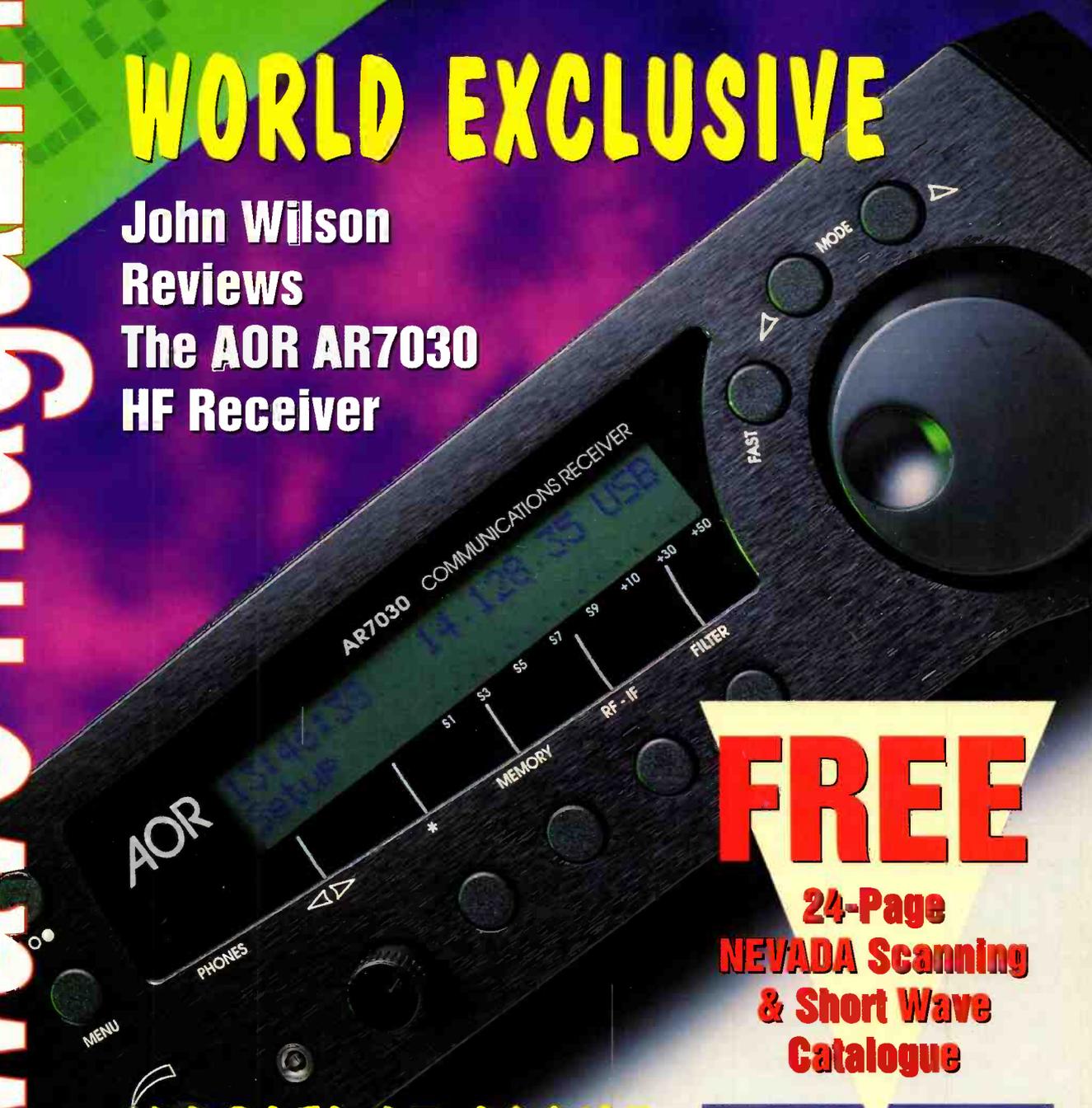


You're Just Not A Serious Listener Without SWM

WORLD EXCLUSIVE

**John Wilson
Reviews
The AOR AR7030
HF Receiver**



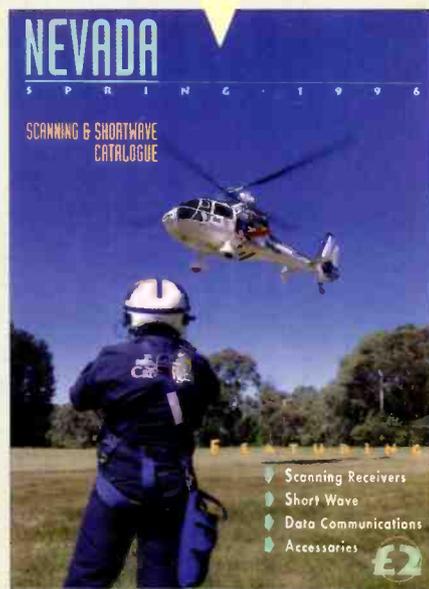
FREE

**24-Page
NEVADA Scanning
& Short Wave
Catalogue**

MARITIME ISSUE

**The low-down on NAVTEX
Marine FAX
GPS Navigators
Radio Lighthouse**

March 1996 £2.50 ISSN 0037 - 4261



- Scanning Receivers
- Short Wave
- Data Communications
- Accessories

NEVADA

Distributors of the **NEW uniden Beacon** range

BC120XLT HANDHELD

A new compact designed handheld featuring Twin Turbo Scan & Search, and a pre-programmed SVC (service) search facility which allows you to toggle the aircraft, marine and other service bands in search mode.

For maximum convenience in monitoring, the 120XLT has 100 memories arranged in 10 banks plus 10 priority channels enabling you to keep track of your favourite frequencies. Channel lock-out and unique data skip facility are also included. Full frequency LCD display with direct frequency entry keyboard. Complete with NiCad battery and charger, belt clip, earpiece and rubber duck antenna.

Frequency coverage 29-54, 108-174, 406-512MHz

PRICE **£139.00**



uniden UBC 65 XLT

The new UBC 65 XLT offers outstanding value for money with 10 memory channels and wide frequency coverage. It will prove especially popular for Marine radio, Ship to Shore, Land Mobile and Public Service coverage. Features 10 channels, 8 band coverage, 2 digit LC display, memory backup, keyboard lock switch and channel lockout and battery low indicator. Accessories included are charger and earphone. Frequency coverage: 66 - 88, 137 - 174, 406 - 512 MHz. Scan speed: 10 channels per second. Req. 6 VDC (5 x AA Nicads) or 12 VDC adaptor

PRICE
£95.95

BC9000XLT



A new 500 channel base station model covering 25MHz to 1.3GHz in two continuous bands (25-550MHz and 760-1300MHz). Featuring Twin Turbo scan & search modes with 10 user definable priority channels. Easy to read large LCD display and manual tuner together with direct frequency keypad make up a very professional front panel. User selectable modes covering AM, FM and Wide FM modes. Selectable receiver attenuator, delay and data options are available direct from the keyboard. For unattended operation the 9000XLT has an automatic tape recorder ON/OFF and tape output feature! Accessories included: AC mains power adaptor, telescopic antenna and owners manual

PRICE **£325.00**

BC860XLT



A stylish designer base station scanner which offers 100 memory channels and a 12 band coverage including 800MHz. Features Uniden's patented TWIN TURBO scan and search facility. The BC860XLT represents the best value for money in the home base scanner market - covering all of the most popular bands including the Amateur VHF and UHF bands, Civilian Airband, Marine & PMR, plus the high UHF 800MHz band.

Features include manual keyboard entry with auto track tuning and a unique data skip option for bypassing unwanted data transmissions. It also helps to reduce birdies!

- Full frequency LCD display
- Programmable delay
- 10 priority channels
- Automatic squelch
- 3-day memory back-up
- Channel lock-out and priority
- Frequency coverage: 29-54, 108-174, 406-512, 806-956MHz
- Scan/Search speed: Max 100 ch/steps per sec (300 ch with Turbo on)

Power requirements: 12V DC via supplied 240V AC mains adaptor

PRICE **£139.00**

Available from Nevada dealers throughout the UK or direct from:

NEVADA COMMUNICATIONS

189 London Road, North End, Portsmouth, PO2 9AE

Retail & Mail Order (01705) 662145 Trade & Export (01705) 698113 Fax (01705) 690626

We'll ship your order the same day . . .



uniden
UBC3000XLT

A superior 400 channel handheld from the Uniden stable, offering a near continuous coverage from 25-550MHz and 760-1300MHz. Reception modes include AM, FM and Wide FM, user selectable (FM & WFM only on the upper bands). Automatic search, priority channel and selective scan delay. Turbo scan/search facility offers 300 steps per second in search mode and 100 ch/steps per second in normal mode. With a switchable delay of approximately 2 seconds. Backlite LCD display and fully functional keypad for direct frequency entry. Accessories included - belt-clip, earphone, case and flexible antenna together with 240V AC adapter/charger.

PRICE
£249.95

uniden
UBC 220 XLT

The UBC 220 XLT is an easy to use scanner with 200 memory channels. Includes 10 band coverage, automatic search, priority channel and selective scan delay. Display light, automatic lockout and direct channel access. Also includes Belt clip, earphone case and flexible antenna accessories. Frequency coverage: 66 - 88, 108 - 174, 406 - 512, 806 - 956 MHz. Scan speed 100 channels per second scanning and 25 frequencies per second in search mode.

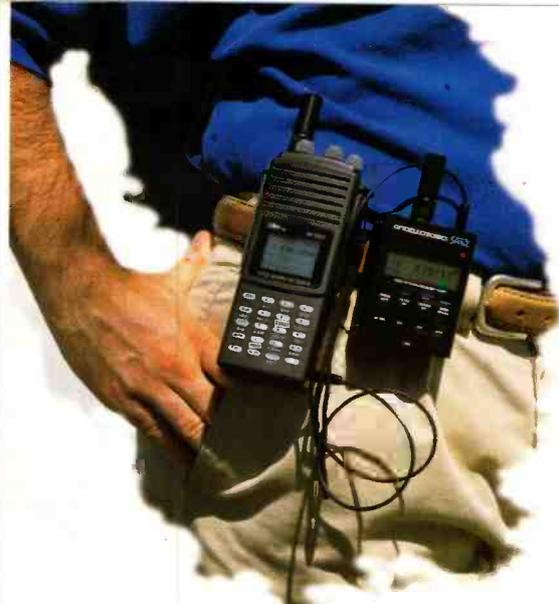
PRICE
£189.95



before the sun goes down.

ALL UNIDEN MODELS
ARE  APPROVED

Europe's Number  Supplier



You Won't

Miss a Thing

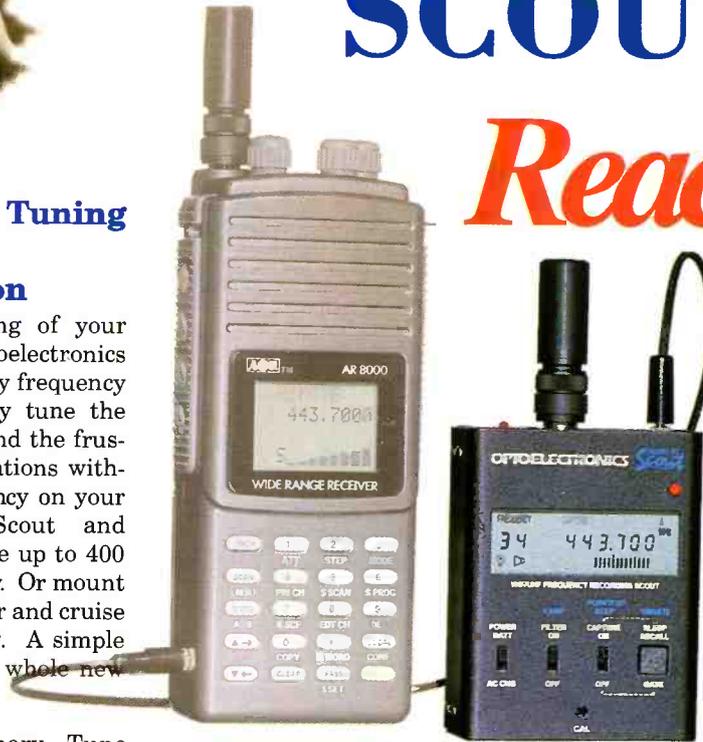
With

SCOUT™

Reaction Tune

The SCOUT™ Has Taken Tuning Your Receiver To a New Dimension

Featuring Automatic Tuning of your AR8000 and AR2700 with the Optoelectronics Exclusive, Reaction Tune (Pat.Pend). Any frequency captured by the Scout will instantly tune the receiver. Imagine the possibilities! End the frustration of seeing two-way communications without being able to pick up the frequency on your portable scanner. Attach the Scout and AR8000/2700 to your belt and capture up to 400 frequencies and 255 hits per frequency. Or mount the Scout and AR8000/2700 in your car and cruise your way into the future of scanning. A simple interface cable will connect you to a whole new dimension of scanning.



*Scanner not included

The Scout's unique Memory Tune (Pat.Pend.) feature allows you to capture frequencies, log into memory and tune your AR8000/2700 at a later time. A distinctive double beep will inform you when the Scout has captured a new frequency, while a single beep indicates a frequency that has already been recorded. For discreet monitoring, a pager style vibrator will inform you of any hits the Scout captures.

The Scout will also Reaction Tune and Memory Tune Icom CI-V receivers: (R7000, R7100, and R9000) and Pro 2005/6 equipped with OS456, Pro 2035 equipped with OS535 (which gives them the needed CI-V port to interface the Scout). Download the Scout frequencies to a PC with the Scout Utility Disk and CX-12AR (optional) for reference and building your frequency database.

Features

- Automatically tunes these receivers with Reaction Tune (Pat.Pend.) CI-V receivers (ICOM's R7000, R7100, and R9000), (Pro 2005/2006 equipped with OS456, Pro 2035 equipped with OS535) or AOR models (AR2700 and AR8000).
- Records and saves 400 unique frequencies
- Records 255 hits on each frequency in memory
- Digital Filter and AutoCapture (Pat.Pend.)
- 10MHz-1.4GHz single frequency range
- View frequencies in RECALL mode
- 10 digit LCD with EL Backlight
- 16 Segment RF signal strength bargraph
- CX-12AR Computer Interface for Scout & AOR (optional)
- PC Utility Disk for downloading memory to PC included
- Rapid charge NiCads with 10 hour discharge time
- DB 32 VHF/UHF mini-antenna shown with Scout (optional)
- Distinctive Beeper/Vibrator indicate frequency hits

**Act Now!! Let the Scout Reaction
Tune you into The World of
Scanning**

At right: Scout shown with CLIMATE™. A handy windshield mount for Scout, for quick access and visibility.



OPTOELECTRONICS®

5821 NE 14th Avenue • Ft. Lauderdale, FL 33334 • Tel: 305/ 771-2050 • Fax: 305/ 771-2052

HAYDON COMMUNICATIONS

132 High Street • Edgewater • London • HA8 7EL
Tel/Fax: 0181-951-5782

NEVADA COMMUNICATIONS

189 London Rd. • Portsmouth • Hampshire PO29AE
TEL: (01705) 662145 • Fax: (01705) 690626

WATERS & STANTON ELECTRONICS

22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835 Fax: (01702) 205843

Vol. 54 ISSUE 3 MARCH 1996

ON SALE FEBRUARY 22

Next issue on sale MARCH 28

EDITOR: Dick Ganderton, C. Eng., MIEE, G8V FH

ASSISTANT EDITOR: Kevin Nice, BRS95787, G7TZC

EDITORIAL ASSISTANT: Zoë Shortland

ART EDITOR: Steve Hunt

PAGE LAYOUTS: Jon Talbot, Marcus Hall

EDITORIAL

Arrowsmith Court, Station Approach, Broadstone, Dorset
BH18 8PW

Telephone: (01202) 659910

Facsimile: (01202) 659950

If you wish to send E-mail to anyone at SWM then our Internet domain name is:

pwpub.demon.co.uk

Simply add the forename of the person you wish to contact. For example:

dick@pwpub.demon.co.uk

BOOK SERVICE, SUBSCRIPTIONS, BACK ISSUES ETC.:

CREDIT CARD ORDERS: (01202) 659930

(Out-of-hours service by answering machine)

ADVERTISEMENT DEPARTMENT

ADVERTISEMENT MANAGER

Roger Hall G4TNT

Telephone: 0171-731 6222

Facsimile: 0171-384 1031

Mobile: (0585) 851385

ADVERTISEMENT DEPARTMENT (Broadstone)

Lynn Smith (Advertisement Sales)

Ailsa Turbett G7TJC (Advertisement Production)

Telephone: (01202) 659920

Facsimile: (01202) 659950

© PW PUBLISHING LTD. 1996.

Copyright in all drawings, photographs and articles published in *Short Wave Magazine* is fully protected and reproduction or imitation in whole or in part is expressly forbidden. All reasonable precautions are taken by *Short Wave Magazine* to ensure that the advice and data given to our readers is reliable. We cannot, however, guarantee it and we cannot accept legal responsibility for it. Prices are those current as we go to press. *Short Wave Magazine*, USPS No. 006996, is published monthly for £25 (UK) per year by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Second Class Postage paid at South Hackensack. Postmaster: Send USA address changes to Royal Mail International, c/o Yellowstone International, 2375 Pratt Boulevard, Elk Grove Village, IL 60007-5937.

Cover Subject

The 'John Wilson Review' - this month John takes a detailed look at the highly innovative AR7030 h.f. receiver from AOR.

Banded with this issue of SWM you will find your **FREE** Nevada catalogue.



Photo Craig Dyball.

CONTENTS

16 **AOR AR7030 HF Receiver Exclusive Review**
John Wilson G3PCY

28 **Global Positioning System**
George Wheatley MRIN G4H NJ

33 **NAVTEX How and Why**
Mike Richards G4WNC

33 **NAVTEX Using It**
Robert Connolly G17IVX

36 **Maritime FAX**
Mike Richards G4WNC

40 **Radio Lighthouse**
Ian Knox

44 **Radio Sites on the Internet**
Kevin Nice G7TZC

Don't miss the chance to win the AR7030 reviewed this month in next month's SWM

Regular Columns

Airband	62	Satellite TV News	53
Amateur Bands Round-up	60	Scanning	64
Bandscan Australia	59	Special Offer	51
Book Store	79	SSB Utility Listening	61
Dacode	70	Trading Post	78
DXTV	54	What's in PW	63/5
Editorial	4		
Grassroots	6		
Info in Orbit	67		
Junior Listener	7		
Letters	1		
LM&S	73		
Maritime Beacons	49		
News	8		
Order Form	78		
Propagation Extra	51		
Propagation Forecast	50		
Rallies	6		

Special Offers
More savings for our readers

51

DISCLAIMER. Short Wave Magazine wishes in no way to either condone, or encourage, listeners to monitor frequencies and services which are prohibited by law. We respectfully refer you all to both the Wireless Telegraphy Act 1949, and the Interception of Communications Act 1985. Some of the products offered for sale in advertisements in this magazine may have been obtained from abroad or from unauthorised sources. *Short Wave Magazine* advises readers contemplating mail order to enquire whether the products are suitable for use in the UK and have full after-sales back-up available. The Publishers of *Short Wave Magazine* wish to point out that it is the responsibility of readers to ascertain the legality or otherwise of items offered for sale by advertisers in this magazine.



SWM SERVICES

Subscriptions

Subscriptions are available at £25 per annum to UK addresses, £28 in Europe and £30 overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £42(UK) £47 (Europe) and £51 (rest of world).

Components for SWM Projects

In general all components used in constructing SWM 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 SWM projects are available from the SWM PCB Service, Badger Boards, 80 Clarence Road, Erdington, Birmingham B23 6AR. Tel: 0121 - 384 2473.

Photocopies and Back Issues

We have a selection of back issues, covering the past three years of SWM. If you are looking for an article or review, or whatever 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 are £2.60 each, photocopies are also £2.60 per article, plus £1.00 for subsequent parts of serial articles.

Binders, each taking one volume are available for £5.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

Orders for back numbers, binders and items from our Book Service should be sent to: PW Publishing Ltd., FREEPOST, Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling.

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Broadstone (01202) 659930. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Poole (01202) 659950.

Technical Help

We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. If you require help with problems relating to topics covered by SWM, please write to the Editorial Offices, we will do our best to help and reply by mail.

EDITORIAL

The latest furore over the use of scanners to eavesdrop on cellular telephone calls made by members of the Royal Family has again raised the possibility of scanners being banned. *Short Wave Magazine*, while doing everything it can to ensure that the listening can be pursued by anyone as a hobby, cannot condone the actions of a very small minority who try to make money out of listening to cellular telephones. Further, it seems obvious to me that anyone who uses any form of listening radio telephone needs to have the dangers spelled out to them in simple terms - **don't!**

There have been the usual claims by those who do not understand our hobby that 'radio hams' spend all their time listening to private telephone conversations. For a start, the majority of 'hams' - licensed radio amateurs - do not indulge in such activities. They value their hard earned licences too much to risk losing them by such actions. Then there is the old chestnut of the media insisting on giving anyone who uses a scanner or short wave radio the tag of 'radio ham'. In the most recent incident, one reporter in the *Daily Mail* described the scanner user as an 'amateur radio ham'!

In an attempt to put the radio amateurs' message over to authority, Rob Mannion G3XFD Editor of our sister magazine *Practical Wireless* is organising a march from Trafalgar Square to 10 Downing Street. Rob has managed to get the support of the RSGB for this event, provisionally scheduled for Saturday 16 March (check with Editorial Office). Try to support this, even if you are not a licensed radio amateur. The hobby of 'short wave listening' is closely related and under just as much pressure from authority.

Reviews

I have received several letters commenting on the level of reviews in SWM. In this issue you will be able to read John Wilson's world exclusive review of the new AOR AR7030 receiver. John is very knowledgeable on receiver matters and I hope that the 'John Wilson Review' will become the acknowledged standard by which receiver reviews are judged. Doubtless some of you will let me know your views on the subject!



Dick Ganderton G8V FH

IF YOU HAVE ANY POINTS OF VIEW THAT YOU WANT TO AIR PLEASE WRITE TO THE EDITOR. IF YOUR LETTER IS PUBLISHED YOU WILL RECEIVE A £5 VOUCHER TO SPEND ON ANY SWM SERVICE

LETTERS



Dear Sir

Once again we have a brainless idiot reporting to have taped the Duke of Edinburgh off a scanner (30 January '96). There are hundreds of us who listen in to Hams, Airband, etc., etc., and just keep it to ourselves.

The simple answer is to find this person and jail him for three years.

Dear Sir

I too am sad that D. Preston will not be renewing his subscription, since he does not agree with SWM keeping up with the new and exciting developments in short wave radio. See letter in the January edition of SWM.

I study with great interest ~5% of the articles each month, and would not condemn the magazine for the 25% content in which I have no interest at the moment. Radio has many facets, let each explore his own, live and let live.

Yes, I am one of those readers who does seriously trawl through the columns of 'LM&S'. I maintain a daily log and like to compare my reception reports with those stations mentioned. It is also useful to know the location and the equipment used by other listeners.

I have a middle-of-the-range receiver and would not expect to compete with those in the JVC, NRD class. I also list the stations which I

Any money made from the press should go to cancer research. I can see it coming readers, one of these days our scanners will be banned.

Mr Ganderton we need help! Basically, we need a stronger letter from you.

Name and address supplied

have not received, but have an interest.

The frequencies and the times given are often more up-to-date than short wave guide books, since through no fault of the publishers, are usually out-of-date the day they are printed. So, keep up the good work SWM.

**Stan Evans
Hailsham
East Sussex**

The Editor reserves the right to shorten any letters for publication but will try not to alter their sense. Letters must be original and not have been submitted to any other magazines. The views expressed in letters published in this magazine are not necessarily those of Short Wave Magazine.

**To: dick@pwpub.demon.co.uk
Subject: SWM Letters Feb, G3FIJ**

I respond to the letter in SWM, February, which carried the notable sentiment that: "I always thought that the Internet is nothing more than a computer connected to a telephone line, and if this is so, then what on earth has this to do with short wave listening and more to the point, isn't even radio."

This statement was clearly made out of a complete lack of understanding of how the Internet is used so please let me try to show the author of that statement why it is so much in error.

The Internet is merely a medium through which people can exchange information and ideas. Internet newsgroups enable the exchange of information about radio activities, DX, techniques, equipment and suchlike. Web pages are used by commercial radio traders (such as Lowe and Siskin) to carry much information of interest to their customers. Many hobby groups such as RSGB, AMSAT and BARTG maintain Web pages which carry information about those groups and their related facets of amateur radio.

It is not uncommon for broadcast stations to have a presence on the Internet, either for comments to be

sent to them via E-mail or for their schedules to be obtained via E-mail or Web pages. A browse of the amateur radio press will show that journalists and DX organisers are now quite often to be contacted via E-mail.

I hope that readers are starting to get the impression that the Internet is simply a tool by which information can be offered, exchanged and discussed. This might sound rather like amateur radio magazines or clubs and, as some will have guessed, this takes me to my next point. If, because it uses computers and land lines, the Internet is not a valid topic because it ISN'T radio then, surely, a room full of people talking is also not radio - yet to disallow such rooms would be to disallow all the radio clubs that exist. In a similar vein, paper, ink and staples have nothing to do with radio so should we, with a single step, disallow magazines such as *SWM* and *PW*. Anyone not yet latched onto the point I'm trying to make?

The point is that the Internet is **no different** from all the other media that enable the chat, discussion and dissemination of information about radio. The Internet is simply another method of talking about radio. To ignore or ban the Internet simply because it uses a "new technology" (namely a computer and associated network) would be to eschew the tendency of the amateur radio enthusiast to learn about new technologies and to incorporate them into the hobby as and when appropriate.

Communications have developed a great deal even in the relatively short time since I was first licensed. In the mid-1970s amateur radio was an unusual hobby and exhibited an ability to communicate way beyond the scope of other ordinary people. These days, so it seems to me, amateur radio is being left behind by the cellular 'phone, satellite TV and other new techniques that are easily available to anyone. For us to turn our backs on the Internet is to turn away from a very powerful communications medium that many outside of amateur radio will soon accept as the norm - if this has not already happened.

This brings me to my final point. My friends know that amateur radio is a hobby of mine. They accordingly see me as a person who knows a little about any communications method that exists, be it the cellular 'phone, DAB or the Internet. Now imagine that I said I only understood (or was interested in) Morse on the h.f. bands. Would I be old-fashioned in the view of my friends? Would amateur radio appear a back water to them? Of course it would - so much for the hobby that led the professionals in communications for so many years!

The Internet offers a wealth of

information about radio to anyone who cares to browse around it. I believe that the amateur radio press should continue to offer their unbiased readers articles, written for the amateur radio readers' perspective, detailing how to use the Internet and what is to be found in it. The biased reader would doubtless moan the waste of space and threaten to withdraw their patronage; the open-minded reader would simply find out about another tool with which to develop their knowledge of amateur radio.

I strongly recommend that anyone who believes that the Internet has nothing to offer to amateur radio should go and visit a radio amateur who is familiar with the Internet and could offer a decent guided tour around it. Go and **see** the tool in action and **then** decide.
"3.

Ian Brothwell...via the 'net

Is there something you want to get off your chest? Do you have a problem fellow readers can solve? If so then drop a line to the Editor.

Dear Sir

First of all I should like to take this opportunity of thanking you and your staff for the interesting, informative and enjoyable issues of *SWM*, which I have received every month during 1995. I find your subscription service very reliable.

As you will probably appreciate the section in which I am particularly interested is 'LM&S' as I am a contributor and because it is that aspect of the radio hobby in which I am mostly involved. I find the charts of particular help when looking for ideas of what to listen to and with a view of sending logs to club magazines perhaps and reception reports to some European stations whose DX clubs I belong to.

All this is leading up to the fact that I feel rather concerned that sometimes there are mistakes with these charts. Maybe they are small and not very often, but for me rather disappointing.

I would refer particularly to the December issue and the local radio chart. In the list of listeners, the letters C to F are missing, yet these are

Dear Sir

Although I have already written to you once on the subject of computer articles in the magazine, some of the letters I have read recently have prompted me to say a little more on what appears to be a very contentious subject.

Firstly, to those readers who say that there are plenty of computer magazines available, yes, I agree there are, but have you bothered to read them? I have. None of them cover one single aspect of radio related items.

Secondly, in reply to Mr D. Preston's letter, who wants to ban pretty well every subject in the magazine, why not go all the way and ban every one directly short wave related article, such as 'Airband' and 'Scanning'. We would be left with a magazine about ten pages thick, including adverts, or should we ban those as well? Would he be prepared to pay the cost of producing such a minority interest publication? I bet he has beans for dinner every day!

The RSGB produce such a magazine that has pages and pages on competitions that clog up the amateur bands far too often, which in turn seems to attract a lot of Italians, who's single aim appears to be to swamp all stations within 7 to 10kHz either side of the spot frequency by using the most powerful amplifiers they can afford. I'm afraid that after

included in the actual chart. Thus it was impossible to check the location of the listeners in these cases, which would perhaps have given me an indication of whether I would be able to log this, or whether I could do better with the station concerned.

Another instance was way back in the summer, the July issue I think it was, when the whole of the previous month's local radio chart appears to have been repeated. There was also, as far as I can remember, a repeat of the tropical bands chart, although the layout was slightly different. Excuse me if I don't go into specific details just now, as I am rather pushed for time.

The point I am trying to make is, that without being exactly critical, I wanted to mention this point just in case you thought the charts were not of much value to readers of that section. I would assure you that as far as I am concerned, they are most important.

Knowing the location of the listeners, as far as I am concerned, is just as important as the other details. Also I look forward to fresh

listening to the amateur bands for many years, the novelty has worn off, the subject matter on these bands is 'officially' so limited.

Thirdly, I have the distinct impression that some readers are a little wary of computers, they need not be, I get tremendous satisfaction designing programmes on the spreadsheet, to use when listening. I can log as I go and sort into frequency, call sign, mode, etc., with a couple of key presses.

Fourthly, I was a little surprised when I read your editorial. I think you are being a little condescending in only allowing one page every three months to computer related matters, after all, surely the scope of the articles will only appertain to aids to listening and watching, or to widening the scope of the aforementioned?

Lastly, Mr Preston and I seem to be totally opposite. I have cancelled my order of *SWM* at the newsagents. I am taking out a subscription, it looks like very good value to me.

I do hope that the rather tunnelled vision readers will, in future, be a little more tolerant of those who wish to expand their knowledge and enjoyment of a very interesting and wide ranging hobby. Keep up the good work.

**Dennis Woodward (aged 65)
Stroud
Glos**

information in fresh charts each month.

Now, in conclusion, I should like to say that I hope you won't mind me having made these observations as I appreciate that we all make mistakes sometimes and I am no exception. I should also like to take this opportunity to wish you all best wishes for 1996.

**Sheila Hughes
Morden
Surrey**

Sheila, we most humbly apologise for this omission, unfortunately these things happen some times. We will do our best to avoid missing such vital information in the future. I hope that it did not spoil your favourite read too much. Below is the missing part of the table. - KN.

