transatlantic calling frequency. In IARU Region 1 (Europe) the centre for narrowband activity (s.s.b.) is 144.300MHz. In North America it is centered on 144.200MHz.

Calling CQ towards VE1 or VO1 for hours at a time on 144.300 or even 144.200 (allocated for meteor scatter usage in Europe) isn't going to make you very popular. One suggestion is to adopt an informal transatlantic calling frequency in a part of the band that has relatively low occupancy on both sides of the ocean. Some stations have suggested 144.155MHz. To avoid mutual interference, some form of scheduling needs to be adopted.

One idea is to use 30 second periods with stations in North America starting first. It's convenient for s.s.b. operation, it fits in with the JT44 protocol and other machine generated modes (m.g.m.) and is reasonable for high-speed c.w. operation. Does anyone have any comments?

PROPAGATION MODES

A number of propagation modes could support

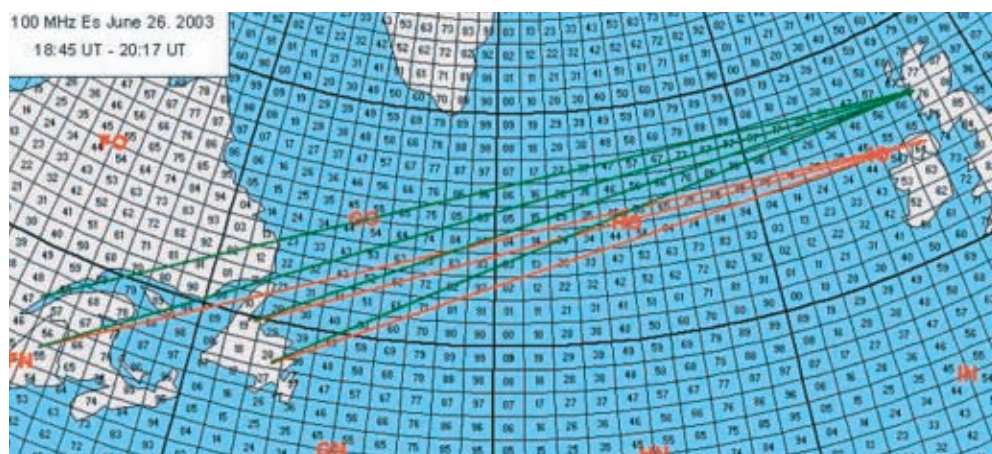
a contact across the Atlantic Ocean, but in my opinion, there are only two worthy of consideration. One is Sporadic-E and the other is tropospheric enhancement.

Paul Logan and David Hamilton have already provided proof that transatlantic paths approaching 5000km are possible at 100MHz. Multi-reflection Sp-E at 144MHz is relatively common and a number of contacts over 3000km have been accomplished this summer. A path extension via tropo propagation is also a possibility.

Last month I reported that at the end of

on the v.h.f. and u.h.f. bands. Stations known to have worked into the UK included EA8/DL6FAW, EA8BPX, EA8TJ, EB8AYA and EB8BTU.

Propagation was so good that the low power beacon EA8VHF (144.402MHz) was copied by a number of DX operators. Often propagation only reaches southern England and Wales, but on this occasion it stretched up as far as southern Scotland. At 1250UTC on August 8 the station of GM4JJJ (IO86) reported hearing EA8BPX (IL18) peaking 52 over a path of some 3238km. That really is remarkable.



● Fig. 1: June 26, the m.u.f. began rising very quickly to over 100MHz with Band II f.m. broadcast stations from Maine, USA and Newfoundland, Canada, being heard in Northern Ireland and Scotland as shown here.

July many UK stations had made s.s.b. contacts on the 144 and 430MHz bands with operators in the Canary Islands (EA8) some 3000km away from the UK. Although it is unlikely that such a path would exist right across the Atlantic Ocean to North America, there is a distinct possibility that an enhancement could exist for some considerable way. I believe that if a transatlantic QSO is to be made at 144MHz, it will be via a tropo-enhanced multi-reflection Sp-E path, possibly in the period mid-June to mid-July.

TROPO OPENING

In August, an extensive period of fine sunny weather gave rise to a prolonged period of tropospheric propagation with contacts being made with stations from Norway (LA) in the north, to Poland (SP) in the east and to Spain (EA) in the south. Typical of the DX contacted were the stations of EA1CRK and SM6FHZ on the 1.3GHz band and CT1DYX, EA1FDI/P and LB8SE on the 430MHz band.

Activity was considerably higher on the 144MHz band with s.s.b. stations such as EA2URE, EB1HJW, LA0BY, LA2PHA, OY9JD, OZ4VW and SP1FJZ being worked by stations throughout the UK.

Every year, normally around the last week of July and the first week of August, there are a few days when the 144 and 430MHz bands are open over the 3000km path to the Canary Islands. I've already reported the openings that occurred during July, but remarkably there were also six continuous days between August 7-12 when EA8-stations were being contacted

Myke G6DDQ reports that on August 8 he was operating portable from the moors above the Rossendale Valley in East Lancashire. His equipment comprised of a Yaesu FT-817 transceiver running 2.5W into a 3-element SOTA beam antenna. Contacts on the 144MHz band were made with the stations of E13GE, F6KSV and ON2VR and then at 1239UTC with the station of EA8BPX (IL18) at a distance of 3075km. Not bad for QRP!

The 430MHz tropo DX record has been broken again. Last month I reported that Reg Woolley G8VHI had claimed a new record when he contacted the station of EB8AYA at a distance of 2966km. That s.s.b. contact was made at 1148UTC on July 31.

Now **Ian McCabe G0FYD** (IO83) reports that on August 8 he worked EA8BPX (IL18) on the 430MHz band at a distance of 3021km. The station of GI4SNA also contacted EA8BPX, but this distance was just under two kilometres, less than that achieved by G0FYD. The s.s.b. contact between EA8BPX and G0FYD would now appear to be the new IARU Region 1 record.

DEADLINES

Wow! Yet another amazing month with contacts over 3000km being made on the 144 and 430MHz bands. I wonder what next month will bring? Thank you for your reports. Please keep sending them in to the address and by the date given at the top of the column. Good luck with the DX and see you again next month.

