Practical Wireless

PW

amateur radio & more!

BUMPER ISSUE

with this issue

FREE

MAINLINE SURPLUS

32-page Catalogue

DREAM MACHINE

The Yaesu FT-1000 MkV

Portable & Practical

The PW Picnic Pole

Build a Multi-Impedance Balun

August 2001 **£2.75**

9 770141 085051 08>

WATERS & STANTON

e-mail: sales@w

Enquiries: 01702 20683

Fax: 01702 205843

FT-817

160m - 70cms 6W Portable

£799.95
Plus £8.00 Carr.

FT-817 is an incredible design feat by Yaesu, and world reviews agree that there has never been anything like it. It's not expensive either. So why not get out in the fresh air, or put one in the car, and put the fun back into your radio. Check out the exciting AT & ATX portable antennas on elsewhere on this page.

QAMP Single band 20 Watt Linear

Ideal for the FT-817 but only available as a kit. Models for 80m, 40m, 20m
£49.95 Case £13.95

Z-11 Auto ATU for FT-817

160m - 10m £199.95
Kit £169.95

OTT-1 One Touch Tune

Plugs into rear of FT-817and gives immediate carrier for adjusting ATU or checking VSWR
£59.95

YAESU

YAESU FT-1000MP Mk-V

200W HF All Mode Transceiver

FREE 3 YEARS WARRANTY

£2899
Plus £8.00 Carr.

The New Industry Standard ..... Would a Serious DXer accept anything else ?

In choosing the FT-1000MP Mk V, you will be proud to own a rig with an impressive specification, reputation and lineage. Its outstanding performance and attention to detail, makes this the premier HF transceiver for the 21st Century. This radio is a class leader.

YAESU FT-1000MP AC

160 - 10m All Mode
19.4% APR Available

SAVE

£1799
Plus £8.00 Carr.

If you are looking for the rig with every feature including dual receive - then look no further!

It has stood the test of time and used by the worlds top DXers and DXepeditions. Its excellent receiver combined with its superior transmitted signal makes this a natural choice for the HF enthusiasts.

19.4% APR: Deposit £199 and 36 months at £57.77.

ICOM IC-746

160m - 2m All-mode

£1395
Plus £8.00 Carr.

FREE 3 YEARS WARRANTY

Your chance to purchase one of the most popular "all-band, all-mode" transceiver at a very competitive price. The IC-746 offers 100 Watts output on all bands and has a receiver performance to match. Limited stock at this price.

19.4% APR: Deposit £145 and 36 months at £45.13.

KENWOOD TM-241E 2m Mobile

SAVE **£149**
Plus £8.00 Carr.

SAVE **£100**

Your chance to purchase this 50W 2m mobile at a fraction of the original price. We have purchased the entire stock. Includes CTCSS tones and can be wide-banded. Limited stocks available.

KENWOOD TS-2000

160m - 70cms + 23cms

FREE 3 YEARS WARRANTY

£1695
Plus £8.00 Carr.

The amazing TS-2000 offers coverage from HF to UHF. And you can go right up to 23cms with the optional module Monitor the DX cluster whilst working other DX, optimise your satellite contacts, enjoy the benefit of built-in ATU. It's all there in one very compact box.Colour brochures available on request.

19.4% APR: Deposit £299 and 36 months at £90.27.

ICOM IC-756PRO

1.8 - 62MHz 100W

FREE 3 YEARS WARRANTY

£1895
Plus £8.00 Carr.

Free desk/mic

You've read the rave reviews, and you have seen our recommendation on the web site. This radio with its amazing receiver and digital filtering, also includes auto ATU and real-time spectrum scope. A great DX rig.

19.4% APR: Deposit £229 and 36 months at £71.13.

YAESU FT- 920AF

HF 160m-8m-100w

SAVE

£1099
Plus £8.00 Carr.

Includes full DSP and internal ATU. High tech receiver with dual tuning controls. Uses many of the FT1000 MP features but at a more attractive price. Full break-in on CW and includes a data port for TNC.

19.4% APR: Deposit £129 and 36 months at £35.02.

ICOM IC-775 DSP 200W HF

Last of The Many

SAVE **£900**

£2099
Plus £8.00 Carr.

YAESU FT-847

160m - 70cm All Mode

SAVE

SCOOP!

FREE 3 YEARS WARRANTY

£1199
Plus £8.00 Carr.

The FT-847 has firmly established itself as a true all-band, all-mode transceiver. Loved by the VHF & UHF operators, and superb for satellite operation, it also offers great HF performance. We have sold more than any other dealer, which says a lot about our reputation and our price. Phone for free leaflet today. And remember, our stock is genuine UK, not modified overseas models!!

19.4% APR: Deposit £129 and 36 months at £38.63.

ICOM IC-706MK2G

160 - 70cm All Mode

FREE 3 YEARS WARRANTY

£1099
Plus £8.00 Carr.

Still a firm favourite with mobile operators and those who want a compact all-mode, all-band station. Phone for latest leaflet.

KENWOOD TS-570DG

160 - 10m All Mode

FREE 3 YEARS WARRANTY

£849
Plus £8.00 Carr.

19.4% APR Available

Probably the most underestimated transceiver on the market. Don't be fooled by the low price, the TS-570 has one of the best receivers around. One of the best buys if you want top HF performance on a budget.

19.4% APR: Deposit £89 and 36 months at £27.43.

KENWOOD TS-50S HF 100W

SAVE **£599**
Plus £8.00 Carr.

Kenwoods TS-50S has stood the test of time. 100W from 160m to 10m makes this a great value rig. Ideal for mobile or portable

wsplc.com on-line catalogue: www.wsplc.com

5/204965 orders only: 08000 73 73 88

WATERS & STANTON

TH-D7E

£299 Plus £5.00 Carr.

TM-D700E

£449 Plus £8.00 Carr.

JC Jaycee

GLENROTHES SHOP
20 WOODSIDE WAY,
GLENROTHES,
FIFE,
KY7 5DF
01592 756962

FT-50R

£169 Plus £6.00 Carr.

LOWE

MATLOCK SHOP
CHESTERFIELD Rd,
MATLOCK,
DERBYSHIRE,
DE4 5LE
01629 582380

VX-1R

WATERS & STANTON

VX-5R

£269 Plus £6.00 Carr.

HOCKLEY SHOP
22 MAIN Rd,
HOCKLEY,
ESSEX,
SS5 4QS
01702 206835

NEW SCOTTISH PREMISES

GLENROTHES

EDINBURGH

MATLOCK

BIRMINGHAM

HOCKLEY

LONDON

MasterCard VISA

WATERS & STANTON

Orders only: 08000 73 73 88

Web: www.wsplc.com E-mail: sales@wsplc.com

VISA MasterCard

ICOM IC-R3 PICTURE THE DIFFERENCE

NEW

* Full UK TV coverage
* 0.495-2450 MHz
* Advanced Lithium battery
* ALL DAY battery life
* 450 Memories
* FM / WFM & AM
* 2" TFT colour display
* Bandscope & automatic squelch
* 8 background colour choices
* Size 61 x 120 x 33mm

Phone Plus £5.00 Carr.

also receives 23 & 13cm amateur FM-TV 900-1300MHz 2250-2450MHz

SEC-230 SMART TUNER

£359.95 Plus £8.00 Carr.

Covers 1.6 - 30MHz and handles 3 - 200W. Designed for end fed wires, just connect to 12V and feed with RF via coax. Can be mounted outside or at top of mast.

MICROSET AMPLIFIERS

All FM/SSB with GaAsFET pre-amps and RF switched. 13.8V DC powered.

R-25	2m 1-4W in / 30W max out	£84.95 B
RV-45	2m 3-15W in / 45W max out	£95.95 B
R-50	2m 1-7W in / 50W max out	£89.95 B
SR-100	2m 4-25W in / 100W out	£169.95 B
SR-200	2m 10-50w in / 200W max out	£299.95 B
VUR-30	2m/70cms 1-5W in / 20/30W out	£199.95 B
RU-20	70cms 3-15W in / 20W max out	£119.95 B
RU-45	70cms 3-15W in / 45W max out	£165.95 B
RU-432-95	70cms 6-12W in / 95W max out	£499.95 C

WCN-3 Adaptor. For all transceivers using SMA connector. Converts to BNC £3.95 A

SPEAKER MICS.

Including Yaesu and Icom 4-way jack.

QS-112-Y Yaesu £16.95
QS-112-K Kenwood £16.95
QS-112-Y4 4-way £16.95

Phone if in doubt about suitable model.

QS-112

£16.95 Plus £2.00 Carr.

HANDS-FREE MOBILE MICS.

£42.95 Plus £2.20 Carr.

Comes complete with PTT switch box for mounting on gear lever. Head/shoulder band makes for easy wear. Models for almost every transceiver. Phone for confirmation of model number to suit your rig.

CUSHCRAFT HAM RADIO ANTENNAS

MA6B MINI-BEAM

£299 Plus £8.00 Carr.

2 El. on:	20m, 15m 10m	
Gain:	3.6dB, 4.8dB, 5.3dB	
F/B	10dB, 12dB, 22dB	
Dipole:	17m and 12m (0dB)	
Power	1.2kW (2:1VSWR)	
Boom:	2.2m	
Element	5.2m	
Radious	2.7m	

A3-S	10-15-20m 8dB 2kW 3 el. 4.27m boom	£389.95 D
A-743	10/7MHz kit	£129.95 C
A4-S	10-15-20m 9dB 2kW 4 el. 5.84m boom	£469.95 D
X7	10-15-20m 13dB 2kW 7 el 5.48m boom	£549.95 D
X9	10-15-20m 14dB 2kW 9 el 8.5m boom	£799.95 D
R-6000	6 - 20m vert.	£299.95 D
R8	6-40m vert 8.7m	£399.95 D
TEN-3	10m 3 el.	£159.95 D
D4	10-40m 10.92m 2kW rotary dipole	£259.95 D
D3	10 - 20m 7.86m 2kW rotary dipole	£189.95 D
XM240	40m 2 el	£569.95 D
XM520	5el 20m	£629.95 D
XM515	5 el 15m	£359.95 D

Phone for catalogue.

MFJ-269 ANALYSER

160m - 70cm On-site Antenna Analyser.

£299.95 Plus £6.00 Carr.

MFJ-259B 1.8 - 170MHz £229.95

Imagine being able to plug into your antenna or feed line and make meaningful adjustments on site. Or be creative and turn hours into minutes and ideas into antennas! Read what RadCom says and make your own mind up. One of the best investments you will ever make!

MFJ-CUB QRPERS

NEW

The MFJ Cub single band transceivers are small enough to sit in the palm of the hand. They provide up to 2 Watts CW output (variable to mWs), have full break-in and on-air sidetone. Available ready built or as a half kit. The kit version has all the surface mounted components installed. You only need to add the larger items, knobs and case.

Kit £89.95 Built £139.95

Models available for 80m, 40m, 30m, 20m and 15m.

Includes cabinet and controls.

Postage £6.00

HEIL AUDIO

Appointed by Heil as UK Distributor

Proset-4	H'phone/boom mic	£129.95
Proset-5	H'phone/boom mic	£129.95
Micro-4	Lightweight ver.	£99.95
Micro-5	Lightweight ver.	£99.95
AD-1	Cables Y. K. or I	£14.95
HM-10-4	Stick mic	£69.95
HM-10-5	Stick mic	£69.96
CC-1	Cables Y. K. or I.	£25.95
HC-4	Spare insert	£32.95
HC-5	Spare insertt	£32.95

You can convert your mic to Heil by simply pur chasing HC-4 or HC-5 insert.

AVAIR AV-600

£59.95 Plus £5.00 Carr.

1.8 - 525MHz VSWR Meter 5/20/200W scales. Dual sensors, PEP reading. More accurate than built-in meters.

THE TOUGHEST JAPANESE ROTATORS

These are tough rotators that weigh almost twice as much as similar priced units and have great turning capacity. Made by Create of Japan, they will handle 4 element HF yagis with ease. Our own Create model has been on our roof for 12 years turning a 4-element HF beam. We wouldn't use anything else!

RC5-1 Standard control box, OK for 4-el Yagis - needs 7-core cable £349.95C

RC5-3 Control box features pre-set or manual control. Otherwise the same as RC5-1 above £449.95 C

MC-2 Lower mast clamps £49.95 B

LINEAR AMP UK AMPLIFIERS

British made Amplifiers with a Pedigree

Full Range Stocked

Challenger	HF 2 x 3CX800 AT 1.5kW out	£2095 D
Explorer	HF 2 x 3-500ZG 1.3kW out	£1595 C
Hunter	HF 1 x 3-500ZG 750W out	£1195 C
Hunter	6m 1 x 3-500ZG 800W out	£895 C
Ranger	HF 4 x 811A 800W out	£895 C
Discovery	2m 1 3CX800 400 - 1KW out	£1395 C

NEW **W-40SM 40 AMP SWITCH MODE**

£149.95 Plus £6.00 Carr.

Digital display, 3 - 15V rated at 40 Amps continuous. Fully protected and very low noise. Ideal for a wide variety of ham applications. Light weight of 3.5kg and measuring 220 x 110 x 300mm Fixed 13.8V switch.

KH-WS1 WORLD SPACE DIGITAL RECEIVER

NEW IN STOCK

KH-ANT external antenna kit in stock £49.95

£99.95 Plus £6.00 Carr.

This radio has its own mini satellite dish and receives digital WorldSpace broadcast signals via the AfriStar satellite. As well as all the normal VHF FM programmes, you can switch to satellite broadcast signals from CNN, BBC, Bloomberg (multi language), World Radio networks 1 & 2, and lots more. High quality mono via the internal speaker and stereo via the headphone socket. Runs from AC, 4 x D cells (not supplied), or external 6V.

CAROLINA WINDOMS

CW-80 Special

Just 66ft long yet covers 80m - 10m. It will out perform a G5RV and give lower angle of radiation because of the 10ft vertical section which is forced to radiate. It will handle 1.5kW

£89.95 Plus £8.00 Carr.

Other Models (all with low angle radiator stub)

CW-160	160 - 10m 171ft long	£109.95
CWS-160	160 - 10m 133ft long	£99.95
CW-80	80 - 10m 133ft long	£84.95
CW-40	40 - 10m 66ft long	£79.95
CW-20	20 - 10m 34ft long	£77.95

Plus £8.00 Carr.

80-40-20M MINI DIPOLE

The "80 plus 2" Mini - Dipole was designed by our Director, Peter Waters, G3OJV. Just 52ft long, it uses linear loading - no tuned traps. It can be directly fed without ATU and also operates at 2.5:1 VSWR on 15m. Amazingly efficient, it handles 400 Watts and is balun fed. Erect it as an inverted V and it takes up less than 40ft of space. If you have a small garden, don't miss out on the LF bands anymore. £79.95 Carr. £6.00

POWER SUPPLIES

SEC-1223 13.8V PSU

£99.95 Plus £6.00 Carr.

23 Amps - 3.2lbs!

Back In Stock

Beware of cheap noisy supplies that have poor filtering & construction!

Lighter than an IC-706 and about the same size! The SEC-1223 switch mode power supply delivers 23 Amps at 13.8V Thermo fan cooled, it measures just 57 x 177 x 190mm. Will power all 100W rigs and can be changed for 115V AC

WATSON

UK'S TOP SELLING POWER SUPPLIES

£89.95 Plus £8.00 Carr.

Watson power supplies guarantee the very best performance and value for money. Tried and tested, they have been submitted for independent laboratory testing for safety and electrical performance.

W-3A	3 Amp fixed supply.	£22.95 B
W-5A	5 Amp fixed supply	£29.95 B
W-10AM	10 Amp variable supply	£59.95 C
W-25AM	25 Amp variable supply	£89.95 C
W-30AM	30 Amp variable supply	£119.95 C

COMPACT 10 AMP SWITCH MODE PSU

£49.95 Plus £6.00 Carr.

The W-10SM is small enough to fit in a brief case. Measuring just 230 x 100 x 65mm, it's ideal for 50 Watt mobile's etc. Over voltage and current protection.

WEB DIRECTORY

Linear Amp UK
E-mail: sales@lauk.karoo.uk www.linamp.co.uk

G3TUX – Kits, Keys, QRP
E-mail: info@g3tux.com www.g3tux.com

Radioworld
E-mail: sales@radioworld.co.uk www.radioworld.co.uk

Pervisell Ltd
E-mail: ham@pervisell.com www.pervisell.com

The Shortwave Shop
E-mail: sales@shortwave.co.uk www.shortwave.co.uk

AKD
E-mail: roger@akdinfo.com www.akdinfo.com

Nevada
E-mail: info@nevada.co.uk www.nevada.co.uk

To advertise here call Chris or Eileen on
01202 659920

£39.95 inc. VAT + £2.50 P&P

AKD

Unit 5, Parsons Green Estate
Boulton Road Stevenage
Herts SG1 4QG
Tel: (01438) 351710

£159.95 + £6.00 P&P

HF ACTIVE ANTENNA

FREQUENCY RANGE:
30kHz - 30MHz
LENGTH:
400mm
COMPLETE WITH:
★ Fused 12V power cable
★ Power adaptor terminated with phono plug for direct connection to the Target HF3 & HF3S short wave receivers
★ Seven meters coaxial cable
POWER CONSUPTION:
20mA @ 12V
WATERPROOF ANTENNA ASSEMBLY

PHONE FOR LOGUE ON...

HF3S SHORT WAVE RECEIVER

★ **30kHz - 30MHz**
★ **USB, AM & LSB**
★ **10 PROGRAMMABLE MEMORIES**
★ **FULLY SYNTHESISED**
★ **SIGNAL STRENGTH METER**
★ **DATA LEAD FOR CONNECTION TO COMPUTER**
★ **JVFAX OR HAMCOMM SOFTWARE**
★ **PSU AND LONG WIRE AERIAL**

MasterCard VISA SWITCH

Website: akdinfo.com
e-mail:
roger@akdinfo.com

PW

AUGUST 2001
(ON SALE JULY 12)
VOL. 77 NO 8 ISSUE 1133
NEXT ISSUE (SEPTEMBER)
ON SALE AUGUST 9

EDITORIAL OFFICES
Practical Wireless
Arrowsmith Court, Station Approach
Broadstone, Dorset BH18 8PW

☎ (01202) 659910
(Out-of-hours service by answering machine)
FAX: (01202) 659950

Editor
Rob Mannion G3XFD
Technical Projects Sub-Editor
NG ("Tex") Swann G1TEX
News & Production Editor
Donna Vincent G7TZB

ADVERTISEMENT DEPARTMENT
ADVERT SALES & PRODUCTION
(General Enquiries to Broadstone Office)
Chris Steadman MBIM (Sales)
Steve Hunt (Art Director)
Bob Kemp (Layouts & Design)
Peter Eldrett (Typesetting/Production)

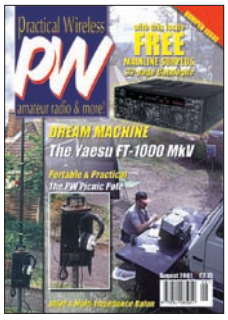
☎ (01202) 659920
(9.30am - 5.30pm)
FAX: (01202) 659950

ADVERTISING MANAGER
Roger Hall G4TNT
PO Box 948, London SW6 2DS

☎ 020-7731 6222
FAX: 020-7384 1031
Mobile: (07885) 851385

BOOKS & SUBSCRIPTIONS
CREDIT CARD ORDERS
☎ (01202) 659930
(Out-of-hours service by answering machine)
FAX: (01202) 659950

E-MAIL
PW's Internet address is:
pwpublishing.ltd.uk
You can send mail to anyone at *PW*, just insert their name at the beginning of the address,
e.g. rob@pwpublishing.ltd.uk



Cover Subject
Summer's here and many Radio Amateurs are taking their hobby on holiday, operating in field day contests and generally making the most of the good weather! With this in mind why not try your hand at developing your own PW Picnic Pole - a concept from **G3XFD** or simply dream of owning a Yaesu FT-1000MP MkV transceiver?

Main photograph by: **Henryk Kotowski SM0JHF**
Inset photographs by: **Rob Mannion G3XFD & Carl Mason GW0VSW**
Design by: **Steve Hunt**

August features

page 17


page 22


page 24


page 33


page 50

August regulars


page 9

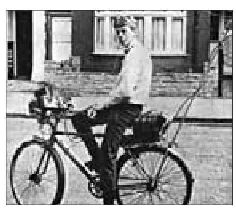

page 11


page 12


page 54


page 70

page 72


page 77

author info

Our Radio Scene reporters' contact details in one easy reference point.

VHF DXer
David Butler G4ASR
Yew Tree Cottage
Lower Maescoed
Herefordshire
HR2 0HP
Tel: (01873) 860679
E-mail: g4asr@btinternet.com

HF Highlights
Carl Mason GW0VSW
12 Llwyn-y-Bryn
Crymlyn Parc
Skewen
West Galmorgan
SA10 6DX
Tel: (01792) 817321
E-mail: carl@gw0vsw.freeserve.co.uk

Keyboard Comms
Roger Cooke G3LDI
Tel: (01508) 570278
E-mail: rcooke@g3ldi.freeserve.co.uk
Packet: G3LDI@GB7LDI

Tune-in
Tom Walters
PO Box 4440
Walton
Essex
CO14 8BX
E-mail: tom.walters@aib.org.uk

In Vision
Graham Hankins G8EMX
17 Cottesbrook Road
Acocks Green
Birmingham
B27 6LE
E-mail:graham@ghank.demon.co.uk

DX Destination
Ed Taylor G3SQX
c/o PW Editorial Offices
Arrowsmith Court
Station Approach
Broadstone
Dorset
BH18 8PW
E-mail: g3sqx@email.com

Down Under
Chris Edmondson VK3CE
Box 123
Eagle Heights
Queensland 4271
Australia
E-mail:editor@radiomag.com

Published on the second Thursday of each mon h by PW Publishing Ltd., Arrowsmi h Court, Station Approach, Broadstone, Do set BH18 8PW. Tel: (01202) 659910. P inted in England by Wa ne s Midlands PLC, Lincolnshire Distributed by Seymour, 86 Newman St eet, London , W1P 3 D, Tel: 0207-396 8000 , Fax: 0207-396 8037, Web http //www seymour co uk. Sole Agents for Aust alia and New Zealand - Gordon and Gotch (Asia) Ltd.; South Africa - Cent a News Agency. Subscriptions NLAND £25, EUROPE £30, REST OF WOR D £32 (Airsaver), REST OF WOR D £37 (Ai mail), payable to PRACTICAL WIRELESS, Subscription Department PW Publishing Ltd., Arrowsmi h Court, Station Approach, Broadstone, Do set BH18 8PW. Tel: (01202) 659930.

Practical Wireless is Published monthly for $50 per year by PW Publishing Ltd., Ar owsm th Court, Station Approach, Broadstone, Dorset BH18 8PW, Royal Mail International, c/o Yellowstone Inte national, 87 Burlews Court, Hackensack, NJ 07601. UK Second Class Postage paid at South Hackensack. Send USA address changes to Royal Ma l Inte national, c/oYellowstone Inte national, 2375 Pratt Bouleva d, Elk Grove Village, IL 60007-5937. The USPS (United States Postal Service) number for Practical Wi eless is: 007075.

ANOTHER PACKED ISSUE

rob mannion's keylines

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

Karen Scott and her colleagues from the Radiocommunications Agency (RA) have become frequent visitors to Amateur Radio shows and other events in recent years. So, it's with regret I've heard from Karen, typically in a personal note to me, that she's on her way to pastures new within the RA.

I appreciate that Karen has had a difficult job at times dealing with an extremely specialist group of people! However, Karen and her team have done a good job, and their attitudes - so very important - towards those of us in the hobby have become far less formal.

Thanks for your input Karen, on behalf of *PW* readers I wish you well in your new job - dealing with broadband fixed wireless access. Hopefully one day we'll get the chance of meeting Karen, her husband and children at rallies once again. They're all charming!

Polling Day

Unusually for a Polling Day - I wasn't in Colchester this General Election! I say this because it struck me as funny that during recent General Elections by coincidence I've been visiting the **Colchester ARS**.

However, even though **I wasn't** in Essex on Polling Day - **I was in East Anglia**, this time as the guest of the **Leiston Amateur Radio Club** in Suffolk, just up the coast - on the Wednesday evening, coincidentally the day before the General Election.

The LARC is an **exceptionally friendly club** and are extremely 'radio active' - in the hobby sense of the words, bearing in mind that the Sizewell nuclear power station is a very near neighbour! A great bunch of people living in a beautiful part of the country.

Island Devastated

On the way home from East Anglia on Wednesday 6th June I heard a news announcement on BBC Radio Four that the BBC had just learned of the devastating storm which had hit Tristan Da Cunha Island a week or so before. This news had of course been widely known amongst the Amateur Radio community only the day after the storm thanks to our communications hobby.

The letter from **Colin Topping GM6HGW** on the letters page draws attention to the plight of the Islanders. Let's hope that we can help these marvellous people and that Amateur Radio will continue to play its part for the Islanders in their lonely Atlantic outpost.

Short Wave Service

While mentioning the BBC I am reminded of the planned closure of h.f. broadcasts to numerous parts of the World. Most of the areas chosen for cessation of short wave broadcasts have - in the opinion of the BBC World Service - good alternatives to 'off air' short wave transmissions.

I fervently hope that free-for-everyone off air short wave broadcasting to the entire World continues. I've learned much from listening to my radio and I'm fully aware that not everyone has, can afford or even wishes to purchase a computer to listen to the radio.

So, hopefully the broadcasters will look once again and continue offering h.f. service for all, with telephone line computer access for those who wish to do so. Although I fully realise that Internet broadcasting **is cheaper** for the broadcaster...so it's bound to appeal to them.

What do you think? We'd like to hear your opinions too!

Don Sobey

Many readers took a great interest in the progress of *PW* reader **Don Sobey** who was serving a prison sentence. The late **Frank Lee G3YCC** gave up much time to visit Don. When Don was transferred to a prison in Northumberland, near his home in the north-east, local Amateur **Ed Chicken G3BIK** gave up his time to visit him.

Don is now on Parole, living in Newcastle-upon-Tyne and is looking for a job, studying radio, and discovering short wave via equipment donated to him. However, could your club extend a welcome to Don? Additionally could **you** spare some friendship to help him further? If so, I'd be pleased if you'd let me know and I'll put you into contact.

Important Survey

Very soon there's to be a **vitally important survey** of *PW* reader's opinions, in fact I can't stress enough just how important the survey will be. **Your opinion counts and I urge - plead would be a better word!** - that you all take some time to answer the questions in the survey when it appears.

Ideally I would like 100% of the survey forms back (there'll be one major prize with 10 special runners-up prizes for lucky readers) from readers. The future Editorial coverage of *PW*, the individual topics, subjects and features all hinge on **your** feedback. **Your likes and dislikes will decide whether or not we expand, modify, change or even drop individual subjects from the magazine**.

So, I ask you to please consider sparing some of your time to fill in the survey form when it's published. **I promise to read every one of the survey forms** and we'll do our very best to act on the vital information you provide. **Thank you**.

Finally, the *PW* team hope you enjoy the Mainline catalogue free with this issue. There's much of interest, especially as Mainline seem to specialise in those really unusual and difficult-to-get bits and pieces.

Cheerio until the next time!

Rob G3XFD

practical wireless services

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

Subscriptions

Subscriptions are available at £30 per annum to UK addresses, £38 in Europe and £42 (Airsaver), £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 £60 (UK) £73 (Europe) and £81 (rest of world), £85 (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. The printed circuit boards for *PW* projects are available from the *PW* PCB Service, **Kanga Products, Sandford Works, Cobden Street, Long Eaton, Nottingham NG10 1BL. Tel: 0115 - 967 0918. Fax: 0870 - 056 8608.**

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 £2.50 each and photocopies are £2.50 per article.

Binders are also available (each binder takes one volume) for £6.50 plus £1 P&P for one binder, £2 P&P 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 £1 inc P&P.

Placing An Order

Orders for back numbers, binders and items from our Book Store should be sent to: **PW Publishing Ltd., Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling. Credit card orders (Access, Mastercard, Eurocard, AMEX or Visa) are also welcome by telephone to Broadstone **(01202) 659930**. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Broadstone **(01202) 659950**.

The E-mail address is **bookstore@pwpublishing.ltd.uk**

Technical Help

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

amateur radio waves

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

The Star Letter will receive a voucher worth £10 to spend on items from our Book or other services offered by *Practical Wireless*.

All other letters will receive a £5 voucher.

STAR LETTER

Radio On The Internet

● **Dear Sir**

It's sad that your correspondent **Tom Walters** (Tune-in, July 2001) feels it necessary to be so scathing about streaming radio on the Internet, in defence of short wave broadcasting. I listen to international broadcasting on my bedside Drake SSR1. Equally, I listen to international broadcasting on my Pentium II computer with the added advantage of being able to listen to local radio transmissions world-wide.

I find it comforting to be able to tune into (click into?) my son's local medium wave and Band II v.h.f. stations in Texas. Equally, I know that my son and other ex-patriots find it even more comforting to listen to the BBC, RTE (the Republic of Ireland's national broadcaster) or local radio stations here, to keep up with home events and hear a familiar accent. To be able to do so 24 hours per day, 365 days per year, without having to worry about tropospheric conditions is an added advantage.

The trouble Tom is experiencing with his Internet reception would suggest that either his equipment lacks capacity or he needs to consider a new Internet service provider. While I do experience occasional short breaks in Internet reception at peak user periods, these are less disturbing than the effects of QRM, QRN or QSB.

More encouragingly, Tom should not worry about the future of short wave broadcasting. As a transmission medium it has, over many years, survived competition from the proliferation of new stations on medium wave, Band II v.h.f. , satellite radio broadcasting, terrestrial television and satellite television. It faces major competition in digital broadcasting and the Internet but, as it provides listeners Worldwide with cheap, private, passive and easy access to news, information and entertainment, I think it's unlikely to disappear into the ether in our lifetime.

As I type this, I have been listening without interruption to Hill Country Countdown on KRVL, Texas. I will now depart to bed and listen to Radio Budapest or the more esoteric delights of Shanwick or Gander on short wave!

John MacCrossan
johnmaccrossan@btinternet.com
Northern Ireland

Editor: Any more comments readers? John has made his case extremely well - so let's have your opinion too!

Author's Photographs

● **Dear Sir**

May I make a suggestion? How about including photo of the author of some, if not all of the articles printed in *PW*? For instance, I live not far from **Gordon King G4VFV** and over the years have spoken to him many times, particularly on 28MHz n.b.f.m. and would like to meet him or at least see what he looks like, (I know what the Editor looks like and have met him several times). I will be at the Torbay rally in August (I will have a stand there) perhaps I might recognise G4VFV in the crowd with the help of a photograph.

Derek Dell G4WLA
Dawlish
Devon

Editor's comment: A very good idea Derek - although our authors are somewhat camera shy! However, we'll ask them again because it's good to see the face behind the pen isn't it?

Meter Shunting & Maths

● **Dear Sir**

Thank you for the Radio Basics article (July *PW*) dealing with meter shunting which I found most useful. Having started to collect meters I was not sure about the measure of sensitivity, etc. It's most useful now I know!

Two other points: Please will you let me have the details on the **National Extension College (NEC)** Maths course - as I seem to have come to a full stop in my studies. Finally, I'd like to mention **Ray Petri G0OAT's** book on basic radio and electronic calculations. In his book Ray goes into the business of meter shunting in some detail. This book was of course featured in *PW* some while ago, along with a special offer to buy a Casio scientific calculator to help us reluctant mathematicians!

Hope all is well with everyone on the *PW* team.

Adrian Soane M0ABY
Wheathamstead
Hertfordshire

Editor's reply: We're all well on the *PW* team thank you Adrian! Details on the NEC are on their way to you. Readers can contact the NEC in Cambridge on (01223) 450500 - ask for their *Guide to Courses*. Their 'Counting On' course is ideal for prospective RAE students to brush up on maths. You can write to the NEC at The Michael Young Centre, Purbeck Road, Cambridge CB2 2HN, FAX them on (01223) 313586 or E-mail: info@nec.ac.uk for full information. Their web site is at www.nec.ac.uk and tutorial back-up from this charitable foundation (a forerunner of the Open University) is - from personal experience - superb.

Free Gifts In *PW*

● **Dear Sir**

Thanks very much for the free gifts, especially the map, in the July 2001 issue of *PW*. However, if you look carefully, the MI (Northern Ireland) callsigns are now in Jersey, and the MJ (Jersey) calls are in Northern Ireland! Also, I guess that the Novice Licence holders might get a bit miffed at being missed off. But then perhaps, the UK is a bit of a small space in which to get them all in?

Dave Ackrill G0DJA
Bolsover
Derbyshire

Editor: Just a lack of space Dave, and no slight intended to Novices either! Only main calls mentioned in all countries. Thanks also to everyone for all the many appreciative comments on the map.

Yaesu FT-707 Appreciated

● **Dear Sir**

I have just re-read the December edition of *PW* with great interest, in that someone else appreciated what a super little rig the Yaesu FT -707 really is! (Well, not so little these days).

I had my first one in the early 1980s when I first gained my 'A' licence. It was used with the matching power supply and a.t.u. into a G4MH Minibeam with excellent results. However, it was sold after six months to buy a Yaesu FT-901 DM in order to get onto 1.8MHz and my local club's Top Band net on a.m.

But in 1986 I wished to go h.f. mobile so another FT-707 was my obvious choice. This was fed into a G-Whip antenna mounted on the rear bumper with separate coils for each band and fine tuned with the whip section. I had no trouble matching it for any band portion I wished to work.

I'm still using the rig for occasional Maritime Mobile work on the high seas. Using the same 'G' whip antenna or loading up my yacht's backstay via an SGC-230 Automatic a.t.u. (it's also fitted with a 600Hz filter which makes for fine for c.w.

Furthermore, I am still using my FT-901 DM line-up. This is fitted with all filters and options and with all manuals and extender boards. I recently

Help For Tristan da Cunha

Andy Repetto ZD9BV (far right) standing next to Conrad the Island's Police Chief, Gale Topping stands on the left of Lorraine Repetto who is on duty as a Police Officer. (Photograph courtesy of GM6HGW).

Dear Sir

In September 1999 my wife Gail and I had the opportunity to visit the tiny British Dependency of Tristan da Cunha (ZD9). Tristan is sited approximately halfway between Cape Town and South America and is the most remote inhabited Island in the World.

During our visit we stayed with **Andy (ZD9BZV)** and **Lorraine (ZD9CO) Repetto**, who allowed us unlimited use of their Amateur Radio equipment. At present Andy and Lorraine are in the UK on study leave. Yesterday (25 May) I received a distressing telephone call from Andy explaining that within the previous week Tristan had been hit by a devastating hurricane. Fortunately there was no loss of life or serious injury. However, the hospital lost its operating theatre, and several other public buildings have been destroyed as well as a number of homes. Andy went on to explain that from the limited information trickling through, he has probably lost all his antennas, towers and radios in the storm.

Due to the damage to the electrical generation plant, satellite dishes and commercial h.f. radiotelephone station, there has been absolutely no communication with the Island until yesterday (25 May) when the satellite link was partially restored. Andy was able to tell me that a vessel is scheduled to depart from Cape Town with much needed supplies within the next few days. But it may take a few years before all the repairs can be carried out and life returns to a degree of normality.

In the meanwhile I was wondering if there are any *PW* readers who might have surplus Amateur Radio equipment there are willing to donate to Andy? In the past, and before the advent of satellite telephones, Andy's Amateur station has been the only back-up link the Island has with the rest of the World when the commercial h.f. link fails. Readers who are willing to donate equipment can contact me as follows: via E-mail : **gm6hgw@brars.org.uk** or by writing to me at **32 Maryknowe, Gauldry, Newport on Tay, Fife DD6 8S**L or by telephone on **(01382) 330532**.

Colin Topping GM6HGW
Newport on Tay
Fife

Editor's comment: Unfortunately Colin's letter - dated 26 May - arrived just after the July issue of *PW* went to press. But Can you assist? If so please contact GM6HGW direct. They're wonderful people - still warmly remembered in the Southampton area, to where many were evacuated during the early 1960s following an eruption of the Island's volcano. (Please also see 'Keylines').

re-aligned the whole rig after 20 years and it's now better than it ever was. Just like a comfortable old pair of shoes for a dedicated knob twiddler like me!

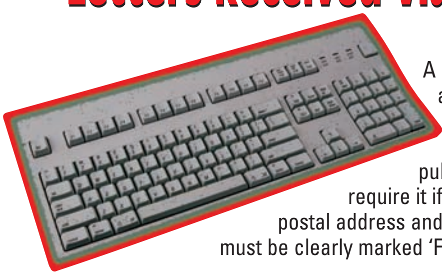
In fact I really must consider taking out a subscription to *PW* in case I miss a review on the FT-901...Another investment opportunity? Regards to everyone on the team.

Nigel Rollason
G4NRR/MM (Sometimes!)
Birmingham

Editor's comment: Good to hear from you Nigel! Generally we get very little feed-back regarding transceiver reviews. However, the It's A Classic series is the exception and more reviews, on an occasional basis, are on the way. We also plan to look at some more modern 'Classics' too.

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

Letters Received Via E-mail



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

Editor

amateur radio rallies

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

July 14
The Cornish ARC Mobile Rally and Electronics Fair
Contact: G4LJY
E-mail: g4ljy@qsl.net
The Cornish club will be holding their 38th Annual Mobile Rally and Electronics Fair at Penair School, Truro. Doors open at 1030 and admission is £1.50. There will be many trade stands, demonstrations, Bring and Buy, refreshments and Talk-In. So why not go along?

July 15
The McMichael Amateur Radio Rally & Car Boot Sale
Contact: Dave Chislett G4XDU
Tel: (01628) 625720
E-mail: g4xdu@amsat.org
Website: http://come.to/mcmichaelrally
This year's McMichael rally takes place at a new venue - the Reading Rugby Football Club, Sonning Lane (B4446), just off the A4 near Reading, Berkshire. The benefits of this larger site is a better parking and car boot area, better catering services, bigger fully licensed bar, easier access, first aid and a talk-in station on v.h.f. This will be Berkshire's Premier event with many traders present and the ever popular car boot sale makes it a good rally to visit. Various local clubs and organisations also have stands at the rally.

July 29
Colchester Radio Amateurs Annual Radio & Computer Rally
Contact: Richard G7BIV
Tel: (01376) 571239 (evenings)
E-mail: http://www.richard.c.hudson@bt.com
Taking place at St Helena School, Sheepen Road, Colchester, Essex, (follow signs for Colchester Centre and then to Colchester Institute) this large radio, electronics and computer rally will include a large hall for indoor traders (with free tea and coffee), large outside area for a big boot sale (all welcome), refreshments and bar, free parking/disabled access and parking and a Bring & Buy.

August 5
Lorn Radio Amateurs, Oban, Argyl Radio Rally
Contact: Shirley GM0ERV/John GM8MLH
Tel: (01631) 566518/(01838) 200304
E-mail: s.mclennan@freeuk.com
There will be the usual stalls, traders, refreshments, etc. Why not make a weekend of it! For details contact Shirley or John.

August 10
The Cockenzie & Port Seton ARC Junk Night
Contact: Bob Glasgow GM4UYZ
Tel: (01875) 811723
The Cockenzie & Port Seton ARV are holding their 8th Annual Radio Junk Night between 1830-2130 at the Cockenzie & Port Seton Community Centre, South Seton Park, Port Seton, East Lothian. Bring along your own 'junk' and sell it yourself. Tables provided on a first come, first served basis (no charge for the table). Raffle at approximately 2100 and there will be refreshments and disabled access. £1 admission. All money raised will be donated to the British Heart Foundation.

August 12
Flight Refuelling ARS Hamfest
Contact: Keith Elliott
Tel: (01202) 577937
This annual hamfest takes pleace at Flight Refuelling Sports Ground, Merley, Wimborne, Dorset. The event will run from 1000 to 1700 hours and will include the usual mix of traders, Bring & Buy, crafts, car boot sale and field events. Overnight camping facilities will be available for Saturday 11th. Talk-in on S22.

August 19
The Leeds & District ARS Rally & Car Boot Sale
Contact: J. Mortimer M0JAM
Tel: (01943) 874650
This twice yearly traditional outdoor rally and car boot sale hosted by the Leeds & District ARS takes place today at the Yarnbury Rugby Club, Brownberrie Lane, Horsforth, Leeds. There will be plenty of free parking for buyers.

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

amateur radio **news**

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

Dual-Bander for the 21st Century

Coming Soon

Yaesu UK Ltd. have announced that stocks of their new mobile dual-bander will be hitting the dealers' shelves very soon.

The FT-7100M is billed by Yaesu as a dual-band engineering milestone offering some excellent features. With the first stocks expected in August and a price tag of approximately £475 this latest addition to Yaesu's range is bound to be sought after.
Features of the FT-7100M will include:

* Dual-band operation on 144 & 430MHz
* Audio Output power up to 2W
* Audio Output Impedance - 4-16Ω
* Large l.c.d. screen - 60 x 23mm
* Separate volume & squelch controls for each band
* 262 channel memory capacity
* VFO scan, memory scan and programmable memory scan
* CTCSS/DCS tone systems

Practical Wireless hope to review the FT-7100M as soon as one is available - so watch this space!

Yaesu would like us to point out that the ATX Walkabout Portable antenna reviewed in *PW* July's Antenna Workshop is **not** a Yaesu product as stated and is in fact a Waters and Stanton product and that all enquries should go to them not Yaesu. *We apologise for any inconvenience caused.* **Editor**

Yaesu UK Ltd.,
Unt 12,
Sun Valley Business Park,
Winnall Close,
Winchester,
Hampshire
SO23 0LB
Tel: (01962) 866667
E-mail: sales@yaesu.co.uk

All at Sea with SMC Supplies

Search & Rescue

Radio plays a big part in assisting the emergency services to do their jobs, so it's no surprise to hear that SMC are involved in helping the RNLI.

South Midlands Communications (SMC) supply radio communications systems and equipment to emergency services organisations world-wide. A large proportion of the equipment they supply is manufactured at their premises in Chandlers Ford, Hampshire.

The Royal National Lifeboat Instution (RNLI) are dependent upon reliable communications in their search and rescue operations and have recently purchased large quantities of Yaesu VX-10 hand-held radios. In support of these radios, South Midlands Communications Ltd., supplied over 1,250 fast chargers and NiMH battery packs specially produced to ensure 100% back-up reliability.

For more information on other services and products available by SMC contact them direct at:

South Midlands Communications Ltd.,
S.M.House,
School Close,
Chandlers Ford Industrial Estate,
Eastleigh,
Hampshire SO53 4BY
Tel: (02380) 246200
FAX: (02380) 246206
Website: http://www.smc-comms.com

Compact but Rugged

New Patcomm Radio

If you are looking for a compact dual-band rugged transceiver to assist you in your QRP and portable operations then the new PC500 QRP h.f. transceiver could be the one for you.

The Patcomm PC-500 is the latest transceiver to be added to Nevada's product range. This small - 8W x 2.8H x 7.5inD - but rugged transceiver delivers an adjustable 1 to 15W of output power making it ideal for mobile use whilst being rugged and light enough 3lbs for using in the field

The PC500 covers any two bands from 1.8 to 50MHz with plug-in modules. Two modules of the customers choice are supplied with the transceiver as standard. A whole range of features are boasted by the PC500 and these include:

- c.w./s.s.b.
- Iambic Keyer
- c.w. keyboard interface
- Digital variable filter
- Vogad and RF clipping

Costing just £399.95 for the basic rig the range of optional extras available includes:

- Additional single band modules
- Noise blanker
- VOX board
- Hand mic
- PSK31 cable
- Mobile mount
- KB1 keyboard with adaptor
- 8-Pole crystal filter

More information including accessory prices is available from Nevada direct.

Nevada,
Unit 1,
Fitzherbert Spur,
Farlington,
Portsmouth,
PO6 1TT
Tel: (02392) 313090
FAX: (02392) 313091
E-mail: info@nevada.co.uk
Website: www.nevada.co.uk

Another *PW* Winner!

A Happy Man!

David Warner G4OER was very pleased to hear he'd won the Icom IC-756 in our competition jointly sponsored by Icom UK Ltd. So, we thought you'd like to see the man who won this much sought after radio.

Photo courtesy of John Turner Photography.

David Warner G4OER has been interested in radio for many years having done National Service in the 1950s and was an RAF Wireless Operator where he learnt Morse code. After being de-mobbed his interest in radio lapsed unitl 1984 when he took the RAE and gained the callsign G4OER.

On taking delivery of his new 'toy' David admits that the instruction manual got pushed aside in his enthusiasm to see how the IC-756PRO performed! Although David says he found the look of the transceiver a little daunting at first he soon found his feet and the factory defaults meant that he could get on air straight away.

David's favourite features of the IC-756PRO were: the band scope which he found especially useful when trying to spot where DX stations were operating; the multi-function screen which allows the operator to find a colour and typeface that suits them and displays both v.f.o. frequencies, signal strenght, power out, ALC, compression level and SWR; and the inclusion of DSP filters.

So, as you can see David was a very happy and statisifed winner and will no doubt have years of operating pleasure using his IC-756PRO. Thanks go to Icom UK Ltd for sponsoring the prize.

Marconi Celebrations Continue

Porthcurno's Radio Week

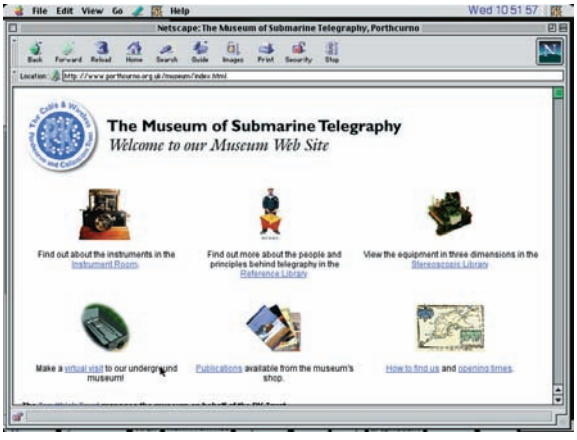
Porthcurno Museum of Submarine Telegraphy has a week of radio events and fun planned this month.

The Museum of Submarine Telegraphy in Porthcurno, Cornwall has a long associated history with radio dating back to 1902 when the Eastern Telegraph Company began spying on Marconi's activities on the Lizard using their own radio mast. The were concerned about the potential threat to their international cable communications business but by 1929 the Company was merged with Marconi's wireless network to form the Company that's known today as Cable & Wireless.

Running from Sunday 12 to Saturday 18th August the Museum is holding a Radio Week in a bid to allow visitors to discover more about radio, how it worked and its history. The event is one of many being held this year to mark Marconi's first radio signal being sent across the Atlantic.

The first event of the week will be a fun and educational radio day taking place on the former Cable & Wireless sports field adjacent to the Minack theatre where visitors will be able to see an exhibition on the history of radio and see GB2PK in operation. Other events throughout the week will include a kite flying day to mark Marconi's kite flying experiments for raising early radio antennas and the opportunity for visitors to view the radio-related displays in the museum.

For a timetable of events and details of other planned activities contact the museum direct on **(01736) 810966.** It's also worth taking a look at their website too.



The Cable & Wireless Porthcurno & Collections Trust,
Eastern House,
Porthcurno,
Penzance,
Cornwall TR19 6JX
Tel: (01736) 810478
FAX: (01736) 810640
E-mail:
mary.godwin@plc.cwplc.com
Website:
www.porthcurno.org.uk

amateur radio clubs

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

DORSET

Christchurch ARS
Contact: Kevin Harris G7WSN
Tel: (01202) 484892 eves
Christchurch Amateur Radio Society meet every Thursday at 2000hours at the Radio Club Room behind the Sports & Social Club, Grange Road, Somerford, Christchurch. Visitors welcome.

Poole Radio Society G4PRS
Contact: Mr Phil Mayer G0KKL
Tel: (01202) 700903
Website: www.pawns.co.uk/PRAS
Main meetings are usually held in Lady Russell Cotes House, Bournemouth & Poole College of Further Education (The College), Constitution Hill Site, Poole, Dorset at 1900hours on the 2nd Friday of the month. Other activities usually take place in the nearby shack on the same site unless mentioned. Things to look out for include: **July 13:** 'Microwaves in Practice' talk by **Colin G6MXL**; **20th:** Construction (Shack), **27th:** Natter (Shack); **29th Sunday:** Day in the Field (subject to confirmation, weather and foot and mouth restrictions, etc. Arrangements confirmed on previous shack night; **Aug 3:** Operating (Shack); **10th:** Preparation for Hamfest and **12th Sunday:** Hamfest Rally.

GLOUCESTERSHIRE

Thornbury and South Gloucestershire ARC
Contact: John Moorhouse M1EON, QTHR
The Thornbury and South Gloucestershire Amateur Radio Club, previously know as Thornbury and District Amateur Radio Club meet on Wednesdays at 1945 hours until 2145 hours at the United Reformed Church Hall, Rock Street, Thornbury. Forthcoming events include: **July 15:** Sunday Trip to Bristol Aero Collection at Kemble; **18th:** Club Speaker - John Moorhouse 'Radio Based Ethernet Lan's'; **25th:** 2001 Video Night; **1 Aug:** Operating Night; **8th:** Practical Night; **15th:** Fox Hunt (Car), meet at the car park at 1945 hours.