Missing Listeners -

Local Radio Chart Dec. '95

- c) Kenneth Buck, Edinburgh
- d) Martin Dale, Stockport
- e) Ted Harris, Manchester
- f) Francis Hearne, N. Bristol

LETTERS





GRASSROOTS

* Short Wave Magazine & Practical Wireless in attendance

rallies

February 24: The 11th Rainham Radio Rally is to be held at the Rainham School for Girls, Derwent Way, Rainham, Gillingham, Kent. Talk-in on S22 by GB4RRR. Doors open at 10am to 3.30pm. Disabled and wheelchair users from 9.30am. Admission is only £1.50, under 14s, free. There will be the usual mix of trade stands, Bring & Buy, many special interest groups, etc. There's plenty of off road parking, a licensed bar, food and refreshments available with an area to sit and eat and watch the world go by. Further details from **Martin G7JBO** on (01634) 365980.

February 25: The Barry Amateur Radio Society are holding their annual Radio and Computer Rally at the Barry Leisure Centre, Barry. Doors open at 10.30am (10am for disabled visitors). More information can be obtained from **Brian Brown GW0PUP** on (01222) 832253.

March 2: The 3rd West Wales Amateur Radio and Computer Rally is being held at a new venue - the Penparcau School, Aberystwyth, near the new Safeways complex. Doors open at 11am and there is ample free car parking. Easy access all on one level. Snack bar. Admission is £1. There will be trade stalls, special interest groups, Bring & Buy, Repeater Groups, DX Cluster Group, Computers, Demonstrations, h.f. & v.h.f. stations on the air, Packet radio and lots more the radio amateur and computer hobbyist. Talk-in on S22. Best in the West. Details or trade enquiries from **Katy GW0SFO, QTHR** on (01545) 580675.

***March 9/10:** The London Amateur Radio & Computer Show is to be held at the Lee Valley Leisure Centre, Picketts Lock Lane, Edmonton, London N9. Doors open 10am to 5pm each day. There will be trade shows, lectures, a Bring & Buy, on-demand Morse tests (two photos needed), talk-in on 144 and 430MHz, disabled facilities, priority admission for disabled visitors, bars, restaurants and ample free parking. **Steve White G3ZVW** on 0181-882 5125.

March 10: Wythall Radio Club will be holding their annual radio rally at Wythall Park, Silver Street, Wythall (near Birmingham) on the A435, two miles from junction 3 on the M42. Doors open 10.30am to 4pm. There will be all the usual traders in three halls and a marquee. Bar and refreshment facilities will be available. In addition there will be a Bring & Buy stall run by the club. Talk-in on S22. Admission only £1. **Chris GOEVO** on 0121-430 7267.

***March 17:** The largest single day amateur radio rally in the UK - the Norbreck Radio, Electronics and Computing Exhibition by the Northern Amateur Radio Societies Association at the Norbreck Castle Hotel Exhibition Centre, Queens Promenade, North Shore, Blackpool. Doors open at 11am (10.45am for disabled visitors). Over 100 trade stands, Bring & Buy stand, RSGB stand and book stall, club stands, amateur computer stands, construction competition, free car parking, free shuttle bus from car park, wheelchair access to all stands, radio talk-in on S22. Admission is £2, OAPs £1 and under 14s free. More information obtained from **Peter Denton G6CGF** on 0151-630 5790.

March 24: Bournemouth Radio Society's 9th Annual Sale will be held at Kinross Community Centre, Pelhams Park, Millhams Road, Kinross, Bournemouth. Doors open at 10.30am until 4.30pm. Talk-in from G1BR5 on 2m S22. Amateur radio, computer traders, clubs and specialised groups. Excellent refreshments. Admission £1. Details from **Malcolm G0UCX, QTHR** on (01252) 845900.

March 24: Pontefract & District Amateur Radio Society Annual Radio Rally & Components Fair. Details from **Colin Wilkinson G0NQE** on (01977) 677006.

March 31: Thames Valley Electronics Rally is to be held at Kempton Park Racecourse, Staines Road East, Sunbury On Thames, Middlesex. Doors open 10.30am to 4.30pm. There will be refreshments and a bar available. Admission is £1.50 for adults, OAPs £1 and children up to 14 years old free. The entire event is on one level. There will be retailers, accessory suppliers, antenna suppliers, a Bring & Buy stall, etc. More information can be obtained from **HD Promotions** on (01494) 450504.

April 7: The Feltham and Hounslow Sea Cadets are holding their Computer and Radio Rally at Feltham and Hounslow Sea Cadet Corps, 2 Popular Way, Feltham, Middlesex TW13 7AB. Doors open at 10am and entrance fee is £1, children under 14 accompanied by an adult go free. Refreshments will be available. Talk-in on S22. **Allan G49JU** on (01784) 456486.

April 14: The Cambridgeshire Repeater Group annual rally will take place again this year at the Philips Telecom Catering Centre, St Andrews Road, Cambridge. The event will feature an auction sale, trade stands, Bring & Buy and a car boot trading area. More information can be obtained from **Paul Dyke G0LUC** on (01920) 821536.

If you're travelling a long distance to a rally, it could be worth phoning the contact number to check all is well, before setting off. The Editorial staff of *SWM* cannot be held responsible for information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers. If you have any queries about a particular event, please contact the organisers direct.

Editor

AVON

Bristol International RC: Tuesdays, 8pm. The Fighting Cocks Public House, Hengrove. All visitors are welcome. The club has been formed so that all radio enthusiasts, whether they be Licensed Amateurs, s.w.l.s or CBers can get together and have a good natter and do things that you do in radio clubs. PO Box 28. Bristol BS99 1GL.

RSGB City of Bristol Group: last Tuesdays, 7pm. New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. February 27 - Amateur fast scan TV by Paul G8YMM, March 26 - Role of QSL. Manager by Phil Whitechurch. Dave Bailey G4NKT. 0117-967 2124.

South Bristol ARC: Wednesdays, 7.30pm. Whitechurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd. Whitechurch. March 6 - 15m Activity evening. 13th - Interest in hand-held rigs?. 27th - HF operation - demonstration. For more information ring (01275) 834282 on a Wednesday evening.

BUCKINGHAMSHIRE

Aylesbury Vale RS: Wednesday evenings, 8pm. Hardwick Village Hall. (Hardwick is situated off the A413 between Aylesbury and Buckingham). March 20 - AGM. Ivan Eamus G3KLT. (01296) 43720.

CLWYD

Conwy Valley ARC: 1st Wednesdays, The Studio, Penrhos Road, Colwyn Bay. Clwyd. March 6 - Stesion Waenlawr Station, the VK/GW Connection by GW0ABL. R. W. Evans GW6PM. (01745) 855068.

CORNWALL

St Austell ARC: 1st & 3rd Monday. Skywave, 47 Trevarthian Rd. St Austell or Poltair School, Trevarthian Rd (in term time). March 4 - Bring & Buy. April 1 - AGM. Reg G4TRV. (01726) 72951.

DERBYSHIRE

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. March 4 - Amateur Television Group Meeting. 6th - Junk sale. Richard Buckley G3VGV. 20 Eden Bank, Ambergate, Belper, Derbyshire DE56 2GG. (01773) 852475.

DEVON

Plymouth RC: Tuesdays, 7.30pm. The Royal Fleet Club, Devonport, Plymouth. March 7 - Committee meeting. March 12 - Business meeting and natter night. 23F. P. Russell on (01752) 563222.

FIFE

Dunfermline & DARC: Thursdays, 7.30pm. The former RAF radio station, Outh Muir, located by the A823 Dunfermline to Crief Road, one mile from the Knockhill Racing Circuit. March 7 & 21 - Natter Night, 14th - HF operating evening. 28th - Inter club quiz. Adrian Donaldson GM0SRD on (01383) 735967.

GREATER LONDON

Southgate ARC: 2nd & 3rd Thursdays, 7.30pm. The Pavilion, Winchmore Hill

Club Secretaries:

Send all details of your club's up-and-coming events to: Lorna Mower, *Short Wave Magazine*, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Please tell us your County and keep the details as brief as possible.

Cricket Club, Firs Lane, Winchmore Hill, London N21 3ER. March 14 - Show debrief. 28th - Radio on the air. M. E. Viney G0ANN. (01707) 850146.

HAMPSHIRE

Hordean & DARC: 1st & 4th Tuesdays, 7.30pm. Lovedean Village Hall, Lovedean Lane, Lovedean. Hants. February 27 - Annual jumble junk sale, March 5 - Natter night, 26th - Marine Radio by Michael Gale G3JMG. S. Swain on (01705) 472846.

Southampton ARC: Mondays, 7pm. This club is now up-and-running after some years of inactivity. New members welcome. Harold McIntyre on (01703) 737715.

HEREFORD & WORCESTER

Bromsgrove ARS: 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot. Bromsgrove. February 27 - Talk on test equipment for the radio amateur, March 12 - Night on the air. 26th - History of radio & stereo. Barry Taylor. (01527) 542266.

Malvern Hills RAC: 2nd Tuesdays. Red Lion, St Annes Rd. March 12 - Communications on Railways. Jim Davis G0OWS. (01684) 576538.

HERTFORDSHIRE

Harpenden ARC: 1st Thursday of the month from September to May, at Aldwickbury School, Harpenden. March 7 - Marine radio. Further details from Peter 2E1BDB on (01727) 860631 or John G4JOV on (01582) 765821.

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. February 29 - Visit of Waters & Stanton. Dave G1CAY on (01929) 460841.

ISLE OF MAN

Isle of Man ARS: 1st Mondays, 8pm Transport House, Fort St. Douglas. Other Mondays, 8.30pm, Royal Naval Assoc. Regent St. Douglas. Every Thursday, The Manx Legion. Peel, 9pm for an informal get together. March 4 - Chaired Discussion. Chris Wood GD6TWF. 2 Lyndale Avenue, Peel, Isle of Man.

KENT

Medway AR & TS: Fridays, 7.30pm. Tunbury Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham, Kent. March 1 - Something for Nothing - The Sequel by G3YVF. 22nd - Construction competition. G3VUN, 40 Linwood Avenue, Strood, Rochester. Kent ME2 3TR. (01634) 710023.

LANCASHIRE

Wigan Douglas Valley ARS: 1st & 3rd Thursdays. Wigan Sea Cadet HQ, Training Ship Sceptre, Brookhouse Terrace, off Warrington Lane, Wigan. D. Snape G4GWG on (01942) 211397.

NORFOLK

Norfolk ARC: Wednesdays, 7.30pm. Formal and informal meetings at The Norman Centre, Bignold Road, Off Drayton Road between 'Asda' and Three

Mile Cross Roundabout, Norwich. February 28 - Informal, night on the air/construction, March 6 - Phase Locked Loops by G4EOL, 13th - Informal Evening, 20th - HF NFD 1st briefing, 27th - Night on the air. Mike G4EOL. (01603) 789792.

NOTTINGHAMSHIRE

Mansfield ARS: 2nd Mondays, 7.30pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. March 11 - Radio related videos. Mick G0UYQ. QTHR on (01623) 792243 or Howard G1JGY, QTHR, (01623) 423697.

OXFORD

Oxford & DARS: 2nd and 4th Thursdays, 7.30pm. The Grove House Club, Grove Street, off Banbury Road, Summertown, Oxford. D.A. Walker G3BLS on (01865) 247311.

Val of White Horse: 1st Tuesday of each month, 8pm at The Fox, Stevenon. Ian White. (01235) 531559.

SHROPSHIRE

Salop ARS: Thursdays, 8pm. Oak Hotel, Shrewsbury. Thursdays, February 29 - Slow scan television. See Clem G0ALV demonstrate the Dark Art of SSTV, assisted by John G6DQY, March 14 - My Trip to the Pyrenees by G0HCU. 28th - Quiz Night at Newtown. Ian Davies G7SBD. QTHR. (01743) 463711.

SOMERSET

Yeovil ARC: Thursdays, 7.30pm. The Red Cross Centre, 27 Grove Avenue, Yeovil. February 22 - Adapting the Pitney receiver for d.f. by G3GC. 29th - Club station on the air and committee meeting. Cedric White, QTHR. (01258) 473845.

WARWICKSHIRE

Stratford-upon-Avon & DRS: 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Street, Tiddington, Stratford-upon-Avon. February 26 - Test equipment evening, March 11 - Visit to the Cable & Wireless Company College, 25th - Surplus equipment sale. Martin Rhodes G3XZO. (01789) 740073.

WEST SUSSEX

Worthing & DARC: Wednesdays, 7.30 for 8pm. The Parish Hall, South Street, Lancing. March 6 - Short talk & discussion, 13th - Information Super Highway by G7PIW, 27th - The Internet by G7OIR. Roy G4GPX. (01903) 753893.

WEST YORKSHIRE

Wakefield & DRS: Tuesdays, 8pm. The Ossett Community Centre, Prospect Road, Ossett. February 27 - Video evening, March 5 - On the air, 12th - Return of the Pathologist, 26th - Packet purchase decision time. Bob 0113-282 5519 or G3WWT@GB7WRG.

WILTSHIRE

Trowbridge & DARC: 1st & 3rd Wednesdays, 8pm. The Southwick Village Hall, Southwick, Trowbridge. March 6 - Surplus equipment sale. Ian G0GRI on (01225) 864698.

JUNIOR LISTENER



Elaine Richards, PO Box 1863, Ringwood, Hants BH24 3XD.

WACRAL

I often mention listening groups in this column, but I haven't mentioned WACRAL in recent months. The World Association of Christian Radio Amateurs and listeners is an active group, and they hold a conference

each year that includes their AGM. This year the 1996 Conference will be held at The Pioneer Centre, Cleobury Mortimer, near Kidderminster, between October 4 and 6. Details of the Conference can be obtained from: **Derek Chivers G3XNX, 51 Alma Road, Brixham, Devon TQ5 8QR.**

If you would like more details on the group and their activities, special event stations, nets, etc., then contact **Victor Brand G3JNB, West Barn, Low Common, Bunwell, Norwich, Norfolk NR16 1SY** and he will direct your enquiries to the right place.

Radio Australia

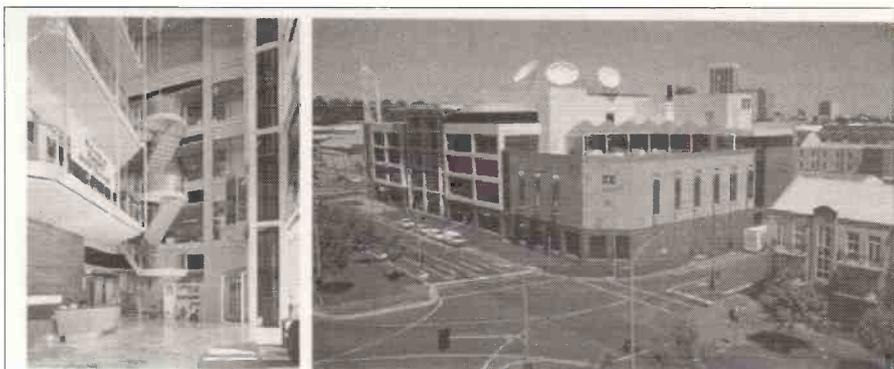
I had a large envelope of 'goodies' arrive from Radio Australia recently. When you read through all the material they send, you often find out all kinds of unusual snippets. Radio Australia employs 169 staff, somehow I always expected it to be more than that, and they broadcast in nine languages, English, French, Cambodian, Cantonese, Mandarin, Indonesian, Tok Pisin, Thai and Vietnamese. For the newcomer, their Programme and Frequency



Guide tells you what kind of radio you will need to hear their broadcasts and what you can do about the antenna to improve things. Radio Australia have a guide to short wave antennas that's available free of charge, if you think it would help your reception. They also sent a detailed list of the programmes that go out Monday to Friday and Saturday and Sunday. As most of my listening gets done at the weekends, I can look at the list and see what programmes are likely to interest me before I start to switch on the radio. For example, on Sundays at 2110 there is a Science Show, these

sorts of programmes have often proved interesting so it's one for me to look out for. I also like letters programmes and one of those goes out each week at 1810 and 2011 each Sunday. Once I know when I want to listen, I can use their frequency guide that tells me what frequency to try - 21.725MHz between 0730-1100, 15.530MHz from 1100-1300, 15.510MHz from 0030-0400 and 0600-0700, 11.660MHz between 1430 and 1800, 9.615MHz from 1100-1800, 7.260MHz from 1800-2100 and 6.090MHz from 1430-1900UTC. If the first frequency you try isn't very good, try one of the others. You can even try listening to the broadcasts not aimed at your location, it is surprising what works. Happy listening.

I don't use the Lowe HF-150 for listening around the bands quite as much as I would like these days, there's always so much to do. But when I do sit down and 'play' it's usually the broadcast bands I stick to - I enjoy many of the programmes that are transmitted by broadcasters all over the world. That could change. I've always enjoyed a good mystery and whilst I have heard 'numbers stations' I've never bothered to listen to them or to listen around for other 'unusual' signals like them. But I've started reading a book called *The Underground Frequency Guide* by Donald W. Schimmel and have discovered that there is a whole area of radio communications I've never given much thought to. Normally I would finish a book before writing about it, but I think it could take a while with this book. The chapter on number stations included some background and some suggestions as to what you are hearing as well as some helpful tables. These tables give you the words in different languages for things like the numbers you may hear. This is because the number stations don't necessarily transmit using English. Languages like Czech, Yiddish, French, Serbo-Croat and Mandarin are given among the thirteen different ones. Then, of course, there are the Morse code 'number stations'. I thought that was about all the mystery stations you would encounter, but that only covers Chapter one! Still to come are c.w. networks that send for hours, those stations that just send out a single Morse Code character continuously and diplomatic links. At the end of the book is a large list of frequencies with detailed descriptions of what was heard and when. The very nature of these sort of signals means that many of them have moved since the book was published, but what I found interesting was the kind of things that had been logged at a particular time. Having read several pages of the frequency listing, I think I would recognise one of these 'underground' stations more easily. *The Underground Frequency Guide - A Directory of Unusual, Illegal and Covert Radio Communications* is proving to be an interesting book to read. Not so much as a frequency guide, but as an insight to what's going out on the airwaves, day and night, all year long. My copy came from **Gazelle Book Services Ltd., Falcon House, Queen Square, Lancaster LA1 1RN. Tel: (01524) 68765** and it costs £13.60.



RADIO AUSTRALIA... in touch with the world.

Birthday Celebrations

Media Network, the radio programme broadcast by Radio Nederlands for the s.w.l. is due to celebrate its 750th programme. On Thursday May 2, they will be broadcasting a special programme, including a quiz with 'a unique prize', a special QSL card for the broadcast and an anniversary 'Gold label Compact Disc'. The 30 minute programme explores all aspects of the radio listening hobby from around the world. They have a network of dedicated reporters who provide them with up-to-date details of what's happening on the air. It goes out on the air every Thursday on the English Service of Radio Nederlands. Jonathan Marks has been involved with the programme for many years, and he also is the 'editor' of the really useful booklets that Radio Nederlands give away. I believe that new *Receiver Shopping List* is soon to be published. If you are thinking about changing your

receiver, or buying your first radio, read this booklet first. They have got together samples of just about every radio currently on the market and tested them, not against each other, but each in their own right. Each radio is given a 'star rating' (from one - give it a miss, to five - excellent) and then it is followed with a brief description of the facilities and the performance. Another useful tip is that if a radio goes under several names, as with the Sangean ATS-803A, then they list all the other names you can look for. I have a copy of the 1993 edition and I still find it useful, as are a couple of other booklets I have from them. If you want to know more, whether about the booklets they produce, or about the 750th programme, drop a line to: **Jonathan Marks, English Section, Radio Nederlands, PO Box 222, 1200 JG Hilversum, The Netherlands.**



COMMUNIQUE

Radio and TVDX News

There is a new national TV channel in the pipeline in Finland with the government inviting applications for the new TV station by mid March. Both Scandinavian Broadcasting Systems and Kinnevik are making franchise offers. The new channel may soon have rivals with the Ministry of Communications planning to go digital (in parallel to existing analogue terrestrial networks) late 1996 and eventually offer many more TV and radio channels. The national broadcaster YLE will be responsible for transmitter construction and operation.

From 1998 terrestrial Swedish TV will be transmitted in the main population areas in digital format with up to 20 channels to start, HDTV will be available some two years later.

There are more TV and radio channels anticipated in Sri Lanka with the new broadcasting authority offering another ten TV and six radio channels. By mid January 16 eager applications had been received for the new stations which will complement the existing six public and commercial broadcasters.

There is money in cartoons, at least in Canada where Cinar Films, Nelvana and Family Channel have applied to the Canadian Radio/TV Commission for a licence to transmit 'Teletoon', an English/French cartoon/animation channel which plans to go on-air September 1, 1997.

Norway's TV2 network has lost its advertising monopoly with parliament

voting for local channels to take satellite fed 'networking' programmes from say TVNorge and Sweden's SBS. TVNorge will now cover nearly 80% of the population. Parliament also confirmed NRK-2, a satellite channel that will go on-air late 1996 - and similar news from Sweden with the new TV4 network receiving approval for a satellite delivered service.

With the BBC now well advanced into their first year of DAB (Digital Audio Broadcasting) the commercial NTL network are intending to open DAB London transmissions during 1996 and rapidly expanding into nationwide coverage 'as quickly as possible'. The Radio Authority have required that early DABers should parallel existing services in DAB and that simulcasting should continue for at least 80% of the time. An f.m. service is envisaged for local services for the foreseeable future and ILR licences should extend to a 10 year period.

There is a new Danish private TV station now on-air - ABENRA ch.E35 2kW e.r.p. vertical and on the Ivory Coast a new TV-2 station operates from Abidjan at 10kW - no channel is mentioned!

Another defector from the SECAM colour camp is Lithuania who will change to PAL colour in 1997. And the Slovak Republic will move all its OIRT band f.m. radio transmitters (68-73MHz) to the CCIR Band 2 88-108MHz from July 1st 1996. TV transmitters now operating on chs. R4,5 (84-100MHz) will be closed down.

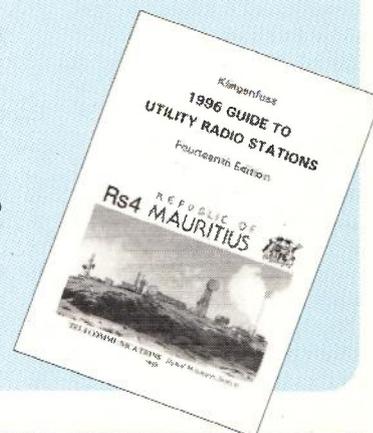
Guide to Utility Stations 14th Edition

An updated version of the essential utility monitor's bible is now available. This new edition has been largely revised with more than 11000 changes. The guide features 14500 frequencies covering 2000 stations. The rapidly changing use of spectrum by utility stations is captured annually in this very comprehensive tome.

Covers the h.f. spectrum from 18.3kHz to 27MHz. Includes information on FAX press and meteo schedules and station details. RTTY press, meteo and NAVTEX schedules. Abbreviations, codes, frequency allocations and radio regulations. Order yours today, only

£35.00 plus P&P.

Both titles available now at the SWM Book Store, order hot-line (01202) 659930.



March March

Are you angered by all the inaccurate publicity regarding so-called 'amateur radio snoopers' in the press and on radio and TV? Are you concerned about the effect that such publicity can have on the radio hobby? If so, why not join the special 'Radio Rally' to be held at Trafalgar Square on Saturday 16th March!

Organised By Rob Mannion G3XFD, Editor of *Practical Wireless*, the rally will start at 10.30 and the demonstration from Trafalgar Square to 10 Downing Street will move off at 11am with a police escort.

On reaching the gates at 10 Downing Street, petitions and letters drawing the Prime Minister's attention to the misleading press statements will be handed to the Prime Minister's office. So, get writing and come and join us and show everyone watching and reading about the event that radio enthusiasts are decent, law-abiding people. Further details in *PW* and from Rob Mannion G3XFD on (01202) 659910.

Short Wave in The Car

Ever fancied monitoring short wave broadcasts as you travel the highways and byways?. The MFJ-306 short wave converter lets you do just that. Connect this mobile shortwave converter to your in-car radio and keep in touch with your favourite international stations. The converter is installed in-line with the antenna socket. The unit converts the 19, 25, 31 and 49m bands to an i.f. output for the medium wave band on your car radio.

Band selection is provided by push buttons and a clarifier control is supplied to enable tuning between the 9/10kHz steps on newer synthesised car radios.

The converter measures 123 x 37 x 86mm and costs £59.00. If you wish to know more, contact: **Waters & Stanton Electronics, 22 Main Road, Hockley, Essex SS5 4QS. Tel: (01702) 206835, Fax: (01702) 205843.**

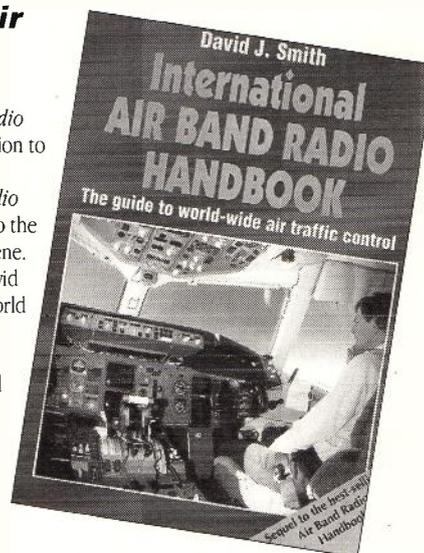


International Air Band

The *International Air Band Radio Handbook* is a brand new addition to the Book Store range, sister publication to the *Air Band Radio Handbook* it provides a guide to the world-wide air traffic control scene. Written by the same author, David J. Smith, the book provides a world overview of the subject. The author is an air traffic controller by profession and therefore well qualified in the field.

The book explains how air traffic control is regulated internationally and includes brief details of each country's system, together with the radio frequencies for all major airports. Also covered are, navigational aids, radio phraseology, flight plans, interception and emergency procedures, weather

reporting and ICAO airport code letter listing. A total of 192 pages. Price £9.99.





Dial Phonocard for History

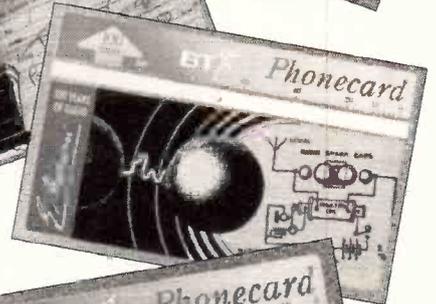
One hundred years of radio are celebrated on a set of recently launched, commemorative, BT Phonecards.

The cards mark the centenary of the first public radio transmission by Guglielmo Marconi from what is now the site of BT's London HQ.

The six special edition 'phone cards recall key events in radio history, including the sending of the first SOS message from the *Titanic*, and Dr Crippen's capture at sea using the medium.

There are four different designs for the £5 card and two for the £10 version. An exclusive extra card will be included in the special limited edition collectors' pack that will be available soon.

The Marconi Phonecards are available from post offices, most news agents, BT shops and other retail outlets and wherever you see the BT Phonocard logo. The collectors' pack can be obtained from BT Phonocard Direct by calling (0345) 697721.



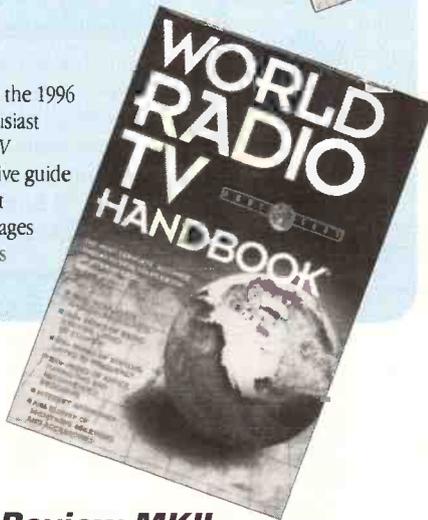
ENIGMA Address

Following our feature 'Radio by Numbers' - January 1996, introducing the exploits of those mysterious numbers station, we have been informed by ENIGMA, the specialist interest group who closely follow the world-wide 'Numbers' transmissions, that the current address for contacting them is: **ENIGMA, c/o BRC, 17-21 Chapel Street, Bradford, West Yorkshire BD1 5DT.** Anyone wishing to join ENIGMA and receive quarterly newsletters and 'Numbers' station schedules, can send the annual subscription of £10, to this address.

Book Store Update

WRTH '96

The SWM Book store now has the 1996 edition of the broadcast enthusiast stalwart, the *World Radio & TV Handbook*. This is the definitive guide to global short wave broadcast stations. With a total of 608 pages the price for this year's issue is £17.95 plus P&P.



RIG Review MKII

Twrog Press announce the second edition of *The Rig Review* by Dave Morgan GW4KYZ. This 56-page booklet features over 550 summary specifications of receivers and transceivers. Included are details of price when new. This invaluable guide is a must for anyone who is trying to get to grips with the second-hand equipment market. Twrog have held the price of this new edition to £5.00 inc P&P. They can be contacted at: **Twrog Press, Penybont, Gellilyda, Blaenau Ffestiniog, Gwynedd**

LL41 4EP. Tel: (01766) 590341.

THE
RIG
REVIEW

2nd Edition
BY
GW4KYZ

© GW4KYZ 1996
Printed in Great Britain
Twrog Press
Penybont Gellilyda
Blaenau Ffestiniog
Gwynedd LL41 4EP

Open Day - All Day

Waters & Stanton Electronics have just announced the date for their sixth annual Open Day. This event is due to be held at the Waters & Stanton Head Offices located in Hockley, Essex. The main event takes place on Sunday the 2nd of June. Doors open at 1000. There is likely to be a marquee that fills the whole car park, crammed full of bargains, clearouts and discontinued lines, in addition to the latest offerings from Alinco, Kenwood, Icom, Yaesu and Watson.

"This day should give the chance to see it, try it and buy it..." said W&S's Jeff Stanton.

There will be free refreshments all day - why not take the family, all are welcome.

For further details contact: **Waters & Stanton 22 Main Road, Hockley, Essex SS5 4QS. Tel: (01702) 206835, FAX: (01702) 205843.**

Radios from Carlisle

Just in is news of a new radio store based in Carlisle - NSC. Northern Shortwave Centre is being set-up by David Brown G4KFN. Located just under half a mile from Junction 44 of the M6, NSC is most convenient for visitors from far and wide. NSC will be offering new and used, short wave receivers, scanners and amateur radio equipment, also books and accessories.

For more information contact the **Northern Shortwave Centre, Blackdyke Road, Kingstown Industrial Estate, Carlisle, Cumbria CA3 0PJ.**

Lowe Elect

AOR BLOCKBUSTERS!

You have never heard an AR8000 like the AR8000DX.

