

Practical Wireless

PWN

amateur radio & more!

**Historic HF
Somerton Radio
Station**

**Build
An RF Ammeter**

Yaesu Double!

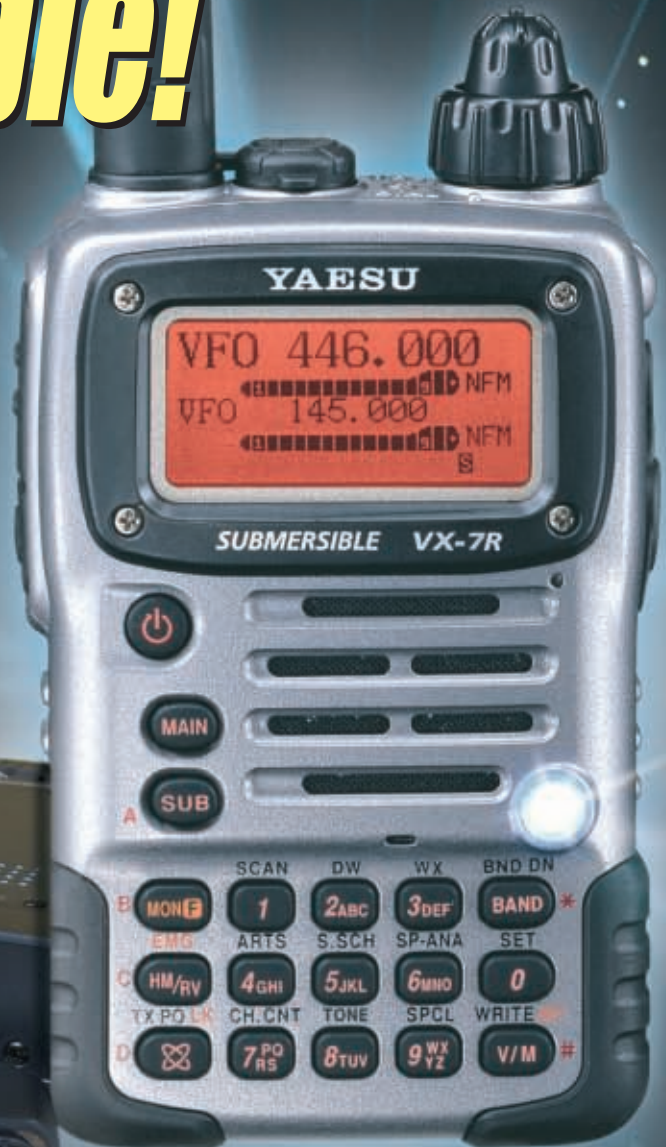
Reviewed This Month

VX-7R

Tri-band Hand-Held

FT-8900

Quad-band Mobile



February
2003
£2.85



WATERS & STANTON

WEB ORDERING
WWW.WSPLC.COM

YAESU

NEW FT-897

£1099 C



A 100W HF rig plus 2m and 70cms (50W/20W) with provisions for running from internal optional Ni-MH pack at 20W output. Go anywhere and operate portable at realistic power levels. Put in car as self-powered radio for mobile use. Use as base station from 13.8V at full power. The possibilities and fun are endless. And it is packed full of features including Large LCD display, 200 tagged memories, DSP, IF shift, IPO, Noise blanker, VOX, Collins filter, CTCSS, and DCS, ARTS, Spectrum Scope, compatible with FC-30 auto ATU and ATAS 120/100 antennas. And all this packed into a size of 7.87" x 3.15" x 10.3". The "must have" radio for 2003.

NEW V-868



A great new automatic Ni-MH/Ni-Cd battery charger that holds up to 8 pieces. (AA, AAA). Switch between Ni-Cd & Ni-MH (load one type at a time). LED's indicate charging progress, Ni-MH in around 8 hours and Ni-Cd in 5 hours. You can't overcharge with the V-868, as once the cells have been charged to 90% it switches to trickle charge mode.

£11.95 A

NEW V-1000



Ultra-fast Ni-MH/Ni-Cd battery charger that charges 2 or 4 pieces of AA, AAA batteries in 2-3 hours. Powered by an external 230V AC adaptor for indoor use or by a cigarette lighter plug from a 12V source. Intelligent microprocessor controlled, with automatic charge current selection for AA & AAA batteries, it even identifies defective batteries. Fitted with safety timer control for overcharge protection, red LED indicates charging, green LED indicates ready.

£10.95 A

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MIDLANDS + NORTH SHOP • BENTLEY BRIDGE • CHESTERFIELD RD
• MATLOCK • DERBYSHIRE • DE43 5LE
ENQUIRIES: 01629 582380 FAX: 01629 580020
SCOTLAND + BORDERS SHOP • 20 WOODSIDE WAY • GLENROTHES
• FIFE • KY7 5DF
ENQUIRIES: 01592 756962 FAX: 01592 610451 - CLOSED MONDAYS

HF TRANSCEIVERS

ICOM		IC-756 PRO II Flag ship of the ICOM range of transceivers.	
IC-756 PRO II	160-6m 100W 12V	£2495.95	C
IC-7400	160-2m 100W 12V	£1449.95	C
IC-706 IIG DSP	160m-70cm 100W 12V	£799.95	C
IC-718	160-10m 100W 12V	£599.95	C
SP-20	Speaker with filters	£164.95	B
SM-8	Base microphone	£129.95	B
SM-20	Base microphone	£144.95	B
PS-125	Icom 25A PSU	£295.95	C

YAESU		FT-1000 Field OFFER! 2 Free Filters.	
FT-1000 mkV	160-10m 200W 230V	£2799.95	C
FT-1000 Field	160-10m 100W 230V	£2199.95	C
VL-1000 Quadra	HF-6m 1kW linear	£3799.00	D
FTV-1000	6m transverter	List: £799 £499.95	C
MD-200A8X	Desk microphone	£249.95	B
MD-100A8X	Desk microphone	£110.00	B
FT-920AF	160-6m 100W 12V	£1099.95	C
FT-897 NEW	HF/6m/2m/70cm 100W	£1099.00	C
FT-847	160-70cm 100W 12V	£1199.95	C
FT-817	160-70cm 5W Batt.	£595.95	B
FT-840	160-10m 100W 12V	£499.95	B

KENWOOD		TS-2000X Top of the range Kenwood transceiver.	
TS-2000	160m-70cm < 100W	£1695.00	C
TS-2000X	160m-23cm < 100W	£1999.00	C
TS-B2000	Computer controlled	£1449.00	C
RC-2000	Remote head TS-2000	£199.95	B
ARCP-2000	TS-2000 software	£44.95	B
TS-870S DSP	160-10m 100W 12V	£1399.00	C
TS-570DGE	160-10m 100W 12V	£849.00	C
YK-88CN-1	270Hz CW filter	£61.95	B
YK-88SN-1	1.8kHz SSB filter	£61.95	B
TS-50S	160-10m 100W 12V	£629.00	C
PS-33	AC power supply 20.5A	£199.95	C
PS-52	AC power supply 22.5A	£229.95	C
PS-53	AC power supply 22.5A	£229.95	C
MC-60A	Desk microphone	£117.95	B
MC-80	Desk microphone	£72.95	B
MC-90	Desk microphone	£187.95	B

VHF/UHF TRANSCEIVERS

ICOM		IC-2725E ICOM's latest unique Dual Band FM transceiver.	
IC-910H	2m/70cm All modes tcvr	£1249.00	C
IC-2725E NEW	2m/70cm FM mobile	£279.00	C
OPC-1156	Separation cable 3.5m	£24.99	A
IC-207H	2m/70cm 50/35W mobile	£279.00	C
OPC-600	Separation cable 3.5m	£32.99	A
OPC-601	Separation cable 7m	£39.99	A
IC-2100	2m FM mobile 55W	£229.00	C

YAESU		FT-8900R FM Quad band transceiver	
FT-8900R NEW	29/50/144/430MHz mobile	£399.00	C
FT-7100	2m/70cm FM mobile	£329.00	C
YSK-7100	Separation lead kit	£39.99	A
FT-1500M	2m 50W mobile	List: £179 £159.00	B

KENWOOD		TMD-700E Dual band mobile & data communicator.	
TMD-700E	2m/70cm FM mobile	£449.00	C
TM-V7E	2m/70cm FM mobile	£359.00	C
TM-G707E	2m/70cm FM mobile	£289.00	C

VHF/UHF HANDHELDS

ICOM		ICOM IC-E90 Handheld + Scanner 6m/2m/70cm 5W	
IC-E90 NEW	6m/2m/70cm Handheld	£269.00	B
BC-06	UK mains PSU (BC139)	£21.15	A
BC-08	(Spare) charger	£23.50	A
LC-152A	Leatherette carry case	£16.99	A
SP-13	Earphone	£5.87	A

YAESU		VX-7R Handie Tri-band Submersible Black or Silver.	
VX-7R NEW	6m/2m/70cm Handheld	£329.00	B
VX-1R	2m/70cm+TV/AM audio	£149.00	B
VX-150	2m + NiCd & charger	£109.00	B
VX-110	2m + NiCd & charger	£99.00	B
ADMS-1E	Software for VX-1R	£44.95	B
CSC-88	Soft case for VX-7R	£11.95	A
CSC-71	Soft case for VX-1R	£11.95	A

KENWOOD		TH-D7E Data communicator with built-in TNC	
TH-D7E	2m/70cm with data	£319.00	B
TH-F7E	2m/70cm with wideband	£259.00	B
TH-G71E	2m/70cm FM Handie	£199.00	B
TH-22EUK	2m+NiCd & UK charger	£149.00	B
TH-22EE	2m+NiCd & EU charger	£139.00	B
SC-40 (D7/G71)	Soft case / strap	£15.95	A
SC-45 (G71)	Soft case	£19.95	A
SC-49 (D7)	Leather case / strap	£19.95	A

LINEAR AMPLIFIERS

DISCOVERY-70		High power 700W 70cm linear amplifier	
CHALLENGER III	HF linear amp 10-160m	£1795.00	D
RANGER-811H	HF linear amp 10-160m	£895.00	D
DISCOVERY-2	2m 400-1000W out	£1395.00	D
DISCOVERY-6	6m 50-54MHz 400-100W out	£1395.00	D
DISCOVERY-70 NEW	430-440MHz 700W out	£1495.00	D

AMERITRON		AL811 XCE HF Linear Amplifier All versions CE approved	
AL811 XCE	160-10m 600W PEP	£799.00	E
AL811 HXCE	160-10m 800W PEP	£989.00	E
AL800 XCE	160-10m 1250W PEP	£1995.00	E
AL1200 XCE	160-10m 1500W PEP	£2695.00	E
TOKYO HY-POWER		HL-50B HF+50MHz 50W amplifier	
HL-50B	HF+50MHz 50W amplifier	£265.95	B

POWER SUPPLIES

WATSON		W-25SM 25A Switch-mode power supply	
W-25SM	25A 13.8V DC power supply	£79.95	B

DIAMOND ANTENNA		GZV-4000 40A Switch-mode variable power supply	
GZV-4000	40A 5-15V DC S/M PSU	£159.95	C
GZV-2500	25A 5-15V DC S/M PSU	£119.95	C

WEST MOUNTAIN		RIGRUNNER 4012 Distribution board with 2m cable + connectors	
RIGRunner 4005	13.8V DC 5-way	£49.95	B
RIGRunner 4008	13.8V DC 8-way	£89.95	B
RIGRunner 4012	13.8V DC 12-way	£109.95	B
C30/PK/12	12 spare connector pairs	£13.95	A

FREEPHONE ORDER LINE:

08000 73 73 88



MFJ

ANTENNA TUNER UNITS

MFJ-989C VERSA TUNER V



*1.8-30MHz *3kW *6-way Antenna/load switch *2 coax positions *Built-in 4:1 balun *X-needle meter *Peak & AV High power tuner.

MFJ-989C 3kW Roller Inductor ATU **£379.95 C**

MFJ-969 DELUXE VERSA TUNER II



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

MFJ-969 160-6m all band 300W ATU **£199.95 C**

MFJ-949E DELUXE VERSA TUNER II



*1.8-30MHz *300W *3-way Antenna selector *Dummy Load socket *Internal balun *X-needle meter *Peak & AV Firm favourite with HF operators.

MFJ-949E Antenna Tuner/Dummy Load 300W **£159.95 B**

MFJ-962D VERSA TUNER III



*1.8-30MHz *1.5kW *6-way Antenna/load switch *2 coax positions *Built-in 4:1 balun *X-needle meter *Peak & AV Ideal tuner for max UK legal power.

MFJ-962D 1.5kW Roller Inductor ATU **£279.95 C**

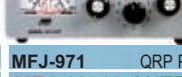
MFJ-921 VHF DUAL BAND TUNER



*144/220MHz *200W max *Power meter *Rear panel earth terminal This tuner helps you get perfect VSWR and offers some filtering as well.

MFJ-921 144 & 220MHz VHF ATU 200W **£74.95 B**

MFJ-971 PORTABLE TUNER



*1.8-30MHz *300/30/6W *X-needle SWR/Pwr meter *Tunes wire, coax & balance line ants *SO-239 sockets Natural ATU for QRP/portable working.

MFJ-971 QRP Portable ATU **£99.95 B**

MFJ-16010 ANTENNA TUNER

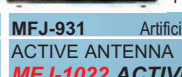


*1.8-30MHz *200W *Base or portable *SO-239 sockets *Simple tuning controls Great little tuner ideal for portable work especially for the FT-817.

MFJ-16010 Random Wire Tuner **£56.95 B**

ARTIFICIAL GROUND

MFJ-931 ARTIFICIAL GROUND

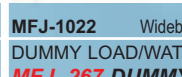


*1.8-30MHz *Ground current meter *Used where no earth ground is possible *Reduces TV/RFI *Resonates random wire Places rig near to actual ground potential.

MFJ-931 Artificial Ground **£94.95 B**

ACTIVE ANTENNA

MFJ-1022 ACTIVE ANTENNA LF/HF/VHF

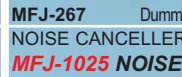


*300kHz-200MHz *Handles strong signals *Reduces Intermod *Low noise *Includes telescopic whip *SO-239 *9V batt or 9-18VDC Easily plugs into your general coverage Rx.

MFJ-1022 Wideband Active Rx Antenna **£55.95 B**

DUMMY LOAD/WATT METER

MFJ-267 DUMMY LOAD/WATT METER

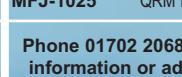


*1.8-54MHz *300/3000W FWD *60/600W RFD *50 Ohms *3in X-needle meter VSWR/Pwr *Reads PEP or AV *SO-239 x2 sockets *9-12V Switch enables the dummy load to be by-passed

MFJ-267 Dummy load & VSWR meter HF+6m **£129.95 B**

NOISE CANCELLER & SSB & CW AUDIO FILTER

MFJ-1025 NOISE CANCELLER



*1.8-30MHz *RF sensed/control switching *Thru Pwr handling for Tx *13.8V ext Eliminates locally received electrical noise.

MFJ-1025 QRM Eliminator (no active ant) **£169.95 B**

QRP-CUB CW TRANSCEIVERS

MFJ-9380 CUB



*Adjustable Tx Pwr *Full QSK CW *Covers 50kHz segment *Sharp passband crystal filter *Product detector *Kit PCB's partially populated with SMD's *Easy to set up *12-15V DC

MFJ-9380W 80m CW 2.2W QRP Tcwr Assembled **£149.95 B**

MFJ-9380K 80m CW 2.2W QRP Tcwr Kit **£99.95 B**

MFJ-9340W 40m CW 2.2W QRP Tcwr Assembled **£149.95 B**

MFJ-9340K 40m CW 2.2W QRP Tcwr Kit **£99.95 B**

MFJ-9330W 30m CW 2W QRP Tcwr Assembled **£149.95 B**

MFJ-9330K 30m CW 2W QRP Tcwr Kit **£99.95 B**

MFJ-9320W 20m CW 2W QRP Tcwr Assembled **£149.95 B**

MFJ-9320K 20m CW 2W QRP Tcwr Kit **£99.95 B**

MFJ-9315W 15m CW 1W QRP Tcwr Assembled **£149.95 B**

MFJ-9315K 15m CW 1W QRP Tcwr Kit **£99.95 B**

MORSE CODE READER

MFJ-461 MORSE CODE READER



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

MFJ-461 Pocket size Morse code reader **£84.95 B**

WORLD TIME CLOCKS

MFJ-115 24 HR QUARTZ WORLD CLOCK



*24 Hr Quartz clock *Full 24 Hr dial format *Superb time keeper *World map on face *Principle cities on outer trim *Size 305mm Know what time it is locally and around the World.

MFJ-115 24 Hr World Map Clock **£29.95 A**

MFJ-112B DX'ERS WORLD MAP CLOCK



*World Map *Time zones *LCD & backlight *Displays Hours, Mins & Secs *12 or 24 hour format *DST *24 Hr alarm *3xAAA *Size: 120 x 85 x 65mm Equally great for the radio shack or bedroom.

MFJ-112B DX'ers World Map Clock **£29.95 A**

MFJ-114BX 24/12 HR Giant LED Clock



Giant 59mm (2 1/4in) red LEDs *Selectable 12 or 24 Hr *220V AC powered with battery back up *Built-in mounting holes *Size 330 x 160 x 20mm * Weight 600g Superb shack clock with highly visible red LED's.

MFJ-114BX 24/12 Hr Giant LED Clock **£59.95 B**

MFJ-890 DX BEACON MONITOR



*Locks onto local atomic standard *18 different world paths *5 HF DX bands *Mimics beacons' sequences - not a receiver *Ext 12V, PP3 back-up Use your receiver to listen to the appropriate band.

£99.95 B

WATSON W-25AM PSU



The W-25AM is the ideal regulated DC power supply for the shack and especially for use with 100W transceivers. Separate voltage and current meters. Output voltage

0-15V DC with an output current of 25A (30A peak). No less than 3 sets of output terminals are provided together with a 10A cigar socket. Over current protection is included and the front panel AC fuse and rubber feet are included.

£89.95 C

MANSON EP-925 PSU



The EP-925 is a general purpose 3-15V DC 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver. It offers dual analogue meters and has over current protection. Large power terminals for rigs as well as quick snap connectors for ancillaries.

NOW BACK IN STOCK

£99.95 C

5 WAYS TO BUY WITH CONFIDENCE !!

1

Scotland & Borders

WATERS & STANTON @ JAYCEE

20 Woodside Way, Glenrothes, Fife, KY7 5DF
Tel:01592 756962 Fax:01592 610451
closed Mondays

2

Midlands & North

WATERS & STANTON @ LOWE

Bentley Bridge, Chesterfield Rd, Matlock, Derbyshire, DE43 5LE
Tel:01629 582380 Fax:01629 580020

3

South

WATERS & STANTON HEAD OFFICE

Spa House, 22 Main Rd, Hockley, Essex, SS5 4QS
Tel:01702 206835/204965
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4

WEB MAIL ORDER



www.wsplc.com

5

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FREEPHONE 08000 73 73 88

Phone 01702 206835/204965 for further technical information or advice on any of these products

PW

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Cover Subject

We were lucky enough to get our hands on the latest offerings from Yaesu this month. Our 'Yaesu Double' means we can bring you up-to-date on what the VX-7R Tri-band hand-held and the FT-8900 Quad-Band mobile have to offer the discerning Amateur. Don't forget to let us have your thoughts if you decide to buy one of these rigs - we'd love to hear how you use yours!

Design: **Steve Hunt**
 Main Photo: **Courtesy of Yaesu UK Ltd.,**
 Inset Photo: **Tex Swann G1TEX/M3NGS**

February features

15 Tex's Tips

More handy hints and tips from you are presented by **Tex Swann G1TEX**. Remember if you have an idea to share...please send it in!

18 Heil Sound Headphone Review

A good pair of headphones can make all the difference to your enjoyment of radio. So, with that in mind we set **Carl Mason GW0VSW** the task of testing a pair of Heil Sound Pro-Set Plus Studio Headphones and boom microphone.

22 Yaesu VX-7R Review

Richard Newton G0RSN has been trying out a new tri-band hand-held from the Yaesu stables, which is billed as being fully submersible and offers extended receive coverage too! Read the review to find out what he thought about this 'outward bound' hand-held.

25 Somerton Radio Station

Somerton Radio Station may now be silent but **Tim Walford G4JCP** remembers the majestic masts and antennas very well. Tim literally grew-up alongside the h.f. station, so what better person to tell the fascinating tale of its history?

30 Antenna Workshop

Dr John Share G3OKA aims to dispel the myths surrounding the Windom Antenna in his analysis of what he describes as an antenna for all bands!

32 Sabah Style

On a trip to East Malaysia keen Amateur Radio traveller **Henryk Kotowski SM0JHF** discovered what he describes as a 'unique radio place'. Find out by reading his article what was so appealing and unusual about the Hillview Gardens Amateur Radio Club in Sabah.

34 An RF Ammeter

James Brett G0TFP shows you how to improve your station by adopting an early method of using aerial current as an indicator of antenna system efficiency.

38 Yaesu FT-8900 Quad-Band Review

Enjoying radio 'fun on four bands' with the Yaesu FT-8900 h.f., v.h.f. and u.h.f. f.m. mobile transceiver is how **Rob Mannion G3XFD** has been spending his time! He was so impressed with this tiny and versatile rig he's nicknamed it the 'Mighty Midget'!

42 Book Profiles

Fancy some winter radio reading to while away those dark days? Then look no further than our selection of recommended titles.

46 Carrying On The Practical Way

Following on from feedback received from readers of his column **George Dobbs G3RJV** now has some additional ideas for you on side tone generation.

50 Valve & Vintage

Ben Nock G4BXD takes his turn in the 'shop' this month and this time he's discussing the famous Hellschreiber and the air-to-ground H2S radar system.



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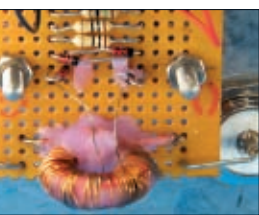
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February **regulars**

9 Rob Mannion's Keylines
Topical chat and comments from our Editor **Rob G3XFD**. This month Rob encourages everyone to record their radio memories before its too late!

10 Amateur Radio Waves
You have your say! There's a varied selection of letters again this month as the postbag keeps on filling as readers make 'waves' by writing in with their comments, ideas and opinions. Keep those letters coming!

11 Amateur Radio Rallies
A round-up of radio rallies taking place in the coming months.

12 Amateur Radio News & Clubs
Keep up-to-date with new products and who's doing what in the world of Amateur Radio with our News pages. This month there's news of more new rigs on the way, as well as a look at the work of the National Coastwatch Institution, which welcomes Radio Amateurs. Also, find out what your local club is doing in our club column.

52 VHF DXer
David Butler G4ASR has details of DX contacts made on the 144MHz band during the recent Leonid Meteor shower.

54 HF Highlights
With the help of your enthusiastic reports, **Carl Mason GW0VSW** rounds up the latest news from the h.f. bands.

56 Keyboard Comms
Roger Cooke G3LDI looks to the future of datacomms and reminds us of the band plan structure.

58 In Vision
Look forward to a new year of Amateur Television activity with **Graham Hankins G8EMX**.

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

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

64 Book Store
The biggest and best selection of radio related books anywhere!

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

69 Topical Talk
We 'honour' a member of the 'team' who's been associated with *Practical Wireless* and its sister publication *Short Wave Magazine* for many years - cartoonist **John Worthington GW3COI**.



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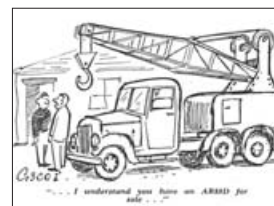
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rob manning's **keylines**

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

I was very pleased indeed to hear that Lord Bath had agreed to one more **Longleat Rally** being held on his estate in 2003 (See News, page 12 January *PW* Reprieve For Longleat Rally). I'm looking forward to meeting readers there next June on the *PW*, stand and also assisting in any way possible to help the **Bristol RSGB Group** find a new site.

So, watch this space for up-dates on the situation. I'm sure a new and successful site will be found. Good luck Longleat Rally team!

Recording History

While working on the Looking Back With G2CVO article, in the January issue - I had the pleasure to listen to **Frank Osborn G2CVO** himself...chatting into a tape recorder. Frank wasn't very impressed with his 'waffling' as he called it...but I realised that through his memories I was listening to history brought to life in a delightful way.

I often have to work late in the evenings, and it can be somewhat lonely sat in front of the glowing computer monitor - ploughing my way through pages of articles as I sub-edit and prepare them for publication. But this one was different...this article was truly 'alive' as I listened to Frank's voice (complete with chuckles and little pauses, all of which added a tremendous atmosphere to the recording), as he remembered his childhood days, and looked back to the days of Zeppelin Airships. It was a most enjoyable job...and I urge you to try the same.

It's very difficult indeed for me to get the message over, while not emphasising human frailty when it comes to recording the memories of old timers you may know. In other words...you must do the job today...**tomorrow might be too late.**

Perhaps it would be better to suggest 'Never put off something you could do today...until tomorrow'. Very few old timers will be keen to sit down and write - and of course they aren't alone in this because writing for some people is not a pleasure. Indeed, some of the E-mails (particularly) that come my way often seem to be composed by someone who has never written a letter before! So, I didn't feel too bad in zipping off one of my quick, non-spell checked replies in return, because I'm sure the recipient will appreciate it's been done to speed things up.

Fortunately though, most of us have a very simple audio secretary waiting at home ready for action...in the form of cassette recorders. All that needs to be done - in the same way Frank G2CVO kept me fascinated, listening to his

memories - is to get the person you wish to record to just chat away into the tape recorder. In most cases there's a built-in microphone so it's all very easy.

Even if the memoirs aren't intended to be published - I'm certain that some sort of record has to be kept. There are so many memories that will be lost otherwise...and they are our heritage aren't they?

Club Visits 2003

By the time this issue of *PW* arrives, the 2003 'Club Visit' season will have started as I'm due to be meeting old friends at the **South Dorset Radio Society** in nearby Weymouth on **Tuesday 7 January**. My next planned trip is to the



● "I wish he'd stop talking while we're reading"! Rob G3XFD starts his club visits again in January...and the travelling archives which contain copies of *PW* going right back to 1932 are always popular. Indeed they're so popular that Rob says "Enjoy browsing through them during the talk!"

Chester & District Radio Society on Tuesday 14 January, and this trip will be my third visit to this club...a very friendly group!

On **Thursday 6 February** I'm due to visit the **Lowestoft & District Amateur Radio Society** in Suffolk, and the **Chelmsford Amateur Radio Society on Tuesday 4 March**. Finally, (for now) I'm really looking forward to attending the **Junction 28 QRP Convention at South Normanton in North Derbyshire on Saturday 22 March**. I missed last year's event because I was unwell...**but I'm determined to be there this year!**

I'll be delighted to meet you at any of the venues mentioned...and hopefully we'll meet and have a chat about Amateur Radio and *PW*...the essential 'extra' ingredient to what I believe to be the most flexible hobby there is!

Rob G3XFD

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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 £2.85 each and photocopies are £2.85 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.

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

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



Stress in a relaxing hobby

● Dear Sir

Today, in vast numbers of Amateur Radio stations, it is not the radio but the home computer that is the focal point. Listening around the 144MHz band, I hear a rapidly growing number of Radio Amateurs, many life-long friends, relating within computer orientated QSOs, their exasperation, infuriation and rising stress levels, brought about by their latest high-speed home computer. When listening I can sense their rising blood pressure, as the computer seems to have a mind of its own. It appears to be laughing at its frustrated operator, as they pound at the keys in a vain attempt to prove to the world that they (the operator) is in control.

Many years past, the giants of industry promised us that in times yet to come the electronic computer would become so expert in our daily lives, that men and women would enjoy a life of untold leisure. Nowhere in the regions of human understanding, could ordinary man envisage that in the years ahead, these man-made machines would achieve the calculating speeds that would race far ahead of man's brain, and far beyond the imagination of man's heart.

However, far from the promises of a life full of leisure, there are now millions of humans all over the world, tethered for long hours to endless batteries of computer keyboards. In our hobby, that's supposed to be therapeutic and a way of relaxing and winding down, I hear the ever growing stresses brought about by the home computer...and I wonder, will it be man or machine that fails first!

We all live in a world where we cannot escape some computerised gadgetry, and amateur radio is a wonderful hobby. I think it's a hobby where operators and listeners all want to help one another, and we all want to live by each other's happiness, not by computerised misery.

It's 'my' opinion, that a computer will never be manufactured

that resembles a human, because although these electronic machines may calculate faster than their creators, they do not possess the essence of human existence. The computer shows no compassion for human frailties, shows no leniency for human error, has no soul, and like the proverbial 'Tin Man' has yet to find a heart.

Even if it doesn't exist in the world outside, within our hobby we still have the means to communicate without high speed computers, and without the high stress levels that seem to be packaged with them. Away from the hurly burly of high speed computers, is the gentler and indeed relaxing side of amateur radio, where verbal discourse, self learning through construction of simple radio projects, brings the amateur enthusiast into a world where, 'Wireless' is forever 'Practical'.

Frank Blakeley M3BTX/G6TNO
Heywood
Lancashire

Editor's Sermon: Writing from the viewpoint of someone who is tied to, and could not work without a computer preparing PW...I'm very sympathetic to the opinions which Frank expresses. Computers are okay...until they go wrong...and that's when you realise just how much you rely on them! Obviously, in publishing, the work we do nowadays would be impossible without the help of the computer. The same applies to many others - computers help them achieve things they couldn't possibly do otherwise. When I go home...I enjoy working on c.w. and home-brewing...avoiding sitting in front of a computer, which I do all day! But of course...'each to his own' and I can understand that others enjoy sitting in front of a computer. That's why - as I've often said in Keylines - our hobby is what you make of it...there are so many different aspects you're bound to find one to suit your needs. Amateur Radio really is your flexible friend...make of it what you will!

Problems For M3s

● Dear Sir

I noted in *PW* the references to the on the air problems which had been experienced by a new M3, which was featured in a previous *PW*. I had thought of responding when I first read of the problems, but didn't as I was only just starting to use my M3 call, having been a G7 for some years.

My experience to date has been fairly limited as an M3, but I have now made approaching 100 QSOs, about 60% in PSK and the rest in s.s.b., all on 14MHz. I can honestly say that I have had no problems of abuse, or even heard criticism of M3s in all those QSOs.