HAMPSHIRE

Horndean & District ARC
Contact: Stuart Swain G0FYX
Tel: (02392) 472846
E-mail: g0fyx@msn.com
The Horndean Club meet on the 1st & 4th Tuesday of each month and are held at Lovedean Village Hall, 160 Lovedean Lane, Lovedean, Hants. Meetings commence at 1930hours and visitors are always very welcome. Meetings coming up include: **Aug 28:** D68C Comoros DXpedition talk by Mike G3SED and **Sep 4** Club Social Evening.

KENT

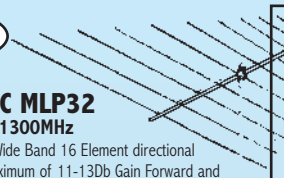
Maidstone YMCA ARS
Contact: Andy Holbrook M0CST
Tel: (01622 661035)
E-mail: g3trf@lineone.net
Website: Lineone.net/-g3trf
The Maidstone YMCA Amateur Radio Society meet every Friday at the YMCA Sportscentre, Melrose Close, Cripple Street, Maidstone, Kent ME15 6BD. Forthcoming meetings include: **7 Sept:** Open evening; **14th:** RAE Licensing conditions; 21st: Lecture an **28th**: RAE Operating procedures. Why not go along and join in?

Continued on page 16

www.scannerantennas.com

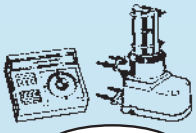
E&OE

£99.95



LOG PERIODIC MLP32

Freq. Range 100-1300MHz
Length 1420mm Wide Band 16 Element directional beam which gives a maximum of 11-13Db Gain Forward and 15Db Gain Front to Back Ratio. Complete with mounting hardware. *(The Ultimate Receiving Antenna - a must for the Dedicated Listener.)*

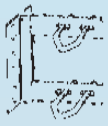


ROTATOR AR-300XL

* Rotation Torque-222Kg
* Vertical Load-45Kg
* Mast Size - 28-44mm
* Control Box-230v AC
* Cable-3 core
* Direct Compass Bearings

(Ideal for Light to Medium Beams, i.e. LOG PERIODIC above.)

£49.95



6" STAND OFF BRACKET

Complete with 'U' Bolts

£6.00

9" STAND OFF BRACKET

Complete with 'U' Bolts

£9.00

MD37 SKY WIRE (LONG WIRE BALUN KIT)

25 METRES OF ENAMELLED WIRE & INSULATOR

FOR USE ON WITH RECEIVER 0 - 40 Mhz. ALL MODE NO ATU REQUIRED 2 "S" POINTS GREATER SIGNAL THAN OTHER BALUNS. MATCHES ANY LONG WIRE TO 50 OHMS IMPROVED RECEPTION

£29.95

T&K BRACKETS

Complete with 'U' Bolts

6"- £6.00
12"- £11.95
18"- £17.95
24"- £19.95
36"- £29.95

5' SWAGED POLES

Heavy Duty Ali (1.2mm wall)

SINGLE 1 1/4" £7.00
SET OF FOUR 1 1/4" £24.95
SINGLE 1 1/2" £10.00
SET OF FOUR 1 1/2" £34.95

CONNECTORS

PL259/9	0.75 each
PL259/6	0.75 each
PL259/7 for mini 8	1.00 each
BNC (Screw Type)	1.00 each
BNC (Solder Type)	1.00 each
N TYPE for NG58	2.50 each
N TYPE for RG213	2.50 each
SO239 to BNC	1.50 each
PL259 to BNC	2.00 each
N TYPE to SO239	3.00 each
Amalgam tape 10 metres	£7.50

CABLE

RG213 MILITARY	0.85 per mtr.
MINI RG8	0.85 per mtr.
RG58 STANDARD	0.35 per mtr.
RG58 MILITARY	0.60 per mtr.
H100	£1.10 per mtr.

£29.95

SUPER SCANAIR BASE (Airband)

(Stainless Steel)
Freq. Range Recieve 117-140MHz Transmit 117-140MHz Length 825mm Connector-N TYPE

This is a transmitting & receiving antenna designed for the aircraft frequency range. *(For the control tower & aircraft listener).*

£29.95

SUPER SCAN STICK

Freq. Range 0-2000MHz Length 1000mm

It will receive all frequencies at all levels unlike a mono band antenna. It has 4 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals. *(Ideal for the New Beginner and the Experienced Listener alike.)*

£39.95

SUPER SCAN STICK II

Freq. Range 0-2000 MHz. Length 1500mm.

This is designed for external use. It will receive all frequencies. at all levels unlike a mono band antenna. It has 8 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals plus there is an extra 3db gain over the standard super scan stick. *(For the expert who wants that extra sensitivity)*

£39.95

MULTISCAN STICK

Freq. Range Receive - 0-2000 MHz. Transmit 144 - 146 MHz gain 2.5 DBd 420 - 430 MHz gain 4.5 DBd Length 1000 mm.

Although marginally compromising sensitivity the multi scan stick has within its transmitting capabilities plus gain makes it an excellent antenna for the amateur and expert alike.

Comes complete with mounting hardware and brackets. *(Ideal for the amateurs ham radio - user).*

£89.95

IVX 2000

Freq. Range Receive - 0-2000 MHz. Transmit 50 - 52 MHz gain 2.00DBd 144 - 146 MHz gain 4.00 DBh 420 - 430 MHz gain 6.00 DBd Length 2.5 m.

For external use, but at a pinch can be used in the loft. It has been finely tuned to make this Antenna the best there is. It has stainless steel radials and hardware. *(THE BEST)*

£49.95

MULTI SCAN STICK II

Freq. Range Receive (0-2000MHz) Transmit (144-146 MHz) Gain 4.00Dbd (420-430 MHz) Gain 6.00Dbd Length 1500mm

Same as Super Scan Stick but with extra gain, makes it an even better antenna for the amateur and expert alike. *(Ideal for the Ham Radio user)*

MWA HF Wire Antenna Mk11

£59.95

Freq 0.05Mhz-40Mhz Adjustable comes with 25 metres of H/Grade flexweave antenna wire,10 metres of military spec RG58 coax cable feeder,insulated guy rope,dog bone & choke balun. All Mods No A.T.U. required. Super Short Wave Antenna.

SWP 2000 FREQ. 25 - 2000 MHz. Length 515mm.

£29.95

Multiband good sensitivity for its small size. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. *(Good for the car user who doesn't want an external antenna.)*

SWP HF30

£39.95

Freq. Range 0.05-30MHz Length 770mm

Although small, surprisingly sensitive for the H.F. user. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. *(Good for the car user who doesn't want an external antenna.)*

HF DISCONE

£49.95

Freq. Range 0.05-2000MHz Length 1840mm

Internal or External use (A Tri-Plane Antenna). Same as the Super Discone but with enhanced HF capabilities, comes complete with mounting hardware and brackets. *(Ideal for the Short Wave H.F. Listener.)*

TRI SCAN III

Freq. Range 25-2000MHz Length 720mm

Desk Top Antenna for indoor use with triple vertical loaded coils. The tri-pod legs are helically wound so as to give it its own unique ground plane. Complete with 5mts of low loss coax and BNC plug. *(Ideal for Desk Top Use.)*

£39.95

ROYAL DISCONE 2000

£49.95

(Stainless Steel) Freq. Range Receive 25-2000MHz Transmit 50-52MHz 144-146MHz 430-440MHz 900-986MHz 1240-1325MHz Length 1540mm Connector-N TYPE

The Ultimate Discone Design. 4.5DB GAIN OVER STANDARD DISCONE! Highly sensitive, with an amazing range of transmitting frequences, comes complete with mounting hardware & brackets *(The Best There is).*

SUPER DISCONE

£39.95

Freq. Range 25-2000MHz Length 1380mm

Internal or External use (A Tri-Plane Antenna). The angle of the ground planes are specially designed to give maximum receiving performance within the discone design. The Super Discone gives up to 3Db Gain over a standard conventional discone. Comes complete with mounting hardware andbrackets. (Ideal for the Experienced Enthusiast.)

MRW-100

£19.95

(Super Gainer) (Rubber Duck) Wideband extra sensitive Dedicated VHF/UHF all mode Length 400mm. P.P £2.00

MRW-40 (Rubber Duck)

Dedicated for Civil & Military Airband VHF/UHF RX & TX Capabilities Length 215mm. P.P £2.00

£19.95

MRP-2000 (Preamplifier)

Freq Range 25-2000 Mhz 9-15v input (Battery not included) 14 db Gain. Complete with lead and BNC connectors.

£49.95

MRP-125 (Preamplifier)

Freq Range 118-137 Mhz 9-15v input (Battery not included) 14 db Gain Complete with lead and BNC connectors.

£44.95

G. SCAN II

Freq. Range 25-2000 MHz.Length 620 mm.

Magnetic mount Mobile Scanner Antenna. 2 vertical loaded coils for good sensitivity complete with magnetic mount and 4mts of coax, terminated with BNC plug. *(Good for when you are driving about)*

£24.95

WEATHER SATELLITE ANTENNA

TURNSTILE 137

Freq. 137.5 MHz Length 1000mm

(Simple and easy to install a must for the enthusiast who has it all.)

This Antenna is designed for external use to receive weather satellite signals.

Complete with mounting hardware.

£39.95

UK SCANNING DIRECTORY

7th edition

£19.50

CIVIL AND MILITARY RECEIVING ANTENNAS

AR30 (Length 1000mm GAIN 3.6 & 6.5) .....Price £39.95
AR50 (Length 1500mm GAIN 5.0 & 7.5) .....Price £64.95

MasterCard VISA

ADD £6 P&P PER ORDER

amateur radio trade

What's going on in the UK's Amateur Radio trade this month?

Atef Awad Worldspace Corporate Development Director concluding the distribution deal with Mike Devereux G3SED MD Nevada

Nevada joins the space age

The satellite broadcasting company, Worldspace appoint Nevada as an official UK distributor for their portable satellite radio range.

If you live and shop for your radio equipment at Nevada in Portsmouth you will now be able to buy Worldspace products direct from them following their appointment as an official distributor. Worldspace own and operate three geostationary satellites transmitting over 40 direct digital audio broadcast programmes to a large part of the world.

Commenting on the appointment **Mike Devereux G3SED** MD of Nevada said: "Worldspace have ambitious plans for future satellite broadcasting and want to rapidly increase sales of their satellite receivers in the UK. Our success in distributing portable radios for Grundig, Roberts and the BBC world service, made Nevada an ideal partner".

For more information on the Worldspace system visit **www.worldspace.com** or contact Nevada distribution on **(02392) 313095** for details of the Worldspace radio range and your nearest stockist.

Behind the Scenes

Waters & Stanton PLC

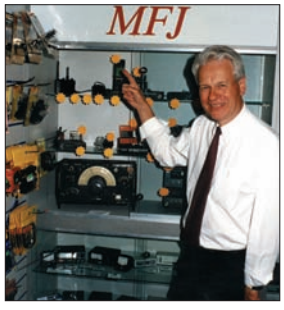
Take a trip with us as we meet the people behind Waters & Stanton PLC who have been trading in Amateur Radio for some 28 years!

A club visit to Leiston in Suffolk provided **Rob G3XFD** with the ideal opportunity to pop into see everyone at W&S and check out their refurbished showroom. Rob's visit coincided with the news that W&S are continuning with their 'shop within a shop' scheme by linking with Jaycee Electronics, Glenrothes, Fife.

The shop will trade as **Waters & Stanton @ Jaycee**. **Peter Waters G3OJV** explained that their Midlands shop at Matlock in Derbyshire, which opened in January, had been so well received, it was decided the premises of Jaycee Electronics were ideally placed to offer the same kind of service to Scotland and the border counties.

Jaycee has been run for many years by **Bill Hay GM6AOJ** and his wife Betty. Peter Waters emphasises that the shop will still remain under the control of Jaycee Electronics Ltd, but will be stocked and supported by Waters and Stanton PLC with all the pricing and service advantages that go with dealing with the UK's largest Amateur Radio retailer. Waters & Stanton @ Jaycee is located at **20 Woodside Way, Glenrothes, Fife KY7 5DF**, two minutes from the A92 with free parking. They can be contacted on **(01505) 503824** and are open from Tuesday to Friday 0900-1700 hours and Saturday 0900-1600 hours.

"Wow....what are you doing here in Essex"? **Jeff Stanton G6XYU** of Waters & Stanton seems to be saying as **Rob Mannion G3XFD** arrives from Dorset on a flying visit! Joking apart though, Jeff was expecting Rob as he was passing through on his way to visit the Leiston Club in Suffolk.



No, the American based MFJ company aren't making replica R1155 receivers yet...but Jeff G6XYU saw the joke when he realised that MFJ's logo appeared over the vintage corner!

Along with carrying a very wide range of Amateur Radio equipment W&S also stock a veritable Aladdin's Cave of hi-fi and video equipment. This view shows just part of their large showroom.

Nigel McAlpine G8OSG (Amateur Radio Sales) demonstrates one of the wide range of h.f. and v.h.f. transceivers set-up on the central demonstration carousel. This is where customers can come and try the 'hands on' approach before buying a new rig. Despite the temptations...Jeff Stanton has yet to be encouraged to enjoy the experience on h.f. in the same way that his experienced Amateur Radio business partner **Peter Waters G3OJV** regularly does. Perhaps Jeff could join the W&S Morse classes too?

amateur radio clubs

KENT

Southdown ARS

Contact: Glynn M0CHO
Tel: (01323) 765731

Meeting on the first Monday of the month at 1900hours at Chaseley Home, Bolsover Road, Eastbourne and each Friday at Hailsham Lagoon Southdown ARS offer a variety of club activities. **6 Aug:** 'Raynet, The Local Scene' by **Dick Jeffries** and **3 Sept:** 'D68 Expedition' by **Nigel Peacock G4KIU**. Visitors are always welcome.

SHROPSHIRE

Telford and District ARS

Contact: Mike Street G3JKX
Tel: (01952) 299677
E-Mail: mstreet@g3jkx.freeserve.co.uk
Website: www.btinternet.com/~t.colton

Meetings commence at 2000hrs every Wednesday (unless otherwise stated) and take place at the Community Centre, Bank Rd, Dawley, Telford, Shropshire. Club activities this month include: **July 14/15th:** Large Model Aircraft Show, Aerospace Museum, RAF Cosford; **18th:** 'High Speed Digital Design' by M1RKH; **25th:** Open house. Food and Drinks. **August 1:** Committee/OTA/Natter night/ Revenue review; **8th**: 'Operation Raleigh'.Talk by **G4AAL** and **15th:** Telford Rally preparation

MIDDLESEX

The Radio Society of Harrow

Contact: Jim Ballard.
Tel: (01895) 476933 or (02072) 786421
E-mail: g0aot@thersgb.net

Meetings are held every Friday from 2000hrs at The Harrow Arts Centre, Uxbridge Road, Hatch End, Mddlesex. If you fancy going along and joining in here's what coming up: **July 13:** French Evening. Just prior to Bastille Day - a chance to try some french food & wine also make contact with our colleagues from over the channel, **27th:** Bring & Buy to round off the summer season. Bring along any surplus gear. From the money raised 10% will go to club funds. Also the club station will be on the air. There are no formal club meetings in August. You will find some members in the bar!

OXFORDSHIRE

Harwell ARS

Contact: John G6LNU
Tel: (01235) 223250
Website: www.hamradio.harwell.com

Meeting on the 3rd Tuesday of the month at 2000 hours at the Social Club, Harwell Laboratory, Didcot, Oxon the Harwell Club lists the following activities as part of their varied programme of events: **Aug 12:** Casual operating evening at club room; **Sept 11:** 'History & Theory of Valves' by **Geoff G3NAQ** and **Oct 9th**: 'Teletext & Sub-Titles' by **Ray G4FON**

WILTSHIRE

Trowbridge & District Amateur Radio Club

Contact: The Secretary
Tel: (01225) 864698
Website: www.gertdarc.fsnet.co.uk

The club meets at the Southwick Village Hall, Southwick. Main meetings commence at 2000hrs unless otherwise stated. All main meetings may be subject to change, please watch for updates via the website, GB2RS or on the club 144MHz net on Monday evenings between 1930 and 2000hrs. Visitors are always welcome to all meetings. Why not go along to one or all of the following: **July 18:** Natter night; **Aug 1:** Club members' - 10 minute talks and **Aug 15th**:Natter night.

Tex's Tips & Topics

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

The first idea comes from **Denzil G3KXF** who for his offering wrote "I can offer a very old idea as an alternative to using stand-off insulators which can be quite costly. One application of this is for prototype (or final) construction of projects. In a recent issue of *PW*, **George Dobbs G3RJV** describes two methods of creating 'lands' on copper clad boards for soldering components that George describes as the 'ugly' method".

Denzil went on to say "My tip is to use high (Megohm) value resistors as stand-off insulators to support supply rail and other 'live' components. The bottom ends of stand-off resistors can be soldered directly to the copper laminate, along with the component leads which need to be earthed anyway. A 1MΩ resistor will leak only 9µA at 9V or 12µA at 12V. Higher values leak less. Also the component capacity is very small.

"New resistor prices from Maplin are quite cheap, and many of the metal or carbon film ones have 6mm body length. So with shortened leads bent over, the overall height of the stand-off may be varied from about 8-12mm. For high voltage uses there are resistors available that can tolerate up to 10kV across the ends without problems.

"Compared with 'proper' stand-off insulators and the other methods in George's article, resistor stand-offs have several advantages. Resistors don't melt when soldered, are cheap, don't need holes drilled, or copper laminate cut or grooved, they can be positioned exactly and very close to other components. Their only detracting point is that the power drain, although small, it should be taken into account in some high impedance circuits".

Suitable For Most

Thanks Denzil for that idea, I think that it will be suitable for most d.c. to h.f. projects. Now I turn to a tip from **Willy Wilson GM3NUF**, who wrote "I was trying to label the controls on the front panel of a recently completed RX2 APT receiver. (That's a kit produced by the **Remote Imaging Group**, for the reception of the orbiting weather satellites in the 137MHz band).

" I was fighting a losing battle with rub-down lettering, as there was always one or more letters that refuse to stick, or that finish up cockeyed and forever offends the eye! Then of course, you run out of letters and have to buy a whole sheet just to get a single character!

"I was looking for an excuse to use my expensive new PC, for what it's supposed to be good at - doing jobs that are difficult, or even impossible otherwise. Finishing off projects seemed to be a good opportunity to produce a drawing of the front panel, with the lettering in place. So, pleased with the initial results, I inserted a cloudy-sky background, which seemed appropriate for this receiver.

"I use *Serif Draw 3.0* which is fairly easy to get the hang of, and is now freely available on the CD-ROMs available free on with several PC magazines. The obvious advantage of this method is the ease with which the lettering can be sized, moved around and coloured. Other symbols can be added and backgrounds can be whatever takes your fancy. If, and when it gets damaged, or you fancy a change, you can print a new one!

"The front panel illustration can be scaled to exact size, printed out on good quality paper, and stuck on to the front panel. Then the apertures are carefully cut out with a craft knife, or scalpel, and the controls, meter, etc., mounted. Easy peasy"!

Digital Pictures

I have to say the two digital pictures, **Fig. 1** and **Fig. 2**, provided by Willy certainly make his receiver look rather more the part. And if you don't like the front panel next week - you can always change it!

Fig. 1: The start point after the front panel has the cut outs made, but before the new face panel is put in place.

Fig. 2: The finished article - a fine looking piece of home-made gear, improved even more with a nice front panel.

Now for an idea from **Jonathan M5FUN** that's simply superb! But I'll let him tell it in his own words. Jonathan wrote "Hi! Here's an idea for your readers if you take a small empty drinks bottle (500ml soft drink bottles are fine) and cut the top and bottom off of it. After smoothing off sharp edges and points, you now have the perfect way of storing cables that would otherwise go all over the place in your tool box. Just simply fold the cable into just over the length of the tube and push gently into the decapitated bottle. Hey presto! Your cable is neatly stored". Now that's really a splendid idea. I wish I'd thought of that one!

Final Tip

My final tip this month comes from **R. Hodgson G3TBT** (sadly now a Silent Key) who mentions a novel idea for marking the leads of transistors with coloured plastic sleeving. This ideas makes it easy to work on both sides of a project when otherwise it's too easy to identify the pin-out wrongly as you swap from one side of the p.c.b. to the other.

Transistors are usually identified when looking onto the pins so, it's easy when looking on the track side of circuit board. However, when trying to measure voltages and signals we are often looking at the project from the other side of the board and often with a differing orientation.

The method suggested by G3TBT is to use a small coloured sleeve on each lead. The colours use the standard colour code, but refer to the letter's position in the alphabet rather than a number. They follow the format shown in **Table 1**. I've illustrated the principle in the sample pinout, **Fig. 3**, of BC212/214 transistors and a 2N3819 f.e.t.

Table 1

Lead	Letter (in alphabet)	Colour
Base	2	Red
Collector	3	Orange
Emitter	5	Green
Drain	4	Yellow
Gate	7	Mauve
Source	19	Brown /white

Table 1: The suggested colour code for identifying the leads of f.e.t.s and transistors. See Fig. 3 for how it works.

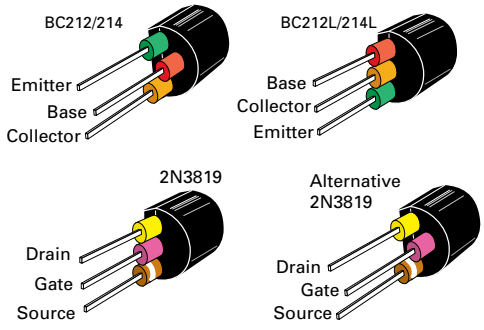


Fig. 3: How the sleeves are put onto semiconductors to identify the leads in all circumstances.

All these tips win £5 book voucher to spend in our Book Store. The idea judged the best each time is awarded a further £5 - so which idea wins the extra voucher this month? Well it's actually been a rather hard decision, as I'd like to award them all the extra voucher.

After much head scratching (followed by removing the splinters from under fingernails) I think the idea from Jonathan M5FUN just has the edge. So, he is the overall winner this time, but thanks to everyone else for their contributions. Now - how about your ideas?

Tex

As an incentive, each published 'Tip' gets a £5 Book service voucher for the author. The best idea each month gets an additional £5 voucher as well. So, get writing! G1TEX

airband basics | backchat | on the road | satellite monitoring | amateur airwaves | software spot | world of cb | scanners

IN THIS MONTH'S

radio ACTIVE

- Scancat-Gold Surveillance edition for controlling and logging a wide range of radios and signals
- The New Maycom FR100 5-band radio on test
- European repeaters: Take your 2m FM transceiver on holiday and find out where the locals chat
- The Ionosphere: Just how does it work and how do radio signals travel the globe and space?

RADIO ACTIVE AUGUST ISSUE ON SALE 20th JULY

Radio Active is published on the third Friday of each month - available from all good newsagents or direct by calling (01202) 659930, priced at only £2.25

SUBSCRIBE - YOU'LL SAVE MONEY!

Subscription Rates	
£30	(UK)
£38	(Europe Air Mail)
£42	(Rest Of World Airsaver)
£49	(Rest Of World Airmail)

As an **avid** reader of the UK's **only** independent **Amateur Radio magazine**, you really **should** consider taking out a **subscription**.

By paying up front for your magazine you can be assured of never missing out on your favourite radio read month after month. You are also saving yourself money over the period of the year! For example 12 issues at current cover price would cost you £33 but by taking out a subscription you are saving £3!

BY SUBSCRIBING YOU ALSO GET THE EXTRA BENEFITS OF:

★ Seeing your copy **before** it gets to the Newsagents! ★ Ensuring that you're **right up-to-date** with all the **latest news** and **reviews!** ★ Having *PW* delivered **direct** to **your door** every month! ★ **Protecting** yourself **against** cover price rises for the duration of your subscription period! ★ Getting the chance to place **FREE** Bargain Basement adverts!

SO, DON'T DELAY – ORDER YOUR SUBSCRIPTION TODAY – YOU KNOW IT MAKES SENSE!

To order your subscription, please use the form on page 76 or call the Credit Card Hotline on (01202) 659930 and quote *PW* Subs 8.

HAYDON Communications

Mail order: 01708 862524 For main product lines see over

PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE VERIFY BEFORE ORDERING. E&OE. NEXT DAY DELIVERY TO MOST AREAS, £10.00.

Q-TEK PENETRATOR

"We've sold 100s all over Europe"

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

ONLY **£179.95** delivery £10

SEND SAE FOR LEAFLET

Wire version now available 45ft long end fed. (1.8-60MHz) spec. as above. Price £159.95.

Q-TEK ZL SPECIALS

Delivery £10.00

2m	5ele (boom 45"/9dBd)	£49.95
2m	7ele (boom 60"/11dBd)	£54.95
2m	12ele (boom 126"/13.8dBd)	£79.95
70cm	7ele (boom 28"/11dBd)	£39.95
70cm	12ele (boom 48"/13.8dBd)	£59.95

Q-TEK YAGIS

Delivery £10.00

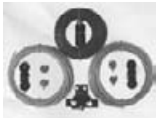
2m	5ele (boom 63"/9dBd)	£49.95
2m	8ele (boom 125"/11dBd)	£64.95
2m	11ele (boom 156"/12.7dBd)	£94.95
2m	5ele crossed (boom 64"/9dBd)	£79.95
2m	8ele crossed (boom 126"/11dBd)	£99.95
4m	3ele (boom 45"/7dBd)	£56.95
4m	5ele (boom 128"/9dBd)	£69.95
6m	3ele (boom 72"/7dBd)	£59.95
6m	5ele (boom 142"/9dBd)	£79.95
70cm	13ele (boom 76"/12dBd)	£46.95
70cm	13ele crossed (boom 83"/12dBd)	£79.95

END FED HALF WAVES

Ground plane free. Made from glass fibre - no ground radials or tuning required.

4m Length 92" (SO239) vertical.....£39.95 *Del £9.00*
6m Length 126" (SO239) vertical.....£49.95 *Del £9.00*

DELUXE G5RV



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

Full size - 102ft.

ONLY **£42.95**

Half size 51ft. Only **£36.95** *Carriage £6.00.*

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

STANDARD G5RV

Full size	102ft	£24.00 P&P £6
Half size	51ft	£21.00 P&P £6

Q-TEK INDUCTORS

80mtr inductors + wire to convert ½ size G5RV into full size. (Adds 8ft either end).....£24.95 (was £22.95) P&P £2.50 (a pair)

REPLACEMENT PARTS
5m length 300Ω twim feeder h/duty.....£5.00 P&P £3
10m length 300Ω twin feeder h/duty.....£10.00 P&P £3

BALUNS & TRAPS

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

1kw Handling

CUSHCRAFT ANTENNA SALE

MA5B	Mini beam 10, 12, 15, 17, 20m	~~£289.95~~	£259.95
A3S	3 ele beam 10, 15, 20m	~~£389.95~~	£349.95
R-6000	Vertical 6, 10 , 12, 15, 17, 20m	~~£299.00~~	£269.95
X-7	7 ele 10, 15, 20m	~~£549.95~~	£499.95
X9	9 ele 10, 15, 20m	~~£799.95~~	£699.95

Q-TEK COLINEARS

P&P £10.00

Glassfibre construction

QT-100 GF 144/70, 3/6dB (1.1m)	£39.95
QT-200 GF 144/70, 4.5/7.2dB (1.7m)	£54.95
QT-300 GF 144/70,6.5/9dB (3m)	£69.95
QT-500 GF 144/70, 8.5/11dB (5.4m)	£125.95
QT-627 GF 50/144/70, 2.15/6.2/8.4dBi (2.4m)	£69.95

MOBILE ANTENNA

P&P £7.00

DB-770M	2m/70cm (3.5 - 5.8dB) 1m PL-259	£24.95
DB-7900	2m/70cm (5.5 - 7.2dB) 1.6m PL-259	£39.95
PL-62M	6m + 2m (1.4m) PL-259	£19.99
MA5M	(20 - 10m) 3/8" fitting	£29.99
CA-HV	(20m - 6m/2m) PL-259	£89.99

COPPER ANTENNA WIRE

(All 50mtr rolls)

Enamelled	£12.95 P&P £5
Hard drawn	£13.95 P&P £5
Multi-Stranded (Grey PVC)	£9.95 P&P £4
Flexweave (H/duty 50 mtes)	£30.00 P&P £5
Flexweave H/duty (20 mtrs)	£15.95 P&P £5
Flexweave (PVC coated 20 mtrs)	£18.95 P&P £5
Flexweave (PVC coated 50 mtrs)	£40.00 P&P £5
PVC coated earth wire (6mm) 15m roll	£10.00 P&P £5
Copper plated earth rod (4ft)	£13.00 P&P £6
Copper plated earth rod (4ft) + 10m wire	£18.99 P&P £6

RECHARGEABLE ALKALINE CELLS

Starter kit includes charger & 4 x AA cells. **£13.99** + £2.50 P&P.

Please note that only the pecial cells can be recharged with this charger.

Extra cells available @ 8 x AA pack £10.99 £1 P&P
4 x AA pack £5.99 £1 P&P 4 x AAA £6.25 £1 P&P. Rechargeable Alkaline. No memory effects. 1.5V cells. 3 x capacity of nicads.

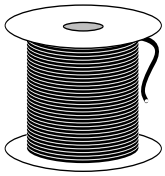
COAX BARGAINS

100m roll of RG-213 coax
ONLY **£49.95** P&P £10

100m roll of RG-58 coax
ONLY **£25.00** P&P £8.50

100m roll of Mil spec RG-213 coax
ONLY **£69.95** P&P £10

100m roll of Mil spec RG-58 coax
ONLY **£35.00** P&P £8.50



NISSEI PWR/SWR METERS

RS-502 1.8-525MHz (200W) .....£79.95 P&P £5
RS-102 1.8-150MHz (200W) .....£59.95 P&P £5
RS-402 125-525MHz (200W).....£59.95 P&P £5
RS-101 1.8-60MHz (3kW).....£79.95 P&P £5
RS-40 144/430MHz Pocket PWR/SWR...£34.95 P&P £1

CAROLINA WINDOM

CW-160	(160-10m)	£105.95 P&P £7.00
CW-80	(80-10m)	£82.95 P&P £7.00
CW-80	Special (½ size)	£89.95 P&P £7.00
CW-40	(40-10m)	£79.95 P&P £7.00

Wimdoms are ½ or end fed.....P&P £7.00

INTERFERENCE STOP IT

Rectangular snap-fixing ferrite cores suitable for :- Radio coax/TV/mains/telephone/PC & data cables. Plastic teeth prevent it from sliding on cable. Simply snap close onto cable and job is done!

Bulk purchase hence **2 for £7.95** (P&P £2.50)

FERRITE RINGS

10 for **£10.00** *or* *Superb quality*
20 for **£15.00** P&P £3.00

NEXT DAY DELIVERY TO MOST AREAS, £10.00.

20ft BARGAIN MAST SET

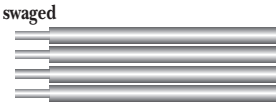
4 x 5' lengths of approx 2" extruded (16 gauge) heavy duty aluminium, swaged at one end to give a very heavy duty mast set.

SSP ~~£60.00~~
LIMITED STOCK
£39.95
Del £10

2 sets for £70.00
Del £12.50

20ft MAST SET

4 x 5' lengths of 1¼" swaged slot together aluminium pole. SSP £29.95.



LIMITED STOCK **£24.95** DEL £10

ALUMINIUM POLES

2" x 2.5m length	2mm wall thickness	£19.99 P&P £10
2" x 10ft collection only	2mm wall thickness	£24.99
2" x 12ft collection only	2mm wall thickness	£29.99
2" x 20ft collection only	2mm wall thickness	£39.99

ALL MEASUREMENTS ARE APPROX

FIBRE GLASS MASTS

1½" Dia	£8.50 per metre *P&P £10*
1¾" Dia	£10.50 per metre *P&P £10*
2" Dia	£12.50 per metre *P&P £10*

Fibreglass available up to 5m lengths.

NB. WE CAN ONLY DELIVER UP TO 2.5M LENGTHS

TELESCOPIC MASTS

6 section telescopic masts. Starting at 2½" in diameter and finishing with a top section of 1¼" diameter we offer a 8 metre and a 12 metre version. Each mast is supplied with guy rings and stainless 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 10 feet. All sections are extruded aluminium tube with a 16 gauge wall thickness.

8 mtrs **£99.95** 12 mtrs **£139.95** *Carriage £10.00.*

Telescopic mast lengths are approx.

Tripod for telescopic masts.....£89.95

METAL WORK & BITS

MAST HEAD PULLEY

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

£8.95 + P&P £2.00

2"	Mast base plate	£12.95 P&P £5
6"	Stand off	£6.95 P&P £5
9"	Stand off	£8.95 P&P £5
12"	T&K Brackets	£12.00 P&P £8
18"	T&K Brackets	£18.00 P&P £8
24"	T&K Brackets	£20.00 P&P £8
U bolts (1½" or 2")		£1.10 each
8 nut universal clamp (2" - 2")		£5.95
2" - 2" cross over plate		£10.95
3-way guy ring		£3.95
4-way guy ring		£4.95
2" mast sleeve		£9.95
1½" mast sleeve		£8.95
Standard guy kits (with wire)		£23.95 P&P £6
Heavy duty guy kits (with wire)		£26.95 P&P £6
Ground fixing spikes (3 set)		£18.00 P&P £6
30m pack nylon guy rope		£10.00 P&P £2
30m pack (3mm dia) winch wire		£16.00 P&P £4

UR THURROCK SHOWROOM "THE LARGEST AMATEUR SHOWROOM IN THE UK"

ICOM IC-R3

NOT FOR THE FAINT-HEARTED!

NEW MODEL

'A first!' TV/video picutre & sound! Certainly a gadget for the future – see things you didn't know existed! A wide-band scanner covering 0.5-2.3GHz (AM/FM/WFM) with "TFT" colour display.

Case. £17.99

SPECIAL OFFER ~~£449.00~~

MVT-7300

SPECIAL OFFER

- Compact wideband hand-held receiver
- Covers 521kHz-1300MHz (all mode)
- 8.33kHz steps
- De-scrambler & bug detctor

Nicads and charger option. £19.95

~~£289.00~~

SALE PRICE £249.00

ICOM IC-R2

We've sold 100s

Miniature wideband hand-held scanner covers 0.5-1300MHz (AM, FM/WFM). Search banks memories and many more features.

Soft case for IC-R2 .....£16.99

SPECIAL OFFER £129.95

BEARCAT UBC-9000XLT

25-1300MHz wideband desktop scanner with turbo scan. (Selectable AM/FM/WFM). Selectable tunning steps + alpha-numeric tagging.

"OUR BEST SELLING DESK-TOP SCANNER"

SPECIAL OFFER £249.00

FAIRHAVEN RD-500VX+

Superb wideband receiver (all mode) with over 50,000 memories capable of holding text. 20kHz-1750MHz.

SSP: ~~£999.00~~

UK's No1 PERFORMER.

8 33kHz compatible

SALE PRICE £799.00

ICOM IC-8500

FREE PSU

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

2 YR G'EE

Latest UK version

SALE PRICE £1149.00

WORLDSPACE HITACHI KH-WS1

Over 40 channels of crystal-clear, fade-free programming direct from satellite to your portable digital radio. Original RRP £249.00.

Sanyo WS-1000 now in stock. £99.95

HEAR SIGNALS FROM OUTER SPACE

OUR PRICE £99.95

Incl. post. Outdoor Yagi antenna kit. £50.00

SANGEAN ATS 909

Superb receiver with true SSB and 40Hz tunning. Sold under Roberts name at nearly twice the price. Features RDS facility, 306 memories and FM stereo through headphones. The ATS-909 is superb value. Runs on 4 AA batteries not supplied or optional PSU.

SPECIAL OFFER £139.00

P&P £10

SONY SW-100E

★ STAR BUY ★

★ Miniature portable all mode SW receiver ★ Station presets for 50 frequencies ★ Single side band system ★ Synchronous detector ★ Tuning in 100Hz + 1kHz steps ★ Includes compact antenna/stereo earphones/ carrying case RRP ~~£229.95~~.

ACE-30 PSU for above...£24.95

AN-100 Active antenna...£64.95

SPECIAL OFFER £139.95

P&P £10

REALISTIC DX-394

★ Superb performance SW receiver ★ 0.2-30MHz (all mode) ★ Selectable tuning steps (down to 100Hz) ★ 240 or 12V ★ Digital S-meter ★ Attenuator ★ Key pad entry ★ 160 memories ★Clock/timer ★ Noise blanker ★ Limit scan ★ Tape output.

Was £199.00.

SPECIAL OFFER £149.95

JUMBO WALL CLOCK

RADIO CONTROLLED

- Wide screen/ 2" digit time display
- Barometer
- Calender
- Temp
- Auto RF synch clock from Rugby.

SALE PRICE £59.95

P&P £4.50

BAR-888U

WEATHER/RADIO CONTROLLED CLOCK.

- Supplied with one remote (wireless) sensor
- Weather forecast
- Barometer
- 24 hr "radio" clock
- Thermometer

RADIO CONTROLLED

£69.95

P&P £4

GARMIN GPS12

Powerful 12 channel GPS 500 way points with graphic symbols. Simple one-hand operation. Waterproof construction. (Ideal for APRS use!).

Etrx "CAMO" new model.....	£129.95
Etrex	Special offer..... £109.95
Emap	Special offer..... £199.95

SALE PRICE £99.95

GARMIN STREET PILOT

UK's most popular GPS system. You may know where your coming from but do you know where your going? Garmin knows both. Superb-ready to use (with maps) car GPS.

Includes CD + 16 meg cartridge

SPECIAL OFFER £469.00

GARMIN GPSIII+/+

SPECIAL

Powered by AA cells or 13.8V, this compact navigational system gives detailed maps of the UK & Europe. Supplied with data lead and free on-board maps also with free CD ROM.

SALE PRICE £349.95

FREE THIS MONTH - UK MAP CD WORTH £70.00

MFJ PRODUCTS

MFJ-259B

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

ONLY £199.95 P&P £6

UK VERSIONS

MFJ-269	160-70cm analyser	£269.00
MFJ-949	300W ATU + dummy load	£125.00
MFJ-969	HF + 6m ATU	£149.95
MFJ-962D	1.5kW versa tuna	£219.95
MFJ-784B	DSP filter	£189.95
MFJ-418	CW tutor	£64.95

D-308B BLACK DELUXE DESK MIC

(with up/down). Every amateur using this mic (over 2000) has expressed extreme pleasure with it's performance.

£49.95

P&P £6.00

OPTIONAL LEADS (P&P £1.50)

A-08	8 pin "Alinco" round	£9.95
K-08	8 pin "Kenwood" round	£9.95
I-08	8 pin "Icom" round	£9.95
AM-08	Modular phone "Alinco"	£9.95
YM-08	Modular phone "Yaesu"	£9.95
IM-08	Modular phone "Icom"	£9.95

NEW NISSEI PS-1225

25A @ 13.8V yet lighter than an IC-706 but about the same size.

Features: ● Ultra quiet fan ● Over voltage/current protection ● Weigh's ~ 1.8kgs

- Size: 57 x 177 x 190mm
- Additional sockets at front & rear
- SSP ~~£99.95~~.

INTRO PRICE £69.95

Delivery £10.00

Radio Basics

Rob Mannion says it's "Time for something really different now" in his column for beginners and the not-so-experienced. And it appears he's been watching a rather special clock!

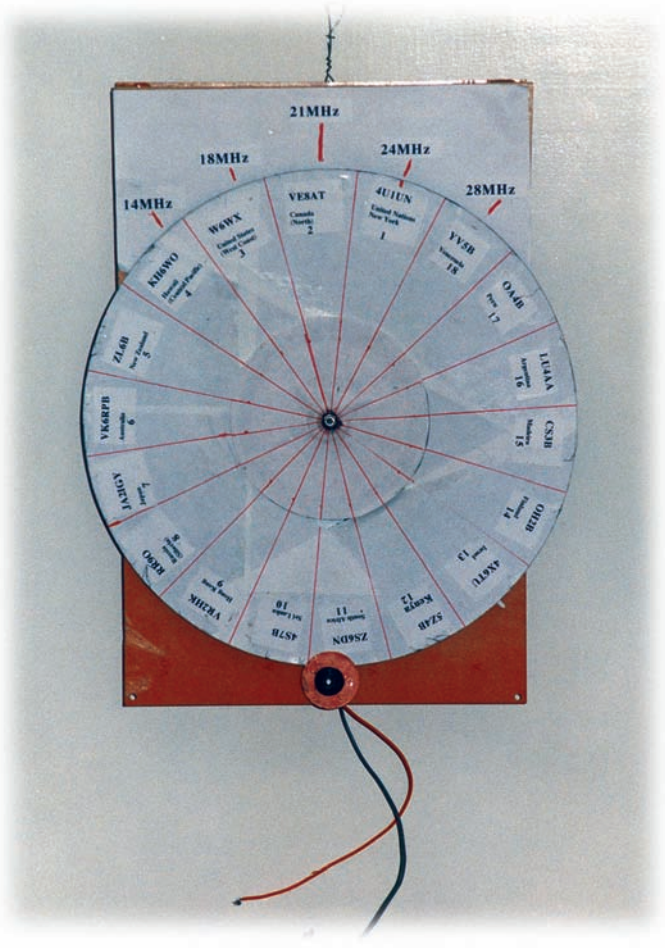


Fig. 1: Using the Radio Basics International Beacon Project 'clock' you can monitor the h.f. beacons, even if you can't read Morse at all! Rob G3XFD says all you need is a little patience, ingenuity, an old vinyl record and a mains powered synchronous motor (see text).

Regular readers will know that I am a keen supporter of the International Beacon Project* and find that the world-wide network of beacons provide an almost instant appraisal of propagation conditions for h.f. With that interest in mind and to encourage readers to take advantage of the IBP beacons- in the coming months there's to be a series of different article is *PW* with differing levels of constructional projects.

* *Please see information panel.*

However, the first IBP project to appear in *PW* is for RB readers and it's actually a clever (but extremely simple) 'clock'. I use the word clock in single quotes carefully though because in reality it won't keep good time for very long but long enough for beacon listening purposes.

The IBP clock, **Fig. 1**, is made up from very cheap and easy-to-obtain components and is very enjoyable to make. I've made several and they're fascinating and amusing to watch when in action. Additionally, this approach means that those who cannot read Morse (or find 22w.p.m. difficult as I do!) won't be denied the extremely useful facilities of the IBP system.

So, before we get stuck into the project let's look at the basis of the IBP system, how it works and the way we can take advantage of it ourselves. Basically speaking there are 18 beacons operating world-wide on a very closely timed sequence. They come on air for 10 seconds on each band (**with occasional exceptions**) give their callsigns at 22.w.p.m. and then send four dashes - the first at 100W and ending up at 100mW. Each beacon uses a Kenwood TS-50S and a Cushcraft vertical antenna.

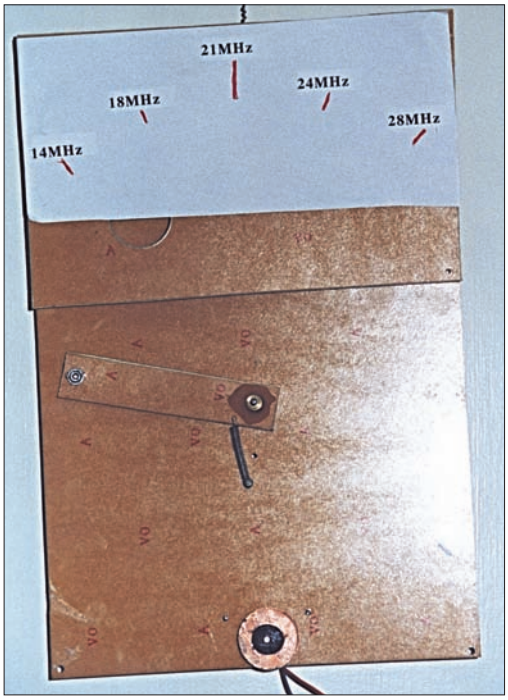


Fig. 2: The Radio Basics IBP clock is fabricated from p.c.b. material and makes both an amusing and helpful project. Most items can be found in the junk box too!

The beacons operate in a sequence going Westwards all the time, starting off with **Number 1 - 4U1UN** (United Nations Building) in New York and within three minutes all the other beacons will have sequenced. Once a beacon has transmitted on a band it goes silent on that band and transmits on the next band up.

The IBP frequencies are as follows: 14.1, 18.110, 21.500, 24.93 and 28.2MHz. The sequence starts on the hour and runs on continually repeating three minutes cycles. So, if you listened for 4U1UN on the hour on 14.1MHz and the pathway was available, you'd hear it for the first 10 seconds, callsign first followed by the four dashes. It's surprising just how many occasions that the 100mW level signal can be heard!

If you then quickly switched up to 18.110MHz you could then hear the same beacon transmitting on that band, followed by transmission on 21, 24 and 28MHz - all following each other at 10 second intervals. Modern receivers allow us to switch that quickly - so it's possible to get a good all round evaluation for the higher h.f. bands very quickly indeed.

However, if you wish to stay on one band to evaluate propagation conditions - you can do so very easily. All you have to do is to listen to the IBP frequency (we'll concentrate on 14.1MHz at the moment) for the complete three minute cycle. If all the beacons can be heard...conditions should be good - but if only a few are heard you'll know what you're likely to hear - especially if you've got the RB Beacon 'clock' to help you!

It's A Record!

Hiding behind my stuck-on paper clock face for one of the prototypes I've made is an old long playing (LP) vinyl record! It was badly scratched but was an ideal size for the beacon monitoring project.

In the next two issues of the RB column I'm planning to

describe two methods of making this simple device. One will require buying a specific mains driven synchronous motor, and the first will describe how you an (with some innovative work and ingenuity) utilise a motor you already have to hand.

The heart of the system is an old mains synchronous motor I removed from a time switch. These are often found at junk sales and at rallies. They're often also sold by electrical shops- very cheaply. A common final output is often six revolutions-per-minute (r.p.m.) The prototype shown in Fig. 1 uses one of these and as you'll realise, it's quite convenient.

The majority of old vinyl LPs seem to have a diameter of 300mm and this makes them ideal to use as a rotating dial for the clock (more details later). The motor is 'locked' to the mains frequency and will provide a remarkably accurate prime mover for the clock. In fact, before the advent of the 1.5V so called 'Quartz' clocks the synchronous motor was to be found in most mains driven wall clocks.

In this version of the project the motor rim-drives the LP. In Fig. 1, you'll see that drive wheel is mounted at the 6 o'clock position. The actual diameter of the drive wheel (made up from two stiff rubber washers) is mounted on the motor spindle using an off-cut of nylon drive shaft spindle from a potentiometer. It was drilled and pushed (as a tight fit) onto the motor spindle.

Then using a radius arm* I cut two discs of p.c.b. material (the whole assembly is made up from Synthetic Resin Paper Board - SRPB) to keep the edge of the LP running on the rim of the drive wheel. These sit either side of the washer forming the drive wheel, and - using Araldite 'Rapid' I attached rubber washes either side of the discs to anchor them in place.

**A rather fancy term for a short length of wood with a hole drilled (for the central screw pivot) in one end, which holds down the rotating arm onto the section of SRPB to be cut - so that it's just possible to easily rotate the arm in a circle. A wood screw is then placed at the radius required to form the size of disc you need and it's then slowly turned. As it's turned the hardened end of the screw (just poking out of the wood on the face against the SRPB) deeply scribes the SRPB material, forming a circular cut. This is continued - with occasional turns on the wood screw to keep it scribing) until the disc is completely free of the p.c.b. material sheet. The method is successful on either SRPB or other resin boards (including glass fibre types).*

Swivelling Arm

The photograph in **Fig. 2** (Page 22) shows the swivelling radius arm which holds the centre of the LP, with a brass bush taken from an old potentiometer. It's spaced **away** from the SRPB backing plate to line up the LP spindle to the rim drive using a bolt, attached to the underside. It needs to present a fairly blunt- but no too blunt-face to the board so it will slide up and down gently to ensure good contact between the LP and the rim drive.

The spring (I had several from old record players but a rubber band will do) **gently** pulls the pivot arm towards the rim drive wheel to provide 'traction' so it won't slip. Experimentation is the name of the game here!

The fixed pivot end (directly under the 14MHz figure) is made so that the arm can swivel up and down but it won't move in-and-out of the board towards or away from you. Here we can use a very clever little trick to our advantage!

The photograph, **Fig. 3**, shows the rear of the motor mounting board. Note that there's a 'fillet' (strip) of p.c.b. material soldered to the board to stop it flexing. This method is very successful. To the right - halfway up the board you'll see the head of the bolt which provides the fixing for the bushing (I used a short piece of brass tubing found in my screwbox but you can use three or four loose nuts or washers) to which is attached a strip of p.c.b. material acting as a spring.

The spring is required so that the radius arm for the LP is forced inwards fairly tightly towards the board. This is achieved by lifting the p.c.b. strip away from the main board (remember it's trapped under the head of the bolt) and when enough tension is found to be present on the main radius arm it's soldered into place on the fillet. Simple eh? And it works well!

● Fig. 3: Despite the fact that the recommended p.c.b. material is thin - Rob G3XFD describes how it can be strengthened. This means you can make the project yourself - with the minimum of workshop facilities or experience.

Drive Ratios

The accuracy and usefulness of the beacon clock depends on getting the synchronous motor drive to LP clock face transmission to the right ratio. This is very important but is easy and amusing to achieve!

My motors all seem to have anti-clockwise outputs. No problem because with the rim drive it eventually rotates clockwise. If your motor goes the other way you'll have to reverse the beacon chart on the clock face.

The rubber washers I had presented (when mounted on the drive shaft) a diameter of 15mm. This made the ratio step-down a very simple 20:1. Hence the use of the old LP which I remembered was around 300mm!