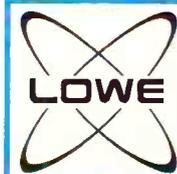


Exclusive performance and feature modifications

- Switchable narrow AM filter for DX performance
- Opto ready for instant Reaction Tune™
- Free Windows Control software worth £50.00!!
- Superior back-up and after sales service

All this for just **£409.00** plus £10.00 carriage

Standard model
£349



EXCLUSIVE MODIFICATIONS

AR8000

Wideband multimode monitor

- Advanced memory features
- Multifunction display
- Optional computer control
- 1000 memory channels
- 20 search bands

SPECIAL PRICE

Just **£349** + £10 Carr



VT225

Civil and Military

- Full VHF & UHF airband ranges
- Keypad entry
- 100 memories
- Monitor switch
- NBFM for marine use

Just **£269** + £10 Carr



SCANNER ANTENNAS

Watson Regular Gainer	£12.95
Watson Super Gainer	£19.95
LoweScan resonant airband mobile antenna with mag mount base	£29.95
LSA700 Discone 70-700MHz	£39.95
LSA1300 Discone 25-1300MHz	£59.95
LSA1500 Vertical, 25-1500MHz	£37.95

PRO44

Wideband scanner

- 40 memories
- Keypad
- Easy to operate
- AM/NBFM
- Airband, marine
- main pmr & phones

Just **£119** + £10 Carr



AR2700

Continuous coverage

- 500KHz-1600MHz
- AM/WFM/NFM
- Optional computer control
- 1000 memories
- Auto mode tuning

Just **£269** + £10 Carr



SCANNER BOOKS

UK Scanning Directory	£17.50
Scanning Secrets	£16.95
Airband Radio Guide by G Duke	£5.99
Scanners 3	£10.95
Airwaves 95	£7.95
Understanding ACARS	£9.95
World Aeronautical Communications Directory	£19.95

MVT7000

Wide range scanner

- AM/FM/WFM
- 200 memories
- Rotary tuner
- 10 search banks
- Priority channel

Just **£289** + £10 Carr



MVT7100

Multimode scanner

- AM/WFM/NBFM
- USB/LSB
- Rotary dial tuning
- Signal strength ind

SPECIAL OFFER

Just **£299** + £10 Carr



OPTO SCOUT

Automatic tuner and memory capture device

- Records 400 frequencies
- 255 hits on each frequency
- 10MHz to 1.4GHz coverage
- Optional computer interface

£399 + £10 carr



ronics

The Shortwave and Scanner Superstore!

What our users say!

While surfing the Net recently, we came across this article, which was posted by one of our many satisfied customers in the USA in answer to a query from a beginner. We've reproduced it below in its entirety, with thanks and acknowledgement to Dan Grunberg.



"I own an HF-150. I like my HF-150 very much. If you value portability, sensitivity, clever design, and ease of operation, you should consider getting an HF-150.

I think the HF-150 is one of the best designed, most well thought out receivers I've ever used. With a minimum of operation, I can hear anything I want to hear. The synchronous detector is extremely easy to use, and it works very well. The tuning knob allows digital tuning that is so smooth, that it has to be experienced to be believed.

The HF-150 is a wonderful radio for a MW or SW broadcast listener. The HF-150 has a high fidelity AM mode that gets all of the audio that is on the carrier. The hi-fi mode works best on MW stations (because of their wider channel spacing) and can be used to less advantage on strong SW stations in the absence of stations on adjacent (5kHz spacing) channels. The HF-150's sound is pleasant with its built in loudspeaker. If you're fussy, you can use an external speaker, or run the HF-150's mono audio out to your stereo system. Everything the Passport says about the HF-150 is true. (You might want to get copies of Larry Magne's more extensive reports on the HF-150 before you buy anything).

I use the HF-150 and a short whip antenna, mainly for evening SW listening (rather than DXing). I am able to carry the HF-150 with me around my house and yard, and I much like its portability. The SW signals are fine, with no fading even in my basement. The synchronous detection eliminates multipath distortion (QSB), that may be present on the signal, even if QSB is evident on other receivers (and on the HF-150 operating in its non-synchronous detection mode). The HF-150 and the short whip also work well for local MW stations. They work well for MW DX stations early in the morning when power line noise is low.

However, I have found that I must use the HF-150 and a 60 foot outdoor wire on MW for daytime reception of a favorite, 50-mile-away, low-power station, because of the high level of powerline noise at my house. The noise seems not to bother SW reception at all. Because I live about 0.75 miles from a powerful MW station, I must use a preselector when I use the outdoor antenna. Incidentally, that station is so strong at my house that it was heard on my telephones, until the phone company put a radio-frequency filter on my phone line. I don't think most people will need the preselector".

Dan Grunberg, Kensington, Maryland USA – January 16 1996

Lowe in the North East
Durham Communications Centre
Drum Industrial Estate
Chester le Street, Co Durham
Tel 0191-410 5555

Lowe in Yorkshire
12 Station Road
Crossgates
Leeds
Tel 0113-232 8400

Lowe in the South West
117 Beaumont Road
St Judes
Plymouth
Tel 01752 257224

Lowe in the South
High Street
Handcross
West Sussex
Tel 01444 400786

Lowe in the West & Wales
79 Gloucester Road
Patchway
Bristol
Tel 0117-931 5263

Lowe in the South Midlands
4 Weavers Walk
Northbrook Street
Newbury, Berkshire
Tel 01635 522122

Lowe in East Anglia
152 High Street
Chesterton
Cambridge
Tel 01223 311230

World-wide email
info@lowe.co.uk
orders@lowe.co.uk

...and on the
World Wide
Web URL
<http://www.lowe.co.uk/>

LOWE ELECTRONICS
CHESTERFIELD ROAD, MATLOCK, DERBYSHIRE DE4 5LE
TEL: 01629 580800 FAX: 01629 580020



COMMUNIQUE



Go Ahead... - Go For Your Rig

If you want to be a 'quick draw' listener, then this is just the product for you. The Watson WSC1 universal body holster and carry case. Priced at £19.95, this hands-free radio transporter could be just be the vital part of your radio arsenal. The ultimate radio slinger's accessory is available from: **Waters & Stanton Electronics, 22 Main Road, Hockley, Essex SS5 4QS. Tel: (01702) 206835, Fax: (01702) 205843.**

WINRADIO

First shown by Rosetta Laboratories at the Freidrichshafen Ham Radio '95 show, WINRADIO offered the listener a serious radio that occupied one of the expansion slots in an IBM compatible PC. Although the idea seemed to offer potential, the quoted price for the receiver card and software of over £700 for the basic version and another £300 for the digital signal processing unit seemed to be a bit on the high side! Nothing much happened until a few weeks ago, when Lowe Electronics told *SWM* that they would be showing the WinRADIO receiver on their stand at the London Amateur Radio Show, Picketts Lock in March. Unfortunately, a sample was not available for review before the show, but *SWM* will be testing one just as soon as we can get our hands on one.



WINRADIO Windows screen showing the representation of a radio receiver front panel on the screen.

Microprocessor

The basic WinRADIO receiver is capable of covering 500kHz to 1.3GHz without gaps. The receiver takes the form of a 16-bit PC interface card ready to plug into a vacant full-length slot in your IBM compatible PC. A 3.5mm stereo jack socket is provided for audio output into an 8Ω speaker or headphones.

The system requirements are an IBM compatible PC with a 386 processor or better, running DOS 3.3 or higher or Windows 3.1 or higher. A minimum of 640Kb of RAM is needed for use with DOS but 4Mb minimum is recommended for Windows use.

The WinRADIO receiver card carries a microprocessor controlled, sensitive wideband receiver with connectors for antenna and audio output. A lot of design effort has been applied to the design of the card, particularly with regard to the screening - the environment inside a computer is not exactly radio-friendly!

Software

Without the necessary software any computer-based device is useless and WinRADIO is no exception. The interface software is Windows based and gives the user full control of all the receiver parameters presented in a representation on the screen of a conventional radio receiver front panel. Functions such as memories and scanning are built-in and there is a database of more than 300 000 frequencies gathered from sources world-wide.

A professional version will also be available later on, providing such extras as digital signal processing, built-in spectrum analyser, real-time signal oscilloscope and data decoding together with an extended frequency spectrum.

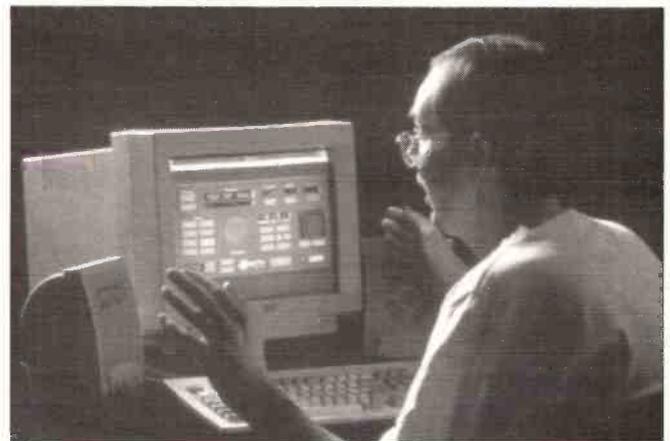
Prices

Lowe Electronics are planning on a launch price of around £399 including VAT putting the receiver in the same price bracket as a hand-held scanner.

For further information either visit the Lowe Electronics stand at Picketts Lock or write to them. **Lowe Electronics, Chesterfield Road, Matlock, Derbyshire DE4 5LE. Tel: (01629) 580800.**



The WINRADIO plug-in card is well screened against r.f. interference from the host computer.



Listen to the DX with WinRADIO inside your PC.

COMMUNIQUE



Coming up on Media Network

Radio Netherlands is a good source of broadcast related information. To enable you to stay up to date we bring you a preview of future *Media Network* programmes which are broadcast every Thursday by the Dutch International Service. Times and frequencies for the English language services are shown in the table.

Thursday February 22nd 1996

This edition of the programme includes a look at Internet developments at RTHK Hong Kong, who are now getting a huge response from the west coast of North America. The station will also host the 1996 Asian Broadcasting Union meeting at the end of October. The programme includes media news from Asia with Victor Goonetilleke.

Thursday February 29th 1996

The Netherlands has a society for the preservation of jingles and tunes...we're serious! Diana and Jonathan talk to the founders to discover what is attracting more and more collectors in The Netherlands, the USA and Britain to this curious past-time. This organisation now has pages on the WWW and together with Radio Netherlands they'll be issuing the list of the 'most wanted' jingles.

Thursday March 7th 1996

The first show in March includes media news from the Pacific, plus a look at what researchers do at the European Institute for the Media in Dusseldorf, Germany. How practical is the research and can they keep up with the developments?

Thursday March 14th 1996

Nethold, Murdoch and Canal Plus are the largest commercial satellite operators in Europe and as digital satellite services switch on and receivers enter the market place we look at what this will mean for viewers and listeners around the world. *Media Network* examines the battle for consumer choice. Is big brother watching you from your desk-top receiver? Diana Janssen investigates.

Thursday March 21st 1996

This week's show includes a profile of one of the rarest radio stations on the dial...the Bhutan Broadcasting Service. Dheera Sujan reports from Thimpu from inside the station started by students and now the country's national broadcaster.

Thursday March 29th 1996

This will be the first edition of the new 'summer' schedule. Remember that the summer schedules of many broadcast stations will be longer this year as Europe is co-ordinating the switch to winter time. This will be at the end of October 1996 instead of September. Lou Josephs and Victor Goonetilleke look at the frequency changes.

Please note that these programmes topics may change.

Schedule to 31 March '96

UTC	Sch	Target Area	Station	MHz	Band
0030-0225	d	South Asia	A	7.305	41
	d	South Asia	U	5.905	49
0130-0325	d	South Asia	M	9.860	31
	d	South Asia	M	11.655	25
0430-0525	d	North America west	B	5.995	49
	d	North America west	B	6.165	49
0730-0825	d	N.Zealand/Australia	B	11.895	25
0730-1025	d	N.Zealand/Australia	B	9.720	31
0830-0925	d	N.Zealand/Australia	I	13.700	22
0930-1125	d	East & southeast Asia	I	9.810	31
	d	Far East & East Asia	P	7.260	41
1130-1325	d	Central & W. Europe	J	6.045	49
	d	West Europe	N	7.190	41
1330-1525	d	South Asia	F	13.700	22
1330-1625	d	South Asia	M	9.895	31
	d	South & East Asia	M	15.150	19
1730-1925	d	West Africa	F	9.860	31#
	d	West Africa	F	11.655	25
	d	Southern Africa	M	6.020	49
1730-2025	d	East Africa	M	9.605	31
1830-1925	d	Northwest Africa	F	6.015	49
1830-2025	d	West Africa	B	15.315	19
	d	Centr. & West Africa	B	17.605	16
1830-2125	d	West Africa	F	7.300	41#
	d	Northeast Africa	F	9.860	31
	d	West Africa	F	9.895	31
	d	Centr. & West Africa	R	4.945	60
1930-2025	d	Northwest Africa	F	6.020	49
	d	Centr. & West Africa	M	11.655	25
2130-2325	d	Europe	L	1.386	m.w.
2330-0125	d	North America east	B	6.020	49
	d	North America centr.	B	6.165	49

For UN Forces in Bosnia

0900-1025	a	Southeast Europe	F	7.190	41
	a	Southeast Europe	F	9.860	31

STATIONS:

F	Flevo
B	Bonaire
M	Madagascar
A	Alma Ata
I	Irkutsk
L	Kaliningrad
T	Tashkent
O	Moscow
P	Petropav.K.
R	Krasnodar
S	Samara
U	Dushanbe

SCHEDULE:

d	daily
w	weekdays
s	sunclays
a	saturdays

LANGUAGE:

#	Dutch, Papiamentu & Sarnami
---	-----------------------------------

SECOND POST

To: dick@pwpub.demon.co.uk

Subject: ShackWare

Thank you for adding to your arsenal of great columns 'ShackWare'. I was just about to put finger to keyboard to join in the debate on whether or not to have computer related column then I noticed to my pleasure that it had already been done.

I have been 'into' radio from age 12 (I'm now 27) and have enjoyed most

aspects of our hobby, particularly s.s.b., scanning and digital. As I look around the shack nearly all of my gear makes use of some sort of microprocessor, so you can see which side of the fence I am on when it comes to computing in *Short Wave Magazine*.

The internet and BBSs provide so much information on radio listening and I have many people world-wide who keep in touch with me on radio subjects via the 'net, even some of your columnists!

Keep up the good work and please pass on my regards to all at *SWM*.
Paul Frankcom...via the 'net

HAYDON COMMUNICATIONS

OPTOELECTRONICS

NEW OPTO SCOUT 3.1-Mk2



Latest mini frequency finder from Optoelectronics. It will capture and memorise up to 400 frequencies that can be recalled directly into the AR-8000. Supplied with ant, nicads and

fast charger. This month we are giving away a free DB-32 ant and case worth £46

RRP **£399**

BUY THE AR-8000 + OPTO SCOUT TOGETHER INCLUDING MODIFICATION & CONNECTING CABLE.
RRP £848.

SPECIAL OFFER £719

NEW OPTO CUB



The Cub is ideal for communication, surveillance and recreational monitoring applications. From 10MHz-2.8GHz. The Cub has maximised sensitivity for detecting RF in the near field and displaying the frequency detected. The cub features a digital filter that reduces false counts and random noise, digital auto capture that acts like an intelligent hold button allowing any frequency captured to remain displayed as long as needed.

RRP **£139**

NEW DB-32



A Miniature Wideband Antenna. Receives 30-1200 MHz. Transmits 2m/70cm, BNC fitting only 1.5" long its superb

RRP **£29.95** P & P £1

OPTO-SCOUT VIDEO

SEE BEFORE YOU BUY. SEND US £10 + £2 P&P AND WE'LL SEND YOU A SIX MINUTE VIDEO OF THE SCOUT IN ACTION. RETURN THE VIDEO AND WE'LL RETURN YOUR £10 OR ORDER THE SCOUT AND WE'LL DEDUCT £10 FROM THE PRICE

SCANNING RECEIVERS

PRO-2036



Wideband Desktop Scanner with rotary tuning and tone encoder. ~~£349~~
Limited Stock £249.95



AOR AR-5000

New wideband all mode base receiver. 10kHz-2600MHz. The Ultimate machine. Why not part-ex your old receiver and move into the 21st century.

OUR PRICE **£PHONE**

HANDHELD SCANNERS

AOR PRICES SLASHED

AR-8000

The ultimate handheld receiver. This month we are giving away a Air-33 antenna with every AR-8000 sold. You've read the reports, now see how good they are for yourself.



RRP ~~£449~~ OUR PRICE **£369.95**
+ FREE AIR-33 antenna

NETSET PRO-44

WANT TO GET INTO SCANNING? THEN THIS IS IDEAL FOR YOU



Listen to Aircraft, Ham, Marine and much more with this superb scanner. Covers 66-88/108-174/380-512MHz. ~~£149.95~~

OUR PRICE **£119.95**

REALISTIC PRO 25 ~~£179~~ **£159.95**
REALISTIC PRO 26 ~~£299~~ **£269.95**
PRO 44/43 CASE **£15.99** £1 P&P

YUPITERU MVT-7100

Handheld scanner cover 100kHz-1650MHz. All mode. RRP £420

OUR PRICE **£289.95**

MVT-7200 RRP ~~£449~~ OUR PRICE **£369.95**
MVT-7000 RRP ~~£349~~ OUR PRICE **£269.95**

☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆
☆ **STAR BUY** ☆
☆ **REALISTIC PRO-43** ☆
☆ Listen to aircraft/ham, marine, mobile ☆
☆ phones and much more with this superb ☆
☆ handheld scanner. Covers 66-88/118- ☆
☆ 174/220-512/806-1000MHz. RRP £249. ☆
☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆☆

BEST SELLERS

UK SCANNING DIRECTORY

4th edition. **£17.50** Free P&P

SCANBUSTERS
Overcome new technology and listen into what you want to hear.

£4.95 P&P £1

ACCESSORIES



EP-300

Deluxe over the ear earpiece.

£9.95 + £1 P&P



MA-339

Mobile holder for H/helds

£9.99

P&P £2

QS-200 Air vent holder **£9.99**

QS-300 Desk Stand **£19.95**



TSA-6201

Superb quality ext speaker with volume control

£14.99 P&P £1

CLIP ON MINI SPEAKER



Ideal for portable scanners. Swivel clip attaches to collar or lapel whilst carrying your portable on a belt clip.

(3.5mm plug) **£9.99** P&P £1



SCANMASTER SP-55

Boost reception of your scanner with this pre-amp. 25-1500MHz, variable gain, band pass filters. RRP **£69.95** P&P £3.50

ANTENNAS

AIR-33

Prof. quality airband base antenna, Civil & Military. Just over 1m long, inc. Mounting brackets. **£44.95** £4 P&P

DB-770H

Telescopic antenna with wideband RX 25 - 1300MHz RRP **£24.95** P & P £1

TSC-2602

Flexible Wideband Antenna 25 - 1300MHz 14" Long **£22.95** P&P £1

TSC-2605

An amazing wideband telescopic with 3 hinged adjustable telescopic ground radials. Ideal for any scanner/wideband Rcvr. or Tcvr. 120-1200MHz (BNC fitting)

Our price **£24.95** P&P £1



TSA-6671

New ultra small BNC magmount. Amazing. Allows you to use any existing BNC antenna from your scanner to transceiver on your car without having to purchase a car antenna. (Supplied with 3m miniature coax + BNC fitted).

Our price **£22.95** P&P £1

DELIVERY (UK MAINLAND) 24HR £10

NB: ALL PRICES INCLUDE VAT

★ Outside office hours 0589 318777★ Mail Order: Same Day Despatch ★

SALES PHONE - 0181-951 5781/2

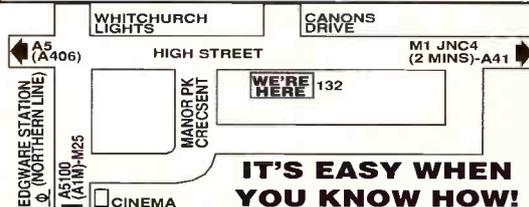
132 High Street, Edgware, Middlesex HA8 7EL
Close to Edgware underground station (Northern Line). Close to M1, M25, A406.



Fax: 0181-951 5782



OPEN: MON-FRI 10-6PM SAT 10-5PM



IT'S EASY WHEN YOU KNOW HOW!

ALWAYS No 1 FOR PRICE, RANGE AND QUALITY OF SERVICE.
NEW SHOP IN THE WEST MIDLANDS OPENING SOON.
SEND IN A S.A.E. FOR YOUR FREE PERSONAL INVITATION
AND SPECIAL OFFER SHEET.

COMMUNICATION RECEIVERS



**YAESU
FRG-100**

RRP ~~£599~~

OUR PRICE **£449.00**

KENWOOD R-5000

RRP ~~£1099~~

OUR PRICE

£899.95

AOR AR-7030

RRP £799 OUR PRICE

£PHONE

DIGITAL AUDIO FILTERS



**TIMEWAVE
DSP-59+**

As recently reviewed, this is far the best "DSP Audio Filter" available. We've sold hundreds and have had nothing but good reports. Isn't it about time you cleaned up your shack?

RRP £299 OUR PRICE **£275**

DSP-9+ RRP £239.95 OUR PRICE **£225.95**

Datong FL-3 OUR PRICE **£149.95**

COMPACT SW ANTENNAS

VECTRONICS AT-100

This is a superb self contained antenna system for inside the house/flat. for better results you can even connect a longwire antenna to the rear. Don't miss out any longer! Add one of these to your receiver (built in preselector)



RRP **£79.95** P&P £4

Sony AN-1 active antenna **£59.95** P&P £6

PORTABLE SW RECEIVERS



Sony SW-77

This is the best portable SW receiver on the market. Every week we get phone calls from customers wishing to part-ex their old Grundig/Sony or Panasonic receiver. Isn't it about time you considered moving up to the best there is!

RRP ~~£399~~

OUR PRICE **£349.95**



**SONY
SW-100E**

Award winning miniature SW receiver.
RRP **£219.95**

OUR PRICE **£189.95**

SW-55.....RRP £299.....OUR PRICE **£259.95**

ICF-7600G.....RRP £199.....OUR PRICE **£169.95**

SANGEAN ATS-803A

UK's Best Selling SW Receiver. All Modes INC SSB



OUR PRICE **£129.95**

SRX-50

World wide digital radio with clock and 20 presets.

OUR PRICE **£34.95** P&P £3

**WE NEED YOUR USED
EQUIPMENT
TOP MONEY PAID**

ACCESSORIES



HOWES CT-U8

Ready built, ready to go antenna tuning unit.

RRP **£49.95** P&P £5

AT-2000 ATU with Q selector **£95** P&P £5



SWA-30

Passive (non-powered) desk or wall mount shortwave antenna. (0-30MHz) with a built in magnetic balun. OUR PRICE **£44.95** P&P £4

NEW SP-1 SPYWIRE

Ideal for any receiver. Receives all short wave bands. All mode, no ATU required.

Built in balun. SO239 connection.



OUR PRICE **£24.95** P&P £3

SONY AN-71

Pull out and clip on compact short wave antenna. Boost the performance of your portable

with one of these. RRP **£9.99** P&P £1

SW LONG WIRE KIT

DX end fed long wire kit, up to 150ft of copper wire. The Complete Package. **£24.95** P&P £3

HF ACCESSORIES (P&P £1.50)

MLB Watson Wire Balun..... **£19.95**

HD CW 50m hard draw copperwire..... **£10.99**

IS nylon dog done insulators..... **99p ea**

PL-259/1 1m Patch lead (259-259)..... **£4.99**

PL-259/5 5m Patch lead (259-259)..... **£7.99**

SECONDHAND & EX DEMO BOARD



ICOM IC-R71E

Communication receiver.

Top performer. **£599.95**



PRO-2032

66-88, 108-174, 380-512, 806-960MHz.

One piece only. Ex demo. **£149.95**

AR-8000

The ultimate hand held scanner.

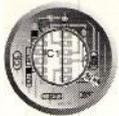
Ex demo. **£339.95**



R-5000 + VHF converter Ex demo	£949.95
R-5000	VGC	£799.95
FRG-100	As new	£399.95
R-8E	VGC	£899.95
R-600	VGC	£299.95
HF-255	As new	£399.95
HF-150	As new	£349.95
PR-150	Immaculate	£219.95
FRG-7	VGC	£189.95
CWR-670E	Telereader + monitor	£199.95

AR-3000A	Immaculate	£799.95
AR-3000	VGC	£699.95
AR-950	VGC	£179.95
Shinwa Scanner, Mobile		£249.95
PRO-2025 66-512MHz with Gaps		£89.95
PRO-2022	VGC	£129.95
RFB-65	As new	£149.95
R-808	As new	£89.95
YB-500	Mint condition	£149.95
SW-7600DS	VGC	£99.95
ICF-2001D	VGC	£219.95

MVT-7100	VGC	£269.95
MVT-7000	As new	£219.95
PRO-43	Immaculate	£139.95
PRO-25	Ex demo	£159.95
AR-1500EX	VGC	£249.95
PRO-46	VGC	£149.95
IC-R1	As new	£299.95
DJ-X1	Immaculate	£249.95
AR-1000	VGC	£199.95
HP-200	VGC	£189.95
AIR-7	VGC	£179.95
PRO-80	VGC	£199.95



The AOR AR7030

Anyone reading this must surely be aware of the AOR company and the fact that it has forged a strong reputation for producing innovative v.h.f. and u.h.f. scanning receivers. Some of the designs have been real landmarks, for example the AR2001/2002/3000 wide range receivers which share the same heritage and were designed by the same person. What is not generally known is that AOR use independent designers for their equipment and are able, therefore, to take the best one for each particular field. The AR2001/3000 series and the new AR5000 were designed by Mr. Nomura, an independent genius who has his own design and manufacturing company in Tokyo. However, his expertise is largely concentrated in v.h.f. and u.h.f., so when AOR were considering production of a new h.f. receiver they were free to look for the best designer around.

British Genius

By sheer good fortune (for AOR), our own British genius John Thorpe, having designed the 'HF' series of receivers for Lowe, had just decided to start up as an independent designer to broaden his horizons. Small wonder then that AOR asked John to undertake the design of a totally new h.f. receiver to be produced in the UK and exported under the AOR name to the rest of the world. Eighteen months later the AR7030 was launched, and I am pleased to be given the chance to review this latest product of an amazing brain. With his first independent receiver design, JT (as everyone knows him) has wiped the slate clean on



receivers as we know them and rendered virtually everything else obsolete. No wonder that Martin Lynch and I were saying 'Ooh-Aah' when we first saw the AR7030.....You will, too.

Stunning

When I unpacked the AR7030 and placed it on the bench I thought "WOW!". Not only is the appearance stunning, the finish on every part is of the highest standard (have you ever looked at the way the panels fit on a BMW?), and the receiver is built like Das Brick Chicken Haus. It's so solid that you could be arrested for carrying an offensive weapon, and it will certainly take any punishment that you or I could throw at it. I particularly liked the textured black paintwork which is of an outstanding quality and a credit to the panel finishers.

The case itself is made from curved side extrusions and flat panels, all of them thick enough to stand on without bending and the front panel is machined from solid, which must have cost a lot of money to design - but the results are worth it. The overall design will surprise some people who think that the only shape for receivers is rectangular, but I personally

believe that British industrial design leads the world, and the AR7030 aesthetics are a sheer joy.

AOR obviously believe that small is beautiful, the AR7030 measuring 90mm high, 240mm wide and 255mm deep. It weighs in at about 2.2kg which is enough to keep it still on the table when in use, aided by soft rubber feet and the receiver can be raised at the front by a metal, fold down, full width foot (why do the Americans call it a 'bail'?), which also has rubber buffers to prevent the receiver from slipping around (and also to prevent domestic repercussions should you scratch the William IV dining table). The size of the radio places the AR7030 firmly in the classification of 'portatop', the term coined by Larry Magne in *Passport to World Band Radio*, and it perfectly illustrates the concept of a radio small enough to be carried around, whilst being powerful enough to perform alongside the more traditional table top units; in fact the AR7030 will out-perform most leading table top receivers regardless of price, but more of that later. Incidentally, provision is made inside the casing for a battery pack option which will make the AR7030 truly portable.

Deceiving

The front panel looks extremely simple, but this is deceiving when one considers the wide range of facilities available to the user, so how does it all work? Taking my usual line of not reading the handbook I connected the power supply and an antenna and aimed my attention to the power switch - what power switch? I decided to try the button marked with a white dot and a black dot and the receiver sprang into life.

The main display is a backlit dot matrix unit which is used to great effect in showing decent readable text, unlike the often used seven or nine segment displays which can't sensibly reproduce letters. Initially the display showed the time, frequency, mode, signal strength and a legend 'Setup'....? I think this should read 'Sit up' because that's what it made me do. At this point I stopped and turned to the manual, because there was clearly more to the AR7030 than met the eye, and having got the rudiments of the operating system in my mind I went back to the receiver front panel. Incidentally, the time is displayed even when the receiver is switched off but still

Communications Receiver

connected to a d.c. supply. And, of course, a timer function has been provided with external control for a tape recorder.

Black Spot

Starting at the top left hand corner of the panel there is a button marked with the mysterious black spot (no Robert Newton impressions, please); a button marked 'Menu'; the volume control; phones jack; a rotary control with left and right arrows; a button marked '*'; then three more buttons marked 'Memory', 'RF-IF' and 'Filter'. From these last five controls/buttons, lines are extended to the main display, and the cleverness is that each of the controls could be automatically designated by legends in the display according to which menu I chose so that they all had multiple functions. As the menu system began to unfold, it was rather like watching Salome and the Dance of the Seven Veils; as each layer of menu was peeled away, more delights were revealed and I began to really enjoy using a very interesting receiver.

No Gaps

The AR7030 tunes from 0 to 32MHz with no gaps, not even at the v.l.f. end, although AOR advise that there is no guarantee of v.l.f. (below about 30kHz) performance. However, those who enjoy listening for v.l.f. 'whistlers' and such like around 12 to 15kHz at least have the opportunity to try. The basic tuning step is about 2.7Hz which is to all intents and purposes an analogue v.f.o., and I certainly couldn't hear any transitions from step to step. The display readout is to 10Hz, and you can be assured that the readout will

be accurate because the whole receiver is controlled by a TCXO (Temperature Compensated Crystal Oscillator).

Dimple

The main tuning control is a large metal knob with a convenient 'dimple' in the face to stick your finger in; I actually found it convenient to rest my fingers on top of the receiver and use my thumb - but I'm right handed and it wouldn't work for the left hand 'cos you cover up the display with your left arm.

Placed in an arc around the knob are three buttons which are, therefore, instantly accessible to a prodding finger, and select mode using a left/right carousel, and the fast tuning button which when pressed allowed me to race up and down between 0 and 32MHz extremely quickly. I noted that there was no 'roll-over' at either end of the range so when I reached 32MHz or 0MHz (never tuned d.c. before!) I had to reverse and go back. The tuning rate has the usual speed up with increasing speed of rotation, and I liked the unobtrusive way in which the speed up took place. I don't know how many rates are used, but the resulting smoothness is outstandingly good and it's as easy to tune slowly at about 1kHz/revolution as it is to hurtle along at some 20kHz/revolution.

Modes

The AR7030 is fully operational on no less than seven different modes and all are provided within the basic receiver - no extra accessory boards to purchase. As well as the obvious a.m., l.s.b., u.s.b. and c.w. which one would expect,

there is a very good synchronous a.m. system which has the unique feature of being auto tuned. All I had to do was twiddle the main tuning until the receiver was roughly on the frequency I wanted and then wait for the AR7030 to do the rest.

Watching the frequency display track the tuning process is quite addictive, and the resultant 'spot-on' tuning means that you can't go wrong. However, if you fancy yourself as a hot shot receiver operator you can disable the auto facility, sandpaper your fingertips, and have a go using manual tuning. An additional feature is the provision of full pass band tuning on synchronous a.m., and availability of all the filter bandwidths as well. If you can't get sensible audio out of even a rotten signal with the AR7030 then nothing will do it. When tuning around in 'Sync' a.m., the AR7030 automatically reverts to normal a.m. so that the synchronous detector doesn't produce howls and shrieks every time you pass a carrier. As a user, you probably won't even notice the transition from 'Sync' to 'Normal' and back again, so smooth is the change.