I will be interested to read of others experiences, but I must say that I did not expect any problems and haven't had any. My only problem has been the

obvious limits as to what you can do with 10W, although even that has surprised me, particularly with PSK. My best DX to date are probably Moscow and the United Arab Emirates, not exactly startling...but a reasonable start.

I worked quite a number of new countries in the recent CQWW contest and was advised to try towards the end, when contest stations are more likely to spend the time digging out a weak QRP station and that worked quite well, as earlier on it was much more of a struggle. I suspect that the M3 concerned is perhaps trying a bit too hard and expecting too much too soon. It takes time to get confident on the bands and to get a reasonably smooth operating style going. I found myself a bit nervous again when starting on, despite being reasonably experienced on v.h.f. s.s.b., particularly when I did

something wrong, which is quite easy in PSK. When I apologised on a couple of occasions, I was simply told not to worry as everyone gets it wrong sometimes! It's the challenge of the hobby that you never stop learning and most good operators spend a lot more time listening than transmitting, perhaps if we get that message across, there will be fewer disillusioned M3's.

Victor Swanwick
G7TMU/M3TMU
Storrington
West Sussex

although the occasional wallow in nostalgia serves a good purpose for many, **as a hobby we cannot afford to live in the past.**

I have recently become active in the hobby again after three years of other interests and University residences. Returning, I'm a little disappointed to see that, although the new Foundation Licence seems to be a wholeheartedly positive step in the right direction, the hobby in general still seems to be geared around 'old timer' attitudes.

That silly argument over the Morse test **STILL** seems to be ongoing (I'm sure that the issue itself was long since decided, and that progress had finally won), the packet radio network is still in the dark ages (not to mention those Amateurs who seem to treat packet as some kind of witchcraft), and there are still people who say things

Occasional Nostalgia

● Dear Sir

Although I'm happy that someone is sufficiently satisfied by *PW* that they feel moved to put pen to paper (**Ray Howes**, December *PW*), I think it's important to point out that,

TEX'S TIPS & TOPICS

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

This session, is a double double, in that two contributors have contributed two ideas each. We have two

construction tips from **Jerry GOAED** and a two ideas of what to do with foam from **Niel Starkie**.

So, let me start with the two tips from Jerry, who wrote in to say "Tip number one - you know how hard it is to turn a piece of hook-up wire around a pin or wire. Just as you reach for the soldering iron the hook-up wire, that looked so solid, drops off. One of the basics of good soldering is to make as good a mechanical joint as possible, before applying the solder. The method I'm about to describe will fulfil this requirement.

"All you need is a small hammer and anvil. Make the wire slightly longer than you need and strip off slightly more insulation than usual. Put the stripped off end of the wire on the anvil and give it a smart tap with the hammer to flatten the end as shown in **Fig. 1(a)**.

"Then wrap the flat side of the wire around the component wire and finally compress the flattened section around the wire as shown in **Fig. 1(b)** and **Fig. 1(c)**. Use needle-nosed pliers to crimp the wire, and trim off excess from the free end before soldering."

That's a great idea Jerry and my only comment that I would add, is to practice the 'clouting' technique first on spare wires, until you have the strength of the blow just right so, as to flatten the wire end without leaving it too thin and liable to break.

If anything, Jerry's second idea is even better. Have a look at the photographs **Fig. 2** and **Fig. 3**. he's

used an i.c. socket as a holder for components. The type of holder that Jerry has used, is the type that is known as 'turned pin'. This type of socket uses contacts made with 'hole' contacts, rather than a 'flat-plate' pressure contact.

Just trim the leads of the various components and push them into the various contacts sockets. Other junctions or components can be made on the underside of the i.c. socket as shown in **Fig. 3**. Jerry's suggestion is very like the 'building blocks' in radar equipment that I worked on in the late 1960 and early 1970s.

When you've finished the circuit and you're sure it works correctly, the whole block can be encapsulated in either paraffin wax (from model shops specialising in candle making) or in cold setting resin for a slightly more permanent solution. (And I dread to think of the number of these holders I've disposed off as 'less than useful'!).

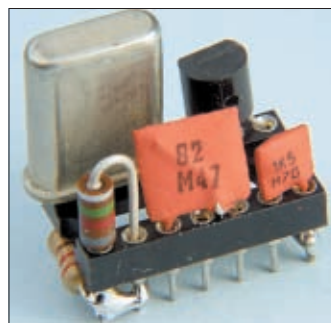
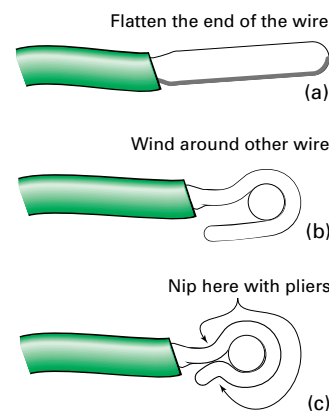
Now let me turn to the 'Ideas with foam' from Niel, who wrote "I was asked by a friend if I knew of a way of refurbishing the foam surrounds on his favourite pair of headphones. These had been modified to have a boom microphone added so, I thought about that as well".

Basically, Niel used foam recovered from packaging. He suggests that the type that is fairly hard is the best one to use for the earpieces, and a slightly softer type for the microphone. The series of photographs shown in **Fig. 4, 5, 6, 7** and **8** show the technique.

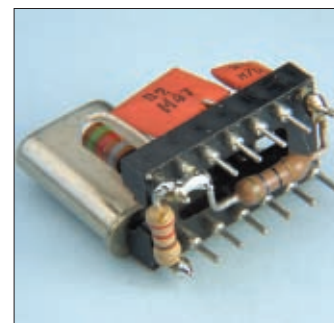


● **Fig. 6:** The bare home-made boom microphone.

● **Fig. 1:** Jerry says flattening the end of a wire, makes it easier to wrap around a pin which gives a better connection.



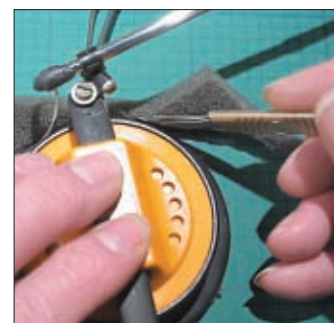
● **Fig. 2:** Trim the component leads before pushing them into the socket side of the holder.



● **Fig. 3:** Additional components or connections can be added on the underside of the i.c. holder.



● **Fig. 4:** After cutting a piece of foam slightly larger than the earpiece, spray it evenly with a rubber photomounting glue. Allow it to dry a little before placing on the earphone and holding in place until fixed.



● **Fig. 5:** Using a cutting mat and a sharp knife, carefully trim the foam to the rim of the earpiece.

My thanks go to Jerry and Niel for those ideas, they're all very useful. Book vouchers on the way to both of them. **So, if you want a**

book voucher for an idea - you've got to write in first! - What are you waiting for?



● **Fig. 7:** A section of thin foam is bound with cotton before glue is applied to hold the binding in place.



● **Fig. 8:** After trimming the foam and binding with electrical tape your microphone is ready for use.

Tex



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

VHF/UHF MOBILE ANTENNAS

MICRO MAG 2 Metre 70 cms Super Strong 1" Mag Mount (Length 22").....**£14⁹⁵**
MR700 2m/70cms, 1/4 wave & 5/8, Gain 2m 0dB/3.0dB 70cms Length 20" 3/8 Fitting.....**£7⁹⁵**
 SO239 Fitting.....**£9⁹⁵**
MR 777 2 Metre 70 cms 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (3/8 fitting).....**£16⁹⁵**
 (SO239 fitting).....**£18⁹⁵**
MRQ525 2m/70cms, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cms Length 17" SO239 fitting commercial quality.....**£19⁹⁵**
MRQ500 2m/70cms, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8dB 70cms Length 38" SO239 fitting commercial quality.....**£24⁹⁵**
MRQ750 2m/70cms, 6/8 wave & 3x5/8, Gain 2m 5.5dB/8.0dB 70cms Length 60" SO239 fitting commercial quality.....**£39⁹⁵**
MRQ800 6/2/70cms 1/4 6/8 & 3 x 5/8, Gain 6m3.0dB/2m 5.0dB/70 7.5dB Length 60" SO239 fitting commercial quality.....**£39⁹⁵**

SINGLE BAND MOBILE ANTENNAS

MR 214 2 Metre 1/4 wave (3/8 fitting).....**£3⁹⁵**
 (SO239 fitting).....**£5⁰⁰**
MR260S 2 Metre 1/2 wave 2.5 dBd gain Length 43" SO239 fitting.....**£24⁹⁵**
MR 258 2 Metre 5/8 wave 3.2 dBd Gain (3/8 fitting) (Length 58").....**£12⁹⁵**
MR 650 2 Metre 5/8 wave open coil (3.2 dBd Gain) (Length 52") (3/8 fitting).....**£9⁹⁵**
MR268S 2 Metre 5/8 wave 3.5dBd gain Length 51" SO239 fitting.....**£19⁹⁵**
MR280S 2 Metre 6/8 wave 5.8dBd gain Length 58" SO239 fitting.....**£29⁹⁵**
MR 614 6 Metre loaded 1/4 wave (Length 56") (3/8 fitting).....**£13⁹⁵**
MR 644 6 Metre loaded 1/4 wave (Length 40") (3/8 fitting).....**£12⁹⁵**
 (SO239 fitting).....**£15⁹⁵**

SINGLE BAND END FED BASE ANTENNAS

70 cms 1/2 wave, length 26", gain 3.5dB.....**£24⁹⁵**
2 metre 1/2 wave, length 52", gain 3.5dB.....**£24⁹⁵**
4 metre 1/2 wave, length 80", gain 3.5dB.....**£34⁹⁵**
6 metre 1/2 wave, length 120", gain 3.5dB.....**£44⁹⁵**
6 metre 3/4 wave, length 150", gain 5.5dB.....**£49⁹⁵**
 (All above end fed antennas are without ground planes)

PROFESSIONAL MOBILE GLASS MOUNT ANTENNAS

GF151 2mtr (length 20").....**£39⁹⁵**
 GF401 70cms (length 11").....**£39⁹⁵**
 GF233 23cms (length 9").....**£44⁹⁵**
 GF270 Dual band 2/70 (length 31").....**£59⁹⁵**

VHF/UHF VERTICAL CO-LINEAR FIBREGLASS BASE ANTENNA

SQ & BM Range VX 6 Co-linear- Specially Designed Tubular Vertical Coils individually tuned to within 0.05pf (maximum power 100 watts)
BM100 Dual-Bander.....**£29⁹⁵**
 (2 mts 3dBd) (70cms 6dBd) (Length 39")
SOBM100 Dual-Bander.....**£39⁹⁵**
 (2 mts 3dBd) (70cms 6dBd) (Length 39")
BM200 Dual-Bander.....**£39⁹⁵**
 (2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")
SOBM200 Dual-Bander.....**£49⁹⁵**
 (2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")
SOBM500 Dual - Bander Super Gainer.....**£59⁹⁵**
 (2 mts 6.8dBd) (70cms 9.2dBd) (Length 100")
BM1000 Tri-Bander.....**£59⁹⁵**
 (2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")
SOBM1000 Tri-Bander.....**£69⁹⁵**
 (2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")
SOBM 100/200/500/1000 are Polycoated Fibre Glass with Chrome & Stainless Steel Fittings. 2 years warranty.

2 METRE VERTICAL CO-LINEAR BASE ANTENNA

BM60 5/8 Wave, Length 62", 5.5dBd Gain.....**£49⁹⁵**
BM65 2 X 5/8 Wave, Length 100", 8.0 dBd Gain.....**£69⁹⁵**

70CMS VERTICAL CO-LINEAR BASE ANTENNAS

BM33 2 X 5/8 wave Length 39" 7.0 dBd Gain.....**£34⁹⁵**
BM45 3 X 5/8 wave Length 62" 8.5 dBd Gain.....**£49⁹⁵**
BM55 4 X 5/8 wave Length 100" 10 dBd Gain.....**£69⁹⁵**

MINI HF DIPOLES (length 11' approx)

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

ROTATIVE HF DIPOLE

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

HF DELTA LOOPS

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

HAND-HELD ANTENNAS

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

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

HB9CV 2 ELEMENT BEAM 3.5 dBd

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

CROSSED YAGI BEAMS All fittings Stainless Steel

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

YAGI BEAMS All fittings Stainless Steel

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

ZL SPECIAL YAGI BEAMS ALL FITTINGS STAINLESS STEEL

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

MULTI PURPOSE ANTENNAS

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

HALO LOOPS

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

G5RV Wire Antenna (10-40/80 metre) All fittings Stainless Steel

Standard	FULL.....	HALF.....
Hard Drawn	£22 ⁹⁵	£19 ⁹⁵
Flex Weave	£24 ⁹⁵	£22 ⁹⁵
PVC Coated	£32 ⁹⁵	£27 ⁹⁵
Flex Weave	£37 ⁹⁵	£32 ⁹⁵
Deluxe 450 ohm PVC Flexweave	£49 ⁹⁵	£44 ⁹⁵
TS1 Stainless Steel Tension Springs (pair) for G5RV		£19 ⁹⁵



UNIT 12, CRANFIELD ROAD UNITS, CRANFIELD ROAD WOBURN SANDS, BUCKS MK17 8UR. sales@moonrakeruktd.com

Callers welcome. Opening times: Mon-Fri 9-6pm

SALES 01908 281705

★ ★ All prices plus £6.00 P&P per order ★ ★

E&OE

G5RV INDUCTORS

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

SHORT WAVE RECEIVING ANTENNA

MD37 SKY WIRE (Receives 0-40MHz).....**£39.95**
Complete with 25 mts of enamelled wire, insulator and choke
Balun Matches any long wire to 50 Ohms. All made no A.T.U.
required. 2 "S" points greater than other Baluns.

MWA-H.F. (Receives 0-30MHz).....**£29.95**
Adjustable to any length up to 60 metres. Comes complete with 50
mts of enamelled wire, guy rope, dog bones & connecting box.

MOUNTING HARDWARE ALL GALVANISED

- 6" Stand Off Bracket** (complete with U Bolts).....**£6.00**
- 9" Stand off bracket** (complete with U Bolts).....**£9.00**
- 12" Stand off bracket** (complete with U Bolts).....**£12.00**
- 12" T & K Bracket** (complete with U Bolts).....**£11.95**
- 18" T & K Bracket** (complete with U Bolts).....**£17.95**
- 24" T & K Bracket** (complete with U Bolts).....**£19.95**
- 36" T & K Bracket** (complete with U Bolts).....**£29.95**
- Chimney lashing kit.....**£24.95**
- Double chimney lashing kit.....**£12.95**
- 3-Way Pole Spider** for Guy Rope/ wire.....**£3.95**
- 4-Way Pole Spider** for Guy Rope/ wire.....**£4.95**
- 11/2" Mast Sleeve/Joiner**.....**£8.95**
- 2" Mast Sleeve/Joiner**.....**£9.95**
- Solid copper earth rod 4"**.....**£9.95**
- Pole to pole clamp 2"-1.5"**.....**£4.95**
- Di-pole centre** (for wire).....**£4.95**
- Di-pole centre** (for aluminium rod).....**£4.95**
- Dog bone insulator**.....**£1.00**
- Dog bone insulator heavy duty**.....**£2.00**

POLES H/DUTY (SWAGED)

- Heavy Duty Ali (1.2mm wall)**
- 1 1/4" single ali pole**.....**£7.00**
 - 1 1/4" set of four**.....**£24.95**
 - 1 1/2" single ali pole**.....**£10.00**
 - 1 1/2" set of four**.....**£34.95**
 - 2" single ali pole**.....**£15.00**
 - 2" set of four**.....**£49.95**

REINFORCED HARDENED FIBRE GLASS MASTS (GRP)

- 1 1/2" Diameter 2 metres long**.....**£16.00**
- 1 3/4" Diameter 2 metres long**.....**£20.00**
- 2" Diameter 2 metres long**.....**£24.00**

GUY ROPE 30 METRES

- MGR-3 3mm** (maximum load 15 kgs).....**£6.95**
- MGR-4 4mm** (maximum load 50 kgs).....**£14.95**
- MGR-6 6mm** (maximum load 140 kgs).....**£29.95**

COAX

- RG58 best quality standard** per mt.....**35p**
 - RG58 best quality military spec** per mt.....**60p**
 - Mini 8 best quality military spec** best quality per mt.....**70p**
 - RG213 best quality military spec** per mt.....**85p**
 - H200 best quality military coax cable** per mt.....**£1.10**
- PHONE FOR 100 METRE DISCOUNT PRICE.

CONNECTORS & ADAPTERS

- 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**
- BNC for 9mm (RG213)**.....**£2.50**
- N TYPE for RG58**.....**£2.50 each**
- N TYPE for RG213**.....**£2.50 each**
- SO239 to BNC**.....**£1.50 each**
- PL259 to BNC**.....**£2.00 each**
- N TYPE to SO239**.....**£3.00 each**
- BNC to N-type**.....**£2.50**
- SMA to BNC**.....**£3.95**
- SMA to SO239**.....**£3.95**
- SMA to PL259**.....**£3.95**
- SMA to BNC (male)**.....**£3.95**
- SO239 chassis socket round**.....**£1.00**
- N-type chassis socket round**.....**£2.50**
- SO239 double female**.....**£1.00**
- N-type double female**.....**£2.50**
- SO239 double female**.....**£1.00**

YAGI COUPLERS

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

10/11 METRE VERTICALS

- G.A.P.12** 1/2 wave aluminium (length 18' approx).....**£19.95**
- G.A.P.58** 5/8 wave aluminium (length 21' approx).....**£24.95**

BALUNS

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

RIBBON LADDER USA IMPORTED

- 300Ω** 20 metre pack.....**£15.00**
 - 450Ω** 20 metre pack.....**£15.00**
- (Other lengths available please phone for details)

TRI/DUPLEXER & ANTENNA SWITCHES

- MD-24** (2 Way Internal Duplexer) (1.3-35 Mhz 500w) (50-225 Mhz 300w) (350-540 Mhz 300w) insert loss 0.2dBd SO239 fittings.....**£22.95**
- MD-24N** same spec as MD-24 "N-type" fitting.....**£24.95**
- MD-25** (2 Way external/Internal Duplexer) (1.3-35 Mhz 500w) (50-225 Mhz 300w) (350-540 Mhz 300w) insert loss 0.2dBd.....**£24.95**
- MX2000 Tri-plexer** 1.6-60MHz (800w) 110-170MHz (800w) 300-950MHz (500w) SO239 fitting.....**£49.95**
- CS201-N** same spec as CS201 "N-type" fitting.....**£28.95**
- CS401** 4-way antenna switch.....**£29.95**

ANTENNA ROTATORS

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

ROTATOR CABLE

- 3 Core**.....**0.45p** per metre
 - 7 Core**.....**1.00p** per metre
- (Please phone for 100 metre discount price)

MOUNTS

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

BEST QUALITY ANTENNA WIRE

The Following Supplied in 50 metre lengths

- Enamelled** 16 gauge copper wire.....**£9.95**
- Hard Drawn** 16 gauge copper wire.....**£12.95**
- Multi Stranded** Equipment wire.....**£9.95**
- Flex Weave**.....**£27.95**
- Clear PVC** Coated Flex Weave.....**£37.95**

TRAPS

- 10 metre trap** 400W.....**£23.95**
- 15 metre trap** 400W.....**£23.95**
- 20 metre trap** 400W.....**£23.95**
- 40 metre trap** 400W.....**£23.95**
- 80 metre trap** 400W.....**£23.95**

HF BALCONY ANTENNA

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



HF YAGI

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



ADEX-3300 3 BAND 3 ELEMENT TRAPPED BEAM
FREQ:10-15-20 Mtrs GAIN:8 dBd
BOOM:4.42m LONGEST ELE:8.46m
POWER:2000 Watts.....**£269.95**



ADEX-6400 6 BAND 4 ELEMENT TRAPPED BEAM
FREQ:10-12-15-17-20-30 Mtrs GAIN:7.5 dBd
BOOM:4.27m LONGEST ELE:10.00m
POWER:2000 Watts.....**£499.95**



40 Mtr RADIAL KIT FOR ABOVE.....**£99.00**

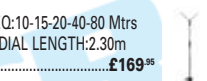
HF VERTICALS

VR3000 3 BAND VERTICAL
FREQ: 10-15-20 Mtrs
GAIN: 3.8 dBd HEIGHT:3.80m POWER:2000 Watts (without radials)
POWER: 500 Watts (with optional radials).....**£89.95**



OPTIONAL 10-15-20mtr radial kit.....**£34.95**

VR5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs
GAIN:3.5 dBd HEIGHT:4.00m RADIAL LENGTH:2.30m
(included). POWER: 500 Watts.....**£169.95**



EVX4000 4 BAND VERTICAL FREQ:10-15-20-40 Mtrs
GAIN:3.5 dBd HEIGHT:6.50m
POWER:2000 Watts (without radials) POWER:500 Watts (with optional radials).....**£99.95**

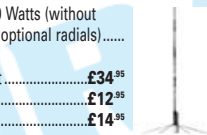


OPTIONAL 10-15-20mtr radial kit.....**£34.95**

OPTIONAL 40mtr radial kit.....**£12.95**

OPTIONAL 80mtr radial kit.....**£14.95**

EVX5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN:3.5 dBd
HEIGHT:7.30m POWER:2000 Watts (without radials) POWER:500 Watts (with optional radials).....**£139.95**



OPTIONAL 10-15-20mtr radial kit.....**£34.95**

OPTIONAL 40mtr radial kit.....**£12.95**

OPTIONAL 80mtr radial kit.....**£14.95**

EVX6000 6 BAND VERTICAL FREQ:10-15-20-30-40-80 Mtrs
HEIGHT:5.00m RADIAL LENGTH:1.70m(included) POWER:800
Watts.....**£249.95**



EVX8000 8 BAND VERTICAL FREQ:10-12-15-17-20-30-40 Mtrs
(80m optional) HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included) POWER: 2000
Watts.....**£269.95**

80 MTR RADIAL KIT FOR ABOVE.....**£79.00**

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



TRAPPED WIRE DI-POLE ANTENNAS

(Hi Grade Heavy Duty Commercial Antennas)

- UTD160** FREQ:160 Mtrs LENGTH:28m POWER:1000 Watts.....**£44.95**
 - MTD-1** (3 BAND) FREQ:10-15-20 Mtrs LENGTH:7.40 Mtrs
POWER:1000 Watts.....**£39.95**
 - MTD-2** (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000
Watts.....**£44.95**
 - MTD-3** (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER:
1000 Watts.....**£79.95**
 - MTD-4** (3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER:
1000 Watts.....**£44.95**
 - MTD-5** (5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m
POWER:1000 Watts.....**£69.95**
- (MTD-5 is a crossed di-pole with 4 legs)

MISCELLANEOUS ITEMS

- CDX** Lightning arrester 500 watts.....**£19.95**
- MDX** Lightning arrester 1000 watts.....**£24.95**
- AKD** TV1 filter.....**£9.95**
- Amalgamating tape** (10mtrs).....**£7.50**
- Desoldering pump**.....**£2.95**
- Alignment 5pc kit**.....**£1.99**

TELESCOPIC MASTS (aluminium & fibreglass options)

- TMA3** 3" to 1 1/4" heavy duty aluminium telescopic mast set,
approx 40ft when erect, 6ft collapsed.....**£149.95**
- TMA2** 2 1/2" to 1 1/4" heavy duty aluminium telescopic mast set,
approx 30ft when erect, 6ft collapsed.....**£129.95**
- TMA1** 2" to 1 1/4" heavy duty aluminium telescopic mast set,
approx 20ft when erect, 6ft collapsed.....**£99.95**
- TMAF** 2" to 1 1/4" heavy duty fibreglass telescopic mast set, approx
20ft when erect, 6ft collapsed.....**£99.95**

heil sound pro-set plus studio headphones

I have always been happy with my Icom transceiver and had not really given much thought to the quality of my transmitted audio when using s.s.b. My favoured headphones, a pair of JVC HA-CD55 are lightweight and have a good frequency response but were showing signs of wear and tear, so I was very pleased to be asked to review the latest offering from Heil Sound - the Pro-Set Plus Studio Headphones and boom microphone.

The Headphones

Removing the headphones from the box I was amazed at how light they were, considering their size. There is a self-adjusting rubber headband, which is cushioned and can be shaped to fit your head.

The ear pads are made of soft plastic and have a removable washable cotton cover and replacement pads are available. Your ear is fully enclosed but exterior noise is not completely blocked out. I prefer this and find it less tiring during long periods of operating, especially in contests.

Each earpiece is fitted with completely new design of speaker and these are mounted in a small acoustically tuned chamber. One interesting feature is a Phase Reversal switch fitted on one side, which puts the received audio at the centre of your head or spreads it out allowing a wider sound field. The manufacturer claims this "makes it much easier to pick out a signal in a pile-up". The Pro-Set Plus has an 8ft lead with a 6.3mm stereo jack at the end which will be more than adequate for most situations.

At no time during the review did I feel like my head was in a vice. (A common fault with a lot of modern hi-fi type headphones).

Microphone Boom

A boom holding the microphone swings through 180° and is suitable for either left or right side operation. The boom arm tension can be adjusted by removing the ear pad and four Philips screws on the speaker plate. This lifts out revealing three more screws, which can be tightened or slackened



● A Phase Reversal switch is fitted to one side of the headphones. (see text).

as required.

At the end of the boom is a

holder for the dual microphones. The HC-4 mic is recommended for DX chasers and has a frequency response designed to cut through pile-ups.

A second insert, the HC-5 has a frequency response more suited for general use. A small switch allows you to select whichever microphone you wish to use.

Adapters & Footswitch

All the supplied leads were of very high quality. The microphone audio lead is terminated into a 3mm male plug while the stereo headphones lead has a 6.3mm stereo jack. Heil have made it very easy to interface the headset with most modern transceivers and produce a selection of short adapters, which are colour coded.

The AD-1 lead adapters have a 3mm female input jack for the boom set microphone while a

6.3mm female adapter handles the push-to-talk (p.t.t.) line. This can then be connected to either the HS-1 hand or FS-1 foot switch. The 6.3mm stereo headphone plug then fits into the headphone socket of your transceiver.

The FS-1 footswitch was supplied with the review headphones and comes with a 250mm connecting lead terminated in a 6.3mm mono jack plug. This then fits into the socket of your chosen AD-1 adapter. The switch is of steel construction and has non-slip rubber pads fitted to both the top and bottom. Inside the case Heil have used a 10A micro-switch that appeared robust

and well up to the abuse it's bound to get.

Performance

So, just how well did the headphones and microphone perform? The answer is very well indeed. Over several days use I received consistently good audio reports, most of which were unsolicited.

All the stations I worked commented on the difference in audio between microphone inserts. Most preferred the more mellow audio quality of the HC-5 and felt the higher bias of the HC-4 was better suited to working DX or for use in poor band conditions.

Comfortable Operating

The headphones are of very high quality and well made with a design that I found comfortable over many hours of operating. They were simple to install but required adjustment of my

Carl Mason
GW0VSW takes time out from writing his h.f. column to test a pair of headphones from the USA.

transceiver's microphone gain control, compression level setting, etc. for the best results. This is easily achieved by having another station monitor your transmitted audio.

The received audio was superb and not at all tiring...unlike other headphones I have tried. The ability to change the spatial image with the phase reversal switch from wide to centre was useful and did allow better copy of weaker s.s.b. and c.w. signals.

The foot switch stayed in one place and was simple to use. It would certainly be useful for contest work or holiday operations where your hands could then remain free for logging and other station duties.

If you want a top-notch pair of stereo headphones then look no further than the Heil Pro-Set Plus. It will be money well spent.

PW

Product

Heil Pro-Set Plus Headphones

Supplier

Waters & Stanton PLC
Tel: (01702) 206835

Prices

Pro-Set Plus
(with HC4/HC5)
£199.95

Pro-Set Plus-IC
(with Icom element & HC4)
£219.95 inc. Icom lead

AD-1 Adapter (Modular)
£17.95

(8 Pin)
£16.95

HS-1 Handswitch
£29.95

FS-1 Footswitch
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New MOBILE PENETRATOR

1.8-30MHz (200W PEP) mobile antenna - no ATU required. Length 102" (52" collapsed). Fits 3/8 mount (SO239 feed point)

INTRO PRICE **£129.95** delivery £10
Mag mount£24.95 Body mount£12.99
"Roof bar" mount£9.95 Cable kit£9.99

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).

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2m	5ele (boom 45"/9.9dBd)	£49.95
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70cm	12ele (boom 48"/14.5dBd)	£59.95

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Delivery £10.00

2m	5ele (boom 63"/10.5dBd)	£49.95
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2m	5ele crossed (boom 64"/10.5dBd)	£79.95
2m	8ele crossed (boom 126"/13dBd)	£99.95
4m	3ele (boom 45"/8.5dBd)	£56.95
4m	5ele (boom 128"/11.5dBd)	£69.95
6m	3ele (boom 72"/8.5dBd)	£59.95
6m	5ele (boom 142"/11.5dBd)	£79.95
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NEW DOUBLE DELUXE

160-10M double length (200 foot) G5RV (made from flexweave). **£84.95** del £8.50

DELUXE G5RV

Multi-stranded heavy duty flexweave wire. All parts replaceable. Stainless steel and galvanised fittings. Full size - 102ft. (80-10M).



Full size ONLY **£42.95**
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Full size 102ft (now includes heavy duty 300Ω ribbon).....£28.95 P&P £6
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80mtr inductors + wire to convert 1/2 size G5RV into full size. (Adds 8ft either end).....£24.95 P&P £2.50 (a pair)

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Open wire.....£5.99
SO-239£5.99

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5m length.....£5.00 P&P £3.00
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A superb TDK 'snap fix' ferrite clamp for use in Radio/TV/Mains/PC/Phone etc.

Simply close shut over cables and notice the difference!
Will fit cables up to 13mm diameter. Ideal on power supply leads/mic leads/audio leads/phone leads - YOU NAME IT!

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

8 mtrs **£109.95** 12 mtrs **£149.95** Carriage **£12.00**
Telescopic mast lengths are approx.

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

20ft BARGAIN MAST SET

4 x 5' lengths of approx 2" extruded (16 gauge) heavy duty aluminium, swaged at one end to give a very heavy duty mast set. OUR LOW PRICE **£39.95** Del £10

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2" x 1.5m length	2mm wall thickness	£12.50 P&P £10
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Del £10.00

1m	1 1/2"	£8.50	1 3/4"	£10.50	2"	£12.50
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Pulley will hang freely and take most rope up to 6mm. (Wall bracket not supplied).