So, when held to the rim of the LP the motor with its 15mm diameter rubber wheel (the washer), running at 6r.p.m. is running it rotates the whole assembly at three revolutions per minute (in theory but we'll check calibration later!).

Clock Face

Having described the basis of the clock itself, let's now look at the dial. This is extremely simple and is marked in 18 separate 20° sections. Mark them up on your LP depending on which way your motor rotates the disc.

Each 20° section represents a beacon's 10 second time 'slot'. On my prototype you'll see 14MHz to the left, and 18MHz to right and so on. With this I can follow each beacon 'up' the system, or monitor each bands' beacons individually.

No knowledge of Morse is required to use this system but I can assure you... you'll soon be able to identify each beacon's c.w. because you identify the Morse with the time slot on the disc!

Next month I'll discuss how you can calibrate and use the system to advantage. I also plan to describe a direct-drive verison which will require a specific motor with a ready-to-go gearbox of the correct ratio. Until then good listening (to the beacons) to you all!

PW

Information Panel

Back issues of the January 1999 *PW* with the IBP article are available for **£2.50**, or you can buy a complete set of 12 issues from 1999 for **£12 inc. P&P**. Call **(01202) 659930** to place your order.

Cost:	£2899.00
Company:	Yaesu UK Ltd
Contact:	Sales
Tel:	(01962) 866667
Website:	www.yaesu.co uk

The Yaesu FT-1000MP

Taking a well earned breather from his busy duties as a BBC TV news cameraman during the recent UK General Election...Carl Mason relaxed for a while in some radio luxury using the latest FT-1000MP MkV transceiver.

Carl Mason GW0VSW - *PW*'s HF Highlights author - thoroughly enjoyed using the Yaesu FT-1000MP MkV "Dream Machine" and was reluctant to see it leave his shack!

I wasn't sure what I was letting myself in for when asked to write a review of the **Yaesu FT-1000MP MkV**. I'd read a good deal about the new transceiver since its launch at the Dayton HamVention, 2000.

Fortunately...it took a few weeks for the transceiver to be delivered. I was grateful for the delay as during this time I was able to clean up the shack which was long overdue and make room for the new arrival!

The Mark V, shown in the heading photograph and **Figs. 1**, **2** and **3**, certainly boasts a lot of features. These include **Interlocked Digital Bandwidth Tracking** (IDBT) which automatically aligns the bandwidth of the **Enhanced Digital Signal Processing** (EDSP) receiver to match the i.f. filter pass-band. This means the operator does not have to make separate adjustments of the analogue and digital signal processing (DSP) filters while operating.

Yaesu have also included a **Variable RF Filter (VRF)** which is manually tuned for the best sensitivity or rejection of strong nearby signals. Other features include dual receive, an r.f. speech processor, an r.f. monitor for voice modes, c.w. spot switch and c.w. pitch control to name a few.

The FT-1000MP MkV also includes Yaesu's **Computer Aided Transceiver** (CAT) control. This is useful for those of you who want to control and customise the tuning, scanning or other operating functions of the transceiver by external computer using the rear serial port.

The professional cameraman is never at home in front of the lens! Carl Mason GW0VSW was very reluctant to hand the FT-1000MP Mark V back to Yaesu, regarding it as his 'Dream Machine".

Power Output

The MkV provides up to 200W of continuous power output on c.w., s.s.b. and narrow band frequency modulation (n.b.f.m.). Additionally, the maximum power output of the MkV can be limited to 75W for Class A operation (driving a linear) using memory programming.

The transceiver is designed to be used in conjunction with the supplied **FP-29** dual voltage switch mode power supply, **Fig. 4**. This gives the 30 and 13.8V required for 200W operation. There's a small cooling fan mounted underneath this unit which runs continuously and is just about audible in a quiet room.

First Impressions

My first impressions? I'll begin by saying that the MkV is certainly a good-looking transceiver.

The MkV has a well laid out front panel containing over 90 knobs and buttons. I particularly liked the two rotary tuning knobs, for the main and sub receivers and are very smooth in operation. Together with Yaesu **Shuttle Jog** fast-tuning facility these made frequency selection very easy.

To select a band the user can do one of two things: push individual buttons on a keypad or push one of two buttons marked **Up** and **Down** near the main tuning knob. Each button on the keypad has two memories and the user's operating preferences for both mode and filtering are stored in the MkV's internal memory.

The fluorescent display panel does take a bit of getting used to as there's a great deal of information available. To start with - the main and sub frequency displays both have an S-meter with peak-hold option.

Other meters are also included

MkV HF Transceiver

Product

The Yaesu FT-100MP MkV

Pros & Cons

Pros: Superb specification, 200W output, sensitive receiver.

Cons: A little on the expensive side.

Summary

A very impressive transceiver that I enjoyed using and was sorry to see go. My thanks go to **Yaesu UK Ltd, Unit 12, Sun Valley Business Park, Winnall Close, Winchester Hampshire SO23 0LB** for the loan of the review transceiver.

Fig. 1: Full front view of the comprehensively equipped transceiver.

and selectable to display standing wave ratio (s.w.r.) from 1 - 3, final amplifier collector current (IC) from 0 – 30A, speech compression from 0 to 30dB, automatic level control (a.l.c.), d.c. supply voltage and microphone audio input level.

There's also a tuning scale provided as an aid to zero beating c.w. stations! The display is not as clear as the one found on the Icom IC-775 DSP, but in time I could grow to like it.

Front Panel

On the front panel of the MkV there were two features that I immediately liked. The first are the twin headphone sockets, one a half-inch jack, the other a 3.5mm mini stereo jack, allow two operators to listen at the same time.

The other feature I liked was the key jack socket. With my IC-737a this socket is at the rear of the transceiver and I have to find a small button alongside it to select the internal keyer. A real pain if access is a problem, which it is!

The FT-1000MP MkV however, allows the operator to select the keyer from the front. During the review period I was able to operate, depending on my mood, with both a straight key or twin paddle within seconds.

Dual Receive

Having the facility of Dual Receive was also a plus point. For example, in a contest you could be transmitting and listening on one v.f.o., while at the same time listening up for possible multipliers on the other.

So, when using headphones, you can have the **Main** v.f.o. in the left ear and the **Sub** v.f.o. in the right with each having its own adjustable volume control. Clever idea eh?

Enhanced DSP

I was very keen to try out the Enhanced Digital Signal processing (EDSP) contours, which allow the frequency of a received signal to be modified according to a specific set of parameters. These are identified after pushing the appropriate button by colours on a panel to the left of the main tuning knob (Green for low-cut, orange for mid-cut and red for high-cut).

In practice, the three EDSP contours worked very well and did make a difference when listening to pile-ups. I found that you really do hear stations come and go depending on where they are in the pass-band!

Another advantage of the MkV's EDSP is the flexibility to customise the received and transmitted audio. The easiest way to hear the effect of the settings is to use the MkV's built-in monitor circuit. This lets the user listen to the audio while transmitting. You can then adjust any of the settings to suit your own personal taste or those of the receiving operator

There's a **Noise Reducer** (NR) that has four settings which help to reduce random noise, static, pulse or man-made noise and heterodynes. As with the contour feature, the user needs to play with the NR settings to find the most effective position at the actual times and conditions you're on air.

Finally, I should mention the **Audio Peaking Filter** (APF). Using this the operator can select from 240, 120 or 60Hz bandwidths as well as a **DATA** position. This position is the best choice when you operate FAX, Packet or SSTV. I found that APF was very effective...especially when working weak c.w. stations.

Reducing Interference

Several controls on the MkV help you deal with reducing interference. The first of these is the **Noise Blanker** (NB) which has two circuits to help combat pulse noise.

Circuit A is a narrow-pulse blanker for short pulse noises such as those caused by power lines. Circuit B is wider pulse blanker used for longer duration man-made noise but can also help reduce the level of static crashes from electrical storms.

At my location power line noise is a big problem and by using a combination of NB and EDSP, I was able to reduce the interference to a very low level.

There are two banks of selectable filters, **NB1** and **NB2**, one each for both the 8.215MHz 2nd i.f. and 455kHz 3rd i.f. in the main receiver. Factory installed 500Hz and 2.4kHz filters are fitted at the 2nd i.f. and 2.4kHz filter at the 3rd i.f.. The Mark V allows filter selections to be cascaded in order to help the operator fight off QRM. Several other filters are available and a guide to fitting these can be found in the instruction manual.

The **Width** control allows the operator to adjust the receive bandpass just enough to remove unwanted signals. In its central position maximum bandwidth is selected. This is equal to the bandwidth of the filter selected. By rotating the knob right or left, it's then possible to adjust the pass-band lower or higher in frequency.

Turning the **Shift** control allows the user to move the receive pass-band up or down to remove QRM from the working frequency.

There are also three **Clarifier** buttons marked **RX**, **TX** and **CLEAR**. These can be used to offset either the receive and transmit frequencies or both.

The FT-1000MP MkV allows the operator to preset for an offset of up to 9.99kHz. This function can be used during QSOs with a station whose signal tends to drift or perhaps when working a station that hasn't quite been tuned corredctly on the first 'over'.

The VRF I mentioned earlier allows the user to switch in a narrow bandpass pre-selector filter into the receiver's r.f. circuit pathway. This is a great help in reducing potential interference from strong out-of-band signals and adjacent frequency stations.

Also included is **Automatic Gain Control** (a.g.c.) which has four positions: **Fast** for s.s.b. reception, **Slow** for c.w. reception, and **Auto** where the a.g.c. is automatically selected depending on the mode used and **Off**. Next to this is the r.f. Attenuator (ATT)

switch, which also has four settings 0, 6, 9 and 12dB.

Combinations of all these and EDSP were used together throughout the review and worked extremely well.

Fig. 2: Close-up view of the left hand side of the MkV's front panel (see text).

Fig. 3: Close-up view of the right hand side front panel on the transceiver (see text).

Three Antennas

On the MkV's rear panel, **Fig. 5**, there's a facility to connect three antennas: two for transmit/receive and one for receive only. Again, these antennas can be selected by pressing one of two buttons on the front panel marked **A/B** and **RX**.

Usefully, the antenna selection for each band or mode is automatically remembered by the transceiver. If a separate receive antenna is connected and the front panel RX switch selected, the receiver will use it. If the operator then transmits, a relay will switch in and the last selected antenna 'A or B' will be used for transmit. For this review I used position A' for my G5RV and 'B' for a Sandpiper vertical antenna.

Automatic Antenna Tuner

The built-in internal **automatic antenna tuner** (auto a.t.u.) makes quick band changes and operation possible. The auto a.t.u will match the antenna and store the exact position of the tuning capacitors and inductance values in one of 39 memories.

Matching will be achieved providing the impedance of the antenna is between 20 and 150Ω and the s.w.r. is less than 3:1. It's worth noting that it can take up to 50 seconds to match certain difficult impedances. So, how well would this handle my inverted G5RV?

Fig. 4: Power for the transceiver is provided by a switch-mode unit. This approach saves weight - especially for those special DXpeditions! (see text).

Digital Modes

For those of you who use h.f. digital modes the MkV offers several special features. It has a built in Audio Shift Keying (AFSK) generator for RTTY and AMTOR terminal units, optimised i.f. bandwidth and automatic display offsets and a 18 millisecond transmit-to-receive turn around time.

Low level main receiver output is provided from the rear panel jacks and these are unaffected by front panel volume controls. Audio level from these jacks is 100mV. The RTTY level is fixed but the packet audio level can be adjusted if necessary.

Speech Processor

Before the user can set up the **Speech Processor** the desired tone characteristic must be chosen using the selector switch on your microphone. The supplied microphone is the **MH-31/B8** and the two-position selector switch for this can be found on the back.

Position 1 is selected if the operator wants to increase the bass response and position 2 is chosen when a reduction on low frequencies (the best setting for DX operating). Once the proper microphone setting has been found the r.f. speech processor can be switched in to increase the average power of the transmitted signal. On the air I found the MH-31 microphone was very comfortable to hold especially during long QSOs.

Fig. 5: The rear panel on the FT-1000MP provides a host of connections for accessories and specialised operations, along with the two main antenna socket (see text for comments).

Voice Operated Control, **VOX**, is provided and it's set using three controls in an access panel on the top of the transceiver. This must be set to match the microphone and station location. It was simple to do and only took me a few minutes.

Scanning VFO

On the air the user can start scanning of the main v.f.o. by holding the **UP** or **DWN** buttons on the HF-31 for half a second. Scan speed can be increased x10 by pressing either the microphone **FST** button or the **FAST** button on the front panel.

The scan rate can be adjusted using menu programming. The MkV has 99 programmable memories and the user can decide just how these are scanned for the operator's particular operating needs.

On The Key

On the key there are several types of c.w. transmission available with the MkV. With Semi break-in, the transceiver remains active except during pauses in your transmission. If full break-in is preferred, a switch marked **BK-IN** is pressed and the receiver will be activated between each dot and dash.

The built in electronic keyer offers two iambic modes as well as a mechanical bug keyer emulation where one paddle produces dots and the other dashes manually. The keyer is activated by a button on the lower right part of the front panel which has speed and pitch controls alongside. **Auto-Character Spacing** (ACS) is provided and the weighting can be adjusted by the operator through the menu selection.

On The Air

Now it's time to report my on-the-air findings. This was the part I was looking forward to!

Band conditions were not at their best during the review period. However, there was some activity on 24MHz, which has become a favourite band for me over the past few months.

I selected the G5RV antenna and pressed **Tune**. And **within seconds** the auto a.t.u. had matched the antenna and I was ready to operate.

Tuning slowly up the band I heard **V51AS** (Namibia). I tried for a short while to work him using 50W without success. Turning the power up to 150W I got him on the fourth call.

A little later I heard VP8SDX working a huge pile-up and he was operating split frequency. Fortunately, this was very easy to set up on the MkV.

The transmit frequency is selected on the v.f.o. of the operator's choice which is then indicated by a red **Transmit** l.e.d. above the v.f.o. chosen. The transceiver then automatically changes the other v.f.o. to receive. This is indicated by a green **RX** l.e.d.

If the operator then pushes the illuminated green **RX** l.e.d. you mute that receiver and the l.e.d. flashes as an indication of this. When both green l.e.d.s are illuminated the transceiver is then in **Dual Receive**.

Dual receive worked very well and I was able to listen up the band to try and 'tail end' the last station being worked. After 15 minutes I heard my call and the Falkland Islands entered my logbook!

A few days later **J88DR** was heard calling CQ close to two European stations. Using the 500Hz filter and the EDSP contours I was able to work St. Vincent with little interference from the other stations.

Selecting other bands, I was pleased to see that the auto a.t.u. would tune and let me operate c.w. on all bands except 10 and 28MHz. There is a note in the instruction manual regarding the G5RV antenna that tells you additional impedance matching will be required on these bands plus 21MHz. When using s.s.b. this was indeed the case. It may be of interest to know that my IC-737a will tune all bands on this antenna **except** 21MHz!

Complimentary Reports

Received reports when using s.s.b. were very complimentary without using the r.f. speech processor. Several DX stations commented on the very good audio quality including **Peter SM4HCF** (Sweden) and **Ray WA2SRO** (USA) both on 14MHz and Lino T77M (San Marino) on 18MHz.

Incidentally, the auto a.t.u. allowed me to use the Sandpiper vertical on several bands.

Received signals were down compared to the G5RV, but using c.w. I was still able to work CN8YR (Morocco) on 18MHz with 120W, P49V (Aruba) on 21MHz with 150W, JA8BGR (Japan) and J5X (Guinea-Bissau) on 24MHz with 180W and LW9EOC (Argentina) on 28MHz with 100W. Good going considering the compact size of the Sandpiper vertical antenna and the less that ideal location.

Abridged Manufacturer's Specifications

General

Receiver freq. coverage:	100kHz – 30MHz
Transmitter freq. coverage:	1.8 – 28MHz (Amateur bands only)
Frequency stability:	±0.5ppm (after 1 min. @ 25°C)
Operating temperature range:	-10 to +50°C
Emission modes:	c.w., a.m., s.s.b., n.b.f.m. FSK and AFSK.
Frequency steps:	0.625/1.25/2.5/5/10Hz for c.w., s.s.b. RTTY and Packet; 100Hz for a.m. and n.b.f.m.
Antenna impedance:	50Ω unbalanced 16.6 – 150Ω unbalanced (inbuilt a.a.t.u.).
Supply voltage:	FP-29 - d.v. 30V and d.c. 13.8V
Dimensions:	410 (W) x 135 (H) x 347 (D) mm
Weight (approx):	14kg

Transmitter

Power output	Adjustable up to 200W (50W a.m. carrier) Class A mode (s.s.b.): 75W maximum
Duty cycle:	1:4 (Typical)
Modulation types:	a.m.: A3E low-level (early stage), s.s.b.: J3E balanced n.b.f.m.: F3E variable reactance, AFK: J1D, J2D audio frequency shift keying
Maximum n.b.f.m. deviation:	± 2.5kHz
Shift frequencies (FSK):	170, 425 and 850Hz
Packet shift frequencies:	200 and 1000Hz
Harmonic radiation:	Better than –60dB (Typical)
Carrier suppression (s.s.b.):	At least 40dB below peak output
Undesired sideband suppression:	At least 55dB below peak output
Microphone impedance:	500 to 600Ω

Receiver

Circuit type:	Quad conversion superhet (triple conversion for n.b.f.m.)
Intermediate frequencies:	Main Rx; 70.455MHz/8.215 MHz/455kHz, Sub Rx; 47.2 MHz/455kHz
Maximum audio output:	2W into 4Ω with <10% THD
Audio output impedance:	4 to 8Ω

Available Options

There are a number of options available for the MkV. Internally they include the **TCXO-6**, which is a temperature compensated crystal oscillator module for special applications or environments where extra frequency stability is essential. An example of this would be long term packet monitoring under wide temperature variations.

A wide selection of add-on i.f. filters are also available. If purchased these will compliment the four already installed as standard.

Externally there's also the **SP-8** loud speaker. This includes its own audio filters.

If you're a keen contest operator the **FH-1** Control Keypad will be useful. It will let you operate the Contest Memory Keyed, v.f.o./Memory Function Control and the main and sub v.f.o. controls all from a remote operating position.

For those keen on QRO operation there's also the **Quadra** 1kW linear amplifier. This is specifically designed to match the FT-1000MP Mark V and allows for fully automatic band changes and up to 1kW of power output.

Fine Transceiver

The FT-1000MP MkV is certainly a fine transceiver and I enjoyed using it. I could not find fault with the rig and can honestly say that for my kind of operating it was a pleasure to use.

However, it's impossible to cover all of MkV's features in a review like this. But I hope that the report of my experiences provides you of some idea of just what's on offer.

The MkV has all the convenience features and performance top DX operators and contesters find useful and have come to expect in a modern transceiver. Most of the controls are intuitive and straightforward and have a nice 'feel' to them.

If you asked me if I would like one I would have to say "Yes". The excellence of the FT-1000MP MkV does not come cheaply though at **£2899** and I guess that for the majority of us it will have to remain just a Dream Machine! *PW*

Zig-Zag Log Periodic

Derek Bundey G3JQQ describes a cheap, compact, wide band antenna covering the 14-28MHz bands.

I first came into contact with log periodic array antennas (l.p.a.) professionally in the mid-1960s. This type of antenna offers, in transmitting terms, the convenience of small v.s.w.r. excursion over several octaves of frequency range. Although the actual v.s.w.r variation does depend on the constants chosen when creating the design.

On reception, an l.p.a. offers useful forward gain and front-to-back ratio, though these parameters are not as good as those of a rhombic antenna. However, the l.p.a. uses less real estate than a rhombic, which is likely to be of greater consideration for most readers.

Multi-Band Coverage

For Amateur applications the main advantage of the l.p.a. is its multi-band coverage, especially on the h.f. bands. Though this is tempered with the need still for a fair amount of space. The other consideration is that only part of the antenna is in use at any one time.

However, if some sacrifice in forward gain and a range of s.w.r. variation is acceptable, it's possible to create a compact design that is small enough to fit into an average garden. The design presented here will achieve that and has an s.w.r. swing of up to 3:1.

The two most significant design constants are the relative spacing, designated by the Greek character σ {sigma} and the geometric constant, the Greek letter τ (tau). I chose a σ factor of 0.06 and a τ of 0.8 for this design, parameters that give an maximum antenna width of 10.36m.

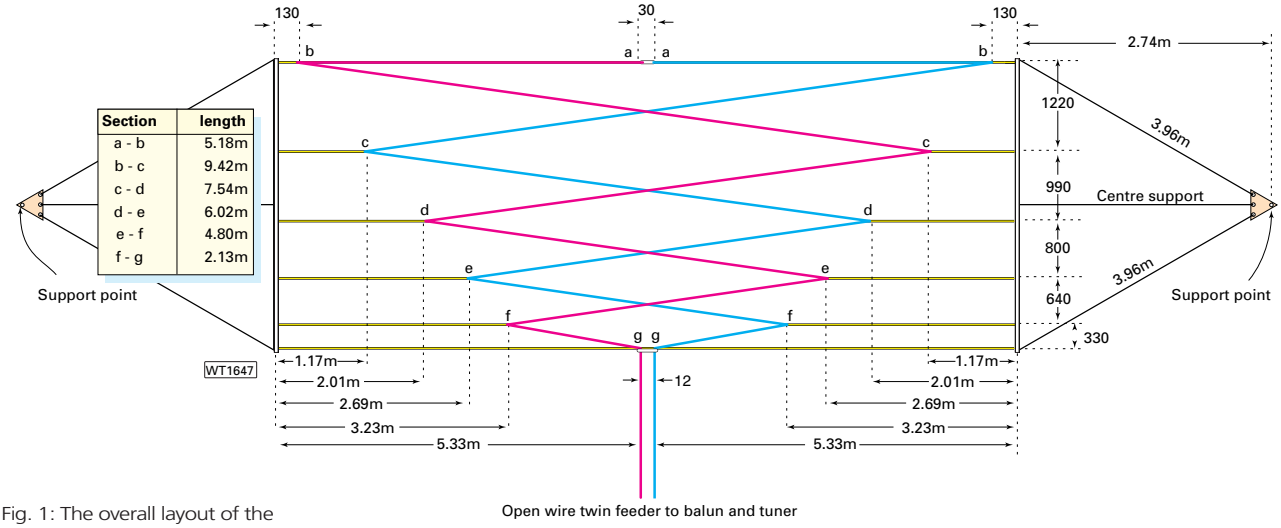
Design Criteria

I won't go deeply into the design criteria, but choosing design constants to reduce the array length has resulted in a reduction of forward gain of around 1.5dB (down to 4.5dB theoretical). There is a very good explanatory chapter on l.p.a. antennas in the *ARRL Antenna Book* and it should be consulted if you are looking for more information about the antenna.

The antenna has five elements within its 3.96m array length, to give a theoretical forward gain of 4.5dBd over the bands 14-30MHz, with a front-to-back ratio that's between 10-20dB over the range. I have since confirmed the front-to-back ratio on DX signals by using two similar antenna mounted pointing in opposite directions.

The basic design may be implemented in various ways, a popular version being a wire dipole form. But this does require a rather more complicated centre feedline, and spacer system with alternate elements transposed.

For this project, I've employed the simpler Zig-Zag configuration, **Fig. 1**, where each



Section	length
a - b	5.18m
b - c	9.42m
c - d	7.54m
d - e	6.02m
e - f	4.80m
f - g	2.13m

Fig. 1: The overall layout of the Zig-Zag log periodic array.

element is fed from the end. The feeder line carries on to become the elements themselves, resulting in an antenna/feeder arrangement combination free of joints or terminations right down to the balun itself.

More Wire

Although the Zig-Zag arrangement uses more wire than that required for a conventional l.p.a. it benefits from simplicity and the lack of troublesome joints. I use *ptfe* covered silver-plated stranded wire (an extravagance made possible by a visit to the Longleat rally some time ago), but pvc covered stranded wire, of almost any size, may be used to good effect.

The finished antenna could be hung from a non-metallic catenary if three elevated points are available. Alternatively, and this is my preferred method, it may be suspended from two 10mm diameter aluminium tubes to the sides of the array.

Of course you could use other material other than aluminium if it's available. But I've found that the lightweight strength of the tubing, when augmented with a three-point suspension method as shown, holds the array in good shape.

The various feedline and rear element central spacers are made from the lightweight plastic material often used for soffit boards. A friendly builder is the ideal place to start for offcuts to make up the pieces at minimum cost.

An alternative material for the spacers is Perspex, although it does degrade in sunlight over time. I've not tried sections of the grey plastic water pipe, available from builders, but using a little ingenuity you can keep the costs down easily.

The Construction

Now let me turn to the construction of the antenna array, which is best carried out on a large flat space. To minimise problems, I would suggest banning from the area, all household members, friends and pets, unless they are helping directly in the job. I'll deal with the construction in a series of steps, as I feel this technique has much to offer in ensuring success.

Step one:

Measure or estimate the length of the extra wire that will become the twin wire open feeder. This length is added to the overall length of each half antenna array element. As the length needed for array is a little over 35m the lengths involved can be quite long. Accurately measure off the total length needed for each element (perhaps adding a little more to cover errors) and coil each wire onto a separate drum or large cardboard box.

Step two:

Prepare the two suspension tubes by marking the various support points on each tube with a marker pen. I used the rear end as the reference point, but start from one end only when measuring and marking. Tie each string onto its correct point leaving enough free to tie and adjust the lines when completed. Attach the low frequency centre insulator to the ends of the two wires on the drums.

Step three:

Start by carefully measuring the wire forming the rear element and bind a small loop of wire to form the suspension point at the outer end of the element. If possible ask someone else to verify the measurement before making the loop.

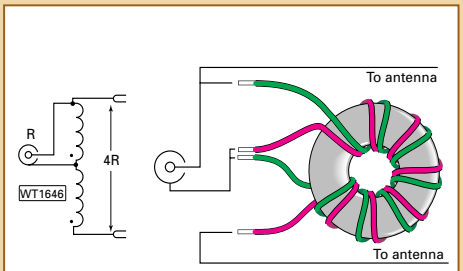


Fig. 2: A typical ferrite cored balun with seven bilfilliar wound turns gives a 4:1 impedance set-up when used in this format.

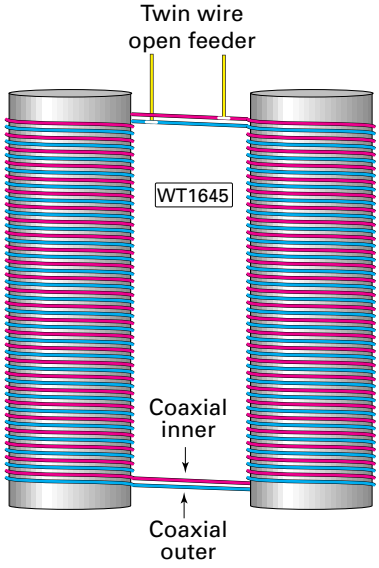


Fig. 3: An alternative balun with two windings of 26 turns wound side-by-side on 30mm diameter plastic waterpipe. The two formers should be separated by about 30mm.

Step four:

Measure the length of the next element forward and make another loop for its suspension point. Again try to have the measurement verified before any action is taken.

Step five:

Repeat step four on each of the smaller elements until you arrive at the feed-point position. Place the drum or cardboard box on the ground. Now repeat steps three to five for the mirror image of the array.

Step six:

Add in the centre support insulator and tie each antenna half to it. Loosely tie each suspension point onto its support line, and suspend the whole antenna at a comfortable height to trim and fix the various lines for equal and even tension in them. Add in the centre support insulators if you are going to use them. Tied in place, they help to keep the antenna in shape, rather better than just simply allowing the wires to float around.

Step seven:

This step is to form the twin wire open feeder from pre-cut plastic spacers to give a wire to wire spacing of 12mm or so. Put spacers about every 300mm along the wires. The end of each slot was sealed using a gas powered soldering iron on medium heat. **DO NOT breath in the fumes**!

Opposite Directions

I actually use two of these antenna mounted, at a height of around six metres, pointing in opposite directions but slightly offset from one another. Each antenna has its own balun, which may be air or ferrite cored, and can be quite near the shack. The pair are fed from a changeover switch mounted in the coaxial cable feeder running back to the shack, the whole arrangement can be quite efficient.

The balun used, **Fig. 2**, should have a nominal step up ratio of 4:1 and may be either seven turns bilfilliar wound on a suitable ferrite toroidal core. Or it could also be double linear wound (26+26 turns) on 30mm diameter formers as shown in **Fig. 3**.

The back-to-back set-up has allowed me to gauge the front to back ratio of the antenna and to guess the forward gain lobe, which seems to be rather broad in use. My reference antenna has been a trapped dipole at around the same height, and the logs show that the Zig-Zag antenna to be several S-points better in signal gain.

We have had some severe storms in this area since I erected the antennas, but no problems or damage have been experienced in the set-up. I do, though have the main suspension point running over a pulley with a counterweight to keep the tension on in normal use, but allow for some movement.

For those of you with more space available, you could extend the antenna coverage down to the 7MHz band, keeping the geometry of the design, as long as the longest element is slightly greater than a half wave long at the lowest frequency. Similarly you could scale the values to extend the values to extend the design higher in frequency. *PW*

During behind-the-lines operations in the Second World War the S-Phone provided a vital link between ground forces and aircraft.

BEHIND THE LINES...

WITH THE S-PHONE

Ben Nock G4BXD takes a look at a pioneering transmitter-receiver which provided an extremely important radio link for agents operating behind enemy line during the Second World War.

During The Second World War the supply of arms and munitions to clandestine groups in occupied countries and the delivery and retrieval of agents by the allied airforces was of major importance. The operations to achieve this were made much easier with the development of a very nice little radio...the S-Phone.

In the USA the work on such special equipment as the S-Phone was pioneered by folk like **Al Gross W8PAL** [1] who died early in 2001. He'd obtained his Amateur Radio licence in 1934 at the age of 16.

Al's early interest in Amateur Radio helped set a career choice while he was still a teenager. Gross pioneered the development of devices that operated in the then relatively unexplored very high frequency (v.h.f.) and ultra high frequency (u.h.f.) spectrum above 100MHz.

The first invention from W8PAL was a portable hand-held radio transmitter-receiver. Developed in 1938 while he was still in high school in Cleveland, he named it the "walkie-talkie".

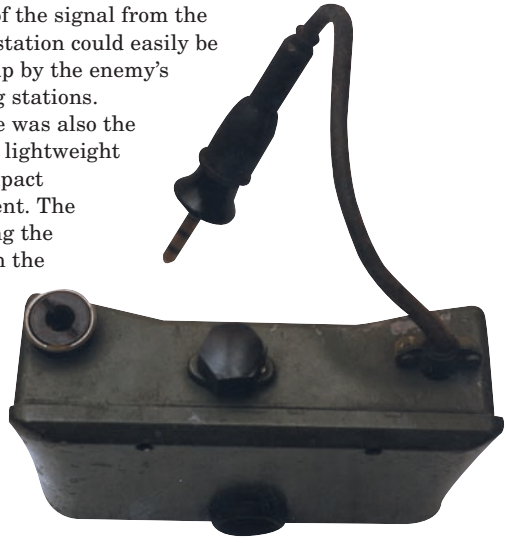
The device caught the attention of the United State's Office of Strategic Services (OSS), the forerunner of the Central Intelligence Agency (CIA). As a result The OSS recruited Gross, and this led to the development of a two-way air-to-ground communications system used by the USA's military and the specialised OSS operating behind enemy lines during The Second World War.

The system allowed OSS agents to communicate with high-flying aircraft with little fear of detection. In the UK development work by **Charles Bovill** and **Captain H. Lane** [2] of the Royal Signals resulted in the design and development of the S-Phone as used by our own clandestine branch, the Special Operations Executive (SOE).

Ground To Aircraft

Communication between the ground and the incoming aircraft were vital for successful missions and any radio traffic used had to be such that it could not overheard, or listened to, by the enemy. This ruled out normal high frequency (h.f.) and even v.h.f. radio as the spread of the signal from the ground station could easily be picked up by the enemy's listening stations.

There was also the need for lightweight and compact equipment. The last thing the forces on the



Simplicity in action - the misleadingly anonymous S-Phone in its case. Note the shaped rear of the case, constructed so that it sat on the operator's chest easily. The lead and plug connected to the supply unit, the socket on the opposite end of the unit end was for the headset/microphone unit (see text).

ground wanted is to be on the run lugging a great big radio set around!

So, to overcome the listening problem a system operating at (almost) ultra-high frequencies was devised to allow a virtually secret link between ground and aircraft. And to overcome the size problem a set, sometimes referred to as a "marvel of engineering" was produced.

Self-Contained Radio

The resulting S-Phone, the S no doubt standing for **Secret**, was a small self-contained radiotelephone operated by one person - the mobile 'phone of 1940. Operating at nearly 400MHz the design and use of the set produced a very narrow radio beam which radiated a signal in a very specific direction.

When using the set the operator would stand at the end of the required landing strip, **don't forget that this could be a field which was very likely to be deep inside enemy held countryside** and face the oncoming aircraft. Even though the aircraft's signal might be received by the enemy listening stations (due to the aircraft's height) the listening stations could not hear the ground signal, so they would have had no idea where the aeroplane was bound for.

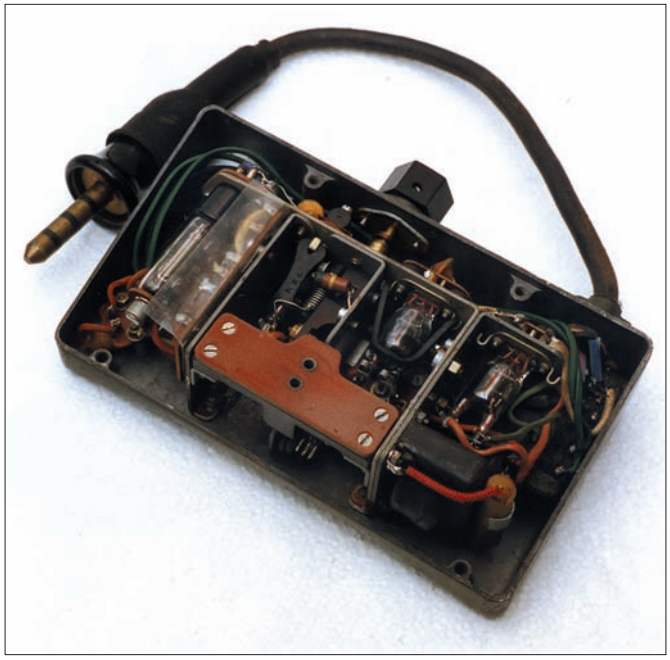
On nearing the location and lined up for a run in to the target the aircraft itself would have directional antennas which also gave a very narrow beam signal to the ground. Finding the drop or landing zone could be very difficult indeed and any assistance was extremely useful.

Communication via the S-Phone was in the full duplex mode. In other words, as with a conventional modern mobile 'phone today, both ends of the link would be transmitting and receiving at the same time, allowing the operator on the ground and the aircraft crew to hold a normal conversation.

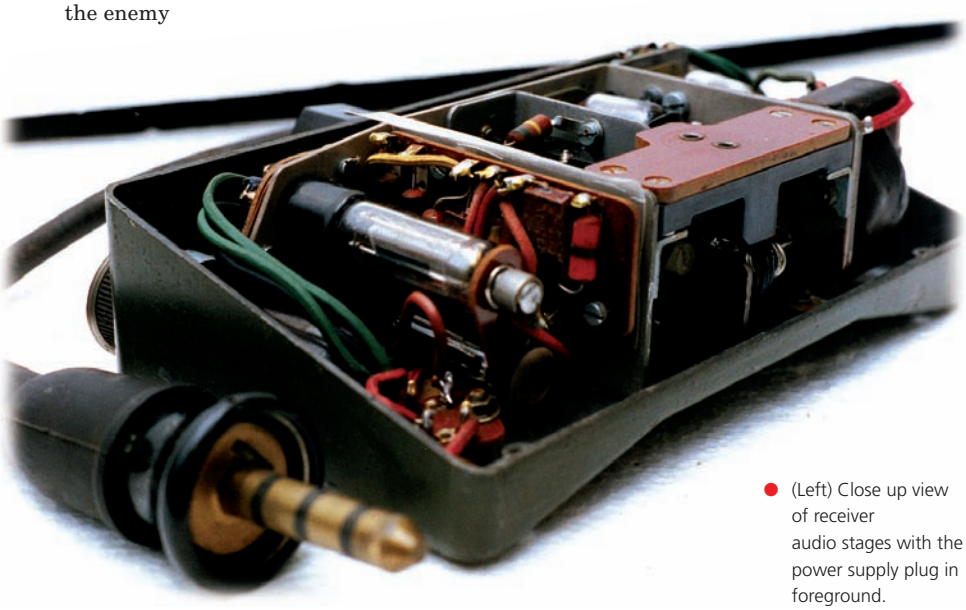
A small folding dipole arrangement plugged into the antenna socket at the front of the S-Phone which itself was positioned on the operator's chest (See heading illustration). The position of the human body and the set's height above the ground helped to act somewhat like directors in a modern Yagi antenna system and produced the directional radio beam which also tilted upwards.

The set was supported on the operator with webbing straps and a similar belt held seven pouches. Five of these held miniature Nickel-Cadmium (NiCad) batteries, one for a vibrator power pack and the seventh held the antenna, microphone and headset when they were not in use.

The microphone and headset were well insulated and soundproof so as to limit any external noise on quiet moonlit nights. Remaining unseen and unheard by anyone other than your comrades could mean the difference between life and death!



● (Above) Inside the S-Phone set, with the transmitter on the right, and receiver on the left. The two pin socket - formed from Paxolin type material - in the centre is for the attachment of the antenna rod dipole. The large knob (top centre) is the receiver frequency adjuster (see text).

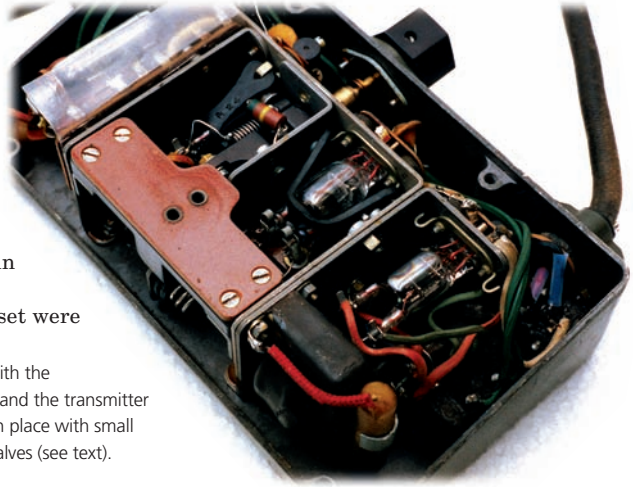


● (Left) Close up view of receiver audio stages with the power supply plug in foreground.

Homing Beacon

In addition to its use as a radiotelephone the S-Phone could also be used as a homing beacon. This was achieved in conjunction with an instrument in the aircraft which would give the pilot a left or right indication to fly so as to reach the target.

The usable range in beacon mode was in the order of 12 miles with the aircraft at 500ft high or 60 miles at 10,000 feet high.



● Close up view of the transmitter with the modulator valve on extreme right, and the transmitter oscillator to right of centre - held in place with small rubber strap. Note the miniature valves (see text).

The curved - to fit the operator's chest profile - nature of the casing on the S-Phone can be clearly seen in this photograph. It's also clear to see just how rugged and robust the little unit is - a necessity for the type of work it was designed for. The two brass hooks attach the unit to the operator's webbing. Ironically, the bland reference number - WS 13/IV on the anonymous metal box - truly disguises a transceiver whose assistance could be life-saving in action.

The incoming aircraft could home onto the location in beacon mode, switching to radiotelephone mode when close to the site. Once near the location the aircraft could also circle whilst still talking to the ground, confirming contact and identification details and the like.

Technical Specifications

The later version S-Phone used five valves, miniature types RL18, XP and XV5 were employed. The transmitter used two RL18 types, a RL18 as the self-oscillating p.a. stage with a RL18M as the Heising modulator*.

The receiver used a further RL18 as a super-regenerative detector and a XV5 and XP as audio amplifiers. The early S-Phone used only four valves and suffered from low level transmitted modulation.

In a later version, the MkIV, had increased modulation which gave a greater range in 'phone mode though the beacon mode range was unchanged. The receiver operated around 337MHz, and there was a small amount of adjustment to compensate for drift....usually about ±5MHz.

Transmitter output was on a frequency of around 380MHz, a sufficient wide frequency split so as to enable full duplex communication without suffering from mutual interference. Incidentally - the power output from the transmitter was in the order of 100 to 200mW!

The set measures approximately 7 x 4 x 2in (178 x 101 x 50mm) in size and weighs just over 2lb (1kg). The whole system, set, belt, batteries and headset totalled around 15lbs (6.7kg).

***Note:** Heising modulation - A constant current form of modulation, arising from one valve driven by signal and another driven by carrier, having their anodes fed by through the same inductor. The modulated carrier is taken from the anode circuit by capacitive or inductive coupling.* ***Editor**.*

Tuned Circuits

Due to the very high frequencies involved all the tuned circuits, what few there are in the unit, are very small. In addition, the very simple circuitry employed in the S-Phone means that it's not in truth a wonder of miniaturisation but it was never the less a very clever, compact and truly portable unit.

The ability to be carried and operated by one man gave it better security and it must have been a very welcome tool for our clandestine forces during those dangerous missions. My thanks go to **Louis Meulstee** for his assistance in preparing this article which I hope - in some small way - will pay tribute to those brave people who had to use the S-Phone.

PW

Acknowledgements of sources and further information:

[1] See web site: www.retrocom.com
[2] *Electronics World* and *Wireless World,* September 1993.

Fig. 1: Diagram illustrating the theoretical main transmitter lobe. But bear in mind that the S-Phone only had an output of around 100 to 200mW depending on the batteries! (see text).

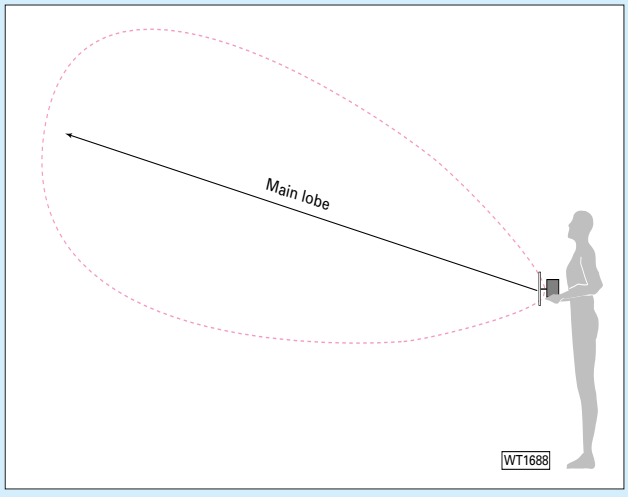
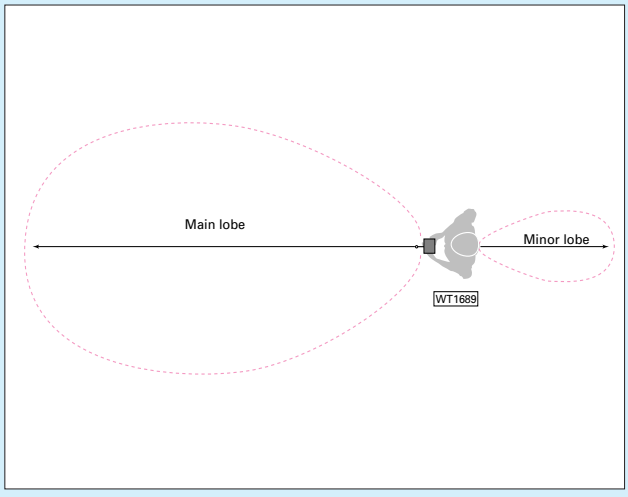


Fig. 2: The very low output of the S-Phone transmitter was effectively directed towards incoming aircraft by the dipole antenna. The operator's body helped to minimise radiation to the rear - helping to reduce detection by enemy monitoring stations (see text).



NEVADA®

LARGE STOCKS FAST DELIVERY EXPERT ADVICE

www.nevada.co.uk

USED EQUIPMENT

BUY WITH CONFIDENCE

All safety tested & guaranteed for 3 months

HF TRANSCEIVERS

ALINCO DX70TH.....BOXED, 100W HF+100W, 6M ..495
ICOM 725 .....100W HF TRANSCEIVER.....395
ICOM IC756 .....100W HF + 6M 899
KENWOOD TS-430S 100W HF TRANSCEIVER.....325
KENWOOD TS-950S HF BASE STATION 999
YAESU FT890 .....100W HF TRANSCEIVER.....399
YAESU FT767GX .....HF + 6M BASE, AUTO TUNER 499
YAESU FT900 .....100W HF MOBILE BASE.....599
YAESU FT77 .....100W HF TRANSCEIVER.....299
YAESU FT1000 .....200W HF TRANSCEIVER.....1299

VHF/UHF TRANSCEIVERS

ADI AR446.....70CM 35W FM 149
AKD 2001 .....2M FM TRANSCEIVER 125
ALINCO ALM-203E ..HANDIE 2M 75
ALINCO DR-430 .....70CMS MOBILE 169
ALINCO DR 510E ....2M/70CM MOBILE TRANS.....179
ALINCO DR 610 .....TWINBANDER 2/70.....259
ALINCO DR MO6.....10W 6M MOBILE TRANSCEIVER 149
ICOM IC280E .....2M FM MOBILE 85
ICOM IC2100H .....2M FM MOBILE TRANSCEIVER ..169
ICOM IC2500E .....70/23CM MOBILE TRANSCEIVER 329
KENWOOD TH 79E ..2M/70CM HANDIE TX.....159
KENWOOD TM 231E..2M MOBILE.....139
NAVICO AMR1000S 2M FM MOBILE 75
PALSTAR KH6 .....6M HANDIE TRANSCEIVER 59
STANDARD C8900 ..2M FM MOBILE 125
TRIO 751E .....ALL MODE 2M MOBILE.....325
YAESU FT41 .....70CMS HANDIE + ACCS 125
YAESU FT411 .....FM HANDIE - BOXED.....125
YAESU FT736R .....6M/2M/70/23CM BASE.....945
YAESU FT5100 .....2M/70CM MOBILE TRANS.....269
YAESU FTL2014 .....VHF PMR TRANSCEIVER 75

AMPLIFIERS

TOKYO HL700 .....SOLID STATE HF AMP.....599
TOKYO HL100B .....100W AMP 21 - 28MHZ 129
TOKYO SAGRA 600 2M 700WAMP 2X4CX250R.....799

SCANNERS & RECEIVERS

ALINCO DJX10 .....WIDEBAND SCANNER 225
AOR AR8000 .....HANDHELD SCANNER 185
COMMTEL COM510..HANDHELD SCANNER.....139
GRUNDIG YB400 ....SHORTWAVE RECEIVER 79
ICOM ICR72 .....HF RECEIVER 399
LOWE HF-225.....HF RECEIVER + KEYPAD 259
JRC NRD545.....DSP HF RECEIVER 899
YAESU FRG100.....HF RECEIVER 279
YUPITERU MVT7000 HANDHELD SCANNER.....129

ACCESSORIES

AMDAT ADC60 .....FREQ STANDARD CLOCK UNIT 99
KENWOOD AT250....AUTO TUNER 175
KENWOOD VS2 .....VOICE BOARD 40
KENWOOD MC85 ....BASE MICROPHONE 69
MFJ 784B.....DIGITAL FILTER 139
PALSTAR AT-300.....ANTENNA TUNER 69
SWAN WM6200 .....50-150MHZ PWR/SWR M 30
TIMEWAVE DSP FILTER 59+ 249
TOKYO HX-240 .....2M - HF TRANSVERTER 99
TONO Q-550 .....TERMINAL UNIT.....125
YAESU FC-1000 .....AUTO ATU FOR FT767GX 189
YAESU FIF232 C VAN COMPUTER INTERFACE (FT736R) 79

NEW ITEMS COMING IN DAILY - CALL

PALSTAR USA PRODUCTS

PALSTAR AT1500

CHEQUE SPREAD

HIGH POWER HF ANTENNA TUNER with CERAMIC ROLLER INDUCTOR for HIGH RELIABILITY

- 1.5kW
- 1.8 - 30MHz
- Built in 4:1 Balun
- 6 position ant switch
- SWR/Power meter

NEVADA PRICE £369

PALSTAR AT300 ANTENNA TUNER

- 150W
- 1.8 - 30MHz
- 4:1 Balun

NEVADA PRICE ~~£129.95~~ £99

PALSTAR AT300LCN

- 1.8-30MHz
- 4:1 Balun
- Dummy Load
- 8-way Ant switch
- Peak/Av pwr mtr

Housed in a larger heavy duty cabinet with many improved features - this has to be one of the best antenna tuners on the market!

NEVADA PRICE £139.95

PALSTAR ACCESSORIES ALL PLUS £6 P&P

B4000

B4000....4kW 4:1 Balun £79.95
B1500....1.5kW 4:1 Balun £35.95
B1500C..1.5kW 1:1 current Balun £35.95
R128C....2kW 28μH ceramic roller ind....£99.95
C240.....240pf 4.5kV var capacitor £49.95
C350.....350pf 6.0kV var capacitor £69.95

PALSTAR R30

NEW!