The Narrow Band f.m. mode uses a separate i.f. strip after all the receiver filtering with the result that recovered audio from low deviation signals such as those found on the foreign CB channels is excellent, with little or no 'bleed-over' (ask a CB enthusiast what that means).

Data Mode

Finally, something quite new; a 'Data' mode for all you folk who want to decode f.s.k., or RTTY, or whatever. The 'Data' mode comes up with a preset b.f.o.

The new
communications
receiver from AOR
has been awaited
with baited breath.
Short Wave
Magazine is the
first magazine to
review the AR7030
in depth. Our short
wave receiver guru
John Wilson
reveals all.

offset to suit normal f.s.k., but the offset can be changed by the user to whatever they might need. Again, coupled with the excellent passband shift system the AR7030 can easily cope with the fallibility of human beings who decided that f.s.k. tone shifts and offsets should be different across IARU Regions.

On both c.w. and Data modes, the receiver b.f.o. is fully tuneable (I was always taught

Continued on page 20

NEVADA

PRICE PROMISE!

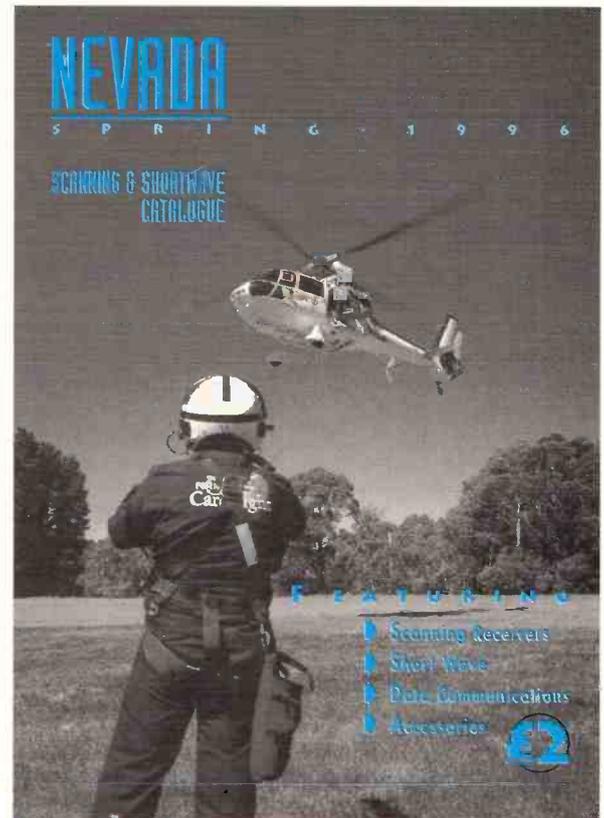
We will match any genuine advertised price

- CALL FOR QUOTATION

01705 • 662145

- **HUGE STOCKS**
- **FAST DELIVERY**
- **PERSONAL SERVICE**

AND WE WON'T BE BEATEN ON PRICE!!!



THIS MONTHS USED EQUIPMENT SELECTION

All Safety Tested & Guaranteed for 3 months

Shortwave Receivers

Drake R8E.....Boxed.....	£725
Drake SW8e.....mint/boxed.....	£499
Icom R70 inc FM.....very nice RX.....	£395
Icom R72 + FM + Nicad pack etc.....	£775
Icom R71e.....quality RX.....	£595
Kenwood R1000.....	£325
Kenwood R2000 Choice from.....	£350
Kenwood R2000.....Gen. Cover.....	£375
Kenwood R5000 (filtered).....	£750
Lowe HF 150.....	£315
Lowe HF 225+FM.....nice.....	£399

Sony Sw1S.....Pocket Receiver.....	£130
Yaesu FRG770.....Gen Cover + VHF.....	£450
Yaesu FRG 9600's from.....	£385
Yaesu JRC 515 + Memory Unit.....	£595
Yaesu FRG 7's.....Choice from.....	£175
Yaesu 7700's Choice from.....	£299
Yaesu JRC 525.....Mint HFRX.....	£725

Scanning Receivers

Alinco DJX1.....Boxed.....	£225
AOR ARI 500.....Boxed.....	£249
AOR AR800E.....H/held.....	£120

AOR ARI1000.....H/held Boxed.....	£185
AOR AR3000.....Super W/Band.....	£695
Bearcat 580XLT.....Mobile/base.....	£120
Bearcat 142 XLT.....Basic model.....	£99
Commtel Com102.....Boxed.....	£85
Fairmate HP2000.....Boxed.....	£199
Fairmate HP200.....Boxed.....	£185
Nevada MS1000.....Base/Mobile.....	£195
Realistic Pro-32.....Handie.....	£110
Win 108.....	£105
Yupiteru MVT3100.....H/held.....	£185
Yupiteru MVT7100.....	£265

Mail Order: 189 London Road • Portsmouth • PO2 9AE

NEVER

**WE WILL
MATCH or BEAT**

**ANY GENUINE ADVERTISED
PRICE FROM THIS ISSUE
OF THE MAGAZINE.**

... IT COULDN'T BE SIMPLER!

JUST CALL US NOW!



01705 662145

**... AND PAY BY
3 POST-DATED CHEQUES**

ON ANY ITEM OVER £100 IN VALUE

Simply divide the price into 3 equal payments. Write 3 cheques dated in consecutive months starting with today's date. Write your telephone N°, cheque card N° & expiry date on the back of each cheque. Post them to us, enclosing your name & address & we will (subject to status), send your goods immediately.



Europe's Number 1 Supplier

Continued from page 17

that 'tune' drops the 'e' when used as 'tunable', but it seems to confuse anyone born after 1945, so I'll ride with the wind). However, the provision of a tuneable b.f.o. is an enormous advantage when receiving c.w. or any data transmissions and it is a rare facility to find in receivers these days. The lily is gilded by having the exact b.f.o. offset shown on the display, and memorised when you switch modes or switch off. Well done JT.

Imaginative

If I thought the synchronous a.m. detector was clever, I was simply amazed when I came to explore the i.f. filtering arrangements in the AR7030. First of all, the basic specification told me that there were four i.f. filters fitted as standard, and that the nominal bandwidths of these were 2.2, 5.5, 6.5 and 10kHz. There are often discrepancies contained within normal production tolerances for i.f. filters, and although a receiver may tell you on the front panel that you have a 2.2kHz filter fitted, it may in fact have a bandwidth more or less than the 'nominal'. With one imaginative move the AR7030 removes any confusion or controversy in this matter by providing a built in automatic filter measurement system which the user can bring in at any time.

At the touch of a button (in the mystic 'Setup' system), I watched the receiver measure the 5dB and 20dB response of all the filters fitted and then automatically place them in bandwidth order for me to use when listening. Now it gets even more clever, because in addition to the four filters fitted there are two additional locations on the board for the user to fit extra filters - which the receiver will measure and include in the bandwidth table - but there's more.

The receiver doesn't care where the filters are fitted, nor indeed what filters they are, and provision has been made for all six filter positions to take

either Murata ceramics or the Collins mechanical filters. You could therefore arrange your own receiver to have a preponderance of narrow filters for data use, or whatever mix you wanted - and it doesn't matter where you put them on the board because the receiver sorts it all out for you. I'm staggered: this is one of the most far reaching ideas ever to be incorporated in a medium priced receiver and it works beautifully, to the benefit of the user.

Taking a look at the circuit of the AR7030 showed that there were more filters in there than you might imagine, and the design follows the doctrine of keeping alignment to a minimum. If you have all six user defined filters fitted, there are no less than ten 455kHz filters involved in the i.f.

system, including all important 'post i.f.' filtering which removes wideband noise generated in the low frequency i.f. system. It's not a new idea; in fact I used to modify NRD-505 and NRD-515 receivers in this way, and Kenwood used it to great effect in their TS-180S transceiver, but it's an example of the careful thinking that went into the AR7030.



Pass Band Shift

Hand in hand with the filtering goes the pass band shift system which allows you to move the i.f. passband relative to the received signal without re-tuning the receiver. Many receivers have this facility, but I liked the way that the actual amount of i.f. shift was shown (accurately) in the main display, and as I moved the filter position using the rotary control on the panel, the display showed the shift in 100Hz steps. The amount and direction of the shift was also automatically retained in memory for each mode when the receiver was switched off. In fact the memory management on the AR7030 deserves a review of its own, but I'll try to cover it later...if my memory allows.

The pass band shift was powerful in operation and helped considerably when digging down in the noise for weak signals. The shift range given in the brochure is +5 to -5kHz, but I am told that this is a misprint for +4 to -4kHz. On the review sample the shift was actually +4.2 to -4.3kHz.

The a.g.c. system is nicely comprehensive, with fast, medium and slow decay rates, and praise the Lord and pass the ammunition, he's remembered to provide an 'a.g.c. off' facility for those of us who remember how to use c.w. I don't know the detail of the attack/decay characteristics, but whatever JT has done, the s.s.b. performance is exceptionally easy on the ear, with no 'popping' on speech transients.

Of course there is a receiver

SPECIFICATIONS

Frequency Range:	0 - 32MHz continuous.
Modes:	sync. a.m., a.m., u.s.b., l.s.b., c.w., data & n.b.f.m.
Intercept point (IP3):	>+30dBm preamp off (+35dBm typ.) Reduced by 10dBm with preamp on at signal spacing of 100kHz.
Dynamic range:	>100dB, a.m. mode, 6.5kHz filter >105dBm, s.s.b. mode, 2.2kHz filter >110dBm, c.w. mode, 500Hz filter
Sensitivity:	150kHz - 32MHz <0.3µV for 10dB S/N s.s.b. mode <0.5µV for 10dB S/N a.m. mode
Selectivity:	>90dB at 10kHz s.s.b. mode >100dB at 20kHz s.s.b. mode
Filters:	Four standard, two optional. 2.2, 5.5, 6.5 & 10kHz
Tuning:	Approx 2.7Hz in s.s.b. mode. Fully continuous, multi-rate, speed-up tuning with weighted spin-wheel. keypad entry from remote hand control unit.

i.f. gain control which operates in the 'pedestal' mode, and the S-meter, although not being an analogue moving coil type makes up for that by having no less than 70 segments allocated on the display and amazing accuracy - so accurate in fact that I checked with a generator to verify it - you could almost use the AR7030 as a calibrated measuring tool, and this explains why the self contained filter set-up works as it does.

Pleasant Change

The audio quality in any mode is very good indeed, and a pleasant change from some receivers which sound 'uncomfortable'. There is more than enough audio power available (2W into 8Ω) to drive a decent loudspeaker to a level where the neighbours complain. A further enhancement is the provision of audio tone controls which allow adjustment of bass and treble boost and cut, with the exact amounts of boost or cut shown on the main display.

Coupled with the wider i.f. filters and given a good strong signal, the quality produced is

Table 1

Receiver	3rd Order IP	Dynamic range	Source
Kenwood R-5000	-2dBm	86dB	RDI White Paper
JRC NRD-525	+5dBm	91dB	RDI White Paper
Lowe HF-250	+4dBm (10kHz) +13dBm (50kHz)	90dB (10kHz) 96dB (50kHz)	Published spec. See note
AOR AR7030	+32dBm	>105dB	Production sample

Note: All figures are given at 20kHz spacing except for the HF-250. The 20kHz figures for this receiver will fall between +4 and +13dBm for 3rd order and between 90 and 96dB for dynamic range.

excellent, and even my wife began to take an interest in music coming from short wave broadcasts. You can by now tell that the AR7030 had all the right features (and more) to make it an excellent receiver, but how did it work in anger?

Confident

I sat down and started again, confidently pressing the black spot and waiting for the 'Setup' legend. I ignored it!! and pressed 'RF-IF'. The display now showed that the rotary control with the left/right arrows was the r.f. gain control with the amount of gain shown as a percentage of rotation; the '*' selected agc time constants displayed as 'fast', 'med', 'slow' and 'off'; whilst the 'memory' and 'RF-IF' buttons could be used to increment the front end

attenuator in 10dB steps from -40 to +10dB. However, I had lost my S meter display but a further single press on the 'Menu' button restored that and I ended up with a classic 'communications' receiver having a.f. and r.f. gain controls, agc selection, frequency displayed to 10Hz and mode shown on the display. Time to tune around....

Delightful

I have some forty plus years of professional h.f. experience behind me and I've used most h.f. receivers made during that time, which gives me the ability to know a good receiver when I use it. The AR7030 is not just good, it's immediately apparent that it's in a class of its own. Whatever I listened to, be it h.f. s.s.b. from aircraft, broadcast

terms everyone can understand? I turn once again to Larry Magne, the doyen of short wave receiver reviewers, and his *White Paper* entitled *How to interpret receiver specifications*. In this simple to understand document, Larry explains the importance of the 3rd order intercept point and dynamic range characteristics of receivers and gives a rule of thumb guide as follows (using two input signals at 20kHz spacing):

Third order intercept point: the more positive (or less negative) the better. +10dBm and beyond is superb; 0 to +9dBm, excellent; -10 to -1dBm, good; -20 to -11dBm, fair.

Dynamic range: the greater the better. 97dB or greater is superb; 90 to 96dB, excellent; 83 to 89dB, good; 76 to 82dB, fair.'

Bearing in mind the letter from David Cripps (*SWM* February '96) I looked up the published data for a few receivers in current use and assembled **Table 1**.

Well, that goes some way to explain why the AR7030 performed so well, but the surprise came when I realised that this kind of performance (in the RDI classification of 'superb') puts it up there with the Watkins-Johnson HF-1000 and it is significantly better than any of its peer group. A further performance measure is that of reciprocal mixing which hinges on the spectral cleanliness of the local oscillator system in the receiver. Using DDS (direct digital synthesis) techniques, the AR7030 again betters the reciprocal mixing performance of receivers costing more than four times its price. For the record, the oscillator phase noise measures at -123dBc/Hz at 5kHz and -132dBc/Hz at 10kHz (manufacturer's figures). The NRD-535 by comparison is

Reciprocal Mixing: Frequency 12.7MHz (not specially selected)
Filter 2.4kHz; mode u.s.b.

Signal Separation	Rejection	LO Phase Noise
(kHz)	(dB)	(dBc/Hz)
100	>125*	<-158
50	119	-152
20	109	-142
10	99	-132
5	90	-123

*not limiting

Audio output: 2W into 8Ω.

Power: 12-15V d.c. @ 300-500mA.
15V required for full spec. operation.
30mA standby.

Antenna connection: 50Ω SO-239 with whip position.
Wire input terminals plus GND.

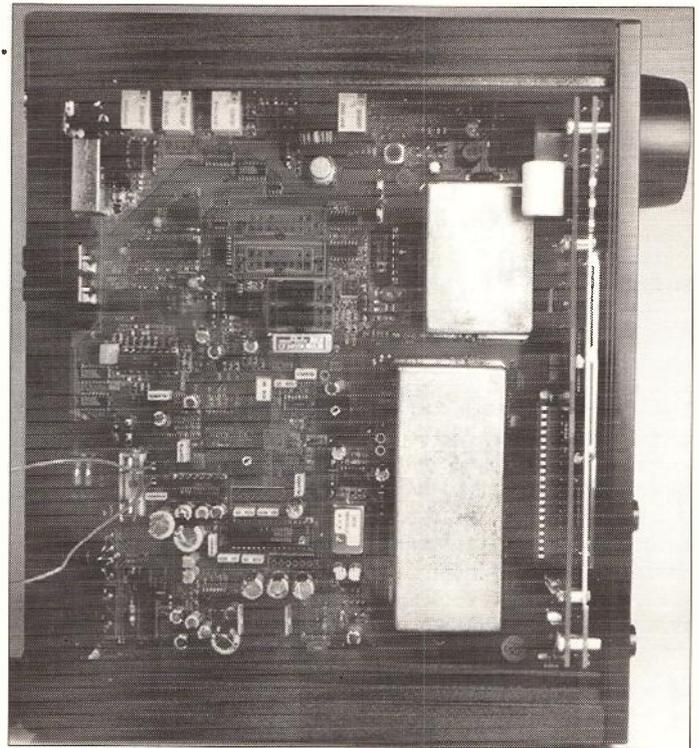
Weight: 2.2kg (approx).

Size: 90(H) x 240(W) x 255mm(D).

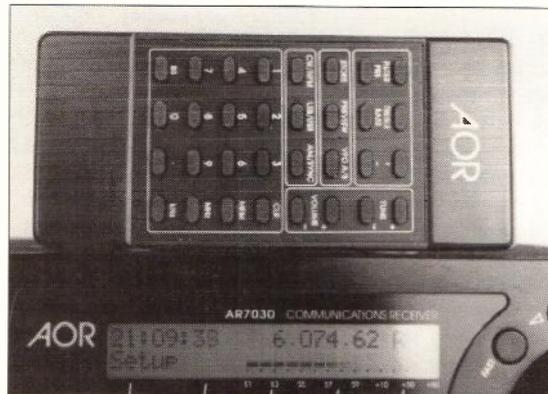
a.m. from around the world, rock crushing amateur s.s.b., c.w. on 20 metres or f.m. on the CB channels, the sheer quality of the recovered audio was delightful.

Not only that, the AR7030 seemed impervious to strong signal overload which straight away told me that the r.f. performance had to be something special - but how can I convey that in

The inside of the AR7030 is neatly laid out.



The AR7030 has an almost conventional remote control unit.



much noisier, measuring -117dBc/Hz at 10kHz (*RDI White Paper*).

Anyone owning an AR7030 can be sure that in r.f. performance it can hardly be bettered, and this is clear when it's connected to a good antenna system. I just sat back and enjoyed the sheer ease with which the receiver coped with everything I pushed at it. I tried a variety of antennas, even lo-o-o-ng wires which normally cause distress to receiver front ends and could find no signs of receiver overload.

The front end of the AR7030 is virtually bomb proof, and this is due in no small measure to the design of the first, and indeed the second, mixers. There is also a facility for setting the front end attenuation from -40 to +10dB, so whatever the antenna, be it a 100m wire or a short whip, there is little doubt that the receiver will cope. Typical sensitivity measured in s.s.b. mode with the 2.2kHz filter is 0.2µV using the +10dB setting, and 0.09µV with the 500Hz option filter fitted.

A good design point is that all front end switching is carried out by relays, not diodes which can introduce intermodulation, and I noted with pleasure that the relay contacts are all d.c. 'wetted', which will remove any oxidation problems which sometimes occur. This is not a whizzy new idea by the way. Anyone with a background in conventional telephony will tell you that relay contact wetting goes back to the last century - it just seems to have been forgotten by some of the newer chaps!!

Intuitive?

At this point someone should be asking "How is it possible for a receiver of this performance and flexibility to be controlled by five buttons and a couple of knobs?". If all

the different functions had their own front panel controls the AR7030 would be ten times the size it is, so a menu driven control system has been used to make this complex radio quite easy to use.

I would disagree with the comment in the handbook that the system is 'intuitive'. It may be (and probably is) to my teenage son, but to one who finds programming the video recorder impossible without the handbook, it takes a little

learning. In all honesty it took me about two days to feel familiar with the AR7030 and put the handbook aside, but once my fingers were flying over the front panel I was completely at home - but 'intuitive' it was not.... However, it is no more complicated than the feel of a different car when you first get into it to drive: having found out where the switches are and stopped giving friendly greetings by flashing the wipers instead of the headlights, it soon becomes second nature.

Menu Tree

The handbook contains a very easy to understand 'menu tree' which shows clearly what is happening when you use the AR7030, and it is possible, using this 'tree', to configure the receiver to do almost anything you want and to tailor the display to suit your own

requirements whatever your particular needs at the time. The menus are designed so that setting the receiver is progressive, and there seemed to be very little I could not make the AR7030 do for me. However, having found that the receiver was an outstanding performer, I was quite taken aback when I came to use the memory system and found more evidence of careful design. First of all, let me explain the twin 'VFO' system.

The 'RF-IF' menu brought up a 'communications' display showing r.f./i.f. gain control, a.g.c. selection and the setting of the r.f. attenuator. However, the last button on the right had a legend reading 'VFO', so I pressed it and entered the world of the twin v.f.o.s. The AR7030 has (in addition to its 100 memories) a facility which gives you effectively two receivers, and the 'VFO' menu allows you to tune, select, and generally mess about with both

of these. More features include the ability to transfer data between the two v.f.o.s, exchange one for the other and even use them in a 'Dual Watch' function where the receiver alternates between the v.f.o.s with independent squelch settings on each. You can use any mode on each v.f.o. so you could for example dual watch between Shanwick on 8.831Hz u.s.b. and a CB channel up on 27MHz f.m. But there is more....

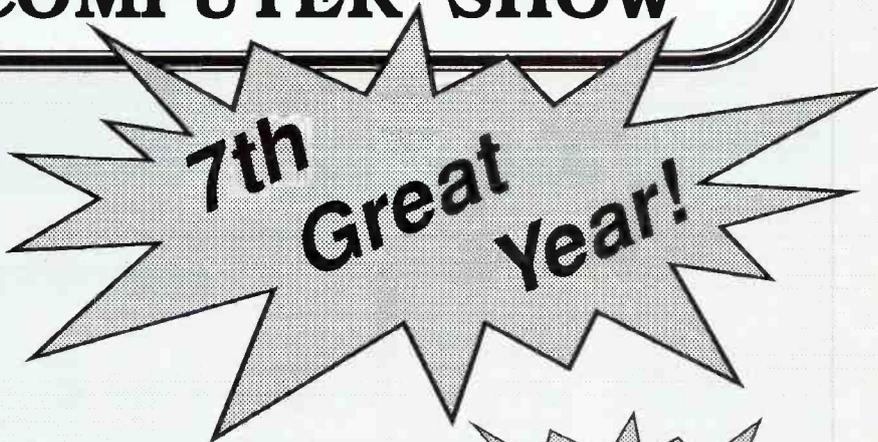
Throwing all caution to the winds I went for 'The Big One' and called up the 'Memory' menu. In the past I have found memory functions on h.f. receivers to be confusing, but despite the number of things available on the AR7030 I actually felt at ease with the memory management. The initial display showed, in addition to the current frequency and mode, the rotary control selecting memory channel by number (00 to 99) with the frequency contents above the number, and the panel buttons designated as

Continued on page 27

IT'S PICKETTS LOCK TIME AGAIN!



LONDON AMATEUR RADIO & COMPUTER SHOW

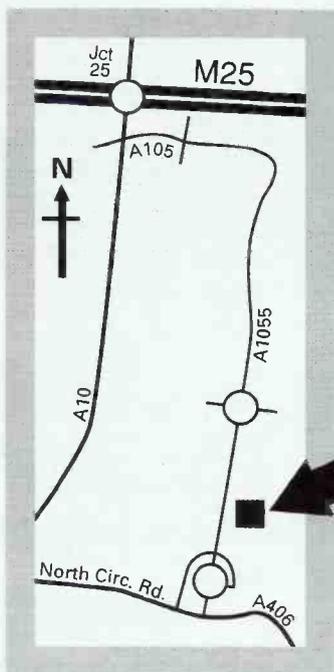


And this year there's an added attraction!



**Saturday March 9th
& Sunday March 10th**

(10.00am - 5.00pm each day)



Venue:
Lee Valley Leisure Centre,
Picketts Lock Lane,
Edmonton, London, N9.

- Trade Show
- Lectures
- Bring & Buy
- Morse Tests
- Restaurants
- Talk - in on 2m & 70cm
- FREE Parking
- Special Interest Groups
- Bars
- Disabled Facilities

Combined admission to both events: Adults £2.50. Concessions £1.50

For further details please contact RadioSport Ltd at 126 Mount Pleasant Lane, Bricket Wood, Herts, AL2 3XD.
Tel 01923-893929. Fax 01923-678770. Presented in association with RSGB and Southgate A.R.C.

Waters & Stanton

01702 206835/204965

Fax 01702 205843

UK's Leading Communications Supplier

Shops: 9 - 5.30pm Mon - Sat Mail Order: 24 or 48 Hour Delivery



MVT-7200 Scanner
100kHz - 1300MHz

£399

This is the latest model and includes a ferrite aerial for much improved low frequency reception. Also included is a new narrow band SSB filter for sharpening up short wave reception. AM reception has been improved by the addition of a new narrower filter and a circuit revision has reduced total battery consumption, giving longer use between charges or battery replacement.

QS-200 Mobile Mount



£9.95

Easy Dash Mount

A great idea. Just clip your handheld via belt clip onto the QS-200 and push it onto the plastic vent grill of your car.

MBR-8 7 Band Radio

£49.95



LW & MW Plus
2.2 - 22MHz & 108 - 174MHz
AC Mains & battery.

MFJ-1020B Active Aerial

300kHz to 30MHz. Sits on desk. Tuned pre-selector. Use PP3 or 12V DC
£89.95



MFJ-411 Pocket Morse Trainer

Battery powered. Even sends complete QSOs. Thousands of combinations, letter groups etc. Fully programmable.

£84.95

MFJ-8100 World Receiver

Regenerative design. 3.5 - 22MHz. SSB - AM - CW.
£89.95



Long Wire ATU

1.8 - 30MHz. Hear the difference! Bring in those weak stations. Ref 16010
£49.95



AT-2000 Receiver ATU

£99.95



This model features the exclusive "Q-switch" which adjusts the front-end selectivity to help with those noisy bands, particularly at night. Can be used with long wires, coax feed or balanced systems. Just hear the difference.

Police Style Lapel Speaker

Save £2

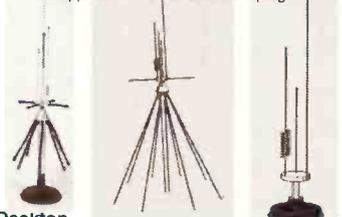
£9.95



Ideal for scanner owners. Clips on lapel or seat belt. Gives clear crisp speech. Similar to that used by Police. Fitted with curly cord and standard 3.5mm plug. Matches all scanning receivers. Order LS-1 Postage £1.50

SCANNING AERIALS

All supplied with coax and BNC plug



Desktop

SS-Desktop SS-Base Mobile
This model is 0.9m high and covers 25-1300MHz. If you want an indoor antenna beside the radio, this is the obvious choice. £49.95

SS-Base

For use in a loft or outside. It covers 25 - 1300MHz and will make a big difference to your receiver's reception. Height is 1.2m £49.95

SS-Mobile

The answer to those who need a wideband aerial for mobile use. Comprises a magnetic base and three element system approx 0.6m high. Covers 25 - 1300MHz £24.95

Full Range of Yaesu, Kenwood, Icom and Sony Stocked Best Prices

AOR-8000 Receiver



Pictured above with Cub auto tune option.
AOR-8000 Scanner £Phone
AOR-8000 / Cub £739.95
Cub Counter £389.95

"Police" Style Holster

WSC-1 Self Adjusting Matches all Scanners

The perfect way to carry your scanner or handheld. It self adjusts and can be worn on the belt or attached to the quick release body holster. Never before offered in the UK, we are now supplying this unit to some police forces.



£19.95

WEP-300 Earpiece

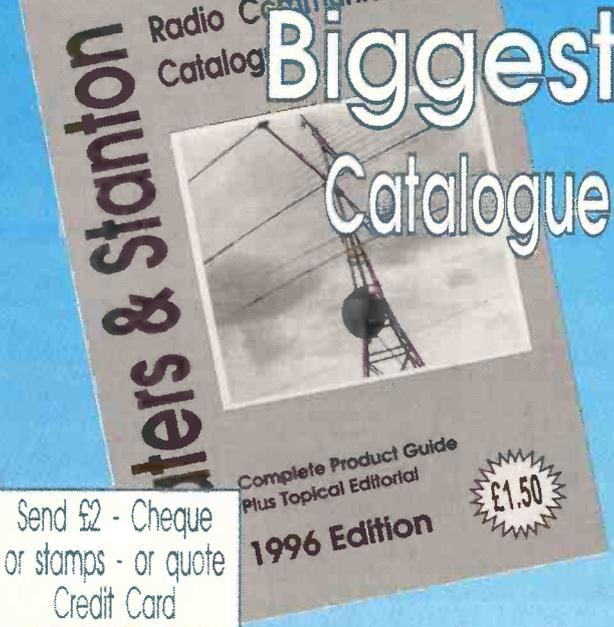
We Supply This to the Police!

£9.95

Fitted 3.5mm plug. "K" version fitted 2.5mm plug



Ham Radio's Biggest Catalogue



Send £2 - Cheque or stamps - or quote Credit Card

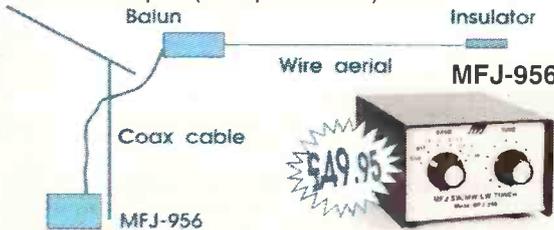
Complete Product Guide Plus Topical Editorial
1996 Edition

£1.50

Phone or write today for Europe's biggest dedicate Ham Radio catalogue. 128 pages packed with information about hundreds of products and accessories. There's also articles covering various amateur radio topics together with kits and projects.

Our famous short wave kit for all scanners.

Comprises long wire balun and MFJ-956. Attach our balun to a length of wire, feed coax from balun to MFJ-956 and the out put to your scanner. You'll be amazed at the difference. Kit price (balun plus MFJ-956) £69.50



£49.95

The Miller

Ultra Compact Short Wave Aerial
1.8MHz - 30MHz
A Most Amazing Performer

Height 2m
Weight 1.3kg.
Socket SO-239
Impedance 50 Ohms

Inc. mast bracket - 5.5cm max
 This antenna is a unique design that uses balun matching and inductive loading to achieve the most compact short wave antenna ever. It requires no power, just connect any length of 50 Ohm cable between the "Miller" and your receiver.

£69.95



Garmin GPS-45

Latitude/Longitude, National Grid 49ft accuracy, Forward Speed, Beam headings, Height ASL, Miles or Metres, 250 Waypoints Moving Map / Zoom, Compass Atomic Time, Route Programming, Arrival Alarm, Backlit switch Satellite Display, Signal Strengths, Uses 4 x AA cells Ext 12V DC socket, Built-in antenna, BNC for remote antenna 156 x 51 x 31mm.

£289



YAESU FRG-100



- FRG-100 12V DC £499.95
- KP-100 keypad £49.95
- FM Unit £33.95
- PA-100 AC adaptor £44.95
- YF-110C 600Hz filter £95.00
- YF-110CN 250Hz filter £106.00

Windows Software

Complete logging, packet and rig operation for Yaesu. Also includes PC interface ready wired for PC and Yaesu rig.

£99.95

"Scanning Secrets"

A "Best Seller" Almost 300 Pages

£16.95



The book that lets you into the secrets of successful monitoring. It is a "Best Seller" and one that should be on everybody's bookshelf.

- 1996 World Radio & TV Handbook £17.95
- 1996 Passport to World Band Radio £14.95
- Packet Radio Beginner £1.95
- Packet Radio Made easy £2.95
- Easy Up Antennas £2.95

Add £2 postage for books

Low Receivers



- HF-150 30kHz-30MHz £419.00
- AP-150 Speaker plus filter £219.00
- HF-226 30kHz-30MHz £499.00
- HF-250 30kHz-30MHz £799.00
- WA-250 Active antenna £35.00

Roberts RC-828 Receiver



200kHz - 30MHz SSB - AM - CW Built-in tape recorder plus FM broadcast.