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24"	T&K Brackets	£20.00 P&P £8
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	U bolts (1 1/2" or 2")	£1.20 each
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2m/70cm dual bander. Includes multi-function D.T.M.F. mic + loads more.

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E-90 New 6m/2m/70cm handie.....Sale price £275.00

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

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KENWOOD TH-F7E



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

+ FREE REMOTE MIC **£249.00**

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TM-D700MkII NEW MODEL 2m + 70cms mobile.....£439.00

hf made simple

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

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

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100 Watt version of the ultimate HF radio! Includes: Built-in PSU. Superb for contest work.

HOW MUCH!!

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100W HF + 6m transceiver. SSP £699.00

SAVE £100

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1.8-30MHz (200W PEP) mobile antenna - no ATU required. Length 102" (52" collapsed). Fits 3/8 mount (SO239 feed point)

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hf no problem

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

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In our opinion, the best HF Tx below £1500.

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power supplies

NEW NISSEI MS-1228



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

OUR PRICE **£79.95**

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25A @ 13.8V yet lighter than an IC-706 but about the same size. Features: ● Ultra quiet fan ● Over voltage/current protection ● Weighs ~ 1.8kgs ● Size: 57 x 177 x 190mm

£79.95. **£59.95** Delivery £10.00

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

A SNIP AT **£119.95** Del £10

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MFJ-259B
HF digital SWR analyser + 1.8-170MHz counter/resistance meter.

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

GC-038 Lower mast clamps £25.00
GC-065 2" Thrust bearing £48.00.

OUR PRICE **£359.00**

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D-308B BLACK DELUXE DESK MIC



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

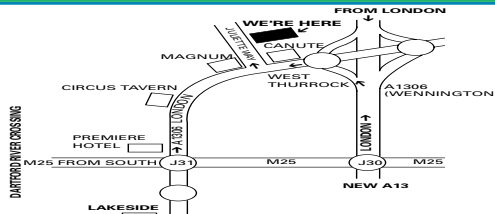
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OPTIONAL LEADS (P&P £1.50)		
A-08	8 pin "Alinco" round.....	£9.95
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AM-08	Modular phone "Alinco".....	£9.95
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OUR PRICE **£299.99**

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BC9000XLT£235.00

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Wideband hand-held scanner covers 500kHz-1650MHz. (All mode). Includes nicad/car charger/charger/antenna. Extremely user-friendly hand-held receiver with outstanding performance unmatched by its rivals.

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

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

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

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

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

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OUR BEST SELLING LOW PRICED RECEIVER
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The short wave receiver for the true enthusiast. Includes free power unit. ● 0.03-60MHz (all mode)

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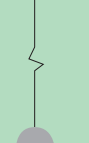


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SGC-237 HF+6m Tuner£379.00
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OUR PRICE **£25.00** P&P £5

Richard Newton
GORSN our keen
 reviewer has been
 trying out a hand-
 held which Yaesu
 dramatically
 demonstrated as
 being fully
 submersible in
 water at the
 Leicester Show!
 But he's reluctant
 to go underwater
 himself!

The Yaesu VX-7R is a tri-band hand-held transceiver which seems to be aimed at the more outward bound Amateur Radio enthusiast! It also has some rather advanced features and provides transmit and receive on three Amateur bands: 50, 144 and 430MHz. It also then offers extended receive capability from 500kHz to 999MHz with the ability to use f.m., w.f.m. (wide f.m.) and a.m. The radio measures 60mm wide, 90mm high and 28.5mm deep (without knobs and antenna). Along with being small it weighs about 260g (just over 9oz) with the supplied battery pack and antenna. The Yaesu VX-7R is supplied with a 7.4V, 1300mAh Lithium-Ion battery pack, wall charger and a stylish swivel belt clip. It also has a hand strap and a helical antenna which has a choice of two extensions, one for 144 and 430MHz with the other covering all bands including 50MHz.

Output Power Options

The VX-7R offers several options on output power. The operator

can choose from 500mW, 1, 2.5 and 5W...this helps with battery life and keeping channel congestion to a minimum. It's capable of tuning in 5, 10, 12.5, 15, 20, 25, 50 and 100kHz steps and will also tune in 9kHz steps on the 500kHz - 1.8MHz a.m. broadcast band. Powering the Yaesu VX-7R is straightforward as it can also be operated via an external d.c. connection with a supply voltage between 10 and 16V. This means it can be operated directly from a car battery or other external 13.8V d.c. source with nothing more than a normal lead. Whether on battery power or not the rig can deliver a maximum output of 5W.

Connecting Antenna

I got the Yaesu VX-7R out of the box and connected the antenna, which has an SMA type fitting, **Fig. 2**, and turned the rig on...noting that there were two v.f.o readouts. Incidentally, and

special black rubber 'bumpers' to provide extra protection if the unit is accidentally dropped. Black battery pack and black knobs match the styling. I presume that this is aimed to make the radio appear even more rugged. However, I have to confess I found it just a little over-stated **although I fully appreciate** that the styling would be appreciated by some. For example, my son **Thomas M3TJN**, and his brother **Oliver** both thought it "looked really cool" ...**so I guess I may just be showing my age!**

Incidentally, I'm mentioning the aesthetics of the Yaesu VX-7R for one reason: It's my opinion that Yaesu have tried to do something different...and perhaps it's just a bit 'off the wall', (like all artistic statements) and I felt their efforts to be worthy of note and comment.

The kind of things I look at are: Can I tune it and transmit, can I programme a simple memory?, Can I adjust the power output level, select repeater offset and tone and tuning steps? These questions I see as fundamental controls and I believe they should be accessible and labelled. Obviously the more advanced features are going to need more detailed explanation ...and as a result are quite correctly made more difficult to select.

The Yaesu VX-7R was the first rig in a while that did not fully pass the 'pick-up-and-use' test. I found that even when something was labelled as one operation or function, it didn't seem to do

The Yaesu VX-7R Tri-Band Hand Held transceiver

● As the PW 'Staff diver' appearance on stage suggests... the Yaesu VX-7R is waterproof... although GORSN suggests you don't call "CQ" underwater!



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Magnesium Metal

The Yaesu VX-7R defies convention with a magnesium metal body, **Fig. 1**, which the manufacturers explain - makes it extremely strong. There are also

jumping ahead a little... I really liked the flexibility that dual v.f.o gives in monitoring and switching between operating bands, this was a definite plus point.

Although the Yaesu VX-7R did not seem to offer full duplex functions, it was still very encouraging to see the two v.f.o readouts. A semi-duplex contact would be possible either on the same band or across bands. For instance...it's possible to use the extended receive capability by receiving a station on 70MHz, while talking back on 144 or 50MHz for example.

The two v.f.o readouts are called the **Main Band** and **Sub Band**. The Sub Band will only allow transmit and receive on the three main Amateur bands where as the full extended coverage is only on the Main band.

Read The Book!

Although I appreciate that most manufacturers would recommend

what it said. Additionally, buttons were actually used for functions they were not labelled to do. There were also inconsistencies in the functions of buttons and the listed function in the handbook.

The handbook is a generic one, **which serves both the American model and the other versions of the rig**. However, in respect of some features and functions the book does not make it clear that they are only for the American market. I followed the book to the letter and could not figure why the monitor function didn't work...until I found in a separate section of the book that this key had been assigned the 1750Hz repeater tone burst for the version on sale in UK!

The Yaesu VX-7R is not the easiest to use rig I've ever operated and the book on occasion seemed to cause me more confusion than explanation. **All I would say is, read the book thoroughly and take notes!**



● A close-up view of the main front panel of the Yaesu VX-7R (see text).

However...it should be noted that **the Yaesu VX-7R is packed with features and functions and I guess that this inevitably means that controls and explanations are going to start getting a bit more challenging!**

Impressive Display

The display on the VX-7R is rather impressive and the rig offers an option of using some rather eye-catching icons. It displays all sorts of information on the screen from battery voltage to the time and date or even a visual representation of the received and transmitted waveform!

Incidentally...the display can be set up to be large and uncluttered, especially if you take advantage of the ability to have a single band on the screen. Very useful!

The rig uses what Yaesu call a 'strobe light' on the front of the rig to indicate things such as transmit and busy signals, I have to say that although having very

limited practical use this was quite impressive, the colours it emits can be user defined and receive and transmit status on the Main band can be assigned different colours to the Sub Band.

Submersible Rig

Yaesu emphasise in their handbook that the VX-7R is a perfect radio for skiing, hiking or walking round town and I think this is part of the reason they have gone to great pains to point out that the Yaesu VX-7R is submersible! However, I must point out to you all the possible pitfalls and dangers to your personal health and safety should you ever consider using your rig underwater! In the highly unlikely event that you should want to call CQ while completely immersed in water I should imagine that you would stand a very real chance of drowning!

But joking apart...I think that Yaesu are pointing out that the radio is waterproof! And of course, I can see this as a real

advantage as in the past I've used plastic bags - to little effect - when trying to protect my hand-held when on my pedal cycle.

When hill walking or just being out and about in the recent wet weather it would be a real bonus to have a **waterproof rig** such as the VX-7R obviously is...but submersible? I don't think so...try to keep out of the water is my advice and leave the submersible test for when you really do (unavoidably) fall in...that's when it will be really useful although we know the rig will pass the test...will the operator survive the dunking?

Notable Features

Just before I tell you how the rig fared on air I'd like to highlight some of the notable features on the VX-7R. This is because along with offering functions such as full CTCSS, DCS, automatic repeater off-set and other established features of a modern menu driven rig...it has some rather more unusual features up its waterproof sleeve.

The Yaesu VX-7R has in built VOX operation where you can set it to automatically transmit when you speak. I had to have the rig right up to my face before the VOX kicked in, even when set to the high sensitivity setting, so it would appear that it will only work with a any degree of success with a headset, extension or boom microphone.

Despite this...it's a useful little feature for easy hands-free operation.

The VX-7R incorporates Yaesu features such as ARTS, a system where compatible radios can poll each other and make the operator aware that it's in or out of communication range of the other rig. This is a useful little feature for work ranging from Search and Rescue applications in RAYNET to simply keeping in contact on a rally site. It also has Smart Search; this helps you identify busy frequencies across a given band, useful for finding the local repeaters when on holiday.

The VX-7R will also tell you the time, the date and the temperature. With an optional extra it will also give you the barometric pressure and a rough guide of altitude!

There is a little feature I particular liked called **Transmit Battery Save**. When activated the VX-7R will automatically reduce the output power from 5W to a low power setting if the

Product

Yaesu VX-7R Hand-Held Transceiver

Company

Yaesu UK Ltd.

Contact

Tel: (01962) 866667

Pros and Cons

Pros

Well made of a good quality, versatile variable output power, dual v.f.o., operates direct from external 13.8V d.c., excellent Frequency coverage, waterproof.

Cons

Difficult to operate, No 8.33kHz tuning steps for Air Band, some of the features appear to be gimmicks which detracts from rig's core use, confusing handbook.

Summary

"It's very versatile, extremely tough and rugged"!

Price

£359 inc. VAT

Supplier

Yaesu UK Ltd.
Unit 12
Sun Valley Business Park
Winnall Close
Winchester
Hampshire
SO23 0LB

last received signal was very strong. There are occasions where this will not assist but with straightforward hand-held to hand-held communications it seems a useful way to prolong battery life.

Standard Memories

The Yaesu VX-7R provides 450 standard memories, 11 quick recall or **Home Channels**, this is one for each band and 20 sets of scan edge memories. The 450 standard memories can be organised into nine memory groups, and each group is capable of storing up to 48 memories.

In use the transceiver provides the operator with numerous scanning options for both memories and v.f.o. It even has a simple band 'scope operation built in.

The Yaesu VX-7R also comes with 89 popular short-wave broadcast stations pre-programmed into a separate bank. A further 280 Marine Radio channels also pre-programmed in to the rig. When these pre-programmed features are selected the transceiver will

only act as a receiver on these frequencies.

On The Air

So, after checking through the many features...it was time to put the Yaesu VX-7R through its paces on the air and I made a simplex contact on 145MHz with **Terry Wood G7VJJ** who was using a WX1 and his hand-held running 5W. We are about 6km (4 miles) apart across the Bournemouth conurbation. The VX7 did well and Terry reported the audio as being "very good indeed".

I took the Yaesu VX-7R out and about and when pedestrian mobile...it was pouring with rain and the waterproof aspect came in to its own! I made contact with **Nick G0EOV** from Ferndown (He was only a couple of miles away from me). Nick reported that the VX-7R sounded "Great".

Nick went on to say: "It

doesn't sound like a hand-held at all" and that he could also hear the kids playing in the background... and even though I was walking there was no distortion. He said the Yaesu VX-7R sounded "Wonderful".

External Antenna

I then put the Yaesu VX-7R on an external antenna at home,



● A view of the top connections on the transceiver. Note the water-proofing precautions (see text).

hearing two stations in QSO who were kind enough to let me in and give me some reports. They were **Jim M3CJB and Ernie 2E1FRY**.

Jim, from Alderholt near

Fordingbridge said: "Your audio is almost BBC quality". Ernie 2E1FRY from Fordingbridge itself reported: "lovely audio Richard, no problem at all". Both stations were about 16km (10 miles) away from me and gave 4 and 5 to 5 and 5 reports.

Personally speaking, I was impressed with the receive audio quality on the Yaesu VX-7R. Both a.m. and f.m. signals were good.

The VX-7R has a range of features and functions, some good and some not so good, some useful and some not so useful.

So, in conclusion, if I was looking for a general hand-held for about town and rally use I probably would not look too hard at the VX-7R. However, if I was looking for a hand-held to operate out on hills when climbing or walking or even for one

to use on a pedal cycle to and from work I would seriously consider the Yaesu VX-7R. It's very versatile, extremely tough and rugged!

DNW

Thank you for sending **Richard Newton GORSN's** review of our new VX-7R Tri-Band transceiver. I have to honest and say that I was a little disappointed when I read the review last night, as I think it misses the point of the radio completely. To specifics:

1: The whole ethos of this radio is, apart from its Tri-Band capabilities and wide band coverage including m.w., s.w. and Band II f.m.. that it is a rugged and weather-proofed hand portable transceiver designed for outdoor use in conditions that other radios would have given up long before. This is a point that I think Richard has totally missed.

2: There is always a trade-off of functions v number of buttons/controls on the front panel. This is an increasingly difficulty decision to make these days, as the use of microprocessors makes more functions possible than there can be buttons/controls for. The balance that has been struck with the VX-7R is based upon years of experience in the manufacture of hand-held transceivers and we believe does match the needs of the majority of users. His comments, in my view, reflect someone for whom the advanced features of the VX-7R have totally passed him by.

3: 'Submersible Rig' is supposed to be a joke, but I don't think it works. Yaesu does not condone anyone trying to call "CQ" underwater! However the 'submersible' feature is not a marketing gimmick. The radio is rated to the JIS-7 standard, which means that it will survive full immersion for up to 30 minutes at up to 3 feet depth of water.

4: Notable Features: There is no mention of the advanced in-band dual receive capabilities of the transceiver nor of the WIRES internet access key on the keyboard, The in-band dual receive features include for example the ability for a user to set up the v.f.o.s to simultaneously monitor both the input and output frequencies of a repeater, or to set-up a General Coverage frequency on the sub v.f.o. and with a repeater or calling channel on the Main VFO, and have the VX-7R reduce the audio level on the sub v.f.o. band when a call is received on the Main VFO. In time, will not the difference between the review as it is today and what users find when they get the radio reflect badly on the magazine and more importantly on his credibility as a reviewer?

5: The VX-7R does not support 8.33KHz channel spacing at present. National requirements for 8.33 kHz were only introduced in the UK on Oct 31st this year and as I am sure you are aware it only applies to flights over 20,000ft. I would contend that the vast majority of users who use a VX-7R for Airband scanning would be interested in listening to the traffic around the airport which will all be at 25kHz channel spacing at least until 2006 when the first implementations below 20,000ft are planned.

In time, will not the difference between the review as it is today and what users find when they get the radio reflect badly on the magazine and more importantly on his credibility as a reviewer? A reviewer has to be impartial and also up to the job of fully recognising the features of the radio being reviewed, something I feel this review is clearly lacking in.

Paul Bigwood G3WYW

Commercial Sales Manager - Special Projects.

Vertex Standard/ Yaesu UK Ltd

Somerton Radio Station

Only 20 years after it played a vital role in communications to the Falkand Islands following the Argentinean invasion....BT International's Somerton radio station has closed. Tim Walford G3PCJ, literally lives 'next door' and provides a fascinating short history of the site.

Any radio enthusiast using the A372 link road between the A303 and Bridgwater - or travelling by train on the Bristol avoiding line between Taunton and Castle Cary in Somerset - would have seen the huge antenna farm at the historic Somerton h.f. radio station. Having moved nearby as a 'nipper' in 1949 with an interest in things electrical, I could hardly fail to notice Somerton Radio Station myself!

My first proper visit was in 1959 while studying for my Radio Amateur's exam under the tutelage of the late **George Pearson G3AWZ** who was living in nearby Street and had friends working at the station. I wish I had my own camera then...but the photograph, **Fig. 1**, shows what it was like with the skyline dominated the massive antenna towers.

First World War

The potential of radio became very apparent during the First World War, so the UK Government decided to let several contracts out for overseas wireless communication. Long wave operation was initially successful, but the early Radio Amateurs and Marconi soon realised that short waves had better potential for overseas work.

Marconi used a transmitter at the famous Poldhu site with

his yacht *Elettra* to explore propagation around the world in many tests up to 1924. This gave him the confidence to set up the 'Empiradio' Beam stations which were initially run by the Post Office but were later owned and operated by Cable and Wireless Ltd.

The sites were known as 'Beam' stations because very large antenna arrays were used. The antennas had narrow horizontal and vertical beamwidths and were used at both ends to focus the radio waves into narrow beams for increased signal strength required by the early receivers.

Somerton was always a receiving station, principally for telegraphy, and working mostly with the massive Beam transmitting station at Dorchester. The early services used manual or machine sent Morse at up to 160 words per minute with the receivers being operated from Electra House on the Embankment in London.

***Editorial note:** *Although nothing remains of the truly gigantic antenna system at Dorchester - which up until around 30 years ago dominated the downland on the western side of the town...the main A35 road passes right through the site not far from Maiden Castle. The old staff houses stand to the coast al side of the road and the transmitter building on the inland side. One of the main transmitter buildings now forms part of an industrial site with a superb view - with the Friary Press printing company occupying the largest remaining building.*
Editor.

● Fig. 1: A majestic sight! The Somerton buildings and towers, as they were in 1948. (Photograph, courtesy of the Cable & Wireless Archive, Porthcurno).

Opened In 1927

Somerton opened on 16 December 1927 for point-to-point services to New York and South America, and shortly afterwards, to Egypt, Japan and Australia. This needed two antenna arrays which were soon extended to 16, with the site eventually covering over 560 acres.

The Beam stations used arrays (designed by **G S Franklin**) which had a curtain of stacked vertical dipoles. Each vertical line had multiple half-wave dipoles with many such 'lines' spread out horizontally between the characteristic massive T-shaped 91 metre (300 feet) high towers.

A complex network of feeders ensured the correct electrical phasing of the vertical lines of dipoles. This arrangement fires forwards and backwards, so a second curtain of reflector elements was used to concentrate the energy along the shorter great circle route to/from the distant station.

The resulting beamwidth (approximately 10°) provided much gain for the early receivers, which was necessary despite the use of 20kW d.c. input of the transmitters used! However, the main snag was that the direction could not be altered and they had to be cut for specific operating frequency bands. Initially, each direction had two operating frequencies in the 4 to 20MHz range, the higher for daylight work and the lower for nighttime use.

The Franklin antennas were used up until the early 1960s. By then, improvements in receiver sensitivity allowed their replacement by smaller and wider bandwidth stacked Rhombic antennas hung between 55 metre (180ft) triangular lattice masts. These were linked to the receivers by high impedance open wire feeders, which minimised the losses over up to 800 metres or so (half a mile).

The feeders were mounted on telegraph poles; with one connected to each end of the rhombic. This was done so that their most sensitive direction could easily be reversed from the control room.

Just outside the buildings, wideband transformers changed the feeder impedance down to a low value for routing by coaxial cable through a switching matrix to the selected receiver. The photograph, **Fig.**

2, shows a selection of the wide variety of high quality insulators used in the antennas and feeder installations.

Eight Receivers

Initially, Somerton was equipped with eight receivers covering 4 to 18MHz, but this was soon increased to 14. These were designed by **G. A. Mathieu** who had performed the tests onboard Marconi's yacht *Elettra*.

The receivers used a modular form of construction in vertical racks comprising nine copper-screened removable units. The first receivers are thought to have had a single radio frequency (r.f.) amplifier stage, followed by the detector, multiple low frequency amplifiers and landline cable driver stages.

To allow for unintentional changes in transmitted frequency, the receiver bandwidth was 10kHz. There was also a form of limiting to cater for the anticipated wide variation in signal strengths.

The output stages were routed through another switching matrix to the telegraph landline circuits taking the messages to Electra House in London. Normally there was no human involvement at Somerton in reading the incoming traffic.

It was not long before space diversity, employing two spaced out antennas, was used to overcome short term fading effects. The duties of the staff at Somerton were primarily to keep the equipment working and alter the connections to the antennas and land lines as time and services required. Actual traffic could be monitored for maintenance purposes with test equipment called 'undulators'.

Traffic Increased

The amount of traffic handled continued to increase, especially when the receiving stations at Skegness and Bridgwater closed in 1941/2. Additional telegraph codes and modes were now in use, including the ability to handle images for newspapers, etc.

Operations were taken over by the Post Office again on 1 April 1950. They started a major refurbishment program replacing the installed RC64,

Fig. 3: The South wing, showing receivers, scope & undulator. (Photograph, courtesy of the Cable & Wireless Archive, Porthcurno).

HSR and CR150 receivers with Marconi HR91/93/24 and Mullard SL60 equipment, the latter being a double diversity design.

The photograph, **Fig. 3**, shows the equipment racks and a portable oscilloscope and undulator used for testing in the 1960s. When narrow band heterodyne receivers took over, the master reference oscillator was installed in a deep outside well to ensure constant temperature operation for best frequency stability!

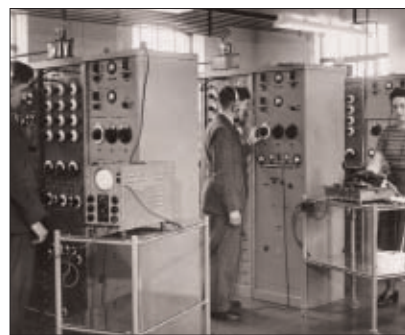
When Brentwood and Baldock* closed around 1970, traffic through Somerton was at its peak and telephony services were temporarily introduced. Later still, telegraphic use began to decline due to improved undersea cables and the advent of satellite services.



Fig. 2: Collection of insulators, a recent colour-digital photo taken by G3PCJ.

The role of Somerton became increasingly devoted to maritime services. Interestingly, for or a short while in 1976, radio operators from Burnham worked at Somerton providing a marine telephony service connected directly to the public telephone network. Additionally, in the 1980s there were about 100 receivers directly controlled by a microwave link from Burnham for maritime (and occasional aeronautical) telegraph and telephony use in conjunction with the Rugby transmitters.

The power supply for all the equipment was originally diesel generator sets, **Fig. 4**, with extensive standby batteries. However, when the national

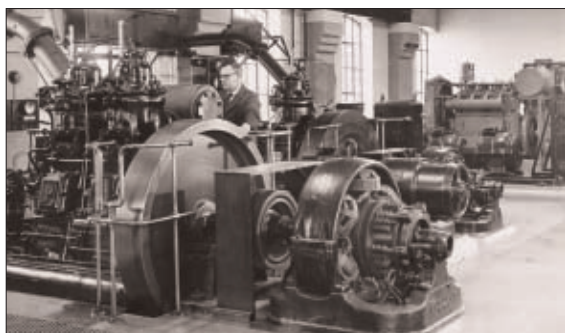


grid reached these parts just after the Second World War, a rotary converter was added to convert the 50Hz to d.c. for the existing equipment.

*This station, as featured in Baldock - Inside The Listening Ear, *PW* July 2002, is of course now the site of the Radocommunications Agency's monitoring station.

Considerable Impact

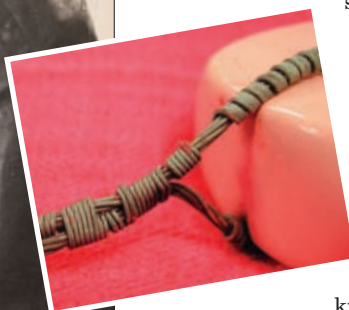
As you may well imagine...the station made a considerable



● Fig. 4: The Engine room at Somerton as it was in 1948. (Photograph, courtesy of the Cable & Wireless Archive, Porthcurno).



● Fig. 6: Assistant engineer Wilson discussing repairs with chief rigger Sweeney. (Photograph, courtesy of the Cable & Wireless Archive, Porthcurno).



● Fig. 5: Detail of wire termination to an insulator.



● Fig. 7: The Somerton buildings photographed in 2002.

impact on the local scene! The property included its own nearby farmhouse/buildings and quarry, which also may have been the source of the stone for the fine main buildings, three detached houses, two bungalows and two pairs of semi-detached houses for the more important staff.

Many people from Somerton also worked 'at the station'. Several farmers leased the land under the antennas but the many posts and lumps of concrete still make it difficult

to use effectively!

Apart from the inside equipment maintenance staff, there were about 14 riggers continually employed on keeping the antennas aloft. They had to work in all weathers, including the awful 1947 winter when icing brought down all the main antennas.

Desite the loss of the main antenna service was hardly interrupted! The staff achieved this remarkable feat by using less complex standby antennas while over 244km (800,000ft) of cadmium copper wire was used to replace 37 main arrays with 970 vertical elements. The dedicated rigging team worked this particular miracle in 69 working days!

Incidentally, the workmanship was superb as

shown by the photograph of the detail termination to an insulator in **Fig. 5**. The photograph in **Fig. 6**, shows the Assistant Engineer Wilson discussing these repairs with Chief Rigger Sweeney.

The 50th Anniversary

Given its local importance, a big event was held to celebrate Somerton's 50th birthday anniversary in 1977. All past and present staff were invited together with senior staff from London, local farmers and dignitaries from Somerton itself.

A formal luncheon was held for 124 guests at the *Red Lion* Hotel in Somerton, with a major exhibition open to the public at the station itself. This was organised by the Managing Engineer, **Les Wilkes** who was also licensed as **G2FHI**. (His extensive correspondence file suggests he did little else in 1977!).

All eight prior Managing Engineers are recorded, with the staff signatures, on a splendid framed 'roll of attendance' for the celebration. Among the staff there were a number of licensed Radio Amateurs, including **Tony Roth** (call not known) who lived in Long Load, and **Geoff Astington G4ZYX**, who kindly helped with much of the material for this article.

The latter had regulator contacts with G2FHI, who had special BT produced QSL cards, up until 20 March 1986. Technical Officer Johnny Wainright also helped run the pub in Compton Dundon where his wife was the official landlord...and it appears BT was not too keen on this arrangement!

Relations with Government departments were always fairly close because much of the traffic was for them. Rumour has it that during the second World War, there was a time when Somerton was the only means of receiving overseas messages, due to equipment failures/enemy action on land and maritime telegraph cables.

Geoff tells me that he once had to go on a course at Grantham to learn how to erect the official massive nuclear fallout shelter within the buildings if needed! Fortunately it wasn't.

In the early days of the Falkland conflict, before the Task Force went south,

Somerton was the only direct means of communication with the islands. This was via a teleprinter link which I'm told by a 'Reliable Source' was only useable twice a day with luck due to the distance and propagational problems!

Closure Inevitable

Satellite communication eventually became so cheap and easy, that even for maritime purposes, the closure of Somerton and its services became inevitable. This happened on 29 April 2000 when a very special event took place during the last 24 hours which marked the end of commercial h.f. c.w. services to the world from the UK.

The 'Wake' was a cross-band event between the maritime c.w. operators at Burnham (Burnham on Sea, also in Somerset, south of Weston-Super-Mare on the Bristol Channel) and Radio Amateurs around the world. The Burnham operators called on their normal maritime frequencies using the Rugby transmitters, but listened on most h.f. Amateur bands for world wide replies using the receivers at Somerton.

The response was overwhelming with a continuous pile-up! Special QSL cards were issued to the lucky few.

The equipment was swiftly dismantled and removed. I happened to notice the standby generator departing on a low loader on 14 August 2000 but by then all the equipment had gone. There have been many rumours about the future use of the site, including plans for a major housing development.

The tower for the microwave link remains in use for other local services, but the many masts for the rhombic antennas are now being felled and stacked up in sections against the hedges waiting for the scrap man. The buildings, shown in **Fig. 7**, remain strong and defiant but for what eventual use?

Somerton may now be silent and the c.w. service extinct...but I'll never be able to forget the majestic masts and antennas which I grew up alongside. They may be gone...but we cannot forget the services that the station and its staff provided.

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- Up to 1W output (with 13.8V supply)
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- 5W/1W/0.5W output power
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- Includes wide FM mode

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DJ-195E 2 mtr Handheld with Keypad

- New 2 metre (144-146MHz) handheld
- Up to 5W output (0.8W low power)
- 40 memory channels + 1 call channel

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DJ 193E 2 mtr Handheld

- New design 2m (144-146MHz) handheld
- Up to 5W VHF
- Wide RX possible (typical 135-173MHz)
- CTCSS + DCS enc/dec fitted

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NEW DJ-596 Dual Bander

- 100 memory channels, any mix of VHF/UHF
- CTCSS, DCS encode + decode
- DTMF tones and autodial memories
- Three scan modes
- Wide and narrow FM TX/RX

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ALINCO DR-605E Dual Band Mobile

- Ready for 9600 bps packet
- Extended RX capability 136 - 174MHz, 420 - 470MHz
- 50W (2m) - 35W (70cms)
- 100 memory channels (+ CALL Channels)
- Cross band full duplex

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- 100W output on HF & 6mtrs
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- SSB, CW, AM, FM and digital modes
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- Detachable faceplate and remote mounting kit available
- Speech processor standard
- Narrow filters fitted as standard
- TX - all HF + 6mtr
- 100W output on HF & 6mtrs available
- Speech processor standard
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DX77E HF Transceiver

The DX-77 is a design achievement that puts a HF desktop transceiver within your reach! And this is no 'bare bones' radio, nor is it a 'converted' 'channelised' adaptation. The DX-77 was designed from the beginning to be a quality Amateur Radio, full of features to enhance its performance and your enjoyment.