73 David G4ASR

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

Henryk Katowski SM0JHF dropped me a line to say that D44AC celebrated his 50th Birthday in September. Many of you will have worked Carlos, who lives in Mindelo, Sao Vicente, in the Cape Verde Islands.

Henryk said "Carlos is better known by his nickname 'Pulu'. He always likes to meet visitors to the island and is very hospitable and generous. Anyone travelling to Mindelo can easily spot his white house on the slope of a hill overlooking the harbour there. He has a very nice radio shack and recently helped **Alex 4L5A** set up a very competitive contest station on the top of Monte Verde hill, 774 metres above sea level on Sao Vicente island from where he recently operated with the callsign D4B".

If you need to work Cape Verde or wish to contact Pulu, you can E-mail him at d44ac@qsl.net or see www.qsl.net/d44ac

NEW PREFIXES

As of the 4 August, the Dutch authorities have expanded the prefixes available for Amateur

former PA0 callsign holders plus a 1 to 3 letter suffix. Class C (CEPT class II) licensees may use PE and PH and Class D (Novice) may use PD. The new licence classes will be A: all bands, C: v.h.f. and up, with permission to work on all h.f. bands from the 1 September and N: Novice with access to 2m/70cm (144/430MHz).

Full details on these new prefixes and a list of both new and former callsigns together with details of various awards can be found at www.pg7v.net/english/

NEW AUSTRALIAN ALLOCATION

A snippet of news from 'down under' now that follows a proposal put to the Australian Communications Authority by the WIA several

DX NEWS

Onto some DX news now and to Central America where members of the **Panama Radio Club** will be running the special event station **HP100RCP**. This is being aired to commemorate the 100th anniversary of the Republic of Panama, which is located at the narrowest point in Central America. Only 36 miles (58km) of land separates the Caribbean Sea from the Pacific Ocean here and the Panama Canal provides a major shipping route across the country.

Activity will take place from the 1 to 3rd November on all bands using c.w., s.s.b., RTTY and PSK31. A special commemorative QSL can be obtained by sending your QSL card plus two IRCs or \$1 to the **Radio Club de**

ALONG WITH NEWS OF A SPECIAL EVENT STATION, CARL GW0VSW ALSO HAS LOTS OF HF ACTIVITY TO REPORT



● Pulu D44AC's abode - situated in Mindelo, Sao Vicente in the Cape Verde Islands.

Radio operators in the Netherlands. For class A (CEPT class I) licensees the following prefix blocks are now available: PA, PB, PC, PF and PG which will be followed by a number in the range 0-5 or 7-9 with 6 being reserved for special event stations in all the prefix blocks.

The prefix PA0 is now available only to

years ago. The Australian Amateur Service is now going to be allocated a segment of the 3.5MHz band between 3.776-3.8MHz on 1 January 2004. Hopefully we will all be hearing some new callsigns on this band during the New Year!

Panama, PO Box 10745, Panama 4, Panama.

Canadian Ham **Joe VE3BW** will operate as **V47CA** from St. Kitts (NA-104) between October 18-26th. His activity will include an entry in the CQWW SSB Contest (Oct 25-26th) and QSLs should go via **VE3BW at 5 Romko Court, St. Catharines, Ontario L2N 7A1, Canada.**

In Chile, members of the **Atacama Desert DX Group** will operate as **3G2D** from Damas Island (SA-086) between the 17 and 19th October. They plan to run three stations, 24 hours a day, on 1.8 to 28MHz c.w., s.s.b. and some digital modes including PSK31. QSL via XQ11DM.

In the Indian Ocean **Willy ON5AX** will be active using both c.w. and RTTY as **FR/ON5AX** from La Reunion (AF-016) between the 20 and 23rd October. He will also use the callsign **S79AX** from Mahe, Praslin and La Digue (AF-024) in the Seychelles from 24 October to 4th November where Willy will operate in the CQ WW SSB DX Contest.

Finally, Willy will use the call **3B8/ON5AX** from Mauritius (AF-049) between the 6 and 15th November. If you work him, you can QSL via his homocall.

IRAQ OPERATIONS

There has been a good deal of activity from Iraq over the last few weeks. **Willie Y1/KV4EB** could be found on 14MHz s.s.b. and I was

fortunate to work him one evening, although his signal was not strong at 5/2. Activity is at various times during the day and you can QSL via KOJN.

Operator **Abel YI/KCOLEK** who is based near Baghdad has also been operating using s.s.b. and can be found between 21250-21302kHz at various times. **Mike OM2DX** has now obtained from the Iraqi PTT his personal callsign YI/OM2DX and the special callsign YI2X which is for use only in contests. He will be active for the next three years from the Slovak Embassy in Baghdad.

Mike has with him two transceivers, a Kenwood TS-850SAT and an Icom IC-706. A power amplifier is on the way and until it arrives, he will only be using 100W and a FD4 antenna. Mike has also erected a 20m high vertical for 1.8 and 3.5MHz and an 8-element log periodic for 14-28MHz. Mike should be active using c.w., s.s.b., RTTY and PSK31. QSL for both callsigns and his activity as YI1BGD is via his father **Steve OM3JW**.

Operation from this part of the world is not easy and still extremely dangerous. As I was putting the column together, I received news that **Ghis Penny ON5NT** was at the United Nations HQ in Baghdad when the Canal Hotel was attacked on 19 August. He was injured and even though he is not in danger of losing his life, he was evacuated to Amman. I am sure we all wish Ghis a speedy recovery.

QSL INFORMATION

Onto this month's QSL information which includes 9A0LH via 9A7K, CS5F via HB9CRV, CS9FSF via CT3FJ, HF150IL via SP8PJG, IU2HQ via I2MQP, R3R via RU3AX, UP5QHT via UA3TT, VP2E via N5AU, YA1D and YA0J via JG1OMV and YI/S57CQ via S57DX Slavko Celarc, Obigriscu 8, 1360 Vrhnika, Slovenia.



● P4QSF QSL card.