PORTABLE COMMUNICATIONS RECEIVER

- 10OkHz -30MHz
- 100 memories
- Ceramic filters fitted
- 4 pole XTAL filter @ 45MHZ
- Analogue S meter

NEVADA PRICE £399.95

DAIWA ACCESSORIES

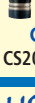
SWR/POWER METERS

CN801H .....1.8 - 200MHZ 2KW.....£109.95
CN801V .....140 - 525MHZ 200W....£119.95
CN101.....1.8 - 150MHZ 1.5KW.....£59.95
CN103.....140 - 525MHZ 200W.....£65.95

PLUS £6 P&P (UK MAINLAND)

DAIWA TRIPLE BAND ANTENNAS

IDEAL REPLACEMENT ANTENNAS 144/430/1200MHZ



HA45S....SMA Triple band L: 4.5cm .£12.95
HA45B ...BNC.Triple band L: 4.5cm .£12.95
HA96B ...BNC.Triple band L: 9.5cm..£16.50
Add £2.75 p & p for all antennas (UK MAINLAND)

COAXIAL ANTENNA SWITCH

CS201A.....0 - 600MHZ 1kW SO239 .£19.95

HEIL PRO SET

THE DX'ERS CHOICE FOR OUTSTANDING AUDIO

PRO SET 4 For contesters & DX'ers who want to cut through the pile ups. Using hc4 insert.
.....£129.95 £5 P&P (UK MAINLAND)

PRO SET 5 A fuller range insert for rag chewers who want quality with clarity. Hc5 insert.
.....£129.95 £5 P&P (UK MAINLAND)

ALINCO HANDHELDS - MORE FOR LESS!

DJV5E

- New dual band transceiver
- 5W/1W/0.5W output power
- Super wide RX (76-999MHz)
- Includes wide FM mode
- CTCSS enc/dec fitted
- 200 memory channels
- Up to 6 character alpha-tagging

NEVADA PRICE £229.95

DJS 193E

- New design 2m (144-146MHz)
- Up to 5W VHF, 4W UHF
- Wide RX possible (typical 135-173MHz)
- CTCSS + DCS enc/dec fitted
- 40 memory ch + 1 call ch

NEVADA PRICE £139.95

DJG5EY

- 2m/70cm handheld TX
- Up to 5W output (switchable hi/lo)
- Wide RX possible (typical 118-999MHz with gaps)
- AM mode for Airband receive
- Listen to both bands at once
- CTCSS encode fitted
- Real time monitor scope

NEVADA PRICE £289.95

DJS 195E

- 2 metre (144-146MHz) handheld
- Easy to use, direct entry keypad
- Wide RX possible (typical 135-173MHz)
- Up to 5W output (0.8W low power)
- 40 memory ch + 1 call ch

LARGE RANGE OF ACCESSORIES AVAILABLE

NEVADA PRICE £159.95

COMET HIGH QUALITY JAPANESE ANTENNAS

NEW UHV-6 MULTIBAND MOBILE ANTENNA

40M - 70cms on ONE ANTENNA!

40/*20/15/10/6/2/70cm
** 20 optional coil*

A 6/2/70cm Whip that accepts 1, 2 or 3 HF coils for up to 6 Band operation. Simply screw on any combination of HF coils you choose.
Standard PL-259 connector allows easy mounting.
Convenient fold-over hinge for entering garages, parking structures, etc.

£89.00 *P & P £10 (UK MAINLAND)*

NEW LOW PROFILE 'FLEXIBLE' ANTENNAS for the YAESU FT817

CHF-412
7, 21, 144MHz, 0.74M Long....£59.95

CHF-816
3.5, 28, 50MHz, 0.74M Long...£59.95

postage & packing £4.75 (UK MAINLAND)

COMET HANDIE ANTENNAS

SM-A3..SMA connector 144/432/900MHz £19.95
SH-95..BNC connector 144/432/1200MHz £26.95
RX-5....SMA connector 144/430MHz + wide RX..£26.95
p & p £3.75 all items above (UK MAINLAND)

COMET MOBILE ANTENNA CABLES/MOUNTS

3D-4MB....SO239 Base/4mtrs coax c/w PL259 plug £15.50
CK-3M4B..SO239...Base w/4mtrs coax c/w PL259 plug ..£24.50
MG-4M.....Heavy duty mag mount/4mtrs /PL259.....£29.95
RS-700 .....Gutter Mount fully adjustable £17.95
RS-730 .....Hatch/Trunk Mount fully adjustable.....£19.95
TBR.....Hatch/Trunk Mount standard model £14.95

COMET FILTERS

CF-30S.....32MHz low pass filter, 150W CW £19.95
CF-30MR ..32MHz Low pass, 1kw PEP.....£37.50
CF-50S.....50MHz low pass filter, 150W CW £21.50
CF-50MR ..50MHz low pass, 1kw PEP.....£37.50

COMET BAND PASS FILTERS

CF-BPF6....50MHz band pass filter, 150W CW £42.50
CF-BPF2....144MHz band pass filter, 150W CW £42.50

COMET BASE ANTENNAS

GP-15N.....50, 144, 430MHz, L: 2.4m 300W PEP.....£89.95
GP-1 .....144/430MHz 3/6dB 1.25mtrs 200W £49.00
GP-3 .....144/430MHz 4.5/7.2 1.78mtrs 200W £59.95
GP-6 .....144/430MHz 6.5/9.0 3.07mtrs 200W £89.95
GP-98 .....144/430/1.2GHz 2.94mtrs.....£129.95

COMET HF MOBILE ANTENNA

CA-UHV.... 7, (14) 21, 28, 50, 144, 430MHz 1.9 mtrs £89.00
L14.....Optional 14MHz coil for CA-UHV £19.95
UHV-6.....7, 21, 28, 50, 144, 430 1.9 mtrs £89.00
p & p £9.50 all items above (UK MAINLAND)

COMET VHF MOBILE ANTENNAS

CHL-285 ...50/144MHz Mobile 300W, length 1.32 mtrs ..£24.95
CHL-350 ...28/50MHz Mobile 200W, length 2.16 mtrs £39.95
HR-50.....50MHz centre loaded , length 2.13 mtrs.....£39.95
SB-15 .....50/144/432MHz with w/fold-over £46.95
SBB-2 .....Dual band Mobile 144/432 length 0.46 mtrs .£19.95
SBB-4 .....Dual band Mobile 144/432 length 0.92 mtrs .£29.95
SBB-14 .....Tri band Mobile 50/144/432 lth 1.08 mtrs £39.95
p & p £8.00 all items above (UK MAINLAND)

COMET BALUNS

CBL-2000..0.5 - 60MHz 2kW 1:1 .....£27.50
CBL-30.....1.7 - 30MHz 1kW 1:1 .....£21.95

COMET DUPLEXERS

CF-416A ....144/430MHz SO239/PL/PL.....£27.50
CF-416B ....144/430MHz SO239/PL/'N'.....£28.50
CF-360A ....1.3-30MHz/49-470MHz SO239/PL/PL.....£37.95
CF-530 .....1.3-90MHz/125-470MHz SO239/PL/PL.....£39.95

COMET TRIPLEXERS

Comet CFX-431A 144/430/1200MHz £46.00
Comet CFX-514N 50/144/430MHz £47.95

SG-239 HF AUTOTUNER

INTRODUCING THE NEWEST MEMBER OF THE SMARTUNER FAMILY!

NEW!

Ideal for FT817, TS50, 1C706

Power.....1.5 - 200W
Freq .....1.8 - 30MHz
Memories 170

CALL FOR DETAILS

PRICE MATCH

SG-230
HF Smart Tuner

NEVADA PRICE £359.95

LINEAR AMP UK

CHEQUE SPREAD

NEW! Pioneer 1.3kw HF amp (4 x 572 B) Now in stock

NEVADA PRICE £1295

£15 P&P all amps (UK MAINLAND)

DISCOVERY (HP) 2M 3CX800 (1kW) £1395
HUNTER SIX 6M 3-500ZG (900W) £895
RANGER 811H HF 4 X 811A (800W) £895
NEW PIONEER 4 X 572B (1300W) £1295
CHALLENGER 1 HF 2 X 3CX 800 (1.5kW) £1495
CHALLENGER II HF 3CX 1500 (1.5kW) £1995

USE YOUR CREDIT CARD FOR SAME DAY DESPATCH!

023 9231 3090

ALL GOODS SHIPPED for 24 hour delivery (UK MAINLAND ONLY) PLEASE ADD £10.00 unless otherwise stated (UK MAINLAND)

NEW OPENING HOURS
MON - FRI 9.30 - 5.30
CLOSED ALL DAY SATURDAY

e-mail: info@nevada.co.uk • website: www.nevada.co.uk • fax: 023 9231 3091

• Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • PO6 1TT

• NO HASSLE
• NO CATCH
• NO PROBLEM!

CHEQUE SPREAD

Buy the radio of your choice at the best price and pay by 3 POST DATED CHEQUES - INTEREST FREE! or part exchange your old radio & pay the balance by CHEQUESPREAD - EASY ISN'T IT!

PATCOMM PC-500
Dual Band QPR Transceiver

COMING SOON!

- Choice of any TWO ham bands 160 - 6 mtrs
- 1-15 Watts output
- CW & SSB
- Iambic keyer
- DVF Digital Variable Filter
- Vogad & RF clipping on SSB

OPTIONAL MODULES
- Single band module
- Noise blanker
- VOX board
- Hand mic
- PSK 31 cable
- Mobile bracket
- Keyboard with adaptor
- 8 pole filter *(factory installation only)*

PRICE APPROX **£399.95**

PATCOMM PC 16000E
A full featured HF Transceiver with a patented built-in keyboard interface. Data may also be sent to a dumb terminal for display via a RS232 built-in serial port.

RTTY & CW MADE EASY!

Send SAE for FULL INFO

- Powers 1 - 100W
- DSP filters built-in
- Gen coverage RX
- Built-in keyer

NEVADA PRICE **£1590**

LOW LOSS COAX SPECIALS

NEVADA H100
Semi airspaced double screened low loss 50 Ω cable

LOSS PER 10 MTRS FREQ	LOSS
28MHz	0.20dB
50MHz	0.25dB
100MHz	0.35dB
400MHz	0.82dB

100 METRE DRUM QUANTITY PRICE ~~£85~~ **£59** £10 p&p MAINLAND UK

NEVADA RG213
Popular low loss 50 Ω cable

LOSS PER 10 MTRS FREQ	LOSS
28MHz	0.36dB
50MHz	0.45dB
100MHz	0.67dB
400MHz	1.47dB

100 METRE DRUM QUANTITY PRICE ~~£73~~ **£49** £10 p&p MAINLAND UK

NEVADA RG58CU
Popular lightweight coax cable

LOSS PER 10 MTRS FREQ	LOSS
28MHz	0.78dB
50MHz	0.97dB
100MHz	1.4dB
400MHz	3 0dB

100 METRE DRUM QUANTITY PRICE ~~£38~~ **£25** £10 p&p MAINLAND UK

NEVADA MINI RG-8
Low loss small diameter cable

LOSS PER 10 MTRS FREQ	LOSS
28MHz	0.69dB
50MHz	0.86dB
100MHz	1.28dB
400MHz	2.82dB

PRICE PER METRE **£0.45**
100 METRE DRUM CLEARANCE PRICE ~~£45~~ **£29** £10 p&p MAINLAND UK

YAESU ROTATORS

G1000C HEAVY DUTY
C/W Control Box & 25 Cable..... **£559**

G450C LIGHT DUTY
C/W Cont ol Box & 25 Cable
..... **£349**

*£10 p&p on all Yaesu rotators

ROPEX The 'First'

30/130W 136kHz TRANSMITTER

NEVADA PRICE **£179**

YAESU FT1000MP MK V

HF 200W All mode transceiver

NEVADA PRICE **£2795**

ICOM IC-756 PRO

save £496

Icoms latest SUPER rig

SPECIAL OFFER BULK PURCHASE ~~£2395~~ **£1895**

NEVADA PRICE ~~£2395~~ **£1895**

KENWOOD TS-2000

DC to Daylight! HF to 1200MHz*

IN STOCK!

*1200MHz optional

NEVADA PRICE **£1699**

YAESU FT-847

70cm - Top Band All Mode

NEVADA PRICE ~~£1699~~ **£1199**

ICOM 706 MKIIG

100W HF/6 + 50W 2M + 20W 70cms

NEVADA PRICE ~~£1199.95~~ **£999**

KENWOOD TS-570 DGE

100W HF radio with a superb DSP RX.

NEVADA PRICE ~~£999.95~~ **£849**

YAESU FT-817

NEW! IN STOCK!

- HF/6/2/70 cms
- Transportable with wide RX
- Supplied c/w Nicads, Charger, antenna & mic

NEVADA PRICE **£799**

ALINCO DX-70TH

- 100W HF + 100W 6 mtrs
- All modes fitted, LSB, USB, CW, AM & FM
- Wide range RX 150kHz-54MHz
- CW and SSB narrow filters fitted
- 100 memory channels
- Optional smart tuner available - EDX2

NEVADA PRICE **£599**

KENWOOD TM-D700E

Dual band DATA mobile radio

NEVADA PRICE **£469**

YAESU FT-1500M

50W Heavy duty 2 metre FM mobile

NEW!

NEVADA PRICE **£229**

ICOM IC-R8500

PRICE MATCH

IN STOCK! Covering 100kHz - 2GHz & lots of features inc computer control.

NEVADA PRICE ~~£1349~~ **£1299**

SCANMASTER LP1300
WIDEBAND BEAM ANTENNA
16 ELEMENT LOG PERIODIC DESIGN

- 105 -1300MHz
- Gain 11-13dBi
- 'N' type connector
- 500W

NEVADA PRICE **£129**

YAESU FT-90

Micro-sized TWINBANDER WIDE RX inc AM AIRBAND

INCLUDES FREE YSK90

NEVADA PRICE ~~£475~~ **£349**

PRESIDENT LINCOLN
High class 21W 10 mtr Multimode Transceiver

- 28 - 30MHz
- AM/FM/SSB

NEVADA PRICE ~~£225~~ **£199**

PALSTAR PS-50

50 Amp heavy duty supply with meters. 13.8V DC 40/50 Amp

NEVADA PRICE ~~£169~~ **£149**

YAESU FT-8100

Dual band high power mobile + wideband receive

NEVADA PRICE ~~£399~~ **£349**

ALBRECHT 485
25W Multimode 10 mtr Transceiver

- 28 - 30MHz
- AM/FM/SSB
- Repeater shift

NEVADA PRICE **£179**

PALSTAR PS-30

3-15V adjustable 25/30A max Voltage + current meters 10mW RMS noise & ripple

NEVADA PRICE **£99**

TIMEWAVE DSP S992X V-S

NOW WITH PSK 31 INTERFACE

- Eliminate heterodynes
- Filters QRM
- Brickwall PSK31 filter
- Sound card interface
- Binaural CW
- CW spotlight
- Enhanced noise reduction

NEVADA PRICE **£359.95**

ANC 4
ANTENNA NOISE ELIMINATOR

Reduces noise from power lines, TVs etc - up to 40dB. Wipes out S9 line noise.
- 500kHz-80MHz

NEVADA PRICE **£199.95**

PK12 PACKET TNC

- 1200 BPS, VHF/UHF packet
- Host mode
- Advanced command set
- GPS commands
- APRS adaptor avail.
- Includes PK-TERM 99 demo software

NEVADA PRICE **£129.95**

YAESU VX-5R

50-144-430MHz
Wide Band Receiver
Ultra Rugged Construction

NEVADA PRICE ~~£359~~ **£299**

YAESU VX1R

Mini 2M/70cm transceiver & wideband RX 500kHz-999MHz.

NEVADA PRICE **£169**

KENWOOD THD7E

Dual Band Handie
Up to 6W Output • Built in TNC!

NEVADA PRICE **£269**

IT'S EASY TO PAY!

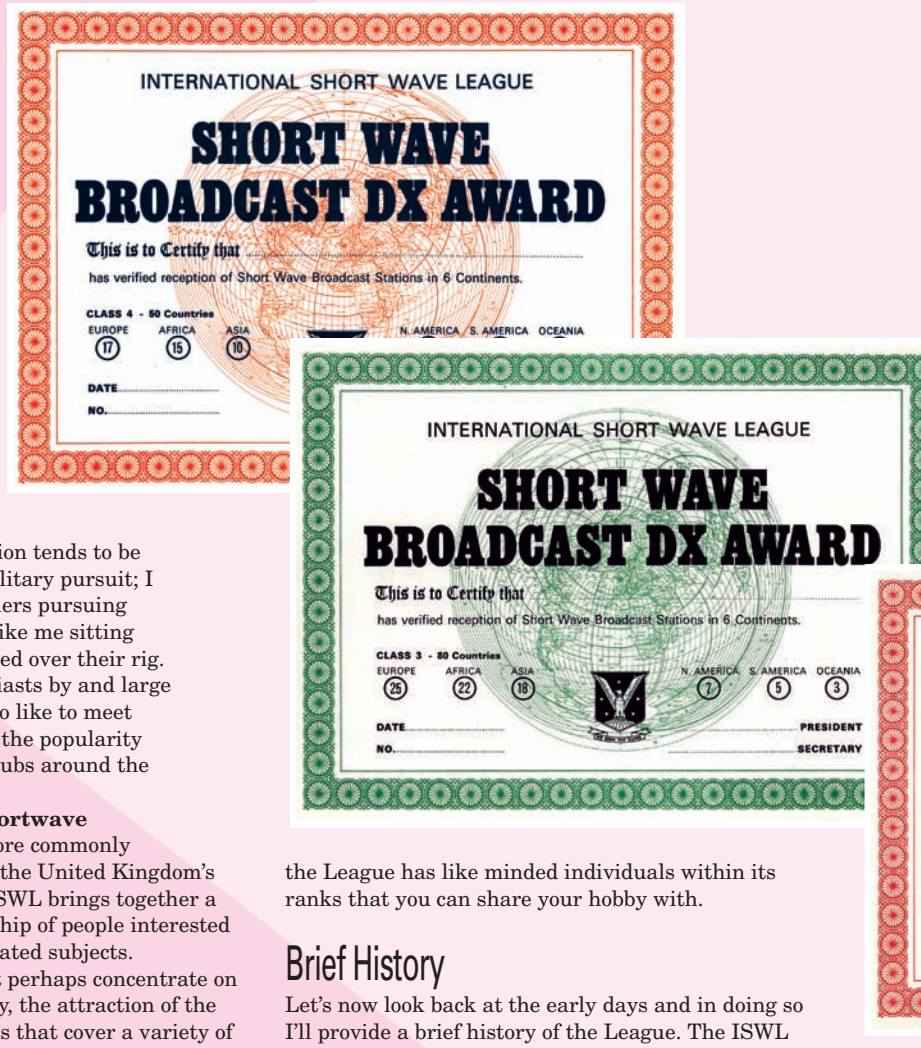
CHEQUE SPREAD

- by three post dated cheques

minimum order: £99

Simply divide the price (including carriage) into 3 equal payments.
Write 3 cheques dated in consecutive months starting with today's date.
Write your telephone number, cheque card No & expiry date on the back of each cheque.
Post them to us, enclosing your name & address & we will (subject to status) send your goods immediately.

The International

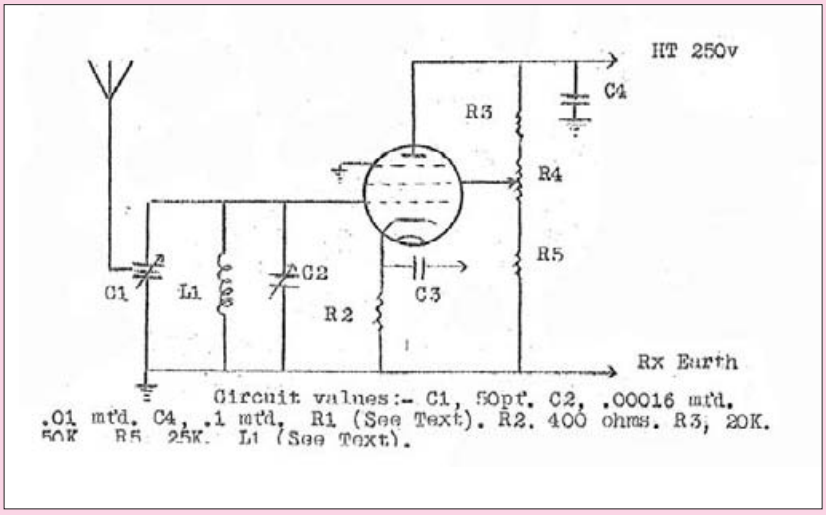


Radio communication tends to be something of a solitary pursuit; I often imagine others pursuing their hobby just like me sitting alone in their shack hunched over their rig. However, Amateur enthusiasts by and large are a gregarious bunch who like to meet and exchange views hence the popularity and importance, of radio clubs around the country.

The **International Shortwave League** or ISWL as it's more commonly known, is presently one of the United Kingdom's premier radio clubs. The ISWL brings together a wide and diverse membership of people interested in a whole host of radio related subjects.

Unlike many clubs that perhaps concentrate on just one aspect of the hobby, the attraction of the ISWL is that it has sections that cover a variety of interests across the radio spectrum ranging from Broadcast Bands to Amateur Transmissions. Whatever your interest I think it's a fair bet that the League has like minded individuals within its ranks that you can share your hobby with.

● Fig. 1: "From little acorns do large oak trees grow". This project was originally printed in the first International Short Wave *Newsletter* which became the internationally famous Monitor magazine.



Brief History

Let's now look back at the early days and in doing so I'll provide a brief history of the League. The ISWL was formed just after the end of the Second World War by the late, very well known Radio Amateur **Arthur Gee G2UK** who was then the Editor of *Short Wave News* - the leading radio magazine of the time.

Growth of the League was somewhat rapid, reflecting the popularity of 'all things radio'. Remember there was no TV for the majority and many a schoolboy would spend his spare hours gathered around father's old radio.

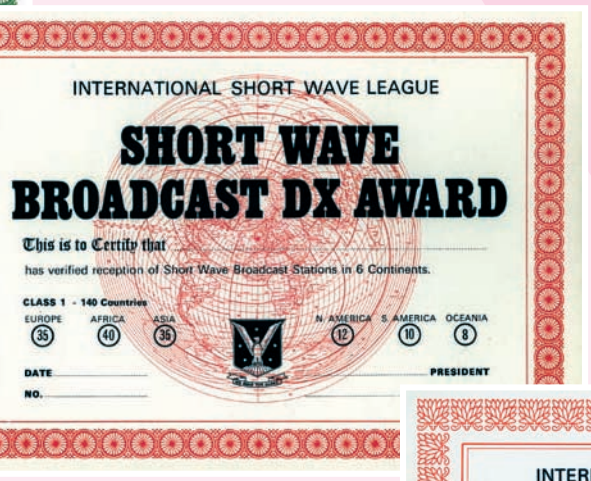
In addition many other young men had acquired their first taste of radio communication through service in the Armed Forces during the Second World War as radio operators or engineers. Essential news and information about the League was included periodically in *Short Wave News* in a feature entitled *ISWL Notes*.

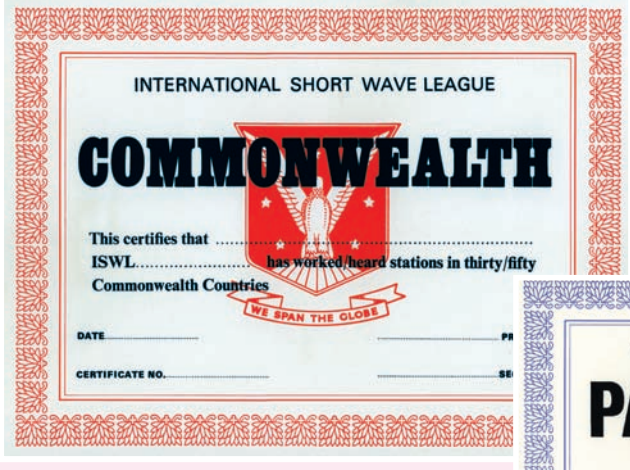
By 1952 the League had become well established with over 5000 members having enrolled since its inception in 1946. Local meetings were held on a regular basis around various parts of the country, and at one time there were 70 groups each with their own County Representative who reported back to the ISWL Council. In fact it was estimated at that time

Shortwave League

Dick King G14167/M5DIK takes a look back at the fascinating history of the International Short Wave league - as well as looking forward to an even more eventful future.

Fig. 2: The ISWL's *Monitor* magazine (left) has matured into a well respected monthly publication serving all radio enthusiasts. It provides an interesting read on a very wide range of topics. The recently reprinted *Art of QSLing* has also proved popular.





that the ISWL was so popular it had become the world's largest short wave listener society.

Monthly Newsletter

It soon became apparent that what was needed was a regular monthly newsletter and in January 1952 the League's first journal, *Monitor* was published. It initially consisted of 20 A5-sized pages stapled together.

Reflecting the truly amateur nature of the times, the first item of interest was a constructional feature on How to build a one-valved Aerial Tuning Unit, (a.t.u.) complete with circuit diagraM (**Fig.1**, page 38) and tips on how to operate it. This project however wasn't for the faint hearted as it required a full 250V for power supplies.

The Broadcast Band section featured five pages of up-to-date news and logs with for example a report that VUC2 in Calcutta could be heard on 4880 kilocycles (no megahertz in those days!) and that CR4AA Praia, Cape Verde Islands had been logged on 5910. Moving on up the bands it was noted that HC2LT Radiodifusora Costa Azul in Salina, Ecuador was operating on 6220kcs with a power of 300W and, reflecting our ever changing world, that at 2100 GMT on 7090kcs La Voix de Vietnam could be heard transmitting from the then named French Indo China.

The success of *Monitor* was swift - the initial print run of a few hundred copies was quickly snapped up. By the end of the year it was made available to all members and had increased in size to an 10 x 8 booklet emblazoned with the ISWL winged eagle logo.

In the early 1950s the opportunity for most members to buy a professionally built

Continued on page 42

ML&S martin lynch & sons

Suppliers of Communications Equipment

tel: 0208 566 1120
fax: 0208 566 1207
website: www.hamradio.co.uk
email: sales@hamradio.co.uk

128, 140-142 NORTHFIELD AVENUE • EALING • LONDON W13 9SB

used bargains

- ✔ **ALL USED KIT** comes with at least **3 MONTHS WARRANTY** *(longer on newer radios)*
- ✔ All radios are ***checked*** and ***cleaned*** in our workshops
- ✔ We are able to offer ***finance*** on any used radio over £300.00
- ✔ We are able to offer ***extended warranty*** on ***ALL used radios***.

Kenwood TS50S
The original 100 Watt HF mobile radio used examples from ***£399***

Kenwood TS4505
Big enough for base use small enough for mobile. This radio has been very popular over the years and we have clean used examples from ***£450***

Kenwood TS570DGE
Currently in stock new at £849.00 this radio is very underated and we get excellent user reports. Used examples from ***£599***

Yaesu FT100
the mobile shack from ***£600.00***

Yaesu FT1000
the original 200 Watt radio from ***£1400.00***

Yaesu FT1000MP
used examples from ***£1250.00***

Icom IC706
We always have a selection of 706s from - ***£450.00*** upwards

Icom IC746
this often overlooked radio is a great radio for an instant multiband shack. With the TS2000 coming in we have had a few of these part exchanged and can offer clean examples from ***£749.00***

Icom IC775 DSP
The Icom Flagship 200 Watt radio. These are being part exchanged in large numbers for the new FT1000MP Mk 5 so we have them from ***£1499.00***

The Millennium Radio Station

Kenwood TS-2000 **£1999.00**

1.8 to 23 cms all mode with built in dual speed TNC (1200/9600) and a host of features all For £1999.00 Also available for £1699.00 without 23cms. (Requires 25 amp 13.8volt PSU)

Kenwood TS B2000 **£1599.00**

Kenwood TS-50

The original HF mobile radio. 100W all mode - still plodding on at only - **£599.95**

Kenwood TS-850S **£699.95**

If you do not want all the bells and whistles but want a good quality 100W HF mobile mini Rig then the TS850S fits the bill at only £699.95 *(Requires 25 amp 13.8volt PSU)*

Kenwood THD-7E Mk2

Dual Band Hand Held with built in TNC (Ideal for APRS and DX Cluster monitoring)

£359.95

Kenwood VCH1

While other manufacturers are making radios to receive pictures Kenwood bring you a unit to send and receive slow scan pictures with the ability to take low resolution colour pictures.

£199.95

kenwood

ACCESSORY LIST

PS53T
Matching PSU for TS2000 and TS570DGE.....£229.95
PS52
Matching PSU for TS870S.....£229.95
SP23
Matching speaker for TS570DGE and TS2000 ..£68.95
SP31
Matching Speaker for TS870S.....£82.95
MC60A
Matching Deskmike for Kenwood HF Radios....117.95
HS5
Top Quality Headphones for HF Radios £52.95

Kenwood TS-570DGE **£849.00**

An Ideal first radio offering excellent features for CW operators. Also very well suited for Blind Operators *(With optional VS3)* 1.8-30mhz with built in ATU at only £849.00 *(Requires 25 amp 13.8volt PSU)*

Kenwood TS-870S **£1599.95**

The original DSP HF Radio with built in ATU
(Requires 25 amp 13.8volt PSU)

Kenwood TD-700E **£519.95**

The only Dual Band mobile with a built in TNC *(Ideal for APRS and DX Cluster monitoring)* Remote head is standard on this model.

Kenwood TMG-707 **£319.95**

Twin Band mobile with large Display for at a glance reading while on the move. One of the few VHF/UHF mobile radios that can have a voice module installed for blind operators. *(With optional VS3)*

The BEST RADIOS at the BEST

yaesu

FREE MD-100 Matching Desk Mic (RRP £110)

Yaesu FT-1000MP MkV

RRP £2899
WE PAY YOUR £100 DEPOSIT!
48 * £85.17
with 2 year warranty

- HF
- Base - 234V
- 200W
- All mode
- DSP

Yaesu FT-847

RRP £1699
ML&S £1199
ZERO DEPOSIT!
36 * £44.56

- HF/6/4/2/70
- Base/mobile – 13.8V
- 100W
- All mode
- DSP

Two Year Warranty & microphone, leads & manual

Yaesu FT-1000MP/AC

RRP £2595
ML&S £1799
FREE FINANCE!
£179 DEPOSIT!
12 * £135

Yaesu FT-817

RRP £799
FREE FINANCE
£79.90 DEPOSIT
9 * £79.90

- HF/6/2/70
- Transportable - Batteries
- 5W
- Wide Band RX
- All mode

Offered with nicads, charger, antenna & microphone

Yaesu FT-100

RRP £1299
ML&S £849
FREE FINANCE!
£99 DEPOSIT!
12 * £62.50

- HF/6/2/70
- Mobile – 13.8V
- 100W
- HF/6 50/40 2/70
- All mode
- Remote Head

Yaesu VL-1000

One piece ONLY
at a very, very special price.
Full 2 year warranty.
Call for details.

FT-840 back in stock CALL FOR PRICE!

icom

Icom IC-910H

STANDARD UNIT
ML&S £1299
ZERO DEPOSIT!
36 * £48.28

The LATEST VHF/UHF all mode radio from Icom. Features include 100watts on VHF, 75 watts on UHF, True Dual Receive with independent Volume and squelch for each receiver, Data sockets for simultaneous two band 9600 Packet operation, Electronic keyer built in and CTCSS encoder.
OPTIONS INCLUDE 1296mHz, DSP units, TCXO, Voice Synthesizer, TCXO, Narrow CW filters.

Icom IC-775 DSP

NEW PRICE!
ML&S £2995
CALL FOR DEAL!!
USED IC775s FROM £1495

The Icom IC775DSP the Flagship 200 watt transceiver has established itself as a very popular Top Class Radio we have used examples from £1495.00. New price is £2995.00 but give us a call if you want a good old Lynch Deal.

Icom IC-746

This radio ONLY
ML&S £1395
ZERO DEPOSIT!
36 * £52.00

This radio has been often been overlooked with all the new radios on offer but it represents good value for money offering 100watts all mode operation on HF/6&2 with DSP and built in ATU and all for only £1395.00 or no deposit and 36 payments of £52.00 per month.

Icom IC-756 Pro

This radio ONLY
ML&S £1849
ZERO DEPOSIT!
48 * £56.26

The Top DSP HF/6m Transceiver 100 Watts all mode. The IC756Pro and IC910H make a superb complete communications Station

Icom IC-718

FREE DSP this month
ML&S £699
ZERO DEPOSIT!
36 * £25.98

This is Icom's entry level HF transceiver with options for DSP and CW or SSB Filter. Offering 100 watts on all the HF bands at only £699.00 we are offering this radio with free DSP for this month only.

ML&S

the very BEST RADIOS brought to you by Martin Lynch & Sons

Have a trade in?
We pay TOP MONEY
– call the sales desk or EMAIL your request.
sales@hamradio.co.uk

NEW MAJOR HF RANGE
ARRIVING SOON CALL FOR DETAILS

Icom IC-R3

The LATEST scanner from Icom offering audio and Visual scanning facilities. Listening to your local repeater or watching Crossroads it does the lot.

COMPLETE WITH LITHIUM ION BATTERY
ML&S £449
or £45 DEPOSIT!
9 * £45.00

Icom IC-706 Mk IIG

One of the finest mobile radio's offering HF/6/2&70 with all mode operation and DSP.

This radio ONLY
ML&S £999
FREE FINANCE
£99.90 DEPOSIT
9 * £99.90

PRICES at ML&S - *where else!* E&OE

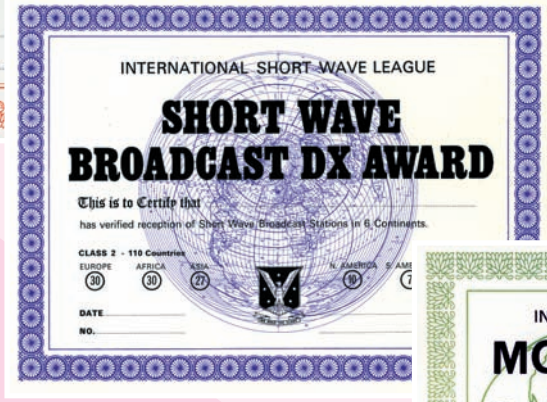
Continued from page 39

radio was somewhat limited. Therefore articles and tips for the home constructor with improvements to surplus War Department equipment were a common feature in *Monitor*.

In March 1952 the 'Constructional Section' featured a simple pre-amplifier that would give most receivers that "little extra punch". The valve specified in the design was "cheap and easy to obtain on the surplus market".

In subsequent issues modifications to a standard superhet receiver were also listed. These included firstly increasing the selectivity in the intermediate frequency (i.f.) stage and improving the tone control to "reduce the annoyance of static particularly on 3.5 and 1.7Mcs".

Other modifications included the addition of an aerial trimmer in the frequency changer stage and the inclusion of an oscillator trimmer as used "in the most expensive American communication receivers".



An Adventure

Short wave listening was still seen as something of an adventure in the 1950s - there were no mobile phones, TV was in its infancy and international travel was only for the very rich.

Shortwave radio therefore provided for many the opportunity of armchair travel and throughout the year several exciting events were reported.

The first event to be reported was about the efforts of the British, Dutch and Belgian radio authorities attempts to catch a radio pirate that had been transmitting fake SOS calls during the year. The government departments using direction-finding equipment had pinpointed the source of the signals "down to an area 8 miles either side of Ostend".

The pirate on one occasion had caused the lifeboats to be launched in response to a distress call purportedly from a Polish vessel in trouble. On other occasions the Ramsgate lifeboat had spent 18 hours at sea because of four bogus calls. It was also suggested that the calls may have been the work of smugglers, known to be active in the area, to cause confusion that would then allow them to slip across the North Sea undetected.

Urgent Call

The second exciting event was reported in the May 1952 edition of *Monitor* - when short wave listener **Alan Blackman** aged 36 of Hull heard a message broadcast from Ceylon that stated "Urgent! will the BBC contact Sir Hugh Cairns at Oxford 58136, ask him to telephone Dr. Pierres, Colombo. It concerns the life and death of our Prime Minister".

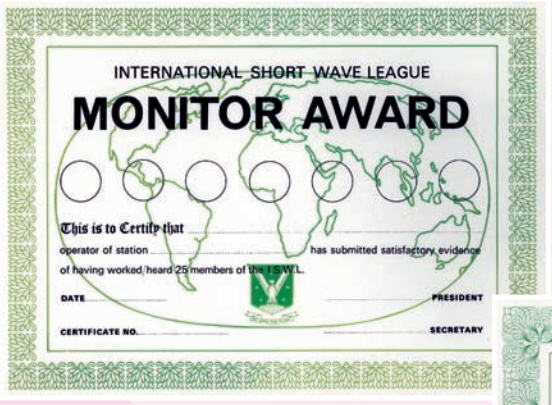
Over the following few hours many listeners contacted the BBC, one even sent a cable from Sierra Leone, as the message from Colombo was being continually repeated every 90 seconds. **Sir Winston Churchill** was at dinner when the message came through and he ordered the RAF to get Sir Hugh to Ceylon as soon as possible.

Unfortunately as the aircraft was about to leave the news came through that the Prime Minister of Ceylon had died. It later transpired that **Don Stephen Senanayake** had been fatally injured when thrown from a horse as he was taking his early morning ride and he never regained consciousness.

Strength To Strength

Throughout the 1960s and 1970s League membership grew steadily as Amateur Radio continued to be a popular pastime for both the listener and the transmitting Amateur. By the mid 1970s the ISWL boasted a membership of over 1600 people scattered around the world.

Most months 40 or 50 new members joined the League and demonstrating the truly international status of the ISWL they hailed from all parts of the globe. For example most countries of the Commonwealth were well represented, especially Canada and Australia and in America virtually every state had at least one member and in several states over 50 League members could be found.

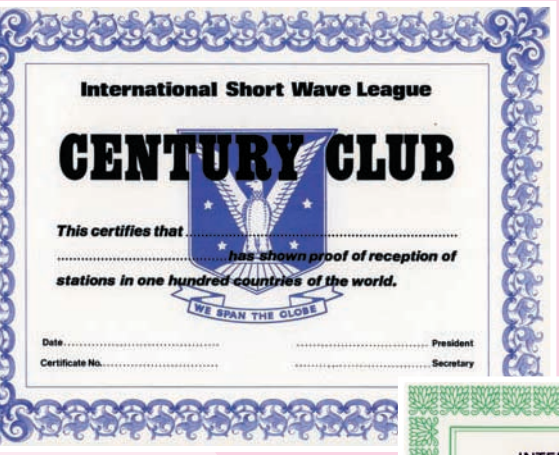


Because the ISWL served all radio enthusiasts there was, and continues to this day, to be a broad mix of interests. Of the 1600 members in 1970 there were over 500 licensed Amateurs, 400 broadcast band enthusiasts and many hundreds of short wave listeners.

Although by this stage the regular weekly meetings were a thing of the past, the League still held the occasional get together. For example, on one Saturday afternoon over 100 enthusiasts attended a meeting in Durham to discuss general short wave matters and to hear talks by representatives of two well known manufacturers, Datong and Lowe Electronics.

The Present Day

Although the halcyon days of 30 years ago are now alas long gone, the ISWL still remains one of the UK's leading radio clubs run by volunteers elected by the



membership. It has remained true to its founding principles and still produces its monthly journal *Monitor* which is posted free to all members.

Nowadays *Monitor* still caters for a wide variety of radio interests with regular columns encompassing a Letters Page, VHF News, Amateur Band Review, Transmitting Topics, Data Lines, The Broadcast Bands and Broadcast Scene. In addition there are feature articles which have recently covered such diverse topics as DIY Radio - A One Valve Radio Project, Serial Ports and How to Feed Them, Component Firms of the Past and finally Rally Report detailing June's Longleat Rally where the League had a stand so we could meet our members. So, whatever your tastes the ISWL should offer something for everybody!

Services & Activities

As well as publishing its regular magazine the ISWL is also a busy club providing many services and activities. For example its licensed Amateurs have a regular net schedule five days a week on a variety of frequencies and modes, and each month a different member operates the club's callsign **GX4BJC/P**.

Throughout the year several different contests are held for both Amateurs and broadcast enthusiasts with a certificate being awarded to the winner of each contest. Points gained from the various competitions are accumulated with the eventual winner receiving the League's All Year Challenge trophy at the end of the year.

Since the early 1950s the ISWL has operated a QSL Bureau which today enjoys a tremendous reputation throughout the world for handling cards efficiently and quickly. In 1969 at the height of its use the Bureau handled 68000 cards in the first four months of the year!

There is a small surcharge to use the bureau. However, the bureau is unique in that all cards addressed to members are dispatched at the League's expense, with costly self-addressed and stamped envelopes not being required.

Also, unlike other bureaus...cards are never thrown away. I can personally vouch for this in that when I rejoined the League in 1989 I received an envelope of cards that had been kept for me since my departure in 1976!

To assist present day DXers in obtaining that illusive QSL the ISWL have also updated and re-issued their booklet *The Art of QSLing*.

Impressive Certificate

To compliment their efforts members are entitled to apply free of charge for the various awards that the ISWL offer, each being marked by impressive certificates. These awards encompass most activities and are open to both Amateur and Broadcast Band enthusiasts alike.

For example since its inception in the late 1950s over 700 members have qualified for the Century Club confirming verified contact or reception of 100 Amateur band countries and over 150 have achieved one of four classes of the Short Wave Broadcast Band DX Award signifying the reception of up to 150 broadcast band countries on six continents.

Other certificates available include the States Award, Continental Award, Pacific Ocean Award, Commonwealth Award, European Award, Zone Award and finally The 5 Band Century Award.

A recent innovation has been the setting up of the Internet ISWL Chat Room where members can converse with one another on the Internet. So, if you require more information about the League and its activities contact us at the **ISWL HQ, 267 Pelham Road, Immingham, Lincolnshire DN40 1JU**, or alternatively visit our website at **www.iswl.org.uk**

PW

Antenna Workshop

The PW Picnic Pole

Mast details:
The FTF telescopic mast is available from
Sycom,
PO Box 148,
Leatherhead,
Surrey KT22 9YW.
Tel: (01372) 372587,
FAX: (01372) 361421.

Rob Mannion G3XFD takes a turn presenting Antenna Workshop this month and describes an idea which he says is more of a concept rather than a specific project. Read on to find out more!

Rob G3XFD says that the PW Picnic Pole is more of a concept than an idea. So, why not try it out and make your own version now that access to the countryside is getting easier again?

As readers know from my regular comments I enjoy portable working very much indeed. It's great fun to operate from one of the delightful scenic locations available here in Dorset, whether it be on h.f., or v.h.f./u.h.f. using lightweight beam antennas.

The PW Picnic Pole concept - **it is a concept rather than a project as you'll soon realise** - came to me when I was testing a QRP transmitter-receiver design. But then I realised what had started out as an idea to take advantage of my Funkteknik Fishing Rod Mast (first reviewed in February 2001 *PW*) without necessarily using my car, would be a concept that many Amateurs -and listeners - could use in whatever way suited them best.

For me, the main advantage is that I can erect the antenna itself very quickly and efficiently with effective DX possibilities too. Getting a temporary long wire up can be a real pain...especially if you aren't any good at throwing weights and wires.

Additionally, you don't have to worry too much - **apart from keeping a very careful look out for overhead power lines which can be very low slung in the countryside** - about trailing wires annoying other visitors to the countryside. There's no trespassing liability for a mast temporarily going up to 10 metres or so!

Practically, the PW Picnic Pole concept is flexible enough, forgive the very deliberate pun - to be modelled to suit your own needs. The only thing which I think is essential for ease of portability is the fibreglass telescopic fishing pole but even then I've no doubt that some canny *PW* readers will try something else!

Essential Box

The choice of housing for carrying your portable rig is up to the individual constructor. I chose wood, and although I'm no carpenter I enjoyed the process. Everything I needed was bought from the ubiquitous B&Q d.i.y. chain and proved relatively cheap to make.

I chose very thin planed timber available in 6 x 92mm thickness and width and 2.3 metres in length. Two of these (at around £4 each) made up the lightweight but very strong box. Corners, edging and framing (for support where necessary) were made from a length of 18 x 18mm square section planed timber available in 2.1m lengths.

The whole box, including hinges and a can of matt black spray paint (from B&Q of course) came to less than £12. Not being able to find a carrying handle of the size and style I wanted...I saved the £5 needed for this by buying a cheap broomstick (69p) and making one to fit my large hand!

Assembled using screws and adhesive the box is very strong for its size. Even with all the equipment needed I can carry it very easily.

The finished box - designed to carry my DX-70 is lighter than a reinforced fibreglass storage unit which was available at £35! It's weatherproof because I used the carpenter's resin adhesive - but I don't intend to leave it out overnight!

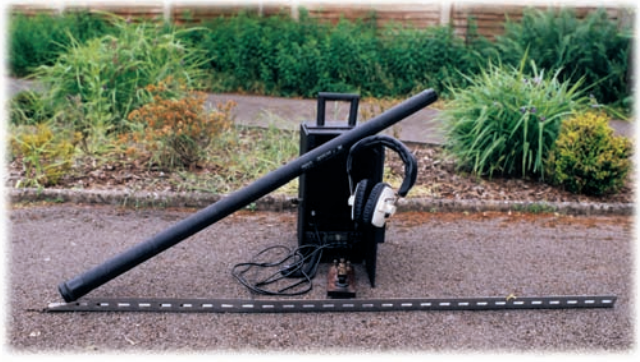


Fig. 1: All you need for the basis of a portable h.f. station - the Picnic Pole concept. A basic recipe to which you add your own favourite ingredient says G3XFD!

Portable Support

Portable, lightweight support for the mast used in the PP concept took some careful thinking about. It had to be light but strong and in the end I chose a length of angled perforated steel (almost like a giant section of Meccano girder) which is sold by B&Q and other outlets for corner reinforcement purposes on interior walls where plasterboard is used.

The support works well but I've decided to buy a piece of duraluminium angle section. This will be light but wont flex as much as the original material. However, the other material has lasted well.

Power Supply

The next consideration is the power supply and the capacity and the weight will depend on what equipment you end up using. Using my DX-70 (switched down to 12W or so for c.w.) I've used D sized NiCad cells and lead acid gel batteries.

In future I'll concentrate on using the gel-electrolyte sealed lead-acid batteries. They can be exceptionally light, and for my purposes a 12Ah unit is proving okay. And if you're feeling very innovative, why not incorporate a small solar panel on the side of the box?

Antenna & Tuning

In essence my preferred antenna is of course just a vertical long wire. Nothing more than that as it takes up little space and is very convenient. On 7MHz, my favourite /P band, a counterpoise helps but is not a necessity. However, on 3.5MHz I found it very helpful. The mounting stake provide a good earth too...so everything is on hand.

I've successfully used the MFJ mobile a.t.u. and a standard tuner, in conjunction with a small roller coaster inductor which I've had for years. This makes resonating the system on 1.8 and 3.5MHz very easy to achieve.

The antenna wire is wound - spirally - around the mast. This can be achieved by slowly pulling out each section (with the end of the wire tightly looped over the top very thin section - where it will remain as the taper of the whip section widens - locking it into place) as you extend the mast.

At the same time you can turn the section - creating the spiral of around 12 turns. If you wish (I do this most of the time) you can also seal each section with tape so that water doesn't run down inside the pole and stopping it from collapsing suddenly if you've not 'twist locked' it correctly.

The performance on the bands from 7MHz upwards is superb in my opinion. Reception of the IBP beacons on 14.1MHz upwards always seems to be better - as they are also vertically polarised too of course. And even when working G and EI stations on 7MHz the system gives good results - so you get the best of both worlds - local QSOs and DX opportunities.

Choice Of Equipment

The choice of equipment to use in your own PP system is of course entirely up to you. However, by sharing some of my own ideas you may get some of your own to add to the fun and challenge of outdoor operating.

My first project specifically built for use with the PP system was extremely simple in format. Based around an old long and medium wave car radio - I used the simple h.f. to medium wave converter project which I featured in Radio Basics several years ago. However, in this project I used a MHz crystal (less than £1 from Sycom) to produce the 1MHz tuneable i.f. on the car radio. Another change from the original project is that I used toroid cores for the inductors.

The transmitter is a QRP level (around 3W) VXO crystal-controlled c.w. circuit from the G QRP Club's handbook. It works very well indeed. In my project I leave the crystal oscillator running on receive to provide the b.f.o. for c.w. reception.

The advantage of the car radio as a tuneable i.f. is that there's a good receiver ready-to-go, there's plenty of audio and when you want a break from operating you can enjoy listening to broadcast radio while enjoying the picnic!

If anyone is interested in building the 7 to 1MHz converter - with care it can actually be mounted inside an older car radio - or take the place of a cassette mechanism (usually the first thing to fail in these radios!) I can send photocopies of my simple p.c.b. lay-out (1st class s.a.e. please). The unit is very cheap to build - using MPF102 f.e.t.s and toroids.

On The Air

Using the PP system on the air is great fun and even when sat on my front lawn it proved to be enjoyable (funny looks from passers by though!). Setting it up is so simple. Short lengths of wire secure the mast to the support angle, and screw-in-elongated slots (using the slots in the angled steel) lock the box into position.

The antenna is connected to the rig in use and the earth to the mounting stake - and off you go! Incidentally, I have also made a very simple (broomstick left over from the carrying handle) one-legged table to hold the Morse key. The end of the broomstick is pushed into the ground. When sitting on a cushion on the grass it's very comfortable to use. My grandson calls it "nanda's toadstool"!