- 100W HF transceiver
- General coverage: RX 500kHz - 30MHz
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- 100 memory channels
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- Optional keyer



DR-605E Dual Band Mobile

The DR-605E is a no-nonsense twin-band mobile transceiver that delivers power and performance with user-friendly features. The command keys are simply laid out to enable intuitive operation.

- Ready for 9600 bps packet
- Extended RX capability 136 - 174MHz, 420 - 470MHz
- 50W (2m) - 35W (70cms)
- 100 memory channels
- (+ CALL Channels)
- Cross band full duplex
- Tone search function
- Cable cloning function
- Channel indication mode
- CTCSS encoder fitted



DR-135E

- TX: 144 - 146MHz
- RX: Expandable 118 - 174MHz
- 50/10/5 Watts power settings
- 100 memory channels
- Frequency Steps: 5, 8.33, 10, 12.5, 15, 20, 25, 30, 50kHz
- Optional internal TNC operates 1200, 9600bps
- Front panel GPS input for APRS
- Rear panel DSUB9 computer connection
- Ignition key on/off feature
- CTCSS and DCS encode+decode
- Super-wide 7 character display
- Wide/narrow (25/121/2kHz) FM modes
- AM airband feature
- AM airband receive
- Ten auto dial memories
- Size: 142 x 40 x 174mm



DJ-S40 CQ UHF Pager Sized Handheld

Alinco has created a new UHF FM Handheld Transceiver that sets new standards in features, convenience and easy operation packed in a compact pager-size package. The DJ-S40T has an ergonomic design that's "user friendly" and capable of 1W output with optional Ni-MH battery pack. You'll be ready to travel the world with CTCSS encode/decode and European tone bursts, all included at no extra cost.

- Up to 1 W output (with 13.8V supply)
- Large illuminated display
- Loud clear speaker horn system
- 100 memories + 1 call channel
- Multi Scan functions
- 38 CTCSS tones for selective calling
- S-meter
- Cable Cloning
- External device control feature (outputs 3Vdc 5mA signal from an accessory port when squelch opens)
- Additional features, including anti-theft alarm and experimental mosquito repelling tone!
- Huge selection of accessories available



DJ-X3 Scanning Receiver

- 100kHz - 1300MHz
 - AM/FM/WFM
 - 700 memory channels
 - Steps: 5/6.5/8.33/10/12.5/15/20/25/30/50/100kHz
 - Auto descrambler
 - Bug detector
 - Stereo FM (with headphones)
 - Attenuator
 - SMA Antenna
 - Battery saver cct
 - Size: 56w x 102h x 23d mm
 - Weight: 14.5g (without batteries)
 - Supplied c/w: 3 AA dry cell battery case and carrying strap
- OPTIONAL EXTRAS: • Earphone
• Ni-Mh battery pack
• Lithium ion battery pack
• Drop in mains charger

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NEW DR-620E
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Supports optional "digital voice" communications

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- Receives Airband and Wide FM
- Dual Watch Receiver with V/U, V/V, U/U capability
- Dual Band TX: 2 Mtrs/70cm
- 200 Memory Channels
- CTCSS/DCS encode/decode
- Advanced 10F3 digital mode w/speech compression technology (EJ-4TU required)
- Four different tone bursts.
- EMS47 Mic (optional) allows remote control/direct VFO input
- Front Panel separation - (optional EDS9 kit)
- Programmable VFO and memory scan
- Direct GPS input for APRS mobile tracking (requires optional EJ-50U)
- Internal Duplexer - single PL-type antenna Socket
- Ignition Key activated power on/off feature
- Theft alarm feature
- Power supply Voltage display
- TNC (Optional EJ-50U) supports digipeat mode
- TX Output Power: 1/10/50 Watts VHF (selectable)
1/10/35 watts UHF (selectable)

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ALINCO DX77E
HF Transceiver

- 100W HF transceiver
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RX 500kHz - 30MHz
- All modes:
FM, LSB, USB, CW & AM
- 100 memory channels
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SPECIAL

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Fully Featured Portable
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- TX - all HF + 6mtr
- 100W output on HF & 6mtrs
- RX - general coverage
150kHz - 30-MHz, 50MHz - 54MHz
- SSB, CW, AM, FM and digital modes
- 100 memories
- Narrow filters fitted as standard

SPECIAL

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DR135E

- TX: 144 - 146MHz
- RX: Expandable
118 - 174MHz
- 50/10/5 Watts power settings
- 100 memory channels
- Frequency Steps: 5, 8.33, 10, 12.5, 15, 20, 25, 30, 50kHz
- Optional internal TNC operates 1200, 9600bps
- Front panel GPS input for APRS
- Rear panel DSUB9 computer connection
- Wide/narrow (25/12/2kHz) FM modes

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DJ 195E
2 mtr Handheld with Keypad

Alinco has created a new 2 mtr HT that sets new standards in features, convenience and easy operation. The DJ-195 sports an alphanumeric display for easy memory management. It has an ergonomic design that's "user friendly" and the 5W output battery is standard. You'll be ready to travel the world with CTCSS encode + decode, DCS and European tone bursts, all included at no extra cost.

- New 2 mtr (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 channels + 1 call channel
- Large range of accessories available

DJ 193E
GREAT VALUE 2 mtr Handheld

• New design 2m (144-146MHz) handheld

- Up to 5W VHF
- Wide RX possible (typical 135-173MHz)
- CTCSS + DCS enc/dec fitted
- 40 memory channels + 1 call channel
- Alphanumeric display
- DCS, Tone burst and DTMF
- 13.8V DC direct input facility with battery charge feature
- THEFT ALARM! Emits a tone when disconnected from power
- S Meter with easy to read display
- Audio dialler
- Call cloning facility
- Comp. programmable 3rd party software (typical)
- Experimental insect repellent feature! Can the DJ-193 actually repel mosquitoes? Activate the special tone and decide for yourself!

NEW DJ-596
Dual Bander

A feature packed dual bander - yet simple to use, with the capability of Digital Voice operation (where permitted - using optional digital voice board). A nickel metal-hydrate (NiMH) battery is supplied as standard, for added power and convenience. VHF/UHF TX/RX including cross-band split operation

- 100 memory channels, any mix of VHF/UHF
- Alphanumeric channel labels
- Direct frequency input from keypad
- Large backlit display and keypad
- CTCSS, DCS encode+decode
- DTMF tones and autodial memories
- Tone bursts
- Three scan modes
- Wide and narrow FM TX/RX
- 12VDC direct input (5W output)
- High-power NiMH battery (4.5w output VHF/4w UHF)
- Busy Channel Lock Out
- Mosquito Repelling feature (experimental)
- External Terminal Control
- Wire cloning capability
- Optional digital mode (where permitted)

DJV5E
Compact Dual Bander

Alinco introduces an exciting new VHF/UHF handheld transceiver that will change the way you think about communications. The new Alinco DJ-V5 can fill a variety of roles and it does them all well. Loaded with technical features, 5W of output power and a wide array of operator conveniences, the DJ-V5 is an attractive radio in a compact package.

- New dual band handy transceiver
- 5W/1W/0.5W output power
- Super wide receive (76-999MHz)
- Includes wide FM mode
- CTCSS Encode+decode, DTMF squelch and 4 different European Tone Bursts
- 200 memory channels+2 call channels
- Alphanumeric display, up to 6 characters
- Autodial memories
- Up to 6 character alpha-tagging
- 4 scan modes, 5 programmable scan banks
- Input voltage display with over voltage warning
- Automatic high temperature protection feature



EDX2
Auto Tuner

- Auto tuner
- 3.5MHz-30MHz (with over 3 mtr element)
- 200W PEP power handling
- Power for tuning = 7-20V
- 13.8V DC
- ±10% operating voltage

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HFM-1

- Covers: 3.5 - 30MHz (when used with EDX-2 auto ATU)
- Length: 2.7 metres

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Antenna Workshop

The Windom Antenna

An analysis of the Windom Antenna by Dr John Share G3OKA...who aims to dispel the myths!

In this analysis of the Windom Antenna, let's first look at its history. The design was originally published in the July 1926 issue of *QST* and credited to **Loren Windom**. The design was also due to contributions from **John Byrne, E. Brooke, and W. Everett** at the University of Illinois. There were later additions from **G2BI** and **Jim MacIntosh** from this side of the Atlantic Ocean.

Essentially, the Windom antenna is a half-wave of wire at the lowest operating frequency, running horizontally and fed by a single wire feeder, at a point one third way along its length **Fig. 1**. The theory is that this position of feed point offered the same impedance on even harmonically related frequencies.

Key Word

Harmonically related perhaps, but the key word 'buly' is often omitted in subsequent descriptions and developments. This conditional factor, that the basic premise applied only to 'even harmonics', is gradually being eroded with the passage of time. The earliest designs used open wire feeders, which operate with negligible losses even when badly mismatched, and it is probable that users anticipated the need for a matching unit.

Open wire lines are cumbersome and at some point 300Ω ladder line was substituted for the open feeder. This ladder line has a poor reputation as regard to losses and has variable characteristics when wet. Lost in the mysteries of time, it came to be accepted that the 'all-band' feed impedance was 300Ω.

In more recent times 450Ω ladder line has come to the fore. This has lower intrinsic losses and is more tolerant of rainwater, and it was inevitable that the 300Ω line would be replaced with 450Ω line. For some inexplicable reason the 'all-band' feed impedance came to be regarded as 450Ω and that, by 9:1 transformation at the antenna, 50Ω coaxial cable could be used as the feeder.

With the ready availability of ferrite toroids, and the ease with which impedance transformers can be constructed, it became inevitable that the Windom would become an all-band antenna that would operate with a low standing wave ratio (s.w.r.) when fed with 50Ω coaxial cable'.

In Practice

In practice, the alarmingly high s.w.r. at the third harmonic of the lowest band, could be readily explained but other problems were more difficult to pin down. A whole range of different dimensions and tap point positions have at some stage of evolution been expounded as the universal solution and said to provide a low s.w.r. on all-bands.

Disappointing experiences with published designs led me to the conviction that the original tap point concept was nothing more than myth, and so, the antenna was analysed starting from first principals. The axiom of 'If it doesn't work in theory it'll never work in practice' has no conditional element and must always apply.

A length of wire that is resonant at one frequency will not be resonant on exact harmonics due to a factor termed 'end correction', that may be formulated as:

$$L = \frac{150 \cdot (N - 0.05)}{f(\text{MHz})} (\text{m}) \quad \text{or} \quad \frac{492 \cdot (N - 0.05)}{f(\text{MHz})} (\text{ft})$$

Where N is the harmonic, (of course, when N=1 it's the fundamental) and the length, L is the resonant length of N half-waves of that harmonic. The results are tabulated in **Table 1**.

If a wire is cut to 20.35m (half-wave on 7MHz), its 28MHz band resonance is 29.105MHz. Similarly if it's cut to 21.155m (four half-waves at 28MHz) its 7MHz resonance is actually 6.743MHz.

Reactance Inductive

In this latter case the reactance of the wire at 7, 14 and 21MHz is inductive and this may be corrected by a single series capacitor to restore the wire to resonance at all frequencies. Typically, capacitor with a value of 75pF (covering 7 to 28MHz) or 150pF (covering 3.5 to 28MHz) provides a satisfactory correction. The exact value is not particularly critical.

Provided the wire is resonant, no matter how many integer half-waves it contains, the impedance at any point, anywhere along its entire length will always be purely resistive. However, the value of this impedance depends on the number of integer half-waves and the specific electrical angle of the antenna current at that point.

Tables of the impedance at current nodes (R_n) for various numbers of half-waves are readily available. Over the range of particular interest they may be summarised as follows:

N=1	$R_n=73\Omega$
N=2	$R_n=94\Omega$
N=3	$R_n=106\Omega$
N=4	$R_n=115\Omega$

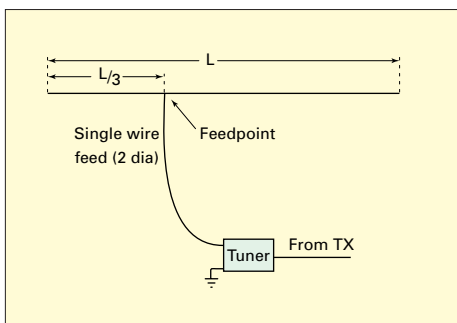


Fig. 1: The 'traditional' Windom antenna, is said to be an 'all-band' antenna, but this might not be the case, argues G3OKA.

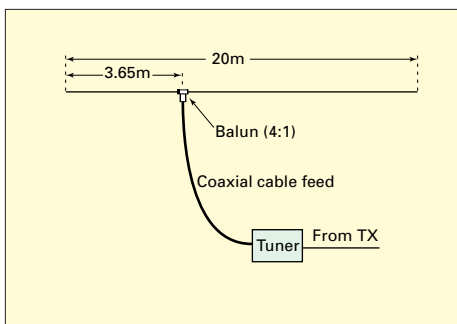


Fig. 2: An interesting combination of tapping point and wire length, that could be the ideal antenna for you!

Moving away from the current node the impedance increases in a sinewave form until, logically, it approaches infinity at the open end of the wire. It should be obvious that this must be a voltage node, there is nowhere for the current to flow hence the current must be zero.

Electrical Length

The relationship between feed point impedance (R_p) and electrical length (F) in degrees is expressed as

$$F = \cos^{-1} \{(R_n/R_p) - 0.5\}$$

Most scientific calculators have the inverse trigonometric function (\sin^{-1} , \cos^{-1} and \tan^{-1}), but computers tend to provide only the ArcTan (\tan^{-1}) function, from which it's possible to derive other trigonometric functions. In the BASIC computer language you could use the following series of statements:

$$B = \text{SQR}(R_n/R_p) :$$

$$A = \text{SQR}(1 - B^2)$$

$$X = \text{ATN}(A/B) * (180 / 3.1416)$$

The resultant value for X is an angle (F) expressed in degrees.

As an example, consider a 20m long wire, a frequency of 14MHz and a desired tap point impedance of 200Ω. From the table N=2 therefore $R_n = 94\Omega$ and the equation evaluates to 46.71°. A quarter-wave at 14MHz can be assumed to be 5m.

A 200Ω tap position is located either side of the current node at a distance of: $(F/90) * (1/4)$ metres.

In the above example, the tap point equates to $((46.71/90) * 5)m = 2.6m$. So, a 200Ω tap position will occur at (5.0-2.6)m and again at (5.0+2.6)m from the end of the wire.

Suffer Loss

All feeders suffer loss along their length, even when correctly matched. This loss occurs in both forward and reverse directions. Also, the losses are considerably higher when there is a severe mismatch at the load. The return loss masks the actual load mismatch so, that at the source end there's a lower s.w.r. reading than that occurring at the load feed-point.

So, we can use this loss reducing s.w.r. reading to our advantage. By accepting a maximum tolerable s.w.r. at the source, we can calculate a wider range of mismatch at the antenna, knowing that some of this mismatch will be hidden by the return losses in the feeder.

Accepting that a mismatch at the antenna is tolerable it remains only to define the limits. When we transform the cable impedance to a higher antenna impedance a significant range of values become available for consideration. When using a 50Ω coaxial cable coupled with a 4:1 balun, the ideal design antenna impedance will be 200Ω.

If we take a 10% variation in this ideal

Table 1

Frequency (MHz)	Harmonic (N)	Length (L)
7.0	1	20.350m (66.770ft)
14.0	2	20.887m (68.528ft)
21.0	3	21.065m (69.114ft)
28.0	4	21.155m (69.407ft)

- Tabulating resonant lengths for the different harmonics on a single wire.

impedance value, (a range of 180-220Ω) there will not be a significant change noticeable at the source end. Similarly using a 6:1 balun, a 300Ω impedance becomes 270-330Ω, and for a 9:1 balun, 450Ω can be range over 410-490Ω.

Lost Appeal

Air cored impedance transformers have long lost their appeal, though they do find favour in high power installations. Compact ferrite toroidal baluns now dominate and can be relied upon to function correctly even when quite crudely made.

The greatest losses in ferrite cored baluns occur at the highest frequency. So, for instance, inexplicably poor s.w.r. at 28MHz is usually traceable to a Ferrite Toroidal transformer that's not functioning according to its design specification.

A 4:1 impedance 'auto-transformer' balun, comprising two identical windings formed into a lightly twisted pair, will generally operate over a 10:1 frequency range (3-30MHz) with minimal losses.

A trifilliar wound auto-transformer balun with the ratio of (2+2+1) turns, results in a transformation ratio of 6.25:1. Whilst using the turns ratio of (1+1+1) gives an impedance ratio of 9:1. But these later cases can prove disappointing in terms of frequency range and efficiency.

Now, having established a technique to compensate for end factor correction, determining the impedance at any point of the wire, and a means of transforming 50Ω cable to higher values it only remains evaluate dimensions to find that elusive 'All-band Antenna'.

Whilst using a calculator to repetitively calculate the values, we will arrive at the same results, this effort cannot be justified. A computer can repeatedly perform the calculations needed very quickly, using a range of parameters and graphically display the result.

Primitive Program

Even a primitive computer program, written in QBASIC that ignores end factor correction in multiple half-waves, as well as

using a gross approximation for quarter waves will work. The results will confirm that, even at this level of precision and irrespective of the impedance, no single tap point will give the same impedance, even for two frequencies.

Sometime, reverse engineering a design, by analysing published dimensions is quite interesting. It's necessary to determine the angle at the tap point and then calculate the

impedance.

Consider a nominal 20m wire with a tap point at 7.62m from one end. It's necessary to roughly work out where the current nodes will occur and determine the distance of the tap from the node

Operating at 7MHz with a $\lambda/4 = 10m$, and the tap is 2.38m from the current node (10.0 - 7.62). As it's a single half-wave, then N=1 hence $R_n = 73\Omega$.

$$F = \{90 * (10 - 7.62)\} / 10 = 21.42^\circ$$

$$cc = \cos(F) :$$

$$cd = cc^2 :$$

The impedance = R_n / cd , giving a result of about 85Ω at 7MHz.

When the 21MHz case is investigated the 20m becomes three half-waves so, N=3, $R_n = 106\Omega$, the current nodes occur at 3.35m and 10m from the end of the wire. The tap point is 2.43m from the current node at 10m and a quarter wave is now 3.35m.

$$F = \{90 * (10 - 7.62)\} / 3.35 = 63.94^\circ$$

$$cc = \cos(F) :$$

$$cd = cc^2 :$$

The impedance = R_n / cd , giving a result of about 550Ω at 21MHz.

is it any good?

In Conclusion

So, having looked at the above figures, what can we say in conclusion? We can say, that there are combinations where tolerable multi-band matches do occur, such as the one shown in Fig. 2. A 4:1 balun fed 20m wire with a tap at 3.65m from one end, it's an interesting combination with an s.w.r. of 2:1 or below on 7, 14, 21 and 28MHz.

There are other combinations to be rediscovered by applying the above analysis. **However a 20m wire with the tap at 6.66m (the exact one third point) is one combination that should be avoided.**

As the basis for an 'all-band antenna', the one third tap theory, 'offering the same impedance' on all bands should be consigned to the realms of myth where it belongs!

Sabah Style

Sabah is the eastern part of East Malaysia. The state of Sabah shares the island of Borneo with another East Malaysian state, Sarawak, the Sultanate of Brunei and Indonesia.

Until the early 1960s East Malaysia and Brunei were known as British Borneo. Even though 40 years have passed there is still a lot of respect for the British in Sabah. (I was very surprised when passing by pre-teen school children to be greeted with "Good Morning, Sir" in an English accent).

The population of Sabah is a mixture of Malay, Chinese, Philipinos, Indians and of course several indigenous tribes. This gives a whole spectrum of inter-racial mixtures.

The purpose of my trip to Sabah was a

combination of Amateur Radio and a holiday. I flew to Kota Kinabalu, the capital city of Sabah, it used to be called Jesselton under British rule but Jesselton was totally destroyed in the final phase of Second World War. The locals refer to Kota Kinabalu as 'KK', and this is now the all-new, growing and bustling capital of Sabah.

Upon arrival in Sabah I was met at the airport by **Doris 9W6DU** and **Alfons 9M6MU**. They were easy to spot as they had driven to the airport in their van, which displays the distinctive letters '9M6AAC' on the windscreen.

Doris and Alfons took me to their Hillview Gardens Resort Hotel in Keningau, almost a three hour drive through the mountains from the airport.

This cosy, family run hotel has more antenna towers than trees! And of course there is a spacious, fully furnished radio room.

A Radio Place

Alfons 9M6MU, who's been a licenced Amateur Radio operator since 1974, had a dream of creating a 'radio place' that could be shared by enthusiasts from all over the world. His dream came true a few years ago and since then more than 100 guests have become members of the **Hillview Gardens Amateur Radio Club (HGARC) 9M6AAC**. Exhaustive information about the HGARC is available on the Internet at www.qsl.net/9m6aac

The list of British visitors to HARC is



Discover Sabah with Henryk Kotowski SM0JHF as he shares his experiences of a unique radio location in East Malaysia.

● More 50MHz Yagis and WARC antennas.



● Barry VK2BJ taking part in the Commonwealth Contest 2002.



● Enjoying a spot of pampering, Barry VK2BJ takes time out in the 'post contest' chair.



● Alfons 9M6MU in the radio room of 9M6AAC in Keningau, Sabah.

● Preserved for all to see - Henryk SM0JHF and Barry VK2BJ made a donation to 9M6AAC by taking part in a palm impression ceremony.





● The Hillview Gardens swimming pool with antenna towers in the background.



● The Hillview Gardens Resort is probably the only place in the world with a The CQ Bar and Lounge. The hosts, Doris 9W6DU (left) and Alfons 9M6MU (far right) are pictured here with visitor Ralph DK3GH.



● This Henry Radio 50MHz power meter was donated by Peter G4MJS.



● The main tower at the Hillview Gardens Resort complete with 7 and 14MHz Yagis.

long and includes: **Jeff 9H1EL, Phil G4JMB/9M6CT/VS6CT, Tony G0OPB, John G3JAG, Ray G3NOM, Neville G3NUG, Mike G3SED, John G3WGV, Don G3XTT, Steve G4JVG, Peter G4MJS, Stephen G4SHE, Tony G4UZN, Martin G4XUM, Richard G4ZFE, Andy G4ZVJ (now G3AB), John G6YIN, Rob GM3YTS and Barry VK2BJ/G3PEK.**

Barry arrived at Hillview Gardens a few days after I did. He now lives in a Sydney suburb but until 12 years ago he was full-time G3! He'd come to Sabah mainly to be on the air and he took part in the Commonwealth Contest (ex BERU), during which he was glued to his chair for a full 24 hours!

On the Monday after the Commonwealth contest I took Barry downtown to Keningau. Apart from having a pint of local lager and going exotic shopping, we visited one of many beauty parlours. I wasn't in need of any treatment, but Barry didn't hesitate in taking a seat in the 'post contest mode' chair!

There are many advantages of operating from 9M6AAC. These include being able to use the most up-to-date equipment, internet connection for DX spotting, several antennas to choose from, attractive propagation, a rare callsign, a reliable QSL manager (so that you don't have to do the QSL chores!), not to mention the climate! Borneo lies on the Equator and 9M6AAC lies out of town and elevated where the air is both cooler and clearer.

Project Donations

Everybody who visits 9M6AAC is asked to donate something to the club. Some of the members of the HGARC have made some exceptional contributions

Peter Bowyer G4MJS has donated equipment that is worth thousands of pounds for the use of visitors. Obviously,

he is a frequent visitor himself so maybe he just calculated that carrying the equipment back and forth would be both costly and cumbersome, I am joking, of course!

Donations are also accepted in the shape of palm impressions in clay tiles and planted trees. I planted a palm tree next to Barry's and we took part in a palm impression ceremony side-by-side. Other ceremonies include a steamboat farewell dinner and drinking young rice wine through a straw - called tapai (I can still feel the headache!).

Another frequent visitor to 9M6AAC is Phil 9M6CT. After retirement from Hong Kong he took up residence in Kota Kinabalu. His efficient quad antenna array creates some big pile-ups when he is at 9M6AAC. Unfortunately, Phil was in Bangkok while I was visiting Sabah so I didn't get to meet him.

Propagation Pipeline

Sabah is no rarity on the Amateur Radio bands. Yet it is so far from Europe and the USA that the demand for 9M6 is not measured up.

Obviously there is a propagation pipeline to Japan from Sabah and the 50MHz band opens up frequently. However, Peter G4MJS asked for one of the two 50MHz Yagi antennas to be permanently pointed towards Europe. The other one can be turned in the same direction and is in-phase fed when the band opens to Europe. Barry turned the other antenna to Australia and managed to make quite a number of contacts with his new homeland.

A permanent 50MHz beacon is transmitting from 9M6AAC on 50.014MHz signing as 9M6SMC. Unfortunately there is one disadvantage of this in that the beacon transmitter is located in the restaurant's kitchen and if the band really opens, you have to run down the stairs to turn the beacon off to avoid interference!

The **Hillview Gardens Amateur Radio Club** is unique - I know of no other place that adopts this approach. Alfons already has another project on the drawing board, to be called The Eagle Plateau.

Friendship Through Radio

Practical friendship through radio is not so common these days. Bad manners, nonchalance of each other and aggressive behaviour are unfortunately all too commonplace on our bands. However, while I was on air from 9M6AAC I did not experience this, should it happen though, there is a solution - jump into the pool to cool off!

When considering your next family holiday, a no-fuss Dxpediton or just a tropical holiday - why not think about visiting 9M6AAC. Before you go, send an E-mail to Doris and ask what **you** can do for Hillview Gardens Amateur Radio Club.

PW

AN RF AMMETER

James Brett G0TFP says that by looking back to the time when 'Aerial current' was used as the indicator for antenna system efficiency, instead of an s.w.r. meter, you could improve your station.

There was a time, before coaxial cable feeder was generally used in Radio Amateur stations, when output power and general antenna system efficiency were gauged by the amount of r.f. current flowing in the antenna circuitry.

In the early days of radio 'aerial current' was an important measurement to be observed. Just look at Second World War military equipment, the ammeter used for this purpose was often an hot wire type, with the antenna system current flowing through a short section of thin wire within the ammeter.

Mechanical Instrument

Such a mechanical instrument as the hot wire ammeter, shown in **Fig. 1** and hot wire thermocouple ammeters are not now generally available. The design presented here, is based on the technique of a current transformer, feeding a moving coil meter, calibrated to read root mean square (r.m.s.)* current, via a rectifier.

(* The r.m.s. value of a sinewave is the mathematical derivation of the effective d.c. voltage that produces the same power in the load as a sinewave with a known peak voltage.

Editor)

The heat generated by the actual current flowing, caused the length of the wire to extend slightly. This slight extension was magnified via a pointer, and used on a scale, as an indication of the r.f. current passing into the feeder system and so to the antenna.

Consider what this current flow can show. In tuning up and loading antennas, it follows that the more current flowing into it the better. More current means a stronger magnetic field and hence potentially more signal radiated.

The r.f. ammeter can also be used for transmitter power output measurements. Working in to a matched dummy load or tuned and correctly matched

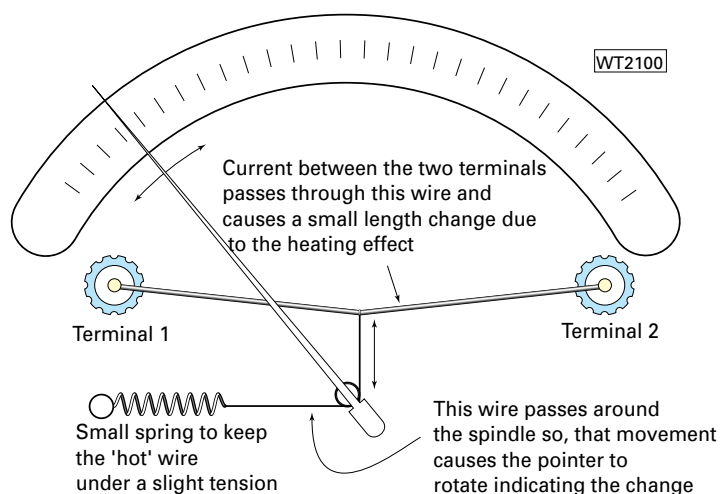
antenna, which can be also considered as a pure resistance, measurement of the current will indicate the power.

For example with a 50Ω load and a with a measured current of 0.5A flowing, power (given by $I^2 R$) is 12.5W. Interestingly a current of 1A flowing in a 50Ω load, represents a power 50W.

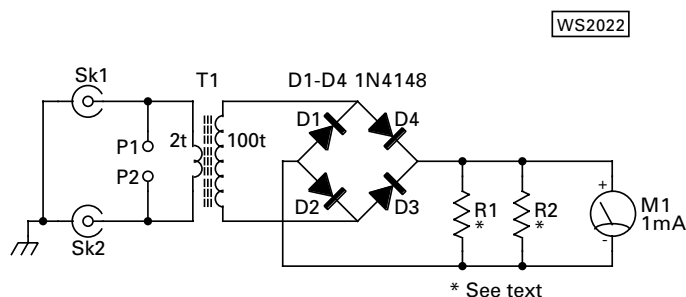
With the lower h.f. bands and antennas that were often random length, measurement of current in the antenna was the easiest

overload. The old hot wire instruments were very easily burnt out and even a moderate overload would alter the characteristic of the hot wire making it very inaccurate.

The design uses a current transformer with a ratio of 50:1. So, for a current of 1A flowing in the primary circuit, the secondary current will be 20mA. The secondary r.f. current is rectified by the diode bridge, D1-D4, and used to drive the



● Fig. 1: A skeleton view of a hot wire current meter, an instrument that reads a.c. (r.m.s.) or d.c. current with the same scale. See text for more details.



● Fig. 2: The circuit diagram of G0TFP's r.f. current meter. See text for more detail.

solution to maximising output. Using the r.f. current ammeter this approach can be repeated and other experiments with long wire antennas made.

Circuit Diagram

The circuit diagram of my current meter, is shown in **Fig. 2**. One big advantage of this approach is its tolerance to

shunted moving coil meter M1.

The peak value of a sinewave is 1.414 times ($\sqrt{2}$) its r.m.s. value (either current or voltage). But in a meter the value indicated is not the r.m.s. but the value of the mean voltage (or current). Like all moving coil meters, the displayed value of the rectified a.c. is the mean value of the a.c. voltage's peak level. And so, this must be taken

into when calibrating the meter.