£219.95

Long Wire Balun



Post £1.50 **£22.95**

Kenwood R-5000



VC-20 VHF converter £213.95
 VS-1 Voice unit £45.95
 DC-K2 DC kit £13.95

£899

Why not trade up?

Give us a call for a deal on your old receiver. It may be worth more than you think when traded against a new model. We can arrange collection anywhere in the UK. Give us a call.



WATSON

Scanning Aerials 25 - 1900MHz
 A new range of scanning aerials designed to give you what others promise.



Hear The Difference
 These Antennas Available all **MAPLIN STORES**

- Tele-Gainer:** 41cm telescopic with knuckle joint BNC Maplin Ref BH82D £14.95
- Regular-Gainer:** 21cm flexible whip BNC Maplin Ref BH81C £12.95
- Super-Gainer** 40cm flexible whip BNC Maplin Ref BH83E £19.95

PRO-44 Scanner



68-88/108-174 380-512MHz FM/AM 50 Memories Maplin Ref AG98

£149.95

MFJ-306 SW Car Converter



Listen to world broadcasts on your car radio. Just connect to 12V DC, plug car antenna into box and output into car radio. Covers 19, 25, 31 and 49 metres. Includes tuning control.

£59.95

MFJ-462B Data Decoder

Just plug into audio jack of receiver and decodes and displays CW - RTTY and AMTOR. Keep in touch with all those data signals.

£169.95

MVT-7100UK



100kHz - 1300MHz Scanner Receiver
 WFM-NFM-AM-SSB Maplin Ref RU00

New Low Price!

Only when you buy Yupiteru from ourselves or any Maplin store do you get the full Yupiteru warranty card.

These scanners also available from your local Maplin Store.

MVT-7000UK

100kHz - 1300MHz Scanner Receiver

New Low Price!

WFM-NFM-AM Maplin Ref CM00

A great scanner if you don't need SSB. This model gives great performance on VHF & UHF. Phone for free brochure and details of all our accessories.



Price Match

SONY ICF-SW7600G



150kHz - 30MHz SSB & AM 76 - 108MHz FM

£199

SONY ICF-SW55



150kHz - 30MHz USB LSB AM 76 - 108MHz FM 125 memories

£299

SONY SW-100E



150kHz - 30MHz SSB AM 76 - 108MHz FM

£219

AOR-3030



30kHz - 30MHz SSB AM FM

£699

NEW AOR-5000



10kHz - 2.6GHz. AM - FM - SSB This is the most advanced scanner yet. A real dream of a machine.

£1599

SONY SW-1000 Receiver

150kHz - 30MHz SSB - AM - CW. FM Stereo. Built-in tape with timer. Battery powered

£439

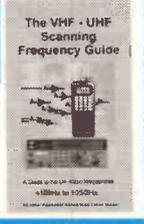
Second Hand

- DX-309 £99
- FRG-9600 £299
- HF-150 £299
- HF-225 £399
- HF-250 £599
- IC-24ET £299
- IC-2SRW £239
- ICF-2001D £159
- ICF-7600A £79
- ICF-7600 £119
- ICF-7600DA £159
- ICF-7601 £69
- ICF-7601L £79
- IC-R1 £199
- IC-R7000 £699
- IC-R72 lcom £599
- IC-W2E £299
- JPS-NRT-1 £149
- MVT-6000 £199
- MVT-8000 £279
- PRO-41 £99
- R-2000 £399
- R-2000+VHF £349
- R-5000 £699
- RF-B45 £99
- SAT-700 £199
- SW-77 Sony £309
- SW-8 Drake £499

NEW EDITION VHF-UHF SCANNING FREQUENCY GUIDE

This new edition of our guide has been completely updated. Now in flip format and extending to 105GHz! Available March

£12.95



Mail Order and Shop: 22, Main Road, Hockley, Essex. SS5 4QS Tel: (01702) 206835/204965 Fax: 205843
VISA Branch Shop: 12, North Street, Hornchurch, Essex. RM11 1QX Tel: 01708 444765 **ACCESS**
 MAIL ORDER - 24 Hour Answerphone & Fax. Retail Open 6 Days 9am - 5.30pm



MULTICOM 2000

BIGGEST DISCOUNTS BEST SERVICE



AOR

- AOR 8000 **£345.00**
- AOR 3030 **£595.00**
- AOR 3000+ **£875.00**
- AOR 3000A **£815.00**
- AOR 2700 **£239.00**

NEW FROM AOR
AR-5000 The ultimate receiver.
30kHz-2.6GHz all made in stock
Price £1699
AR-7030 Top end SW receiver.
Going to be a winner.
Price £749

DRAKE

- R8A **£1145.00**
- R8E **£995.00**
- SW8 **£595.00**

ICOM

- ICR-1 **£389.00**
- ICR-100 **£585.00**
- ICR-7100 **£1249.00**
- ICR-72 **£769.00**

RECEIVERS

JRC

- NRD-535 **£1525.00**

LOWE

- HF-250 **£785.00**
- HF-225 Europa **£625.00**
- HF-150 **£385.00**

KENWOOD

- R5000 **£925.00**

YAESU

- FRG-100 **£459**

REALISTIC

- PRO 2039 **£149.00**
- PRO 25 **£175.00**
- PRO 26 **£295.00**

SONY

- SW-77 **£349**
- SW-55 **£259**
- SW-100 **£189**
- SW-7600 **£169**

YUPITERU

- MVT-7200 **£345.00**
- MVT-8000 **£335.00**
- MVT-7100 **£285.00**
- MVT-7000 **£255.00**
- MVT-225 **£220.00**

AOR AR 900	£125
AOR AR 950	£169
AOR AR 1500EX	£225
AOR AR 3000A	£699
AOR AR 3000A +	£675
Daiwa Notch S/P	£140
Drake SW8	£525
Drake R8E	£725
ERA Microreader	£125
ICOM ICR 1	£299
ICOM ICR 100	£425
ICOM ICR 71E	£699
ICOM ICR 7000	£599

ICOM ICR 72E	£599
JRC 525	£725
JRC 535	£1055
Kenwood R 1000	£249
Kenwood R 5000	£665
Kenwood R 5000 vhf	£795
Kenwood R 2000	£385
Lowe HF 150	£325
Lowe HF 225	£399
Lowe HF 225 Europa	£455
Panasonic RB 65G	£120

12 MONTH
GUARANTEE
ON OUR USED
EQUIPMENT



WE NEED YOUR USED EQUIPMENT

SONY SW 7600	£125
SONY SW 55	£199
SONY SW 77	£275
SONY AIR 7	£160
NETSET PRO 46	£175
NETSET PRO 44	£90
REALISTIC PRO 37	£95
Datong FL 3	£110
JPS NIR 10	£199
REALISTIC PRO 2022	£145
REALISTIC PRO 2036	£259

YAESU FRG 100	£399
YAESU FRG 7700	£295
YAESU FRG 7700	£50
YAESU FRV 7700	£50
YAESU FRA 7700	£50
YAESU FRG 9600	£365
YAESU FRG 9600	£325
YAESU FRG 8800	£365

LET US SELL YOUR RADIO
EQUIPMENT ON A 0%
COMMISSION BASIS.
COLLECTION ARRANGED

ACCESSORIES

AOR

- SDU5000 **£699.00**
- CU8232 **£95**
- 8000/2700 case **£17**

HOWES

- CTU8 ATU **£29.00**
- CTU9 ATU **£39.00**
- AA2 SW active amp **£8.90**
- AA4 VHF active amp **£19.90**
- AB118 airband ant **£18.80**
- ASL5 audio filter **£29.90**
- CTU30 ATU **£39.90**

LOWE

- SP150 speaker **£210.00**
- PR150 preselector **£235.00**
- Keypad **£45.00**

WATSON

- Telegainer whip **£14.95**
- Regular gainer **£12.95**
- Super gainer **£19.95**
- Balun **£18.95**

GLOBAL

- 2000 ATU **£95.00**

ICOM

- SP3 speaker **£69.00**
- SP7 **£35.00**
- SP12 speaker **£POA**

SCANMASTER

- Mobile mount **£9.95**
- Desk Stand **£19.95**
- GW2 Pre-amp **£59.00**
- GW55 Pre-amp **£69.00**

TIMEWAVE

- DSP599ZX **£345.00**
- DSP9 FILTER **£185.00**
- DSP9+V3E **£225.00**
- DSP59 + **£275.00**

CABLE

- RG58 **£0.50 per metre**
- 8DFB **£1.95 per metre**

AERIALS

- Skyscan 1300 **£45.00**

- Skyscan Desk **£45.00**

- Skyscan Mobile **£19.95**

- Scanmaster base Base **£38.00**

- Scanmaster double Discone **£59.00**

- Scanmaster SBA100 **£59.00**

- Diamond D707 active antenna **£129.00**

- G5RV SW Dipole **£28.00**

- G5RV SW 1/2 Dipole **£24.00**

- SWA30 SW+Bauln **£40.00**

- Miller Compact **£69.00**

MULTICOMM RANGE

- BSS1300 Base Station Nest of Dipoles **£65.00**

- DSS1300 Desk top Nest of Dipoles **£41.00**

- MSS1300 Mobile Nest of Dipoles **£41.00**

BOOKS

We have 100's of books available. Here is just a small example.

- 4th UK Scan Directory.....**£17.00**
- Scanning Secrets.....**£16.50**
- Airwaves 95.....**£7.50**
- Flight Routings 1995.....**£6.25**
- Airband Jargon Book.....**£6.95**
- Airband Radio Handbook.....**£8.50**
- Passport to World
- Band Radio.....**£14.00**
- World Radio & TV Handbook.....**£15.50**

Radio House,
37 Cunningham Way,
Eaton Socon,
St. Neots, Huntingdon,
Cams. PE19 3NJ

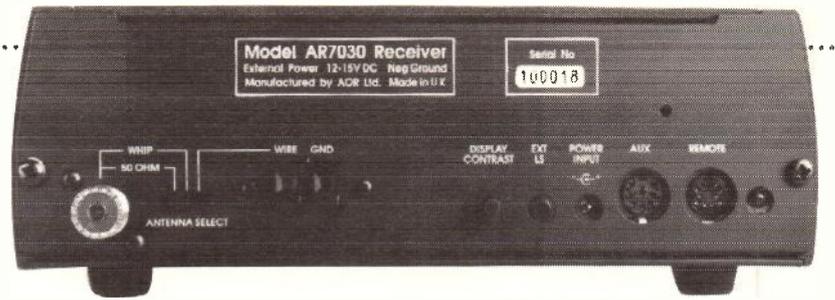


PHONE: 01480 406770

Fax: 01480 406770 E mail: 100302,2651@compuserve.com

ES&OE

Continued from page 22



'Recall', 'Exclude', 'Store' and 'Scan'.

'Recall' is obvious, and it's neatly positioned alongside the memory channel selector so I could review the frequency in each memory and recall the information into the receiver by a quick prod. 'Exclude' allows one to omit any channel or channels from the scanning process, whilst 'Store' is also obvious in that it transfers the current receiver settings and frequency into a designated memory location. Before hitting the 'Scan' button I thought I had better explore what I could actually do with the memories.... 'Ere we go, 'ere we go, 'ere we go....

Memories

Each of the 100 memories contains information on frequency, mode, i.f. bandwidth, passband shift setting, squelch settings for a.m., n.b.f.m. and s.s.b. modes, b.f.o. settings for c.w. and data modes, and scan include/exclude. When looking at this lot I realised that I had in effect 100 different receivers available so I programmed memory 20 to set it up as a 20 metre amateur band c.w. receiver; 40 as a 40 metre s.s.b. receiver set to the middle of the band and 80 as - obviously - an 80 metre s.s.b. receiver with a wider filter bandwidth than that on 40 or 20.

By simply setting the memory selector to '80' and pressing 'Recall' I had a dedicated 80 metre receiver at my fingertips because once the memory contents have been recalled into the main receiver, I could use the receiver as fully tuneable, with all facilities available.

I have always had an interest in aeronautical h.f. s.s.b., so I programmed a bank of memories with all the trans-oceanic u.s.b. channels and tried out the scanning.

Now to a really clever bit.....

Pressing the 'Scan' button brought up a further menu which allowed me to set the squelch level on each memory channel independently and this removes one of the greatest snags in h.f. scanning. Whatever the noise level on the frequency in the memory, I could adjust the squelch to close it out - and change it at any time as conditions demanded. Having set the individual squelch levels on a bank of channels I could then include or exclude any channel from the scan process, but more importantly in my opinion I could have the receiver stop on any frequency where a signal is present - or, simply listen and move on. As I wrote this review I monitored a group of h.f. s.s.b. frequencies by scanning them, but chose to let the scan progress without stopping so that I could listen to all frequencies continuously. There goes Concorde.....

But there is more.....

A further layer (the sixth veil?) of the memory menu allowed me to set up the time between scan steps from 0.5 to 30 seconds in 0.5s steps and other more detailed functions, but by this time I had consumed another glass or two of Sauvignon and thought it time to withdraw gracefully and talk more generally about the AR7030.

Remote Control

As if all this wasn't enough, the AR7030 is supplied with an infra-red remote controller included in the price. Without going into great detail, it is true to say that anything I could do from the front panel I could do from the remote controller - indeed there is a further function available; that of setting the tuning step size.

To enter frequency from the remote control you simply press 'xxxx.x kHz' and there you are. To tune around you have up/down buttons which are initially set to move the frequency in 1kHz steps. However, any frequency below 50kHz keyed into the controller is automatically assumed to be a step size, so by keying in 0.01kHz the tuning steps become 10Hz. For listening to short wave broadcasts you could key in 5kHz and the receiver will then step between stations at 5kHz spacing - or key in 9kHz for medium wave listening. Simply brilliant.

I found myself using the remote controller a lot of the time, and since there are two sensors on the AR7030; one on the front panel and one at the rear (to use reflections from the wall) it didn't seem to matter where I sat to use it, and the absence of any trailing wires made it so convenient. But there is more.....

Computer Access

Along with all the usual rear panel connectors for antennas and so on is a connector for remote control by computer, and I have never seen such comprehensive control facilities. The design of the AR7030 allows direct computer access to virtually every function in the receiver, and when the 'Windows' compatible software is available I think I'll have to do another lengthy review to uncover the 'seventh veil'. I certainly couldn't attempt to describe it all in this article.

The whole concept of this receiver is one of utter flexibility which will allow development of an exciting range of accessory units to be developed, and I hear talk of v.h.f. and u.h.f. converters as a start in this direction. Another connector on the rear panel carries a receiver mute line, auxiliary audio outputs labelled left and right (rather suggests

that an f.m. broadcast option may be available), isolated relay contacts for controlling an external tape recorder, a 14V d.c. feed and a 455kHz i.f. output at -20dBm.

Conclusions

The AR7030 combines professional levels of r.f. performance with compact size and portability if needed. Although complex, using the receiver is made easy by a well thought out system of menu driven software, and the design shows great flexibility for expansion with additional units such as converters and even extended software functions.

The self-aligning i.f. filter system is an exciting feature, being both clever and useful, and the memory management has been handled with great skill. I particularly liked the individual squelch setting for every memory, although as a personal preference I would like to have had the facility to automatically recall each memory as it was reviewed.

The supplied draft operating manual was a mess, and although containing all the information needed to operate the AR7030, needed a lot more work to make it acceptable to an average user - but I'm sure that this will be taken care of quickly. At the current price of **£799**, which includes all seven modes fitted, whip preamplifier fitted, mains power supply included and a remote control keypad as well, the AR7030 seems to be an absolute bargain, particularly when you consider the r.f. performance. I won't compare it price for price with other receivers because I would only embarrass their manufacturers.

I wish to extend my thanks to **AOR (UK) Ltd, 4E East Mill, Bridgefoot, Belper, Derby DE56 2UA**, for the loan of the review receiver. ■



In the last couple of years or so affordable Global Positioning System technology has become available to the general public. Expert navigator George Wheatley MRIN, G4HNJ has been looking at a couple of low-cost hand-held GPS units.

The Global Positioning System Magellan GPS 2000 Garmin GPS 45

Not that long ago a hand-held unit that could tell you your position anywhere in the world to within a few metres would have been considered science fiction. Now science fiction has become fact with the development of GPS.

GPS is an acronym for Global Positioning System. This US developed and sponsored

navigation aid attained full operational status with the successful deployment and testing of 24 Block II satellites in a constellation of semi-synchronous orbits on 17 July 1995. This number of satellites and the pattern of their orbits is necessary to maintain the full global coverage essential if such a system is to be of practical use.

The aim of this short review is to acquaint SWM readers with the bare bones of GPS and its use and to show that the system is now within the reach of a large number of readers by describing the features of two GPS receivers at the more affordable end of the price range. At this end of the market GPS is targeted primarily at the hiker, country lover, or anyone else who takes their leisure, or business, in out of the way places, and particularly for those who may have responsibility for the safety of others. In fact, anyone who has a need to know exactly where they are - from radio amateurs operating mobile or portable to fell walkers and hot air balloonists.

Each GPS satellite is constantly transmitting data which can be received by mobile land, aeronautical or

marine stations. The transmissions are in the microwave region of the radio spectrum. The ground station can resolve these signals into extremely accurate time and position information. An accurate position in three planes - latitude, longitude and height - can be resolved when four satellites are in 'view' and a position in two planes - latitude and longitude - is available even when only three satellites can be acquired.

Global Accuracy

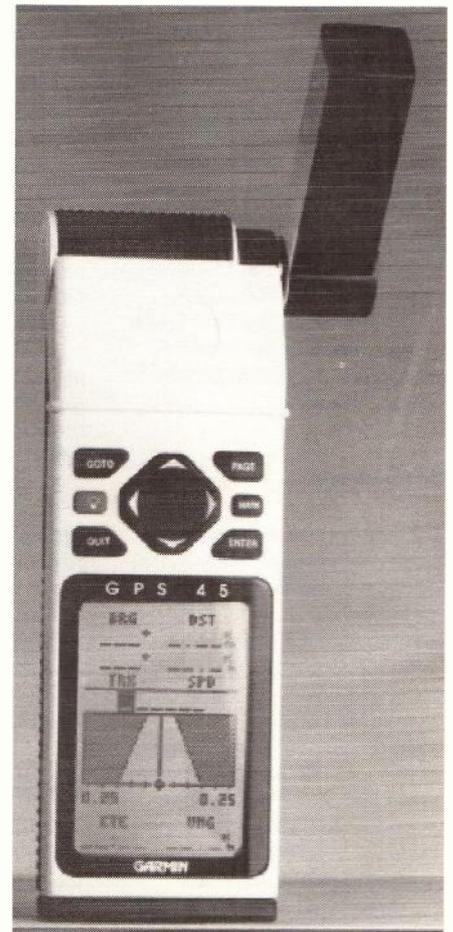
Accuracy of a few metres is possible with the system, but the US National Defense insists that the global accuracy is degraded by the introduction of a random error. This automatically reduces the accuracy from 15 metres to round about 100 metres. For the record, the accuracy can be enhanced where a separate, but linked, receiver is used to pull in a locally calculated differential GPS signal that can be applied to make the necessary corrections.

You can see that the latest calculator-size GPS receivers can give you a position accurate enough for most practical

purposes - after all, except in a real pea-souper, 100 metres is well within visual range. But before looking at the two hand-held GPS receivers let's have a brief look at the navigational aspects of their use.

A Science

Navigation is the science of finding one's current position and then moving to another



The Garmin GPS 45 display screen.

The Garmin GPS 45 showing the keyboard and the initial search screen with two satellites found.



position of one's choice in a safe manner. The methods of doing this do not essentially vary, whether the exercise is conducted at sea, in the air, or on dry land. Positions are designated by one of several methods, but here we will mention only Latitude and Longitude and Grid References. The former are related more to the marine environment and the latter to the land, although there is some overlap between them. A third method,

GPS receiver can then derive course and distance from this basic information and display it for you to read and act on.

Hardware

Now for a look at the hardware - Two GPS receivers were tried out for this review. The Magellan GPS 2000 is available in the UK for less than £200 while the more up-market Garmin GPS 45 is just under £300 and both are widely advertised in

radio and marine publications. I will describe the common points and then elaborate a little on the extra facilities offered by the more expensive.

The two units are very nearly the same size and weight. Both have commendably clear displays and credit must go the handbook writers for the clear text and diagrams together with easily understood instructions for both receivers. Both keyboards are innovative, as can be seen from the pictures and need only a short time to master their idiosyncrasies.

Magellan GPS 2000

The Magellan GPS 2000 is a no-nonsense, basic model that performed well. On first switching

on it works out exactly where it is and this can take up to 15 minutes. For this it needs to be out in the clear so that it can get a good look at as many satellites as possible. Different 'screens' can be called up. One provides position and height information while a compass pointer on another screen provides precise bearings to a predetermined destination or waypoint. Navigational information is given on yet

another screen together with your deviation from the chosen course and the corrections needed to get you back on track. A 'plotter' is also provided and this can be loaded with information relating to your route, drawing your exact course relative to the stored waypoints. You can store your position and also check your last stored position.

Garmin GPS 45

The Garmin GPS 45 does all that the Magellan does, but with increased performance and some additional features that add to the flexibility and make it easier to operate.

However, for about £100 more than the Magellan the Garmin GPS 45 offers some enhanced features that I would consider well worth the extra money. The prime enhancement is the ability to remove the antenna from its normal position on the side of the case - it is connected by a BNC connector - and locate it in the most favourable position for the reception of microwave



The Magellan GPS 2000 SAT STATUS screen showing the satellites that can be seen by the unit.



The Garmin GPS 45. The antenna can be removed and connected by coaxial cable to give a better 'view' of the satellites.

applicable to both environments, is compass bearing and distance from a known position.

We have already seen that GPS is capable of giving your known position. It is also capable of accepting the entry and storage of other positions. These are variously known as 'Waypoints' or 'Landmarks'. Their positions can be entered in either Latitude & Longitude or Grid Reference format. The



signals. In other words, out in the clear!

There is severe degradation of microwave signals when the antenna's view to the necessary satellites is obscured by trees, buildings or even large animals. The construction of a simple lightweight 'antenna raiser' improves reception considerably. Even raising the antenna to just above head height is worth doing.

It is not usually convenient to hold the GPS receiver itself in the optimum position to receive adequate signals. In the case of

The Magellan GPS 2000 is a neat and compact unit. The keyboard is below the display, here showing the POSITION screen.



Communications Centre (Photo Acoustics Ltd.)

TWO-WAY RADIO ● AMATEUR RADIO ● AUDIO VISUAL ● SALES & SERVICE

58 High Street, Newport Pagnell, Bucks MK16 8AQ. Tel: (01908) 610625 FAX: (01908) 216373

AOR AR5000 -

"The new horizon"

New wide band all mode base receiver



New high performance base / mobile wide band receiver offering great sensitivity and **excellent strong signal handling**. The AR5000 is housed in a newly designed **solid metal cabinet** and provides a very wide receive frequency coverage from **10kHz to 260MHz, all mode reception** FM, AM, USB, LSB & CW and **MANY** microprocessor facilities aimed toward professional monitoring and the dedicated listener.

£1749 inc VAT

The **AR8000 UK** receiver is without doubt the most full featured wide band hand held receiver on the market today. Frequency coverage is from 500 kHz - 1900 MHz without gaps. All mode reception AM, NFM, WFM, USB, LSB & CW... twin frequency display, alphanumeric text comments, optional computer control



etc..
AR8000 UK
£410

The **AR2700** receiver is the very latest high tech hand held receiver from AOR.

Frequency coverage is 500 kHz - 1300 MHz with receive modes of NFM, WFM & AM. Optional voice record chip available.
AR2700 UK £269

ANC4 Antenna Noise Canceller

Noise is the great spoiler for short wave listeners. With the ANC4, you can cancel out locally generated noise quite significantly. Particularly good with power line noise and computer hash. Just **£189.00** + £10.00 Carr



PRO-25

100 Channel
Portable Scanner
68-88MHz
108-174MHz
406-512MHz
806-956MHz

£179.95



PRO-62

200 Channel
Portable Scanner
68-88MHz
118-174MHz
380-512MHz
806-960MHz

£219.00



The UK Scanning Directory
New 4th Edition



4th Edition Scanning Directory
£17.50
FREE P&P

PRO-26

200 Channel
Scanner with
continuous
25MHz to 1.3GHz
Coverage

£299.00

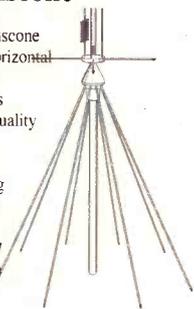


DX V1300 Discone

The Sky Scan V1300 discone has both vertical and horizontal elements for maximum reception. The V1300 is constructed from best quality stainless steel and aluminium and comes complete with mounting pole. Designed and built for use with scanners.

£49.95

+ £3.00 p&p



Magmount MKII

For improved performance, wide band reception. 25 to 1300MHz. Comes complete with protective rubber base, 4m RG.58 coax cable and BNC connector. Built and designed for use with scanners

£24.95

+ £3.00 p&p



MAGELLAN GPS 2000

- Tracks up to 12 satellites
- 15 metre accuracy
- 17 hour battery life
- Lat Long or Nat Grid

only £199



Secondhand Equipment

- Icom IC-R71E general coverage receiver 30kHz - 30MHz. This unit is in superb condition c/w box, manual and mains lead and a bargain **£575**
- AOR-3030 general coverage receiver 30kHz - 30MHz, all mode receiver, this unit is also fitted with the optional VHF converter for Airband, the receiver is in excellent condition and complete with box and manual **£575**
- Low HF-225 general coverage receiver 30kHz - 30MHz, this receiver is all mode having been fitted with the optional FM/AMS board, the radio is sold complete with box, manual and power supply **£375**
- KX-3 Sky coupler shortwave antenna tuner. Superb ATU **£59**
- AOR-1500EX handheld scanner covering 500kHz - 1300MHz, all modes, complete with box, manual, nicad pack and charger **£229**
- Yupiteru MVT-7200 handheld scanning receiver covering 500kHz - 1650MHz, all modes, complete and as NEW **£289**
- Yupiteru MVT-7000 handheld scanning receiver covering 100kHz - 1300MHz Am, FM, WFM, complete with manual, nicads, aerial and charger **£229**

AUTHORISED AGENTS FOR KENWOOD, ICOM, YAESU & ALINCO. FULL SERVICE FACILITIES AVAILABLE

SPEND UP TO £1,200 INSTANTLY WITH A PHOTO ACOUSTICS LTD. CREDIT CHARGE CARD

PART EXCHANGE WELCOME, ASK FOR KERRY G6IZF

RETAIL SHOWROOM OPEN MONDAY - FRIDAY 9.30 - 5.30, Saturday 9.30 - 4.30

Goods normally despatched within 24 hours. Please allow 7 banking days for cheque clearance. Prices correct at time of going to press - E&OE



the Magellan GPS 2000 the tilt of the case is fairly critical and for continuous use, holding it is tiring on the arm, wrist and hand.

Another very useful enhancement featured on the Garmin is the ability to connect the GPS 45 to a PC, using the PCX-5 software, so that waypoints, positions, courses and speeds can be transferred from one to another. This is far simpler than one might expect and all the necessary hardware and software is available as an optional extra.

The combination of GPS and a laptop computer with suitable software is already available for in-vehicle use. When used with suitable voice recognition software the driver is offered a complete and inherently safe vehicle navigation package.

Unlike the Magellan, the GPS 45 has a 'live map' display, allowing you to watch your journey unfold. You can also zoom in and out at will.

Battery Life

As with any physically small piece of electronic equipment there is a price to pay in battery life. There are battery saving facilities built-in to both units and battery life is claimed to be 15 hours for the GPS 45 and 17 hours for the GPS 2000. It should be self-evident that fresh AA cells, by a reputable manufacturer, should be carried at all times the unit is being used seriously. This limitation must be clearly understood and a responsible attitude taken if you value your safety. Change the batteries if there is any doubt as to how much life is left in them. I found that I could comfortably change the batteries without losing essential data.

As soon as I was out of short trousers I became a belt and braces exponent. While the GPS is a wonderful system, some additional equipment is needed for most uses. For example a compass and map or chart would be the minimum necessary for safety and flexibility. Good planning of your journey and the pre-input of waypoints or landmarks is also essential.

A minor disadvantage of both the Magellan and the Garmin is the intentional built-in

inaccuracy of the direction and speed information due to the inherent random errors of the system. With care this need not be serious and is seldom critical. Although directional information is lost when the operator is stationary, this limitation does not apply when moving at speed and the system is accurate enough to calibrate your car's speedometer.

Concern

There are two matters which may cause some concern to prospective users. - national navigation authorities are becoming concerned at the possibility of interference causing a problem, although this does not appear to be a serious matter at the moment. Secondly, as the whole GPS system is defence orientated, the possibility of jamming in times of major international unrest cannot be entirely discounted.

Cost-effective

However, the overriding impression is that GPS is an excellent navigation aid and, with the advent of low-cost receivers such as the Magellan and Garmin reviewed here, the most cost-effective global positioning system available to the general public. Its intelligent use will enhance the pleasure obtained from almost any outdoor leisure pursuit. If I were asked which of the two units I would recommend, the Garmin GPS 45 would be favourite, but if there was a financial restraint the Magellan GPS 2000 would still be a very worth-while buy.

I would like to thank Waters & Stanton Electronics, 22 Main Road, Hockley, Essex SS5 4QS. Tel: (01702) 206835/204965 for the loan of both the Magellan GPS 2000 and the Garmin GPS45. ■

Specifications

Magellan GPS 2000

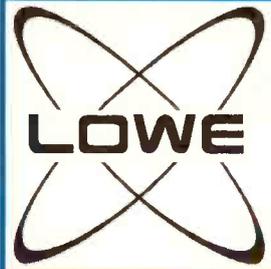
Receiver:	AllView 12 Technology, tracks up to 12 satellites
Co-ordinates:	Latitude & Longitude; OSGB
Acquisition times:	Warm: 35 seconds Cold: 2.5 minutes Autofind: 15 minutes approx.
Update rate:	1 second continuous
Accuracy:	Position: 15m r.m.s. (but see review) Velocity: 0.1 knot r.m.s. steady state
Display:	46 x 36mm l.c.d. with back light
Temperature range:	Operating: -10 to +60°C Storage: -40 to +75°C
Power:	4 x 1.5V AA cells 10 - 16V d.c. external
Battery life:	17h (continuous operation)
Size:	167 x 58 x 33mm
Weight:	283g (with batteries)
Extras:	External 12V supply (£49) Carrying case (£7.95) Swivel mount (£18.95)

Garmin GPS 45

Receiver:	Differential-ready MultiTrac8
Co-ordinates:	Latitude & Longitude; OSGB
Acquisition times:	Warm: 20 seconds approx. Cold: 2 minutes approx. AutoLocate: 15 minutes approx.
Update rate:	1 second continuous
Accuracy:	Position: 15m r.m.s. (but see review) Velocity: 0.1 knot r.m.s. steady state
Display:	46 x 36mm l.c.d. with back light
Temperature range:	-15 to +70°C
Power:	4 x 1.5V AA cells 5 - 40V d.c. external
Battery life:	10h (normal); 20h (battery saver mode)
Size:	156 x 51 x 31mm
Weight:	284g
Extras:	12V cigar lighter adaptor (£23) Magnetic antenna mount (£38) PCX-5 software & cable kit (£122)

More information on GPS is available in the many books on the subject. The Internet also has many references on the subject.