YOUR REPORTS

The first of our reports comes from **Steve Bainbridge M3SWB** in Liverpool who used PSK31 once again to have QSOs with UA3DPM (European Russia) at 2020, EI2FN (Ireland) 2040 and GU0VPA (Guernsey) at 2055UTC using an IC-706 MkIIIG with a home-made vertical antenna.

All c.w. man **Ted Trowell G2HKU** on the Isle of Sheppey in Kent found the bands "A little better, with the occasional short DX opening on several bands throughout the day". Ted used his Ten-Tec Omni V and G5RV on 7MHz logging A45WD (Oman), A61AR (United Arab Emirates) and UA9MC (Asiatic Russia) around 2100UTC. A change to 10MHz found VR2UW (Hong Kong), R0PA (Asiatic Russia) at the North Pole around 2110UTC and a little later CY9A (St. Paul Island), 9H3TM (Malta), PY2VA (Brazil) and OY3QN (Faroe Islands).

THE 14MHZ BAND

Onto the 14MHz band now and the log of **Martyn Medcalf M3VAM** in Chelmsford, Essex, who uses an IC-746 connected to a SGC-237 tuner and 8.2 metres of wire as the antenna



● The working station of Pulu D44AC.

working CS4S (Portugal) 1005, OZ1AA (Denmark) 1358, ZA1A (Albania) 2129, SV1CRX (Greece) 2158, YT1AD (Yugoslavia) 2205, YL4HQ (Latvia) 2225 and YM0KA (Turkey) at 2252UTC.

Using a Carolina Windom 80 Special once again was **Rob Hastings M3AHH** in Chelmsford, Essex, who worked LZ1KKZ (Bulgaria) at 1905 followed later by LY1FW/P (Lithuania) at 1912UTC using a Kenwood TS-50 and 10W s.s.b.

Mark Taylor G0LGJ in Dereham has been on holiday this month, but found time to report just one contact - HL0C/P (South Korea) - at 1943UTC using an Yaesu FT-100 and 100W s.s.b. to a Pro-Am whip antenna.

Before heading off to Scotland once again for a well-earned break, **Mike Baker G3SUK** in Stowmarket, Suffolk, found time to use his IC-746, Carolina Windom and 80W s.s.b. to work TA2DS/Q (Turkey) 1145, Z3100MK (Macedonia) 1440, EA8BWW (Canary Islands) 2006, ES1BA (Estonia) 2029, IK8WEJ/P (Italy), T91EDK Bosnia-Herzegovina) 2043, UE6AWF/P (European Russia) 2109 and 4X4BO (Israel) at 2124UTC.

Also on the band was **Steve M3SWB** whose p.s.k. found LX1NJ (Luxemburg), US0GA (Ukraine) 2105 and 4X4DZ (Israel) at 2137UTC.

THE 18 & 21MHZ BANDS
The 18MHz band provided **Rob M3AHH** s.s.b. contacts with SP9MRO/P (Poland) 1922, OD5NH (Lebanon) 1927, VE1BU (Canada) 1930 and MI1MRV (Northern Ireland) at 1950UTC.

Onto 21MHz where the s.s.b. of **Mike G3SUK** found 9A5KV/P (Croatia) on Sipan Island EU-016, HF650O (Poland) 0831, OH0R (Aland Island) EU-002 at 1314, FM/IV3JUI (Martinique) NA-107 at 1936 and VP5/IK2SGC (Turks & Caicos Islands) NA-022

at 2204UTC.

Welcome now to new reporter **Geoffrey Powell M3UXB** in Tamworth, Cheshire, who uses an Icom IC-746 and 132 foot dipole approximately 45 feet high. This set-up appears to be working well judging by the 21MHz log received and contacts include J49PC (Crete) 1200, YI/NG5L (Iraq) 1315, ET2AA (Ethiopia) 1550, EC8AY (Canary Island) 1555, ZS1NL (South Africa) 1634, OD5ZX (Lebanon) 2020, PY2NY (Brazil) 2025 and LU3DL (Argentina) 2110UTC.

The c.w. of Ted G2HKU found VP2E (Anguilla) NA-100 at 2110 and V44KJ (St. Kitts & Nevis) NA-104 at 2115UTC. Also on this band was **Martyn M3VAM** who used s.s.b. once again to work ZC4RR (UK Sovereign Bases on Cyprus) at 1915 and CQ3T (Madeira Island) a little later at 2248UTC.

THE 28MHZ BAND

Finally, to the 28MHz band now and the log of **Paul Burgess M0CCQ** in Ellesmere, Cheshire, who used his FT-920 with 300W to a 5-element Yagi working VK6TQ (Australia) in Hillarys, Western Australia at 0853, OH0JTU (Aland Island) 1939, PY7PT (Brazil) 2058 and VP2E (Anguilla) at 2212UTC.

SIGNING OFF

That about wraps things up for another month. I hope I managed to fit you all in as I rushed to put this column together after returning from two weeks training with my local Sea Cadet Unit in Gibraltar. A great time was had by all and I even managed a little QRP operating during some rare 'time off' using my FT-817 and simple dipole.

Thanks to **Tedd Mirgliotta KB8NW** editor of the *OPDX*

Bulletin and **Mauro Pregliasco I1JQJ** editor of the *425 DX News Sheet* for all the DX information.

Have a good DX filled month.

73. *Carl GW0VSW*



● Up high - Pulu climbing his tower.

DATA BURST

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I have just discovered my youngest reader, a young lady called **Rosie McGready**, aged four. Rosie, the youngest sister of **Eleanor** who featured on the Topical Talk page in August 2002, spotted the 'Tux' logo in my last column ... when I said I was going to have a look at the Linux operating system in this issue.



● Fig. 2: Red Hat - or Blue Square?

So, what is the Linux operating system (OS)? Well that's a difficult question to answer simply, as it's many things to many people, as it may be tailored to various general types of operation. It can exist as a text-only Command

Line Interface (CLI) that operates as DOS did (does?) on PCs. Or, as is becoming more usual, the operator may use a more graphical Windows, Icons, Mouse Pointer (WIMP) interface to set a command into action.