Mean Value

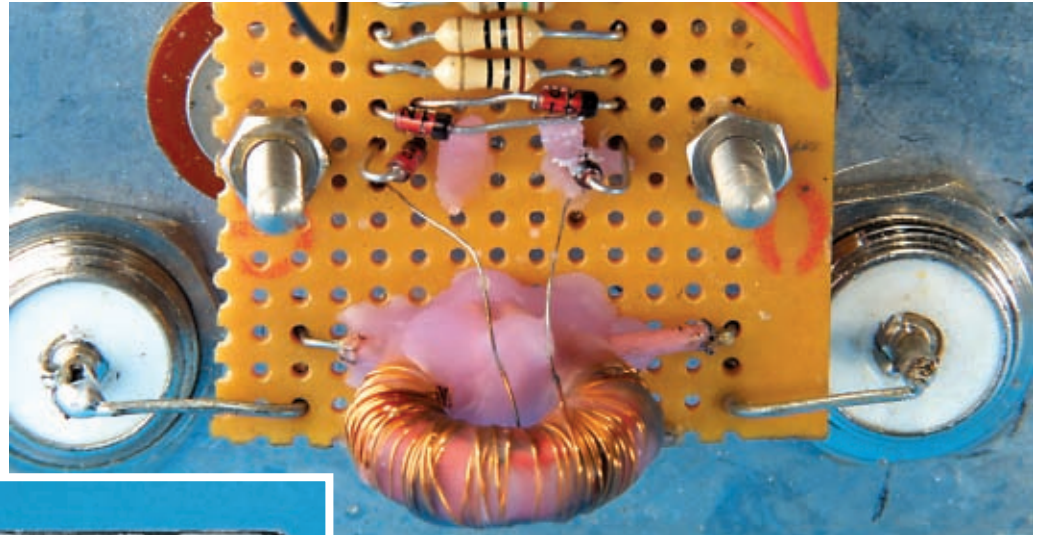
The mean value of a sinewave is 0.636 times the peak level. Hence the meter will not indicate the r.m.s. value, but the lower, mean value. Let's assume we wish to measure a primary current of 1A r.m.s.. The 20mA r.m.s. in the secondary must be shunted to display the mean value of this value at full scale. We must bypass some of the secondary current with low value resistors, shown as R1 and R2 in the circuit diagram of Fig. 2.

The peak value of a 20mA current is 28.28mA so, the meter must be shunted to show a full scale reading with the mean of this current. To calculate the mean value of

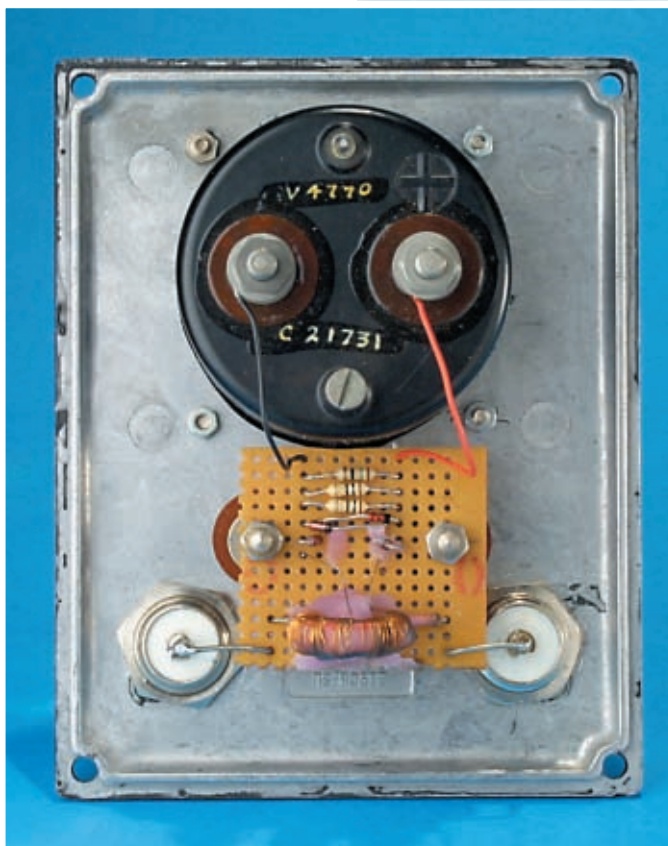
then it's quite easy to calculate the actual value of the shunt. But I've found that the best way to make up the shunt is by trial and error using several low value resistors connected in parallel. In my prototype, this worked out as a shunting resistance made from one 15Ω

the photographs. Just remember to keep leads short and layout as compact as practically possible, **Fig. 3**. The toroidal current transformer is wound as a single layer with 100 turns of 0.2mm (36s.w.g.) enamelled wire and two turns of 1 x 0.24

This will also support the circuit board. Cut unwanted tracks and ensure that the terminal nuts are not making any unwanted short circuits. The toroid is supported by the primary winding and held in place by dropping melted candle wax on to the toroid



● Fig. 3: All components are mounted on a small piece of Perf-board mounted between the two coaxial sockets.



● Fig. 4: A close up of the simple layout of the current sensing transformer, rectifiers, and loading resistors.

28.28, multiply it by the mean conversion ratio of 0.636. So, $0.636 \times 28.28 = 17.98\text{mA}$ or more practically 18mA full scale, corresponding to a primary current of 1A r.m.s..

If you know the internal resistance of the milliammeter,

and two 10Ω resistors in parallel, giving 3.75Ω in parallel with the 1mA meter.

Construction Simple

Construction of the current meter is simple, as shown in

plastic covered hook up wire.

I find that a convenient way to wind 100 turns on the toroid is to take a little over two metres of the enamelled wire and thread one end on to a darning needle. Pass half the wire through the toroid, held in a bulldog clip, and restrain the wire.

Use the needle to feed the wire through the middle of the toroid, as you wind 50 turns evenly over the free half of the toroid. Next rotate the toroid, so that the wound half is held in the bulldog clip, then again using the needle, thread the remaining half length of wire through the toroid to wind a further 50 turns.

You should now have a single winding with 100 turns evenly wound on the toroid. A small dab of glue at each end will hold this winding in place. Then wind the primary two turns onto the toroid, leaving the ends free.

Circuit Board

My circuit board is assembled and can be positioned so that direct connection to the terminals can be made, **Fig. 4**.

and circuit board.

After checking that all is well the ammeter is ready to use. The prototype was checked using a transmitter and dummy load. Calculation of power from current measurements showed good correlation with the selected power levels from the transmitter.

Now you can begin testing out all your antenna systems, and you have a reading of the real power passing up into the antenna system. You never know - you might dispense with the s.w.r. meter all together!

DW

COMPONENT LIST

To make the r.f. ammeter, you will need the following items:
 A 1mA moving coil meter, four diodes (typically IN4148 or IN914), one T68-2 toroid (Micrometals), several low value resistors for shunt (see text), two panel sockets, two terminals, a die cast box (depth to suit meter) and finally, a small piece of Veroboard or Perfboard.

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IC-R3 IC-7400
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 36 x £14.51

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NEW!
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 Before you ask who makes a quad band mobile whip for it? Maldol do of course.

ICOM IC-718
ML&S £649
ZERO DEPOSIT!
 36 x £23.60



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ICOM R-75
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 36 x £21.78

ICOM IC-R10
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Kenwood bought us the first full DSP hf radio and now TS-2000 is the first DSP all band radio! Coverage is 160m-70cms with built in ATU (HF & 6m). Built in TNC, 100 Watts HF, 6 & 2m 50W 70cms!
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 Same as the TS-2000E but with 10W23cms as well!

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 36 x £69.42



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 If you require the B2000 or 23cms CALL FOR A PRICE PACKAGE

YAESU FT-1000MP MK5
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ML&S £2799
ZERO DEPOSIT!
 36 x £101.76



The flagship of the Yaesu range goes from strength to strength and is the only 200 Watt base station in production. Built in ATU

YAESU QUADRA VL1000
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ML&S £3799
ZERO DEPOSIT!
 36 x £138.12



This state of the art 1000W HF & 6m amplifier is in a class of its own. Couple it to any 100W HF or 6m radio and within seconds the ATU has tuned and you are ready to crack the pile ups (in fact you will probably create a few of your own). Just because Yaesu make the amp you do not need a Yaesu to drive it. (Not cheap but then the best never is!)

YAESU FT-847
ZERO DEPOSIT!
 RRP £1699 **ML&S £1199**
ZERO DEPOSIT!
 36 x £43.59



This radio has established itself as a very popular Shack in a box! All bands 160m to 70cms (including 4 metres). With DSP and options for Collins filters this radio is a serious DX machine with full Satellite capability

KENWOOD TH-F7E
ML&S £259
ZERO DEPOSIT!
 36 x £9.42



A dual band hand held with built in Scanner. Full VHF/ UHF Dual band coverage plus 100kHz to 1300MHz scanner built in. SSB receive on all frequencies up to 470 MHz. Built in ferrite antenna for short wave.

KENWOOD TM-D700E
ZERO DEPOSIT!
ML&S £449
ZERO DEPOSIT!
 36 x £16.32



Dual band VHF/UHF mobile with built in TNC! Ideal for Packet or APRS. The latest version can connect to the TS-870 and TS-570 for DX cluster auto QSY. (FREE X band repeat for Raynet operators on request)

KENWOOD TS-570DGE
ZERO DEPOSIT!
ML&S £849
ZERO DEPOSIT!
 36 x £30.87



This is one of our most popular HF radios. Offering an excellent blend of simplified operation with state of the art performance. An ideal 1st radio as well as an excellent portable DX station! Built in ATU

ICOM IC-910H
ZERO DEPOSIT!
ML&S £1249 STD UNIT
ZERO DEPOSIT!
 36 x £45.41



The Only VHF/UHF base station Still in production. With full all mode dual receive. 100 watts VHF & 75 watts UHF. You can add the UX-910 to give 10 Watts of vb23cms. UX-910 price £349

NEW ICOM IC-7400
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FREE desk mic & speaker!
ML&S £1395
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 36 x £50.72



The replacement for the popular IC-746 has 100 Watts HF, 6m and 2 metres all mode operation. Built in ATU for HF and 6m. Full IF DSP. Fast becoming a hot seller!

ICOM IC-706 MK2G
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ML&S £849
ZERO DEPOSIT!
 36 x £30.87



Why did they not just call it the Mk3? Call it what you like this is one of the best mobile radios available with HF, 6m, 2m & 70cms plus DSP. All mode operation and DSP

AOR 5000
ML&S £1449
ZERO DEPOSIT!
 36 x £52.68



ZERO DEPOSIT!

KENWOOD TS-50S
ZERO DEPOSIT!
ML&S £629
ZERO DEPOSIT!
 36 x £22.87



If you do not want DSP or built in ATU but want a straight forward no nonsense 100 Watt HF radio look no further! The TS-50 is at home in the shack or in a mobile installation. 160m-10m all mode ML&S price £629

KENWOOD TS-870S
ZERO DEPOSIT!
ML&S £1399
ZERO DEPOSIT!
 36 x £50.86



The original DSP radio Still a popular choice among serious HF operators. Covering 160m to 10 metres all modes. Built in ATU
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ICOM PCR-1000
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ML&S £309
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Computer controlled receiver 100kHz-1300MHz

ICOM IC-R8500
ZERO DEPOSIT!
ML&S £1299
ZERO DEPOSIT!
 36 x £47.23



Covering 100kHz-2000MHz

ICOM IC-R2E
LAST FEW AVAILABLE
£139



This little handy scanner is very simple to operate and is very popular among our commercial customers

AOR 7030
ML&S £749
ZERO DEPOSIT!
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YAESU DAY
Featuring the FT-897
Demonstrations
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ML&S £429
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NEW!

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ML&S £329
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Do those engineers at Yaesu ever sleep? The best 3 band radio we have ever seen is here and user reports are excellent. The first fully water-proof hand held has all the features the famous VX-5R had but has the addition of a second receiver, 2, 70 & 6 at 5 Watts from a Lithium Ion Battery This radio will last you for years. Call for a brochure!



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George G3NOH, receiving the first FT-897 at our showroom. This is one of many radio's George has bought from us over the years. He is an avid CW operator and Yaesu fan.



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ML&S £1099
ZERO DEPOSIT!
36 x £39.96



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- High Efficiency Cooling system
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- Twin Stacked VFO Registers
- Easy Digital Mode Interfacing
- And MORE.....



YAESU FT-920AFC

Offering 100 watts HF and 6metres this radio is a delight to operate. Fitted with FM, 6kHz AM filter and 500Hz CW filter plus simple to operate DSP this is an excellent base radio. (Requires 25a 13.8v PSU). Built in ATU

ML&S £1199

ZERO DEPOSIT!
36 x £43.59

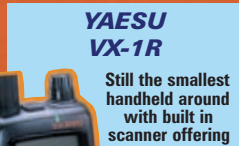


YAESU FT-100D

Following on from the FT-100 the D offers 500Hz CW filter CTCSS Decode and bigger speaker for that extra punch. 160m-70cms all mode with wide band receive (100kHz to 999MHz) An absolute bargain at £849!

ML&S £899

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YAESU VX-1R

Still the smallest handheld around with built in scanner offering up to 1 Watt on 2 & 70 and Lithium ion battery that last for ages this is the ultimate pocket radio at only £159!

ML&S £159
ZERO DEPOSIT!
36 x £5.78



YAESU FT-7100

For the same price most other manufacturers offer a twin band Yaesu offer a full blown Dual band mobile. With CTCSS, switchable deviation, dual receive. Built in Duplexer plus remote head (requires YSK-7100 at £39)

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36 x £11.96



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The new desktop scanner from Yaesu all bands and all mode with a host of features.

ML&S £599
ZERO DEPOSIT!
36 x £21.78

LOOK! New Miracle Antenna Mk2 has arrived!

MIRACLE WHIP MKII

This antenna has been designed with the FT-817 in mind and is a 55 inch whip with a tuning box at the base. The performance is staggering and it will work with any radio from 3.5-460MHz (25W max). It even works without a counter poise. Call for full details!



ML&S £129.95
IN STOCK!



Kenwood TM-V7E

Dual Band Mobile giving VHF & UHF coverage with dual receive of VHF & UHF or HF & VHF/UHF & UHF. Free wide band Receive on request! **ML&S price: £359.** **ZERO DEPOSIT, 36 x £13.05**

FT-1500M

50 watt 2m FM mobile with DTMF mike and CTCSS making it ideal for internet linking (See www.g7wfm.co.uk <<http://www.g7wfm.co.uk>> for details on internet linking) **ML&S price still only £159.00 ZERO DEPOSIT, 36 x £5.78**

Icom IC-2725E

When I first saw the IC-2725 I thought it was just another dual band radio! When I connected it to an ariel I soon discovered it was the Dual Band Radio. The first radio I have seen to be able to monitor 2 Airband signals at the same time. Pagers do not seem to bother it at all. The remote head puts all the controls where you want them. The mike can completely operate the radio (including frequency entry and DTMF). If you want a serious dual band radio with excellent scanning facilities then the IC-2725 is ideal. **ML&S price £349. ZERO DEPOSIT, 36 x £12.69**



FINANCE EXAMPLE VX-7R at £329.00
PAYMENT ILLUSTRATION: ZERO DEPOSIT: 36 payments of £11.96 TOTAL AMOUNT PAYABLE: £430.56
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Yaesu's Might

FT-8900 HF/VHF & UHF FM Mobile Transceiver

Rob Mannion G3XFD has been thoroughly enjoying himself evaluating Yaesu's latest offering - a four band 28, 50, 144 and 430MHz f.m. transceiver. He was so impressed with this tiny and versatile rig...he's nicknamed it the 'Mighty Midget'!

You can often hear the phrase "Good things come in small packages" and I can confirm that this is certainly the case with the amazingly potent little Yaesu FT-8900 four band f.m. mobile transceiver. What a concept...what a great little performer it turned out to be! It's the first time I've ever come across a 28, 50, 144 and 430MHz coverage mobile f.m. transceiver. **Perhaps it is a first?** But, whether or not Yaesu are the first in the field this time...in my opinion they've got a first class winner with this little thoroughbred.

The FT-8900 is small...**very small...but extremely versatile.** The complete rig can sit on my outstretched hand - but despite this the 140 x 41.5 x 168mm transceiver provides a maximum r.f. power output of 50W on 28, 50, and 144MHz. Output on 430MHz is 35W.

During the time I had the rig on review I genuinely fell in love with this amazing little machine. It certainly falls into the "I must have that in my car" category! So, let's take a look at

this latest offering from Yaesu...the company that provided my first dedicated h.f. mobile rig - the FT-75 - well over 30 years ago. Incidentally, my (which is at least 10 times the size of the FT-8900) FT-75 is still working and I've no doubt the extremely rugged FT-8900 will have an equally long life!

What's On Offer?

The FT-8900 is based around a double conversion superhet receiver. The intermediate frequencies are 45.05MHz 1st i.f. (for left band receiver) with a second i.f. of 450kHz. The Right band receiver uses a 47.25MHz 1st i.f. and a 450kHz second i.f.

The transmitter employs variable reactance to produce the narrow band f.m. The high power output of the FT-8900 is produced by its RD770HVF1 power MOSFET amplifier, this is cooled by the a direct flow heat-sink and (as I found out) the very quiet running thermostatically-controlled cooling fan.

Yaesu explain in their comprehensive and easy-to-read manual (It must be good, I

normally have much trouble with modern manuals, as they are so complex) that the rig has "809 memory channels".

However, I see my job as being to tell you as much generally about the rig as I can...so I'll leave learning about aspects such as memories to you, when you visit a Yaesu dealer to try the rig out!

Full duplex operation is available, with independent volume and squelch controls, and built in CTCSS and DCS encoder/decoder circuits. The FT-8900 also includes the facilities for the provision of remote control head mounting utilising the **YSK-8900 Separation Kit** (which I used, and can thoroughly recommend, see later comments).

The Microphone

The microphone is such a complex piece of equipment it should really be called the 'Auxiliary control panel with microphone'! Yes, it's that comprehensive!

Along with the usual push-to-talk switch there's a full set of 16 push-buttons to generate DTMF tones during transmission. In the receive mode the buttons can be used for direct frequency entry/and or direct numeric recall of the memory channels. See what I mean about it being a mini control panel?

The microphone can be illuminated, the illumination is a nice ruby red colour - it reminds me of that favourite childhood drink Ribena! I found it very helpful during the dark evenings I was using the rig.

Altogether, the microphone is a major part of this transceiver,



● In his review Rob G3XFD describes the Yaesu FT-8900 h.f. and v.h.f. mobile transceiver as the "Mighty Midget". He says you've got to "See it, to believe just what can be fitted into such a tiny, rugged package".

ty Midget!

and I strongly recommend you take a close look at it when examining an FT-8900. Yes, such microphones have been around for a long time...but I found this one to be a delight to use.

On The Air

For the necessary - in my opinion the most important part of a review - on air testing I used the FT-8900 both as a mobile rig and also used it in my main shack. A variety of antennas were employed.

As I don't use 50MHz very often I sought the advice of **Bob Burrows G6DUN** at the **Short Wave Shop** in Christchurch (ideal in having an Amateur Radio shop literally on my

part of the spectrum.

I had dozen of QSOs with Russian and Baltic countries on n.b.f.m. I just wished I was able to speak a little Russian...it would have helped! My limited knowledge of Polish helped though...and I was able to enjoy many QSO with the seemingly hundreds of active n.b.f.m. stations in north eastern Europe.

Along with receiving some complimentary remarks on the audio from the transceiver, it soon became very obvious indeed that the FT-8900 was both extremely sensitive and selective. In fact the performance made me sit back for a little while to ponder ...just why is the transceiver so lively

230 automatic a.t.u. set-up which runs into a 10 metre long vertical antenna (I shall be writing about this system in *PW* very soon).

Once set-up and running on my main station's antenna system it proved an idea little rig for general purpose use. Using the generous length separation leads from the demountable kit supplied by Yaesu, I actually had the control panel sat on top of a small ledge provided by the gap between my Macintosh computer and an external disk drive which provides extra height for the monitor unit I use. During these operations the main body of the transceiver was to one side of my office unit at home, based



● Fig. 1: What must surely be one of the most important aspects of the FT-8900 is the neat and convenient separation process. The main control head - with the use of an extremely generous length (optional accessory) cable system provided - can be mounted literally anywhere in a modern vehicle, away from the transceiver itself (see text).

● Fig. 2: The front panel - shown detached ready for installation of remote cable kit - is light and convenient for mounting in parcel shelves, dashboards and overhead lockers in vehicles, or even within a workshop. Positive action SMA connectors are used and G3XFD found no difficulty whatsoever in using them (see text).

doorstep) who kindly loaned me A Japanese-made Diamond TRY2E 50/144MHz mobile antenna. This antenna is a popular choice for operators favouring both bands, and in length, it equates approximately the same as my 5/8λ mobile whip. The Diamond antenna retails at £29.95, plus £5 P&P.

For the limited operations carried out on 430MHz I used my own Diamond dual-band 144/430MHz whip. However, I should now mention that over 80% of the QSOs I had with the FT-8900 were on the 28MHz band. There are two reasons for this...the first being that there always seemed to be someone to work on the band...plus the added fact that the transceiver **seems to have absolutely superb performance** on that

and responsive? Then came the realisation, of course - instead of it being an h.f. rig operating at the top end of its spectrum - this was a high quality v.h.f./u.h.f. transceiver working at its lowest coverage.

In reality the FT-8900 is just 'ambling along' at 10 metres, providing the operator with the performance required at v.h.f. and u.h.f....very much to the advantage of the user in my opinion! It was very impressive indeed, and after using the rig in the car over several days, I then took it into my home station to operate it on my SGC-



around an enormous wooden Edwardian style glass fronted bookcase.

There's plenty of room in the main shelf for all my Amateur Radio transceivers, and the Yaesu joined them very comfortably. And why am I telling you all this? I'm doing so because the rig was then sat next to my *PW* IBP Beacon

Product

Yaesu FT-8900 Transceiver

Company

Yaesu UK Ltd.

Contact

Tel: (01962) 866667

Pros and Cons

Pros: I look forward to seeing this rig in use by many Amateurs. Perhaps I'll have the pleasure of working with them on 70MHz f.m. too - you never know...someone might take up the hint! Well done Yaesu...we've been waiting for a long time for a transceiver as useful as the FT-8900.

Cons: The only complaint I can bring to mind is the designer's choice to place the main tuning controls above, rather than below, the dual squelch/gain controls. In my opinion if they'd been reversed it would have made operation from below easier.

Price

Transceiver £429

Separation kit £42.95

Summary

So, having read my evaluation of this very interesting Yaesu transceiver are you likely to find it in Rob's car? The answer is a very firm "Yes"

Supplier

Yaesu UK Ltd.

Unit 12

Sun Valley Business Park

Winnal Close

Winchester

Hampshire SO23 0LB

Continued on page 40

Timer unit which provided accurate timing 'slots' for when the 28.200MHz IBP beacons would appear (I was listening for them using c.w. on my Alinco DX-70TH). Once the North American beacons, particularly **4U1UN** (New York) and **VE8AT** (Northern Canada) appear I know it's worth while trying for a transatlantic f.m. contact using the FT-8900. (10 metres was excellent on Sunday 15 December...I managed to work into Toronto getting 5 and 7 from one simplex station...not bad on 50W f.m. in my opinion!)

So, as I hope I've demonstrated, the FT-8900 should not be considered just as a mobile unit - it's far more flexible than that, it's a literally 'go anywhere rig'.

Operating On VHF

I was extremely disappointed at the level of activity on 50MHz. Where is everybody? Surely they just don't come out to play when the DX is about? Yes, I did hear some repeater activity and I managed to raise several repeaters...but I didn't get a QSO.

Mind you, I think many Amateurs are put off from operating on 50MHz by the large amount of computer orientated spurious signals to be found all over the band. In the days when I lived in the suburbs (I now live 400 metres inland from the sea front in Bournemouth) I can remember **Tex Swann G1TEX/M3NGS** commenting on the various electronic cash registers and other equipment which pop-up across our band.

There's no point in talking to the owners of the offending equipment, after all why should they care...we're an un-protected service. On the other hand, I'm sure that if we caused interference to their cash registers, something would be done very quickly indeed!

So, although I didn't have any successful QSOs on 50MHz, the receiver was obviously working very well. But hang on a moment...50 is not so far away from 70MHz is it? And 70MHz operators like to enjoy a QSO with other UK Amateurs don't they? So...I'm wondering just how long it will be before someone offers a 4 metre conversion for FT-8900 owners...and judging from the



excellent transmit audio reports I received on 144MHz simplex QSOs, I can assure you that I'll be first in the queue for 70MHz. After all...if I want to work the DX on 50MHz I can do that with an s.s.b. rig can't I?

As I've already mentioned, reports on the 144MHz transmitted audio were very good, and even from my favourite convenient roadside hill-top v.h.f. location (very close to the site I use for the *PW* 144MHz QRP Contest) I wasn't to be disappointed. I say this because from this site n.b.f.m. transmissions from all over the south and south west seem to converge at weekends! Often it can be very difficult to find a simplex channel on 144MHz. The situation can be made worse because distant stations can't hear what seems to be a clear channel isn't clear at all.

Several hours on the site led to many enjoyable QSOs, with several operators kindly transferring up to 430MHz for me. I was pleased to be able to complete several repeat QSOs on u.h.f., with the best being to Swansea on the Gower Peninsula in Wales. The antenna for that QSO was my dual band Comet 144/430MHz vertical whip. No bad eh?

Incidentally, for most of my hill top operations I was working in dull land overcast conditions, with occasional very bright Autumnal sunshine. As this sunlight was low angle due to the time of year...it made driving conditions difficult and I was also expecting the FT-8900 l.c.d. screen to be compromised by the

- Fig. 3: The comprehensively-equipped microphone provide a platform for a numeric keypad and various other controls (see text). Despite the duck-egg blue colour of the number buttons- the effective background lighting provided for night time use is actually a deep ruby red. In use G3XFD found this to be an ideal choice...enough illumination without being too bright (See text).

dazzle effect. But no, it was still very readable and the effective contrast provided by the black figures on the display made it easy to use. Very effective.

In the car I didn't bother to use an external speaker, the internal unit proved to be perfectly acceptable. And although I don't operate true mobile nowadays for safety reasons, I'm sure the dedicated mobile operator who can operate in the tradition way, will find some method of placing the main 8900 unit either in an overhead parcel shelf pocket (as I did) or mount

an external loudspeaker to suit. The entire concept behind the FT-8900 is versatility, and I think that the Yaesu designers have done their very best to overcome the problems in many modern cars: lack of anywhere to mount accessories other than the ubiquitous cup holder so beloved by the American market!

In Rob's Car?

So, having read my evaluation of this very interesting Yaesu transceiver are you likely to find it in Rob's car? The answer is a very firm "Yes"...especially if - as I suspect will happen very quickly - someone offers a modification to get the synthesiser working on the 70MHz band. If ever a rig

deserves to be treated to 4 metres...this one does!

It's often very difficult indeed to find criticisms to express with modern Amateur Radio equipment. Most published criticism often reflect the price and the personal operating preferences and opinions of the reviewer - after all a review is an opinion. Unless of course you're reading a laboratory style check list, with a tiny dash of opinion added! Unfortunately, the only possible complaint I can bring to mind is the designer's choice to place the main tuning

controls above, rather than below, the squelch, gain controls. In my opinion if they'd been reversed it would have made operation from below (rig in an above the head shelf) easier.

The other push-button controls are also small, but they didn't cause me any problem whatsoever. And as I've said...the main display is superbly clear and follows the established Yaesu styling.

I look forward to seeing this rig in use by many Amateurs. Perhaps I'll have the pleasure of working with them on 70MHz f.m. too - you never know...someone

might take up the hint! Well done Yaesu...we've been waiting for a long time for a transceiver as useful as the FT-8900.

Paul Bigwood G3WYW of Yaesu UK comments on the review:

Dear Rob, thanks for sending the FT-8900 review for me to comment on. Your comments on the design are spot on. It is a v.h.f./u.h.f. transceiver working at its lower frequency range, rather than a h.f. design struggling to work at the top end of its design criteria. I have also taken on board your suggestion regarding 70MHz and have requested information from the designers in Japan as to whether it can be modified to cover the 4 metre band. I will let you and your readers know as soon as I have any news.

There is also a quick release mobile mount MMB-60 priced at £18.95 that may be of interest to readers who don't use the remote mount kit, but who wouldn't want to leave the radio in their car overnight. Best Regards
Paul Bigwood G3WYW
Vertex Standard/Yaesu UK Ltd.

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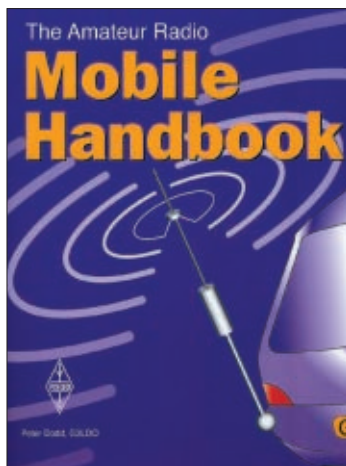
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Here's a selection of books stocked by the PW Book Store, which you should consider giving

The Amateur Radio Mobile Handbook
Peter Dodd G3LDO
£14.99

This newly available book has been a rather long time coming and will be much appreciated by the many Radio Amateurs whose operational activities are concentrated on mobile working - together with the occasional mobile operator. **Peter Dodd G3LDO** is well known as a *PW* author - particularly for his work on antennas - and his input on the antenna aspects of mobile working are dominant throughout the book.

Literally every aspect of



mobile working is covered - from basic bicycle mobile to the maritime operations for the keen sailors who abound in our hobby. Extremely well illustrated with many photographs, diagrams and charts (however, although the majority of the illustrations are obviously good, the printing process has resulted in a lack lustre minimum contrast, which is also noticeable in the printed text). Chapters include: going mobile, mobile operating, installing equipment, mobile antennas, fixing antennas to vehicles (very useful indeed!), kite and balloon antenna supports, bicycle h.f. mobile, maritime mobile,

experimental activities, walkabout mobile.

In my opinion this book really fills a need and will no doubt be reprinted regularly.