WiNRADiO



Your window to the world

Tune into the action-packed world of radio communications with your PC!

What is WiNRADiO!

WiNRADiO integrates advanced radio receiver technology and the power of your PC, to create a stunning new concept in communications technology. Using the keyboard or mouse, WiNRADiO can be operated exactly like a professional radio receiver with controls and displays you would only find on high quality equipment. WiNRADiO is a 16-bit PC card which slots into your PC and uses powerful Windows software to control the receiver functions. comprehensive on-line help is always only a keystroke away.



Scanning For Fun

Try radio scanning once and you will understand why this is one of the fastest growing hobbies in the world today. In WiNRADiO we have included a rich variety of powerful scanning options, some of which can only be found on the highest-end receivers like those used by the military. WiNRADiO makes scanning easier than ever. It can easily be the most amazing and entertaining PC add-on you have ever had.

System requirements

IBM PC compatible computer with 386 processor or higher, DOS 3.3 or higher, or Windows 3.1 or higher (including Windows 95) 640K RAM (4MB recommended for Windows).
Vacant slot for 16 bit interface card
Speaker or headphones with standard 3.5mm stereo plug.

Specification

Receiver type – PLL synthesised triple conversion superheterodyne

- Frequency range – 50kHz to 1.3GHz.
- Tuning steps – 1kHz to 1MHz
- Modes – AM, FM-W, FM-N, USB, LSB
- Sensitivity – 1uV (nominal)

You might think you've seen something like this before but you haven't!

WiNRADiO will be available in two versions, the first, WiNRADiO Multimedia will be available very shortly with WiNRADiO Professional following a little later.

We expect WiNRADiO Multimedia to sell at £399 or thereabouts so this is a tremendous breakthrough in price!

Send us eight first class stamps for your demo disk and datasheet today or see WiNRADiO for the first time in the UK on the Lowe Stand at the London Amateur Radio Show at Picketts Lock.

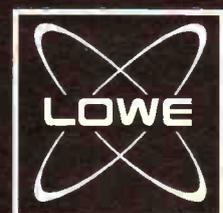
Lowe Electronics Ltd

Chesterfield Road, Matlock Derbyshire DE4 5LE UK

Tel: 01629 580800 Fax 01629 580020

E-mail info@lowe.co.uk

Website URL <http://www.lowe.co.uk/>





zczc sdpp mayday alert 50-05n 06-40w 121.5mhz epirb alert distress indicated within 11 miles of position vessels in area report on ch16vhf. mnnn

NAVTEX

How and Why

*Decode columnist Mike Richards
G4WNC explains how the vital
NAVTEX system operates.*

The UK coastal waters present a vast range of problems for the mariner. Not only is the weather highly variable, but there are a host of navigational problems to overcome. These range from the nature of the coastline itself through to the serviceability of navigational aids such as light buoys and radio-navigational systems.

A major source of information for all these hazards is the international NAVTEX system. This wonderfully simple radio communications system provides the mariner with vital information that can be tailored to suit the individual's specific requirements. The system uses a network of transmitters

operating on 518kHz sending coded messages using a kind of teletype signal called FEC (forward error correction). This system is very well known among utility fans and most of the popular decoding systems can resolve FEC, giving easy access to NAVTEX messages.

Vital Role

The NAVTEX service plays a vital role in general safety at sea and is part of the overall Global Maritime Distress and Safety System. This is an international agreement that sets out the transmission systems to be used for all distress and safety communications. As a result, it is now mandatory for all ships to carry NAVTEX receiving equipment.

UK Operation

For UK coastal waters the service is provided by BT on behalf of the Marine Safety Agency, an agency of the Department of Transport. The transmission comes from three of BT's m.f. Coast Stations - Niton, Cullercoats and Portpatrick. These three sites are linked by land-line to the central control point at Portishead Radio.

The information for broadcasting over the NAVTEX service comes from three organisations. HM Coastguard and BT Coast Stations provide the data for Distress alerts, whilst the Meteorological Office at Bracknell provide weather forecasts and gale warnings, then finally the Hydrographer

of the Navy is responsible for navigational warnings and other marine safety information. Messages for transmission are first sent to Portishead using TELEX or FAX. These messages are scanned on a v.d.u. by a radio officer and put in to a computer system for processing. At the scheduled transmission times the appropriate messages are automatically sent to the relevant NAVTEX transmitter site. These transmitters are at standby for power saving most of the time and are automatically activated by the incoming message.

Back at Portishead, the transmissions from all NAVTEX stations are monitored on a v.d.u. to make sure that the messages are transmitted

NAVTEX

Using It

NAVTEX is a utility mode used by many coastal radio stations around the world to transmit maritime messages concerning weather, navigational information, iceberg information, distress information and much more to ships and yachts fitted with decoders using a single frequency of 518kHz.

From the point of view of the short wave listener these can be decoded using computers with the appropriate software, Morse decoders, such as the ERA Microreader, or by a dedicated NAVTEX receiver, and thus enjoy receiving the up-to-date weather forecasts, navigational

information, etc.

The world-wide NAVTEX system operates on a single frequency. To achieve this successfully, without stations interfering with one another, the world is divided into areas with a number of stations located in each area. Each of these stations, within a specific area, broadcasts at a set time resulting in a geographical and time separation for the use of the frequency.

On a dedicated NAVTEX receiver, the transmitted signals are decoded and either stored in the receiver for visual display or printed-out immediately on paper, depending on the actual make of receiver which is being used.

The United Kingdom falls within NAVTEX Area One and has three stations, Niton, Cullercoats and Portpatrick. Area One extends from Iceland to Northern France taking in Scandinavia and the Netherlands. Each station is identified by a code letter, e.g. Niton 'S'. Messages are also given code letters depending on their type, e.g. navigational warning 'A'.

Automatic

A NAVTEX signal would appear on the receiver video display by first showing a phasing signal. This automatically changes the receiver from its stand-by mode to the receive mode. This will then change,

'receive' is shown on the display and the message is automatically decoded and printed onto the screen (or paper depending on receiver type). When the transmission is complete, the receiver is again automatically switched into the stand-by mode.

With the visual display type receivers, the power to the display can be switched off until the messages require to be checked and reception is automatic as long as the power to the processor in the unit is switched on. A typical NAVTEX message would read as follows:

ZCZC OA35 NAVAREA ONE
214 IRELAND, EAST COAST,
WICKLOW HEAD SOUTHWARD.

*Robert Connolly G17VX explains how
NAVTEX covers the world and how he makes
practical use of the messages he receives.*

Safety at Sea

```
zczc al611 151203 utc jan 968-t t t avurnav brest-nr 034 m 019 n . atlantic underwater cable operations by c/s
vercors from 16 jan 96 until further notice along trackline joining wc ruaromon 004-20-8w 47-39.6n ~ppratpmw
4uaepmnp 005-41.0w 47-25.6n 005-54.5w ~ruage en 006-10.7w 46-42.0n ppyaepmpw ~6-24.0n 00-04.2w 46-03.7n-009-39.8w 45-
40.0n 011-40.0wa wide berth requested. nnnn
```

accurately at the correct time. As well as the scheduled times, Portishead can activate the immediate transmission of Initial Distress and Urgency Alerts. This is so that all ships in the vicinity are aware of the emergency and can set a manual watch on the appropriate distress frequency.

The UK system forms part of the European network of stations that cover what's known as Navarea One of the world-wide navigational warning service. Navarea One is the area of coastal water bounded by 71°N, 48°27'N, 35°W and the coastline of Europe.

High Power Transmitters

The transmitters in the BT network are the W50 series that were manufactured by BT at Rugby Radio between 1980 and 1982. As you can see from the photos, the transmitters are rack-mounted units and are rated for use at up to 2kW over the frequency range 405-

525kHz. They can operate on up to six pre-set frequencies and can be completely remote controlled.

One of the remarkable features is that the transmitter can operate at full power just five seconds after a cold start! This makes it just right for the short transmission periods encountered in NAVTEX, usually less than a minute. The ability to operate on different frequencies is fully exploited as the transmitters are also used to provide BT's Marine Page service that operates on 414kHz.

For the technically minded the transmitter uses a mix of valve and solid state technology. The r.f. drive unit is fully solid state and provides a power output of 100mW into a 50Ω load. The main power amplifier uses a solid-state front-end to raise the power to 8W, which is used to drive a single 4CX5000A ceramic tetrode to the full 2kW. Despite the high power, conventional forced air cooling is used to keep the power amplifier under control.

The antenna systems used at BT's sites varies from station to station but are either underground coaxial fed mast radiators (50m high) or inclined wires. The combination of antenna system and r.f. power gives each station a range of approximately 400 nautical miles.

Schedules

As the world-wide NAVTEX system operates on a single frequency there needs to be some form of agreement to stop all the transmitters sending their messages at the same time. This is handled by pre-arranged schedules and alphabetical identifiers for each station. The standard schedules allow each station six specific transmission time-slots in any 24hr period. As an example, Cullercoats is assigned the letter G and transmits at 0048, 0448, 0848, 1248, 1648 and 2048UTC.

Although this is a very convenient scheduling system there are times when urgent

information needs to be transmitted as quickly as possible. To ensure these messages are handled effectively, all messages are clearly categorised by the originator. Those marked VITAL are broadcast immediately providing they do not interfere with an existing transmission, the next most urgent category is IMPORTANT and these are to be sent as soon as the frequency is unused. The final ROUTINE category is used for all other messages.

Message Format

Because the mariner doesn't want to read through reams of irrelevant information, messages are classified into a range of subjects and given a single alphabetic character. (The full list is shown in Table 1.) Specialist receiving equipment lets the mariner select the range of messages to be received. For example, there's little point in receiving DECCA messages if

CHARTS BA1468 AND 1787 HORSE SHOW PORTHAND LIGHTBUOY 52-56 6N 05-59 3W FOG SIGNAL PERMANENTLY DISCONTINUED. NNNN 00.

This is decoded as follows:
ZCZC = message start signal;

OA35 = Portpatrick (O) navigational warning (A) number 35;

NAVAREA ONE 214 = message 214 concerning NAVTEX Area One.

The main message text then appears in plain language.

NNNN = message end signal.

Finally the 00 is a receiver code indicating the number of characters it failed to decode - in this example, none.

World-wide

Navarea Two covers the Atlantic coast of France, Portugal and Spain. Navarea Three covers the Mediterranean region, while

Area Four covers the eastern American coast from Canada down to Puerto Rico. There are a total of eight NAVTEX areas world-wide. All messages are broadcast in English irrespective of country or area and the same format is used

Reception

For NAVTEX reception I use a dedicated receiver which is programmable world-wide. The receiver is produced by NASA Marine, Stevenage, England and uses a dual

Each station has its own area of coverage within the NAVTEX area. Coverage for the UK stations are as follows:

Cullercoats - 62°N to the Thames Estuary and from the UK coastline to the middle of the North Sea.

Portpatrick - 62°N to 53°N and 15°W to 05°E.

Niton - 55°N to 48°N and 15°W to the Straits of Dover.

Messages concerning gales, warnings and distress alerting messages are normally broadcast on receipt by the station concerned and then repeated in the scheduled broadcast. **Table 1** shows the various code letters currently in use for messages, and **Table 2** shows the Area One broadcast stations with their code letter and transmitting times. **Table 3** shows the Navarea Two broadcast stations with their code letters.

throughout the system, although some are transmitted in bi-lingual format, namely English and the language of the country of transmission.

conversion superhet receiver with a 6800 series microcomputer. A version of ALNOR error correcting software is used, with a high

definition, 6in green phosphor c.r.t. and multi-function keypad. It also has picture brightness and screen on/off controls and operates on a 12V d.c. supply.

This receiver comes supplied with an active 850mm stainless steel whip antenna. The in-built computer has a sixteen-page memory, which when full, will automatically start again on page one. This is an older version which cost around £170 from marine suppliers. NASA produce a newer version which is smaller and uses an l.c.d. display, costing just under £200. Other dedicated receivers that use paper print-outs can cost well over £300.

With the NASA receiver I can receive all the UK stations along with Rogland, Oostende, Scheveningen and Brest le Conquet in Navarea One and subject to conditions in Lisbon, Brest le Conquet and Finisterre in Area Two. This is with the active antenna mounted on the side of my bungalow

zczc aa03 312000 utc jan 96 this is mrcc et-1 (france)= phone:(33) 97 55 35 35 telex:(42) 950519
 fax:(35) 97 55 49 34 overdue f/v carreira - c/s ea 2834 - nr of registry ss 124482 (passajes) - lenght : 24 meters -
 pob : qwor q- a bridge color white - hull color red - flag spain -1 at alst contact with another f/v her position was :
 47 pi n / 006 w the 06th of january ships in vicinity are requested to have a sharp look out and report
 all informations to mrcc etel nnnn

you're not using that navigational system. However, you will note that categories A, B and D cannot be rejected as this would negate the whole purpose of an automatic warning system!

The final part of the message formatting is a two digit serial number. The main purpose of the number is to enable the processor in the NAVTEX receiver to filter out repeated messages. An example here could be a gale warning. This may well have an IMPORTANT classification and would be sent as soon after issue as possible, but it would also be repeated at the next scheduled transmission time. In this case the automated NAVTEX receiver would note the repeat but not print it. In this way the mariner can be assured that all printed messages are worth reading!

Monitoring NAVTEX

Whilst dedicated NAVTEX

about 3m above ground, or 12m above sea level. I can programme any NAVTEX Area into the receiver from the main menu and if I wish I can select any or all stations in that area, and finally decide which or all message types I want to receiver for any particular selected station.

Information Source

I do, of course, not only use it just for my radio listening and for keeping track of the serviceability of the marine radio beacons that I listen to, but also as an up-to-date information source for my marine activities. However, as far as I am concerned, it is much more use to me installed in my shack than in my yacht, which I use for day sailing during the season. I can check the information and make a note of anything important before I leave the house for my day in the yacht. The other nice thing is that the

receivers can be had for £200 upwards, most of us mortals have to use our existing stations for all monitoring. So, how can you receive NAVTEX at low cost? First of all you need a receiver that's capable of receiving s.s.b. and can be tuned to the NAVTEX frequency of 518kHz. You will then need a decoding system capable of receiving SITOR mode B or FEC. A typical system could use a decoder like the ones by Momentum or Universal, etc., or perhaps a PC and the HAMCOMM 3.0 program.

When you first tune to 518kHz you will most likely find a deadly silence. Don't worry, this will be broken when your nearest station hits its scheduled transmission time. The transmission starts with around 10 seconds of phasing, this can be described as a 'rhythmic warbling note'. This is essential because most FEC decoders can only lock onto a signal during the phasing stage.

After the phasing stage you should see the standard

information is free and one does not require a licence to receive it.

message start signal ZCZC this will be followed by a four character group. This is the vital header that identifies and categorises the message. The first character is the station identifier as shown in Table 2, next comes the subject indicator as per Table 1, the final two numbers are the message serial number. After the four character group you will find some additional header

information before the message text starts. At the end of the message the characters NNNN are sent followed by a short idle signal and close.

So, have a go at listening to the NAVTEX messages that are going out on the air day and night, every day of the week. Drop a line to the 'Decode' column if you hear anything interesting.

TABLE 1: Message Categories.

A	Navigational Warnings
B	Meteorological Warnings
C	Ice Reports
D	Search & Rescue Information
E	Meteorological Forecasts
F	Pilot Service Messages
G	DECCA Messages
H	LORAN Messages
I	OMEGA Messages
J	SATNAV messages
K	Other Electronic NAVAID Messages
L	Navigational Warnings -additional to letter A
M - U	To be defined later
V	Oil rig moves, Notice to Fishermen (US only)
W	Environmental (US only)
X	Special Services - allocation by IMO NAVTEX Panel
Y	Special Services - allocation by IMO NAVTEX Panel
Z	No messages on hand (QRU)

TABLE 2: Navarea One Transmission Schedule.

H	Hamosand	0000	0400	0800	1200	1600	2000
S	Niton	0018	0418	0818	1218	1618	2018
U	Tallinn	0030	0430	0830	1230	1630	2030
G	Cullercoats	0048	0448	0848	1248	1648	2048
F	Brest-le-Conquet	0118	0518	0918	1318	1718	2118
O	Portpatrick	0130	0530	0930	1330	1730	2130
L	Rogaland	0148	0548	0948	1348	1748	2148
T	Oostend	0248	0648	1048	1448	1848	2248
R	Reykjavik	0318	0718	1118	1518	1918	2318
J	Stockholm	0330	0730	1130	1530	1930	2330
P	Scheveningen	0348	0748	1148	1548	1948	2348
B	Bodo	0018	0418	0900	1218	1618	2100

TABLE 3: Broadcast Stations in Navarea Two.

(Atlantic coasts of France & Spain including Portugal, Azores & Canaries).

F	Brest Le Conquet	France
R	Lisbon	Portugal
A	Horta	Azores
D	Finisterre	Spain*
I	Canary Islands	Spain

*NB The Finisterre transmission is originated from La Coruna Coastal Station in Spain and is relayed to the Finisterre transmitter.



HF FAX

Receiving a high resolution FAX chart from the h.f. bands always creates a degree of excitement as the image slowly builds-up in front of you. Mike Richards gives the background to FAX reception and explains how simple it is to receive.

Before I get stuck into the details of FAX reception, it might be helpful if I give some background to the way that FAX charts and weather forecasts are put together. The first stage in any weather forecasting system is to find out the current situation. This is done by making detailed observations of the conditions from a wide range of stations around the world. In the UK, the Met. Office is based at Bracknell and has a very comprehensive monitoring system.

On land there are 30 main observing stations used to define the broad weather pattern. All these stations take readings every hour and are manned by full time Meteorologists. These readings are supplemented by a number of additional sites staffed by Met. Office people, other observers and some fully automatic stations. In all, there are around 200 surface observation sites in the UK. Although this is fine for ground observations, this needs to be supplemented by readings taken at sea. The main contributors in UK waters are the 500 vessels and rigs of the UK Voluntary Observing Fleet. This in itself forms just a part of

the global scheme involving more than 7000 ships from 49 nations, supplemented by a number of moored and drifting buoys. A formidable collection!

Another important area for measurement is conditions in the upper atmosphere. It is the radiosonde balloons (see SWM December '95) that are released by the eight Met. Office sites twice a day at noon and midnight, that provide data up to heights of 20km. These are complimented by smaller balloons that operate at up to 5km. The detailed measurements are combined with reports from aircraft to build an accurate picture of the state of the upper atmosphere. All these physical measurements are backed-up with radar for rainfall monitoring and satellite imaging.

To make use of this detailed information, it all needs to be collated at the Met. Office. This is where the Meteorological Global Telecom System comes into its own. This is a network of communication systems that delivers observations from all over the globe to the key Met. Offices. Part of this can be intercepted by the short wave listener - the SYNOP and related Radioteletype transmissions that are found on the h.f.



bands. These use a coded system of five-digit groups for detailed observation data. Many popular decoding systems now have facilities to convert this coded data into plain English, providing the s.w.l. with some more unusual decoded material.

Analysis

Analysis of data from the observing stations is usually done in two ways. The first is to plot the information on a chart and thus show pressure lines (isobars) or maybe wave heights. Forecasters can then use charts to predict what may happen over the next few hours. For longer term forecasts, a sophisticated computer model is required. This system operates by dividing the atmosphere into boxes with a grid point at the centre of each box. The current forecasting model uses 20 vertical levels plus 217 from pole to pole and 288 latitude points. Setting-up the model requires the conditions at each gridpoint to be set using the observed data mentioned earlier. As you can see, the acquisition and dissemination of weather information is a very sophisticated business.

With all this energy going

into the production of weather forecasts it's no wonder there's an attraction in receiving detailed weather charts. The number of charts available on the h.f. bands is really quite staggering. Charts can be received from all over the world and range from simple surface analysis, through detailed upper atmosphere to typhoon warnings. The trick, of course, is knowing where and when to look. Before we get into that let's just take a look at how FAX images are sent.

Transmission System

To help you understand the way FAX works, I'll describe a very basic electro-mechanical h.f. FAX machine. The process starts with a conventional paper weather chart that's wrapped around the drum of the FAX machine. In this case the drum circumference matches the paper width so that the paper wraps neatly around the drum with no overlap. For the next stage, the drum is rotated at a precise speed - most commonly 120r.p.m. Once the drum is spinning, a sensitive photo-detector is slowly moved along the length of the chart and is used to convert the black and white image of the chart into a varying electrical signal.

SOUTH MIDLANDS COMMUNICATIONS LTD

SPECIAL OFFER OF THE MONTH YAESU FRG-100 HF RECEIVER

save
£150



50kHz - 30MHz
AM, USB, LSB, CW,
FM*, 100 Memory
channels.

*Optional

only **£449**



AR-303

Light duty rotator
offset mounting.



only **£49.95** inc Carr C

AR-200AB
matching offset bearing

only **£14.95** inc Carr C

LAFAYETTE BA213 ELECTRONIC BAROMETER



NEW

LCD digital barometer displays. Rising, steady or falling
barometric pressure. Weather forecast display shows sunny,
cloudy, rainy or stormy.

Built-in weather warning with audio-visual alarm. Displays indoor
& outdoor temperature with detachable probe. Both °F or °C.
Digital calendar/clock with alarm selectable 12 or 24 hour format.
Operates from 4 x AA batteries.

only **£49.95** Carr A

COAX SWITCHES

CX401 S0239 Sockets £37.50

CX401/N 'N' Sockets

£39.95

4-way 0-500MHz 1kW CW 2.5kW PEP
(built in lightning protection)



CARR B

CX201 S0239 Sockets £18.50

CX201/N 'N' Sockets £19.95

2 way 0.1GHz 2.5W PEP 0.5dB
insertion loss.



CARR A

CS201 2 way switch S0239 1kW

£17.50

CS201GII 2 way switch 'N' 1kW PEP

£23.50

CARR A

LAFAYETTE EW882 WORLD CLOCK

LCD digital world time clock. 16 time zones for 24 cities. Built-in
calender/clock selectable 12 or 24 hour format. Displays day, date
month & year for each city & for the daily alarm. Weather data
reference for each city shows min/max temperature & number of wet
days each month. Temp °F or °C. Other features: 100 year calendar
clock, home time + 2nd city time, also summer time for each city.

only **£21.50** Carr A



NEW

All discounts are based on recommended retail prices.

CARR A = £2.50

CARR B = £5 (Handi's)

CARR C = £9.50 (Mobiles)

CARR D = £13.50 (Base Stations)

CARR E = £16.50

Showroom/Mail Order 9.30-5pm, 9-1pm Sat Tel: (01703) 251549 Service Dept 9-5 Mon-Fri Tel: (01703) 255111 Email: smc@tcp.co.uk

SMC Ltd HQ Southampton: S M House, School Close Chandlers Ford Ind Estate, Eastleigh, Hants SO5 3BY. Tel: (01703) 255111 Fax: (01703) 263507

ARE Communications: 6 Royal Parade Hanger Lane, Ealing, London W5A 1ET. Tel. 0181-997 4476 9.30am - 5.30pm Monday-Friday 9.30am - 1.00pm Saturday

Reg Ward & Co: 1 Western Parade, West Street, Axminster, Devon EX13 5NY. Tel. (01297) 34918 9.00am - 5.15pm Tues-Sat

SMC (Northern): Nowell Lane Ind. Estate, Nowell Lane Leeds. Tel. (0113) 235 0606 9.30am - 5.00pm Monday-Friday 9.00am - 1.00pm Saturday

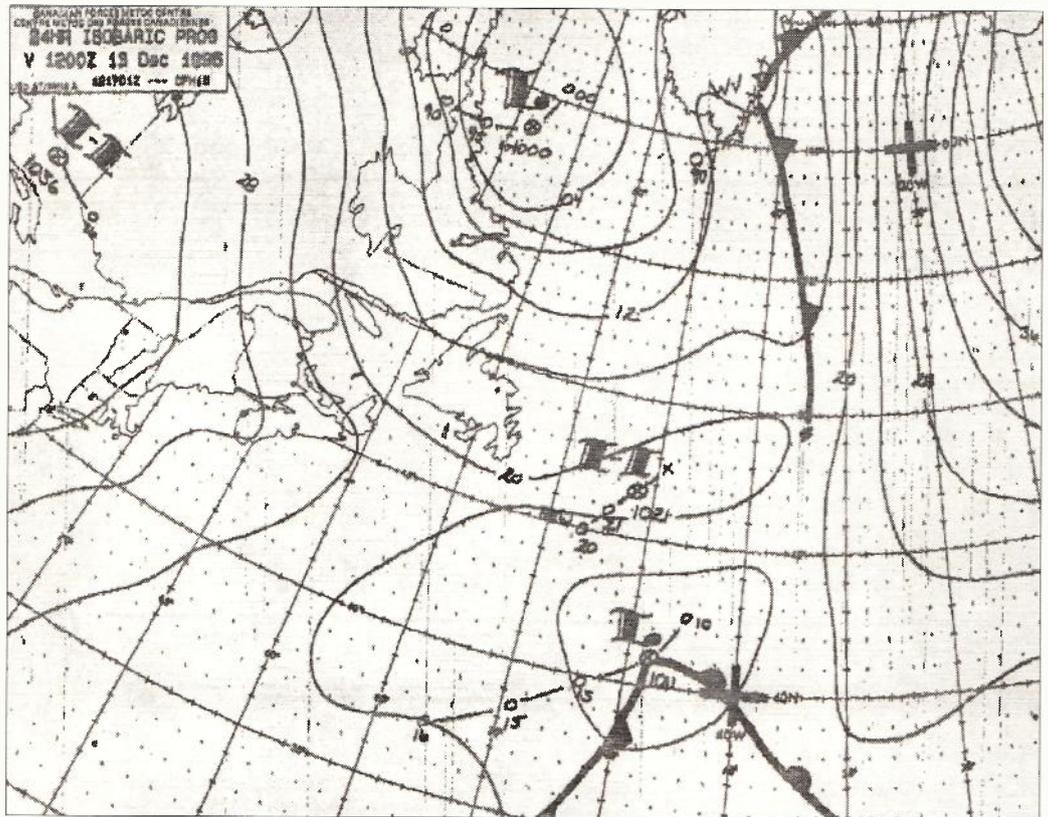
If you imagine we are sending a simple black and white chart, the output from the photo-detector will have just two output signals - one for black and another for white. Now, to send this electrical signal over the æther we just have to connect the output from the photo-detector to a frequency modulated transmitter. This is set so that the transmitter sends one frequency for white and another, 800Hz higher, for black. Yes, it really is as simple as that.

If you were to listen to a FAX signal you would hear what I would describe as a cyclic grating sound - try Bracknell Met. on 4.61MHz. The regular beat comes from the gap where the edges of the paper join around the drum whilst the grating is caused by the rapid transitions from black to white as the narrow lines of the chart pass under the sensor.

Although that completes the basics of FAX transmission, there are one or two important frills that make the system easier to use. It is clear that the commercial operator cannot afford to leave a radio officer monitoring the FAX machine all day to make sure the image is received properly aligned. The solution is to add some signalling tones to the FAX transmission to automate reception. The first part of an automatic FAX transmission is a tone that's used to set what's known as the Index of Co-operation (IOC). This sets the co-ordination between the length of the receiving paper and the speed of the writing device in the receiver. This is important to ensure that the aspect ratio of the image is maintained and circles really are circles. Next comes the phasing signal that's used both to tell the receiver the correct drum speed and to mark the edge of the chart. This part of the signal is a regular transition from black to white that lasts around 30 seconds.

Receiving Equipment

Before I get into this section I ought to point out that the FAX systems used on the h.f. bands bear no resemblance to the



modern office FAX machine - so don't expect to be able to connect your office FAX machine to the receiver. As described earlier, the technology used is really very old and uses analogue techniques to convert the chart into a form for transmission over the air. The advantage of using old technology is that receiving equipment for the short wave listener is very reasonably priced. When looking for a FAX decoder you will find that there are two basic types available. The first is aimed at the serious user and is usually self-contained with a built-in (often thermal) printer to capture the received image.

Whilst these units produce very good results, they're not really suitable for the listener who wants to tune around to see what can be heard. This is because the tune-up process tends to waste a lot of expensive paper. The second, more popular, system uses computing technology to display the FAX image on a v.d.u. or monitor. This is a much better bet for the casual listener as you can spend as long as you like tuning around without the wasted paper problems of other systems.

Most of these systems also include image manipulation utilities so you can tidy-up or zoom-in to parts of a FAX chart. Supporting this are options to store received images on disk and print them out on a standard computer printer. It is this revolution in amateur FAX reception that's made this part of the hobby so popular.

The systems available for amateur FAX reception range from self-contained units through to software packages that run on standard home computer systems. For SWM readers one of the most popular starter systems is JV FAX 7.0. This is a full featured

FAX and SSTV system that runs on a standard IBM compatible PC with a simple interface providing the link to the receiver. The interface contains some very simple circuitry to limit the level changes of the received audio signal. If you're into electronic construction you can build your own interface. Alternatively, there are a number of SWM advertisers that can supply interfaces ready-built or in kit form at reasonable cost. Many of the sample pictures accompanying this article have been received with JV FAX. ■

Where To Look

If you're tempted to try FAX reception here are the operating frequencies of a few of the more popular stations. (Frequencies in MHz.)

4.271	Hallfax (CFH)
4.4475	Rome Met. (IMB51)
6.9185	Madrid (ECA7)
8.1466	Rome Met. (IMB55)
9.3179	Keflavik USN (NRK)
9.36°	Copenhagen Met. (OXT)
10.25°	Madrid
13.5974	Rome Met. (IMB56)

AOR AR7030



*High Dynamic Range Short Wave Receiver
Designed & Built in the UK*



AOR LTD, 2-6-4 Misuji, Taito-Ku, Tokyo 111, Japan
AOR MANUFACTURING LTD, AOR (UK) LTD,
4E East Mill, Bridgefoot, Belper, Derbyshire DE56 2UA, England
Fax: 01773 880780 **Tel: 01773 880788**

- ✓ Wide frequency coverage 0-32MHz with DDS
- ✓ All mode reception; USB, LSB, CW, AM, Synchronous AM, NFM, DATA
- ✓ Advanced IP3 greater than +30dBm (+35dBm typical)
- ✓ Very high dynamic range
- ✓ TCXO frequency standard fitted

- ✓ Variable bandwidth synchronous detector with selection of USB, LSB, DSB or anything in between
- ✓ Passband tuning approx ± 5 kHz
- ✓ Re-configurable receiver, switch between several favourite setups
- ✓ Clock & timer facility
- ✓ Supplied with full function infrared hand control, PSU & manual

UK RRP £766 incl VAT

Radio Lighthouse

Radio lighthouse.... No, not a new pop radio station, but an experimental radio navigation system that was set-up to provide a reliable, accurate and relatively cheap navigational aid for anyone with a marine band v.h.f. radio, as Ian Knox explains.

During the 1980s a series of lighthouses around the coast of Britain and France were fitted with specialised radio equipment to aid the passage of vessels in our coastal waters. Unlike the non-directional maritime beacons, which radiate their signal through the 360° of the compass allowing the navigator of a vessel to home in on the Morse identity signal of the beacon with radio direction finding equipment, the aim of the new system was to provide a service that did not need specialised receiving equipment and was available to all mariners be they on the largest tanker or the smallest yacht.