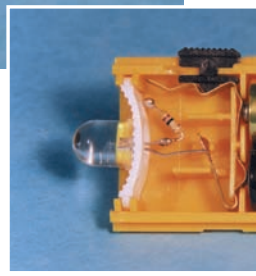
One wag of a *PW* reader - working me on 7MHz c.w. immediately referred to the PP system as the PW 'Telegraph Pole'! But whatever you call it, and whatever equipment you use...it's a concept which can add to the enjoyment of out-and-about Amateur Radio. It'll be ready for use anytime you need it and I hope you enjoy using the concept as much as I've done!

PW

Fig. 2: Although the box which you construct will be perhaps the most time consuming job entailed in making up your on PP system...other items are necessary. Rob has built his PP around the German made FTF fibreglass telescopic mast, which is supported by a lightweight length of angled steel (see text).

Fig. 3: Using thin, very lightweight planed timber G3XFD made a box which will take one of the modern small h.f. transceivers (or home-brewed QRP equipment), an antenna tuning unit (a.t.u.), Morse key, headphones, wire for the antenna and radials, a gel battery, notebook and a small hammer.

Carrying On The Practical Way



This month the Rev. George Dobbs G3RJV suggests that you shine a light on your QRP work - especially when it's a little gloomy - after you've read the illuminating quotation!

"Let your light so shine before men that they may see your good works"

Matthew 5:16

One of the additional joys of QRP operation is its suitability for portable operation. We all know that a simple little transceiver, drawing very little current, and a wire antenna strung out to a tree can provide hours of enjoyment. Some QRPers take it further by enjoying 'wilderness operation'. The **Adventure Radio Club** was set up for such intrepid operators. We are rather short of true wilderness here in the UK (and Rochdale!) but a tent set-up in a remote spot, with a small transceiver, is Amateur Radio heaven for the out-door type of operator.

Amateur Radio is a real take-everything-with-you pursuit. One of the problems can be providing power. By definition, most QRP transceivers have modest power requirements and lightweight gel-cell batteries can usually provide several hours of operation.

One flaw I recall from times gone by is that my attempt to light up such a station with a 12V bulb took more power from the battery than the transceiver! I took a dim view of that.

A couple of years ago, at the Dayton HamVention, I noticed that an enterprising company had produced a small light emitting diode (l.e.d.) lighting system for operation in remote locations. Using high brightness l.e.d.s, **it is possible** to make an adequate light with low current consumption.

So, I thought it might be useful to experiment with the idea for *PW* readers. But first a little about the l.e.d. itself.

Incredibly Common

The l.e.d. is an incredibly common electronic component nowadays. Most consumer electronic equipment contains several of them to indicate circuit functions.

It all began when In 1907, **Henry J. Round**, an American electrical engineer connected a piece of crystal silicon carbide to a 10V battery and noticed that the crystal emitted a yellowish light. If Mr Round had kept a voltage connected to the crystal, it would still be glowing!

The l.e.d. is a source of **cold light** and generates very little heat and is far more efficient than a normal incandescent lamp. The lifetime of an l.e.d. is estimated as around 100 years. That is the lifetime measured by the light output.

It takes about 100 years for the light intensity to reduce by a half and at 200 years it should still be giving out about a quarter of the initial output. That's certainly better than the light bulbs I use in my house!

The l.e.d. converts electrical current directly into light and is therefore more efficient than most other light sources. However, the forward voltage across a *pn* diode must exceed a **threshold voltage** before the diode will pass current.

For a silicon diode the threshold voltage is 0.6V. For a diode using Gallium Arsenide (commonly used for l.e.d.s) the threshold voltage is 1.3V. This voltage excites the electrons, which cross the junction and combine with 'holes' to emit photons.

Unlike an incandescent lamp, which emits a wide spectrum of light, the l.e.d. has a narrow wavelength range. So l.e.d.s are available according to the colour of light they emit.

Although Mr Round's light emitter was yellow, the first l.e.d.s that could be produced in commercially viable numbers were red. These were followed by green and then orange l.e.d.s.

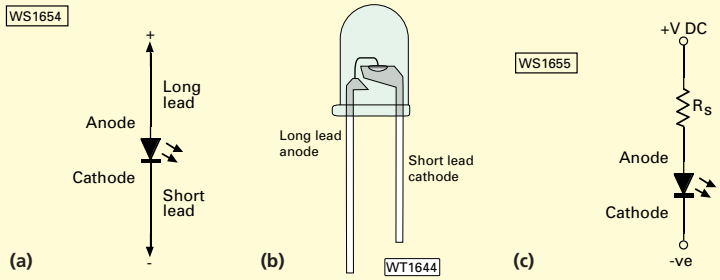


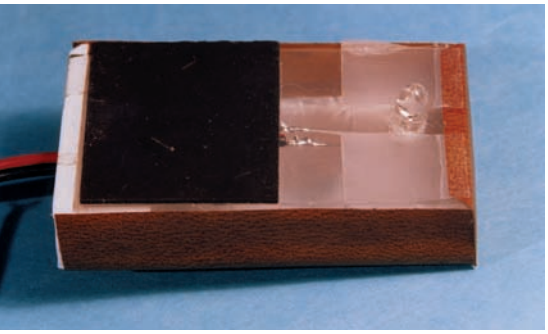
Fig. 1: circuit symbol and details (a), physical details (b) and a typical circuit (c) for using a light emitting diode (l.e.d.). See text for further information.

Common Conception

The common conception of l.e.d.s is that they glow rather than shine – they are indicators rather than illuminators. The earlier common GaAs types have been improved with the more efficient **Gallium Aluminium Arsenide** (GaAlAs) l.e.d.s and from the mid 1980s the **Super High Brightness** (GaAlAsP) l.e.d.s became available.

The threshold voltage of these l.e.d.s is around 2 volts and they need about 30mA of drive current for full output. These have been followed by **Ultrabright**, **Hyperbright** and **Extreme Brightness** l.e.d.s. This is why the l.e.d. can now be considered a viable light source.

The diagram, **Fig. 1(a)**, shows the usual circuit symbol and nomenclature details for an l.e.d. The illustration in Fig. 1**(b)**, further explains the physical details and polarity recognition by differing lead-out lengths. A normally packaged l.e.d. has one lead



● This month George Dobbs G3RJV sheds a little more light on his own QRP operations - using light emitting diodes!

longer than the other. This longer lead is the anode, as shown in Fig. 1(b).

Many l.e.d. packages have a flat side, which indicates the cathode. The diagram, Fig. 1**(c)**, shows the basic circuit for l.e.d. use. A series, current limiting, resistor (Rs) is required to obtain the correct working conditions.

$$R_s = \frac{\text{Supply voltage - l.e.d. voltage}}{\text{l.e.d. current}}$$

$$R_s = \frac{V_s - V_d}{I_d}$$

Let's say we wish to operate an l.e.d. rated with a 2V forward voltage and 20mA from a 12V supply with a forward current. The working out would be:

$$R_s = \frac{(12 - 2)V}{20mA} = \frac{10}{0.02} = 500$$

1 0 ÷ 0 . 0 2 = 500

For a 6V supply, a 180Ω (200Ω preferred standard value) is required and for a 9V supply, 330Ω (350Ω standard value) is required. When opting for the nearest preferred value and higher value will give slightly less light output and a lower value more light output. In practice l.e.d.s are quite rugged devices provided the recommended forward current is not excessive. I experimented with some hyperbright and extreme brightness l.e.d.s as **wilderness lights**.

Hand Torch

My first project was a simple hand torch using an orange extreme brightness l.e.d., a push-button switch and a battery holder for two AA sized cells. The 3V from the pair of AA sized cells is effectively the minimum usual voltage for an l.e.d. light.

The circuit, such as it is, is shown in **Fig. 2**. The 47Ω series resistor keeps the current within the specifications for the l.e.d. and gives an acceptable light output.

Notice that I've added the series resistor in the cathode lead. In practice it can go on either side of the l.e.d. And usefully, the shorter lead gives more space to include the resistor in this skeleton style torch.

Lurking in a desk drawer, I had a cheap two AA sized cell torch and wondered if I might convert this to an l.e.d. type. I also had a jumbo hyperbright l.e.d., although sadly, it was a red l.e.d. but it would do for an experiment.

I managed to get the jumbo l.e.d. to fit in place of the bulb and inserted the 47Ω series resistor between the anode lead and the springy brass switch. Its works (surprisingly) well, in spite of the red output. The mechanics of such a conversion will depend upon the construction of the torch. I leave readers to their own ingenuity!

For Portable Operation

The final project, and object of the exercise, was to make a lamp for portable radio operation. The circuit is shown in **Fig. 3**.

Using an orange Extreme Brightness l.e.d. and the 12V supply, a series resistor of 470Ω is required. These l.e.d.s are happy with 30mA, so a series resistor of 330Ω could be used for a little more light output.

I mounted my l.e.d. in a Tic-Tac mint case making the required hole with the tip of a hot soldering iron. Incidentally, if you make a hole in both the **top and bottom** of the case, it's easier to manoeuvre the l.e.d. into place.

I placed a section of shiny aluminium kitchen foil on the top of the case – which hopefully helps a little with light reflection. The top and side of the case are covered with (rather tasteful) wood effect sticky-backed plastic.

The final touch was to add a strip of **plastic magnet,** culled from an old refrigerator magnet, on the underside of the case. This enables the lamp to stick on the edge of the transceiver top panel (assuming it's steel of course!) and the light to fall onto the area in front of the front panel.

The result? I quite like it! There's enough light for operation on a dark night. Even enough to make notes and fill in a logbook.

Using more than one l.e.d., connected in series, could make a better light. However, be warned....**using l.e.d.s in parallel is not a good idea**. Although it should work, as they warm up there may be unstable current distribution between the paralleled l.e.d.s.

In practice though, l.e.d.s may be mounted in series with only one series resistor. Add up the voltages of all the l.e.d.s in the series string and calculate the resistor value from the supply voltage **minus the total l.e.d. voltages, divided by the recommended l.e.d. current**.

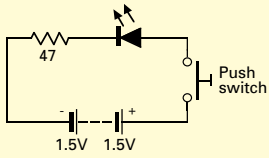
But of course...there is a limit to the number of l.e.d.s that can be used in series. The total l.e.d. voltage should not exceed about 80% of the supply voltage.

Have a go yourself - shine a little more light on your hobby and get more out of those darker afternoons when operating portable!

"The result? I quite like it! There's enough light for operation on a dark night. Even enough to make notes and fill in a logbook".

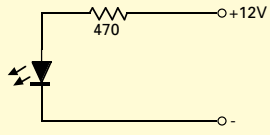
PW

WS1656



● Fig. 2: Modern l.e.d.s provide a lot of light for little power consumption. This circuit could prove very useful, so why not try it for yourself? (See text).

WS1657



● Fig. 3: Even though the jumbo-sized hyperbright l.e.d. G3RJV had to hand in his workshop was a red type - he says this ultra simple circuit worked well. Rumours that the St. Aidan's Church vicarage is now in a 'red light district' now abound!

TELEPHONE SALES ON:
01922 414796

Ask for Dave (G1LBE)

Open Mon-Fri 9.30 - 6.00pm. Sat 9.30 - 4.00pm

WEB SITE: http://www.radioworld.co.uk
E-mail: sales@radioworld.co.uk

There is NO CHARGE for using credit cards

VISA · E · DELTA · MasterCard · SWITCH

E&OE

RA
42 BR
WALSAL
Tel sa

Main dealers for Alinco, Icom, Yaesu & Kenwood

Manufacturers warranty on all new equipment

- About Us
- Map
- Adonis
- Alinco
- AOR
- Bearcat
- Comet
- Cushcraft
- Daiwa
- Diamond
- Garmin
- Icom
- Kenwood
- MFJ
- Roberts
- Sirio
- Sony
- Tokyo
- Watson
- Yaesu
- Yupiteru

YAESU

ROTATORS

G-1000DXC Rotator 1100kg/cm CE c/w control box & 25m cable RRP £599 .....**RWP £509.00**

G-2800SDX Rotator HD 0.2 degree CE c/w control box & 40m cable RRP £1229 .....**RWP £999.00**

ROTATORS IN STOCK

G-450C Rotator light duty CE c/w control box & 25m cable RRP £379 .....**RWP £325.00**

G-650C Rotator medium duty CE c/w control box & 25m cable RRP £499 .....**RWP £425.00**

OPTIONS

GC-038B	Mast clamp (brown)	**RWP £25.00**
GC-038G	Mast clamp (green)	**RWP £25.00**
GC-048	Mast clamp for G-2800SDX	**RWP £39.00**
GS-050	Stay bearing (small type)	**RWP £29.00**
GS-065	Stay bearing (medium type)	**RWP £45.00**

ICOM

IC-756 PRO

Icom's flagship. Colour screen, 32 bit prosessor. Absolutly fabulous.

£1895

IC-746

HF/VHF all mode transceiver, 6m/2m, 100W with tuner built in. 2 years warranty.

£1299.00

IC-706 MKII G

Smallest DSP radio on the market. HF, 6m/2m/70cm. Detachable front. **£959.00**

IC-R8500

Probably the best wide band receiver available, coverage from 0.1-2GHz. Many 'top-end' features, 2 years warranty. **£1199.00**

IC-821

2m, 70cm base flexible main/sub band operation. Advanced CW features, seperate VFO & 10 memory channels for satellite operation & connection for 9600 packet operation. Limited stock.

£999.00

IC-2800

Dual band mobile, colour display. Full duplex, inc. CTCSS, 50W output. Detachable front. List price £449.00. OUR PRICE **£395.00**

KENWOOD

TS-870S

Kenwood's top HF radio, DSP & IF. No need for filters, transmit Tx audio, fully adjustable, broadcast audio on SSB. A CW's operators dream. Plus Rx antenna tuner.

BARGAIN AT **£1299.00**

TS-50S

The first and still one of the best little mobile radios, dedicated for HF users. Don't miss out! Brand new with UK warranty. **£599.00**

TS-570DG

Still the only HF monoband mobile radio with DSP and ATU built in for under £1000.00.

RADIOWORLD PRICE **£829.00**

TM-D700E

The latest dual bander, dual display, built-in TNC, APRS locating system, alpha-numeric. List price £519.00.

OUR PRICE **£429.00**

TM-V7E

Cool blue display, dualband, packet ready, detachable front. List price £419.00. OUR PRICE **£379.00**

TM-G707

Dual band, detachable front, clear display. No squinting! Bullet proof front end. List price £319.00.

OUR PRICE **£279.00**

TH-D7E

The world's first handie with built-in TNC, plus APRS, CTCSS searching system, metallic silver finish. List price £309.95.

OUR PRICE **£279.00**

TH-G71E

Dualband handie, reliable and rugged. List price £279.00.

OUR PRICE **£210.00**

while stocks last

KENWOOD TS-2000

All mode multi-bander HF/6m/2m/70cm optional 23cm, DSP, built-in keyer, large amber coloured backlit LCD.

RWP **£1649.00**

WANTED
USED EQUIPMENT
PX WELCOME
BEST PRICES PAID!

PRICE MATCH

Up to 5% extra discount may be available on selected items.

DIO WORLD

OOK LANE GREAT WYRLEY,
L, WEST MIDLANDS WS6 6BQ

E&OE

les & service: 01922 414796 Fax: 01922 417829

USED EQUIPMENT PRICE LIST

MAKE	MODEL	PRICE
ADI	AR-146 2m FM 50W MOBILE	£130.00
AKD	4001 4m TRANSCEIVER	£130.00
AKD	6001 6m FM TRANSCEIVER	£135.00
ALINCO	DJ-G1 HANDY TRANSCEIVER	£120.00
ALINCO	DJ-G5EY DUAL BAND HANDY	£199.00
ALINCO	DJ-X1 RECEIVER	£90.00
ALINCO	DJ-X10 WIDE BAND RECEIVER	£275.00
ALINCO	DR-150E 2M 50W MOBILE TRANSCEIVER	£140.00
ALINCO	DR-M06 6M FM TRANSCEIVER	£140.00
ALINCO	EDX-1 ATU	£140.00
AMERITRON	AL-1500 1.5KW AMPLIFIER	£1,499.00
AOR	AR-3030 HF / VHF RECEIVER Inc converter VHF	£450.00
AOR	AR-3030 HF RECEIVER	£399.00
AOR	AR-7030 TOP RECEIVER	£550.00
AOR	AR-7030+HF RECEIVER (With AM Filter, Optical Encoder)	£650.00
AOR	AR-8000 WIDE BAND RECEIVER	£199.00
AOR	AR-8200 mk1 WIDE BAND RECEIVER	£230.00
BEARCAT	UBC-860XLT SCANNER	£120.00
BEARCAT	UBC-9000XLT RECEIVER	£199.00
BNOS	LP-50 50MHz 50 Watt AMPLIFIER	£99.00
DAIWA	CN-1001 AUTO ANTENNA TUNER	£140.00
DAIWA	CNW-518 1KW AUTO ATU	£199.00
DAIWA	NS-660P SWR &PWR MTR	£40.00
DAIWA	CN-540 SWR &PWR MTR	£30.00
DAIWA	CN-630 SWR &PWR MTR	£40.00
DATONG	FL3 FILTER	£75.00
DATONG	D-70 MORSE TUTOR	£25.00
DATONG	AUTOMATIC RF SPEECH PROCESSOR	£80.00
DATONG	FL-2 FILTER	£60.00
DIAWA	PS-304 PSU 20amp	£75.00
DRAKE	R7 HF RECEIVER	£550.00
DRAKE	SW-2 HF RECEIVER	£299.00
FAIRHAVEN	RD-500 WIDE BAND RECEIVER	£575.00
HARRIS	RF-590 TOP CLASS RECEIVER	£2,250.00
HOWES	CTU8 ANTENNA TUNER UNIT	£20.00
ICOM	AT-180 AUTOMATIC ANTENNA TUNER	£200.00
ICOM	FL-100 500Hz CW NARROW FILTER	£40.00
ICOM	FL-222 1.8KHz SSB NARROW FILTER	£100.00
ICOM	FL-223 1.9KHz SSB FILTER	£40.00
ICOM	FL-52A 500Hz CW NARROW FILTER	£99.00
ICOM	FL-53A 250Hz CW FILTER	£100.00
ICOM	IC-2100H 2M MOBILE TRANSCEIVER	£150.00
ICOM	IC-229H 2M/ 50W/ FM Mobile TRANSCEIVER	£130.00
ICOM	IC-229H FM TRANSCEIVER	£140.00
ICOM	IC-251 2m MULTIMODE TRANSCEIVER	£295.00
ICOM	IC-275E 25W TRANSCEIVER	£525.00
ICOM	IC-290 2m MULTIMODE TRANSCEIVER	£240.00
ICOM	IC-2KL AUTOMATIC LINEAR AMPLIFIER + PSU	£999.00
ICOM	IC-490E 70cms MULTIMODE MOBILE TRANSCEIVER	£265.00
ICOM	IC-725 HF TRANSCEIVER	£375.00
ICOM	IC-728 HF TRANSCEIVER	£399.00
ICOM	IC-735 HF TRANSCEIVER	£400.00
ICOM	IC-737 HF BASE BUILT IN ATU 100W	£595.00
ICOM	IC-756 HF / 6m All Band Transceiver	£999.00
ICOM	IC-765 HF BASE TRANSCEIVER	£950.00
ICOM	IC-821H VHF / UHF MULTIMODE TRANSCEIVER	£699.00
ICOM	IC-R10 HANDY WIDE BAND RECEIVER	£199.00
ICOM	IC-R7000 RECEIVER MINT! CONDITION	£550.00
ICOM	IC-R72 RECEIVER	£399.00
ICOM	IC-R75 HF / 6m RECEIVER	£475.00
ICOM	IC-T81E QUAD BAND HANDY	£250.00
ICOM	IC-T8E HANDY TRANSCEIVER	£175.00
ICOM	IC-W21E HANDY TRANSCEIVER	£199.00
ICOM	PS-15 20A POWER SUPPLY FITS ALL ICOM	£110.00
ICOM	PS-85 POWER SUPPLY	£175.00
ICOM	SP-21 LOUDSPEAKER, BOXED	£55.00
ICOM	UT-102 VOICE SYTHESISER	£20.00
ICOM	UT-84 TONE SQUELCH UNIT	£25.00
ICOM	AT-120 ANTENNA TUNER	£200.00
ICOM	IC-R71E RECEIVER	£399.00
JRC	NRD-535 HF RECEIVER	£600.00
KANTRONICS	KAM PLUS TNC	£220.00
KANTRONICS	KP-3 TNL	£89.00
KENWOOD	AT-250 AUTOMATIC ANTENNA TUNER	£200.00
KENWOOD	AT-50 AUTO ANTENNA TUNER	£175.00
KENWOOD	AT-50 AUTO ATU	£175.00
KENWOOD	DFC-230 FREQUENCY CONTROLLER	£70.00
KENWOOD	PS-20 10A POWER SUPPLY FITS TR-9130 ETC	£55.00
KENWOOD	PS-50 POWER SUPPLY	£145.00
KENWOOD	PS-52 POWER SUPPLY	£150.00
KENWOOD	SM-220 SCOPE 830 etc	£200.00
KENWOOD	SP-120 LOUDSPEAKER	£30.00
KENWOOD	SP-430 LOUDSPEAKER	£40.00
KENWOOD	SP-950 LOUDSPEAKER	£90.00
KENWOOD	TH-25E HANDY TRANSCEIVER	£49.00
KENWOOD	TH-47E HANDY TRANSCEIVER	£100.00
KENWOOD	TH-79E HANDY TRANSCEIVER	£189.00
KENWOOD	TH-D7E 2m / 70cms HAND HELD BUILT-IN TNC	£195.00
KENWOOD	TL-120 100W LOW DRIVE HF AMPLIFIER	£150.00
KENWOOD	TL-922 HF LINEAR AMP 1Kw (AS NEW!)	£999.00
KENWOOD	TM-251E MOBILE TRANSCEIVER	£140.00
KENWOOD	TM-255E 2m MULTI-MODE MOBILE TRANSCEIVER	£400.00
KENWOOD	TM-455E 70CM MULTIMODE MOBILE TRANSCEIVER	£495.00
KENWOOD	TM-D700E 2/70 DUALBAND APRS Built-in TNC TRANSCEIVER	£375.00
KENWOOD	TM-V7E MOBILE TRANSCEIVER	£290.00
KENWOOD	TR-9000 2m MULTIMODE MOBILE TRANSCEIVER	£240.00
KENWOOD	TS-120 HF SOLID STATE MOBILE	£225.00
KENWOOD	TS-430 HF BASE / MOBILE INCLUDUNG FM	£375.00
KENWOOD	TS-450SAT HF TRANSCEIVER	£600.00
KENWOOD	TS-50S SMALL HF MOBILE 100W	£425.00
KENWOOD	TS-570D HF/ DSP/ATU MOBILE-BASE TRANSCEIVER	£650.00
KENWOOD	TS-570DGE HF DSP BASE / MOBILE TRANSCEIVER	£725.00
KENWOOD	TS-711E 2m MULTIMODE BASE TRANSCEIVER	£399.00
KENWOOD	TS-790E 2m / 70cm MULTIMODE BASE TRANSCEIVER	£799.00
KENWOOD	TS-811E 70cms MULTIMODE BASE TRANSCEIVER	£399.00
KENWOOD	TS-830S HF TRANSCEIVER	£325.00
KENWOOD	TS-850SAT HF BUILT IN ATU EXCELLENT TRANSCEIVER	£800.00
KENWOOD	TS-870SAT HF/DSP-IF-100W BUILT IN ATU TRANSCEIVER	£999.00
KENWOOD	TS-940SAT HF BASE STATION BUILTIN ATU (CLASSIC!)	£700.00
KENWOOD	TS-950SD HF/ 150W DSP BASE TRANSCEIVER	£1,100.00
KENWOOD	TS-950SDX HF/150W MOSFET DSP TRANSCEIVER	£1,749.00
KENWOOD	TSU-8 TONE SQUELCH UNIT	£25.00
KENWOOD	VFO-120	£50.00
KENWOOD	VFO-180 EXTERNAL VFO	£75.00
KENWOOD	VS-1 VOICE SYTHESISER	£30.00
KENWOOD	VS-2 VOICE SYTHESISER	£30.00
KENWOOD	YG-455CN-1 270Hz CW CRYSTAL FILTER	£100.00
KENWOOD	YK-88A-1 AM FILTER	£40.00
KENWOOD	YK-88C-1 500Hz CW NARROW FILTER	£40.00
KENWOOD	YK-88CN1 270Hz CW FILTER 8.83MHz IF	£40.00
KENWOOD	YK-88S-1 2.4KHz SSB NARROW FILTER 8.83MHz IF	£40.00
KENWOOD	YK-88SN 1.8K SSB FILTER (TS-440 /R5000)	£40.00
KENWOOD	YK-88SN-1 1.8KHz SSB NARROW FILTER 8.83MHz IF	£40.00
KENWOOD	PS-430 POWER SUPPLY	£120.00
KENWOOD	TM-G707E MOBILE TRANSCEIVER	£220.00
MCL	MCL1100 EASY READER	£75.00
MFJ	MFJ-1020B INDOOR ACTIVE ANTENNA	£40.00
MFJ	MFJ-1278 MULTI MODE DATA CONTROLLER	£199.00
MFJ	MFJ-462B MULTI READER	£140.00
MFJ	MFJ-462B MULTI-READER	£100.00
MFJ	MFJ-956 SWR AND ANTENNA TUNER	£30.00
MFJ	MFJ-986 ANTENNA TUNER	£195.00
MFJ	MFJ-989 3KW ROLLER COASTER ATU	£230.00
MFJ	MFJ-959B RECEIVER ANTENNA TUNER	£55.00
MICROSET	PT-135 POWER SUPPLY	£80.00
MICROWAVE MODULES	MML-144/100 2m 100W LINEAR AMPLIFIER	£129.00
MICROWAVE MODULES	MML-144/50S 2m 50W LINEAR AMPLIFIER	£80.00
MICROWAVE MODULES	28/144 TRANSVERTER 28/144 £125.00	£125.00
NAIGAI	NAG-144XL 2m 400W PEP LINEAR AMPLIFIER	£325.00
OPTOECLECTRONICS	SCOUT FREQUENCY COUNTER Inc MEMORIES	£220.00
PAC RATT	PIC-232 Multimode, dual port data controller	£175.00
PACCOM	TNC-320 TNC	£90.00
PANASONIC	DR-49 RECEIVER	£125.00
QM 70	28/144 TRANSVERTER	£100.00
SAGRA	AMP-600 2M 1KW PEP MAINS AMPLIFIER	£750.00
SEM	TRANSMATCH Z MATCH ATU INC 160m	£75.00
SEM	ANTENNA TUNING BRIDGE	£30.00
SHURE	SR-444 CLASSIC BASE MIC	£35.00
SMC	T3-170L SWR & POWER METER	£20.00
SML	SWR-25 SWR & POWER METER	£20.00
SOMMERKAMP	FT290R 2m MULTI-MODE TRANSCEIVER	£180.00
SSB ELECTRONICS	LT-23 23cms TRANSVERTER	£450.00
ST3 HEADPHONES	DELUXE HEADPHONES	£45.00
STANDARD	AX-700E WIDE BAND RECEIVER - BASE SCANNER	£170.00
SYNCRON	PS-1220VU 20 AMP POWER SUPPLY	£60.00
TAGRA	22AMP POWER SUPPLY	£70.00
TIMEWAVE	DSP-599ZX TOP OF THE RANGE DSP UNIT	£250.00
TIMEWAVE	DSP-9+	£125.00
TOKYO HY-POWER	HL-166V 6m 160W LINEAR AMPLIFIER	£175.00
TOKYO HY-POWER	HL-30V 2M and 25W AMPLIFIER	£75.00
TOKYO HY-POWER	HL-37V LINEAR AMPLIFIER	£60.00
TONNA	7000E TERMINAL	£130.00
TRIO	TR-2300 2M PORTABLE TRANSCEIVER	£60.00
TRIO	TR-9130 2M ALL MODE TRANSCEIVER	£250.00
TRIO	TS-940SAT HF TRANSCEIVER	£750.00
WELZ	AC-38M 200W MOBILE MATCHING NETWORK	£50.00
WELZ	SP-15M SWR & POWER METER	£20.00
YAESU	FC-102 1.2KW ATU WITH 4 WAY SWITCHING UNIT	£200.00
YAESU	FC-20 AUTO ANTENNA TUNER FOR 847/FT100	£175.00
YAESU	FC-757AT FULLY AUTOMATIC ATU	£180.00
YAESU	FC-902 ATU 500W	£140.00
YAESU	FEX-767-2M 2m MODULE for the FT-767GX	£140.00
YAESU	FEX-767-6M 6m MODULE for the FT-767GX	£140.00
YAESU	FEX-767-70CM 70cms MODULE for the FT-767GX	£150.00
YAESU	FL-2100Z HF AMPLIFIER	£450.00
YAESU	FP-107E POWER SUPPLY	£120.00
YAESU	FP700 POWER SUPPLY	£100.00
YAESU	FP-757HD HEAVY DUTY POWER SUPPLY	£120.00
YAESU	FRG-100 HF RECEIVER	£300.00
YAESU	FRG-7 HF RECEIVER	£99.00
YAESU	FRG-7700 HF RECEIVER	£220.00
YAESU	FRG-9600 60-905MHz All mode Receiver	£199.00
YAESU	FT-1000MK5 200W DSP HF TRANSCEIVER	£2,600.00
YAESU	FT-1000MP AC HF BASE DSP TRANSCEIVER(Late serial no)	£1,550.00
YAESU	FT-1000MP DC BASE TRANSCEIVER	£1,200.00
YAESU	FT-101 TRANSCEIVER MINT!	£200.00
YAESU	FT-101ZDmk111 HF TRANSCEIVER inc FM	£375.00
YAESU	FT-23R HANDY TRANSCEIVER	£89.00
YAESU	FT-2500M MOBILE TRANSCEIVER	£190.00
YAESU	FT-290RMK1 2M ALL MODE TRANSCEIVER	£180.00
YAESU	FT-290RMK1 Includes Bracket + FL-2010 LINEAR AMP	£275.00
YAESU	FT-290RMK11 MOBILE 2M MULTIMODE TRANSCEIVER	£275.00
YAESU	FT-3000M 2m 70W MOBILE TRANSCEIVER	£175.00
YAESU	FT-41R HANDY TRANSCEIVER	£120.00
YAESU	FT-470 DUALBAND HANDIE TRANSCEIVER	£150.00
YAESU	FT-690MK11 6M MULTIMODE MOBILE TRANSCEIVER	£295.00
YAESU	FT-7 MINT! CONDITION	£275.00
YAESU	FT-726R 2 / 70 / 6m TRANSCEIVER	£575.00
YAESU	FT-730R 70CM MOBILE TRANSCEIVER	£120.00
YAESU	FT-736R 2m / 70cm TRANSCEIVER	£650.00
YAESU	FT-736R 2m / 70cm / 6m TRANSCEIVER	£750.00
YAESU	FT-7400 70cm MOBILE TRANSCEIVER	£160.00
YAESU	FT-747GX HF TRANSCEIVER	£399.00
YAESU	FT-757MK1GX HF TRANSCEIVER	£375.00
YAESU	FT-767GX HF BASE 100watt built-in ATU	£599.00
YAESU	FT-790R 70CM MULTIMODE MOBILE TRANSCEIVER	£225.00
YAESU	FT-7B HF 50 W MOBILE TRANSCEIVER	£199.00
YAESU	FT-80C 0-30MHz COMMERCIAL TRANSCEIVER	£375.00
YAESU	FT-840 HF MOBILE TRANSCEIVER	£450.00
YAESU	FT-847 HF / 2 / 6 / 70cm BASE TRANSCEIVER	£999.00
YAESU	FT-900AT HF/ DETACHABLE FRONT BUILT IN ATU	£650.00
YAESU	FT-980 HF TRANSCEIVER	£495.00
YAESU	FT-ONE HF BASE TRANSCEIVER	£450.00
YAESU	FTV-901 TRANSVERTER Inc 2m Mod	£165.00
YAESU	MD-1 DESK MICROPHONE	£75.00
YAESU	SP-5 LOUDSPEAKER Including Audio Filters	£100.00
YAESU	SP-767 LOUDSPEAKER Including Audio Filters	£80.00
YAESU	SP-8 LOUDSPEAKER Including Audio Filters	£100.00
YAESU	SP-980 LOUDSPEAKER Including Audio Filters	£55.00
YAESU	VX-5R 2 / 70 / 6 HANDIE 5W	£220.00
YAESU	XF-114SN 2KHz SSB FILTER	£60.00
YAESU	YO-100 SCOPE VERY RARE!	£150.00
YAESU	YS-60 SWR METER 1.6 - 60MHz	£30.00
ZETAGI	B-132 10 / 11m LINEAR AMPLIFIER , MAINS	£60.00

A Multi-Impedance

Bruce Sutherland M1CVP/M0CVP

describes a balun that can provide several impedance ratios to match to a variety of loads.

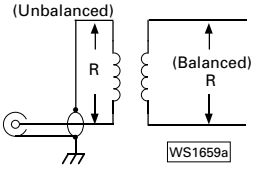
When I wrote this article I, for my sins, was chairman of **Chester And District Radio Society**. One of our evening meetings went under the catch-all phrase 'Bring & Tell'. At that meeting I took along the balun that I'm about to describe here.

But first a little bit of background information. As a relative newcomer to the hobby of Amateur Radio, I had heard discussions about the use of 'balance to unbalance' transformers (baluns) and the desirability of matching the impedance of an antenna to the feeder and to the output impedance of the transceiver.

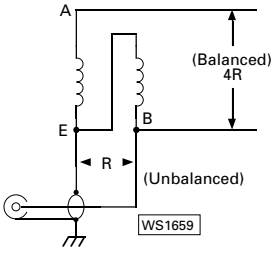
Not knowing much about the subject at the time, I decided to look further into the matter. Fairly soon, I found out about bifilliar (two windings together) and trifilliar (three windings together) and how to connect them together to give different impedance ratios.

Bifilliar Windings

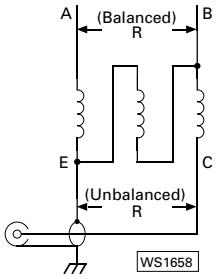
The bifilliar, but separated, windings of **Fig. 1** for instance, gives a 1:1 impedance transformation with an unbalanced input and a balanced output capability.



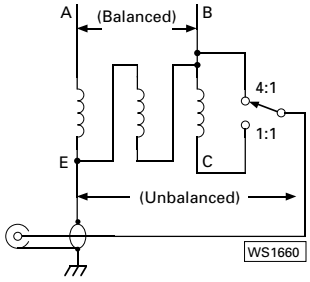
● Fig. 1: A simple 1:1 balun uses two windings that may be individual windings or bifilliar wound (see text for more detail).



● Fig. 2: Another balun using the same two windings as in Fig. 1, but now a 4:1 impedance step-up has been obtained (see text for more detail).



● Fig. 3: Adding a third winding to the balun gives a 1:1 ratio with a simple setup. Note that only two out of the three windings are involved with both input and output.



● Fig. 4: Adding a switch to select the input tapping point allows choice of two impedance transformation ratios.

Try connecting the same two windings together as shown in **Fig. 2** however, and the balanced output impedance is now **four times** the input unbalanced impedance.

By using a trifilliar method of winding, which improves the actual balancing action of a balun, it's possible to achieve a 1:1 ratio balun again as shown in **Fig. 3**. Using a little lateral thinking, I realised that by changing the feed-point I could alter the transformation ratio from 1:1 to 4:1 as shown in **Fig. 4** while still retaining the balancing action of the unit.

Expanding this idea of multiple windings and by adding a second switch, I tried four windings and two switches to increase the range of impedance possibilities to include a 16:1 capability. Similarly by using six windings and two multi-pole switches as shown in **Fig. 5** it's possible to have nine impedance variations ranging from around 1:2 to 36:1.

Now although there are nine possible combinations of switch position, three of them give the same transformation ratio of 4:1. **So, in reality there are only seven different ratios possible with this simple single toroidal transformer set-up** (see Fig.9). Not wanting to go to any more complexity, I settled on this as the project to construct.

Picked Up Cheaply

Most of the parts for this project were picked up very cheaply. The case was one I purchased at a surplus sale at our club (bought knowing that it would come in useful). The ferrite core used here was one of four bought at a rally, with no specific use in mind, but was cheap and thus irresistible! The switches were also bought at a rally, with this project in mind. All other components were found in the junk box.

The ferrite core is some 63mm outer diameter with an inner diameter of 38mm and about 25mm thick. I cannot tell what type of ferrite composition it has, as it has no colour coding. (*It sounds like one designed for low frequency EMC work or for switched mode power supply use.* **G1TEX**).

The transformer was to have six windings (hexafilliar?) each of ten turns, so, first I estimated the length of wire needed for the turns and added a

Balun

little for terminations. I cut six lengths of a plastic insulated wire with an overall diameter of 2mm and placed them side-by-side.

Using a hand I drill carefully wound the six wires into a 'rope' that held together well. This rope was wound evenly over the toroidal core to cover about three quarters of the circumference leaving equal amount of of excess, for terminations, at each end of the winding.

Very Important

It's **very important to identify the beginning and end of each winding**, although not so important to identify which wire is which winding. Depending on the exact termination block you have to hand wire the windings in the following order and mark the various points as you go. Connect:

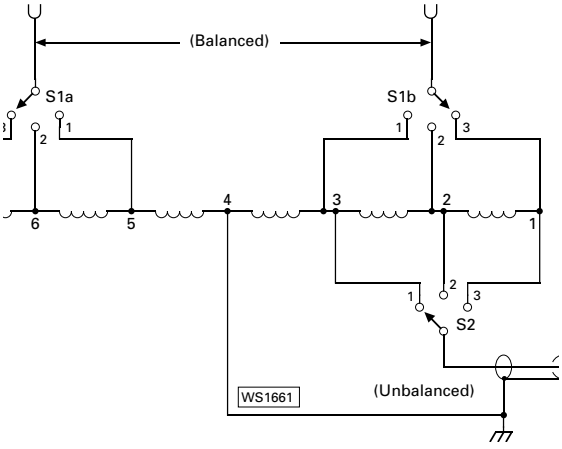
end of 1 to the start of 2
end of 2 to the start of 3
end of 3 to the start of 4
end of 4 to the start of 5
end of 5 to the start of 6.

The following labels will be needed:

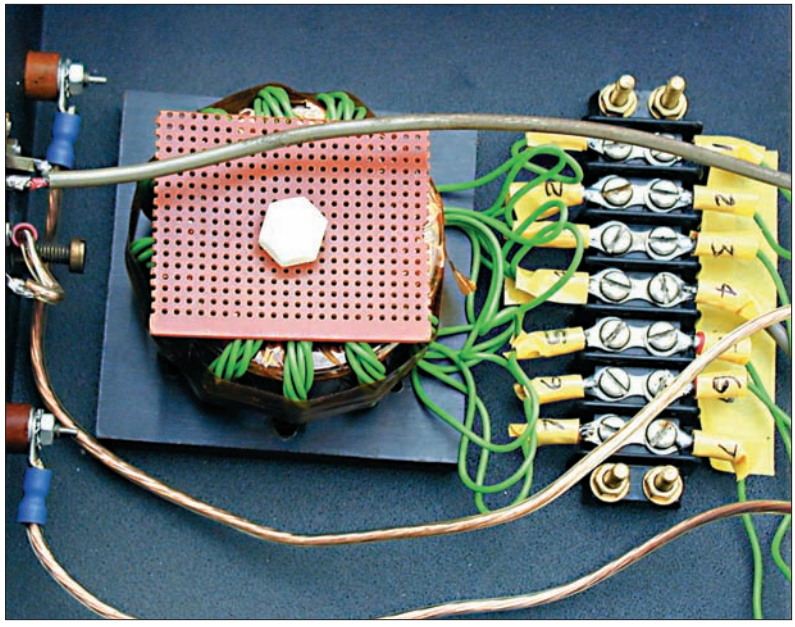
start of 1	marked '1'
end of 1	marked '2'
end of 2	marked '3'
end of 3	marked '4'
end of 4	marked '5'
end of 5	marked '6'
end of 6	marked '7'

Follow Or Adapt

To assemble the project in the case, have a look at the illustrations **Fig. 6** and **Fig. 7** and, either follow the layout, or adapt the layout to suit the case that you have available. I mounted the two switches on the front panel for convenient use, with all the connectors on the back panel.



● Fig. 5: Using six windings, and switches to select both input and output tapping points, seven unique transformation ratios are now available (see text for more detail).

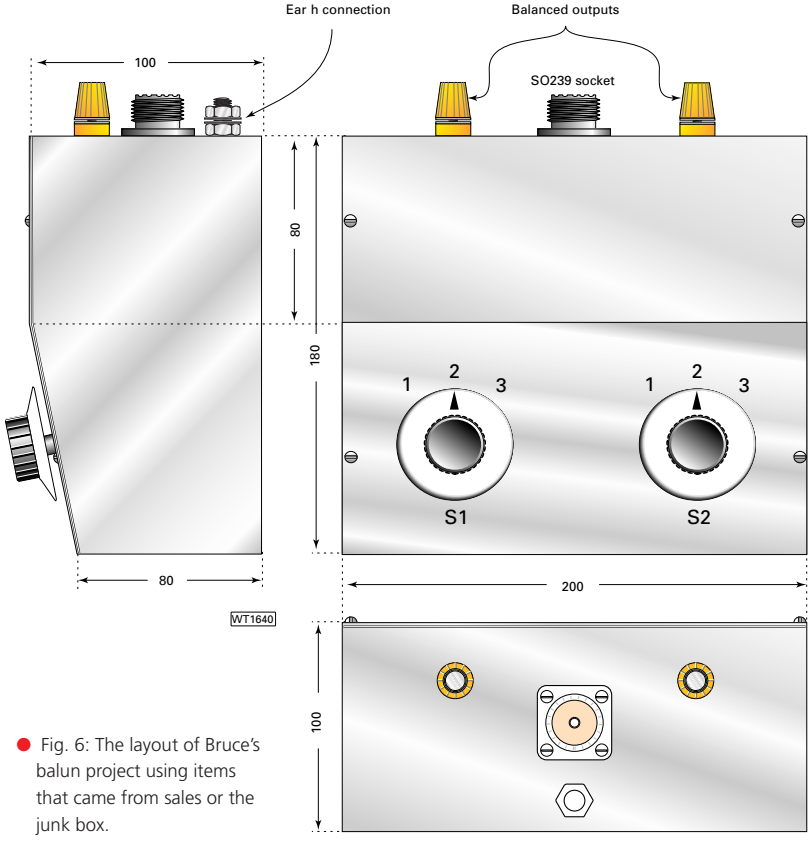


A Paxolin block was used to mount the toroidal transformer. This square block was cut rather larger than the ferrite core drilled in the centre for a nylon bolt to pass through. The lower side of the plated was countersunk to fit the head of the bolt. After fitting the bolt, the plate is glued to the base of the case.

The top plate, forming the other side of the toroid clamp should, ideally, also have been made of Paxolin. But I didn't have another piece so, I used a similar sized piece of perf-board to clamp the toroidal transformer in place. Screw a nylon nut down just tight enough to hold the toroid securely in place.

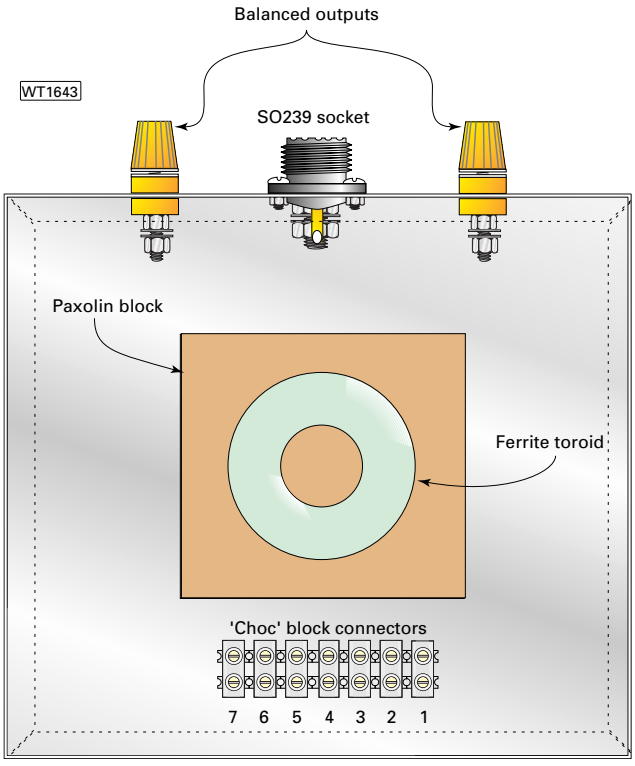
Connect the leads from the transformer, in order to the correct tags on one side of the the connector block. Then solder the input leads from the SO239 socket to

● Close-up of the completed toroid (held in place by perf board) and connector block. The electrical ('choc-bloc') style of connector is also suitable.



● Fig. 6: The layout of Bruce's balun project using items that came from sales or the junk box.

A Multi-Impedance Balun



● Fig. 7: This is the layout that Bruce decided to follow.

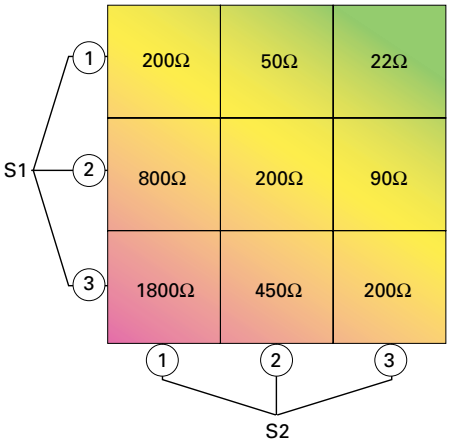
the wiper of S2 and from the other identified contacts of S2 to the correct positions on the connector block.

Wiring Up

Continue with wiring up the output selector switch S1 to the connector block and the two balanced output points. All that has to be done now is label each switch and its position as that will be used to check the transformation ratio.

I know that many Amateurs have trouble with transformers and the impedance ratios that take place with differing numbers of turns in both primary and secondary windings. So, this project was designed to make it quite easy to calculate. Which is why I placed such stress on marking the switches and their positions.

Because the six windings are identical and they are applied in combinations of one, two or three, a rather simple formula may be used. That formula uses the positions of switches S1 and S2 as 'values':



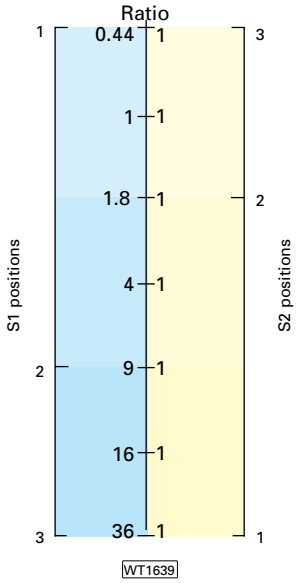
● Table 1: With a 50Ω input impedance, the various positions give these working impedances, chose the nearest value and use the switch positions shown.

$$\text{Ratio} = 4\left(\frac{S1}{S2}\right)^2$$

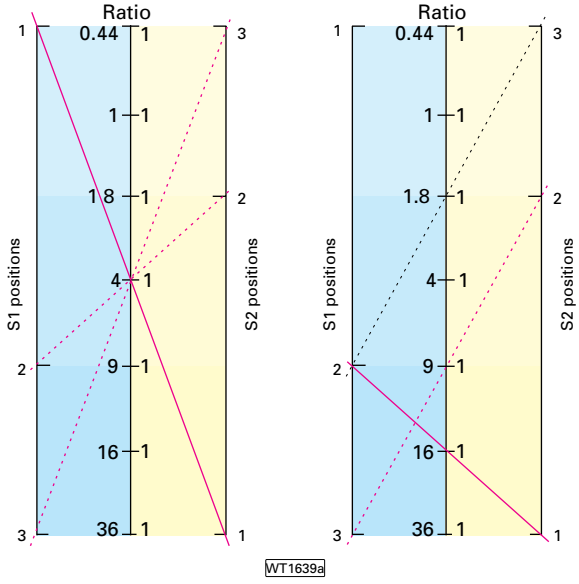
As an example: If S1 is in position 3 and S2 is in position 2, then the impedance ratio becomes:

$$4\left(\frac{S1}{S2}\right)^2 = 4\left(\frac{3}{2}\right)^2 = 4\left(\frac{9}{4}\right) = 9:1$$

● Fig. 8: The simple method of deciding which switch settings to use. For an explanation see Fig. 9.



● Fig. 9: Lay a straight edge between the marked switch positions and read off the actual transformation ratio on the middle scale. The left hand illustration shown the three combination of switch positions that give a 1:4 impedance step up.



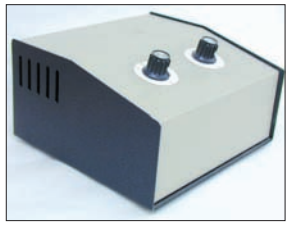
Aversion To Maths

However, there are many who have an aversion to even the simplest of maths. So, for those readers, have a look at the method shown in the chart of **Fig. 8**, where all that's needed is a straight edged ruler or similar. Some typical measurements are shown in **Fig. 9** where the chart Fig. 8 is shown in use.

When dealing with a 50Ω input impedance **Table 1** shows the reflected impedances at the balanced output connectors. Choose the most appropriate setting for the antenna system you are trying to feed.

Well there you have it! A multi-impedance balun that's simple to build, yet has the ability to cope with a wide variety of impedance transformation.

PW



Trader's Table

Disclaimer

Advertisements from traders for equipment that is illegal to possess, use or which cannot be licensed in the U.K. will not be accepted. While the publishers will give whatever assistance they can to readers or buyers having complaints, under no circumstance will the magazine accept liability for non-receipt of goods ordered, late delivery or faults in manufacture.