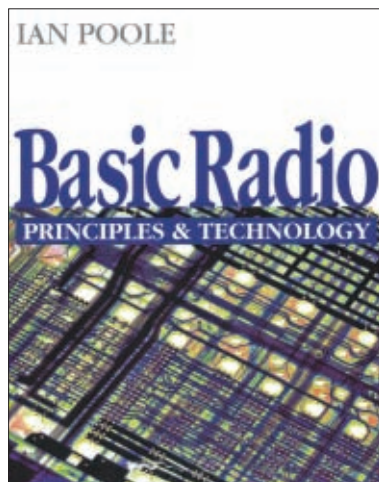
Highly recommended.

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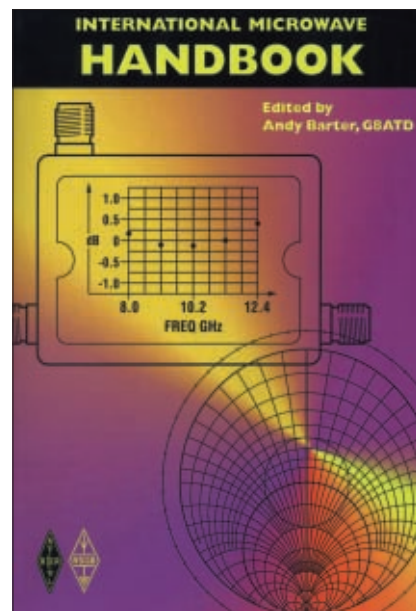
Basic Radio Principles & Technology
Ian Poole
£15.99

Ian Poole G3YWX is of course extremely well known to *PW* readers through his long running series 'What Is A....?' and particularly his ground breaking series 'Specifications Explained'. I mention these popular articles because this book in particular follows Ian's usual format of a easy-to-digest read but packed with information approach. An ideal beginner's book this paperback volume provides a lightweight introduction to the science of radio which is helped by the inclusion of many clear and concise illustrations. In particular, I've liked the chapter on radio waves and propagation because these in my opinion provides excellent diagrams, illustrations and explanations which help the student to understand some difficult concepts. **A good all round beginner's book.**

Order Code: BRPRIN



International Microwave Handbook
Edited by Andy Barter
GBATD
£24.95



This impressive soft-backed 474 paged book is a new venture from the RSGB in that it's from a joint publishing initiative between the **American Amateur Radio Relay League (ARRL)** and our own National Society. It's profusely illustrated, indeed, for most of the book there's at least one illustrations to be seen per page. However, some of the drawings and the way they've been printed do not come up to the standard we've been used to seeing in RSGB publications. Having said that, it's the information needed that's important, and at least (even in the slightly-too-dark drawings) you can get the information you require.

In reality it's a first class reference manual covering: operating techniques, system analysis and propagation, antennas, construction techniques. Separate chapters covers the 1.3, 2.3, 3.4, 5.6, 10, and 24GHz bands. A separate chapter covers the bands above 24GHz. It's a fascinating introduction to the microwave bands. **Recommended reading.**
Order Code: IMWHB

space on your shack bookshelf to. The *PW* team think you'll agree they'll make great reading for the dark days of winter:

Antenna Toolkit
Joe Carr
£25.00

The late Joe Carr was a master when it came to discussing antennas. His expertise, interest and bubbling enthusiasm really showed through no matter how technical the subject. This enthusiasm helps the reader because Joe's enthusiasm rubs off - and that's a great help when you're dealing with the complex abstract concepts behind antenna work!

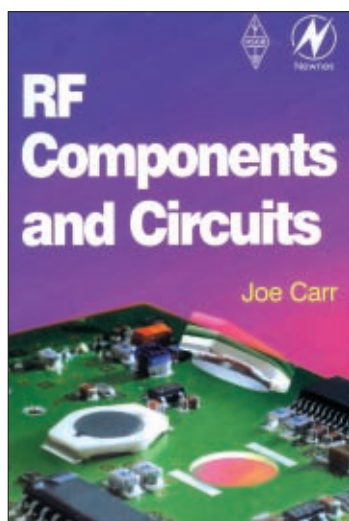
The chapters include: radio signals on the move, antenna basics, wire connections, doublets, dipoles, limited space antennas, wire arrays, small lops, yagis, instrumentation and measures. This is truly a mini-manual and it also comes with a CD Rom packed with extra information. However, in my opinion this book would be worth buying for just the first three chapters...let alone everything else!

Not sure of propagation or how an antenna actually radiates? If the answer is yes - you'll find Joe's approach extremely helpful indeed. Superbly illustrated with economical, non-fussy and

exceptionally easy to understand drawings, **this book comes as very highly recommended.**

Order Code: ANTOOL

RF Components & Circuits
By Joe Carr
£22.50



The late - and much lamented - Joe Carr had the ability to pass on his abundant enthusiasm on whatever branch of electronics he was writing on at the time. It was an essential and helpful gift to help others - especially those readers who struggle with individual concepts. In this particular book, which apparently grew out of a series of articles published in the *Electronics World/Wireless World* magazine, the concept is very simple. Joe takes the reader carefully and safely through the minefield of electronic circuitry concentrating on radio frequency components and their circuitry.

Profusely and extremely clearly illustrated in a straightforward style this book is absolutely superb. In fact, it's probably the best collection of Joe's work we've ever come across...and wish that it had been published in *PW* first!

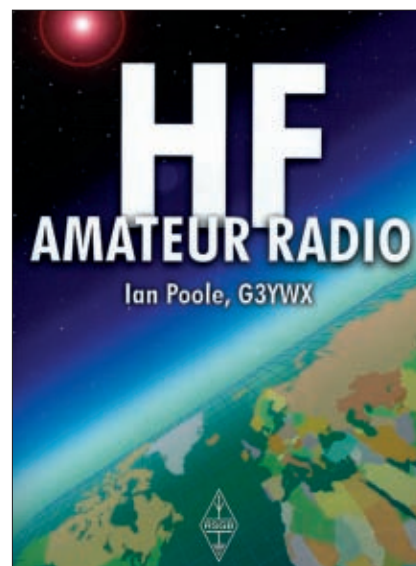
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includes introduction to r.f., signals and noise, radio receivers, circuits, r.f. amplifiers, mixers, oscillators, i.f. amplifiers and filters, demodulators, components, inductors, tuning and matching, splitters and hybrids and others. Each section then covers associated topics in details. **Very highly recommended for learning and essential reference.**

Order Code: RFCOMP

HF Amateur Radio
By Ian Poole G3YWX
£13.99

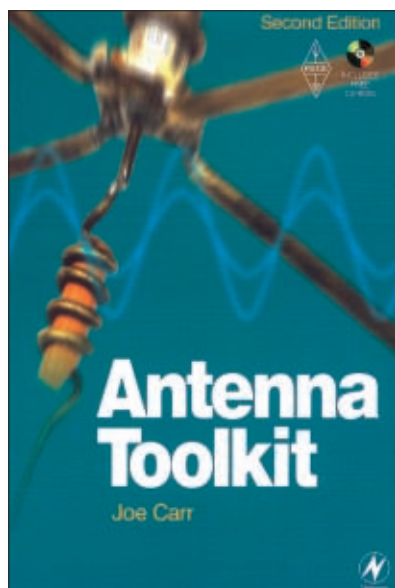
In essence this book by **Ian Poole G3YWX** should be considered as the natural 'follow on' volume to accompany his *Basics Radio Principles & Technology* volume. because it takes up where the other leaves off. Aimed more at the active Radio Amateur who is just beginning to get to grips with their new h.f. transmitting station - I think it will appeal to the newcomer....



especially those taking advantage of the easier access to h.f. provided by the recent licence changes.

Chapters include topics on introduction to h.f., radio wave propagation, types of transmission, receivers, transmitters, antennas, bands and band plans, on the bands, setting up a station, abbreviations and codes. In approach this book should be considered as a newcomer's h.f. manual - and it will make an ideal gift for anyone venturing onto h.f. for the first time. **Very useful h.f. operator's handbook/manual.**

Order Code: HFAR



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Carrying On The Practical Way

This month the Rev. George Dobbs G3RJV has a confession to make! A reader has gently criticised him...and this had led to further ideas on side tone generation...after you've read the appropriate quotation!

"Money is not required to buy one necessity of the soul"

Henry David Thoreau

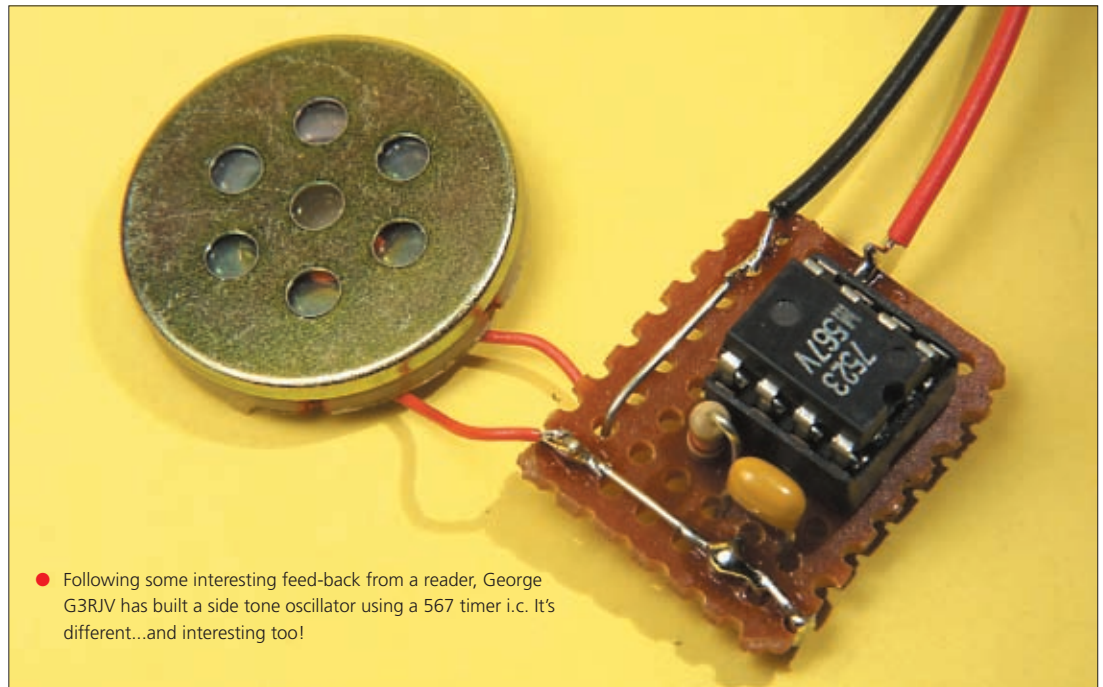
open the first Carrying On The Practical Way (COTPW) of 2003 with the news that a PW reader has criticised me! Not that it was a severe criticism...but it's certainly worth noting on these pages. The reader wrote to me about the COTPW column for November 2002 where I described how to add a side tone oscillator to a simple QRP

transmitter. What surprised him was my choice of oscillator; a twin-tee transistor circuit.

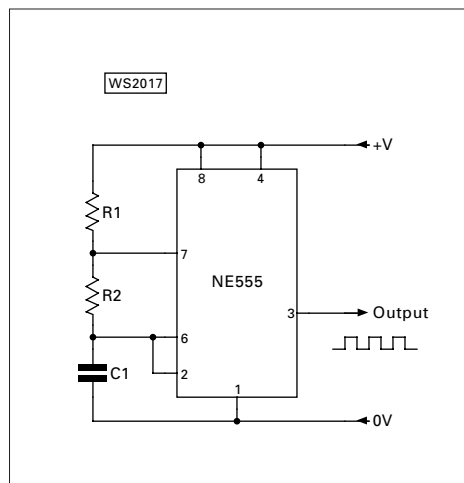
My critic suggested that my approach in this column was usually the KISS (Keep It Simple Stupid) approach and that there are far more simple circuits that would do the same job. To prove his point, he sent me two circuits which I now reproduce for readers.

However, before continuing...I must add that my defence was simple! I used the twin-tee circuit **because it makes a nice noise by producing a sine wave.**

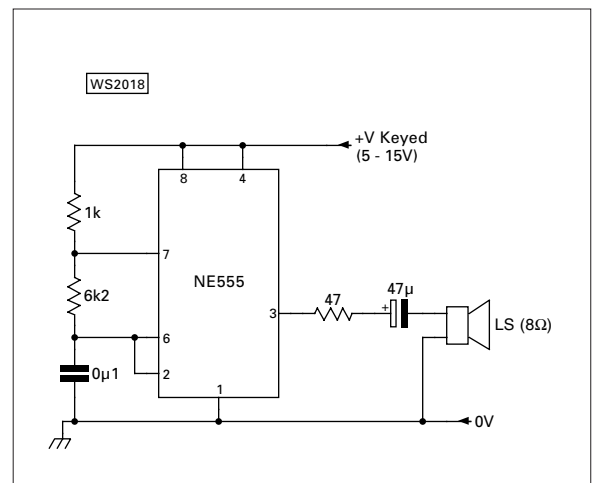
I'm also not so sure that the KISS philosophy **always applies to using the least number of parts in a circuit.** Basic electronic components are



● Following some interesting feed-back from a reader, George G3RJV has built a side tone oscillator using a 567 timer i.c. It's different...and interesting too!



● Fig. 1: A 555 timer chip configured as an astable oscillator (see text).



● Fig. 2: The working circuit using the 555 as a tone generator. The values give an output frequency a little under 1kHz. Increasing the value of R2 would reduce the frequency and of course, you could experiment to get the desired tone.

quite cheap and if adding a few more improves the performance of a circuit, in my opinion then they are worth adding. As Albert Einstein once said: "...as simple as possible but no simpler"...which could be a good KISS adage.

First Circuit

The first suggested tone circuit the reader sent, uses a 555 timer chip. This is a reliable old workhorse. Looking back I guess I've been using the NE555 chip for at least 25 years...although some reader will probably inform me they have not been around as long as that! (It was certainly in the days when we marvelled at 23 transistors, two diodes and 16 resistors all squeezed into one tiny package.

The 555 can be configured to work in monostable or astable modes. In the monostable configuration a change on the output always returns to the original state.

In the astable configuration the output switches continually from one state to another. In other words, the monostable is a switch, the astable is an oscillator and the circuit, **Fig. 1**, shows a 555 timer chip configured as an astable oscillator.

The frequency of the oscillations is determined by three components; R1, R2 and C1. The actual value of the frequency can be worked out by the formula:

$$\text{Frequency} = 1.44 / ((R1 + 2(R2))C1)$$

The diagram, **Fig. 2**, shows the working circuit I used as the tone generator. The values give an output frequency a little under 1kHz. Increasing the value of R2 would reduce the frequency and of course, you could experiment to get the desired tone.

The circuit will drive a small loudspeaker directly through a coupling capacitor and limiting resistor. A single transistor amplifier could be added if extra sound is required and the circuit, **Fig. 3**, shows the amplifier I've used for the previous sidetone circuits.

The circuit in Fig. 3 only adds four parts and a variety of things can be used as a loudspeaker. I found that a miniature loudspeaker from an old a.m. pocket radio worked well as did an insert from a scrapped telephone.

I tried the circuit out by building it 'ugly-style' on a small piece of printed circuit board (p.c.b.). In my trial example I used Blu Tack to attach the board to the back of the speaker, making a very compact unit. As usual, I leave it to the *PW* reader's ingenuity – there aren't many parts to join!

Incidentally, I quite agree with my corresponding reader – the 555 circuit **does indeed use less parts**. My only reservation would be the rather strident note.

Second Suggestion

Now...how about a side tone oscillator using only three parts? That was the second suggestion, and let's now look at it in detail.

The i.c. used for the second idea is an LM567 Tone Encoder and the diagram, **Fig. 4**, shows a layout of the pin functions. The 567 has an internal oscillator, the frequency of which can be determined by using a timing resistor (pin 5 – TR) and a timing capacitor (pin 6 – TC).

The resistor should be between 2 and 20kΩ and the frequency is calculated by $(1.1) / (RC)$. When the frequency of a signal applied to pin 3 (Input) matches the centre frequency of the internal oscillator, pin 8 (Output) goes low. The 567 can detect frequencies from about 500kHz to below 1Hz. Two further pins, 1 and 2, provide connections for input and output filter capacitors.

Several years ago I used the 567 as a 'sort of' c.w. filter. I arranged to feed audio Morse signals from a receiver to the input of a 567 whose internal oscillator was set at about 800Hz. When the 567 detected a

signal at that frequency, the output switched low.

The 567's switching action was used to trigger an audio oscillator, which followed the detected signal. It worked reasonably well and gave the uncanny effect of hearing the c.w. signal without any other band noises. Perhaps I ought to resurrect that circuit for *PW* readers? (**Note:** *Good idea George...I used the circuit myself and it's fascinating to use and works well.* **Editor**).

Using Internal Oscillator

Having discussed the merits of the i.c., in this project we're not going to use the 567 as a tone encoder but merely make use of its internal oscillator. So, all that's needed is the resistor and capacitor to set the frequency, and **Fig. 5** shows how this can be done.

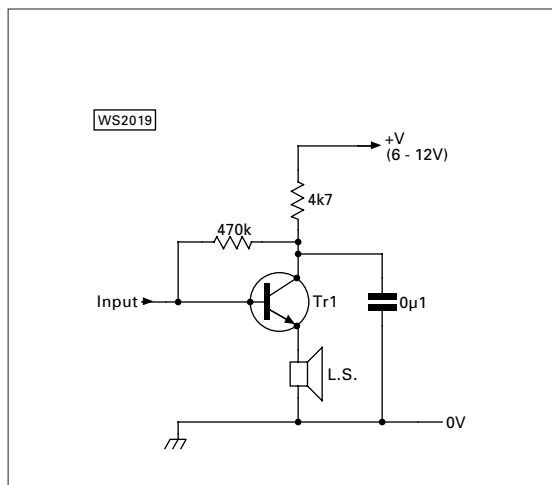
The resistor at pin 5 and the capacitor at pin 6 set the frequency of the oscillator. These values give a frequency a little below 800Hz.

Although the oscillator is not designed to be used externally, it can be 'picked off' at either pin 5 or pin 6. At pin 6 it's a sawtooth (triangular) waveform and at pin 5 it appears as a high impedance square wave.

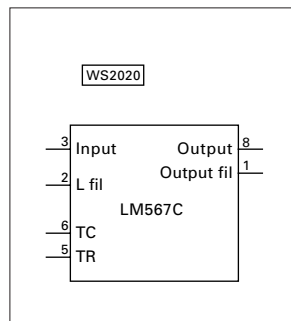
I found that the output from pin 5 would drive a small ceramic resonator, of unknown origin, loud enough to be a useful sidetone. Incidentally, either output could be used to drive a small amplifier.

My prototype was built on a very small piece of perf-board using an 8 pin DIN chip holder. This was because I only had one 567 and wanted to save it for another day and another use. But I must admit, only three parts to build an oscillator is not bad. So, now you have a couple of simple ways to make a noise...and my thanks go to the reader who prompted the ideas!

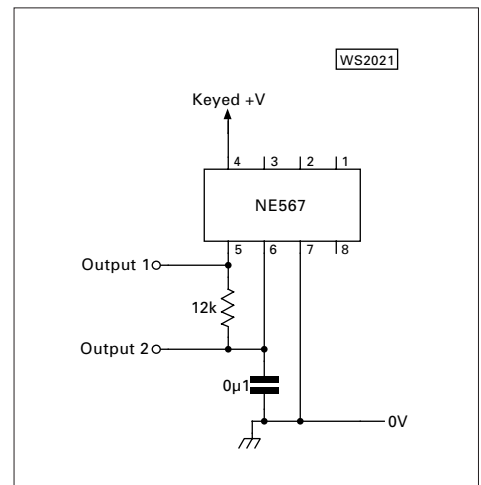
PW



● Fig. 3: A single transistor amplifier could be added if extra sound is required and the circuit shows the amplifier G3RJV used for the previous sidetone circuits (see text).



● Fig. 4: The i.c. used for the second idea is a LM567 is a Tone Encoder. The diagram shows a layout of the pin functions. The 567 has an internal oscillator, the frequency of which can be determined by using a timing resistor (pin 5 – TR) and a timing capacitor (pin 6 – TC).



● Fig. 5: Using the 567 internal oscillator. The only components needed are the resistor and capacitor to set the frequency (see text).



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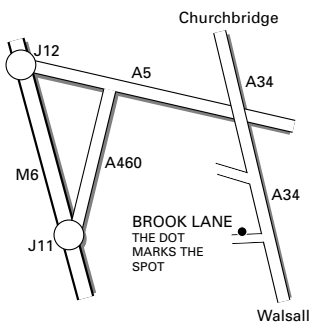
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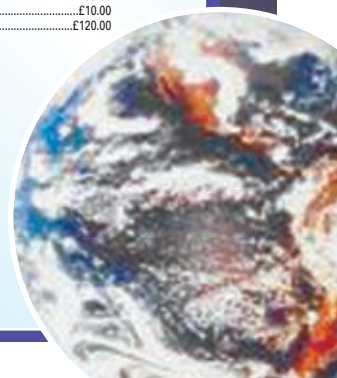
USED EQUIPMENT

ADI	AR-146	2m FM 50W MOBILE.....	£130.00	KENWOOD	YG-455CN-1	270Hz CW CRYSTAL FILTER	£100.00
AKD	6001	6m FM TRANSCEIVER.....	£135.00	KENWOOD	YK-88A-1	AM FILTER.....	£40.00
ALINCO	DJ-580E	270CM HANDY TRANSCEIVER	£140.00	KENWOOD	YK-88C-1	500Hz CW NARROW FILTER.....	£40.00
ALINCO	DJ-G5EY	DUAL BAND HANDY.....	£199.00	KENWOOD	YK-88CN1	270Hz CW FILTER 8.83MHz IF.....	£40.00
ALINCO	DJ-X10	WIDE BAND RECEIVER.....	£275.00	KENWOOD	YK-88S-1	2.4KHz SSB NARROW FILTER 8.83MHz IF.....	£40.00
ALINCO	DR-140	2M MOBILE TRANSCEIVER.....	£120.00	KENWOOD	YK-88SN	1.8K SSB FILTER (TS-440 /RS500).....	£40.00
ALINCO	DR-80SE	2M / 70CMS MOBILE.....	£200.00	KENWOOD	YK-88SN-1	1.8KHz SSB NARROW FILTER 8.83MHz IF.....	£40.00
ALINCO	DX-70	HF MOBILE + 6M.....	£399.00	MAGNUM	DELTAFORCE	10M MOBILE AM/FM/USB/LSB/CW.....	£149.00
ALINCO	DX-70TH	HF MOBILE + 6M.....	£475.00	MICROSET	RU-20	70 CMS AMP.....	£60.00
AMERITRON	OSK-5	AMPLIFIER SWITCH / PRE HEAT.....	£200.00	MICROWAVE MODULES	28/144	TRANSVERTER 28/144 £125.00	£125.00
AOR	AR-3000A	WIDE RECEIVER.....	£475.00	MIDLAND	MIDLAND 48	80 CHANNEL CB.....	£55.00
AOR	AR-3030	HF / VHF RECEIVER Inc converter VHF.....	£450.00	PACCOM	TINY 11	TNC.....	£99.00
AOR	AR-3030	HF RECEIVER.....	£399.00	PACCOM	TNC-320	TNC.....	£90.00
AOR	AR-7030	TOP RECEIVER.....	£560.00	PLESSEY	PR-2250	HF RECEIVER BEST QUALITY CLASSIC!.....	£1,200.00
AOR	AR-8000	WIDE BAND RECEIVER.....	£199.00	REALISTIC	PRO-2006	400 CHANNEL SCANNER.....	£110.00
AOR	AR-8200 mk1	WIDE BAND RECEIVER.....	£230.00	REALISTIC	PRO-394	HF RECIEVER.....	£99.00
AOR	AR-8200II	WIDE BAND SCANNER.....	£275.00	SGC	SGC-2020	HF TRANSCEIVER.....	£450.00
AOR	AR5000	TOP CLASS RECEIVER.....	£999.00	SOMMERKAMP	FT290R	2m MULTI-MODE TRANSCEIVER.....	£180.00
AZDEN	PCS-4000	2M TRANSCEIVER.....	£99.00	SONY	ICF-SW77	FM/SW/MW/LW PORTABLE AS NEW!.....	£250.00
BNOS	AMPLIFIER	432-10-50 70CM 50Watt.....	£99.00	SONY	SW-100E	FM/SW/MW/LW PORTABLE.....	£90.00
CAPLO	SPL-3000	ANTENNA TUNING UNIT.....	£199.00	SYNCRON	PS-1220VU	20 AMP POWER SUPPLY.....	£60.00
DAIWA	CNW-419	ATU.....	£190.00	TOKYO HY-POWER	HL-30V	2M and 25W AMPLIFIER.....	£75.00
DATONG	FL-2	FILTER.....	£60.00	TOKYO HY-POWER	HL-37V	LINEAR AMPLIFIER.....	£60.00
DIAMOND	SX-1000	POWER METER - HF TO 23CMS.....	£110.00	TONNA	7000E	TERMINAL.....	£130.00
DRAKE	SW-2	RECEIVER.....	£275.00	TRANSVERTER	QM 70	28/144 TRANSVERTER.....	£100.00
FAIRHAVEN	RD-500	WIDE BAND RECEIVER.....	£575.00	TRIO	R-2000	RECEIVER + CONVERTER.....	£300.00
GRUNDIG	SAT800	SATELITE 800 MILLENIUM.....	£400.00	TRIO	TR-2300	TRANSCEIVER PLUS AMPLIFIER 2M.....	£99.00
ICOM	IC-R9000	TOP CLASS COMMUNICATIOS RECEIVER.....	£2,995.00	TRIO	TR-9000	2M MULTI MODE.....	£199.00
ICOM	AT-100	AUTO TUNER SUITE IC-751 etc.....	£225.00	TRIO	TR-9130	2M ALL MODE TRANSCEIVER.....	£250.00
ICOM	AT-150	AUTO ATU.....	£175.00	TRIO	TS-780	DUAL BAND BASE TRANSCEIVER.....	£275.00
ICOM	AT-180	ATU.....	£250.00	WELZ	AC-38M	200W MOBILE MATCHING NETWORK.....	£50.00
ICOM	AT180	MATCHING ATU FOR THE IC706.....	£250.00	YAESU	FP-75/HD	HEAVY DUTY POWER SUPPLY.....	£120.00
ICOM	IC-2100H	2M MOBILE TRANSCEIVER.....	£150.00	YAESU	FP700	POWER SUPPLY.....	£100.00
ICOM	IC-251	2m MULTIMODE TRANSCEIVER.....	£295.00	YAESU	FRG-100	HF RECEIVER.....	£300.00
ICOM	IC-271E	2m MULTIMODE TRANSCEIVER.....	£325.00	YAESU	FRG-7700	HF RECEIVER.....	£220.00
ICOM	IC-271E	ALL MODE TRANSCEIVER.....	£299.00	YAESU	FRG-8800	RECEIVER INCLUDES CONVERTER.....	£399.00
ICOM	IC-275E	25W TRANSCEIVER.....	£525.00	YAESU	FRG-9600	RECEIVER.....	£200.00
ICOM	IC-471E	70CM BASE MULTIMODE TRANSCEIVER.....	£299.00	YAESU	FT-100	HF / VHF / UHF ALL MODE TRANSCEIVER.....	£599.00
ICOM	IC-706MK1	HF / 6M / 2M (10w) TRANSCEIVER.....	£450.00	YAESU	FT-1000MK5	200W DSP HF TRANSCEIVER.....	£2,000.00
ICOM	IC-706MK11	HF / 6M / 2M TRANSCEIVER.....	£560.00	YAESU	FT-1000MP AC	HF BASE DSP TRANSCEIVER(Late serial no).....	£1,560.00
ICOM	IC-706MK1IG	HF / VHF / UHF TRANSCEIVER.....	£699.00	YAESU	FT-1000MP	BASE TRANSCEIVER.....	£1,300.00
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ICOM	IC-728	HF TRANSCEIVER.....	£399.00	YAESU	FT-101Z	MINT CONDITION!.....	£250.00
ICOM	IC-737	HF inc ATU BASE STATION TRANSCEIVER.....	£575.00	YAESU	FT-101ZDmkII	HF TRANSCEIVER inc FM.....	£375.00
ICOM	IC-756	HF / 6m All Band Transceiver.....	£999.00	YAESU	FT-225RD	2M BASE MULTIMODE CLASSIC!.....	£399.00
ICOM	IC-756PRO	ICOM TRANSCEIVER.....	£1,600.00	YAESU	FT-23R	HANDY TRANSCEIVER.....	£180.00
ICOM	IC-756Proll	HF / 6M DSP BUILT IN ATU.....	£2,000.00	YAESU	FT-2500M	MOBILE TRANSCEIVER.....	£190.00
ICOM	IC-775DSP	HF 200W BASE STATION TRANSCEIVER.....	£1,499.00	YAESU	FT-290RMKII	2M ALL MODE TRANSCEIVER.....	£180.00
ICOM	IC-8500	WIDE BAND RECEIVER.....	£999.00	YAESU	FT-290RMKII	MOBILE 2M MULTIMODE TRANSCEIVER.....	£275.00
ICOM	IC-910	270 CM BASE TRANSCEIVER.....	£999.00	YAESU	FT-41R	HANDY TRANSCEIVER.....	£120.00
ICOM	IC-R2	HANDY SCANNER.....	£99.00	YAESU	FT-470	270CM HANDY TRANSCEIVER.....	£140.00
ICOM	IC-R3	HANDHELD RECEIVER.....	£299.00	YAESU	FT-480R	2M TRANSCEIVER.....	£199.00
ICOM	IC-R7000	RECEIVER MINTI CONDITION.....	£560.00	YAESU	FT-650AC	26-50MHz 100w BASE SATATION TRANSCEIVER.....	£599.00
ICOM	IC-R71E	RECEIVER.....	£399.00	YAESU	FT-690RMK1	6M MULTIMODE MOBILE TRANSCEIVER.....	£250.00
ICOM	IC-R72	RECEIVER.....	£399.00	YAESU	FT-690RMKII	6M PORTABLE.....	£375.00
ICOM	IC-R75	HF / 6m RECEIVER.....	£475.00	YAESU	FT-7100	2M / 70CMS DUALBAND TRANSCEIVER.....	£249.00
ICOM	IC-T81E	QUAD BAND HANDY 2m/6m/23cm/70cm.....	£250.00	YAESU	FT-726R	2 / 70 / 6m TRANSCEIVER.....	£575.00
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ICOM	PCR-1000	COMPUTER SCANNER.....	£200.00	YAESU	FT-736R	2m / 70cm / 6m TRANSCEIVER.....	£750.00
ICOM	PS-15	20A POWER SUPPLY FITS ALL ICOM.....	£110.00	YAESU	FT-736R	2m / 70cm TRANSCEIVER.....	£650.00
ICOM	RM-1000	REMOTE CONTROL.....	£40.00	YAESU	FT-747GX	TRANSCEIVER.....	£299.00
ICOM	UT-84	PHONE SQUELCH UNIT.....	£25.00	YAESU	FT-757GXMKII	TRANSCEIVER.....	£395.00
JRC	JST-245	HF 50MHz 1500w AC BASE TRANSCEIVER.....	£1,295.00	YAESU	FT-757MK1GX	HF TRANSCEIVER.....	£375.00
JRC	NRD-345	RECEIVER.....	£299.00	YAESU	FT-767GX	HF BASE 100watt built-in ATU.....	£599.00
JRC	NRD-535	HF RECEIVER.....	£600.00	YAESU	FT-77	INCLUDES FM MINTI.....	£275.00
KENWOOD	AT-120	ANTENNA TUNER.....	£75.00	YAESU	FT-790R	70CM MULTIMODE MOBILE TRANSCEIVER.....	£225.00
KENWOOD	AT-230	ANTENNA TUNER.....	£120.00	YAESU	FT-80C	0-30MHz COMMERCIAL TRANSCEIVER.....	£375.00
KENWOOD	DFC-230	FREQUENCY CONTROLLER.....	£70.00	YAESU	FT-840	HF TRANSCEIVER.....	£425.00
KENWOOD	PS-430	POWER SUPPLY.....	£100.00	YAESU	FT-847	HF / 2 / 6 / 70cm BASE TRANSCEIVER.....	£900.00
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KENWOOD	R-2000	RECEIVER.....	£225.00	YAESU	FTV-901	TRANSVERTER Inc 2m Mod.....	£165.00
KENWOOD	R-5000	RECEIVER + CONVERTER.....	£600.00	YAESU	FV-707	VFO UNIT.....	£99.00
KENWOOD	R-5000	RECEIVER.....	£499.00	YAESU	MD-100ABX	DESK MICROPHONE.....	£80.00
KENWOOD	SM-220	SCOPE - TS-940 etc.....	£200.00	YAESU	MH-3484B	SPEAKER MICROPHONE For VX5R VX-1R.....	£15.00
KENWOOD	SP-31	SPEAKER.....	£60.00	YAESU	MH-35	SPEAKER MICROPHONE.....	£10.00
KENWOOD	SW-100E	SWR METER.....	£25.00	YAESU	MMB-16	MOUNTING BRACKET.....	£20.00
KENWOOD	TH-22E	2M HANDY TRANSCEIVER.....	£99.00	YAESU	NT-29	CHARGER.....	£30.00
KENWOOD	TH-251E	HANDHELD 2M.....	£140.00	YAESU	PA11U	PSU FOR FRG-100.....	£20.00
KENWOOD	TH-77E	DUALBAND 2M/70CMS HANDHELD.....	£130.00	YAESU	VR-120	RECEIVER FM /VFM/AM.....	£99.00
KENWOOD	TH-79E	HANDY TRANSCEIVER.....	£189.00	YAESU	VR-5000	TOP RANGE SCANNER RECEIVER.....	£450.00
KENWOOD	TL-120	LINEAR LOW DRIVE AMPLIFIER 100W HF.....	£150.00	YAESU	VX-1R	HANDHELD TRANSCEIVER.....	£120.00
KENWOOD	TM-231E	2M MOBILE TRANSCEIVER.....	£120.00	YAESU	VX-5R	2 / 70 / 6 HANDIE SW.....	£220.00
KENWOOD	TM-241E	2M MOBILE TRANSCEIVER.....	£120.00	YAESU	XF-114SN	2KHz SSB FILTER.....	£60.00
KENWOOD	TM-251E	MOBILE TRANSCEIVER.....	£140.00	YAESU	YO-100	SCOPE VERY RARE!.....	£150.00
KENWOOD	TM-255E	TRANSCEIVER 2M MULTIMODE.....	£395.00	YUPITERU	MVT-225	AIRBAND SCANNER.....	£150.00
KENWOOD	TM-455E	70CM MULTIMODE MOBILE TRANSCEIVER.....	£450.00	YUPITERU	MVT-7300	MULTIBAND HANDHELD SCANNER.....	£199.00
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KENWOOD	TR-751E	2M MULTIMODE TRANSCEIVER.....	£350.00				
KENWOOD	TR-951E	70CM MULTIMODE MOBILE TRANSCEIVER.....	£395.00				
KENWOOD	TS-2000	HF / VHF / UHF ALL MODE MULTIBANDER.....	£1,350.00				
KENWOOD	TS-440SAT	TRANSCEIVER WITH BUILT IN ATU.....	£499.00				
KENWOOD	TS-50	HF TRANSCEIVER.....	£425.00				
KENWOOD	TS-570D	TRANSCEIVER HF DSP ATU MOBILE/BASE.....	£650.00				
KENWOOD	TS-680	HF 6M MOBILE/BASE TRANSCEIVER.....	£400.00				
KENWOOD	TS-690	HF 6M Inc ATU.....	£550.00				
KENWOOD	TS-711E	SM BASE STATION TRANSCEIVER.....	£399.00				
KENWOOD	TS-790E	270CM BASE STATION TRANSCEIVER.....	£699.00				
KENWOOD	TS-790E	2m / 70cm/23cm BASE TRANSCEIVER.....	£999.00				
KENWOOD	TS-850SAT	HF TRANSCEIVER - MINTI.....	£800.00				
KENWOOD	TS-950SD	HF 150W DSP BASE TRANSCEIVER.....	£1,100.00				
KENWOOD	TS-950SDX	HF 150W DSP FULLY LOADED LATE S.NUMBER.....	£1,700.00				
KENWOOD	VFO-120	TS120 VFO.....	£50.00				
KENWOOD	VS-1	VOICE SYTHESISER.....	£30.00				
KENWOOD	VS-2	VOICE SYTHESISER.....	£30.00				