With Linux there are several different windowing interfaces, so the user has a choice. The interface only conveys the operator's wishes to the underlying operating system, and the results of these actions back to the operator as a graphical display. When using a Microsoft Windows (in any of its guises), the interface you have is the only one you can use, any changes are largely cosmetic. (I'll look at the Macintosh interface in a later 'outing').

SIMPLY DESCRIBED

But firstly, let me take a couple of steps backwards, and describe (simply) the system behind Linux. The Linux OS, conceived by **Linus Torvalds** as part of his studies at university, was designed to mimic the Unix operating system. And Linux grew from there. Linus still maintains overall control of the OS, although there are many 'flavours' to be found.

Linux, like Unix, is designed to be an expandable OS, and to appear to be independent of the machine it runs on. There are versions of Linux to run on many microprocessors, not just on PC clones. The logic behind the Linux system is somewhat different to a basic Microsoft Windows machine.

With Windows 95, 98 or ME, the underlying system is basically DOS (where disk drives have a letter to access them). Floppy drives are 'A' or 'B', hard disk and

now look at getting hold of a copy of Linux to try out - and don't worry about getting hold of different copies, in general they're free! Well - almost free, other than the cost of copying and postage. A good place to start, if you have internet access is <http://www.yourlinux.com>

Linux distributions (or 'distros') may be obtained from **Yourlinux.com** for the princely sum of £2 per copied CDROM. Individual distros can be from one to three CDROMs making it worth getting hold of several versions to try out. I can recommend the **Suse**

TEX SWANN G1TEX/M3NGS TAKES AN INITIAL LOOK AT LINUX

CDROMs (or DVDs share the 'C' to 'Z' drive labels. Any installed software will usually only run from the disk drive that it was 'installed to'.

If you add another hard drive to the machine the CDROM, is likely to have another drive-letter assigned to it and may no longer be accessed by programs that worked before. Linux, on the other hand, is a complete system and resources are available by function rather than by drive letter assignment.

MULTI-USER

Linux is a multi-user system, which is designed to be used by one or more separate users, each one with an individual login identity and password.

These 'ordinary' users have restricted access to system areas, usually getting only 'run' access to programs, but being unable to change any system setup parameters.

Changes to system parameters and setup are the prerogative of the 'Superuser' ('root' user) only. When installing a Linux system, you will be asked for a 'root' password. **Do not forget this password, for without it no changes can be made to the system.** Normally, during the installation process, you'll be offered the chance to 'add a user' and password. This is to be your 'normal' login when running Linux.

After the necessary words of warning, let's

version, **Fig. 1**, the 'Blue Square', **Fig. 2** (which seems to be a complete **Red Hat** Linux installation) or the **Mandrake** version, **Fig. 3**.

QUITE EASY

Each installation makes it quite easy to install a working system on a spare PC and although I've installed all three of them, many of the screens have been 'grabbed' while using Suse and Red Hat (Blue Square) systems. In general each installation will be slightly different, but they all follow along the same general lines.

Firstly, each system will require that your PC can boot from the CDROM (or DVD) to begin the installation. So, go into the BIOS setup and set the CDROM up as the first boot device. (You'll need a basic system with a hard disk of around 2Gb or more for a basic install).

If you are new to Linux (a 'newbie') then don't try this on a hard disk with your Windows system on it - you may loose everything!

After the initial boot, **Fig. 4**, the hard disk needs to be reorganised and formatted. It's likely that the version you're installing will have its own default set-up for the first hard disk, **Fig. 5**. In the first instance it might be easier to allow the system to set the disk as it wants to. (The actual organisation will vary from distro to distro).

Before installation begins, you may have to choose what type of machine you're setting up. In **Fig. 6** you'll see I've chosen a simple 'Personal Desktop' set-up. This will predetermine the actual user programs that are copied and made available to users, although

● Fig. 1: The Suse chameleon.



● Fig. 3: Mandrake's logo.

you can also select individual programs too.

You may be offered the chance to make other changes to the system, such as the network (TCP/IP) address, etc. At about this time, the graphical interface will be set up to the machine too. I've found that most installations make excellent 'guesses' about the hardware that it's running on.

I've found that in most cases, just choosing the default option offered on installation is usually a good choice if you're unsure - it's easy to change it afterwards! Then sit back and let installation begin!

NOW LOG IN

After installation, and a reboot, it's now time to log in! Initially, I would suggest logging in, **Fig. 7**, with the user name and password that you chose earlier. **Unless you are confident, do not log in as 'root' initially.** It's all too easy to make the wrong choice when making changes.

Of the two graphical interfaces most commonly found on Linux systems, I use the K Desktop Environment (KDE) most often. The 'Gnome' graphical interface is also available to use, as well as several others depending on your version of Linux. Each distributor may lean towards one interface or the other.

As you can see from **Fig. 8** the Suse KDE interface looks almost like *Windows*, but unlike *Windows*, you have two or more desktop screens (shown with two desktop screens available), while the Blue Square/Red Hat has four separate ones. It's an easy task to have up to four programs running full screen (but without the clutter of the other programs) and to switch between the screens.

The Linux installations all came with a selection of useable programs (**Figs 9, 10 and 11**), including *Open Office* (a suite of programs, file and operation compatible with *Microsoft Office*) and *Gimp* an excellent graphics manipulation program. Additionally in the case of the Suse version there are some helpful technical programs to play with.

NEXT COLUMN

I invite you to read my next column in February, for an overview of some software for the Linux operating system and programs from many sources. Many of these programs are free to use and copy! There's probably one that's just right for your purposes.

Tex G1TEX/M3NGS

Useful URLs

Some Linux and Amateur Radio software webpages to look at:

www.yourlinux.com

www.radio.linux.org.au

www.radio.org/linux

www.radio.org/linux/HAM-HOWTO-13.html



Fig. 4: Ready to start installing Red Hat's Linux.

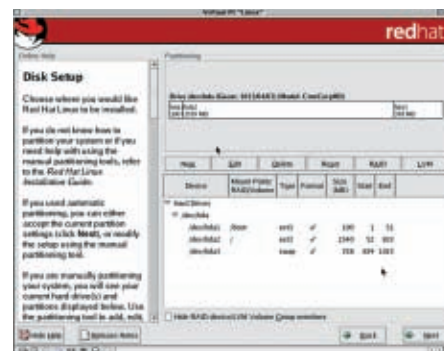


Fig. 5: Choose the hard disk layout.