THE SHORTWAVE SHOP

01202 490099

TRANSCEIVERS.

ICOM IC706 HF/6M/2M TRANSCEIVER £525
ICOM IC746 HF/6/2Mtr TRANSCEIVER £795
YAESU FT990 HF TRANSCEIVER £695
KENWOOD TS850S TRANSCEIVER £695
KENWOOD TS 830S TRANSCEIVER £395
KENWOOD TS 520 TRANSCEIVER £195
KENWOOD TS 440S TRANSCEIVER £395
ATLAS 110 HF TCVR MINT CONDITION £255
KENWOOD TS700S ALL MODE VHF TCVR £295
KENWOOD TS700G ALL MODE VHF TCVR £195
KENWOOD/TRIO TR9130 VHF £265
ICOM IC28 VHF FM TRANSCEIVER £125
YEASU FT290R Mk1 VHF MULTIMODE £135
YAESU FT8000R MOBILE VHF/UHF £225
YAESU FT708R UHF 70cm HANDIE £65
KENWOOD TR7800 VHF FM TRANSCEIVER £125
ALINCO DJ120 VHF HANDIE WITH S/MIC £85
KENWOOD TH205 VHF HANDIE £75

RECEIVERS and SCANNERS.

ICOM R70 HF RECEIVER £295
ICOM R72 HF RECEIVER £325
ICOM R71 HF RECEIVER £385
NRD JRC 525 HF RECEIVER £395
YAESU FRG100 HR RECEIVER inc PSU £295
YAESU FRG 7700 HF RECEIVER £175
YEASU FRG8000 HF RECEIVER £250
AOR 3000A WIDE BAND RECEIVER £495
AOR 3000 WIDE BAND RECEIVER £395
AOR2002 VHF/UHF RECEIVER £155
YUPITERU MVT7100 WIDE BAND RCVR £165
YUPITERU MVT7000 WIDE BAND RCVR £125
AOR AR8200 H/H WIDE BAND RCVR £225
RACAL RA17 HF RECEIVER MINT £295
REALISTC DX394 SHORTWAVE RECEIVER £80
ROBERTS R861 VHF/SW PORTABLE £125
BEARCAT 9000XLT VHF/UHF BASE RCVR £175
OPTO R10 INTERCEPTOR N/F RECEIVER £135
PRO 2006 BASE VHF/UHF SCANNER £125
MAYCOM AR108 AIR/MARINE SCANNER ..... £ 45
LOWE FX10 VHF MARINE HANDIE RX ..... £ 45

ACCESSORIES.

KENWOOD SP30 SPEAKER £65
KENWOOD AT230 HF ATU £135
YAESU FT102 HF ATU £135
BUGCATCHER HF MOBILE ANTENNA £95
GPO TELEGRAPH KEY £45
DIAWA SW110A SWR/PWR METER £35
DIAWA 620 1.5-200Mhz SWR/PWR METER £35
DIAWA CL65 HF ATU 300 WATT £65
HANSEN W720S VHF/UHF SWR/PWR MTR £25
KANTRONICS KPC3 PACKET MODEM £99
YAESU FRT7700 HF ATU for 7700/8800 ..... £49
YAESU FRV7700VHF CONVERTER £49
SEM TRANSMATCH ANTENNA TUNER £85
DC1435-10C UHF BANDPASS FILTER £75
AEA MICROREADER £65
DATONG D70 MORSE TUTOR £45
DATONG FL2 AUDIO FILTER UNIT £65
DATONG FL3 AUDIO FILTER UNIT £85

We can Sell your Used Equipment for you.
For details and our latest Second Hand List
Please visit www.shortwave.co.uk

NEVADA

023-9231 3090

ADI AR446 70CM FM TRANSCEIVER £149
AKD 2001 2M FM TRANSCEIVER £125
ALINCO ALM-203E + ACC2M MTR H/HELD TRANSCEIVER £75
ALINCO DJ-C5 TWIN BAND MICRO HANDHELD TX £125
ALINCO DR-430E 70CM MOBILE TRANSCEIVER £169
ALINCO DR510E 2M/70CMS MOBILE TRANSCEIVER £179
ALINCO DR-M06 6M 10W MOBILE TRANSCEIVER £149
ICOM IC-2100H 2M FM MOBILE TRANSCEIVER £159
ICOM IC-2350 TWIN BAND MOBILE £199
ICOM IC-2500E 70/23CM MOBILE TRANSCEIVER £329
ICOM IC-280E 2M FM TRANSCEIVER £85
ICOM IC-T8E 6M/2M/70/HANDI TRANSCEIVER £229
KENWOOD TH-79E 2M/70CM HANDHELD TRANSCEIVER £159
KENWOOD TM-231E 2M FM MOBILE TRANSCEIVER £139
NAVICO AMR1000S 2M MOBILE TRANSCEIVER £75
PALSTAR KH6 6M HANDY TRANSCEIVER £59
STANDARD C-8900 2MTR MOBILE TRANSCEIVER £159
YAESU FT227R 2M 10W FM TRANSCEIVER £89
YAESU FT411 2M HANDI TRANSCEIVER £125
YAESU FT5100 2M/70CM MOBILE TRANSCEIVER £269
YAESU FT736R 6M/2M/70/23CM BASE TRANSCEIVER £999
ALINCO DJ-X10E HANDHELD SCANNER £225
AOR AR8000 HANDHELD SCANNER £185
AOR AR8200 + CC8200 HANDHELD SCANNER + RS232 INT £275
COMTEL COM 510 HAND HELD SCANNER £139
MAYCOM AR108 HANDHELD SCANNER £49
NEVADA MS1000 WIDEBAND BASE SCANNER £120
YAESU VR-500 HANDHELD SCANNER £139
YUPITERU MVT9000 HANDHELD SCANNER £245
GRUNDIG SAT-700 MULBAND RECEIVER £199
GRUNDIG YB-400 SHORTWAVE RECEIVER £79
ICOM IC-R72 HF RECEIVER £399
JRC NRD345 HF RECEIVER £325
JRC NRD545 DSP DSP RECEIVER £899
LOWE HF225 HF RECEIVER + KEYPAD £259
SONY ICF-2001 SHORTWAVE RECEIVER £75
YAESU FRG-100 HF-RECEIVER £279
ALINCO DX-70TH HF/6M 100W TRANSCEIVER £495
ICOM IC-725 HF 100 WATT TRANSCEIVER £395
ICOM IC756 HF/6M 100W BASE DSP TX C.W ATU £899
KENWOOD TS430S 100W HF TRANSCEIVER + GEN. RX £325
KENWOOD TS950S 100W HF BASE TRANSCEIVER £999
YAESU FT1000 200W HF TRANSCEIVER £1295
YAESU FT890 100W HF TRANSCEIVER + GEN. RX £599
YAESU FT-900 100W HF TRANSCEIVER £599
YAESU FT920AF HF & 6M 100 WATT TRANSCEIVER £999
DEWSBURY S/TUTOR SUPA TUTOR/MORSE TUTOR £25
FDK KP100 KEYER £49
HIMOUND BK100 BUG KEY £49
ICOM PS55 POWER SUPPLY £125
KENWOOD DRU3 VOICE RECORDER TS-870 ..... £69
KENWOOD MC-85 BASE MICROPHONE £85
M W MODS MM4001KB MWMODS RTTY RX/TX INC KB £49
MFJ-989C COASTER TUNER PLUS MODS £245
PALOMAR VLF VERY LOW FREQ. CONVERTER £19
PALSTAR AT-300 HF ANTENNA TUNER £69
SWAN WM6200 50-150 POWER/SWR METER £30
TIMEWAVE DSP-59+ DSP FILTER £249
TOKYO HL100B/21-28 100W AMP 21-28MHZ £129
TOKYO HL-700B HF 600 W LINEAR AMP £595
TOKYO HX-240 2M-HF TRANSVERTER £99
TONO Q-550 DATA TERMINAL £125
VECTRONICS AT100 ACTIVE ATU £49
YAESU FC-1000 AUTO ATU FT757 ETC £189
YAESU FIF232C VAN COMPUTER INTERFACE (FT736) £79

SOUTH EAST COMMUNICATIONS

00353 51 871278

Station Accessories

Daiwa PS313 30amp PSU cross needle meter £119
Diamond SX100 SWR/PWR meter 3kw £65
Kenwood MC85 desk mic with meters etc £99
Revex WS40 2m/70cm SWR/PWR meter £49
Kenwood DSP100 DSP unit for TS450/850 etc £199
Keypad for HF225 or Lowe HF150 ..... £29
Pakratt PK232MBX mulitmode decoder £149
Kenwood SP-31 matching speaker TS850 etc £69
Kenwood CW filters YK-88CN-1 also
YK-88CN-1 each £45
Auteck antenna analyzer £99

VHF/UHF Transceivers

Uniden Marine VHF h/h inc nicads new £119
Alinco DJG5 2m/70cm hand held dual display £189
Icom IC2350 dualband mobile 50/45watt £249
Icom IC821H 2m/70cm multimode base station work phase 3D £699
Yaesu FT50R 2m/70cm hand held £139
Kenwood TH711E 2m multimode base 25watts £499
Kenwood TM-255E 45watt 2m multimode £399
Kenwood TH-79E 2m/70cm handheld dual RX £249
ADI 146 2m mobile 50watt £149
Icom IC2800H colour display and remote kit £299
Kenwood TM241E 50watt 2m mobile new £149

HF Transceivers

Yaesu FT1000MP/AC boxed and mint £1299
Icom IC706 mk11 HF+6M+2M all mode £599
Yaesu FT100 HF+6M+2M+70CM DSP new £799
Yaesu FT920 HF+50mhz auto ATU DSP etc £899
President Lincoln 10m Amateur transceiver new £199
Kenwood TS570D DSP auto ATU and mint £699
Kenwood TS850SAT auto tuner filters etc £799
Icom IC738 auto ATU 100watt all mode mint £699
Icom IC728 0-30mhz all mode mint £399
Alinco DX70TH 100watt HF and 6meters £499

Shortwave Receivers

AOR 7030 0-30mhz remote control £499
Yaesu FRG100 0-30mhz boxed and mint £299
Target HF-3 shortwave RX 0-30mhz AM, SSB £109
JRC NRD525 0-30mhz boxed etc £499
Century 21 analogue receiver 0-30mhz £99
Hitachi worldspace satellite RX for radio stations £99
Lowe HF225 0-30mhz boxed PSU mint £249
Lowe HF150 0-30mhz all mode and mint £229
JRC NRD345 0-30mhz all mode new £399
Kenwood R5000 0-30mhz top class receiver £499

Scanners Base/Mobiles

AOR 8000A 0-1900mhz all mode RX £199
Icom IC7100 25-2000mhz 1000 memories £699
Realistic Pro2014 66-512mhz 50mems base/mobile £79
Icom PCR1000 computer Radio 0-1300mhz mint £249
Yupiteru MVT7100 0-1650mhz all mode nicads £179
Yaesu VR500 0-1300mhz all mode £179
Alinco DJX10E 0-2000mhz 1100 memories £199

All prices in Sterling

WATERS & STANTON

01702 206835

HF TRANSCEIVERS

Icom IC-725 x2 Base Transceiver with Gen.Cov. 100W 12V £399
Icom IC-730 Base Transceiver with Gen.Cov. 100W 12V £449
Index QRP-Plus 160-10m 5W QRP Transceiver with Gen.Cov. £249
Kenwood TS-50S HF Mobile/Base Transceiver with Gen.Cov. £429
Kenwood TS-430S Base Transceiver with Gen.Cov. 12V + MC-60 ..... £399
Kenwood TS-430S Base Transceiver with Gen.Cov. 12V + MC-80 ..... £399
Kenwood TS-440S Base Transceiver with Gen.Cov. 12V £449
Kenwood TS-850SAT Base Transceiver with Gen.Cov. and ATU 12V £749
Kenwood TS-870S Base with Gen. Cov. + ATU/DSP in the IF (P.Sale) £995
SGC SG-2020 "QRP Transceiver SSB,CW 20W 12V" £485
Trio TS-120V "HF SSB,CW Transceiver 10W " £225
Yaesu FT-101ZD Base Transceiver 100W Mains £299
Yaesu FT-767GX HFTransceiver with Gen.Cov. Mains £499
Yaesu FT-900AT Base/Mobile + Gen.Cov./ Remote Head (P.Sale) £450

VHF/UHF BASE/MOBILE TRANSCEIVER

Alinco DR-430E 70cm FM Mobile 35W £169
Kenwood TM-221ES 2m FM Mobile 45W £149
Kenwood TS-811E 70cm All Mode Base Transceiver 25W mains £495
Yaesu FT-290R 2m All Mode Portable 2.5W £159
Yaesu FT-290R II x3 2m All Mode Portable 2.5W £249
Yaesu FT-690R II 6m All Mode Portable 2.5W £299
Yaesu FT-3000M 2m FM Mobile 70W £249
Yaesu FT-8100R 2m,70cm FM Mobile 50W,35W (Remote Head) £299

VHF/UHF Hand Held Transceiver

Icom IC-2SET x2 2m FM H/Held £99
Icom IC-2SET x2 2m FM H/Held £199
Icom IC-T7E x4 2m/70cm FM with wide RX £199
Icom IC-T8E 6m,2,70cm FM wide RX £169
Kenwood TH-25E 2m FM H/Held £75
Kenwood TH-D7E 2m,70cm FM Palm Held with Wide RX and TNC £249
Trio TH-41E 70cm FM H/Held £85
Yaesu FT-40R 70cm FM Handy with Wide RX £99

Shortwave Receivers

AOR AR-3030 "30kHz-30MHz All Mode with Collins Filter , PSU £329
JRC NRD-525 x2 90kHz-34MHz All Mode Receiver 200Ch. Mains £529
Lowe HF-150 30kHz-30MHz All Mode 12V (P.Sale) £225
Lowe HF-250 x2 30kHz-30MHz Receiver 12V PC Compatable £325
Sony ICF-2001 Portable SSB/AM with HF £99
Sony ICF-2001D Portable SSB/AM with HF & VHF Airband 32Ch. £149
Sony ICF-SW1000T Portable Receiver + FM stereo & SSB + Cassette £299
Sony WA-8000 Portable Receiver with FM stereo + Cassette £199
Tatung TMR-7602 Portable Receiver with FM stereo and SSB £59

Scanners Mobile/Base

AOR AR-2001 "25-550MHz AM,FM,WFM 20Ch. 12V" £145
AOR AR-2500 "5-550,800-1300MHz All Mode Mobile 1984Ch. 12V" £249
AOR AR-3000A x3 100kHz-2036MHz All Mode 400Ch. 12V with PSU £459
Fairhaven RD-500VX "10kHz-1750MHz All mode, 13000+ Ch. 12V + PSU" £599
Icom IC-PCR1000 500kHz-1300MHz All Mode PC Controlled £199

Scanners Hand Held

Yaesu VR-500 100kHz-1300MHz All Mode Receiver 1000Ch. £179

Station Accessories

AKD WA-1 120-450MHz VHF Wavemeter £25
BNOS LPM-144-3-100 "2m Linear Amp 3W in , 100W out with Preamp" £139
BNOS LPM432-1-50 "70cm Linear Amp 1W in, 50W out with Preamp" £99
Datong ANF CW Automatic Notch Filter £69
Heatherlite Explorer 2m Valve 350W out Linear amplifier £499
ICS FAX-1 "Weather Fax , NAVTEX , RTTY Decoder" £125
Kent KMK Morse Keyer £35
JPS NTR-1 x2 DSP Noise Reducer £99
Kenwood IF-232C RS 232 Interface for Kenwood transceivers £59
Kenwood LF-30A HF 1kW Low Pass Filter £29
Kenwood PS-50 12V 20A Matching PSU £149
Kenwood PS-430 13.8V 20A Matching PSU £129
Linear Amp Hunter 750 "HF Linear 100W in,750W out" £799
Lowe PR-150 HF RX Preselector for HF-150 (P.Sale) £149
MFJ MFJ-493 Menu Driven Menu Keyer + Keyboard Input £99
MFJ MFJ-498 Deluxe Morse Keyboard Keyer £129
MFJ MFJ-784B Tunable DSP Audio Filter £139
MFJ MFJ-956 Shortwave Preselector £25
MFJ MFJ-1020B 0-30MHz Indoor Active SWL Antenna £65
MFJ MFJ-1270C VHF,HF Packet TNC £79
MFJ MFJ-1272B TNC switch/mic interface 8 pin plug £29
M.Mods MML-432-30-L 70cm 1-3W in, 30W out Linear with Preamp £120
M.Mods MML-432-50-10 70cm 10-15W in, 50W out Linear with Preamp £90
Opto 2600HA 1MHz-2.6GHz Frequency Counter £79
Opto CD-100 10MHz-1GHz Multi-Counter + Tone Decoder £299
Opto Micro-RF Pager sized micro RF Detector £69
Opto Model 40 Scout 10MHz-1.4GHz Feq Counter £225
PacComm Tiny-2 Mk.II VHF Packet TNC £95
Ramsey W9GR DSP Audio Filter £119
Sadelta Bravo Pro CB Base Desk Microphone + Pre-amp £50
Sony AN-1 Active Shortwave Indoor/Outdoor Antenna £49
SSB LT-23S 23cm Transverter IF 2m 10W out £499
Star Masterkey Memory Keyer £49
Tono THETA-550 RTTY & CW Decoder + Monitor output £75
Watson W-420 118-530MHz SWR/PWR meter 200W £35
Yaesu FL-6020 6m clip-on 25W Linear (for FT-690R II) £99
Yaesu FL-7025 70cm clip-on 25W Linear (for FT-790R II) £119

Valve&Vintage

As it's been sunny recently Ben Nock G4BXD has been wearing his tropical Second World Army uniform when attending radio sales. Read on to find out what treasures he's found on his travels!

A big hello to you all, I hope you have been enjoying the sun and the rally season over the past few months. I have a few new additions to the collection here to tell you about, some old, some more recent, so on with the show.

Whilst staying the weekend with an Arnhem veteran friend of mine I took time to visit the **Cambridgeshire Repeater Group's** rally at the end of April. A big thank you to **Paul Dyke G0LUC** and the others for a very nice rally, nice location at Bottisham Village College (near Cambridge) and easy access.

Drake Receiver

The Cambridge RG's rally proved worthwhile with a few things ending up in the back of the car, as they do of course! One of the treasures I found was the very nice Drake 2C receiver shown in **Fig. 1**.

The owner of the Drake claimed that it had an intermittent beat frequency oscillator (b.f.o.). But when it was on my workbench, after examination the lack of any high tension (h.t.) supply to the b.f.o. and the first mixer oscillator was diagnosed as the fault. A resistor was replaced and the set worked fine.

Like other Drake equipment, I have already covered the 2B and 4C in previous columns, the design and construction is very nice. This one had suffered a little at the hands of the 'modifyusanythingus' animal but the flavour of what had once been was indeed evident.

The 2C receiver is a basically a 3.5MHz double conversion superhet. For other bands a further mixer is placed in front of it making it a triple conversion receiver with a first intermediate frequency (i.f.) of 3.5 to 4MHz.

The second i.f. is 455kHz and the third is 50kHz. A product detector is used for single sideband (s.s.b.) reception and a diode detector for amplitude modulation (a.m.) use. Drake also made add-on units, including a noise blanker and a Q-Multiplier, which could be used with this receiver.

● Fig. 1: The Drake 2C receiver which has a clean front panel layout and easy-to-operate controls.

Hello Sailor!

Something a little more modern now...and I'll give you a little clue by saying "Hello Sailor"! This particular sailor - another recent addition to my collection - is a Redifon R551N receiver.

The '551N, **Fig. 2**, is a general purpose single sideband suppressed carrier (s.s.b.) and double sideband suppressed carrier (d.s.b.) communications receiver providing continuous coverage over the m.f./h.f. frequencies from 100kHz to 30MHz with operation down to 10kHz with reduced performance.

● Fig. 2: The Redifon R551N receiver, the synthesiser unit can be seen at the top right, and the a.t.u. at the top left of the photograph. The transmitter interface panel is along the bottom of the case (see text).

Designed for maritime use, I believe that the Royal Navy used these sets for a time.

The receiver is a double conversion superhet with i.f.s of 38 and 1.4MHz, with the tuning of the set accomplished by a six figure digital read-out. The 10 and 1MHz and 100kHz settings are provided dial up switches while the 10, 1kHz and 100Hz figures are presented on a three digit mechanical counter controlled by the main tuning knob.

A comprehensive automatic gain control (a.g.c.) system is used on the '551N which acts on the radio frequency (r.f.) and i.f. stages independently. The sensitivity of the receiver is set by the bandwidth in use so that the a.g.c. threshold comes into operation at similar signal to noise ratios for all bandwidth.

Various i.f. bandwidths are selectable and these include: a standard 2.35kHz for s.s.b., with 8, 3 and 1kHz for a.m. and c.w. together with an additional 300Hz narrow bandwidth for c.w. reception.

Additional units can be connected to the

● Fig. 3: Ben's mystery receiver...from the old strength measuring receiver, with large cer controls top right. Can you help G4BXD id

'551N, and these were fitted on my example. One is a frequency synthesiser to provide full frequency synthesis, and this is unit ARU11N which supplies the 10kHz, 1kHz and 100Hz settings (a switch selects between manual tuning or the output of the synthesiser unit).

Another addition is an antenna tuning unit (a.t.u.), the ARU18A Adapter, useful when the commonly-used antenna was the standard type of marine whip array. A further panel attached below the receiver - in the same case - facilitates connection to the transmitter unit.

A hand-written note in the manual that came with the set gives the 1990 cost of a new system as described here as £13,500! I think that puts those £2,800 Amateur Radio rigs into perspective doesn't it?

Inspector Nock Investigates

Now on to a set, **Fig. 3**, which needs some investigation from Inspector Nock! I believe it's a General Post Office (GPO) test set, from the days when the Post Office did that sort of thing, which was used to measure field strength and the like.

The set in question is a tuneable receiver, covering 150kHz to 30MHz in five ranges. It has a b.f.o. and works just like a normal receiver.

The main give-away to the receiver's former role is a meter calibrated in Decibels with a switchable attenuator. Side sockets allow line voltages to be measured - maybe from a 600Ω line? - and for radio reception using a whip antenna. This incidentally, is carried in a metal channel on the side of the set and plugs into a socket on the top of the receiver.

Unfortunately, the receiver's lid which probably had its identity plate and maybe other information, is missing. The external power supply is mains or d.c. powered and plugs into the set via a side mounted connector. So, if any ex-GPO radio man out there knows what the set was called and its main use please do let me and - ultimately - the readers know.

Army Reception

Another 'new' item in my collection, which arrived here recently is the Army Reception Set R206. This monster of a set, **Fig. 4**, **is bigger than an AR88** and the same size as the R107 and just as heavy! - first appeared on the military wireless scene in 1945.

General Post Office (GPO)? It's obviously a field ntre tuning dial, with the meter calibration entify the unit?

The version I have is a Mk V and probably dates from around 1946 or 1947. It's a five band receiver tuning 550kHz to 30MHz and has a b.f.o., noise limiter and audio filter. Also provided are wide, medium and narrow i.f. bandwidths, fast and slow motion tuning controls and switchable a.g.c. controls.

A front panel antenna trimmer is provided as is a calibration control to align the dial pointer. No calibrator is built in to the set though, calibration would have been achieved using an external calibrator such as the BC221 or Class D wavemeters.

Fig. 4: The British Army heavyweight R206 MkV reception set. The power supply plugs into the top left, and the large brass handle bottom right is the band change switch!

The set is powered from an external unit, capable of running on a.c. or d.c. ac supplies. My set has had the antenna connectors changed (of course!) otherwise it's in fairly good condition.

Performance is very good considering the receiver's age. Even on the proverbial piece of 'wet string' it pulls in many stations, the narrow i.f. bandwidth and audio filter really work well on weak c.w. stations.

Sky Riding

Next in this month's showcase I've got a most impressive looking set - the Hallicrafters SX-17 or *Skyrider* , **Fig. 5**. The two large tuning knobs and meter faces, the black crackle finish and large centre tuning dial make for a very sharp looking receiver. One of the meter faces though (that on the right) is in fact the bandspread tuning scale.

Fig. 5: The Hallicrafters Skyrider receiver, an impressive looking, large black and heavy receiver. Ben G4BXD is looking forward to trying it out on the higher frequency ranges...a feature which made this receiver very useful during the Second World War for monitoring and test purposes.

The set tunes 545kHz to 62MHz in six bands, and is a 13 valve standard superhet design with a 465kHz i.f. stage. There's also **Broad/Sharp** i.f. selectivity switch provided, although no details of actual bandwidth are given in the handbook.

Interestingly the *Skyrider* has a b.f.o. with both injection and pitch controls, a feature I've never seen on another receiver. There's also a crystal filter and phasing control and switchable a.g.c. system.

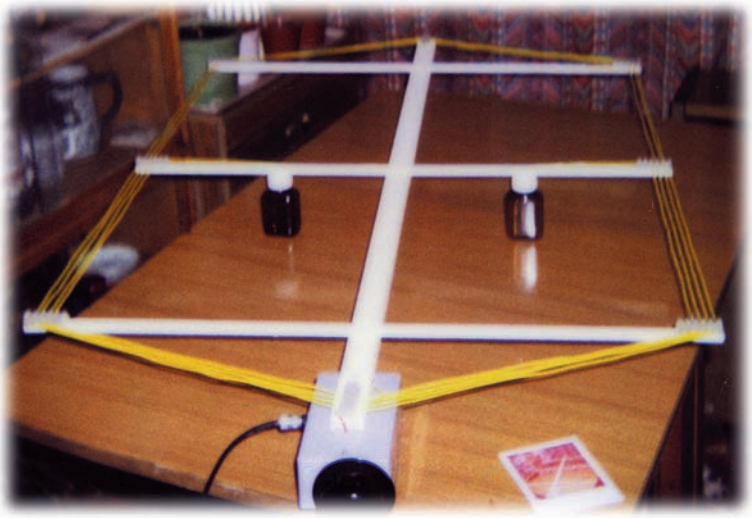
The audio output from a pair of 6V6 valves, is rated at 13W, enough for most shacks I would have thought! However, this is achieved with a strange output impedance of either 5000 or 500Ω.

Hallicrafters supplied a matching speaker with a high impedance permanent magnet dynamic speaker. A standard valve audio output transformer before a low impedance speaker solved my listening problems.

General reception with the *Skyrider* is good, although I have yet to try the set on a decent antenna for the upper ranges, 50MHz and such. It should be interesting to hear just what it's like on those frequencies, but I'm expecting nothing too startling.

Well sadly it's time to close shop and go home, as always I can be contacted at: **62 Cobden Street, Kidderminster, Worcestershire DY11 6RP**. There's also my web site at **www.qsl.net/g4bxd**, or you can send E-mail to **G4BXD@qsl.net** Best regards to you all. *PW*

Go Loopy *Build The Tab*



Richard Marris G2BZQ is a self-confessed 'loop obsessive' and thoroughly enjoys using this form of antenna. The project described is for table-top operation on 80 metres... hence TT-80.

● Richard G2BZQ's prototype TT-80 loop antenna. Richard says that the two pill bottles makes useful stand-offs and he regularly has QSOs with a friend in Germany.

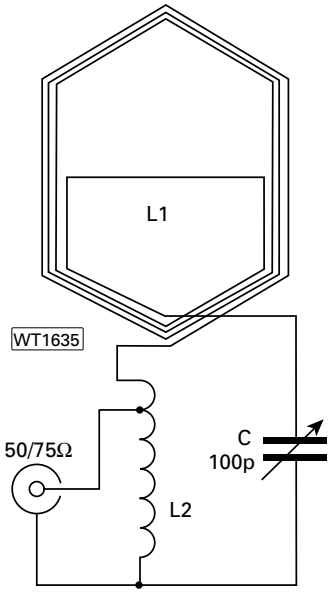
It was way back in the early 1950s when my work led to frequent changes of QTH. Inevitably this meant apartment dwelling with the equally inevitable transmitting antenna problems. Gone were the long wire antennas and dipoles...as were good earthing/grounding facilities.

In my first apartment QTH a 10W c.w. home-brew valved transmitter, and an HRO receiver were set up in the corner of quite a small room. A short end-fed antenna was slung across the room and matched with a LC (or CL) antenna tuning unit (a.t.u.), which would just about match the transmitter-receiver combination to anything on the lower h.f. bands. Results **were obtained** but needless to say they were not particularly good!

Next, a couple of wires turns were taken around the room and end-fed with the a.t.u. Results were better but not brilliant.

Another attempt led to the two wire ends being tuned with a variable capacitor. This resulted in a two turn horizontal loop with a very narrow bandwidth, which greatly reduced man-made and atmospheric QRN (noise, static, etc.) and gave much improved results on 3.5MHz c.w.

● Fig. 1: Circuit of the G2BZQ TT-80 loop antenna. The adjustment of L2 is critical for best performance (see text).



As a result of the experiments I designed a timber framed square vertical loop antenna. It had a figure of eight radiation/reception pattern; was narrow band and greatly reduced both QRM (interference from unwanted transmissions, adjacent channels, etc.) and QRN.

After trying out various low impedance coupling methods and other modifications the whole thing looked like a spider's nest! However, the results exceeded all expectations.

Since that time many transmitting and receiving loops have been designed and tested, while residing in the UK and USA (operating as G2BZQ/WO). Since then loops and other compacted antennas have become an obsession of mine!

In the past I've completed much experimental work in the field; from v.l.f. to v.h.f. frequencies using multi-turn small tuned frame loops; ferrite loops and hybrid frame and ferrite loops.

Design Considerations

Let's now take a look at some design considerations for loop antennas. In practice, dimensions of small multi-turn tuned loops are likely to range from maybe 15 x 15 inches (380 x 380mm) to over 48 x 48in (1.22 x 1.22m) - or a similar diameter - depending on the space available when mounted vertically.

The loops can be manually tuned and rotated in a room alongside the operating position. Alternatively they can be remotely controlled either indoors or out.

In use the radiation/reception pattern in usually figure-of-eight. Additionally, various methods can be used to increase the size of one lobe while decreasing the size of the other, arriving at the point where a cardioid pattern is present thus reducing reciprocal bearing QRM.

Such tuned loops will have a narrow bandwidth. They're also very directional and QRM and QRN can therefore be reduced to an absolute minimum by small rotational movements of the loop.

Harmonic radiation is very low or even non-existent, thus eliminating television inference (TVI). Another plus is that they can be fed with standard 50 or 70Ω impedance coaxial feed line.

Furthermore grounding/earthing at the loop is not necessary. In fact, a poor ground may well introduce/increase man-made noise.

However, **there is a negative side** to such a vertical loop. The radiation/reception pattern is very directional and narrow band, so that incoming CQ calls will only be heard from a small directional segment and outgoing CQ calls will only be heard in that small segment.

So, it will be seen that the chief advantage of a highly directional vertical loop can also be a disadvantage. It depends on whether you concentrate on point-to-point working as at your QTH or just send and receive CQ calls.

Horizontal Loop

The TT-80 is a horizontal, small dimension multi-turn tuned loop for the 3.5MHz band. The radiation/reception

ble-top 80 Metre Antenna

pattern is 'all round looking'.

In the prototype I found that the usable bandwidth on the is ±6kHz (a total of 12kHz). This narrow bandwidth dramatically decreased atmospheric and man-made QRN which can be simply atrocious on the 3.5MHz band.

Furthermore when the loop is carefully and correctly matched, harmonic radiation can be zero. In fact no TVI could be detected on my television with its antenna close to the loop.

Additionally, the loop can be accurately matched to either 50 or 70Ω impedance standard coaxial feed line.

Four Turns

As shown in the diagram, **Fig. 1**, the TT-80 loop consists of four wire turns. One end of the loop is connected to L2 which can be tapped for either 50 or 70Ω.

The loop is tuned to resonance by a 100pF variable capacitor C, as in Fig. 1. Loop dimensions are approximately 48in by 30in (1.22m x 762mm). This is a convenient size for lying horizontally on a table, near the operating position or even suspended below the ceiling with nylon cord.

In all cases the tuning capacitor C should be within easy reach of the operator. I've no doubt it could also be remotely controlled for indoor or outdoor use.

As an alternative the loop can also be **vertically mounted**, thus making it highly directional. A suitable hinged arrangement could be used. And in my opinion this versatility makes the TT-80 useful under all conceivable circumstances and situations.

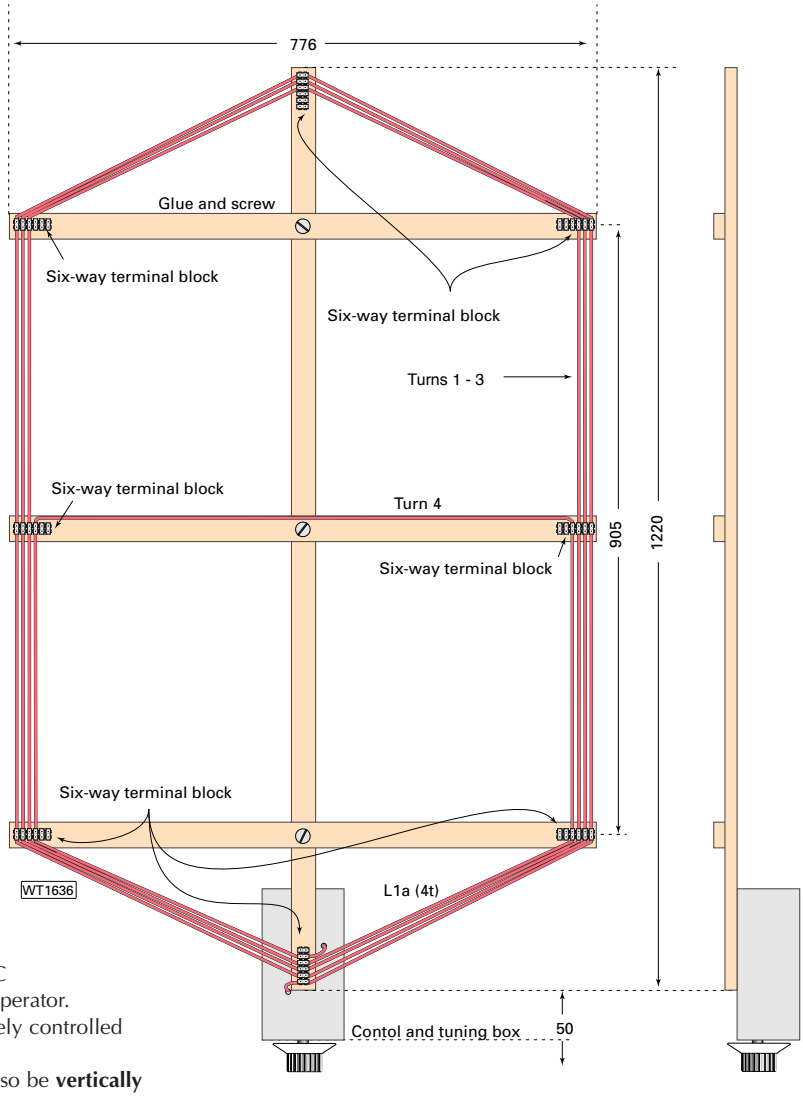


Fig. 2. Physical lay-out and dimensions of the TT-80 (a), with a side view of the complete project in (b). See text for details.

Shopping List

Timber 1.22m x 34mm x 12mm (hardwood preferred), timber 776 x 16 x 6mm. Wire For L1 = 24/0.2 pvc covered outside diameter 2.05mm and rated @ 6A. Wire For L2 - 16s.w.g. tinned copper wire. Two-way terminal blocks 6A - 8mm pitch between inserts (cut in two to form six blocks). Variable capacitor 100pF - **see text** (**note:** on the prototype a Jackson type C11 was used) ABS plastic box 90 x 14.95 x 52.5mm (Maplin PX4 or similar) 3 inch diameter instrument knob. Coaxial socket.

The Lay-out

The front view of the TT-80's lay-out is shown in **Fig. 2a**. And the associated side view on the right in **Fig. 2b**.

To build the antenna you should first obtain one piece of timber 1.22m long x 34mm wide x 12mm* thick, to form the main structural beam. Onto this are fitted the cross-struts at 90° (see diagram), each being 776 long x 16 wide x 6mm thick.

Care should be taken to select, good, straight well seasoned timber - even hardwood (if obtainable). The three cross-struts are mounted as shown in Fig. 2a. They are firmly secured with wood glue (the rapid setting carpenter's resin adhesive is recommended) and screws. The resulting frame can be given a coat of paint of any convenient colour.

A 6-way terminal block is screwed onto the end of each arm of the frame. The 6-way terminal blocks are cut from standard 12-way 6A nylon blocks (these have inserts at 8mm pitch).

Next, you should wind on the loop, L1, winding. This is done using 24/0.2 *pvc* covered wire with an outside diameter (o.d.) of 2.05mm and rated at 6A.

Start L1 at the bottom terminal block at the outer hole and winding counter-clockwise (note this end goes to L2). Pass the L1's wire through the terminal block inserts **for three full turns** plus **one half turn as shown**.

The inner end of the winding will be connected to the variable capacitor C. The terminal block grub screws should be finally tightened onto the pvc outer, of the wire, thus holding the wire turns firmly-tight in place. It will be seen that this leaves several terminal block holes unused (see later).

** No imperial equivalent measurements are provided for the wood required as timber is now mostly sold in metric sizes only, the sizes quoted are what Richard purchased.* ***Editor****.*

Plastic Box

When the antenna is assembled, the variable capacitor C and inductance L2 are housed in a readily available standard size ABS plastic box, **Fig. 3**. These are sometimes known as PX4 by some suppliers.

Go Loopy

The variable capacitor I used on the prototype was a small 100pF transmitting type Jackson type C11. But any good quality air spaced receiving type could be used for powers up to 20W or more. If it appears that the selected capacitor will not fit into the PX4 size, you only need to select a size suitable for the capacitor you've got.

Inductance L2 consists of 12 1in (25mm) diameter spaced turns of 16s.w.g. tinned copper wire. To achieve a nice tidy coil, 13 turns of wire should be close wound onto a 7/8in (22mm approximately) diameter wooden dowel (the coil will spring open to 1in diameter when released).

Next, you should then separate the turns by running a knife blade around the coil. Finally, the ends should then be shaped to fit into the plastic box.

A coaxial socket is fitted into the box side and a wire taken from the centre contact to a tap on L2. The exact position of this tap will be determined during initial testing, but start with about ten and three quarter turns from the bottom of the coil.

The complete control box assembly should be bolted to the bottom of main frame arm as shown in Fig. 2. The outer end of L1 should be taken through a hole in the box to the top end of L2. The inner end of loop L1 is taken through a hole to the moving plates of variable capacitor C.

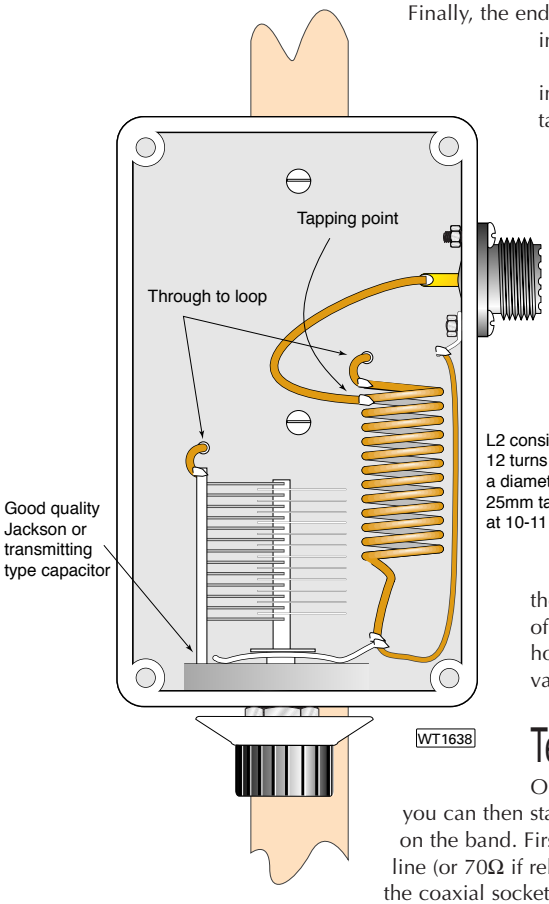


Fig. 3: The plastic control box for the TT-80, the actual size of box is chosen for the variable capacitor used, is then attached to the wooden framework by screws (see text).

Testing & Operation

Once the assembly is finished, you can then start testing ready for operating on the band. Firstly, a short length of 50Ω feed line (or 70Ω if relevant) should be taken from the coaxial socket to your receiver's antenna input socket. Next, lay the loop flat on a wood top table.

Then you should tune variable capacitor C to resonance at around 3.520-3.550MHz. When resonance of the loop is achieved, it will made obvious by a substantial increase in signal strength. As an indication and to help, I found tat the moving plates of C on the prototype were about 15/20% enmeshed. Then you should check resonance over the whole band.

Next, find a steady signal near the l.f. end of the band and adjust the tap on L2 for maximum signal. This will bring the tapping point very close to the final position for transmitting.

Finally, with a field strength meter (f.s.m.) positioned nearby, you should then feed a low power c.w. signal into the loop and make any necessary minor adjustments to C1 for maximum f.s.m. reading.

It will then be necessary to find the best position for the tap on L2. **And to obtain maximum radiation - I strongly advise that the position of this tap should be found with great care and checked, and rechecked again**.

Bear in mind that the ultimate target is **maximum radiated signal** and the tap should be moved up to maybe ±half a turn for maximum radiation as indicated on the f.s.m. Once the critical tap position has been found the s.w.r. can be checked and should be near unity; the harmonic radiation should be near zero and no TVI should be present.

The effect of the narrow bandwidth of the loop acts as a bandpass filter. This can be very useful on the crowded 80 metre band!

On The Air

In my on the air operations at G2BZQ the loop has been supported on a table by the plastic control box plus two non-metal supports. These were positioned about half-way between the centre and ends of the cross-strut C. (In my shack these supports were two plastic pill bottles with the screw-on caps being drilled and screwed to the strut).

An alternative mounting is to use a vertical short post about 2in diameter or 2 x 2in (51mm square section) screwed to a heavy base. The loop frame might well be hinged so that the loop can be used either horizontally or vertically.

In operation I recommended that a 10-15W c.w. be used although I've used up to 30W for testing purposes. In use the loop has been on a wooden table top alongside the operating position, **making certain that the periphery of the loop is not against a wall containing house wiring**. This latter point is very important as an EMC precaution, as it's possible that r.f. getting into the mains wiring could cause problems.

The antenna has been very effective in operation and has been regularly used for an early morning CQ QSO with a friend in Germany. He uses 100W and an outdoor dipole, but I'm pleased to say that there has been little to choose between the daily two-way RST reports.

Efficiency Of Loop

The efficiency of such a loop as the TT-80 will in theory be less than an outdoor antenna such as a dipole. On the other hand, it is possible of course to peak the loop to any particular frequency. Also the feed line is so short that the question of losses doesn't occur. This, plus the ability to adjust the loop to fine limits will enable every last milliwatt to be squeezed out of it.

I think that the TT-80 will move loop effectiveness some way towards equality with the outdoor antenna. The latter lives outdoors in all weathers subjected to high temperatures, sunlight, frost, snow, wind and rain.

The outside antenna will also have been made to textbook dimensions with a much wider bandwidth, feeding onto the end of a long length of somewhat lossy coaxial feed line. And everything on the system is also subject to a gradual creeping unseen loss in efficiency as general deterioration sets in. The indoor loop is spared most of this!

As I've already mentioned, low power is used with my TT-80. This is purely a personal preference, but if you do use higher power on any indoor antenna, please bear in mind it can produce nasty r.f. burns.

Finally, if the spare holes in the terminal blocks are filled with wire turns the loop will tune down to the 1.8MHz band. (for Top Band operation L2 will maybe have to be about 18 turns).

This little antenna may well be an effective answer for those transmitting Amateurs unable to use an outdoor antenna, for whatever reason. It can also be used for portable and vacation applications. So, why not give it a try? - but don't forget to select the L2 tap with care!

PW

QSL at no cost

John Worthington GW3COI promotes an idea for free QSL cards believing it could make the system of QSLing a whole lot easier.

I gave up QSLing many years ago mainly because I had lost interest and had achieved the Worked All States and the DXCC (100 countries any bands) awards. It had taken me 30 years of hard slog to accomplish and for each certificate the main problem I'd encountered was getting the QSL cards sent to me to confirm the conacts I had made.

I found with the rarer cards that I often needed to work **several stations** just to get **one card**. I admit that I did quite enjoy receiving the cards, as some had very interesting designs and were often accompanied by some interesting comments too.

Card Collecting Hobby

The collecting of QSL cards in itself can turn into a hobby of its own and I do not denigate what it represents but an idea came to me recently to make the process easier. It may have already been suggested elsewhere but it could just work.

I think my idea would particulary help the station who perhaps cannot afford to be a member of the RSGB and use their QSL bureau sevice offered as part of the membership or cannot afford the postage that occurs as a result of this or perhaps simply doesn't have any cards to send. Those stations perhaps would like to be able to use a subsitute device which would enable the other station to still have the QSO confirmed.

Using my idea it wouldn't cost the cash strapped station a penny. All the operator has to do is authorise the making out of a card bearing his callsign and the date, time, band, etc. of the QSO. In other words the station wanting the QSL card should have special cards made with a blank space for his QSO partner's callsign.

Among the other printing on the card could be wording along the lines of "This card has been authorised by..... (callsign of station worked)". There may be objections to this procedure by some certificate promoters but any monkey business could be discovered easily if suspected and the penalty the wrongdoer would have to pay would be banishment from any further participation!

Self-Made Cards

Of course there would be nothing to stop operators churning out self-made cards for rare countries but it would serve impecunious Radio Amateurs well and transform certificate hunting into a demonstration of operating expertise, etc., instead of long waits for cards that may never arrive.

There are of course some certificate awards which do not require any cards but that rely on the honesty of contest participants. But judging by the behaviour of some operators involved in the bigger tests, fiddling could be a significant factor to watch out for!

Mind you it would take a few years for this idea to spread around. Imagine how long it would take to tell everyone you worked on the key for instance!

For several years now I have tried to tell all those I worked that as I was no longer a member of the QSL bureaul would not QSL and therefore didn't require their card. About half of the folk I work read me okay and say that's quite okay Old Man! But the other half don't recieve and acknowledge. Those ultimately not receiving a card, might think I was one of the many who never reciprocate; but if my idea became widespread many operators would have none of this aggravation!

Find A Sponsor!

Another method -which can be very successful for both parties is to find a sponsor. In the 1950s and 1960s many cities and resorts offered to provide special postcards of their areas overprinted (the important bit: free!) with the Amateur's callsign. This idea I like because it frees up the pension for pipe tobacco!

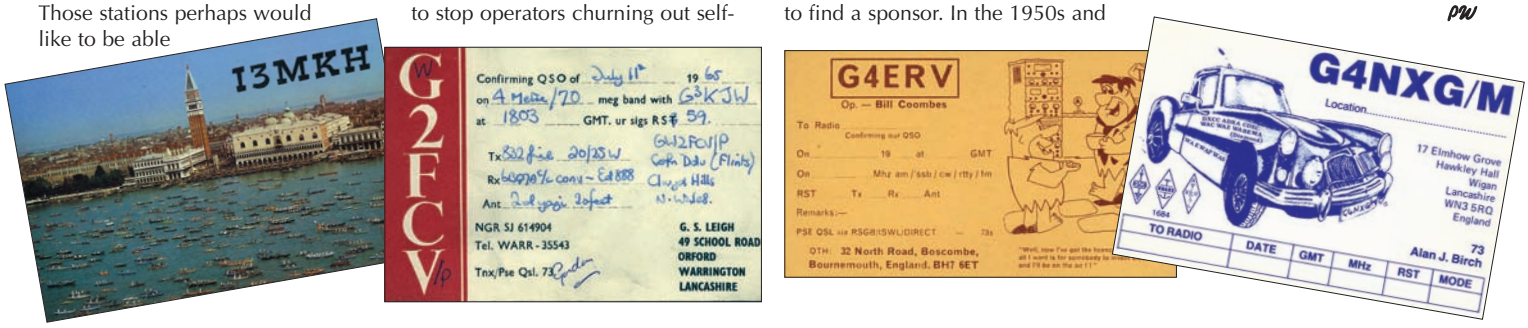
Nowadays large companies and businesses who are anxious for cheaper publicity (that's us) will probably be quite keen to sponsor your card if they get something in return. I've no doubt that if approached, the various famous narrow gauge railways here in North Wales would provide picture postcards of their railways and locomotives. In return they would get world wide publicity from the QSLing Amateur's activities.

This approach has been adopted by one Mannion, the esteemed Editor of our publication. Crafty Rob - not being keen to get wet perched on a grassy railway embankment contacted the Swanage Steam Railway in Dorset. In return he got some very good transparencies of the line with picturesque Corfe Castle and his favourite locomotives to use on the G3XFD QSL card which, when printed, will be sent around the world.

Known for his thriftiness - in my day we would call him a cheapskate - in return for the good quality photograph Rob will publicise the famous Dorset railway. You might choose a local beauty spot, a windmill, preserved building or what have you.

There's only sheep here in Abersoch, but they've already been sponsored by the British Wool Council! I've tried asking the pipe tobacco manufacturers too, but all I got was a packet of pipe cleaners! But you might be more successful!

pw



Cards like these may become a thing of the past if John GW3COI's idea was adopted (see text).