Please note, the equipment listed may

have been sold / updated, please ring

01922-414796 to check availabilty



Value & Vintage

Ben Nock G4BXD welcomes readers to his first column of 2003. Ben's looking forward to more rallies and also discusses the famous Hellschreiber, and air-to-ground H2S radar system from the Second World War.

A very happy New Year to you all! I hope you had an enjoyable time over the festive season? However, as I'm writing this in November I am not sure how successful mine will be yet....the problem of lead times in publishing eh?

Firstly a big thank you to **Muriel** and the gang at the **Llandudno Rally** on 2 & 3rd November, another great event. It was also a great pleasure to have so many readers come up to my display of equipment and tell me how much they enjoy these pages. I'll try and keep up the standard.

So, on with the show as they say. You may remember that back in August 2002 I mentioned the transmitter Type SR. Subsequently, a kind reader telephoned to say he had the matching receiver which, true to his word, he duly delivered. The photograph, **Fig. 1**, shows the two units, with the receiver on the left and transmitter on the right in identical cases and style of course.

Its interesting to note that the receiver controls are very simple...there's not even a volume control. There is however, a power **On/Off**, **Channel Selection**, **Trace** and **Range** selection. Incidentally, the function of the last two controls is still a mystery!

By Magic?

As if by magic another recent contact resulted in the acquisition of the wartime version of the previous set Wireless Set SR O., **Fig. 2**, or WS Sound Ranging Out Station. The wartime set has transmitter (TX) and receiver (RX) in the same case with an external power supply unit.

The set's receiver is capable of tuning between 9 and 10.5MHz. Transmit section of the unit, which, after it's been tuned to a nominal frequency, can be set to one of five channels. These consist of four above, and four below the main frequency shifted by 25 and 50kHz (Note: the later SR t.x. also has five channels).

There is also WS SR HQ set, this has a receiver with five intermediate frequency (i.f.) units and a

single channel transmitter. This was used to receive the signals from five Out Station transmitters and output their signals to a chart recorder from which a plot of enemy gun positions could be calculated.



National Receiver

A recent G4BXD find in a small town junk shop was a rather nice looking set by National, the company who made the HRO receiver. This is the NC-2-40S, **Fig. 3**, a single conversion superhet covering 200kHz to 18MHz in six ranges.

The receiver has an odd wave change switch in that the main tuning knob is **pulled forward to engage gears** which then turn the wave switch. After band changing the tuning knob is pushed in to resume normal tuning.

Another odd thing about the set is that it differs from the 40C and 40D versions by having the square S-meter of the 40D but the centre tuning dial of the 40C. There are also other differences, which may mean that this was a military version (the small chart holder lower right also suggests this). Of course, if any reader knows different please let me know!

Friend In Finland

I recently received an E-mail from a good friend of mine in Finland. He had found three interesting items in a junk shop and asked if I interested in one. Well, needless to say I was...as the items turned out to be German Hellschreiber machines! He acquired one for me and kindly sent it over on a slow boat.

You will no doubt realise...I was really pleased when it arrived. Although my first impressions on opening the packing were low as the external condition is poor...but when I opened the equipment the insides were near perfect.

The photograph, **Fig. 4**, shows the Hellschreiber, with its keyboard on the bottom. The box above contains the electronics, and the motor-like unit on the left not only supplies the high tension (h.t.) for the valves but also drives the mechanics inside.

The Hell system is similar to FAX in that tones are generated when a key is pressed - the tones are simply fed to the microphone socket of a transmitter. On receive the audio tones are fed to the electronics which control a small relay which in effect taps onto a paper tape which is pressed against an inked roller. The relay pushes the paper tape on to the roller in such a way as to form characters that can be read off the tape.



● Fig. 1: The modern Sound Ranging units, receiver on left, the transmitter on the right.



● Fig. 2: The war time Sound Ranging set, the controls are the same as used on the Wireless Sets 18 and 68 (see text).



● Fig. 3: The National NC-2-40S receiver, very nice clean lines with a rack mounting front panel (See text).



● Fig. 4: The German Hellschreiber, dated 1940, in very nice condition (see text).

feed down to the horn on the dish. I have an H2S indicator, so hopefully I can match the two up and eventually produce an interesting display for future rallies.

Well that's all for now. I'm looking forward to the new rally season, and hope to see you at the Harwell, Cambridge and Swansea rallies in February. As always you can write to me at **62 Cobden Street, Kidderminster, Worcestershire DY11 6RP**, or via e-mail at **G4BXD@qsl.net** and have a look at my web pages at **www.qsl.net/g4bxd** PW

*The H2S system got its code name when a doubtful war-time boffin said the idea 'Stank'- the H₂S being the chemical symbols for Hydrogen Sulphide...which smells like rotten eggs. It proved very successful in service.

● Fig. 5: The radar motor unit, Type 51, centre coaxial cable feed to the dish with drive motor on the right (see text).

The computer operators* amongst you will probably know there's software available to emulate the Hell mode and it's used on many h.f. nets. Incidentally...as this unit still works I intend to try it out on the air, and we'll see just how good that software is.

**Editorial note: A new column - to be introduced in 2003, will cover the Hell mode. Robin Trebilcock GW3ZCF will be dealing with this, and other specialist modes in Data Burst on a three monthly basis (see Keylines, January 2003 PW). Editor.*

Rotten Eggs?

Not quite a radio but...H2S is interesting I believe...and it didn't smell of rotten eggs*! I discovered an odd unit recently and once it was cleaned and examined it turned out to be the head unit of the H2S radar dish rotating system.

The Type 51 unit, **Fig. 5**, was mounted under the aircraft and the radar dish hung beneath it. A motor on the unit drives the dish around via several gears; it also drives scan coils that fed a waveform to the indicator unit producing the rotating trace on the cathode ray tube (c.r.t.).

The large coaxial socket on top of the unit is the



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REPORTS & INFORMATION BY THE LAST SATURDAY OF EACH MONTH.

Last month I reported that propagation on the 50MHz band during October was very good with contacts being made with stations as far away as Australia and Japan. Many operators expected the F2-layer propagation to continue through much of November but this didn't materialise to any great extent.

Some F2-openings to Australia (VK) and Malaysia (9M) were reported but all were very brief and restricted to stations in south-east England. Nevertheless there was hardly a day during November when DX contacts were not reported on the band.

Propagation was either to the south via the trans-equatorial (t.e.p.) mode or north via

50MHz band during November.

Auroral backscatter and Auroral-E openings were also reported during the month but very little European traffic was noted on this band. The 'highlights' included the stations of TF8GX (Iceland) via Au-Es on November 12 and Swedish stations SM0ELV (JO89) and SM3NRY (JP82) via aurora on November 20.

THE 144MHz BAND

Auroral openings were reported on the 144MHz band on November 3, 12, 18, 20, 21 and 22. Most were weak events with only inter-UK traffic being reported. An event on November 20 between 1800-2100UTC was significantly stronger with many long distance

Firstly, nearly everyone was operating on or close to 144.370MHz and thus causing mutual interference. Secondly FSK441 (from the *WSJT* program written by K1JT) is not designed specifically for use during an intense meteor shower. It really comes into its own when used with short-duration meteor pings or on long distance paths where there are very few reflections. Yes, it's true that FSK441 does produce good results during a shower ... but the 30-second transmit/receive period used by the mode is much too long for making quick two-way contacts.

On s.s.b. it is possible to complete a QSO using the proper procedures in less than 20 seconds. Using the rigid FSK441 time structure a similar contact will take a minimum of 2.5 minutes.

What was very noticeable during the Leonid shower was the almost complete absence of any high-speed c.w. (h.s.c.w.) operation. In my opinion this was regrettable. Having said that though, I believe that this type of shower (during the peak hours) was more suited to s.s.b. operation rather than other modes.

I suggest that FSK441 and h.s.c.w. are best used when meteor reflections are few and far between, for example in the days before and after the main peak of a meteor shower. Furthermore I suggest that FSK441 and h.s.c.w. modes are used on a daily basis via sporadic meteors outside of known shower periods.

During the peak of the Leonid shower hardly anyone reported making contacts on the 50 and 70MHz bands although according to the DX cluster some s.s.b. QSOs were made albeit at fairly short range. It's on the 144MHz band where the real DX contacts were being made and I'll now turn to your reports to show what is possible on this so-called 'line-of-sight' band.

Richard Staples G4HGI (IO83) mentions that he used the FSK441 data mode for the first time during the Leonid meteor shower and was very pleased with the results. He noted that a small number of operators are now using the convention of sending CQ plus a three number digit (e.g. CQ385) to indicate what frequency the QSO will be conducted on. (This was one of my proposals agreed at the recent IARU Region 1 Conference in San Marino. I'll provide full details of the conference decisions in the next issue.)

Contacts on FSK441 made at the station of G4HGI included E55RY, LA1K, OH5LIZ, OH6HFX and YL3DW. Richard also made s.s.b. QSOs with HA5KDQ, IK2YXK and 9A1CAL/P.

auroral backscatter or Auroral-E. Conditions on the 144MHz band were equally as good with many long distance European contacts being reported either by auroral propagation or via meteor scatter during the intense Leonid meteor shower.

THE 50MHz BAND

Although F2 propagation was quite tenuous a few openings were noted on November 5, 7, 10, 12, 13 and 14. As only the extremes of electron density produced any openings these proved to be rather geographically selective with only a handful of DX stations being reported. Those heard or worked from UK locator squares IO90 and IO91 included FY5LS (French Guiana), J3/W6JKV (Grenada), VK6JQ (Australia), VP2MJD (Montserrat), 4S7AB (Sri Lanka) and 9M2TO (Malaya).

F-layer propagation on the southerly path proved far more reliable during the month but only if you were situated in southern England or Wales. Six Metre operators from these locations reported making c.w. and s.s.b. contacts on a daily basis with stations in central Africa. Again, these only amounted to a few callsigns which included C56JHF, C56R (Gambia), J28UN (Djibouti), TR8CA (Gabon), XT2WP (Burkina Faso), 3XY7C (Guinea) and 9L1AB (Sierra Leone). Apart from transitory sightings of D44TD (Cape Verde Islands) and HZ1MD (Saudi Arabia) that was the sum total of DX worked outside of Europe on the

c.w. contacts being reported.

I was active at my QTH (Herefordshire IO81) from 1815UTC and made c.w. QSOs with the stations of DL/UT8AL (Germany) at 805km, LA3BO (Norway) 1200km, SM0KAK (Sweden) 1543km and YL3AG (Latvia) for best DX at 1875km. Also contacted on c.w. was the expedition station EI2TAA operating from IO42 a very rare locator square on the west coast of Ireland.

The event of the month, if not the year, was the Leonid meteor shower which the Earth encountered on Tuesday November 19. You may recall that I forewarned you of this event a few months ago, so I hope you were all ready and made many DX contacts.

The peak in meteor activity came exactly as predicted with many long duration reflections occurring between 0330-0500UTC. Indeed for much of the time that the shower radiant was above the horizon (approximately 0100-1100UTC in the UK) there were numerous bursts of signals, some lasting minutes at a time.

Previously, I suggested using s.s.b. telephony and many stations took heed of this and made some excellent contacts. A great number of operators were also heard using the high-speed data mode FSK441. Although many contacts were made via this mode the QSO rate was considerably less than using speech modes. There are a number of reasons why this should be so.

Jamie Ashford GW7SMV (Monmouthshire IO81) was unable to be active during the peak of the shower but managed to find time to make FSK441 contacts with ES1RF, ES5RY and SP3VSC and one solitary s.s.b. QSO with the station of OH0JFP (Aland Island).

Ian McCabe G0FYD (Lancashire IO83) reports that he was active between 0330-0630UTC keeping the beam to the north-east in the hope of finding new locator squares. Running 100W from a TS-2000 transceiver into a 9-element Yagi he made s.s.b. contacts with the station of LA8G, LA8KV, SM2CKR and OH1XT. Ian also heard the stations of ES1RF, ES2NJ, EW1RZ and RX1AS.

Steve Bunting M0BPQ operated from a portable location (Kent JO01) close to the **GB3VHF** beacon site at 200m a.s.l. He used a Yaesu FT-847 transceiver with an MGF1302 low-noise amplifier, 200W and a 12-element DL6WU Yagi at 7m above ground alongside his car.

During the night Steve made a total of 15 complete s.s.b. contacts which included the stations of ES2RJ (best DX at 1786km), OK1VT, OK2PIN, S52EZ and TK5EP. He also heard the stations of LY2SA, LY3ED (Lithuania), RW3PF (Russia), SP2OFW (Poland), YT1UV and YU3EP (Yugoslavia).

John Lemay G4ZTR (Essex JO01) uses a Yaesu FT-1000MP h.f. transceiver driving a Down East Microwave transverter, 400W and a 12-element M2 Yagi. He was active on the 144MHz band between 0300-1000UTC and made a total of 18 contacts. His s.s.b. QSOs included the stations of OY9JD (Faroe Islands), CT1FOH (Portugal), EA1DVY, EA4CTF, EA7RM (Spain), EA6SA, EA6VQ, EA6/DL1GGT, EA6/DL1SAN and EA6/DL6SAQ (Balearic Islands). Contacts on FSK441 were made with LA1K, OH6HFX and 9A1CAL/P.

Dave Edwards G7RAU (Isle of Wight IO90) reports making 49 contacts with stations in 15 countries, DL, EA6, F, HA, I, LA, LZ, OH, OH0, OK, RW, SM, SP, S5 and 9A. His contacts included HA2RI (JN87), HA4WQ, HA5KQD, HA5UK and HA6ZB (all in JN97), HA8V (KN06) and LZ5UV (Bulgaria) at 2061km. Best DX of the event was with the Russian station of RW3PF (KO94) at 2670km!

I was active from my QTH (Herefordshire IO81) between 0300-1130UTC and made 56 s.s.b. contacts with stations in Aland Islands (OH0), Austria (OE), Balearic Islands (EA6), Corsica (TK), Croatia (9A), Czech Republic (OK), Estonia (ES), Finland (OH), Germany (DL), Hungary (HA), Italy (I), Lithuania (LY), Norway (LA), Poland (SP), Russia (RX), Slovenia (S5) and Sweden (SM). I used a Kenwood TS-790E transceiver with a miComm (DB6NT) L145P low-noise amplifier, 400W amplifier and an 18-element DL6WU Yagi.

Some of the DX stations contacted

included EA6/DL6SAQ (JN20), ES2NA (KO29), HA5OV (JN97), LY2BIL (KO24), OH0JFP (KP00), OH6MAZ (KP21) and TK5EP (JN41). The top three s.s.b. contacts were with IK7UXY at 2092km, OH7HDU 2133km and my longest distance ever via meteor scatter RX1AS (KO59) at 2234km. The station of OH8K (KP55) was heard three times during the night at a distance of 2396km but no two-way contact was made.



● Keen DXers at the San Marino IARU Region 1 Conference. Left to Right: Riccardo 772EB, Mario I1ANP, Dick PA2DWH, David G4ASR, Jussi OH5LK.

Tim Fern G4LOH (Yorkshire IO94) felt that the Leonid shower was not as good as in previous years (a view I share) and that the predicted storm did not materialise. Although some long bursts were heard the reflected signals were not particularly strong.

Tim also noticed many new callsigns active who have probably discovered meteor scatter communication via the *WSJT* weak signal program. In the days leading up to the peak of the Leonid shower he tried out the new FSK441 software and was pleased to make QSOs with the stations of ES1RF, LA1K, OE5MPL, OH5LIZ, OH6HFX, OK2BRD, OM3WBC, SP2MSL, SP2OFW, S59F, YL3DW and 9A1CAL/P. His furthest distance via this mode was made on November 16 when a contact was made with OH8K (KP55) at 2150km.

Tim used s.s.b. exclusively during the peak of the shower making a total of 26 contacts. Among them were the stations of EW1RZ (Belarus), LY2BAW (Lithuania), T94DU (Bosnia-Herzegovina) and YO2BBT (Romania). At 0400UTC Tim had arranged a schedule with UR5LX (Ukraine) over a 2535km path. Although a two-way contact was not completed the Ukrainian station did receive a two second burst of s.s.b. from G4LOH.

Tim reckons that if he was using high-speed c.w. or FSK441 then a contact may have been made. He also participated in meteor scatter tests with W3EME and W5SNX in the

USA but nothing was heard in either direction.

Tim wasn't the only person to attempt a 144MHz contact between Europe and North America. A team consisting of DK5DQ, DL5DAW, EI7BMB and EI8JK located on the west coast of Ireland and DL2DAO, VO1DZA and VO1HE located in Newfoundland attempted to make a two-way FSK441 contact over the 3100km path.

Using the callsigns EI2TAA and VO1BZM both stations ran high power into stacked Yagi arrays. Unfortunately due to gale force winds in Ireland it was necessary to make use of a smaller Yagi array which exhibited a higher noise level. Nothing was heard in the first scheduled test starting at 0200UTC. A second test commencing at 1000UTC also proved fruitless, being aborted due to a failure in the amplifier high voltage supply in Newfoundland.

Andy Adams G0KZG/MM has sent in a report from the Royal Research Ship *Discovery* whilst on a trip around Iceland and Greenland. He was active during the Leonid

meteor shower from a location to the south of Iceland. In a twelve hour period between 0000-1200UTC he heard three stations and worked only two! His problems were two-fold; equipment failure and extreme distance!

Andy commenced operation from locator square HP52 using FSK441 transmissions. He was then called by the station of GW3HWR (IO71) but suffered equipment failure before he could complete the contact.

An hour later at 0220UTC Andy called CQ on high-speed c.w. and was answered by G0CUZ (IO82). The QSO, over a distance of 1881km, took 30 minutes to complete, the longest burst lasting for 10 seconds at S4. After that contact no other signals were heard until 0535UTC when the station of G0CUZ was heard calling CQ again. By this time Andy was in locator square HP42 and so another c.w. contact was made, this time at a distance of 1984km.

Andy's final contact (now in locator HP43) was made at 0820UTC with the station of GW4VEQ (IO73) over a path of 1850km. Andy mentions that although he enjoyed the challenge he did wish he was 500km further east. He reckons he was out of range of the majority of European stations who were probably beaming in the opposite direction!

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 your letters and good luck with the DX. Happy New Year!

TS David G4ASR

HF HIGHLIGHTS

CARL MASON GW0VSW

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

Pactical Wireless reader **John Warburton G4IRN** had the opportunity to operate from The Gambia in September as C56/G4IRN. His 'out of season' DXpedition went very well and John made over 5000 QSOs on all bands from 7 to 28MHz. His chosen location was the Senegambia Beach Hotel where he had no problem installing his equipment which included a TS-50S, MFJ-971 a.t.u. and 28MHz vertical wire antenna which had just a single radial and was fed with 450Ω ribbon feeder.

Running 100W John worked 98 DXCC entities using both c.w. and s.s.b. A small Toshiba 486 laptop and SDX, a DXpedition and Special Event logging programme written by **Paul O'Kane EI5DI**, kept track of all the contacts. Best DX was KH6 (Hawaii) and VK9N (Norfolk Island) although John says "Not that I was chasing the DX....it chased me!"

DX NEWS

Special event station **ER60SB** will be operating between 23 January and 2 February to commemorate the 60th anniversary of the Battle of Stalingrad. QSLs should go via ER1DA either through the bureau or direct to **Valery Metaxa, P.O. Box 3000, Chisinau, MD-2071, Moldova.**

Dave Hess NK3T, is currently active as **KC4/NK3T** from McMurdo Station Antarctica (AN-016) until late January or early February. Listen

for Dave between 0230 and 0400UTC around 14.243MHz. If you manage to work him your QSL card should go via his home call. A nice collection of QSL cards from Antarctic stations can be found on **Michael McNamara, EI2CL's** website at

www.qsl.net/ei2cl/antarctic/antarctic1.html

Operating from Tonga using RTTY after a 'six year layoff' is **Paul Kidd A35RK**. He can only run 50W, and is still trying to sort out some software and computer problems. It has been so long since he has operated using this mode and says "It seems like I've forgotten almost everything so please be patient with me". You can find Paul around 21.081MHz

after 2230UTC and as late as 0330UTC.

Between January 30 and February 16, **Hans DL7CM** and **Sid DM2AYO** will operate from the island of Haiti (NA-096) as HH2/home call. Activity is expected on all h.f. bands using c.w., s.s.b. and RTTY. You can find more information on their operation at www.qsl.net/dl7cm/haiti.html

back on the h.f. bands using a FT-990 with 50W output to a simple 70m end-fed long wire.

Leighton says "I am getting a bit more selective these days and generally only operate in the evenings. Top Band has always been a favourite with me and I am pleased to see that my antenna is allowing contacts on that band

CARL GW0VSW ROUNDS-UP THE NEWS FROM HIS ENTHUSIASTIC

HF BAND REPORTERS

Operating from Belize until April is **Joe Pontek K8JP** who will use the callsign **V31JP** on all h.f. bands operating mainly c.w. with some s.s.b. and possibly RTTY. All QSLs should

despite the high levels of static noise". Leighton's 1.8MHz contacts 'on the key' include YL2PQ (Latvia), RZ1AWT (European Russia), HB0/HB9AON (Liechtenstein) and ER3ER (Moldova) between 2000 and 0130UTC. A change to 3.5MHz found EA8/HA5RT/P (Canary Islands) at 1151 and a s.s.b. contact with VK3DZM (Australia) at 2012UTC, both of which are new countries for Leighton on this band.

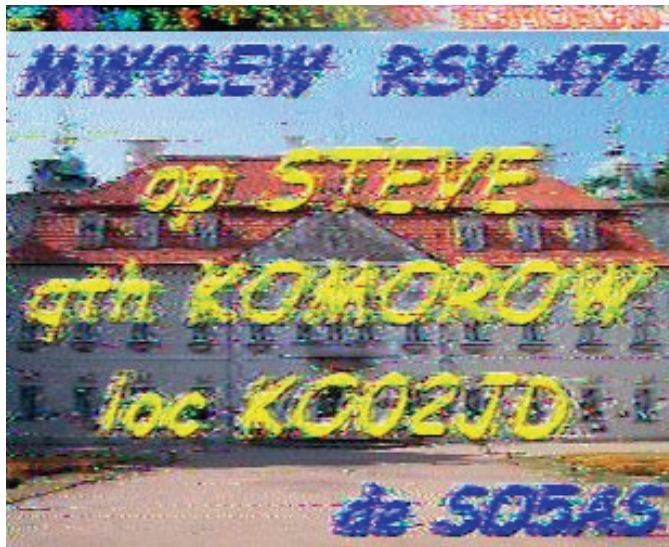
New reporter **Lewis Thomas MW0LEW** has also been on 3.5MHz using SSTV with some success. From his home in Goytre near Port Talbot. Lewis was pleased to work SO5AS (Western Sahara) at 0018UTC on 3.733MHz using an IC-706 MkII and 80W to an inverted dipole cut for the band, despite some very poor conditions at the time.

Once again PSK31 was the chosen mode for **Steve Bainbridge M3SWB** in Liverpool who ran a TS-430S at 10W on 7MHz to work EI9FV (Ireland) at 1025 followed later by PB5SAM (Netherlands) at 2000UTC. Steve also worked over 60 stations on various bands during the recent TARA PSK Rumble.

THE 14 & 18MHz BANDS

On to 14MHz and **Tom Kelly EI2AJ** in Corbally, Limerick who has been running 30W to a half-size G5RV with good results. DX worked included UN9FB and UN5J (Kazakhstan), EA8/DL7PV (Canary Islands), AY5FZ Argentina, N6AR (USA) in Winter Garden, Florida, VK6JQ (Australia) and HZ4DZ (Saudi Arabia). Congratulations to Tom for working 50 countries and winning the **South Dublin Radio Club Challenge 2002**, Restricted Section using a QRP Plus at 5W QRP.

All c.w. man **Ted Trowell G2HKU** on the Isle of Sheppey in Kent has been bashing the



● The poor conditions on 3.5MHz are illustrated by this SSTV contact between Lewis MW0LEW and SO5AS.

go direct to **Lonnie W. Miller KA9WON, 12618 Thistle Ridge Close, Roscoe, IL 61073, USA.** You can find Joe's web page at <http://mywebpage.netscape.com/v31jp/homepage.html>

YOUR REPORTS

Welcome back to **Leighton Smart GW0LBI** in Trelewis, Mid-Glamorgan who has found his duties as a Local Councillor taking up a good deal of his time lately. However, he is now

key once again working LU1FAM (Argentina) and ZL7C (Chatham Islands) OC-038 around 0800 followed a little later by HS0/G3NOM (Thailand) and XV9DT (Vietnam) at 1099UTC using a Ten Tec Omni V and Butternut HF6 vertical antenna. Ted also spent a good deal of time listening to a South Korean station operating on 10MHz who persisted in trying to get the call of a 'G' station who was running QRP.