Fig. 6: Simple choice of set-up type.

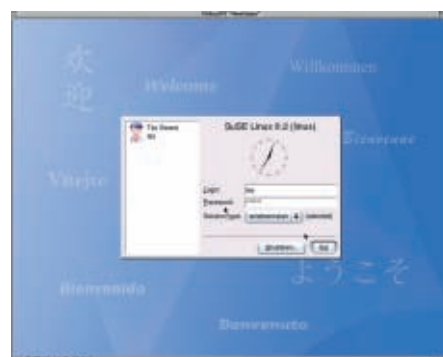


Fig. 7: Now Log in (on Suse).

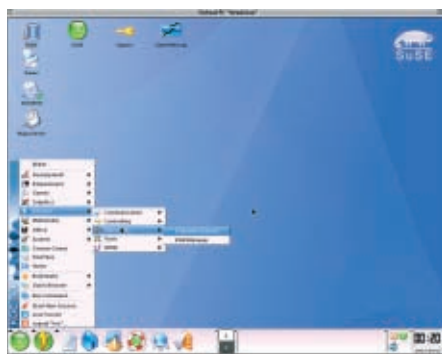


Fig. 8: The desktop in use.

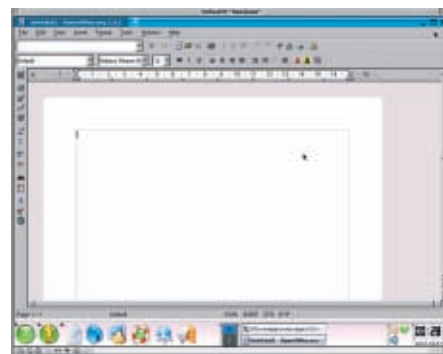


Fig. 9: Open Office - everything that you could need - and free.



Fig. 10: Gimp - a graphics manipulation program to rival Photoshop?

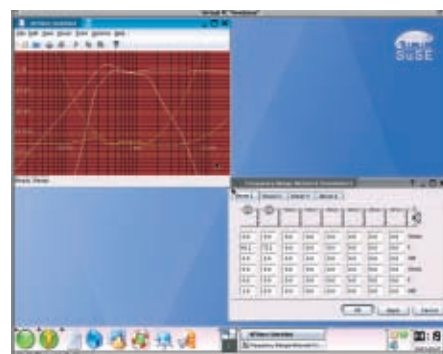


Fig. 11: Kfilter - a graphical filter-creation program that came on the Suse CDROM.