There were originally five of these experimental lighthouses positioned around the coast

with two set-up to cover the straights of Dover, two to cover the western approaches to the Solent and one to cover the Firth of Clyde. Each lighthouse operated on channel 88 (162.025MHz) enabling the signals to be received on normal everyday marine band v.h.f. radios.

The system worked by radiating radio signals out from the lighthouse in a specific pattern, which gave the navigator of a vessel a bearing to the lighthouse from their present position. This bearing would then be layed off on the chart, enabling the navigator to plot the position of the vessel on a line from the lighthouse.

Historically, there had been a similar type of trial system set-up in the 1920s on the island of Inchkeith in the Firth of Forth to

the north of Edinburgh, here a spark gap transmitter was connected up to a very large lattice steel antenna, giving the

system a very narrow beam. The whole antenna was rotated by a geared motor arrangement and a Morse code signal was sent for every half point of the compass as the antenna moved.

The system utilised in the modern v.h.f. system used a frequency modulated signal, which carried an audio tone like the non-directional beacon was radiated out from a known navigational point. An electronic system was used to rotate the beam through a sophisticated antenna array which worked by blocking out the beam along a certain radial or point of the compass, thus producing a null point in this direction.

This principle is more easily understood if we think of a light in the lighthouse being permanently switched on and allowed to shine

over the 360° of the compass. If a solid object is then placed in front of the light, it will cast a shadow out over the sea in a certain direction. This direction in turn will correspond to a compass bearing to and from the lighthouse.

Rotating the object around the light will in turn cause a corresponding revolving shadow to fall across the sea out from the lighthouse, producing a dark or null radial with the light as its axis.

In practice, the system would never actually be needed to cover the 360° horizon for as with the light, it would radiate over land for part of its sweep and be of no use to the shipping it was intended for, so the antenna array was designed to cover only a designated sector radiating out over the sea

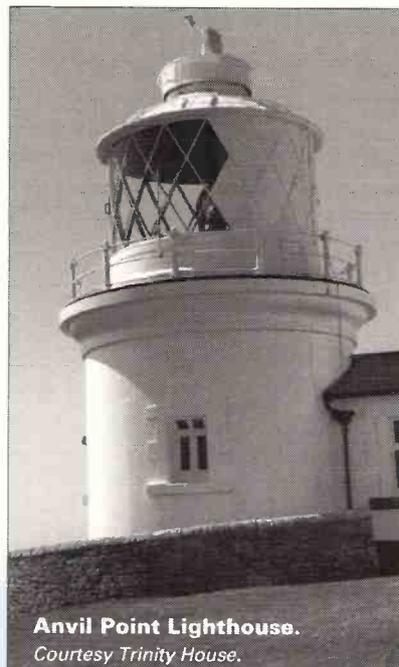


Fig. 1.

Bearings to v.h.f. radio lighthouse Scratchells Bay.

Morse Ident HD

No of beats	0	1	2	3	4	5	6	7	8	9
0	—	—	—	—	—	—	—	357	339	341
10	343	345	347	349	351	353	355	357	359	001
20	003	005	007	009	011	013	015	017	019	021
30	023	025	027	029	031	033	035	037	039	041
40	043	045	047	049	051	053	055	057	059	061
50	063	065	067	069	071	073	075	077	079	081
60	083	085	087	089	091	093	095	097	—	—

Bearings to v.h.f. radio lighthouse Anvil Point.

Morse Ident AL

No of beats	0	1	2	3	4	5	6	7	8	9
0	—	—	—	—	—	—	—	247	249	251
10	253	255	257	259	261	263	265	267	269	271
20	273	275	277	279	281	283	285	287	289	291
30	293	295	297	299	301	303	305	307	309	311
40	313	315	317	319	321	323	325	327	329	331
50	333	335	337	339	341	343	345	347	349	351

of no more than about 120°.

If the characteristics and timing of this rotation are known within that designated sector, from the time the rotation starts to the time the null radial passes through the vessel's position, then an accurate bearing can be calculated.

To make things simpler, the modulated tone was broken into 70 segments or beats each signifying a 2° increment in the bearing to the lighthouse. These bearings were then simply calculated by counting the beats from the start of the sequence to the null tone and

pause and the station ident was again transmitted in Morse.

In practice, the lighthouses were set-up in pairs with the exception of the installation on Holy Island in the Firth of Clyde, and transmitted their information alternately allowing the navigator of a vessel to count the beats from each lighthouse in turn and then work out the position of the vessel in relation to each lighthouse, thus giving an accurate fix.

The use of transmissions in the v.h.f. spectrum along with the directional qualities of the system meant that the range of

allocated v.h.f. channel, allowing the safe navigation of vessels in any given area.

The advantages of this system over the non-directional maritime beacons was that the accuracy of a bearing was much improved.

Typically $\pm 2^\circ$ over 48 Km, whereas a navigator using radio direction finding that although the range of the maritime beacons was greater, the errors brought in by the movement of the vessel and the local reflections set-up by the metal work in the vessel's rigging and structures, etc.

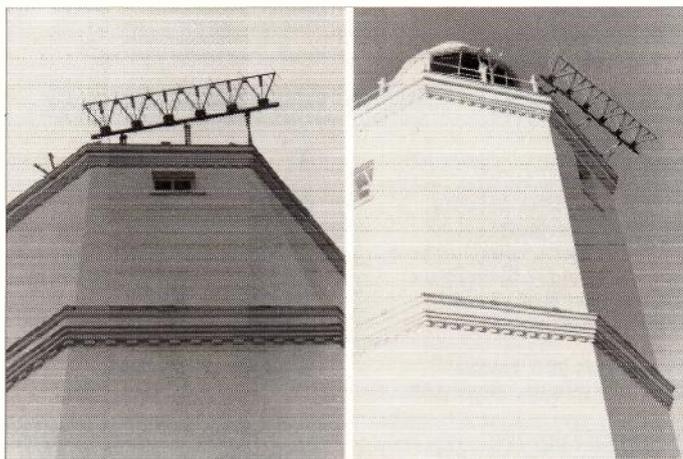
could lead to various inaccuracies in the perceived bearings that were taken. It was also not unknown for the novice to align the receiving antenna in the r.d.f. set in the wrong direction and obtain a reverse bearing some 180° out.

As technology progressed through to the 1990s more and more vessels both large and small were being equipped with radio navigation systems such as Decca, giving the navigator an instant read-out of the latitude and longitude of the vessels position which was automatically updated every two seconds.

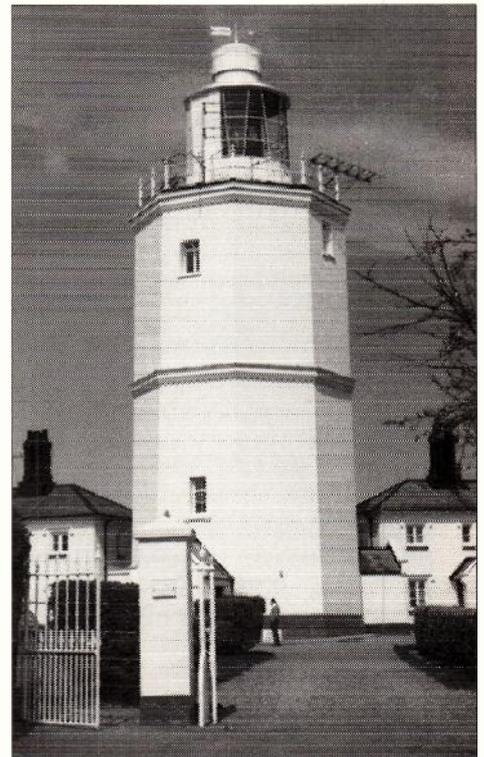
This, along with the advent

of today's latest GPS satellite navigation systems that can pinpoint the position of a vessel to within a few metres virtually anywhere in the world, sealed the fate of the experimental radio lighthouse.

In March 1994, the only two remaining transmitters of the original five set-up in 1980 were closed down, bringing to an end the era of the radio lighthouses. No, not a new pop radio station, but certainly something worth listening to when you were all at sea and lost for something to do, or more to the point, when you were all at sea and just plain lost!



North Foreland Lighthouse v.h.f. antenna.
Courtesy of Trinity House.



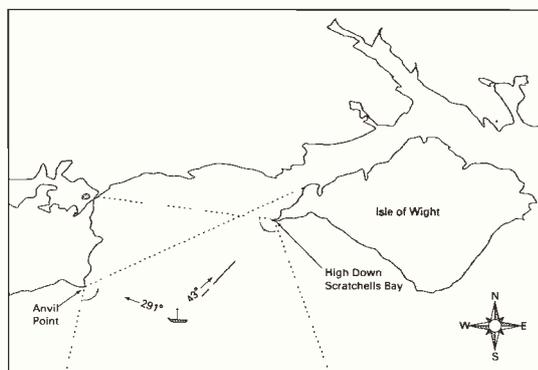
North Foreland Lighthouse.
Courtesy of Trinity House.

reading of a pre-printed table, see Fig. 1.

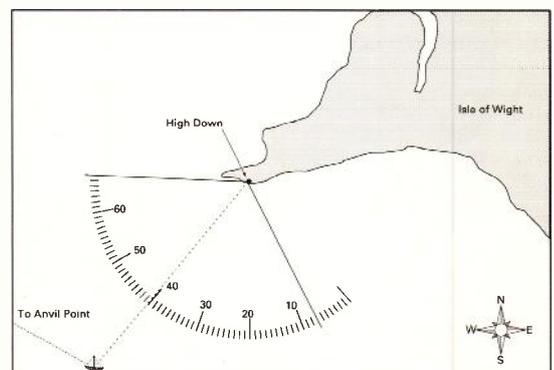
The sequence of events would be for the station to transmit its ident in Morse. There would then be a brief pause and the series of 70 beats would then commence with each 10th beat used as a marker, which was indicated by a change in the audio tone. This change in tone provided a reference point at regular intervals to help avoid miscounting the transmitted beat signals.

As the null radial approached the vessel, the variation in the radial's tone decreased until the null tone passed through the vessel's position. Once passed through this position, the tone then increased in variation until the 70th beat was reached, whereafter, there was another slight

the installations was relatively short. Virtually limited to line of sight and provided navigational coverage for a small localised area only. This meant further installations could be set-up around the coast at regular intervals, which could pinpoint specific hazards to navigation or aid tricky entrances to harbours using the same



The ship would hear the null on the 40th beat from High Down and on the 29th beat from Anvil Point. This would enable the navigator to pinpoint his ship's position.



The New AOR AR-7030

NEW PRODUCT



Probably the best engineered receiver in the world. Now available from the end of January, including a full FIVE YEAR WARRANTY, only available from MARTIN LYNCH.

RRP: £799. Five year warranty: £84, Total: £883. Deposit £83. 12 payments of only £66.66. ZERO APR.

The New AOR AR-5000

NEW PRODUCT



For those who take the entire radio spectrum very seriously. The AR-5000 covers 10kHz through to a staggering 2600MHz! All mode base receiver, setting new standards in all band performance.

RRP: £1749. Five year warranty: £114, Total £1863. Deposit £363.00. 12 payments of only £125.00 ZERO APR



SpotLight on Staff

Chris Taylor GOWTZ (ex-G1FMH)

This months feature is on Chris Taylor, Sales Manager. Chris has been with me almost four years and is responsible for costing all the trade-in's, looking after the rest of the sales team and anything else I can sling at him. When he joined, he had

long thick flowing hair down to his navel, but such is the pressure to ensure customers always get the best deal on new and used equipment, the top of his head at least, has suffered. Probably where he keeps smacking his forehead when saying "you want to pay HOW MUCH?!"

AR-8000 UK



The best scanner on the market. Don't argue. My scanner man Graeme said so. To find out why, give him a call. Even if he does spell his name rather strangely.
RRP: £410. ML PRICE: £349. Super low finance

Lowe HF-150



We sell as many to commercial users as we do to enthusiasts. The best built, best performing receiver under £500.

RRP: £419. Deposit £59, 12 payments of only £30, ZERO APR. why not add a keypad for fast frequency access? only £44.95.

AOR SDU 5000



A spectrum display unit designed to work with the AR-3000A+, locating "short burst transmissions" has never been so easy. Displaying +/- 5MHz off the centre frequency. In addition you can measure signal strength as well.

RRP: £799. Deposit £99, twelve payments of only £58.33. ZERO APR.

Yaesu FRG-100



Retailing at £599, the new receiver from Yaesu takes some beating. At £499, its an even better buy!
RRP: £599. ML price £499. Super low cost finance available from only £36.66 p/m!

Drake R-8A



One of our best selling shortwave receivers and one that you do not have to spend hundreds of pounds on additional filters. It has them all fitted!
RRP £1295. Deposit £296, 12 payments of £83.25, ZERO APR.

Global AT-2000



A superbly built SWL antenna tuner for improved receive performance. Built in Q selector. **£95.**

ERA Microreader



Decodes RTTY, Amtor, Sitor, FEC & CW, built in display and Morse tutor.
All this for only £189.

MVT-7200



The alternative to the AR-8000. If you liked the old MVT-7100, this new enhanced version should fit the bill.

RRP: £449. ML PRICE: £399 and FREE FINANCE! deposit £99, 12 payments of only £25, ZERO APR.

Lowe PR-150



Matching the HF-150, a preselector can greatly enhance reception of weaker signals, that would otherwise be lost in the noise caused by stronger signals. They really do work. Suitable for most other receiver. Ask for details.

NEW LOW PRICE: £199.

Bearcat 220XLT



The easiest to use scanner available. The best audio too. Covers all the important bits including Air band, Cellular, police, Fire, plus much more. 200 channels, 66-956MHz, (with gaps). Available at a very special price.

RRP: £229. ML Price £195.

Opto Electronics Scout



The most innovative product for scanners of 1995? Connect this little frequency counter up to your AR-8000 and see it make the scanner

jump onto a frequency that its literally just "sniffed" out of the air! Termed "Reaction Tune", it has many uses both for the hobbist and commercial user.

RRP: £449. ML Price: £369 Super low cost finance available from only £27.50 p/m!

Noise reduction?



Suffering from power line noise? Got a noisy street lamp or thermostat clicking away? Slip in line the ANC-4 and see it disappear. If not send it back and get a refund!

RRP £195 incl. p&p.

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

AOR AR-2700



A great starter into the world of scanning. 500kHz-1300MHz, NBFM, WBFM & AM, no gaps, supplied with nicads & charger - ready to go!

RRP: £269. Deposit £69. Six payments of only £33.33. ZERO APR.

Lowe HF-250



Beautifully built and obvious choice for the "premium grade" receiver user.

RRP £799. Deposit £99, 12 payments of only £58.33, ZERO APR.

Icom ICR-7100HF



The ONLY company who can offer you an ICOM UK approved HF

modification, enabling the receiver to cover 500kHz to 2GHz, with no gaps!

RRP: £1549. Deposit £349, 18 payments of £72.22, ZERO APR.

Timewave & MFJ DSP Filters



**DSP 9+
DSP 59*
DSP
599zx*
MFJ-
784B**

Digital Signal Processing will enhance any receiver performance by removing one main ingredient - NOISE! If you haven't heard a DSP unit work, then call into the London Showroom for a demo. Alternatively, order by mail order and if it doesn't impress you, return it for a full refund of the purchase price. How's that for confidence?

MFJ-784B All mode Tunable DSP £229
DSP 9+ All mode DSP at only £219
DSP 59+ As above but more features £279
DSP 599zx NEW! Hyper speed processor, alpha display and more £349

Opto Electronics Cub



For those of you that do not require the reaction tune of the scout, the new CUB frequency counter is the ideal scanner companion.

In stock now at only £139.

AOR AR-3000A



Lots of different versions being offered, but make sure you are buying one sourced through the U.K. distributor. We only sell this model supplied by AOR U.K. Ask before you buy elsewhere!
RRP: £949. Deposit £149, twelve payments of only £66.66, ZERO APR. Also available the "PLUS" version. Please add £46.

Yupiteru VT-225



The only choice when it comes to serious Air Band civil/military monitoring. Offered with nicads and charger.

RRP £319. ML price: £249.

Kenwood R-5000



Still our top selling Shortwave receiver. Also the very best in "investment value".

RRP: £1059. Deposit £159, twelve payments of only £75, ZERO APR.

BayGen "Freeplay" Wind-up Radio



No this is no wind-up! Invented by an Englishman, Trevor Baylis, this new AM/FM & SW receiver needs NO BATTERIES or External power! Wind the cranking handle and sit back and enjoy up to

40 minutes of listening, without lining the pockets of your local battery provider! When its run out, simply wind the handle up again.

Exclusive to Martin Lynch
£79.95. p&p £10

Police look-alike Lapel speaker.

Suitable for most scanners on the market.
Only £11.50 incl. delivery.

Police look alike Earpiece

MyDEL P-300
As used by many government establishments throughout the world, the new MyDEL P-300 easy to wear "over the ear" earpiece is available now, including FREE P&P.
(State which scanner the P-300 is for when ordering).
ONLY £9.95 p&p FREE!



Garmin GPS-45

Due to an overwhelming demand, we've decided to stock this important device. Locate your latitude/longitude national grid to within an amazing 49ft accuracy! Lots more besides, **only £289.**

MARTIN LYNCH & Son

THE AMATEUR RADIO EXCHANGE CENTRE

0181-566 1120

OPENING HOURS **MON-SAT 9.30 - 6.00**
Late night Thursday by appointment

TEL: 0181 - 566 1120
AFTER HOURS: 0973 339 339

F AX: 0181 - 566 1207
B.B.S.: 0181 - 566 0000

Please NOTE prices & monthly payments are based on 17.5% VAT & no more price increases! E&OE. £10 p&p on all major items.

ALL ABOUT THE NEW MARTIN LYNCH INTERACTIVE "FAXBAK" SERVICE.....

Introduced in December 1995, this new service is a first for Shortwave Radio. Unlike other ordinary Fax Back services offered in the past, the system in operation at the London Showroom actually allows YOU to choose what information you require. For example, if you want to see the latest used equipment list, dial the FAXBAK number, hit key 1, then 11 and a complete listing will be sent. For a brochure on new items, key 2 then the MODEL NUMBER required, (i.e., for details on the AOR AR-7030, key "7030"), and so on. You can also retrieve our latest newsletter, (key 5 then "5" again), new Equipment prices key 3 and so on. Its a first once again, from MARTIN LYNCH!



Try it today. Dial 0181-566 0007

AEA Acars/UG

Add ACARS (Aircraft communications addressing & reporting system) to your existing decoding software for just £49.00. You can now make full use of your VHF scanner (131.725MHz) for decoding. **The full ACARS AEA version is also available at £89.95**

AEA FAX 111

Why wait for the weather reports?
AEA FAX 111 is a package containing a small demodulator & DOS computer software that lets you receive grey scale HF weather FAX images, (which you can later colour). It also decodes CW, RTTY & NavTex. All you need is an SSB receiver and an IBM compatible PC.

Look at these features:

- 256 WeFax colouring capability
- Receives WeFax in 16 shades of grey
- Receives WeFax, NavTex, RTTY & Morse Code
- Includes a FAX database
- On screen tuning
- Unattended Auto fax receive
- Slide show mode
- Plus lots more! **New low price: £119.95.**

Datong Active antennas

AD-370/270 The pair of Active Aerials were originally designed for the Royal Navy several years ago and to date, no other manufacturer has been able to offer such performance from a compact design.



If you are stuck for space and need a good high performance SHORTWAVE ANTENNA then order your today!
Datong AD-270 (internal) £59.95 AD-370 (external) £79.95 p&p £10.

Headphones

We now stock a superb range of headphones, specifically designed for communications use. By using "Hi-Fi" 'phones, you allow a wider frequency range to enter your ears which result in fatiguing noise that is in addition to the monitored signals. By using correctly adjusted communications headphones you're listening to a much narrower bandwidth - tailored correctly.

Yaesu YH-77ST Lightweight 'phones £56.00
Kenwood HS-6 Lightweight 'phones £35.95
Kenwood HS-5 The best Deluxe 'phones £52.95



Internet Sites for Radio

This month Kevin Nice G7TZC provides a list of radio related internet sites

If you have any favourites that you wish to tell your fellow readers about then please let me know. You can send me any addresses or site references at the Editorial Offices via E-mail to Kevin@pwpub.demon.co.uk

World Wide Web (URLS)

- <http://bjr.aci.nyu.edu/ailinfo/scanning.html>
- <http://dice.dac.nyu.edu/Homepages/paul/al.html>
- http://hypatia.gsfc.nasa.gov/sarex_mainpage.html
- <http://lre.uncceds.edu/radio/>
- <http://kzsu.stanford.edu/other-radio.html>
- <http://maegwy-mac2.gsfc.nasa.gov/garc/wa3nan-home-page.html>
- <http://p300.cpl.uiuc.edu/~tpeckish/ar8000.html>
- <http://ripco.com:8080/~glr/glr.html>
- <http://s/rine.cyber.ad.jp/~jwth/hamradio.html>
- <http://usis.com/~odium/>
- <http://ux1.cso.uiuc.edu/~tomairr-freqs.html>
- <http://w3eax.umd.edu/w3eax.html>
- <http://w6yx-stanford.edu/w6yx.html>
- <http://www.access.digex.net/~cps/numbers.html>
- <http://www.acs.ncsu.edu/HamRadio>
- <http://www.acs.oakland.edu/barc/ham-more/ham-more.html>
- <http://www.adfa.os.au/DODI495.html>
- <http://www.analysys.co.uk/commslib.html>
- <http://www.cc.columbia.edu/~tjst/cuaro/www-sites.html>
- <http://www.comet.com/~rwilkins/>
- <http://www.cs.mnsu.edu/~thharrel/>
- <http://www.demon.co.uk/aviation>
- <http://www.fcc.gov>
- <http://www.law.indiana.edu/fc/fc/fc.html>
- http://www.leonardo.net.berni/wun/wun_str.html
- <http://www.mcc.ac.uk/John/SatTrack.html>
- <http://www.mcc.ac.uk/Other/Pages/AmateurRadio.html>
- <http://www.mit.edu:8001/activities/wmbr/otherstations.html>
- <http://www.okc.com/freq-out>
- <http://www.qrz.com/callbook.html>
- <http://www.rpi.edu/dept/union/w2sz/www>
- <http://www2.ncsu.edu/unity/users/jjwprice/index.html>

FTP (URLS)

- <ftp://ftp.cdrom.com/pub/hamradio/>
- <ftp://oak.oakland.edu/pub/hamradio>
- <ftp://ham.eetech.mcgill.ca/pub/ham-radio>
- <ftp://bubba.business.uwo.ca/moods>
- <ftp://garfield.catt.ncsu.edu/pub/hamradio>
- <ftp://ftp.sunet.se/pub/radio>
- <ftp://ucsd.edu/mailarchives/info-hams>
- <ftp://mgate.arl.org/ARRLFTPsite>
- <ftp://ftp.cs.buffalo.edu/pub/ham-radio>
- <ftp://ucsd.edu/hamradio>
- <ftp://unbc.edu/ampr>
- <ftp://tandem.com/hamradio>
- <ftp://mic.funet.fi/pub/ham-and/pub/dx>
- <ftp://ftp.demon.co.uk/pub/ham/mac>

- Railroad Scanning
- FAQs, Freqs, Moods
- Sarex Info
- Shortwave/Radio Catalog (lots of links)
- Links to non-commercial broadcasters
- Goddard ARC
- Glen Roberts Full Disclosure
- Nice Amateur page, USA, Canada, Japan
- Scanner info, hacking, etc.
- Railroad Freqs
- University of Maryland ARC
- Stanford ARC
- HF numbers station loggings
- North Carolina State University ARC
- Australia Defence Department
- Many links to comms & telecomms sites
- Lot of Links to ARC pages
- San Francisco Bay Area Ham Club, the cAve group
- Scanner info

- FCC Web Server
- Federal Communications Law Journal
- World Utility Net Web
- Satellite Tracking

- Radio sins on internet
- frequency database
- Amateur Callsign database

- Info Hams Digest archives

MAC area

- <ftp://grivel.une.edu.au/ham-radio>
- <ftp://rtfm.mit.edu/pub/usenet/news.answers/ham-radio>
- <ftp://ftp.qrz.com/qrz>
- <ftp://archive.afft.af.mil/pub/pace/amateur.rtf>
- <ftp://ftp.crl.com/users/ro/thealey/www>
- <ftp://scitsc.wlv.ac.uk/pub/hamradio>
- <ftp://ftp.iea.com/pub/borg/hdn>
- <ftp://wb3ffv1.secd.csc.com/ham>

E-Mail servers (URLS)

- mail to: ftomail@exchange.th.fli.us
- mail to: qsl-info@augs3.augsburg.edu
- mail to: callbook@n8emr.cmhnet.org
- mail to: wi-scan-q@society.com
- mail to: mail-server@rtfm.mit.edu
- mail to: rcconslfileserv@telelrama.lm.com
- mail to: wun@grove.net

Gopher (URLS)

- <gopher://gopher.switch.ch/11/misc/faq/faq-dir-FAQs>
- <gopher://hamster.business.uwo.ca/129.100.89.100/>
- <gopher://gopher.cic.net/11/e-serials/general/radio>
- <gopher://scitsc.wlv.ac.uk/11/pub/hamradio>
- <gopher://yfm.ysu.edu/11/public/signs/ham>
- <gopher://gopher.tcc.gov>

USENET (URLS)

- <news:alt.radio.scanner>
- <news:alt.radio.scanner.uk>
- <news:alt.cellular>
- <news:alt.radio.pirate>
- <news:rec.antiques.radio-phonos>
- <news:rec.radio.amateur.antenna>
- <news:rec.radio.amateur.equipment>
- <news:rec.radio.amateur.misc>
- <news:rec.radio.amateur.digital.misc>
- <news:rec.radio.amateur.homebrew>
- <news:rec.radio.amateur.packet>
- <news:rec.radio.amateur.policy>
- <news:rec.radio.amateur.space>
- <news:rec.radio.broadcasting>
- <news:rec.radio.scanner>
- <news:rec.radio.shortwave>
- <news:rec.radio.swap>
- <news:rec.radio.info>
- <discuss:ons>
- <news:phl.scanner>

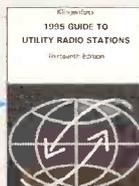
- Radio FAQs
- QRZ CD-ROM files - less callsign database
- Keplerian Elements
- Use WWW viewer for HTML docs
- UK ham radio - buffalo mirror
- Amateur Distribution Network site

- 'get INDEX.TXT'
- Callsign server no subject; callsign in body
- Callsign server
- Frequency lists put INDEX as subject
- Put help in the message body
- All Ohio scanner club.type: GET AOSCNINFO.ZIP
- World Utility Net no subject 'subscribe in body'

- Above 30 MHz (rec.radio.scanner)
- Scanning discussions for the United Kingdom (I've never seen any cellular related traffic yet)
- Pirate radio station topics
- Antique radio & phono topics
- Antenna related topics
- Radio equipment discussions (mostly Ham)
- Main newsgroup for Ham radio topics
- Digital communications (including Packet)
- Make your own radio equipment (not used any more?)
- Amateur radio rules, regulations, policy changes
- Amateur radio & space communications
- AM & FM broadcasting
- Monitoring above 30 MHz
- Monitoring below 30 MHz
- radio related sales & swap topics
- Citizens Band Radio topics
- Radio related newsgroup FAQs, reference info, (no
- Scanner topics in the Philadelphia, PA area.

BOOK BONANZA

The *SWM* Book Store needs to make room for the 1996 editions of some of its best selling books. Now is your chance to buy at a bargain price.



Guide to Utility Stations 1995 edition

Reckoned by many to be the frequency listing for utility stations this is a real bargain.

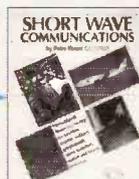
Normal price £30. **Offer price £20**



Radio Amateur Callbook. International Listings Radio Amateur Callbook. North American Listings

Indispensable for the shack, this pair of books cover amateurs world-wide. Go on, treat yourself to both volumes.

Normal price £20.95 each. **Offer price £14.00 each**
Or buy the pair for a combined price of £25.00



Short Wave Communications

This very readable book by the late Peter Rouse is the ideal introduction to the fascinating world of radio comms.

Normal price £8.95. **Offer price £4.50**



Worldwide Aeronautical Communications Frequency Directory

Covers commercial and military, h.f. and v.h.f./u.h.f. voice and digital aeronautical communications.

Normal price £19.95. **Offer price £17.95**



Understanding ACARS 2nd Edition

This book will help you understand the Aircraft Communications & Reporting System.

Normal price £9.95. **Offer price £7.95**

SWM BOOK STORE



(01202) 659930 (24 HOURS)

Internet orders: bookstore@pwpub.demon.co.uk

Postal charges
UK:

£1.00 for one book.
£2.00 for two books or more.

Overseas:

£2.00 per book surface mail.

To order:
Please use the form on page 78, telephone, Fax or E-Mail us anytime.



ANNOUNCING HOKA CODE 3 GOLD



THE MONITORING TOOL USED
BY PROFESSIONALS

SOON TO BE AVAILABLE FOR YOUR PC

Anyone used to using our professional package, Code30, will be amazed at how we managed to achieve such high performance from so little hardware. Over a year of hard development work at our Netherlands HQ has resulted in this latest decoder product. Code3 Gold uses the very best of software DSP filtering and detection technology (borrowed from our professional Code30) and the very latest surface mount miniaturised electronics for the hardware interface.

**“The performance is stunning, the compactness remarkable
and the price is simply unbelievable!”**

We are unique in the decoder market because we put all the DSP software onto the PC. This makes it much easier to fully combine the DSP filters with the software signal detectors and the system decoders. This makes on-the-fly adjustments to the shift or baudspeed completely seamless to the decoding process. All decoding is optimised for every possible combination of keying speed and bandwidth. All of this DSP filtering means your receiver does not need to have expensive narrow filters for RTTY. Simply use your wideband SSB setting for SW monitoring and AM or FM for VHF.

Systems supplied as standard

ACARS, POCSAG, DTMF, PACKET, BAUDOT, ASCII, SITOR, NAVTEX, PACTOR, FAX, SSTV

Short Wave Option

This adds nearly every decodeable system there is on shortwave. Diplomatic stations, Customs, Police, Military & Weather Stations sending 5 figure groups, Decode “Annex 10” Aircraft selcalls, Morse, Hellsreiber, ARQ-S, ARQ-E, ARQ-N, ARQ6-90/98, ARQ-E3, ARQ-SWE, ARTRAC, POL-ARQ, F7BBN Baudot, Twinplex, CCIR242 TDM, CCIR342-2 TDM, FEC-A, FEC-S, Autospec, Spread, HC-ARQ, TORG10/11, ROU-FEC, HNG-FEC, COQ8, COQ13, Piccolo Mk6, SYNOP (AAXX, BBXX with 10,000 stations).

Upgrading from a previous version of Code3?

If you have a previous version of Code3, then contact us for a very competitive upgrade path to Code3 Gold.

PRICES WILL BE:-

Code3 Gold **£295.00**, SW Option **£125.00** (if ordered together deduct £20), Post and Packing **£10.00**

All prices include VAT at 17.5%.