Ted eventually managed to make out the callsign only to be suddenly confronted by various European stations who instantly went /QRP with no reduction in signal strength! Now I must admit that I have also witnessed this several times, particularly with DXpeditions. It's a trend that does seem to be spreading amongst certain EU countries and I wonder just what can be done to stop it?

The 18MHz band proved to be good for **Clint Oliver M3GMM** who used a TS-2000 with 10W to a Butternut 2-element beam. Countries worked include A61AO (United Arab Emirates) 1800, JW0HR (Svalbard) EU-120 at 1900 and ZL3RG (New Zealand) at 1911UTC.

One reporter who is not having any difficulty keeping warm in his shack this winter is **Roy Walker G0TAK**, Kendal, Cumbria. Roy has just acquired a pair of veteran rigs, a KW-2000B and 2000E that have 22 valves each.

Roy says: "The heat generated from them means I can now turn down my central heating"! Stations worked with c.w. and using a TS-570DG and 3.5MHz long wire loop include RN3ZB (European Russia), OK1CTB (Czech Republic), DL3HSC (Germany), F9KP (France), SM3RXC (Sweden), 9A3FO (Croatia) and T96Q (Bosnia & Hercegovina) between 1120 and 1504UTC.

THE 21 & 24MHz BANDS

Welcome now to new reporter **Paul Bridle MW3ARD/G6CHD** near Rhyl, North Wales who runs a FT-847 with FC-20 automatic a.t.u. to various home-made dipoles. On 21MHz s.s.b. this month Paul worked 6K2CFI (South Korea) 1104, CN8NK (Morocco) 1114, BG2EX (China) 1125, AP2AI (Pakistan) 1148, JR2TQG (Japan) 1335, VK2CP (Australia) 1348, JW0HU (Svalbard) 1443, VE3MCE (Canada) 1506, YB1AQV (Indonesia) 1522, 4L6AM (Georgia) 1627, T77GO (San Marino) 1631 and EW1AQ (Belarus) at 2322UTC.

On to the log of **Martyn Medcalf M3VAM**, Chelmsford, Essex who used his IC-746 with 10W s.s.b. SGC237 tuner and 8.2m of wire working YL1AU (Latvia) 0757, YT6A (Yugoslavia) 1037, OH8VJ (Finland) 1053, EA3KU (Spain) 1106, UX0FF (Ukraine) 1152,

First Contact in the Country of England
20 meters PSK
NJ2LH
Lyndhurst High School
Weart Avenue
Lyndhurst, NJ 07071
BERGEN COUNTY

DATE	Day	Month	Year	UTC	CONFIRMING QSL WITH	RST	MHz	MODE
21	Sept.	02		22:30	M3SWB	449	14.068	PSK

PSE QSL Steve, Thanks for the 1st contact in England on 20m Psk, and you 10 watts QRP. Hope to print you again sometime. Peter, NZ1YY
 TNX

- Once again PSK31 was the chosen mode for Steve Bainbridge M3SWB (see text).

V47NS (St. Kitts & Nevis) 1226, 8P8P (Barbados) and ZX5J (Brazil) at 1953UTC bringing Martyn's DXCC total to 67 countries of which 24 are now confirmed!

Also operating on this band with s.s.b. was our third new reporter **Gary Macleod MM3SCO** in Tongue, Sutherland who used his TS-50S and converted CB antenna to contact JA0LBE (Japan) at 0953, followed later by DJOJE (Germany) 1238, S55T (Slovenia) 1349, CT3FT (Madeira Island) 1350, VE9MZ (Canada) 1524 and W2EZB (USA) in New York at 1636UTC. Switching to 24MHz Gary logged SP4ZO (Poland) 1326, EU3AR (Belarus) 1558, YO8BPK (Romania) 1645 and K5RQ (U.S.A.) in Frisco, Texas at 1739UTC.

THE 28MHz BAND

Alex Shillito G2FRY in Nottingham continues to gain success using a simple indoor station consisting of a FT-101E and 2.5m (8ft) rod mounted to one side of a wardrobe. Contacts this month using c.w. include 3U2DD (China),

P40W (Aruba), HC8N (Galapagos Island), PJ4W (Netherland Antilles) and C53M (Gambia).

Using an IC-746 and 100W to a Carolina Windom was **Mike Baker G3SUK** in Stowmarket who had s.s.b. contacts with RV3VGD (European Russia), RA9LL (Asiatic Russia), 9H1EL (Malta), KB8DOR (U.S.A.) in North Carolina, PY2RM (Brazil) and UU4JKY (Ukraine) between 0730 and 1500UTC.

On to **Paul Burgess M0CCQ** in Ellesmere, Shropshire who used his FT-920 with amplifier at 200W and five element mono band ZX Yagi to work XV9DT (Vietnam), 5Z4DZ (Kenya), H44A (Solomon Islands) OC-047, 6J2MX (Mexico), ZL7C (Chatham Island), V51KC (Namibia), A61AJ (United Arab Emirates), 5U7JK (Niger), 3XY7C (Guinea) and ZD9BV (Auckland & Campbell Island).

Finally, on to the log of **Robin Trebilcock GW3ZCF** in Bishopston near Swansea who found 9K2ZZ (Kuwait) 1132, VU2XO (India) 1134, 3B8CF (Mauritius) 1442 and J3/K1JN (Grenada) NA-024 using s.s.b and CP6EB (Bolivia) 1307 and CX2AV (Uruguay) at 1810UTC using PSK31. The equipment was an IC-775DSP to a 3.5MHz horizontal loop.

SIGNING OFF

It has been another busy month for all our reporters with the h.f. bands showing some signs of improvement. It certainly looks like things are going to get better over the next few months, so now is the time to get in your shacks and see just what you can work.

My thanks to everyone who sent in their reports this time and to **Mauro Pregliasco I1JQI/KB2TJM** Editor of the *425 DX Newsletter* for the DX information. A Happy New Year to you all.

73, Carl G7W01SW

- John Warburton G4IRN recently had the opportunity to operate from The Gambia in September as C56/G4IRN.



KEYBOARD COMMS

ROGER COOKE G3LDI

THE OLD NURSERY

THE DRIFT

SWARDESTON

NORWICH

NORFOLK

NR14 8LQ

TEL: (01508) 570278

E-MAIL: rcooke@g3ldi.freemove.co.uk

PACKET: G3LDI @ GB7LDI

Over the last 15 years or so, there has been a quiet – or not-so-quiet – revolution in digital communications. Twenty-five years ago, computers were in their infancy, most homes didn't have one, and if they did it was a basic machine, running either basic programming for the 'nerd' user, or games for the kids.

Now, there are few homes without a computer, very few Amateurs not using one in everyday communications of some sort, either directly or indirectly, and some have several computers. Digital communications will be with us permanently, and will become more sophisticated as time goes by.

We know that Packet is undergoing a phase whereby Nodes and BBS are closing down. This is inevitable, bowing gracefully to the success of the commercially sponsored E-mail/Internet telephone communications, which is a far cheaper and quicker way of communication.

A few of us plod on in the vain hope that we can survive the onslaught of commercialism, but I doubt we will succeed. The cost in time and money is excessive and with the user base dropping daily, it hardly seems worth it any more.

Having penned all this doom and gloom it's quite remarkable therefore that a bunch of new users seem to be coming onto the Packet network. These are Amateurs who have not tried Packet before, so I do hope that we can keep the network together for them to get their share of the pleasure that we oldies have seen.

With the advent of the WLAN cards, and possible some high-speed data, point-to-point, we might revive this poor old system yet. There are quite a number of interested Amateurs getting involved in this now, so hopefully it will eventually give rise to some development involving radio, rather than land-lines.

COMMENTS FROM MR GATES

Bill Gates (Mr Microsoft, of course!), opening the Comdex show in Las Vegas has said that

the next ten years will provide another revolution in the way that people talk to each other. He also talked about the Wireless technology and seems to think that has a great future. The magic of the chip and the magic of the software are now spreading to other devices, and those devices are connecting up in very flexible ways.

The next version of *Office*, due out next summer, will feature new applications to improve knowledge management and collaboration. *Office* users will be able to access XML information in back-end systems

altered in any great way in the near future. We could always use a larger portion of each band, and in fact if you listen on a major contest weekend you will see that a considerable overlap at each end of the segment takes place due to the enormous number of stations on the air.

A recent suggestion from **Wolf DK2OM** in a Packet bulletin, suggested an RTTY Pirate contest on 28MHz. What a brilliant idea!

In its basic conception, an RTTY Pirate contest would entail having RTTY contacts on top of as many of the f.m. pirate operators on

ROGER G3LDI LOOKS TO THE FUTURE, REMINDS US OF BAND PLANNING & ROUNDS UP THE DATA NEWS

using XDocs. Microsoft OneNotes will allow users to organise meeting notes in virtual ink or text, audio files and HTML using a drag and drop interface that links with *Outlook*.

New smart displays, such as a portable slate-like intelligent monitor, will allow users to surf the Internet and send e-mail while away from the PC. The products will be available in Europe in the first quarter of 2003.

Microsoft's Smart Personal Object Technology (SPOT) group has been looking at imbedding intelligence into small everyday devices, such as fridge magnets, key chains and wrist watches that will automatically update with the time, weather, latest news and other information services.

It's hoped to provide an alarm clock based on SPOT next year. It will always tell the right time, check the weather, traffic and news to calculate journey times to work!

Reading all this makes me feel that I was born about 50 years too soon to take advantage of all this new technology coming along! However, I don't need that alarm clock; I am retired and don't have to worry about journey times to work, or getting stuck in that traffic jam!

I wonder what technology can do about the endless streams of traffic? They call it the rush hour; but I have always wondered why! The pedestrians are overtaking most cars!

DATA BAND PLANNING

It never does any harm to remind Data users of the actual frequencies they should be using. The list printed here is current as I write (Dec 2002), and without any major band plan changes, especially on h.f., I can't see it being

that band as possible. We could certainly use a lot more 28MHz operators to rid ourselves of these cretins.

There are f.m. stations all over the band, so the RTTY segment for the purpose of this contest would be 28.000 to 29.500MHz, excluding any QRM to other Amateur users of the band of course!

Anyway, here is a list of the current available frequencies for data.UK h.f. Data Band plans. The following frequencies are assigned to data communications in the h.f. bands within the UK:

Note: Digimodes are defined as including: AmTOR, PacTOR, Clover, ASCII, RTTY (Baudot) and AX25 packet. The above frequencies have been extracted from the <i>RSGB Yearbook</i> Band plans pages, and like all band plans are subject to review and changes as required from time-to-time.	1.838-1.842MHz
	3.580-3.620MHz
	3.590-3.600MHz
	3.730-3.740MHz
	7.035-7.045MHz
	10.140-10.150 MHz
Note also the RTTY segment from 1838 to 1842kHz. This is not very wide, but could be very useful for extra points in that RTTY contest. Unfortunately the segments are denoted merely as Digimodes.	14.070-14.099MHz
	14.089-14.099MHz
On h.f., it is normally an acceptable 'gentleman's agreement' to separate the various modes; otherwise it would be mayhem. It still is at times, and there is a 'war-zone' around 14.115MHz when the data modes and s.s.b. stations battle it out. Unfortunately neither side really wins; it just creates aggravation, so please try to avoid any confrontation.	14.101-14.112MHz
	18.100-18.109MHz
	21.080-21.120MHz
	21.100-21.120MHz
	24.920-24.929MHz
	28.050-28.150MHz
	28.120-28.150MHz
	29.200-29.300MHz

AMATEUR RADIO VIA INTERNET LINKS

Amateur Radio via the Internet is a subject that is either loved or hated; possibly some have a nonchalant attitude. I must admit to being biased against it myself.

I think it destroys ambition, technical achievement, self-education and self-training in radio communication, which our hobby is supposed to be all about. The very essence of Amateur Radio itself is being discarded in favour of the 'easy way out' just to bolster numbers. However, as it is part of hobby, as decreed in stone now, here is some news regarding this subject.

There are currently a number of schemes in use to connect Amateur Radio facilities via 'internet' transport mechanisms. Note that what is currently permitted under the terms of the UK licence does not include connecting non-Amateur users/services to Amateur Radio, one thing to be thankful for I guess.

There are generally three areas of interest, and the licensing mechanisms for these are (of necessity) very different:

- * **Digital Nodes, Mailboxes, etc:** The well-established processes in place for Nodes and Mailboxes have been appropriately modified so that interconnections via non-Amateur networks ('internet', PSTN, etc) are now included in the standard Notice of Variation (for a mailbox) or Authority to Operate (for a node) documents. If you are applying for a new system, 'internet connectivity' will be included by default. This is one reason, in my opinion, that the Packet network is suffering in the way it is, again the easy route.
- * **Analog f.m. Voice Repeaters:** Permission to connect these via non-Amateur networks is arranged via the RSGB Repeater Management Committee. However, this can only be arranged with the express permission of the individual Repeater Keeper, who should be your first

point of contact when considering such a link. Both RMC and the RA have indicated that they are entirely happy to support such applications in cases where the technical criteria can be met and appropriate frequencies are available. If this is your chosen route, your first port of call should be your local RMC representative.

- * **Simplex Voice Gateways:** Permission to install and operate a 'Simplex Voice Gateway' may be requested by any individual. The application process is extremely simple and speedy. After checks are made by DCC to ensure that the proposed operation would not cause undue interference to other users (frequency coordination), your application will be sent to RA via electronics means for final processing. Please note that operation of this type of gateway must be attended by the Licensee in person and at the main station address as on your licence validation document. There are several frequencies currently available for these links in the 50 and 430MHz bands.

For more information on the subject, a stalwart supporter is **Ian Abel G3ZHI**. He often has bulletins on the Packet network and updates appear quite regularly.

SIMPLE32 GOLD

Paul Harrison DJ0CU has announced his new program *Simple32 Gold*. This program is designed essentially to work only with the PTC-II, PTC-III and PTC-IIIpro and best with PACTOR Level III, with two exciting new features InstantPix and InstantSound. Pictures can be seen building up as they arrive live, and with InstantSound you can send a melody, which plays instantly on arriving.

There are many other features too numerous to mention. The program has gone through a rigorous testing phase and many

loyal PTC fans have helped in this process, the result of which is a program that is very stable. A demo of the program can be obtained by visiting the Paul's website at: www.simple32.com

RCKRTTY

The new version of *RCKRtty* V2.18 is on the homepage of **Walter DL4RCK** at <http://www.rckrty.de> Don't forget to uninstall a previous version of RCKRtty first. Latest additions are:

- * Fixed the panic key RX with the DXP38 and DSP4100 TNC better contest performance.
- * Fixed a Multi-problem in the WAEDC contest. Again thanks **Peter F6FJE**
- * Correct the VE-Province-Multis for the CQWW Contest.

SITES TO BROWSE

If you are interested in the history of data etc, then take a look at: www.nadcomm.com (Fig. 1). There is a lot to read here, and some very interesting links to other sites.

Look at www.rtty.com/ttystory for example in Fig. 2 Nostalgia abounds here and you can spend a happy hour or two, depending on your Internet expense account!

WLAN UPDATE

All seems to have gone quiet regarding WLAN cards. But it looks as though most people experimenting with these cards are using them for their intended purpose, namely accessing the Internet from a remote computer.

However, I did notice a mention of the first permit to operate a high-power unattended node in the 2.4GHz band operating at 802.11b specifications. This is for none other than **Dirk Koopman, Norfolk** who will be running GB3KP.

Nobody here in Norfolk knew anything about this, but I suppose that it's par for the course. That is one reason why there is no active data group, a distinct lack of communication! Happy Keyboarding.

Roger G3LDT

Digimodes (and c.w. but excluding AX25 packet) - RTTY (Baudot) is the preferred digital mode on this band. Note: AX25 packet should not be used on the 1.8MHz band

Digimodes (and c.w.) Note: Phone may be used and has priority above 3.600MHz

AX25 Packet

SSTV/FAX recommended

Digimodes (and c.w., SSTV, FAX but excluding AX25 packet)

Digimodes (and c.w. but excluding AX25 packet) Note: Unattended digimode stations should avoid the use of the 10MHz band. AX25 packet should not be used on the 10MHz band.

Digimodes (and c.w.)

AX25 packet frequencies, no digimode mailbox or forwarding

AX25 packet frequencies, Digimode mailbox and forwarding

Digimodes (and c.w.)

Digimodes (and c.w.)

AX25 packet preferred

Digimodes (and c.w.)

Digimodes (and c.w.)

AX25 packet preferred

AX25 packet (+phone and c.w.)



Fig. 1.

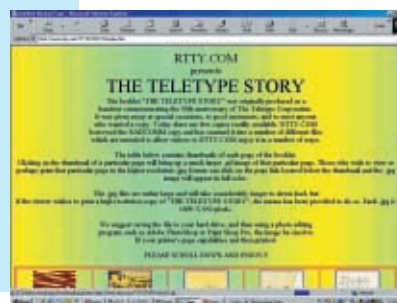


Fig. 2.

IN VISION

GRAHAM HANKINS G8EMX

17 COTTESBROOK ROAD
 ACOCKS GREEN
 BIRMINGHAM
 B27 6LE
 E-MAIL: graham@ghank.demon.uk

Welcome to the first In Vision of 2003 - and I hope you are ready for some serious ATV in the months to come! At the close of 2002, the **British Amateur TV Club (BATC)** was about to print the 200th edition of its magazine *CQ-TV*, and I had built the G8SUY 24cm (1.3GHz) ATV transmitter but it seemed to have a few faults. So, a quick update seems appropriate.

Copies of *CQ-TV 200* duly arrived through BATC members' doors, but the club has

mounted component (s.m.c.) position, depending on the device actually supplied, and these are very small items anyway, my error was perhaps understandable! There had been a few dry joints around the big phase-locked loop chip too - well, it's been a while since I did any soldering.....anyway, that's my excuse! Andy also 'tidied up' some of the s.m.c. inductors, adjusted the pre-sets (video deviation etc) then gave the unit a soak-test.

With the Worthing kit having ceased distribution, the G8SUY 'p.c.b. and

onto data CD, having added a CD-RW drive to my present computer. Like the video, the 'slides' are designed to help any newcomers take their first steps into Amateur TV, and at the moment the presentation package is easier - a matter of seconds - and cheaper to copy!

If anyone has already seen either of these 'productions', please remember that they were compiled and produced by G8EMX and are available as such; **they are not issued by the BATC.** I emphasise this because only my personal audio/video home resources were used to make them so the quality is not to the highest standard that can be achieved with industrial or broadcast facilities. But I considered it important that an ATV video and 'slideshow' media were available, to be improved upon with time.

The **North London Television Group (NLTG)** was very helpful in providing useful ATV off-air footage for my video, so it was good to meet club members John, Duncan and Vas again at the new London Show last November. The Communications and Computer exhibition has moved from Picketts Lock to Wodson Park, ten miles up the A10, at Ware. Unfortunately, that ten miles was just too far for the signal from **GB3EN**, the Enfield 24cm ATV repeater, to reach.

Despite a very tall antenna mast tied to railings outside the hall, with a double Yagi on top, GB3EN just could not be satisfactorily locked. Visitors to the NLTG stand watched pre-recorded shots instead. Maybe next time (April 2003) the club will try using a higher gain antenna - the loop Yagi could be a better choice.

Finally, a plea from one of the visitors to the BATC stand at Ware; is anyone able to programme the EPROMs that were used in the 'Cropredy' test card generator circuit board? This was a very popular board some years ago, and many wish it was still available.

The circuit used an early EPROM to generate the test patterns and could be programmed with callsign; a row of EPROMs could be switched to give different pictures and portable callsigns etc. If anyone is still using this board and programming the 'chips', can they please let me know and I will pass the information on. Many thanks.

See you next time,
Graham G8EMX

● Dove ATV receiver kit available from Bob Platts G8OZP.

GRAHAM G8EMX WELCOMES YOU TO A NEW YEAR OF A AMATEUR TV FUN!

decided to remove all back numbers from its website. There were just too many non-members downloading the magazine and not joining the BATC.

Storage of back copy archive was also taking many Mb of space on the web server. Back numbers continue to be available on the *CQ-TV* CD that can be purchased from the club, but a price increase on this is being considered.

Now for news of a change on the BATC committee. After many years as Membership Secretary, **Dave Lawton G8ENO** has decided to retire from handling subscriptions for the club. Fortunately, a new face was persuaded to take over the task, **Pat Hellen**.

Pat was introduced to ATV and the club by her partner **Brian Kelly GW6BWX**. Brian used to run the club's dial-up bulletin board, in the days before E-mail and web pages. Pat has not only agreed to handle memberships but is also keen to take her Radio Amateurs Examination.

THE TRANSMITTER

So, what about my faulty 1.3GHz ATV transmitter then? After some cursory prodding around with the oscilloscope and a digital multimeter, not knowing what voltages to really expect anywhere, plus having no replacement components anyway, I decided to use **Andy Parnell G8SUY's** 'get you going' service.

The transmitter was parcelled up and posted to Kent. Andy e-mailed to confirm receipt (always reassuring!) and a few days later mailed to say that the kit was now working fine. I was keen to know what had been wrong.

It seems that the main problem had been the mounting of the MAR 8 r.f. pre-amplifier. My input had been where the output should be!

Given that there were two alternative body and pin-out markings for the MAR-8 surface

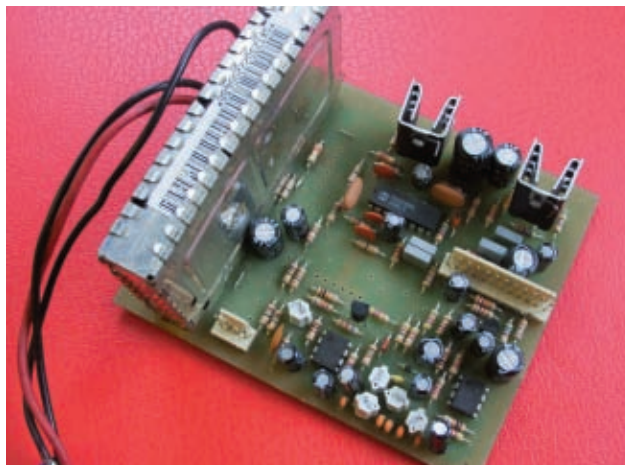
components' is now the only 24cm ATV transmitter kit available. A similar situation seems to apply to 24cm ATV receivers. The only kits are the 'Dove' from **Bob Platts G8OZP**, and a design from Andy G8SUY.

The Dove is still available but the SUY receiver is not yet available. Ready-built ATV receivers are currently being advertised by **G1MFG**; fair enough, these have had good reports, I have bought one myself. However, the Dove is very easy to construct, which is what I think Amateur Radio and ATV should really be all about....discuss!

INTRODUCTION TO ATV

My *Introduction to ATV* video, mentioned last time, has been 'tidied up' a bit and the sound voice-over sequence has been improved to increase the audio level. When I have built a new computer, which may have happened when you read this, the video will be put onto DVD or video CD format and submitted to the BATC for its approval or otherwise!

Additionally, an ATV slides presentation has been compiled in PowerPoint and saved



TUNE-IN

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First of all it's a case of ..."Oh, no, here we go again!". News came through recently that **Radio Austria International** (ROI) may soon stop international short wave broadcasting. You may remember that only some two years ago, ROI were on the brink of closure, and were only saved by amalgamating with the parent organisation Oesterreicher Rundfunk (ORF). Programming was watered down, to include some domestic output.

Now it seems that, with savings needed (aren't they always?) the management of ORF have been asked to present a plan for the closure of ROI short wave, with programmes going out on the Internet only (the easy and

headquarters.

Last November, the big political guns arrived in the Czech capital for a conference and President Bush made it clear that he wanted RFE/RL to continue broadcasting from the Czech Republic. A new location seems to have been found, but it's not known where. We don't want to tell the terrorists just yet, do we? The station doesn't broadcast in English, but full details of all its transmissions in more than 30



more defined high-end and more detail throughout the audio spectrum.

This is great for the USA, but IBOC is incompatible with the Eureka system used in Europe and elsewhere. Once upon a time it was all so simple!

UP TO SOMETHING?

The **Voice of America** (VoA) is up to something. Under new direction from the Board of Governors and the IBB, programme streams to various parts of the world are going out under fancy names, like 'Radio Sawa' in Arabic for the Middle East, which aims to pull in young listeners by using lots of music.

Some people think that this is a throwback to a discredited form of broadcasting, where a strong political line is sugared by giving it a new identity. Personally, I'm not worried by this, so long as cross-border broadcasting gets a new lease of life.

The VOA have started a 'branded' service to Iran, and now to Cuba they've started a weekly phone-in show on health matters, and *Window on Cuba* (Ventana a Cuba). Is this a naïve attempt to soften the heavy politics, or an effective new kind of international broadcasting?

On the subject of Cuba, what's coming back from there? The current short wave English schedule runs from 0100-0700 on 9.820; 0500-0600 on 11.705; 0500-0700 on 9.550, 9.665; 2030-2130 on 13.660, 13.750 and at 2230-2330 on 9.550MHz. Audio can be heard by Internet on www.radiohbcu on which there are also plenty of current new items in English to read, contests to enter, and a Radio Havana pocket calculator to obtain.

Just a quick flip across the Yucatan Channel from Cuba is Mexico. **Radio Mexico International** has a website at <http://hello.to/rmi> entirely in Spanish, which is not too helpful for English speakers, although with reasonable guess-work you can find your way around!

As regards frequencies and times, the site is just about impregnable, however, apparently not having a frequency schedule for the three languages – Spanish, French and English. Just two frequencies are in use for all of these: **9.705** and **11.770MHz**, so you'll usually pick up something.

*Eye for now
Tom*

TOM WALTERS HAS ALL THE LATEST BROADCAST BAND NEWS FOR YOU TO ENJOY

cheap option). The result was that international programmes on short wave may stop altogether in March 2003. Short wave frequencies will carry a few domestic programmes (in German) only.

With alarm bells clanging furiously, the protesting machine drove into top gear immediately. Already there is a glimmer of sunshine!

The ROI management told me: "A decision will now be taken in March 2003. In the meantime the board has asked management to pursue other options for funding ROI including approaching the government for separate funding and an increase in licence fees. We are hopeful that this will secure the long-term future of our international broadcasting. In the meantime we appreciate the expressions of concern that have been pouring in from around the world".

Oh boy, will they never learn? I do hope that this isn't the last chance to hear ROIs English service. Listen at: 0000-0030 on 9.870, 13.730 (Sat-Sun); 0230-0300 on 7.325; 0630-0700 on 6.155, 13.730, 17.870; 0905-1000 on 6.155, 13.730 (Sun); 1230-1300 on 6.155, 13.730; 1330-1400 on 17.855; 1430-1500 on 6.155 and 1630-1700 on 17.865MHz

The much talked-about move of **Radio Free Europe/Radio Liberty** (RFE/RL) out of central Prague has come a stage nearer. Following the 2001 shock attack on New York's twin towers, strict security measures were introduced around RFE/RL's Prague

languages can be found on the website www.refrl.org on which there is also a huge of amount of text news in English.

International broadcaster **NPR Worldwide** has been available for many years. The programmes are taken from the domestic parent **NPR**, which is a big public-service broadcaster in the USA.

The NPR service has been available on Eutelsat and now it's audible much further afield via **WorldSpace**. Although NPR Worldwide on short wave is still a bit difficult for the uninitiated, because it's transmitted on single side band: Listen at **daytime** on 6458.5, 10320.0, 12579.0, 12689.5, 13362.0; Evening: 4319.0, 5765.0, 6359.0, 6458.5, 12689.5.

UNCERTAIN LURCH FORWARD

Digital Audio Broadcasting (DAB) takes another uncertain lurch forward, as the first full-time DAB station in the United States takes to the air. The installation of an Omnia-6dab audio processor marked a historic event as Susquehanna Radio's, **WYGY-FM**, became the States' first full-time In Band, On Channel (IBOC) digital radio station.

The IBOC is the format that's been given approval for the USA, and it uses existing f.m. frequency channels. Staff at WYGY completed installation of their Omnia-6dab in just 20 minutes, apparently, and their new digital broadcast is characterised by expanded audio frequency range, resulting in notably cleaner,

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All prices in Sterling

WATERS & STANTON

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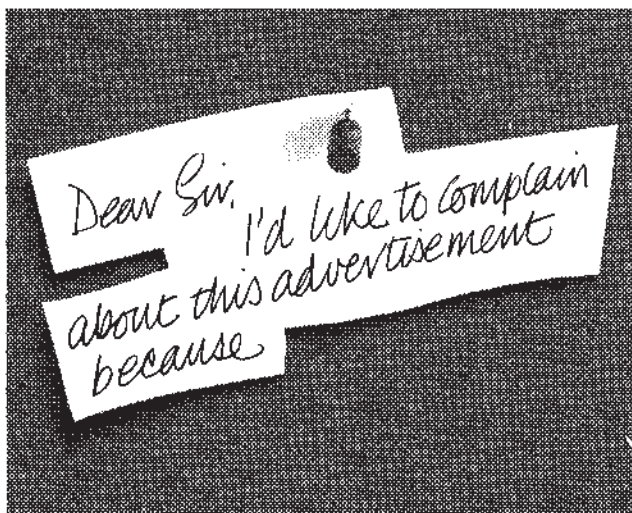
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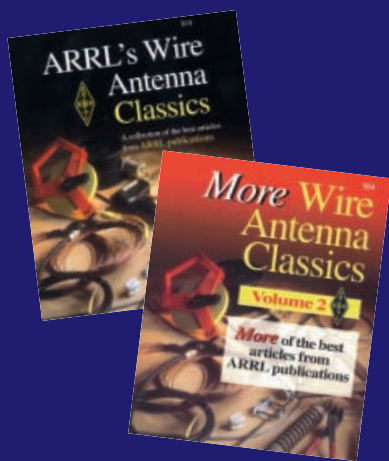
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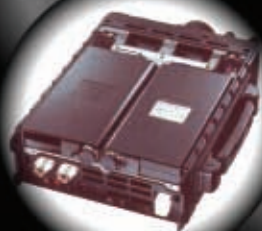
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