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AEA	PK-232MBX	TNC	£125.00	Kenwood	TS-950SDX	Kenwood's Flag Ship	£1,650.00
AEA	PK-900	TNC	£200.00	Kenwood	VC-10	VHF Converter	£99.00
AEA	PK-96	TNC	£90.00	Kenwood	YG-45SCN-1	270Hz CW Crystal Filter	£100.00
AKD	6001	6m FM Transceiver	£135.00	Kenwood	YK-88C-1	500Hz CW Narrow Filter	£40.00
ALAN	HQ-2000	2kW 26 - 30MHz SWR / Watt Meter	£25.00	Kenwood	YK-88CN1	270Hz CW Filter 8.83MHz	£40.00
Alinco	DJ-G5EY	Dual Band Handheld	£199.00	Kenwood	YK-88S-1	2.4KHz SSB Narrow Filter 8.83MHz	£40.00
Alinco	DJ-X10	Wide Band Receiver	£200.00	Kenwood	YK-88SN-1	1.8K SSB Filter	£40.00
Alinco	DJ-X3	Handheld Scanner	£99.00	Kenwood	YK-88SN-1	1.8KHz SSB Narrow Filter 8.83MHz	£40.00
Alinco	DR-150	2m Transceiver with Air-and Receive	£150.00	Lowe	HF-225	HF Receiver	£175.00
Alinco	DX-70	HF & 6m Transceiver	£399.00	Lowe	HF-350	HF Receiver	£295.00
Alinco	DX-70TH	HF & 6m Transceiver (100W Output)	£475.00	MFJ	MFJ-1272B	TNC / Mic Switch	£20.00
Alinco	DX-77E	HF Base Station	£399.00	MFJ	MFJ-1278	TNC All Mode	£175.00
Ameritron	QSK-5	Amplifier Switch / Pre Heat	£200.00	MFJ	MFJ-207	HF SWR Analyser	£50.00
Ameritron	RCS-4X	4 Way Switch	£99.00	MFJ	MFJ-722	CW / SSB Filter with 5 Watts Amp	£59.00
AOR	AR-3000A	Wide Band Receiver	£450.00	MFJ	MFJ-784DSP	DSP Tunable Filter	£140.00
AOR	AR-3030	HF Receiver, Including PSU	£350.00	MFJ	MFJ-921	VHF 200 Watt ATU	£50.00
AOR	AR-7030	Top Receiver	£550.00	MFJ	MFJ-941E	Versa Tuner	£89.00
AOR	AR-7030+	HF Receiver	£625.00	Microwave	28/144	28 / 144 MHz Transverter	£125.00
AOR	AR-8600	Base Scanner / Receiver	£425.00	Microwave	MOD-144/30	30 Watt Amplifier	£79.00
AOR	AR-8600mkII	Base Scanner / Receiver	£499.00	Microwave	MML-144/100-S	100W 2m Amplifier	£99.00
AOR	AR-950	Communications Receiver	£89.00	Microwave	MML-432/50	50 Watt 70 cms Amp, with Built-In-PreAmp	£85.00
AOR	ARD-2	Decoder	£200.00	Microwave	Pre-Amp	Low Noise RF Switched Pre-Amp	£25.00
AsCom	4 Metre	4 Metre, FM Transceiver, Including PSU. Base Station	£99.00	Midland	PowerPack	CB Power Pack (BOXED)	£50.00
Comet	CD-2700	SWR Power Meter	£49.00	Nissei	TM-3000	1.6 - 60MHz, 10W / 3kW, SWR Meter	£49.00
Cubic	CDR-3550	State of the Art 20 - 1300 MHz Digital Receiver	£4,999.00	OptoElectronics	MiniScout	Frequency Counter	£129.00
Daiwa	CL-22		£20.00	PacCom	TNC-320	TNC	£90.00
Daiwa	CN-1001	Auto ATU	£99.00	Pres. Lincoln	10 METRE	10 Metre Multimode	£175.00
Daiwa	CN-103L	2m / 70cms Cross Needle SWR Meter	£40.00	RadioShack	Pro-60	200 Channel Handheld Scanner (30MHz - 999MHz, WITH GAPS)	£99.00
Daiwa	CN-540		£20.00	RevCo	RS-2000	60 - 519 MHz Home Base Scanner	£79.00
Daiwa	DK-210	Electronic Keyer	£60.00	Revex	V-540	SWR Meter	£25.00
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Datong	ASP	Automatic Speech Processor for FT-817, FT-77 etc.	£70.00	SGC	SG-2020	HF Transceiver	£450.00
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Datong	FL-3	Filter	£75.00	Sony	SW-100E	FM/SW/MW/LW Portable Receiver	£90.00
Datong	RFA	Broad Band Amplifier	£20.00	Spectrum	RP-65		£20.00
Diamond	SX-100	SWR & Power Meter - 1.6 - 60MHz	£65.00	Standard	C-156E	2m Handheld Transceiver	£125.00
Drake	SW-8	World Band HF Receiver	£375.00	Standard	C-500	Dual Band Handheld	£99.00
Fairhaven	RD-500VX	Wide Band Receiver	£525.00	Standard	C-510	2m / 70cms Handheld Transceiver	£125.00
Global	AT-1000	Manual Short Wave Tuner	£50.00	Standard	C-510E	Dual Band Handheld	£99.00
Hunter	750	Linear Amplifier	£599.00	TenTec	RX-350	HF Receiver	£999.00
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Icom	IC-2100H	2m FM Mobile Transceiver	£150.00	Tono	T-777	Communications Terminal	£120.00
Icom	IC-2710H	Dual Band Mobile	£225.00	Transverter	QM-70	28/144 Transverter	£100.00
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Icom	IC-451E	70 cms Base AC	£299.00	Trio	TR-9130	2m All Mode Transceiver	£250.00
Icom	IC-471E	70cms Multimode Transceiver	£299.00	Uniden	UBC-860XLT	Base Scanner / Receiver	£99.00
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Icom	IC-505	50 MHz Multimode Transceiver	£275.00	Welz	AC-38M	200W Mobile Matching Network	£50.00
Icom	IC-575A	50 MHz Multimode Transceiver	£450.00	Welz	CH-20A	Antenna Switch	£15.00
Icom	IC-7100	25 - 2000 RECEIVER	£575.00	Welz	CH-20N	Antenna Switch	£15.00
Icom	IC-720A	HF & FM Transceiver	£400.00	Welz	CT-150	Dummy Load	£50.00
Icom	IC-735	Base Or Mobile Transceiver	£399.00	Welz	SP-15M	SWR Meter	£35.00
Icom	IC-740	HF Base Transceiver	£350.00	WinRadio	SP-380	SWR & Power Meter 1.8 - 500MHz	£30.00
Icom	IC-7400	HF / 6m / 2m Built In ATU	£999.00	WinRadio	WR-1550E	Trunking Software	£450.00
Icom	IC-746	HF / 6m / 2m Built In ATU	£875.00	Yaesu	ATAS-100	Yaesu Active Tuning Antenna System	£175.00
Icom	IC-746pro	HF / 6m / 2m Built In ATU Latest DSP Radio	£999.00	Yaesu	FL-2025	Amplifier	£90.00
Icom	IC-756	HF / 6M All Band Transceiver	£950.00	Yaesu	FP-30	Power Supply - FT-897, FT-857	£189.00
Icom	IC-756pro	High Class Transceiver	£1,400.00	Yaesu	FP-700	Power Supply	£100.00
Icom	IC-821H	Dual Band Base - All Mode	£599.00	Yaesu	FP-707	Power Supply Unit	£80.00
Icom	IC-910	2m / 70cms Base Transceiver	£999.00	Yaesu	FP-757GX	Power Unit for FT-757	£300.00
Icom	IC-E90	Tri-Band Handheld	£220.00	Yaesu	FR-101	HF, 2m, 6m Base Transceiver	£399.00
Icom	IC-R2	Handheld Scanner	£99.00	Yaesu	FRG-8800	Receiver Including Converter	£399.00
Icom	IC-R5	Handheld Scanner	£125.00	Yaesu	FRT-7700	Antenna Tuner for FRG-7700	£60.00
Icom	IC-R10	Handheld Scanner	£229.00	Yaesu	FRV-7700	Converter for FRG-7700	£60.00
Icom	IC-R70	HF Receiver	£299.00	Yaesu	FT-100	HF / 6m / 2m / 70cms Mobile Transceiver	£499.00
Icom	IC-R7000	MINT CONDITION!!! Receiver	£550.00	Yaesu	FT-1000MP	HF Base Station with Built In ATU with DSP	£1,199.00
Icom	IC-R71E	Receiver	£325.00	Yaesu	FT-1000PmkV	200W DSP HF Transceiver	£1,800.00
Icom	IC-R72	Receiver	£350.00	Yaesu	FT-1000PmkV-Field	Top HF Radio - AC	£1,500.00
Icom	IC-R75	Receiver (With DSP Unit)	£499.00	Yaesu	FT-101ZD	HF Base Transceiver	£275.00
Icom	IC-T21E	2m Handheld Transceiver	£60.00	Yaesu	FT-1500M	2m 50W Mobile Transceiver with DTMF Microphone	£129.00
Icom	IC-W2E	2m / 70cms Handheld Transceiver	£140.00	Yaesu	FT-221R	2m Multimode Base Station	£200.00
Icom	PS-55	Power Supply Matching IC-735	£100.00	Yaesu	FT-2600M	Mobile VHF / FM Transceiver	£120.00
Icom	RC-7000	Remote Control	£40.00	Yaesu	FT-290RmkII	2m Multimode Mobile Transceiver	£225.00
Icom	SP-20	External Speaker	£99.00	Yaesu	FT-41R	Handheld Transceiver	£120.00
IJS	NIR-10	Noise / Interference Reduction Unit	£99.00	Yaesu	FT-50R	Dual Band Handheld	£150.00
JRC	JST-245	HF 50MHz 1500w AC Base Transceiver	£1,295.00	Yaesu	FT-5100	Dual Band Transceiver	£199.00
JRC	NRD-525	HF Receiver	£375.00	Yaesu	FT-51R	2m / 70cms Handheld Transceiver	£199.00
JRC	NRD-545	DSP Receiver	£899.00	Yaesu	FT-690R	6m Multimode Mobile Transceiver	£199.00
JRC	NRD-L2000	1kW Linear Amplifier Solid State (VERY RARE!!!)	£1,600.00	Yaesu	FT-707	HF 100W Transceiver	£275.00
Kamtronics	KAM	Multimode TNC	£140.00	Yaesu	FT-7100M	2m / 70cms Mobile Transceiver	£220.00
Kent	RA	Morse Paddle Key	£40.00	Yaesu	FT-726R	6m / 2m / 70cms / HF Transceiver	£575.00
Kenwood	23cms	23cms Module for Kenwood TS-790E	£299.00	Yaesu	FT-726R	2m / 70cms / HF Transceiver	£425.00
Kenwood	AT-230	ATU for TS-830S etc	£130.00	Yaesu	FT-730R	70cms Mobile Transceiver	£120.00
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Kenwood	PS-10	Power Supply for TR-9130 etc.	£40.00	Yaesu	FT-790R	70cms Multimode Transceiver	£175.00
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Kenwood	PS-430	Power Supply	£100.00	Yaesu	FT-8100R	2m / 70cms Mobile Transceiver	£220.00
Kenwood	PS-50	Power Supply	£145.00	Yaesu	FT-817	Mobile HF, VHF, UHF Transceiver	£450.00
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Kenwood	R-5000	Receiver With VHF Converter	£600.00	Yaesu	FTV-1000	200 W Transverter	£475.00
Kenwood	R-600	Receiver	£175.00	Yaesu	FTV-430MHZ	Module for Transverter	£99.00
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Kenwood	TM-255E	2m Multimode Transceiver (MINT)	£395.00	Yaesu	VR-120	FM / WPM / AM Receiver	£99.00
Kenwood	TM-451E	70cms Mobile Transceiver - Data Ready	£175.00	Yaesu	VR-500	Yaesu Handheld Scanner	£149.00
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Kenwood	TS-450S	HF Base / Mobile	£499.00	Yaesu	XF-114SN	Triband Handheld	£240.00
Kenwood	TS-50S	HF Mobile / Base Variable Power	£425.00	Yupiteru	MVT-3300	2KHz SSB Filter	£60.00
Kenwood	TS-570DGE	Mobile / Base HF Transceiver	£675.00	Yupiteru	MVT-7100	Handheld Scanner	£99.00
Kenwood	TS-790E	Dual Band Base - All Mode	£750.00	Yupiteru	MVT-7300	Handheld Scanner	£129.00
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						Base / Mobile Scanner	£199.00