VHF DXER

BY DAVID BUTLER G4ASR
YEW TREE COTTAGE
LOWER MAESCOED
HEREFORDSHIRE HR2 0HP

TEL: (01873) 860679
E-MAIL: g4asr@btinternet.com

REPORTS & INFORMATION BY THE LAST SATURDAY OF EACH MONTH.

During May there were an interesting variety of propagation modes observed on the v.h.f., u.h.f. and microwave bands. Sporadic-E (Sp-E), trans-equatorial propagation (t.e.p.) and auroral backscatter (Au) openings were noted at the low frequency end of the spectrum. Although a few stations mentioned that this year's Sporadic-E season on the 50MHz band has got off to a slow start.

However, I recorded 24 days during May when Sp-E openings occurred on the 50MHz band from the UK. Some of them were very intense and on May 25 and 31st there were multi-hop openings across the Atlantic into North America. Trans-equatorial propagation to Africa and South America were reported on 14 days during the period and a total of six auroral back-scatter openings were noted in central England.

Now moving up to the 144MHz band and unlike last year there were no Sp-E openings in the UK that reached up to this band during May. Just for the record the first European Sp-E opening on the 144MHz band occurred on May 21 with contacts being made between Hungary, Italy and Slovenia to stations in southern Spain.

To compensate for the lack of Sp-E on the 144MHz band there were periods of extensive tropospheric propagation and on May 26 an excellent opening to the Canary Islands off the African coast! There were also a few days when auroral openings reached the 144MHz band but these were generally weak events. The best of these were on May 9 with **G4HGI** (IO83) contacting RK2FWA (Kaliningrad) and on May 28 with **G4LOH** (IO94) working LA2RZ (Norway), OZ2TF (Denmark) and SM1FMT (Sweden).

An unusual propagation mode, field aligned irregularities (f.a.i.) was reported on May 23. The opening occurred around 1930UTC coincident with a strong Sp-E opening on the 50MHz band. Weak c.w. signals from 9A1CAL and 9A4FW (Croatia) were heard by the stations of G0KPW and G4SWX. Meteor scatter (m.s.) propagation was also on the up with an increase in the daily sporadic meteor count and a number of minor streams such as the Eta Aquarids and Piscids showers that occurred during May.

Propagation on the microwave bands is largely dependant on the vagaries of the troposphere. There were some periods between May 22-26 when the prevailing high pressure systems allowed some good long distance contacts to be made on frequencies as high as the 10GHz band.

Conversely when it was raining it was also possible to make scatter contacts by reflecting microwave signals off the intense rain belts. Although not a propagation mode it was a pleasure to note that some microwave transponders onboard the AO40 satellite were temporarily activated during May. This enabled satellite operators to make worldwide contacts by uplinking on the 430 or 1296MHz bands and receiving signals on the 2.4GHz downlink band.

IONOSPHERIC CONDITIONS

Now it's time to look at those reported openings in a little more detail and I'll turn first to the Sp-E openings on the 50MHz band. This ionospheric mode provides operators running low power and small antennas with an excellent opportunity to work many DX stations. At times signals can be overpowering, unlike anything you've heard before and contacts can literally be made with a few watts and a piece of string.

Without looking in detail it's probably true to record that every European country with 50MHz authorisation was at some time worked from the UK during May. Some of the European stations that were contacted included ES1CW (Estonia), EW6DI (Belarus), LY2BH (Lithuania), LZ3XV/ZA (Albania), OH0/SM3KIF (Aland Islands), OY9JD (Faroe Islands), TF3EK (Iceland), T95C (Bosnia-Hercegovina), UX1UG (Ukraine), YL3AG (Latvia), ZB2CF (Gibraltar) and Z36W (Macedonia).

At the QTH of **Stefhan SM4TZZ** (JP70) s.s.b. contacts were made on May 19 with the stations of G4DEZ (JO03), G4JCL (IO93), G7EXO (IO91), G7SQW (JO02) and G7WAY (IO92). Stefhan was running 10W output into a small Yagi antenna.

Mick Bradley G6ASJ (Hampshire IO90) mentions in a packet radio message that the Sp-E propagation on May 23 was very good. This enabled him to make s.s.b. contacts with stations in Croatia (9A), Czech Republic (OK) and Italy (I).

Mick also made a slow scan television (s.s.t.v.) contact with S53X in Slovenia. Nothing spectacular about that except that Mick was only running 15W output from a home-made transverter into a vertically polarised tri-band colinear antenna.

Multi-hop Sp-E paths were also in evidence enabling long distance contacts to be made into the Middle-East (Asia) and north Africa. Among these were the stations of A45XR (Sultanate of Oman), JY9NX (Jordan), OD5/OK1MU (Lebanon), TA1AZ (Turkey) and 4Z5AO (Israel). African contacts via Sp-E were also made with EH8BPX (Canary Islands), EH9IB (Ceuta & Melilla), SU1SK and WA0VOM/SU (Egypt) and 5A1A (Libya).

On May 18 there was an unusual mixed-mode propagation path to the Chagos Islands in the Indian Ocean. Around 1610UTC during an intense Sp-E opening in which stations in Egypt, Israel, Jordan and Lebanon were worked, up popped the station of VQ9IO (MI62). He was heard in the southern part of the UK by G3FPQ (IO91), G3IBI (IO90) and GW7SMV (IO81).

THIS MONTH DAVID BUTLER G4ASR REPORTS ON CONTACTS WITH NORTH AMERICA ON THE 50MHz BAND AND WITH AFRICA ON THE 144MHz BAND.

TRANSATLANTIC OPENINGS

As if that wasn't enough there was also some excellent multi-hop Sp-E openings on May 25 and 31st to North America. The transatlantic opening around midday on May 25 was geographically selective favouring stations located to the east of the UK.

However, the multi-hop opening on May 31 was tremendous with many stations throughout the UK making contacts into Canada and the United States of America. The event appeared to start around 1130UTC with stations in eastern England first making contacts into North America. It then slowly spread westwards across the country and then finally to the north of England and Scotland finishing there around 1600UTC.

Jamie Ashford GW7SMV (Monmouthshire IO81) mentions that it was a great opening and the best he had ever

experienced to Canada and the USA. Running an Icom IC-746 transceiver, 170W from a TE Systems amplifier and a 5-element Yagi at 15m above ground Jamie made 26 contacts on s.s.b. and one solitary c.w. contact.

Jamie's QSOs were made between 1202-1452UTC and included stations in the VE3, W1, W2, W3 and W8 call areas. Jamie reports that his longest distance contacts, around 5700km, were made with the stations of K8TVD and W8AC.

At my QTH (Herefordshire IO81) the 50MHz band was open to North America between 1200-1445UTC during which time I made 21 c.w. and 11 s.s.b. contacts with stations in the VE1, VE2, VE3, W1, W2, W3, W4, W5, W8 and W9 call areas. I was using a new antenna system consisting of a pair of stacked DJ9BV 6-element Yagis at 20m above ground. This and the use of c.w. enabled some very long distances to be achieved. Best DX was N5WS (EL09) at 7850km, K9HMB (EN52) at 6190km and W9ZR (EN80) at 5960km.

Peter Sprengel PY5CC (left) awarding Cliff Ibell G1IOV with a tankard in recognition of his services during his term as Chairman of the UK Six Metre Group. The photograph was taken at the RSGB VHF Convention, Bletchley

TRANS-EQUATORIAL CONTACTS

Contacts made via multi-hop Sp-E on the 50MHz band can be very exciting but you need an F-layer propagation mode to assist signals over really long distances. True F2-layer propagation on the 50MHz band is dependant on the solar cycle, the season of the year and the time of day.

The F2-layer maximum usable frequency (m.u.f.) peaks around the equinoxes rather than in the summer. However, there is an F-layer mode called trans-equatorial propagation which extends beyond the spring equinox period often well into May. This t.e.p. mode occurred on at least 14 days during the month enabling some very long distance contacts to be made across the geomagnetic equator into southern Africa and South America.

The majority of t.e.p. openings in May however were with stations in South America around 10000-11000km away from the UK. The peak time for most of these openings was between 1800-2000UTC and produced c.w. and s.s.b. contacts with stations such as CX2LI (Uruguay), CE3RR (Chile), LU1DMA (Argentina), PY5CC (Brazil) and ZP4KFX (Paraguay).

Stewart Reeve G1HHO (Hampshire IO90) reports that on May 6 between 1500-1700UTC he made s.s.b. contacts with the stations of CX1DDO, LU3DZK and LU9AEA. He uses a Yaesu FT-650 transceiver driving a Henry Radio amplifier to 400W output into a 3-element Yagi at 7m a.g.l. Stewart also made Sp-E contacts into Gibraltar, Spain and Portugal prior to the t.e.p. opening.

Although there were far less openings into southern Africa there was still some very good contacts being made. Amongst these were ZS6AXT (South Africa), Z21FO (Zimbabwe), 3B6RF (Mauritius), 5R8FU (Madagascar) and 9J2BO (Zambia). All these by the way were in the time frame between 1600-1800UTC.

TROPOSPHERIC CONDITIONS

Now I'm going to move away from the ionospheric layers and take a look at what's been happening lower down in the troposphere. An excellent tropo opening on the 144MHz band occurred during Saturday evening on May 26.

At my QTH (IO81) s.s.b. contacts were made with EB1DNA/P (IN63) and F4ARU (IN94). Signals were exceptionally strong and acting on previous experience of this path I then called 'CQ DX EA8' in c.w. on 144.295MHz. Amazingly I was answered at 2005UTC by the station of EB8BTV (IL18) in the Canary Islands.

A few minutes later at 2010UTC I swapped over to s.s.b. and made a contact with 53 signals both-ways over a path of 2861km! At 2020UTC the station of EA8BPX also appeared on the 144MHz band and another s.s.b. contact was completed. (I also worked him later in the evening at 2100UTC as no one else was replying to his CQ calls!)

Unbeknown to me the 144MHz band had been open for many hours before my contact. **Fernando Borges EB8BTV** reports that he was hearing very strong signals during the afternoon from EA1OS/P and EB1DNA/P located on the north coast of Spain. At 1740UTC he called 'CQ DX' and received a reply from **Colin Morris G0CUZ** (West Midlands IO82).

Fernando knew that G0CUZ wasn't located by the coast (where signals are strongest) and then expected to hear many stations located in Cornwall, south Wales and the south coast of England. Surprisingly there was absolute silence! This was strange as the Cornish beacon GB3MCB (IO70) was being heard at reasonable strength considering that the beacon antenna beams to the north-east.

At 2005UTC Fernando then heard myself (G4ASR) calling in c.w. and his second DX contact was made one and a half hours after the initial contact with G0CUZ. Following announcements on the DX Cluster network the activity picked up and EB8BTV then went on to work the stations of G4ALY (IO70), GW8IZR (IO71), GW4VEQ (IO73), M0BKL (IO80), MW1TYO, GW5NF, GW6TCO, GW7SMV and GW8JLY (all in IO81), G4PBP (IO82) and G4KWQ (IO92). His best DX of the night though was with G4LOH (IO94) over an amazing 3111km path!

During the evening both EA8BPX and EB8BTV took it in turns on 144.295MHz s.s.b. calling for long distance contacts. Other UK operators who heard or worked into EA8 that evening included GW0WGK, GW7UNJ, G7RAU (IO90), G0FYD and G4HGI (both in IO83).

Fernando mentions that the path was still open on Sunday May 27 but no other UK stations apart from the GB3MCB beacon were heard. On Monday May 28 at 0430UTC he checked the beacon again and the signal was even stronger. This 3000km path from the UK to the Canary Islands is open every year, but more often in July or early August.

The marine path opening favours stations in south-west and western England, Wales, Ireland and occasionally western Scotland. Look for openings to the north coast of Spain - the EA1 call district - and then call for EA8 stations around 144.300MHz.

Contacts are also made on 144MHz f.m., especially by stations in Cornwall. The path will also support communications on the 432MHz band and higher frequencies, probably right through to the 10GHz band.

DEADLINES

That's it again for another month. Forward any news, views, comments or photographs to the address and by the date given at the top of the column.

Thanks for alll your letters and good luck with the DX. See you next time.

73, David G4ASR.

HF HIGHLIGHTS

BY CARL MASON GW0VSW
12 LLWYN-Y-BRYN
CRYMLYN PARC
SKEWEN
WEST GLAMORGAN SA10 6DZ

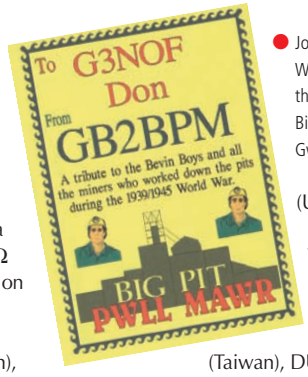
Tel: (01792) 817321
E-MAIL: carl&gw0vsw.freeserve.co.uk

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

CARL MASON GW0VSW STARTS WITH NEWS OF A SPECIAL EVENT STATION.

Some of you may have worked the special event station **GB2BPM** during May. Operators **John Densem G4KJV** and **David Williams GW3XJA** had fun operating at the Big Pit mining museum in Blaenavon, Gwent. The aim was to pay tribute to the Bevin Boys who worked down the pits during the Second World War.

The station was set up in John's van, based in the car park alongside the museum, generating a good deal of interest from the visitors as well as the museum staff. A special QSL card was produced showing an almost exact copy of the logo used by the museum. John got permission from Peter Walker the Mine Manager to use it. If all goes well, the next special event will be from the Cefn Coed mining museum near Neath, West Glamorgan later in the year.



John Densem G4KJV and David Williams GW3XJA had fun operating the special event staion GB2BPM at the Big Pit mining museum in Blaenavon, Gwent.

DX NEWS

Martin 3C5J has been very active from an oil platform in Equitoral Guinea, especially on 14 and 21MHz. Martin operates s.s.b. and c.w. around 0530-0830 and 1300-1630UTC. Please QSL via MW0BRO.

In celebration of the 50th anniversary of the founding of Radio Amateurs du Quebec Inc (RAQI), Canadian operators have permission from Industry Canada for all VA2/VE2 stations to use a special commemorative prefix. Holders of VA2 calls can use the prefix **CF2** and VE2 holders the prefix **CG2** from 15 June until 15 July 2001. President of the RAQI **Daniel A. Lamoureaux VE2KA** has obtained the callsign **VC2A** for use by individuals or groups, most probably in contests.

Bob I2WIJ will be active from the island of Crete from 23 July until 6 August using mostly s.s.b. on the WARC bands. Bob also hopes to have a 1.8MHz dipole up even though conditions may not be so good for that band during his stay. In the 2001 IOTA contest he will operate using the callsign **J49R** as a 24 hour, 100W c.w.

Members of Grantham ARC will be operating from Lammskar Island EU-177 as **SM5/G0GRC/P** from July 22 for three days. Please QSL via G0RCI .

YOUR REPORTS

On to your reports now and the 7MHz logbook of **Roy Walker** operating as **GW0TAK/P** from Conwy, North Wales. Using his QRP Plus at 5W and indoor MFJ-1621 vertical antenna just 1.3m high Roy worked EA2CHT/QRP (Spain), SM5BDY (Sweden), F/GW4ACO (France) and DL8MKG (Germany). All contacts were made around 2130UTC.

THE 10 & 14MHZ BANDS

New reporter **Larry Stringer G4GZG** in Ongar, Essex uses an IC-756 PRO with a 20 metre doublet antenna fed with 300Ω feeder through a Z-Match. It works well on all bands.

Best c.w. DX this month on 10MHz includes VU2BGS (India), JY9NX (Jordan), T77C (San Marino), EY8MM (Tajikistan) and 8Q7KK (Maldives) between 1930 and 2130UTC. I look forward to receiving more of your logs soon Larry.

It's down to the Isle of Sheppy, Kent now and the log of **Ted Trowell G2HKU** who used a Ten-Tec Omni V and 70W of c.w. on 14MHz to work JW3FL (Svalbard) at 1500UTC followed later by FG5XC (Guadeloupe), D2BB (Angola) and a string of Japanese stations around 2100UTC.

Also operating was **Paul Morrison G0VHT**, Bromsgrove, Worcestershire who's in the process of upgrading his antenna. Using 5W QRP and PSK31 Paul worked 3A2MW (Monaco) at 1009UTC and later in the evening LU3CT (Argentina) 2213 and NG9Y near Indiana (USA) at 2341UTC along with a pile of European stations.

THE 18 & 21MHZ BANDS

Another new reporter is **Iain M0PCB** in Crook, County Durham who has held his callsign for just six months and already logged 112 countries! Despite studying for his GCSEs Iain found time to work OX3NUK (Greenland) 1620, ER1ZZ (Moldovia) 1655, YV5EED (Venezuela) 2055, JA1JRK (Japan) 2145 and CO8LY (Cuba) at 2205UTC on 18MHz. All contacts were made using an IC-746, 100W s.s.b. and a nested dipole in the loft. Good luck with your exams Iain and your QSLs are on their way!

Operating with a Ten-Tec Argonaut 2 and 3-element Yagi at 17 metres was **Brian Waddell GM4XQJ** in Laurieston, Falkirk who was very pleased to work VK7GK (Australia) at 0803 followed a little later by J79CGA (Dominica) at 1223UTC using c.w.

Also spending sometime on this band was Roy GW0TAK/P who worked UA9FGJ (Asiatic Russia) at 1528, his best DX from Conwy and UR6IM (Ukraine) 2129UTC.

Don McLean G3NOF in Yeovil, Somerset found conditions poor on 21MHz but still managed to find AP2JZB (Pakistan), BV4VE (Taiwan), DU1/JA1HBC (Phillipines), J28NH (Djibouti), JX3EX (Jan Mayen), 5H3OG (Tanzania) and 6M0IG (South Korea) using s.s.b. between 1539 and 1830UTC!

THE 24 & 28MHZ BAND

On 24MHz Ted G2HKU worked 3B6RF (Agalega Island), J5X (Guinea-Bissau) and J88DR (St Vincent) around 1500 then VQ9CXF (Chagos) at 1600UTC using c.w.

The large log of **Mike Baker G3SUK**, Stowmarket, Suffolk lists a fine collection of DX. His s.s.b. contacts on 24MHz include OD5/OK1MU (Lebanon) 1421, 5B4/DL7VFR/P (Cyprus) 1524, YI1BGD (Iraq) 1550 and V47UY (Nevis Island) at 2040UTC using an IC-746 and Carolina Windom antenna.

Finally to 28MHz and Larry G4GCG who used c.w. once again to work 5A1A (Libya) 1552, FR5FD (Reunion Island) at 1554 and one s.s.b. contact with AO4O (Peru) at 1728UTC.

In Newtownabbey, Northern Island **Peter Lowrie MI5JYK** used his Albrecht AS458E, 10W of s.s.b. and 10 metre dipole to work ZC4RAF at RAF Akrotiri (Cyprus) 1125, Z21KF (Zimbabwe) 1656 for a new country and J5X (Guinea-Bissau) at 1703UTC before dashing off to a local club to give a talk on 50MHz DXing!

Jon Wheeler G0IUE, Melksham, Wiltshire was reviewing the President Lincoln transceiver for *PW*, and was operating mobile on 28MHz using a K40 antenna and magmount on the car roof. Contacts included US5EAU (Ukraine) at 1115 followed by JA7DYJ at 1126UTC using s.s.b. and 20W.

Jon says, "I could not believe my luck when I worked the JA. After the QSO finished there was a huge pile up of stations waiting to work him"! Returning home, and with the rig safely back in his shack, Jon worked PY2VA (Brazil) followed by a string of Argentinean stations around 1800UTC.

SIGNING OFF

Time to sign off once again. Thanks to **Bernie McClenny W3UR** and the *Weekly DX* for the DX information and special thanks to all our reporters for the vast amount of DX information received. I hope I've managed to fit you all in?

73 Carl GW0VSW

KEYBOARD COMMS

BY ROGER COOKE

TEL: (01508) 570278
E-MAIL:
rcooke@g3ldi.freeserve.co.uk
PACKET:
G3LDI @ GB7LDI

ROGER G3LDI LOOKS AT SOUNDCARDS AND CONTESTS AS WELL ALL THE LATEST DATACOMMS NEWS.

Most web users have heard of cookies - but few really understand what they do. Essentially, a cookie is a string of html that gets itself into the memory of your browser. A cookie can store information about your activities when visiting a site and later send that information back to its masters.

Anyone concerned with privacy issues may be worried by this revelation. But fear not. For a start, you're not obliged to accept cookies. Internet Explorer users can choose not to accept cookies by going to Internet Options, Security and then clicking on Custom Level and the relevant check boxes.

Most users accept cookies as an essentially harmless device that makes surfing a more personal experience. For an exhaustive and easy-to-understand low-down on cookies, check out Cookie Central at:
www.cookiecentral.com

SOUNDCARD COMPATIBILITY

John WA9ALS, has started a soundcard survey to help guide those comtemplating a new sound card and/or a new computer. Some have purchased expensive computers only to be disappointed that its sound card or integrated sound system was not fully compatible with their Amateur Radio software!

Although this survey and site are primarily targeted to Writelog users, users of other digital mode software utilising sound cards are likely to find it interesting and possibly useful to them. For example, some people are adding comments about functionality with RITTY/K6STI (also used with WF1B RTTY) and other observations.The more data we can accumulate on this site, the more useful it will be, **so please contribute**.

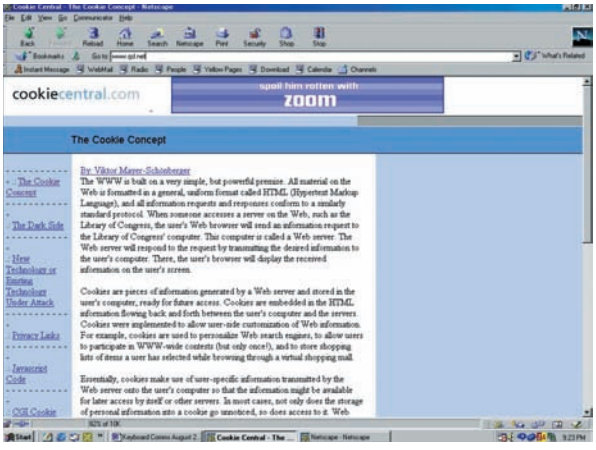
Note that you can get the Writelog Soundboard Checker program and run it even if you're not a Writelog user. It's FREE and will tell you something about your soundcard! The survey can be found at:
http://www.qsl.net/wa9als/sound_survey.htm
and the early results are at:
http://www.qsl.net/wa9als/sound_results.htm

RTTY JOURNAL CD-ROM

I subscribed to the *RTTY Journal* for several years in the early 1960s and unfortunately got rid of all the magazines when I moved house due to the usual storage problems. I wish I hadn't done so now, but help is at hand!

Now you can have the history of RTTY right at your fingertips. All past RTTY Journal issues have been fully archived onto CD-ROMs for easy viewing on your computer. Using Adobe Acrobat software (included on each disk), you can easily navigate through hundreds of issues, each one packed with interesting RTTY information. Finding a specific article or author is easy, too, with the searchable index included with each archive disc.

The RTTY Journal Archives are sold individually for $20 each; $15 each if you are a subscriber to the *New RTTY Journal*. For information on buying the complete set of eight disks, see the special offer below.



Take a look at Cookie Central.

NEW RCKRTTY

A new version of *RCKRtty* is available, V 2.11. This program is written by **Walter DL4RCK** and is quite popular. You can download it from:
http://www.rckrtty.de

New additions to version two include

* Changes in the TRX interface
* Added the Cabrillo log format for the SARTG RTTY Contest
* Some changes for networking
* Added TRX control for Yaesu FT-817
* Call districts corrected for 7K,7L,7M,7N = JA1
* Bugfixes

Don't forget to de-install first the previous version.
More information about RCKRtty can be found on the homepage.

PLEA FOR HELP

If anybody can help **Stuart Trench-Brown G7DTG** with the following please contact him direct via E-mail at:
tightlacers@madasafish.com
Stuart asks: "I travel overseas very often on business and usually take a small computer and some type of transceiver with me. Currently I carry an HP Journada 720 computer and FT-817 I am unable to find any kind of communications software that will run on the HP Journada which uses the MS Windows for H/PC 2000 operating system. Can you help? Even some simple decoding software would be useful".

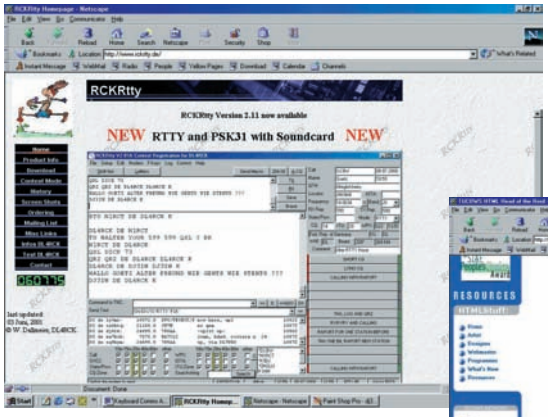
PSK31 NEWS

The PSK31 DX Notes are now back in circulation. **Dima UT5RP** recovered enough of his health to assemble a report for the week ending May 6. The fact that it is possible to obtain DXCC on PSK31 just shows how popular this mode really is. Forward your PSK DX spots to Dima at
ut5rp@radio.tenet.odessa.ua

Notes arrive from someone or other every week asking about where to go first for PSK31 information. After reviewing the list of options, it appears to me that your first port of call should be **www.psk31.com** It has about everything available on the site or a link to the site needed to fill the order. Other sites are available and can usually be found with a Google search, or links.

NAIL UP PICTURES

If you've built - or are building your own website, you'll know that one of the most



● Checkout the latest version of *RCKRtty*.

● Produce your own photo galleries with *AutoNailer*.

tedious bits is putting together a gallery of pictures. Not anymore - Download *AutoNailer* and you can use this JavaScript application to produce photo galleries.
In essence all you do is to match the pictures to a scheme and *AutoNailer* gets busy and builds the page for you. You can also use it to make it harder for visitors to steal your pictures by hiding the picture url. Download it free from Tucows:
http://html.tucows.com/herd/herd011501.html

SARTG WW RTTY CONTEST

There are still plenty of RTTY contests about and the Scandinavian Amateur Radio Teleprinter Group (SARTG) contest is a well-established one that always produces a hive of activity. Even if you can't enter the contest for the full period, a lot of fun can be had and you are helping others scores.

It is also an ideal way of picking up a few new countries. The rules are:
Contest Periods: Three separate periods: 0000-0800UTC Saturday, 1600-2400UTC Saturday, 0800-1600UTC Sunday.

Bands: 3.6, 7 14, 21 and 28MHz

Classes:
A: Single operator all band
B: Single operator single band
C: Multi operator single TX all band.
D: SWL all band

Single operator all band entrants may also enter one single band entry of their choice. DX spotting and alerting assistance is permitted in all classes.

Modes: RTTY only
Exchanges: RST + QSO number, starting with 001.

QSO Points:
QSO with own country = 5 points.
QSO with other countries in own continent = 10 points.
QSO with other continents = 15 points.
Same station can be worked once on each band.

Multipliers:
Each DXCC country on each band, including first contact with Australia, Canada, Japan and USA. Additionally, each call area in VK, VE, JA and W will count as one multiplier on each band (W1, WA4, JA2, VK4).
Stations operating from call areas other than their call ID, are asked to use '/x' for their actual call area. i.e. K5DJ/1

Scoring: Sum of QSO points x sum of multipliers = Total Score.

Logs:
Electronic log submissions: Only two files are required, callsign.all and callsign .sum. These logs must be in chronological order and show: band, date/time(utc), callsign, exchange message sent received, multipliers and QSO points. The Summary sheet must show scoring, class, your call sign and name and postal address. Multi-Op stations must include the callsigns and names of all operators involved.

The Cabrillo format will be accepted but is not mandatory. Please make sure that you fill in the Cabrillo header correctly.

An additional and **completely** separate single band of choice log for Single Op all bands entrants must show the same information as above and be named with your callsign band X. Logs on 3in disk togheter with a printed summary sheet are accepted.
Paper log submissions: The log must be in chronological order showing the same information as required for electronic ones. In addition, a written summary sheet, dupe sheet and multiplier sheet must be submitted.
Logs Deadline: Logs must be received by 10 October 2001 to qualify.

Please advise of any team/club participation, your score will be added to the aggregated score of your team/club. Maximum five members in club/team. Your comments will be very much appreciated.

Awards: To the top stations in each class, country and district, if the number of QSOs is reasonable.

E-mail logs to: sm7bhm@svessa.se or post to SARTG Contest Manager, Ewe Håkansson SM7BHM, Pilspetsvägen 4, SE-291 66 Kristianstad Sweden

SPECIAL OFFER

The first eight RTTY Journal archive disks are being offered to subscribers for $100. This is a savings of $20. If you have already purchased any number of disks, the amount you paid for them will be credited toward the $100 special offer.

For example: If you've bought disks one through three. This would give you $45 credit ($15 per disc). Now you only need to pay $55 to get the remaining five disks. Contact RTTY Journal to take advantage of this offer, so they can give you the correct price based on your past purchases.

New Disks
Disks five through eight are now available! You'll notice that these disks don't have as many years on them as the previous disks did. This is because of two reasons. Starting in 1978, the RTTY Journal increased page size from half-page to full-page. And, as time went on, the Journal kept gaining pages. Early issues of the Journal usually had about sixteen half-pages (eight full-size pages), whereas an issue from 1995 commonly had thirty full-size pages. Needless to say, these later issues take up a lot more disc space.

Disks Available

Disk One	1953-1962
Disk Two	1963-1972
Disk Three	1973-1977
Disk Four	1978-1982
Disk Five	1983-1987
Disk Six	1988-1991
Disk Seven	1992-1994
Disk Eight	1995-1997

Disk Three also includes the 1956 and 1958 Callbooks.

Ordering
For quickest response, call the RTTY Journal during the daytime (0800. to 1700hours, central time) on 217-367-7373. If you prefer to mail your order send to: The New RTTY Journal, PO Box 236, Champaign, IL 61821-0236 USA.

AND FINALLY

Young Judy, the editor of a trivia publication, was having trouble with her computer. So she called Prem, the computer guy, over to her desk. Prem clicked a couple buttons and solved the problem.
As he was walking away, Judy called after him, "So, what was wrong?"
And he replied, "It was an ID ten T error."
A puzzled expression ran riot over Judy's face. "An ID ten T error? What's that ... in case I need to fix it again??"
He gave her a grin... ;-) ...
"Haven't you ever heard of an ID ten T error before?"
"No," replied Judy.
"Write it down," he said, "and I think you'll figure it out."
(She wrote...) I D 1 0 T

Roger G3LDI

IN VISION

BY GRAHAM HANKINS G8EMX

17 COTTESBROOK ROAD
ACOCKS GREEN
BIRMINGHAM
B27 6LE

E-MAIL: graham@ghank.demon.uk

The Amateur Radio Bandplan for the UK does not, at the moment, include an allocation for Amateur Television Repeaters within the 13cm (2.3GHz) frequency allocation. But this may change because a small group of dedicated individuals in the Basingstoke area, including **G8GTZ** and **G8CKN**, are requesting the Repeater Management Committee (RMC) to comment on the possibility for the world's first ATV repeater with a digital TV output.

The repeater **GB3FT** (Future Television) is intended to cover the North Hampshire and Wiltshire areas. These are not presently covered by existing or proposed 24cm (1.3GHz) ATV repeaters, but frequency-planning difficulties may arise if a further 24cm unit were considered. Simplex ATV on 2.3GHz is increasing, so it's timely that a 2.3GHz ATV repeater should be presented to the RMC for comment.

Two new parameters will be unique to this proposal. Considering the low occupancy of the 2.3GHz band, together with the design difficulties that low-noise, high gain, wide band ATV receivers are likely to present at this frequency, the RMC will be asked to consider an analogue f.m. r.f. transmitter output power of 100W e.r.p. at 2.370GHz. This is **ten times** the present maximum permitted power for any repeater so, if accepted, will be a major step forward in repeater specifications.

The proposal for GB3FT will also request a second output, centred at 2.386GHz, also at 100W e.r.p. to carry the world's first Digital ATV repeater output. Modulated with an MPEG-2 version of the main analogue output, the DATV output will be to broadcast standards and compatible with current set-top boxes for reception of Digital Terrestrial TV.

At this stage, the Repeater Management Committee is being asked to comment on this idea for a DATV repeater in the 2.3GHz band. If accepted, a formal proposal is expected to be available within a few months.

CLAIMING A FIRST

Claiming a 'first' for anything is always liable to challenge and **Dave Hall G8VZT** responds to the 'first ATV microwave between the Isle of Man into Northern Ireland' mentioned in this column in June. Dave sent me some cuttings from the British ATV Club's magazine *CQ-TV*, which record **Tony GD4CBW** on the Isle Of Man working **Sam GI8GJX** on 10GHz, exchanging P5 ATV pictures way back in 1994. Dave comments: "I hope this may clarify things".

Of course, without asking the world, it can be difficult to establish who was the first to accomplish almost anything. By all means report achievements, but there are a lot of folks out there and the actual first one may not have told the rest of us!

Dave Hall G8VZT with portable microwave ATV.

Dave Hall has been an ardent microwave ATV enthusiast for many years and was responsible for the 10GHz ATV repeater in Telford. He says: "GB3DJ is still going strong and enjoys fairly regular use, including stations within the West Midlands. The Telford Amateur Radio Rally on 2 September will have a Microwave theme this year, with demonstrations up to 76GHz by the Microwave Society. A rally not to be missed"!

GRAHAM G8EMX HAS ALL THE LATEST NEWS FROM THE ATV SCENE INCLUDING A REPORT FROM NEW ZEALAND.

CRAWLEY REPEATER UPDATE

Gary Pitts has an update on the proposed 1.3GHz ATV repeater in Crawley, Sussex: Gary says "At the moment we are doing coverage maps for GB3CT. There are people at the club every evening to turn on the repeater on at 1930 and turn it off at 2300 local time for testing purposes and allow other to try and gain access to it, when the footprints are complete we shall apply for the repeater licence". Thanks for that Gary, keep us posted.

NEW ZEALAND NEWS

Michael Shefield ZL1ABS in New Zealand clarifies why some ATV repeaters in Auckland do not have their own callsigns: "Hi Graham! The site that ZL1BQ operates from is called Niohutupu (try saying nigh-hoe-too-pooh and you'll be about right).

"Way back in the mists of time the old Post Office was in charge of radio licensing. It was decided that as an Amateur had direct control of a repeater when transmitting through it and used his own callsign for identification, as required by the regulations, that callsigns would not be issued for repeaters in ZL. Thus we have been spared c.w. identification, 'K' tones and complex logic.

"Beacons for propagation studies were not under the direct control of an operator, so were issued with their own callsigns for identification. Much later on, unmanned Packet digipeaters and Nodes got callsigns because they needed the other stations using them to have something to 'connect to' by way of an address. Also they could be classed as a, sort of, beacon too".

Michael continues: "ATV repeaters are classed like a voice repeater (directly under the control of the operator working through them using his own callsign for identification) and don't receive callsigns. But only battery powered ATV repeaters operate like a voice repeaters, with the carrier turning off (after a short delay) when there is nothing on the input frequency.

"The majority of ATV repeaters in ZL keep the transmitter going, even when there is nothing on the input, displaying test cards, local cameras, digital clocks, teletext style information pages, various tones or recorded audio messages. This could be perplexing to the viewers, so the adopted practice is for the callsign of the club station of the sponsoring club to be used, when the ATV Repeater is in beacon mode.

Since the second Auckland ATV repeater, located at Whitford, was designed to permanently receive the first Auckland ATV repeater at Niohutupu, it has not got a callsign as such. What you normally see is the ZL1BQ test cards and teletext style pages from Niohutupu.

The callsign ZL1BQ is the club station callsign of the Auckland VHF Group inc. At first there was not even a video generator at Whitford, which presented difficulties whenever the link from Niohutupu was lost. Now there is a video generator at Whitford and it too says ZL1BQ. Two repeaters, one callsign - it couldn't happen in the UK." Thanks for that interesting insight Michael.

As there is increasing ATV above the 1.3GHz band here in the UK, I am planning a 10GHz Special for the next In Vision, so see you all in October!

Graham G8EMX

TUNE-IN

BY TOM WALTERS
P.O. BOX 4440
WALTON
ESSEX
CO14 8BX

E-mail: tom.walters@aib.org.uk

TOM WALTERS PROVIDES US WITH HIS MONTHLY ROUND-UP OF THE HAPPENINGS ON THE HF BROADCAST BANDS.

So the Internet cat is now well and truly among the short wave pigeons! Writing in June for the August issue, the news is of steep cuts in the **BBC World Service** short wave service. Coverage to North America, Australia and New Zealand is to **stop altogether**, and coverage to the Pacific Islands is to be cut back. Perhaps by August listener opinion will have forced a re-think, but I doubt it.

The BBC says that in these areas more people now listen to rebroadcasts, to satellite or to streamed (a fancy word for continuous) programming on the Internet, than to short wave. So no harm will be done. Oh yes? All the thousands of hobbyists will be hit straight away, for a start!

Additionally there must be plenty of areas where people with no Internet or satellite gear, and who are out of reach of a m.w., f.m. or cable rebroadcast station, rely on their faithful shortwave radios. In North America, the distributor of Grundig, and Larry Magne of *Passport to World Band Radio* both claimed that the number of short wave listeners in North America is actually growing.

At the time of writing, the BBC had announced frequency cuts as follows: North America 5.965, 6.135, 6.175, 9.515, 9.590, 11.865 and 15.220MHz (1400-1600), 17.840 (1700-1900); Australia, New Zealand and Pacific Islands 5.975kHz (2000-2200), 9.580, 9.660, 9.740 (1700-2200), 11.955 (0500-1100) and 12.080MHz. There will of course be some spill-over from transmissions intended for other places, and reception in some of these areas was never brilliant at the best of times, but with only a month's notice given of the cuts, there are going to be thousands of angry radio owners out there.

The money saved by the BBC is to be ploughed back into expanding services, including short wave to areas such as Asia. But what a slap in the face for the short wave listeners in the affected areas! At least the DX hobby might take on a new lease of life **but for the wrong reasons**.

In June, bad news was followed by bad news. **Radio Canada International** (RCI) was once again the victim of money troubles. Not government cuts this time, just that the annual budget is not big enough. There won't be enough in the kitty for the next financial year, unless cuts are made. And fairly severe they are too.

Over RCI's seven-language service, there will be no more newscasts at weekends, no morning shows to Africa, the Middle East and Europe, and no evening broadcasts to India. There will be cuts too in Russian, Ukrainian, English and French.

Are the broadcasters trying to do too much with their existing services? Are they claiming that the new media can take the place of radio, in order to save money? Is international short wave radio doomed? The BBC, RCI and a short while ago **Swiss Radio International** have all announced cuts of one sort or the another. It keeps the paymasters happy, but what about the poor old punters?

If you haven't got yourself on the Internet yet, it may prove a good investment, **but not necessarily** for listening. The internet can provide programmes "on demand" (when you want them) but it also has narrow bandwidth low-grade sound, it can be costly, it's subject to sudden breaks and traffic jams, and is limited in the amount of programming that can be made available.

Swiss Radio International is just one of several stations who have announced cuts recently, raising the question is international short wave listening doomed?

To find out directly from the stations mentioned above about the current state of play, try these websites: **www.bbc.co.uk/worldservice**, **www.rcinet.ca**, and **www.swissinfo.org**. These and other stations can also be conveniently accessed via the web site of the Association for International Broadcasting **www.aib.org.uk**

SHREWD MOVE

It seems like a shrewd move to use the Internet for what it's good at, which is providing information. Almost every radio station now has a web site, containing radio information and bonuses in the form of news about the station and the country. So you can get the information from the web, and then do your listening on the radio.

Where the stations are right is that the transmission of international broadcasting is breaking up into many different media - radio, including a.m. satellite radio (such as WorldSpace), DRM (digital AM) and its American equivalent IBOC (using existing f.m. bands); Internet; Internet radio; direct-to-home satellite including DVB (digital video broadcast); rebroadcasting…..you name it, some international broadcaster is using it already, or plans to very shortly.

You need to be aware of these changes, but don't worry, the good old wireless has so many advantages for so many people that **the broadcasters dispense with it at their peril**. So for now, get your information electronically, or by mail or FAX and just keep on sampling the never-ending fascination of worldwide, portable long-distance radio listening

UNLIKELY CHEER

A bit of cheer from, of all unlikely places, Eastern Europe. At the present time, **Radio Yugoslavia** is back on short wave. The schedule for English is: Europe 6.100 at 1830-1900, 2100-2130; Australia at 2200-2230 (not Sats) 7.230MHz; North America at 0000-0030, 0430-0500 on 11.870MHz.

Vatican Radio, bombarded with complaints from the Italian government about health hazards from its short wave transmitters in an Italian residential area, has decided to reduce its transmitter power, thus avoiding an ugly court case that was pending.

Radio Australia has returned to shortwave via Darwin, in the Cox Peninsula. Darwin was Radio Australia's main shortwave transmitting centre until budget cuts forced a sale to evangelical broadcaster Christian Voice. Now Christian Voice is leasing back seven hours per day to Radio Australia for English and Indonesian broadcasts. The service for English is 0000-1030 on 17.775, and at 2200-0000 on 13.620MHz. You see, someone has some sense.

Cheerio for now, don't forget to let me know of any interesting finds on the broadcast bands for inclusion in this column.

Tom

SEND YOUR ADVERT TO PRACTICAL WIRELESS, BARGAIN BASEMENT, ARROWSMITH COURT, STATION APPROACH, BROADSTONE, DORSET BH18 8PW

Bargain Basement

YOUR ATTENTION PLEASE!

Bargain Basement rules - £4 per advert.

Please write your advert **clearly** in **BLOCK CAPITALS** up to a maximum of **30 words**, plus **12 words f**or your contact details on the form provided and send it together with the dated corner flash and your **payment of £4** (**subscribers** can place their advert **free of charge** as long as they provide their **subs number and corner flash**), cheques should be made payable to **PW Publishing Ltd**, credit card payments also accepted. Send your advert to **Bargain Basement, Practical Wireless, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW** or E-mail your advert to **donna@pwpublishing.ltd.uk** (If you don't want to include your credit card details on your E-mail, just 'phone us on **(01202) 659910**).

Please help us to help you by preparing your advert carefully. Any advert which contains **??** marks indicates that the Editorial staff could not read/interpret the wording.

Advertisements from traders or for equipment that it is illegal to possess, use or which cannot be licensed in the UK, will not be accepted. **No responsibility will be taken for errors and no correspondence will be entered into on any decision taken by the Editor on any of these conditions.**

You should state clearly in your advert whether equipment is professionally built, home-brewed or modified. The Publishers of *Practical Wireless* also wish to point out that it is the responsibility of the buyer to ascertain the suitability of goods offered for purchase.

FOR SALE

AOR 3030, £280. Garmin GPSIII, £180. Global 2000 a.t.u., £45.ICS FAX4 weather FAX, £140. All mint and boxed. Tel: (01902) 567070 or (07748) 371971.

BC221 with charts and p.s.u., £15. Variac 0/270V 2A, £10. Lafayette 80/40 v.f.o., £5. Venner counter 10Hz/32MHz, £10. Prefer buyer collects. Syd Fenwick G3AIO, 28 Gimble Way, Pembury, Kent TN2 4BX. Tel: (01892) 822836.

Cushcraft R7000 vertical 40-10m (7-28MHz) in good order with instructions, £120 or reasonable offer. Peter G0WPH, Bristol. Tel: 0117-967 5861.

Drake R4-C 500kHz filter manual, £230. Eddystone 940 companion speaker, £145. FRG100, £225, part exchange Eddystone 940 plynth speaker (wooden) for 670/A or EB36. Tel: 0141-562 4571.

Drake TR7 transceiver plus manual, not working, £50. Icom p.s.u. 13.8V 12-15A, £20. Hanson s.w.r. bridge FS20D 3.5-150MHz, £20 buyer collects. G3XYK, Felixstowe. Tel: (01394) 275285.

Eddystone panoramic display unit 961, Kenwood R5000 receiver, Datong UC-1, converter, Datong ANF audio notch and c.w. filter, Sailor R2122 marine gc receiver, current production, Marconi acceptor (pre-selector) 5420A. Tony, Worcester. Tel: (01905) 641759 or (07798) 881993.

Four ICs and 4MHz crystal for Talking Morse Code Reader (June *Radcom*) cost £24, sell for £15 with track pattern transparency to make p.c.b. using Maplin photo resist board. John G3EGC, Bolton. Tel: (01204) 301502.

FT-200 transceivers two available with FP200 p.s.u. working order, £70 the pair. KW204 TX, £30. Drake MS4 speaker, £20. David, Suffolk. Tel: (01359) 244349.

FT-736R transceiver, 2m (144MHz), 6m (50MHz) & 70cms. (430MHz) box, manual plus tri-plexor, Adonnis mic, power meter, £700. Try it here first and collect please. Tel: Bolton Area (01204) 852446 E-mail: concord6@btinternet.com

Going QRT FT-920 fully loaded, boxed, mint cond. Icom IC-706II,. c.w. filter, all with manual, £1150. carriage extra. Tel: Dave on (01443) 683912.

Grundig Yacht Boy 400, £80 o.n.o. Tel: Tony on 0141-944 3865.

IC-207 2m (144MHz) f.m. transceiver only three months old. Too many buttons and knobs for an old man. Cost £269 make me a sensible offer. Alan G0HBC, Solihull. Tel: 0121-745 1000.

IC-701 h.f. TCVR, IC-701PS, IC-RM3 remote, IC-EX1 extension, IC-SM2 mic, manuals, g.w.o., £300. FL-2277 h.f. linear amp 1kW input, manual g.w.o., £250. Tony, Ilford. Tel: 0208-554 8187.

Icom 706 pristine condition with seperation kit, £450. Icom IC-32E new NiCads, boxed, £125. Eddystone EC10 MkII, £75. Datong AD-270 active antenna, £38. Alinco EJ26U encoder unit for DX70, NEW £260. Tel: (01937) 844197.

Icom IC75A h.f. TXCVR all bands inc WARC + gc 100W extras built in, p.s.u. c.w. filters fitted HM35, mic manual, original box, £400. Ken G3RFH, Blackpool. Tel: (01253) 407952.

Icom R-70 general communications receiver, f.m. board, DC kit, good condition boxed, £275 o.v.n.o. Stewart G1HHO, QTHR. Tel: Bournemouth (01425) 621945.

Jaybeam TB3 MkII 10 (28MHz), 15 (21MHz), 20m (14MHz) tri-band antenna in good condition, £150 o.n.o. with handbook, buyer collects. Wanted FV102DM v.f.o. in good condition. Tel: (01788) 860550.

Kenwood TS-120v h.f., s.s.b. transceiver, remote v.f.o. 120, tl 120 linear amp, ps-30 power supply, d.f.c. 230 freq controller, boxed as new, £600 no offers. Tel: (01282) 693573 between 6-8pm.

Kenwood TRX/RX TS-430s, perfect Kenwood SPK mic, Yaesu power pack, dummy load 5**????** etc., complete station, all perfect, any trial. £500. Tel: (02392) 376008.

Kenwood TS-690s all-mode TX/RX h.f. plus 6m (50MHz), narrow s.s.b. filter and voice read-out. Speaker and p.s.u., £590. Also Kenwood AT-300 remote smart antenna tuner, £260. Tel: Norfolk (01263) 515908.

Kenwood R1000 shortwave receiver 0-30MHz very good condition with manual, original box only, £120 plus postage, also Yupiteru 125 airband scanner with base stand, manual, books, charger, £90 post. Tel: (01608) 662488.

Kenwood 440 full h.f. internal tuner, recent W&S overhaul, a little jewel, £229 + P&P. MFJ Versa tuner 1.5kW, £80 as new. Tel: (01634) 379140.

Lattice tower three section tilt over 55ft with rotator, £30. FT-736 144, 430, 50MHz, £500. Pakratt 232, £50. FRG-7700 plus a.t.u., £123. Yaesu SP102 speaker, £45. Tel: Kent (01634) 407717.

National Panasonic receiver, 11 wave bands digital read-out on seven short wave bands, g.w.o., £95. Racal receiver RA17 g.w.o., £70. Tel: Coventry (02476) 265498.

Oscilloscope Telequipment D61A. Dual-beam 0.5micro/sec. Time base no handbook, £45. Tel: (01268) 750744.

Printer Citizen 9 spare ribbons, £35. Wavemeter AKD WA3, £40. v.h.f./u.h.f. Rod aerial, £10. Realistic receiver, 400 channels, PRO 2005, £120. SWR meter 2000W, £40 P&P extra or collect. G3ZJH, Bristol. Tel: 0117-969 1025.

RA17, £90. R209Mk, £40. TCS46159, £40. C12 (inc p.s.u., a.t.u.), £120. BC22IT, £30. Eddystones 750, £70. 770R/1, £75. 730/4, £65. All working condition, buyer

Yaesu FT-102, £200. FC102, £125. FV102DM, £150. SP102, £50. MDI, £50. FR100B, £50. FL200B, £50. JRC NRD-525, £200. Trio TR-78800, £75. Alinco DJ-180, £75. IC-706MkII seperation kit, £450 o.v.n.o. Alex G0JZE, Chipping Norton, Oxon. Tel: (01608) 643585.

collects. Colin M5CTR, East Hertfordshire.
Tel: (01279) 777091.

Racal RA17L receiver, 500kHz to 30MHz in working order, 3120. Tel: Cheltenham (01242) 690020.