 <p>QUADRA £3,725.00 HF & 6m Solid State Amplifier. 1kW Output. Built in Tuner. Auto Bandswitch.</p>	<p>YAESU Available from RADIOWORLD 42, Brook Lane, Great Wyrley, Walsall, WS6 6BQ. Tel: 01922 414796 Fax: 01922 417829 Web: www.radioworld.co.uk E-mail: sales@radioworld.co.uk</p>		 <p>FT-1000MPmkV £2,290.00 200W HF Transceiver, 220V AC PSU, auto ATU, Collins Filter</p>
 <p>FT-1000MPmkV-Field £1,739.00 100W HF Transceiver, 220V AC / 13.8 DC. Auto ATU, Collins Filter</p>	 <p>FT-847 £1,149.00 HF/6m/2m/70cms plus 4m Satellite Transceiver, 100W on HF/6m 50W on 2m/70cms</p>	 <p>FT-897 £975.00 Portable Transceiver HF/6m/2m/70cms 100W on HF/6m 50W on 2m. 20W on 70cms</p>	 <p>FT-857 £789.00 Mobile Transceiver with DSP. HF/6m/2m/70cms. 100W on HF/6m 50W on 2m. 20W on 70cms</p>
 <p>FT-817 £525.00 Mobile/Portable Transceiver. HF/6m/2m/70cms. <i>Also available now with DSP from bhi for an extra £89.95 plus fitting</i></p>	 <p>FT-8900R £339.00 Quad-Band Mobile Transceiver. 10m/6m/2m/70cms. 50W on 10m/6m/2m 35W on 70cms.</p>	 <p>FT-8800E £339.00 Dual Band Mobile Transceiver. 2m/70cms. 50W on 2m. 35W on 70cms</p>	 <p>FT-7100M £289.00 Dual Band Mobile Transceiver. 2m/70cms. 50W on 2m. 35W on 70cms</p>
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As is so often the case, there's some not-so-good news to get out of the way first this month. That means 'cuts' of course. The latest broadcaster to fall victim is the **Australian Broadcasting Corporation (ABC)**. As usual, the government wants the broadcaster to make do with less money, around 10 million pounds per annum, and as usual, services begin to look shaky.

The boss of ABC has come up with a politely-named 'restructuring' programme, which means

sending and raising awareness in countless ways about this issue with their local media".

DIGITAL RADIO

There has been some quite remarkable progress in Digital Radio. The big snag has always been the radios as systems such as DAB, DRM and WorldSpace all require different radios. It was obvious years ago, that some kind of 'universal radio' was needed, a bit like we have for all a.m. and f.m. broadcasting. So three loud cheers for the first step in this much-needed process, as the

Following an intensive promotional campaign, consumer awareness of DAB digital radio in the UK is at 30% and rising, and there are clear signs that it is entering the mass market. The number of retailers stocking DAB digital radio in the UK has grown from 600 to over 3,000. The combination of new programme choice, improved sound quality and easy tuning, where wavelength numbers are a thing of the past is proving popular with the consumer. Perhaps you will find a digital radio in your Christmas stocking!