Rare collectors item FT-150 TCVR, g.w.o. needs tlc, £100. HW8 newly built kit complete with Heathkit p.s., good condition, £125. FRG-7700 RX., g.w.o., £150. Buyer inspects, collects. Jock, Chorley, Lancs.
Tel: (01257) 792070.

Signal R535 airband receiver v.h.f./u.h.f., battery, case, £215 o.n.o. Dressler ARA60 antenna co-axial lead with BNC mains adaptor, new, £170, bargain at £98. Tel: Warwicks (01926) 854556.

Two Amphenol coaxial relays silver plated N connectors 26V coils, £15 each also large quantity N plugs fro RG58. Tel: Nick on (01453) 883519.
Tel: (01865) 374868.

Yaesu 290R + charger + case + mic, £120. Microwave Modules 30W pre-amp, £75. VSWR meter, £10. Drae power unit 13V, £25 or the lot for £200.
John Mirams, 33a The Moors, Kidlington, Oxon, OX5 2AH.

Yaesu FT-900CAT in mint condition have Collins filters in and a.t.u., £550. FP800 p.s.u. for the FT-900, £150. Ten-Tec Pegasus DSP h.f. transceiver 100W computer control have all option key pad tuning knob and MC702 mic all in tip-top order, £650. All radios are boxed.
Tel: G0UUT on (01603) 742733 or E-mail: g0uut@arrl.net

Yaesu 902DM 0-30MHz s.s.b. RTTY, a.m./f.m. ex cond, serviced, manual, £300. TET 2-ele Triband beam 10/15/17/20m, good condition, stainless steel parts, £40. G0ONH, QTHR, Barry, Halesowen. Tel: 0121-559 9734.

Yaesu FT-901DM line-up inc. FTV901, SP901 plus spare FT-901 full working order with c.w. filter and manual, £485. Yaesu FR101/FL101 seperates, super condition, boxed, £275. Tel: Simon on (01434) 633913 or E-mail: simon@norris.co.uk

Yaesu FT-920 v.g.c. gen, cov. Three years old bought from M L @ S, boxed, £725. Bird wattmeter model 4304a with 500W slug 25-1000MHz, £100 o.n.o. Tel: (01793) 337089 or E-mail: derek.wilson1@ntlworld.com

Yaesu FT-480 s.s.b., f.m., c.w., 10W, g.w.o., 2m (144MHz) complete with handbook, mic, £100 if collected free power supply, too heavy to post. Tel: GW3XJC on (01656) 733729 or E-mail: lukes@btinternet.com

ZC1MkII transceiver WWII with internal 240V a.c. power supply. Internal speaker plus S-meter, super reception, good condition, £195. Also Collins TCS 240V a.c. speaker and S-meter, £155.
Tel: (01872) 862291.

EXCHANGE

Gamba Daytona Shoteun valve, £2000 and/or Boss hammer gun value £1800 both immaculate s/e certificate, holders only for h.f. rig, accessories or w.h.y.? John, Peterborough. Tel: (01733) 232277.

WANTED

Can anybody help to teach me to get a Amateur Radio licence in the Angelsey, North Wales area only or advise on any clubs or courses running in that area. Please Tel: (01407) 761670.

Looking for Drake receiver 1A, 2A, 2B, 2C in good order please. Tel: G0UUT on (01603) 742733 or E-mail:g0uut@arrl.net

Original or photocopy of operating instructions for Hansen FS210 automatic s.w.r. and power meter, costs reimbursed. Bill, Looe, Cornwall. Tel: (01503) 263495.

Manual and modification for Trio 9R-59DS any other information.
Tel: 0141-562 4571.

Transformer for AVO valve tester would be glad to purchase AVO not working but good transformers. Can anybody rewind a transformer? Also need meter for AVO valve analyser. Pascal GI0SFT. Tel: (02871) 352804 after 6pm.

Kenwood TS-940 transceiver for spares. E-mail details and price to tony.dolby@wanadoo.fr

PHOTOS

Now's your chance to send in a photograph of your equipment (a good idea if it's really unusual) to accompany your advert. Please note that **all photos** will ony be **published at our discretion** and are **non-returnable.**
When sending in your advert, please write **clearly** in **BLOCK CAPITALS** up to a maximum of 30 words, plus state your contact details. Please use the order form provided.

BARGAIN BASEMENT ORDER FORM

Please insert this advertisement in the next available issue of *Practical Wireless.*

❑ **For Sale** ❑ **Wanted** ❑ **Exchange**

Don't forget the corner flash!!

Name .....

Address .....

.....

..... Post Code .....

Telephone Number .....

CARD NUMBER

Signature .....

Expiry date of card.....

My Subs Number is .....

(or mailer label).....

please write in block capitals

	(30)		

CONTACT DETAILS FOR ADVERT.

Please only write in the contact details you wish to be published with your advert, ie. do you want your name & address, or just your telephone number?

Your advert, you decide!

			(12)

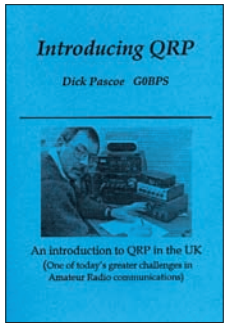
Book Store

BUY of the MONTH

Introducing QRP

Dick Pascoe G0BPS provides an introduction to QRP in the UK in this concise A5 sized publication. Covering topics such as What is QRP?, Typical QRP Equipment, Station Accessories and Operating Skills to name a few this book shows how 'power is no substitute for skill'. Although first published in 1996 *Introducing QRP* is still a useful reference book that all QRPers should keep close at hand.

Introducing QRP can be yours for the new price of **£4.95 plus £1.25 P&P (UK), £4.95 plus £2.50 P&P (overseas)**. Order yours today!



To order either use the form on page 76 or please call the PW Book Store on (01202) 659930

LISTENING GUIDES

Airband

	Pages	Price
AIRBAND RADIO GUIDE 5 h Edition	112	£8.99
AIR TRAFFIC CONTROL (abc) 8th Edition	112	£8.99
AIRWAVES 2001	134	£9.95
CALLSIGN 2001	168	£9.95
CIVIL AIRCRAFT MARKINGS (abc)	384	£7.99
FLIGHT ROUTINGS 2001. Williams	160	£7.95
MILITARY AIRCRAFT MARKINGS (abc)	224	£7.99
NORTH ATLANTIC FLIGHT COMMUNICATIONS 2nd Edition (inc. software)	172	£16.50
UNDERSTANDING ACARS 3rd Edition. Aircraft Communications Addressing and Reporting System. Ed Flynn	80	£9.95
WORLD AIRLINE FLEET & SELCAL DIRECTORY	300	£16.00
WORLDWIDE AERONAUTICAL COMMUNICATIONS FREQUENCY DIRECTORY 2nd Edition. Robert E. Evans	260	£19.95

Datamodes

FAX & RTTY WEATHER REPORTS. Philip Mitchell	88	£11.50
KLINGENFUSS 2001/2002 GUIDE TO WORLD-WIDE WEATHER SERVICES 20 h Edition Joerg Klingenfuss	436	£20.00
WEATHER REPORTS FROM RADIO SOURCES 3rd Edition. Philip Mitchell	32	£7.50

DXTV

DXTV FOR BEGINNERS. Simon Hamer	31	£3.95
GUIDE TO DXTV. Kei h Hamer & Garry Smi h	36	£3.95
GUIDE TO WORLDWIDE TV TEST CARDS	60	£4.95
MASTS - PRACTICAL IDEAS FOR THE DXER. Kei h Hamer & Garry Smith	36	£4.95
THIS IS BBC TV - FIRST 30YRS OF TV GRAPHICS. Kei h Hamer & Garry Smith	38	£4.95
THE FIRST 30 YEARS OF BBC-2. Kei h Hamer & Garry Smith	60	£4.95

Frequency Guides

2001 SUPER FREQUENCY LIST on CD-ROM. Joerg Klingenfuss	n/a	£16.00
FERRELL'S CONFIDENTIAL FREQUENCY LIST, 12 h Edition	450	£19.95
GLOBAL BROADCAST GUIDE 2001	32	£1.95
GUIDE TO UTILITY RADIO STATIONS 2001. 19 h Edition. Joerg Klingenfuss	580	£26.00
PASSPORT TO WORLD BAND RADIO 2001	528	£15.50
PROMA SCANNING SCENE CD	n/a	£4.75
RADIO LISTENERS GUIDE 2001	128	£5.25
SHORTWAVE FREQUENCY GUIDE 2001 - 5 h Edition. Joerg Klingenfuss	564	£23.00
WORLD RADIO TV HANDBOOK 2001	640	£19.95

General

BUYING A USED SHORT WAVE RECEIVER - New 4th Edition. F. Oste man	78	£5.95
GETTING ON TRACK WITH APRS. Stan Horzepa WA1LOU	165	£11.50
POP WENT THE PIRATES. Kei h Skues	568	£16.95
RADIO COMMUNICATIONS HANDBOOK. 7th Edition. Dick Biddulph/Chris Lorek	580	£29.99
RADIO SCIENCE OBSERVATION Volume 1 (inc. CD-ROM). Joe Carr	414	£26.95
SHORT WAVE COMMUNICATIONS. Peter Rouse GU1DKD	187	£4.50
SHORT WAVE RADIO LISTENING FOR BEGINNERS	174	£14.95
SHORTWAVE RECEIVERS PAST & PRESENT (3rd Edition)	450	£25.95

Satellite

AN INTRODUCTION TO SATELLITE COMMUNICATIONS BP326. F.A. Wilson	230	£5.95
ARRL SATELLITE ANTHOLOGY 5 h Edition	150	£11.50
NEWNES GUIDE TO SATELLITE TV. Derek Stephenson	371	£19.95
SATELLITE EXPERIMENTERS HANDBOOK (ARRL). Martin Davidoff K2UBC	370	£15.50
SATELLITE PROJECTS HANDBOOK. Lawrence Harris	174	£14.99
SATELLITE TELEVISION. A layman's guide. Peter Pearson	73	£1.00
WEATHER SATELLITE HANDBOOK. 5 h Edition. Dr Ralph E. Taggart WB8DQT	192	£15.50

Scanning

AN INTRODUCTION TO SCANNERS AND SCANNING BP311. I.D. Poole	152	£4.99
SCANNER BUSTERS 2. D.C. Poole	100	£6.00
SCANNERS 2 INTERNATIONAL. Peter Rouse GU1DKD	261	£12.95
SCANNERS 4 SCANNING INTO THE FUTURE. Bill Robertson	245	£9.95
SCANNING THE MARITIME BANDS. 2nd Edition	158	£9.75
UK SCANNING DIRECTORY New 7th Edition	604	£19.50
ULTIMATE SCANNING GUIDE. Richard Allport	640	£19.99

AMATEUR RADIO

Amateur Television

AN INTRODUCTION TO AMATEUR TELEVISION. Mike Wooding G6IQM & Trevor Brown G8CJS	156	£5.00
THE AMATEUR TV COMPENDIUM. Mike Wooding G6IQM	104	£3.50

Antennas & Transmission Lines

	Pages	Price
25 SIMPLE AMATEUR BAND AERIALS BP125. E.M. Noll	63	£1.95
25 SIMPLE INDOOR AND WINDOW AERIALS BP136. E.M. Noll	50	£1.75
25 SIMPLE SHORT WAVE BROADCAST BAND ANTENNAS BP132)	48	£1.95
25 SIMPLE TROPICAL AND MW BAND AERIALS BP145. E.M. Noll	54	£1.75
ANTENNA IMPEDANCE MATCHING (ARRL). Wilfred N. Caron	195	£15.50
ANTENNA TOOLKIT (inc. CD-ROM). Joseph J. Carr	214	£25.00
ARRL ANTENNA BOOK 19 h Edition	732	£24.00
ARRL ANTENNA BOOK ON CD-ROM	n/a	O/P
ARRL ANTENNA COMPENDIUM Volume One	175	£10.50
ARRL ANTENNA COMPENDIUM Volume Two.	208	£10.50
ARRL ANTENNA COMPENDIUM Volume Three. Edited by Jerry Hall K1TD	236	£11.50
ARRL ANTENNA COMPENDIUM Volume Four	204	£16.50
ARRL ANTENNA COMPENDIUM Volume Five	200	£16.50
ARRL ANTENNA COMPENDIUM Volume Six (inc. CD-ROM)	200	£18.50
BACKYARD ANTENNAS. Peter Dodd G3LDO	200	£18.99
BEAM ANTENNA HANDBOOK. W.I. Orr W6SAI & S.D. Cowan W2LX	268	£8.95
BUILDING & USING BALUNS. Jerry Sevick	125	£18.95
CUBICAL QUAD ANTENNAS 3rd Edition. William Orr W6SAI and Stuart Cowan W2LX	110	£8.95
EXPERIMENTAL ANTENNA TOPICS BP278. H.C. Wright	70	£3.50
G-QRP CLUB ANTENNA HANDBOOK. Compiled and edited by P. Linsley G3PDL & T. Nicholson KA9WRI/GW0LNQ	155	£7.25
HF ANTENNA COLLECTION RSGB). Edited by Erwin David G4LQI	233	£9.99
HF ANTENNAS FOR ALL LOCATIONS RSGB). Les Moxon G6XN	322	£7.99
MORE OUT OF THIN AIR PWP).	112	£6.95
"ON4UN'S" LOW BAND DXING (ARRL). J. Devoldere	330	£23.00
PHYSICAL DESIGN OF YAGI ANTENNAS (Hardback) D.B. Leeson W6QHS	200	£15.50
PRACTICAL ANTENNA HANDBOOK 3rd Edition. (inc. software) Joseph J. Carr	580	£33.45
RADIO ANTENNAS & PROPAGATION. William Gosling	260	£19.99
RADIO AMATEUR ANTENNA HANDBOOK. W.I. Orr W6SAI & S.D. Cowan W2LX	188	£8.95
RECEIVING ANTENNA HANDBOOK. Joe Carr	189	£17.50
SIMPLE, LOW-COST WIRE ANTENNAS FOR RADIO AMATEURS	224	£8.95
THE RIGHT ANTENNA. How To Select & Install Antennas For Entertainment & Communication Devices. 2nd Edition. Alvis J. Evans	78	£16.95
THE TRUTH ABOUT CB ANTENNAS. (Orr & Cowan) W.I. Orr W6SAI & S.D. Cowan W2LX	188	£8.95
VERTICAL ANTENNAS. W.I. Orr W6SAI & S.D. Cowan W2LX	192	£8.95
VERTICAL ANTENNA CLASSICS (ARRL). R. Schetsen	123	£11.50
WIRE ANTENNA CLASSICS (ARRL)	144	£11.50
YOUR ANTENNA COMPANION. Paul Danzer	130	£7.50

Beginners (inc RAE)

AN INTRODUCTION TO AMATEUR RADIO - (BP257). Ian Poole G3YWX	150	£4.99
BASIC RADIO PRINCIPLES & TECHNOLOGY. Ian Poole G3YWX	262	£15.99
BASIC RADIO & ELECTRONIC CALCULATIONS. Ray Petri G0OAT	160	£13.95
AN RAE STUDENTS NOTEBOOK. Bob Griffiths G7NHB	76	£6.95
PRACTICAL RECEIVERS FOR BEGINNERS (RSGB). John Case GW4HWR	165	£14.50
PRACTICAL TRANSMITTERS FOR NOVICES. John Case GW4HWR	126	£12.50
RADIO AMATEURS EXAMINATION/END OF COURSE TEST PAPERS. Ray Petri G0OAT	104	£13.95
RAE MANUAL (RSGB). New Revised Edition	127	£15.00
RAE REVISION NOTES RSGB)	92	£5.25
THE NOVICE LICENCE STUDENT'S NOTEBOOK. John Case GW4HWR	124	£6.00
THE NOVICE RADIO AMATEURS EXAMINATION HANDBOOK (BP375) Ian Poole G3YWX	150	£4.95
THE RADIO AMATEURS' QUESTION & ANSWER REFERENCE MANUAL. 5th Edition. Ray Petri G0OAT	208	£13.95
TRAINING FOR THE NOVICE LICENCE A MANUAL FOR THE INSTRUCTOR (RSGB) John Case GW4HWR	101	£6.75
YOUR FIRST AMATEUR STATION. RSGB) Colin Redwood G6MXL	120	£5.75

Callbooks

RSGB YEARBOOK 2001 Edition	460	£15.99

Computing

AN INTRODUCTION TO THE WORLDWIDE WEB FOR PC AND MAC USERS. BP390) D.C. & O. Bishop	148	£6.99
HOW TO EXPAND & UPGRADE YOUR PC BP450 R.A. Penfold	170	£6.99
INTERFACING PCs AND COMPATIBLES BP467. R.A. Penfold	86	£4.99
NEWNES COMPUTER ENGINEER'S POCKET BOOK 3rd Edition. Michael Tooley	256	£12.95
PERSONAL COMPUTERS IN THE HAM SHACK (ARRL)	284	£11.50
THE INTERNET AND WORLD WIDE WEB EXPLAINED. J. Shelley	130	£5.95
WINDOWS '98 ASSISTANT BP454) I. Sinclair	160	£6.99
WINDOWS '98 EXPLAINED (BP456). N. Kantaris & P. Oliver	160	£6.99
WINDOWS '98 - HARD DISK & FILE MANAGEMENT. (BP455) J. Gatendy	160	£6.99

EMC

ARRL RFI BOOK (Practical Cures For Radio Frequency Interference)	316	£15.50
INTERFERENCE HANDBOOK. William R. Nelson WA6FQG	250	£9.50
RSGB GUIDE TO EMC. 2nd Edition. Robin Page-Jones G3JWI	204	£18.50

Historical

	Pages	Price
100 RADIO HOOK UPS. 2nd Edition (reprinted)	48	£3.35
1934 OFFICIAL SHORT WAVE RADIO MANUAL. Edited by Hugo Gernsback	260	£11.85
COLLECTOR'S GUIDE TO ANTIQUE RADIO 4th Edition. Marty & Sue Bunis	248	£19.95
COLLECTOR'S GUIDE TO TRANSISTOR RADIOS (2nd Edition). Marty & Sue Bunis	320	£16.95
COMMUNICATIONS RECEIVERS - THE VACUUM TUBE ERA. R.S. Moore	141	£17.95
DOUBLE TESLA-OUDIN COIL	24	£3.95
GUIDE TO OLD RADIOS, POINTERS, PICTURES, PRICES. David & Betty Johnson	278	£19.95
HENLEYS 222 RADIO CIRCUIT DIAGRAMS (1924)	271	£9.45
HOW TO BUILD THE TWINPLEX REGENERATIVE RECEIVER. Lindsay	63	£5.75
HOW TO BUILD YOUR FIRST VACUUM TUBE REGENERATIVE RECEIVER. T.J. Lindsay	127	£7.30
HOW TO BUILD YOUR RADIO RECEIVER (A4) Popular Radio Handbook No. 1)	100	£6.95
HOW TO MAKE A NEUTRODYNE RECEIVER. Webb	63	£5.00
MARCONI'S ATLANTIC LEAP (H/B)	96	£6.99
RADIO TESLA	36	£5.95
SAGA OF MARCONI OSRAM VALVE Paperback). B Vyse	346	£25.00
SECRETS OF HOMEBUILT REGENERATIVE RECEIVERS Rockey)	127	£7.95
SEEING BY WIRELESS - THE STORY OF BAIRD TELEVISION. Ray Herbert	27	£4.95
TESLA - THE TRUE WIRELESS	16	£3.95
THOSE GREAT OLD HANDBOOK RECEIVERS (1929 & 1934)	94	£6.95
TRANSISTOR RADIO! - A COLLECTOR'S ENCYCLOPEDIA & PRICE GUIDE. David & Robert Lane	170	£19.95
VISION BY RADIO (1925) (Jenkin)	140	£7.85
WATCHERS OF THE WAVES. Brian Faulkner	118	£13.50
WORLD AT THEIR FINGERTIPS (RSGB)	290	£9.99

Crystal Set Books

THE XTAL SET SOCIETY NEWSLETTER. Volume 1 & 2 Combined. Phil Anderson W0XI	96	£14.00
THE CRYSTAL SET HANDBOOK & VOL. 3 XTAL SET SOCIETY NEWSLETTER. Phil Anderson W0XI	134	£8.00
THE XTAL SET SOCIETY NEWSLETTER. Volume 4. Phil Anderson W0XI	88	£7.00
CRYSTAL RECEIVING SETS & HOW TO MAKE THEM	124	£7.95
CRYSTAL SETS. The Xtal Set Society Newsletter, Volume 5. Phil Anderson W0XI	88	£7.00
CRYSTAL SET BUILDING & MORE		£10.50
CRYSTAL SET PROJECTS	160	£10.00
CRYSTAL RADIO HISTORY, FUNDAMENTALS AND DESIGN. P.A. Kinzie	122	£8.00
CRYSTAL SET LOOPERS, A3 TUBER & MORE. Volume 8 Xtal Set Society Newsletter	128	£10.50

Maps & Log Books

AMATEUR RADIO LOGBOOK RSGB)	50	£3.75
AMATEUR RADIO WORLD ATLAS (A4 size)	20	£8.00
GREAT CIRCLE MAP 600mm x 600mm	n/a	£1.50
NORTH ATLANTIC ROUTE CHART	740 x 520mm	£9.00
QTH LOCATOR MAP OF EUROPE. New Edition due Sept 2001	1080 x 680mm	£7.00
RADIO AMATEURS MAP OF THE WORLD. New Edition	980 x 680mm	£7.00

Morse

SECRETS OF LEARNING MORSE CODE Mark Francis	84	£6.95

Microwaves

AN INTRODUCTION TO MICROWAVES (BP312). F.A. Wilson	134	£3.95
ARRL UHF/MICROWAVE EXPERIMENTER'S MANUAL. Various Authors	446	£15.50
ARRL UHF/MICROWAVE PROJECT MANUAL VOL 2	160	£11.50
ARRL UHF/MICROWAVES PROJECT MANUAL (ARRL)	352	£15.50
MICROWAVE & WIRELESS COMMUNICATIONS TECHNOLOGY. Joseph J. Carr	436	£35.00
MICROWAVE HANDBOOK - COMPONENTS & OPERATING VOL 1 (RSGB)	110	£12.00
MICROWAVE HANDBOOK - CONSTRUCTION & TESTING VOL 2 RSGB)	120	£18.99
MICROWAVE HANDBOOK - BANDS & EQUIPMENT VOL 3 RSGB)	140	£18.99

Operating & Handbooks

ALL ABOUT HAM RADIO. Harry Helms	290	£16.50
AMATEUR RADIO OPERATING MANUAL RSGB)	257	£24.99
ARRL HANDBOOK 2001 77th Edition	380	£25.00
ARRL OPERATING MANUAL New Edition	420	£18.50
ARRL RADIO BUYERS SOURCEBOOK VOL 1 (QST Reviews 1981-1991)	280	£11.50
ARRL RADIO BUYERS SOURCEBOOK VOL 2 (QST Reviews 1991-1993)	240	£11.50
ARRL VHF/UHF RADIO BUYER'S SOURCEBOOK	120	£11.50
COMPLETE DX'ER. Bob Locher	204	£9.50
DISCOVERING DXING (2nd Edition). John Zondlo	90	£7.50
GUIDE TO VHF/UHF AMATEUR RADIO. Ian Poole G3YWX	106	£8.99
HAM RADIO MADE EASY (ARRL). Steve Ford	204	£11.50
HINTS AND KINKS FOR THE RADIO AMATEUR. Edited by Charles L. Hutchinson & David Newkirk	129	£9.50
LOW PROFILE AMATEUR RADIO (ARRL). Jim Kearman KR1S	124	£7.50
LF EXPERIMENTERS HANDBOOK	112	£18.99
SETTING UP AN AMATEUR RADIO STATION BP300. I.D. Poole	81	£3.95
RSGB PREFIX GUIDE	34	£6.95

Packet

HF DIGITAL COMPANION. Steve Ford	120	£7.50
NOS INTRO: TCP/IP OVER PACKET RADIO. Ian Wade G3NRW	356	£11.50
PACKET RADIO PRIMER RSGB). Dave Comber G8UYZ & Martyn Corft G8NZU	266	£8.95
PACKET, SPEED & MORE SPEED APPLICATIONS (ARRL)	148	£10.50
YOUR PACKET COMPANION. Steve Ford WB8IMY	170	£7.50

Propagation

AN INTRODUCTION TO RADIO WAVE PROPAGATION BP293. J.G. Lee	116	£3.95
YOUR GUIDE TO PROPAGATION (RSGB) Ian Poole	88	£6.95

QRP

ARRL LOWER POWER COMMUNICATIONS - THE ART & SCIENCE OF QRP. Richard Arland K7SZ204 £11.50		
LOW POWER SCRAPBOOK RSGB)	320	£12.99
QRP POWER (ARRL)	188	£11.50
INTRODUCING QRP. Dick Pascoe G0BPS	48	£4.95
W1FB's QRP NOTEBOOK (ARRL). 2nd Edition. Doug DeMaw W1FB	175	£8.00

Test Equipment

AN INTRODUCTION TO THE ELECTROMAGNETIC WAVE BP315. F.A. Wilson	122	£4.95
BUILD YOUR OWN TEST EQUIPMENT. Davidson	285	£19.95
GETTING THE MOST FROM YOUR MULTIMETER BP239. R.A. Penfold	102	£2.95
OSCILLOSCOPES & HOW TO USE THEM. 5 h Edition.		£18.99
HOW TO USE OSCILLOSCOPES & OTHER TEST EQUIPMENT BP267. R.A. Penfold	104	£3.50
TEST EQUIPMENT CONSTRUCTION BP248. R.A. Penfold	104	£3.99
TEST EQUIPMENT FOR THE RADIO AMATEUR. Clive Smi h G4FZH	170	£10.95

VHF

ALL ABOUT VHF AMATEUR RADIO. W. I. Orr W6SAI.	163	£8.95
GUIDE TO VHF/UHF AMATEUR RADIO	180	£8.99
VHF/UHF HANDBOOK (RSGB). Dick Biddulph G8PDS	180	£22.00
YOUR MOBILE COMPANION. Roger Butch	190	£8.50
YOUR VHF COMPANION. Steve Fo d	230	£7.50

ELECTRONICS

General

BEGINNERS GUIDE TO MODERN ELECTRONIC COMPONENTS BP285	166	£4.99
CIRCUIT SOURCE BOOK 1 - BP321. R.A. Penfold	182	£4.95
CIRCUIT SOURCE BOOK 2 - BP322. R.A. Penfold	214	£4.95
DIGITAL ELECTRONICS (CD-ROM). Mike Tooley	n/a	£45.00
ELECTRONIC PROJECT BUILDING FOR BEGINNERS. R. Penfold. (BP392)	110	£4.95
ENCYCLOPEDIA OF ELECTRONIC CIRCUITS Vol. 7	1128	£32.95
FAULT FINDING ELECTRONIC PROJECTS BP391	133	£4.99
GETTING STARTED IN PRACTICAL ELECTRONICS BP345. Owen Bishop	198	£4.95
HOW ELECTRONIC THINGS WORK... AND WHAT TO DO WHEN THEY DON'T, Goodman	390	£16.95
HOW TO TEST ALMOST EVERYTHING ELECTRONIC	326	£16.95
LADDER CRYSTAL FILTERS. John Pivnichny N2DCH	134	£14.95
NEWNES AUDIO AND HI-FI ENGINEER'S POCKET BOOK 3rd Edition. Vivian Capel.	210	£14.95
PARTS GALLERY & ELECTRONICS CIRCUITS & COMPONENTS (CD-ROM). Mike Tooley .	n/a	£35.00
PICTUTOR (CD-ROM). John Decker	n/a	£45.00
POWER SUPPLY PROJECTS BP76. R.A. Penfold	89	£3.99
PRACTICAL DIGITAL ELECTRONICS FOR TECHNICIANS. Will Kimber	262	£12.99
PRACTICAL ELECTRONIC FILTERS BP299. Owen Bishop	89	£4.95
PRACTICAL ELECTRONICS HANDBOOK. Ian Sinclair	439	£14.95
PRACTICAL OSCILLATOR CIRCUITS BP393. A. Flind	136	£4.99
RADIO ENGINEERS FACTFINDER FOR WINDOWS (Floppy Disk) John Davies	n/a	£18.00
RADIO FREQUENCY TRANSISTORS, PRINCIPLES & PRACTICAL APPLICATIONS Dye/Granberg (Motorola). Hardback	235	£39.95
SCROGGIES - FOUNDATIONS OF WIRELESS & ELECTRONICS. 11 h Edition	292	£19.99
TECHNICAL TOPICS SCRAPBOOK (RSGB). 1995-99. Pat Hawker	310	£13.50
THE ART OF SOLDERING BP324. R. Brewster	84	£3.99
THE SUPERHET RADIO HANDBOOK I.D. Poole	104	£4.95
UNDERSTANDING BASIC ELECTRONICS (ARRL)	314	£15.50
UNDERSTANDING DIGITAL TECHNOLOGY. F. Wilson. BP376)	110	£4.95
W1FB's DESIGN NOTEBOOK (ARRL). Doug DeMaw W1FB	195	£8.00

Data

ARRL ELECTRONICS DATA BOOK. Doug DeMaw W1FB	260	£8.95
ELECTRONIC HOBBYIST DATA BOOK BP396. R.A. Penfold	242	£5.95
PRACTICAL ELECTRONIC DESIGN DATA BP316. Owen Bishop	327	£5.99
PRACTICAL RF HANDBOOK (2nd Edition). Ian Hickman	302	£19.99
RF CIRCUIT DESIGNS. Chris Bowick	176	£18.99
SECRETS OF RF CIRCUIT DESIGN. New Edition (Hardback) Joseph Carr	405	£41.95
SOLID STATE DESIGN FOR THE RADIO AMATEUR (ARRL) Les Hayward W7ZOI & Doug DeMaw W1FB	256	£11.50
SPREAD SPECTRUM SOURCE BOOK	320	£15.50
TOWERS INTERNATIONAL MOSPOWER & OTHER FET SELECTOR	140	£19.95
TOWERS INTERNATIONAL TRANSISTOR SELECTOR - UPDATE 5	476	£24.95
TRANSISTOR DATA TABLES (BP401)	178	£5.95

Projects

33 SIMPLE WEEKEND PROJECTS/CQ	68	£7.95
BUILD YOUR OWN INTELLIGENT AMATEUR RADIO TRANSCEIVER.Randy L. Henderson	350	£25.95
COIL DESIGN & CONSTRUCTION MANUAL BP160. B.B. Babani	106	£3.95
HOW TO DESIGN & MAKE YOUR OWN PCBs BP121. R.A. Penfold	66	£3.99
MORE ADVANCED POWER SUPPLY PROJECTS BP192. R.A. Penfold	92	£2.95
PROJECTS FOR RADIO AMATEURS & SWLs BP304. R.A. Penfold	92	£3.95
RADIO RECEIVER PROJECTS YOU CAN BUILD	312	£20.95
SIMPLE SHORT WAVE RECEIVER CONSTRUCTION BP275. R.A. Penfold	88	£3.95

Valves/Tubes

ELECTRON TUBE LOCATOR. George H. Fathauer	350	£21.95
HANDBOOK OF RADIO, TV, INDUSTRIAL & TRANSMITTING TUBE & VALVE EQUIVALENTS	60	£3.45
RADIO VALVE GUIDE BOOK VOL 1	54	£3.45
RADIO VALVE GUIDE BOOK VOL 2	42	£3.45
RADIO VALVE GUIDE BOOK VOL 3	40	£3.45
RADIO VALVE GUIDE BOOK VOL 4	48	£3.45
RADIO VALVE GUIDE BOOK VOL 5	44	£3.45
MASTER INDEX TO VALVE TYPES, BOOKS 1-5	40	£1.50
TUBE SUBSTITUTION HANDBOOK	150	£15.50
VALVE AMPLIFIERS. Morgan Jones	374	£25.00
VALVE & TRANSISTOR AUDIO AMPLIFIERS. John Lindsay Hood	310	£19.95

The quickest and most comprehensive radio book service in the UK.

Telephone (01202) 659930

E-MAIL: bookstore@pwpublishing.ltd.uk

FAX: (01202) 659950

OR USE THE ORDER FORM ON PAGE 76

MasterCard DELTA AMERICAN EXPRESS SWITCH VISA

Please note: *Cash not accepted with mail orders.*

To advertise on this page see the booking form below.

Classified Ads

Whilst prices of goods shown in advertisements are correct at the time of going to press, readers are advised to check both prices and availability of goods with the advertiser before ordering from non-current issues of the magazine.

For Sale

TECHNICAL MANUALS, AR88, CR100, R210, HR0. £5 each. Circuits £1.50. Hundreds available. SAE list. Bentley, 27 De Vere Gardens, Ilford, Essex IG1 3EB.
Tel: 0181-554 6631.

VINTAGE SERVICE DATA. Radio, Audio, Electrical, TV & Cimema - 1900 to 1970s. Complimentary Newsheet.
50 Meddon St, Bideford, Devon,
EX39 2EQ. Tel/Fax 01237 424280.
E-mail: savoy.hill@virgin.net
Web Site: http//freespace.virgin.net/tudor.gwilliam-rees Visa & Mastercard.

THE RF-KIT CATALOGUE. send 2x 2nd class stamps or browse
www.rf-kits.demon.co.uk
Hands Electronics, Tegryn, Llanfyrnach, Pembs SA35 OBL. Tel 01239 698427.

QUARTZ CRYSTALS 1MHz/£2.95, 1.4MHz/£3.95, 3.2768MHz/£1.95, 3.932160MHz/£3.75, 4.0MHz/£1.00, 4.194304MHz/£0.75, 6.0MHz/£1.54, 7.03MHZ/£3.95, 8.9985MHz/£2.95, 9.0MHz/£2.95, 9.0015MHz/£2.95, 10.0MHz/£1.54,10.106MHz/£3.50, 10.245MHz/£1.54, 10.7MHz/£1.54, 11.155MHz/£3.50, 16MHZ/£1.54, 21.04MHz/£4.75, 21.06MHz/£4.75, 28.060MHz/£3.75, 45MHz/£1.75, 9MHz X-Tal filters for SSB & CW from £30.00/unit. 5MHZ, 6MHz, 10MHz OCXO's £12.50/unit. X-Tal circuits, applications booklet/£5.00. Cermamic resonators, applications booklet/£3.50. Wanted freq. sweep generator to 25MHz. Good price paid. IQ-Electonic Design. Tel: 020-8391 0545.
E-mail: japj69@netscapeonline.co.uk

YAESU FP-757HD POWER SUPPLY £100.00 o.n.o. Yaesu FT-757GX HF all mode transceiver £250.00 o.n.o. CDE transmit/receive direction control Model Ham II/CD44 Series 1 £200.00. All in immaculate condition. Contact Nigel 07811 263100.
E-mail: nigel.brandon@btinternet.com

Aerials

G2DYM ROLLS-ROYCE ANTI-TVI, anti-interferance aerials, info SAE. G2DYM Uplowman, Devon EX16 7PH.
Tel: 01398 361215 anytime.

Valves

VALVES GALORE Most valves available from stock. Otherwise obtained quickly. Please send SAE stating requirements or telephone. **VALVE & ELECTRONIC SUPPLIES** Chevet Books, 157 Dickson Road, Blackpool FY1 2EU.
Tel: (01253) 751858 or Fax: (01253) 302979.
E-mail: chevet@globalnet.co.uk

VALVES:- OVER 50000 STOCKED Ham, Vintage, Military, Audio. SAE for FREE list to: Wilson Valves, (Jim Fish G4MH), 28 Banks Ave., Golcar, Huddersfield, West Yorks HD7 4LZ.
Tel: 01484 654650/650725.
Mobile:- 07733 283084.
Fax: 01484 655699.
E-mail: wilsonvalves@surflink.co.uk
Visa etc. Fast & personal service.

VALVES AND ELECTRONIC COMPONENTS Large stocks. Send for list to: Stuart Scott, 19 Portway, Steying, W. Sussex BN44 3QF. Tel/Fax: 01903 815118.
E-mail: triumph.76@btinternet.com

VALVES WANTED NEW AND BOXED!! KT66 GEC £35, KT88 GEC £60, EL34 & EL37 Mullard £27, EL84 £4, DA30, DO30, PS25 all at £120 each. PX4 globe shape £70. DA100 GEC £150, ECC83 Mullard £5, GZ32 & GZ34 Mullard £10, ECC32 & ECC33 Mullard £15. Other types wanted.
Colomor (Electronics) Ltd. Tel: 01403 786559.
E-mail sales@colomor.demon.co.uk

THE SUPPLY OF VINTAGE COMPONENT PARTS/VALVES Valve communications receiver service. Also vintage radio/audio equipment service. A one year guarantee on service. Write to: Vintage British Radio Components, 132 Lincoln Way, Corby, Northants NN18 9HW.

BEST CASH PRICES PAID for valves KT88, PX4, EL34, EL37. Complete collections usually welcome. Ask for wanted list.
Billington Export Ltd., Unit E1, Gilmans Estate, Billingshurst RH14 9EZ. MINIMUM ORDER £50.
Tel: 01403 784961. Fax: 01403 783519.
E-mail:- sales@bel-tubes.co.uk
Visitors please phone for appointment.

TOP PRICES PAID
for all your valves, tubes, semi-conductors and ICs.
Langrex Supplies Ltd.
1 Mayo Road, Croydon Surrey CR0 2QP.
TEL: 0181-684 1166. FAX: 0181-684 3056.

Holidays

NORTH WALES HOLIDAYS – Caravan - bunkhouse - camping. Elevated rural site, two miles from beach, use of shack and antennas, open all year. Tynrhos, Mynytho, Pwllheli. Tel: 01758 740712.
E-mail: tynrhos@btinternet.com

Wanted

WANTED FOR CASH Valve or solid state communication receivers Pre-1980. Preferably working and in good condition. Non working sets considered also domestic valve radios. Items of Government surplus wireless equipment and obsolete test equipment. Pre-1965 wireless and audio components and accessories. Pre-1975 wireless and TV books and magazines. Also, most valves wanted for cash. Must be unused and boxed. CBS, 157 Dickson Road, Blackpool, FY1 2EU.
Tel: (01253) 751858 or Fax: (01253) 302979.
E-mail: chevet@globalnet.co.uk

WANTED FOR CASH Quantities of RF co-axial relays (DC-18GHz for example). Solid state or electromechanical. With SMA connectors ideal. New or used. G3LZM.
Tel: 01432 271162 after 5.30pm.

Miscellaneous

INTERESTED IN VINTAGE TECHNOLOGY? The OTS Vintage Technology Catalogue is packed with lots of interesting items for the vintage wireless, television and telephone enthusiast, collector and restorer. Send 2 x 1st class stamps to: Old Time Supplies, P.O. Box 209, Banbury, Oxon OX16 1GR.

WIRELESS SET FAULTY? I am able to repair any old valve radio, valve Hi-Fi amp, crystal set, communication receiver, etc. Enquires R. B. Kerr. Tel: 01349 852332 (Invergordon).

DISCLAIMER

Some of the products offered for sale in advertisements in this magazine may have been obtained from abroad or from unauthorised sources. *Practical Wireless* advises readers contemplating mail order to enquire whether the products are suitable for use in the UK and have full after-sales back-up available. The publishers of *Practical Wireless* wish to point out that it is the responsibility of readers to ascertain the legality or othe wise of items offered for sale by advertisers in this magazine.

ORDER FORM FOR CLASSIFIED ADS

Please photocopy this form if you prefer

PLEASE WRITE IN BLOCK CAPITALS

The prepaid rate for classified advertisements is 42 pence per word (minimum 12 words), box number 70p extra. Semi-display setting £13.90 per single column centimetre (minimum 3cm). Please add 17.5% VAT to the total. All cheques, postal orders, etc., to be made payable to PW Publishing Ltd. Advertisements, together with remittance, should be sent to the Classified Advertisement Dept., Practical Wireless, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Tel: (01202) 659920, Fax: (01202) 659950

Please insert this advertisement in the ..... issue of Practical Wireless (if you do not specify an issue we will insert it in the next available issue of PW) for ..... insertion/s. I enclose Cheque/P.O. for £..... (42p per word, 12 minimum, please add 17.5% VAT to total).

Name: .....
Address: .....
.....
.....
Telephone No.: .....
Box Number @ 70p: Tick if appropriate ..... ☐
Category heading: .....

Order Form

Photocopies of this page are acceptable

Check out our Web Pages at:
http://www.pwpublishing.ltd.uk

FOR ALL MAIL ORDER PURCHASES IN *PRACTICAL WIRELESS*

SUBSCRIPTION RATES

Practical Wireless – 1 year.

❑ £30 (UK)

❑ £38 (Europe Airmail)

❑ £42 (Rest of World Airsaver)

❑ £49 (Rest of World Airmail)

Special joint subscription with

Short Wave Magazine – 1 year.

❑ £60 (UK)

❑ £73 (Europe Airmail)

❑ £81 (Rest of World Airsaver)

❑ £93 (Rest of World Airmail)

Monitoring Times – 1 year (12 issues).

❑ £38 (UK)

❑ £43 (Europe Airmail)

❑ £49 (Rest of World Airmail)

BUY OF THE MONTH

❑ Please send me ..... copy(ies) of ***Introducing QRP*** at the new price of **£4.95 plus £1.25 P&P (UK), £2.50 (overseas)**.

£ .....

Book Orders

..... **£** .....

..... **£** .....

..... **£** .....

..... **£** .....

..... **£** .....

..... **£** .....

..... **£** .....

Binders: £6.50 per Binder
Postal charges:
UK: £1.25 for one item, £2.50 for two or more items.
Overseas surface: £2.50 for one item, £4 for two items, three or more add an additional 50p per item. Airmail prices on application.
Binders P&P: £1.25 for one, £2.50 for two or more.

GRAND TOTAL ..... **£** .....

Thank you for using PW for your purchases

PAYMENT DETAILS

CREDIT CARD ORDERS TAKEN ON (01202) 659930
between the hours of 9.00am - 5.00pm. Outside these hours your order will be recorded on an answering machine.

FAX ORDERS TAKEN ON (01202) 659950
or please fill in the details ticking the relevant boxes, a photocopy will be acceptable to save you cutting your beloved copy!

To: PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW

I enclose my Cheque/Postal Order* for £ .....
made payable to PW Publishing Ltd. (*Delete as necessary)
or please debit my Access/Visa/Amex card No.

☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Expiry Date.....

or please debit my Switch card No.

☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐

Date.....Switch Issue Number (if on card.....

Switch Expiry Date.....

Signature .....

Name .....

Address .....

.....

.....

.....

.....

Postcode.....Daytime Tel. No.....

.....

Orders are normally despatched by return of post but please allow 28 days for delivery. Prices correct at time of going to press. **Please note:** all payments must be made in Sterling. Cash not accepted.

topical talk

The rally season is in full swing and radio enthusiasts all over the country are looking forward to the chance of a day out, bargain hunting.

This month the *PW* Editorial team take a look back into mobile and rally history with the help of our sister publication *Short Wave Magazine* and its Editor **Kevin Nice G7TZC**.

Nowadays most of us take modern small mobile equipment for granted, but **there was a time** when keen enthusiasts really did have to come up with ideas of their own. If you weren't old enough to drive you had to be really innovative in the same way as the very young **C. Richardson G3WPR** did when equipping his bicycle in the late 1960s!

The photograph shows G3WPR from his article, published in the *SWM* August 1969, with the bike equipped for /M on 144MHz. The equipment was powered by a car battery and as stated in the article - he found it very heavy but it worked! One trip involved G3WPR in a ride of over three and a half hours from his home in Ilford. But at least he was able to report he achieved S9 level QSOs with G2HR in Chingford, Essex.

However, perhaps the highest accolade was the comment G3WPR's achievement drew from **Austin Forsyth G6FO,** the renowned Editor of *SWM* who commented at the end of the article: "We congratulate G3WPR/M - not yet 17 years of age - on his ability, enthusiasm and fortitude and on the fact that he is able to get such interesting results on the two-metre band under leg-power conditions - and we feel sure that many readers will agree".

Praise indeed from the mighty G6FO! Even now, over 30 years later...you've got to admire G3WPR haven't you?

Longleat Rally

As this edition of Topical Talk is prepared - we're looking forward to attending the annual Longleat Rally. In fact, it's much more than **just a rally** - instead it's a focal point where old friends meet each year. The attractive venue draws radio visitors from all over the south and west - not forgetting all those keen Welsh enthusiasts who often come by the coach load! Yes indeed, the Longleat mobile rally is one we all look forward to attending.

Leafing through *SWM*'s archives...it was only a few moments before memories of past Longleat rallies were surfacing! The photographs shown here are from The Mobile Scene, published in *SWM* October 1969 The well-known QSL card printers **Bailey & Son** from Weston-super-Mare were displaying their wide range of cards, while the (then) stand of **Graham Newberry** was being looked after by none other than **Reg Ward G2BSW** from Axminster.

Memories indeed! As this Topical Talk draws to a close it looks as though we'll have good weather for Longleat. Let's hope so!

YOUR LOCAL DEALERS

Index to Advertisers

ICOM

Top Performer

HF + 50MHz DSP Transceiver

IC-756PRO

- Excellent SSB transmit signals that analog simply cannot compete with.
- CW Reverse mode flips carrier point from USB to LSB.
- Digital noise-reduction at demodulation stage gives crystal clear signals, for today's DX'er.
- 100 watts output power from MOS-FET finals.
- Newly developed mixer-less PLL to improve DDS system.
- 1Hz tuning, 3 grade selectivity, high performance Rx and much much more!

IC-718
All-Band HF Tx.

IC-746
HF+6m+2m Tx.

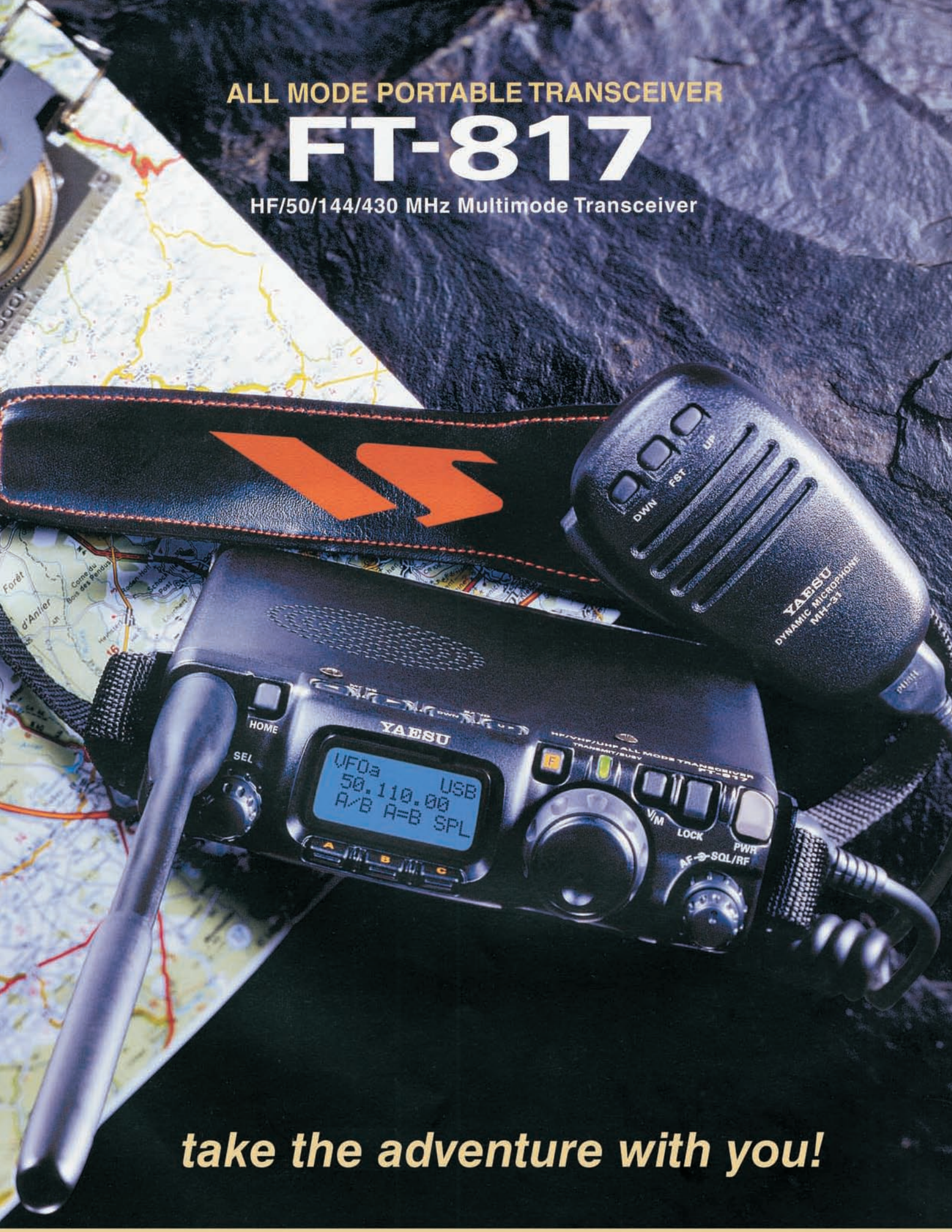
IC-775
HF 200 watt Tx.

IC-910
VHF/UHF All-Mode Tx.

• Fantastic Value! • Exceptional Quality • Incredible Versatility •

Icom (UK) Ltd. Sea Street Herne Bay Kent CT6 8LD. Telephone: +44 (0)1227 741741. Fax: +44 (0)1227 741742.
e-mail: sales@icomuk.co.uk ...or visit our website on www.icomuk.co.uk

Count on us!



YAESU