TOM HAS NEWS OF A NEW SHORT WAVE SERVICE UP AND RUNNING IN AUSTRALIA - AND MUCH MORE!

many little cuts in domestic broadcasting and a few redundancies. At the moment, it's not certain that **Radio Australia** or the **Asia Pacific** TV service will be affected.

However, rather better news, an unusual short wave service has just been started in Australia, for the Yoingu people of north-east Arnhem Land. It's on 5050kHz, and is transmitted from the quaintly-named Humpty Doo, near Darwin. Transmissions are in the Yoingu language, and as the Yoingu are in a bad way economically, they will benefit from the information and education that short wave radio can bring to their remote region.

There's been a setback for a long wave project in Norway. Northern Star International Broadcasters were planning to transmit on 216 metres from the Sveio short wave site. But transmitter operators Norkring have declared that no further plans can be made, in view of the environment at Sveio and the general decline of a.m. broadcasting in Norway. Not so good.

The **Radio for Peace International** saga goes on. The radio station, which broadcasts messages of peace and UN programming, found itself the subject of an eviction notice, served by the University for Peace! The radio station has been on university premises for over 15 years, unmolested. Meetings have taken place, but no progress at the time of writing.

'Conversations' were due to end on 31 October. The station manager says: "RFPI wishes to thank all listeners and supporters for their crucial dedication and commitment to an ongoing campaign of letter writing, petition

DAB Forum and DRM have decided to get together.

The two organisations have agreed to collaborate on the development of their systems, a move that they anticipate will 'pave the way for a new genre of future digital radios, enabling listeners to receive any digital radio service

without having to worry about the underlying transmission system'. Which is definitely a revolution, as each system separately will have quite a hard time, especially the newer DRM.

Some DRM broadcasting is already in place. On 16 June 2003, 16 leading broadcasters made radio history by sending the world's first DRM broadcasts across the globe. Since then, the number of stations transmitting live, daily DRM programmes and periodic specials has risen to 27. There are DRM programmes now reaching Europe, the USA, Canada, the Middle East, Australia and New Zealand.

As for DAB, things seem to be looking up, in the UK at any rate. The Supermarket giants Tesco and Sainsbury's are to start stocking DAB digital radios. Over the next few months, Tesco will trial sales of digital radios in 17 of its stores, while Sainsbury's will roll out in 125 outlets.

SERIOUS INTERNET BROADCASTER

The **Voice of the Mediterranean (VOM)**, well-known as an international radio broadcaster, is now setting out to be a serious Internet broadcaster as well. They have launched a 24/7 Internet-only service called VOMi, which you can access via www.vomradio.com by using the 'Listen to VOM Radio live' button.

Why is VOM doing this? VOM Managing Director **Richard Muscat** said: "This medium, a first for Malta, will be able to transmit live programmes to our ever increasing numbers of listeners around the world. Their feedback so far has been overwhelming. The service will offer live interaction for them".

The VOM has been seriously busy with

frequent re-designs of its website, which has been nominated for numerous web design awards and receives an average of 28,000 hits a day. Future plans include a web cam for a view of live studios.

Oh yes, the short wave. In my opinion, while short wave offers simple,

universal communication, especially for those who don't have the Internet, stations' websites can add a great deal of helpful information and programming, even for the most dedicated listeners.

Incidentally, VOM's English schedule is very simple: 0800-0900 (Sun) on 9.605; 1730-1830 (Mon-Sat) 12.060; and at 1900-2000 (daily) on 12.060MHz. For transmitter buffs, 9.605MHz comes from Rome at 100kW and 12.060 is sited near Moscow at 240kW. The VOM transmits in Arabic, English, French, German, Japanese and Maltese.

Bye for now, Tom



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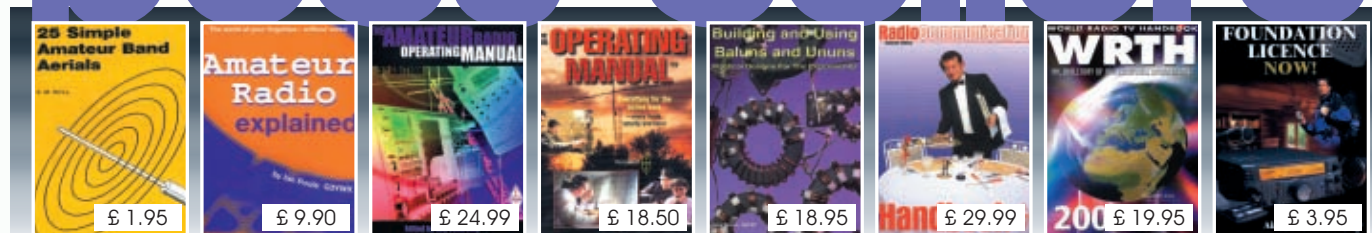
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This month Rob G3XFD shares some interesting correspondence from a reader who enjoyed the 'Back to the bench...at Premier Radio' article published in the October issue.

Amongst the topics discussed at the W&DARS were the old time projects and television receivers, and the huge amount of small advertisers selling War surplus which *PW* carried in the late 1940s and well into the 1950s. I mentioned the Premier Radio article which was due to be published...and the audience memory floodgates opened!

I'll now let Ron take up the rest of the story:
*"Dear Rob...**Jim Leigh's** article in October's PW certainly brought back memories to me as I built the 'Inexpensive Televisor' from (I think, Radio Constructor) using a 5CP1 tube from an American radar set giving an even smaller picture area than*



● Fig. 2: The ubiquitous SP61 valve featured in many projects...including Ron Davies GOWIX's receiver kit.



● Fig. 1: The 'Sleeping Beauty' awakes!

I certainly did enjoy them Ron...and I mentally ducked myself...remembering just how dangerous exploding electrolytic 'cans' could be! Thanks for the memories...any more of the same readers?

prw

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- **Neill Taylor G4HLX** announces the winners of this year's PW QRP Contest

● **Tim Walford G3PCJ** presents part 2 of his Sidcot 3.5MHz c.w. Transceiver project



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