COMING SOON



UK SALES OFFICE:

NTech Communications, 8 The Crescent, Willingdon, East Sussex, BN20 9RN
Voice/Fax : (01323) 483966

Email: 100612.725@compuserve.com

Web Page: <http://ourworld.compuserve.com/homepages/HokaElectronics>

ASK ELECTRONICS LTD

248/250 TOTTENHAM COURT ROAD, LONDON, W1P 9AD • Tel: 0171-637 0353/0590 • Fax: 0171-637 2690



YOUR SONY SPECIALIST

All products covered by a total manufacturers guarantee

NEW FROM SONY

CRF-V21 satellite weather fax & HF receiver with printout. Last few remaining RRP £2099.....ASK price **£1250**

ICF-SW77150-29995kHz, usb/lb cw, 160 mem-ories & labelling facility, 5 event timer, world timer RRP £399.95.....ASK price **£349.95**

ICF-SW55 RRP £299.95.....ASK price **£255.00**

ICF-SW100E RRP £219.95.....ASK price **£179.95**

ICF-SW100S KIT inc active antenna RRP £299.95.....ASK price **£235.95**

ICF-SW1S KIT incl active antenna RRP £229.95.....ASK price **£179.95**

ICF-SW7600G RRP £189.95.....ASK price **£159.95**

ICF-PRO80 150kHz-223MHz RRP £349.95.....ASK price **£299.95**

ICF-PRO70 150kHz-29995kHz full HF coverage RRP £249.95.....ASK price **£179.95**

ICF-SW30 RRP £149.95.....ASK price **£120.00**

AN1 Active SW antenna RRP £74.95.....ASK price **£59.95**

ICF-SW33 RRP £149.95.....ASK price **£135.00**

ICF-SW10 RRP £54.95.....ASK price **£49.95**

AN-71 Wire antenna.....**£4.99**

AN-100 Active antenna for ICF-SW100 or ICF-SW7600G.....**£49.95**

AN-101 Active antenna for ICF-SW1E (without box).....**£49.95**

AN-102 Compact active antenna.....**£59.95**

ROBERTS

RC-818.....**£184.95**

R-817.....**£159.95**

R-808.....**£94.95**

R-617.....**£120.95**

R-621.....**£59.95**

R-101.....**£49.95**

AS ADVERTISED IN SWM

MAIL ORDERS WELCOME ON THE ABOVE PHONE NUMBERS. FAST-EFFICIENT-CONVENIENT TO YOUR DOOR STEP!!

GRUNDIG

Satelit-700.....**£330.00**

Yachtboy-500.....**£159.95**

Yachtboy-400.....**£120.00**

Yachtboy-207.....**£32.95**

Yachtboy-217.....**£42.95**

GARMIN

GPS 40.....**£255.00**

GPS 45.....**£275.00**

MAGELLAN

GPS 2000.....**£199.00**

SONY

IPS 760 GPS receiver 8 channel.....**£640.00**

AT ASK

We also have in stock a range of Frequency Scanning Guides and Books

UK Scanning Directory 4th Edition.....**£17.50**

Monitoring the World Above 30MHz.....**£19.95**

Shortwave International Frequency H/Book.....**£14.95**

Ham Tool Kit - CD ROM.....**£9.95**

Shortwave Maritime Communications.....**£16.50**

QRZ Call Sign Data Base (CD ROM).....**£19.95**



SW Receivers

HF-150.....**£385.00**

KEY PAD.....**£39.95**

PR-150.....**£205.00**

IF-150 interface.....**£39.95**

HF-225 Europa.....**£645.00**

HOW TO INTERPRET FACSIMILE WEATHER MAPS & CHARTS
£8.95

WEATHER REPORTS FROM RADIO SOURCES
£6.00

HANDHELD & BASE

SCANNERS

YUPITERU

MVT-125II air band.....**£169.95**

MVT-150 FM marine.....**£169.95**

VT-225 civil & military airband.....**£220.00**

MVT-7000 100kHz-1300MHz (no gaps).....**£255.00**

MVT-7100 500kHz-1650MHz.....**£290.00**

MVT-8000 home base 8MHz-1300MHz.....**£335.00**



AOR AR-8000.....**£365.00**

AR-2700 500kHz-1300MHz.....**£260.00**

AR-8000 100kHz-1950MHz no gaps.....**£379.00**

AR-3000A 100kHz-2038MHz home base.....**£840.00**

AR-3030 30kHz-30MHz home base.....**£615.00**

SDU-5000.....**£740.00**

AOR SDU-5000.....**£740.00**

TAX FREE FOR EXPORT. MAIL ORDER IMMEDIATE DESPATCH. GOVERNMENT & LOCAL AUTHORITY ORDERS WELCOME

YAESU

FRG-100

50Hz-30MHz.....**£509.95**

FRG-9600

60MHz-905MHz.....**£525.00**

ALINCO

DJ-X1D

200KHz-1300MHz.....**£280.00**

ICOM

ICR-1

100KHz-1300MHz.....**£380.00**

(The smallest hand held scanner)

ICR-7100 homebase.....**£1279.00**

All products are subject to a posting & packaging charge

PLEASE MAKE ALL CHEQUES PAYABLE TO: ASK ELECTRONICS AT 248-250 TOTTENHAM COURT ROAD, LONDON W1P 9AD

For the best prices give us a call on: 0171-637 0353

PRO-62



200 Channel
Portable Scanner
68-88MHz
118-174MHz
380-512MHz
806-960MHz

RRP ~~£229.99~~
OUR PRICE
£179.99
SAVE £50.00



PRO-26
200 Channel
Scanner with
continuous
25MHz to 1.3GHz
Coverage

£299.00

PRO-25
100 Channel
Portable Scanner
68-88MHz
108-174MHz
406-512MHz
806-956MHz



£179.95



PRO-44
INCLUDING A
FREE CARRY
CASE WORTH
£15.00

£129.95

NEW
PRO-60
RRP ~~£269.99~~



OUR PRICE
£249.99

Grundig Yacht Boy 400

- 40 Memory channels
- Signal meter & carrying case
- 1.6 - 30 MHz
- Full s.s.b

129.95
+ £5 P & P



INCLUDING :

Free S.W. Antenna worth £14.99, FREE Batteries, FREE Short Wave Frequency Book & FREE Headphones.

4th Edition Scanning Directory



£17.50

FREE P&P



YUPITERU MVT-7100

ALL MODE SCANNING RECEIVER
500KHZ - 1300MHZ
AM, FM, SSB, WFM.

*Very special part exchange deal or
huge cash discount for straight
purchase*

RING FOR DETAILS

PRO-2039 Base Scanner



200 channels with Hyperscan system which lets you scan at 25 or 8 channels per second. High speed search facility locates new and unlisted frequencies at a flash. Coverage: 68-88, 108-136.975 (AM), 137-174, 380-512, 806-960MHz.

Price £219.99 Save £70.

NOW £149.99 + £5 P&P

Telescopic scanner antenna

Extends portable scanner range. 9 sections, centre loaded.
For 1- 1300MHz BNC connector **£9.99 / £1 p&p**



Clip-on Mini Speaker

Ideal for portable scanners. Swivel clip attaches to collar or lapel for easy listening while you carry your portable on a belt-clip (3.5mm plug) **£9.99 / £1 p&p**

— SKY SCAN —



**Desk Top Antenna
Model Desk
1300**

£49.00

+ £3.00 p&p

**DX V1300
Discone**

£49.95

+ £3.00 p&p



**Magmount MKII
Scanning
Antenna**

£24.95

+ £3.00 p&p



**Mail Order: SRP Trading, Unit 20, Nash Works, Forge Lane
Belbroughton, Nr. Stourbridge, Worcs,
Tel: (01562) 730672. Fax: (01562) 731002**



**Shop: SRP Radio Centre, 1686 Bristol Road South, Rednall, Birmingham B45 9TZ.
Tel: 0121-460 1581/0121-457 7788**

LW Maritime Radiobeacons

During some nights in October, November and December the propagation conditions were well above average and the sky waves from some remarkably distant radiobeacons reached the UK. Most of the listeners who searched for them in the evening, or until midnight, logged several beacons for the first time. Those who were prepared to search for them well into the night compiled very extensive logs. Even the most experienced DXers managed to improve their scores!

Good reception during daylight of the ground waves from some beacons was also reported. Whilst in Inverness during October, Peter Pollard (Rugby) was surprised to receive during daylight very clear signals on 298.5 from the beacon on Round Island (RR), Scillies! Perhaps the report which Peter compiled in Rugby will encourage other listeners who live well inland to try this aspect of our hobby.

Not all listeners met with success. Tom Smyth (Co. Fermanagh) took his portable to Mullaghmore, a seaside resort in Co. Sligo, but reception there proved to be no better than at home. Both Ross Workman (Shoreham-by-Sea) and Andrew Tett (Hove) have been unable to receive the Brighton Marina beacon (BM) on 294.5. Ross telephoned the Harbour Office at the Marina and was informed that it is working normally. However, when Andrew took a JVC portable along to the Marina he could not detect it! Furthermore, he did not see an I.f. beacon antenna.

It was very nice to receive first time reports from Fritz Nusser (Arbon, Switzerland), Stan Pratt (Cowling) and John Woodcock (Basingstoke). During an initial search of the band Fritz noticed that the Consul beacon (LEC) at Stavanger, Norway on 319.0 was transmitting the callsign followed by a plain carrier instead of dots and dashes which merge. He has JRC NRD-525 & 535 receivers, also a Trio R-2000. Stan, who lives on the edge of the Yorkshire Dales, used a NRD-525 plus a G5RV antenna to compile his first list for the chart. Beacons along both sides of the English Channel and some others were logged by John using a Lowe HF-225 plus a a.t.u. and 20m wire.

If you would like an information sheet about Robert Connolly's popular guide to the beacons please write to him, via me, enclosing an s.a.e.

Long Wave Maritime Radiobeacon Chart

Freq (kHz)	C/S	Station Name	Location	DXer	Freq (kHz)	C/S	Station Name	Location	DXer
284.0	VN	Capo Vaticano	S Italy	Q*	299.5	VR	Utvær Lt	Norway	A,C*,E*,F*,J*,M,N*,O*,Q*,W*
284.5	LZ	Lizard Lt	S Cornwall	A,B*,C,D*,F,G,H,I,N*,O*,S,U,V,W,X	300.0	MZ	Mizen Head	S Ireland	C*,I*,Q*,U
284.5	MA	Cabo Machichaco	N Spain	C*,E*,F*,G*,I*,J*,K*,L*,N*,O*,Q*,U,W	300.0	TI	Cap d'Antifer Lt	N France	B*,F,G,H,K,O*,S,T,U,W,X
284.5	PR	Porkkala	Finland	Q*	300.5	DU	Dungeness Lt	Kent	B,C*,D*,F,G,H,K,N*,O*,S,T,U,V,W
285.0	NO	Cabo de la Nao Lt	S Spain	C*,U	300.5	LA	Lista	Norway	A,B*,C*,E*,J*,M,N*,O*,Q*
285.0	NP	Nieuport W Pier	Belgium	C*,Q*	301.0	CA	Pt de Craach	France	C,E,I,U
285.0	TR	Tuskar Rock Lt	S Ireland	A,B*,C,F,G*,H,I,K,N*,O*,Q*,S,U,V,W	301.0	ER	Eierland Lt	Holland	C*,F*,Q*
285.5	AL	Almagrundet Lt	Sweden	C*,E*,F*,N*,O*,Q*	301.1	RG	Raufarhoefn	Iceland	C*,R,S*
286.5	BY	#Baily Lt	S Ireland	C,I,P	301.5	KD	Kinnards Hd Lt	NE Scotland	A,B*,F,M,O*
286.5	FI	Cala Figuera	Majorca	B*,C*,F*,G*,N*,O*,R*,U,W*	301.5	L	Torre de Hercules	N Spain	E*,I*,O*,R,W*
286.5	FT	Cap Ferret Lt	W France	B*,C*,D*,E*,F*,I,N*,O*,Q*,W	301.5	OB	Hoburg	Sweden	B*,C*,E*,I*,N*,O*
286.5	NK	Inchkeith Lt	F of Forth	A,O*	302.0	RB	Cherbourg Ft W Lt	France	B*,C,D*,E,F,G,H,I,K,N*,O*,S,T,U,V,W,X
287.3	BT	Bjartangar Lt	Iceland	C*	303.0	D	Rota	SW Spain	C*,O*
287.3	HA	Haifa Lt	Israel	E*	303.0	FB	Flamborough Hd Lt	Yorkshire	A,B*,C,D*,F,G,I,N*,O*,P,Q*,S,T*,U,W
287.3	IB	Í Berlenga	Portugal	C*	303.0	FV	Falsterborev Lt	Sweden	A*,C*,E*,I*,O*
287.3	JA	Jaroslawiec	Poland	I*,O*	303.0	MY	Myggenaes Lt	Faeroes	N*,X*
287.3	MD	Cabo Mondego	Portugal	C*,O*	303.0	YE	Ile d'Yeu Main Lt	France	C*,F,G*,H*,K*,N*,O*,Q*,S,U,W
287.3	RO	Rozewie	Poland	C*	303.4	VC	Cape St Vincent	Portugal	F,O*
287.5	DO	Rosedo Lt	France	C*,Q*	303.5	BJ	Bjornund Lt	Norway	A*,B*,C*,E*,I*,M,N*,O*,Q*
287.5	FR	Faerder Lt	Norway	A*,C*,O*,Q*	303.5	FN	Feistein Lt	Norway	A,N*,O*,Q*
287.5	SE	Sete Mt St Clair	S France	Q*	303.5	IA	Ilanes Lt	N Spain	C*,F*,I*,N*,U,W
288.0	HH	Hoek van Holland	Holland	C,K,O*,U	303.5	VL	Vieland Lt	Holland	B,C*,E*,F*,G,I,O*,R,S,U,W
288.0	KL	Skinna Lt	Norway	A,C*,O*,Q*	304.0	ME	Punta D. Maestra	Italy	J*
288.0	OH	Old Hd of Kinsale	S Ireland	I,O*	304.0	PS	Pt Lynas Lt	Anglesey	A,B*,C,F,G,I,N*,O*,P,Q*,R,S,U
288.0	OM	Helnes Lt	Norway	Q*	304.0	SB	Sumburgh Hd Lt	Shetland Is	G,M,O*
288.5	CT	Pt de Combrit Lt	France	Q*	304.5	MY	Cabo Mayer Lt	N Spain	D*,F*,N*,Q*,U,W
288.5	FI	Cabo Finisterre Lt	N.W Spain	A*,B*,C,E*,F,G,I,N*,O*,Q*,R,W*	305.0	BA	Estaca de Bares	N.W Spain	R,W*
288.5	YM	Ijmuiden Lt	Holland	E,F,G*,N*,O*,S	305.0	FP	Fife Ness Lt	SE Scotland	A,B*,C,F,G,I,N*,O*,S
289.0	BL	Butt of Lewis Lt	Is of Lewis	O	305.0	GL	Ile de Giraglia Lt	Corsica	C*,R
289.0	BY	Baily Lt	S Ireland	A,C,I,Q*,R	305.5	AL	Pt d'Ailly Lt	France	C*,I*,O*,Q*
289.0	ZB	Zeebrugge Westdun	Belgium	Q*	305.7	DA	Dalarangi Lt	Iceland	B*,C*,E*,N*,O
289.5	KY	Oksøy Lt	Norway	C*,O	306.0	EC	Elizabeth Castle	Jersey	H,U,W
289.5	LO	Landsort S Lt	Sweden	C*,E*,F*,N*,O*,R,U	306.0	FN	Walney Is Lt	Off Lancs	A,B*,C,F,G,I,J,L,N*,O*,P,Q*,S,U
289.5	MN	Hammerodde	Denmark	C*,F*,Q*	306.0	TN	Thyboron	Denmark	A,O*,Q*
289.5	NP	Punta Carena	Italy	W*	306.5	GJ	Le Grand Jardin Lt	France	O*,U,W
289.5	SN	Ile de Sein NW Lt	France	C*,E*,F,H,I*,Q*,S,U,W	306.5	KR	Kubassaar	Estonia	C*
290.0	FD	Fidra Lt	F of Forth	A,C*,N*,O*,Q*	306.5	OR	O. Osussaar	Estonia	C*
290.0	ST	Stevens Klint Lt	Denmark	E*,O*	306.5	RS	Ristna	Estonia	C*,I*,O*,Q*
290.5	DY	Duncansby Hd Lt	NE Scotland	C,M,O*	306.5	UT	Utsira	Norway	A,B*,C*,E*,F*,G*,I,M,N*,O*,Q*,R,S*
290.5	LL	Hallo Lt	Sweden	B*,C*,D*,E*,F*,N*,O*,Q*	307.0	GL	Eagle Is Lt	Ireland	A,C,I,O*,Q*,R
290.5	SB	S. Bishop Lt	Pembrok	A,B*,C*,F*,G,I,N*,O*,S,U,V,W	308.0	RC	Cabo Roca	Portugal	C
290.5	VI	Cabo Villano Lt	N Spain	A*,C,D*,F*,G*,I,J*,K*,N*,O*,Q*,R,S*,T*,U,W	308.0	RD	Roches Douvres Lt	France	B*,C,O,E,F*,G,I,K,N*,O*,Q*,S,T*,U,W
290.5	VY	Visby	Sweden	W*	308.0	SN	Cabo de Sines Lt	Portugal	E*,W*
291.0	OR	Orskar Lt	Sweden	C*	308.5	NZ	St Nazaire	France	B*,C*,E*,G,Q*,U,W
291.0	SN	Cabo San Sebastian	S Spain	C*,E*,W*	309.3	BA	Punta Estaca Bares	N Spain	C*,E*,F*,G*,I,N*,O*,Q*,U
291.5	SU	South Rock LV	Co Down	A,B*,C,D,F*,G,I,L,M,N*,O*,Q*,R,S,U,W	309.5	FH	Fruholmen Lt	Norway	C*,O*
291.9	AV	Aveiro	Portugal	C*	309.5	MA	Marstein Lt	Norway	A,C*,E*,I*,O*,Q*,S*
291.9	LT	La Isleta	Canaries	C*	309.5	PB	Portland Bill Lt	Orser	A*,C*,F*,G,H,I*,K,N*,O*,S,U,W,X
291.9	NA	Punta Lantaila	Canaries	C*,E*,F*,W*	309.5	WE	Wangerooge Lt	N Germany	Q*
292.0	MH	Mahon, Minorca	Balearic Is	C*,W*	310.0	ER	Pt de Ver Lt	N France	B*,C*,D,E,F,H,K,O*,S,U,W,X
292.0	SJ	Sourer Lt	Sunderland	A,C,F*,I,L,N*,O*,P,Q*,S,U	310.0	IP	Capo Sandalo Lt	Sardinia	Q*
292.0	TO	Torungen Lt	Norway	Q*	310.5	BO	Bokfjord Lt	Norway	C*
292.5	SM	Pt St. Mathieu Lt	France	C,D*,E*,F*,I,N*,O*,S*,U,W,X	310.5	SG	Sjællands N Lt	Denmark	C*,N*
293.0	CP	St. Catherine's Lt	Io W	A*,B*,D*,F*,G*,H,K,N*,O*,S,T,U,V,W,X	311.0	GD	Girdle Ness Lt	NE Scotland	A,C,I,M,O*
293.0	RN	Rhinns of Islay Lt	Is of Islay	A,C,I,M,N*,O*,R	311.0	NF	N Foreland Lt	Kent	B*,D*,F*,G*,I*,K,N*,O*,S,T,U,W,X
293.0	SY	Svinoy Lt	Norway	C*,O*	311.5	LP	Loop Hd Lt	S Ireland	C*,N*,O*,Q*
293.5	RO	Cabo Silleiro Lt	N Spain	C*,N*	312.0	HO	Tennholmen Lt	Norway	O
294.0	KU	Kulien High Lt	Sweden	A*,C*,E*,F*,Q*	312.0	DE	Doosten Lt	Belgium	B*,C*,E,F,G,I,K,N*,P,Q*,S,T,U,W
294.0	PH	Cap d'Alprech	France	B*,C*,D*,E*,F*,G,H,I,K,N*,O*,S,T,U,V,W,X	312.0	UH	Eckmuhl Lt	France	C*,E*,I*
294.5	MH	Mohni Lt	Estonia	C*	312.5	AK	Akmenrags	Latvia	C*
294.5	NG	Pikasaare Ots	Estonia	C*	312.5	BK	Baltiysk	Russia	C*,O*
294.5	PA	Pakrineem Lt	Estonia	C*	312.5	BT	Mys Taran Lt	Russia	O*,O*
294.5	PS	#Pt Lynas Lt	Anglesey	C,I,N*,PR	312.5	CS	Calais Main Lt	France	C*,F,G,O*,R,S,T,U,W
294.5	PT	#Souter Lt	Durham	A	312.5	DB	Doobysk	Ukraine	B*,C*
294.5	SN	Sletnes Lt	Norway	C*,Q*	312.5	KA	Klaipeda Rear Lt	Lithuania	C*,O*
294.5	UK	Sunk Lt V	Off Essex	B*,D*,F,G,N*,O*,S,T*,U,W	312.5	LB	Liepaja	Latvia	C*,O*
295.5	CB	La Corbiere Lt	Jersey C.I.	B*,C*,D*,F,G,H,I*,N*,O*,S,U,W	312.5	VS	Cabo Estay Lt	N Spain	N*,T
295.5	RE	La Rochelle	France	C	312.5	WW	Ventspils	Latvia	C*,Q*
296.0	BH	Blavandshuk Lt	Denmark	A,C*,E*,I*,N*,O*,Q*,U	312.6	SR	Skardstfjara Lt	Iceland	C*,E*,N*,O*
296.0	GR	Georee Lt	Holland	F,G,O*,S*,U	313.0	HA	Haiten Lt	Norway	E*,O*,D*
296.0	KN	Skrova Lt	Norway	B*,C*,E*,F*,N*,O	313.0	PA	Cabo de Palos Lt	S Spain	B*,C*,E*,I*,N*,W*
296.5	BN	Cap Bon	Tunisia	W*	313.0	TY	Tory Is Lt	N Ireland	A,C,I,O*,PR
297.0	FG	Pt de Barfleurt	France	B*,C*,D*,E*,F*,G,H,I,K,N*,O*,S,T,U,V,W,X	313.5	BR	Cap Bear Lt	S France	B,C*,E*,I*,J*,O*,W*
297.5	MA	Mantyluoto	Finland	Q*	313.5	CM	Cromer Lt	Norfolk	A,B*,C*,D*,F,G,I,N*,O*,P,Q*,S,T,U,W
297.5	PS	Cabo Penos Lt	N Spain	C,D,E*,J*,Q*,R,U	313.5	OG	Olands Sodra Grund	Sweden	C*,E*
298.0	GX	Ile de Groix	France	B*,C*,E*,I,N*,O*,S,U,W	313.5	PQ	Porquerolles	S France	S*,F*,O*
298.0	TA	Cabo Gata	S Spain	C*	314.0	HK	Hekkingolles	Norway	B*,C*,E*,O*
298.5	RR	Round Is Lt	Is Scilly	A,B*,C,D*,F*,G,H,I,J*,K,M,N*,O*,Q*	314.0	VG	Ile Vierge Lt	France	A*,B*,C,D*,E*,F*,G,H,I,N*,O*,Q*,S,T*,U,W,X
298.5	SK	Skomvaer Lt, Rost	Norway	R,S,T*,U,W	314.5	SK	Strandhoefn	Iceland	C*,N*
298.5	SW	Skagen	Denmark	C*,O*	314.5	TL	Punta D. Penna	Italy	E*,G*,J*,N*,O*,Q*,W*
298.5	DV	Djupvogur	Iceland	C*	316.0	IN	Ingolfshofdi Lt	Iceland	B*,C*,E*,O*
299.0	AD	Ameland Lt	Holland	A,C,F,I,K,N*,O*,U	319.0	LEC	Stavanger	Norway	A,B*,C,D*,F,G*,I,J*,M,N*,O*,P,Q*,R,S,T,U,W*
299.0	BN	Les Baleines	W France	C*,E*,I*,Q*,U	372.0	OZN	Prins Chris's Sund	Greenland	B*,C*,I*,O*
299.0	UN	Understen Lt	Sweden	C*,O*	381.0	AB	Akraberg	Faeroe Is	A*,B*,C*,F*,I*,N*,O*,W*
299.5	NP	Nash Pt Lt	S Wales	B*,C*,F*,G,H,I,N*,O*,S,U,V,W	404.0	NL	Nosio	Faeroe Is	A*,B*,F*,I*,M,N*,O*,W*
299.5	SK	Skomvaer Lt, Rost	Norway	C*,O					

Note:

Entries marked # are calibration stations.
Entries marked * were logged during darkness.
All other entries were logged during daylight or at dawn/dusk.

DXers:-

- (A) Kenneth Buck, Edinburgh.
- (B) Steve Cann, Southampton.
- (C) Robert Connolly, Kilkree.
- (D) John Eaton, Working.
- (E) Jim Edwards, Bryn.
- (F) John Hobson, Ely.

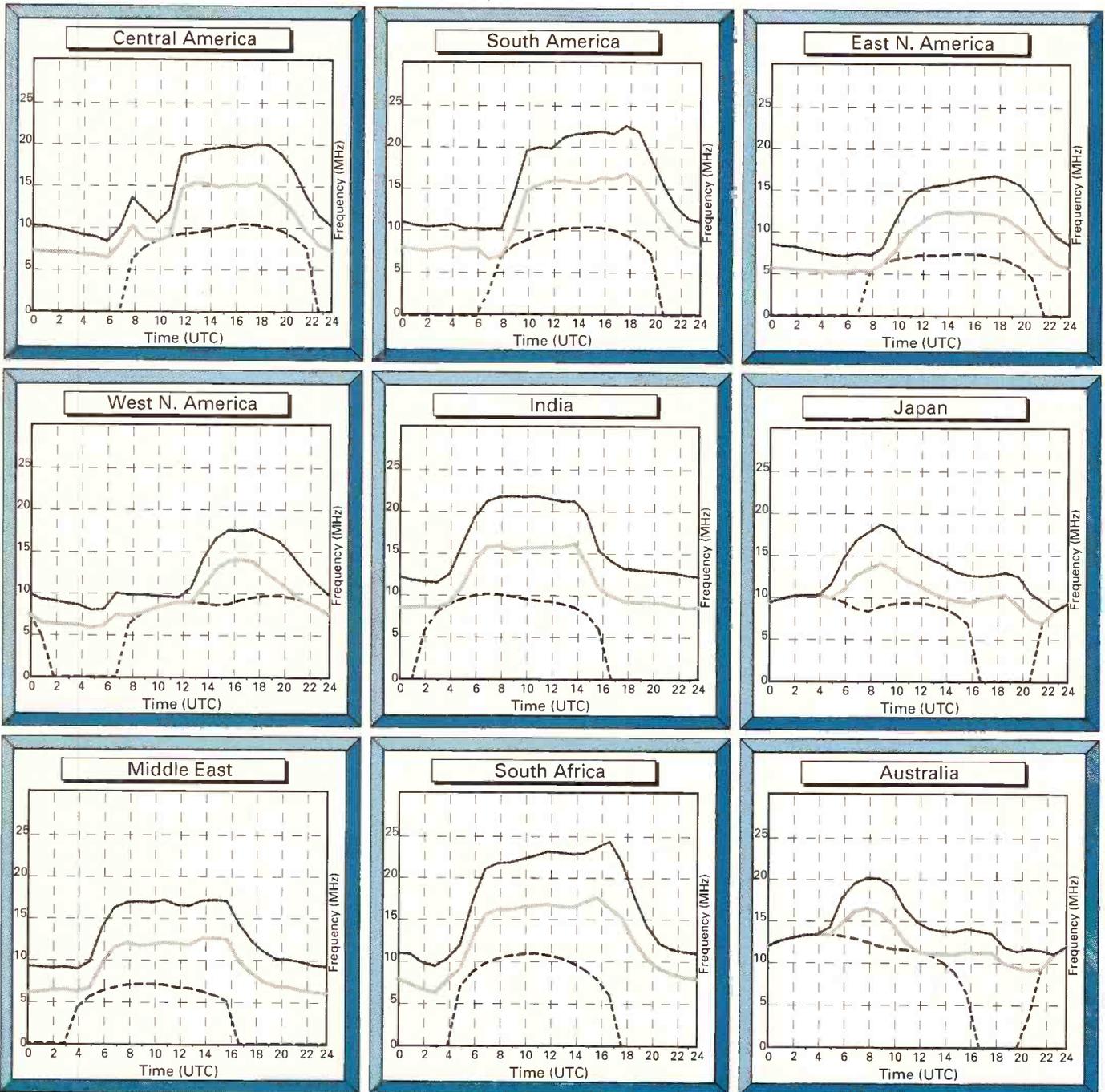
- (G) Derek Malyon, Ipswich.
- (H) George Millmore, Wootton, IoW.
- (I) Albert Moore, Douglas, IoM.
- (J) Fritz Nusser, Arbon, Switzerland.
- (K) Fred Pallant, Storrington.
- (L) Clare Pinder, while in Appleby.
- (M) Peter Pollard, while in Inverness.

- (N) Peter Pollard, Rugby.
- (O) Peter Polson, St Andrews.
- (P) Stan Pratt, Cowling.
- (Q) Peter Rycraft, Wickham Market.
- (R) Tom Smyth, Co. Fermanagh.
- (S) Philip Townsend, E. London.
- (T) Eric Tuoman, Whitstable.

- (U) John Wells, E. Grinstead.
- (V) John Woodcock, Basingstoke.
- (W) Ross Workman, Shoreham-by-Sea.
- (X) Andrew Tett, Hove.

World Propagation Forecasts March

Circuits to London



How to use the Propagation Charts.

The charts contain three plots. The lower dashed line represents the lowest usable frequency (LUF), or ALF (Absorption Limiting Frequency). The chances of

success below this frequency are very slim.

The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

Lastly, the upper dashed line, represents the maximum usable frequency (MUF) a 50%

probability of success for the path and time.

To make use of the charts you must select the chart most closely located to the region containing the station that you wish to hear. By selecting the time chosen for listening on the horizontal axis, the best frequencies for listening can be

determined by the values of the intersections of the plots against frequency.

Good luck and happy listening.

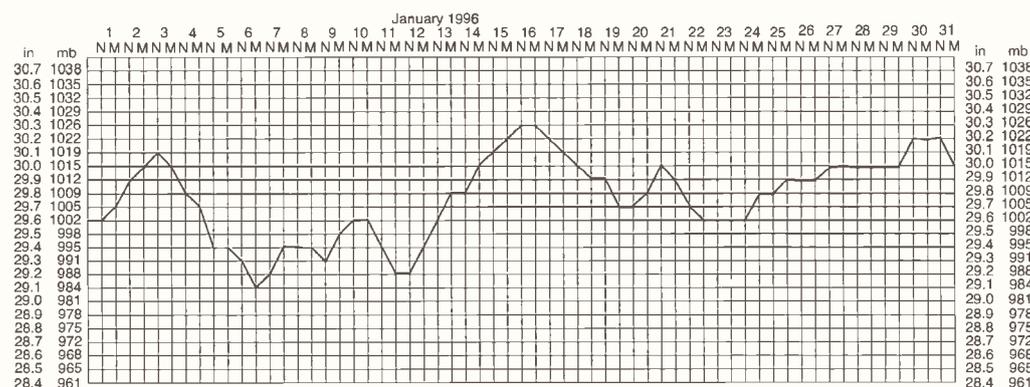
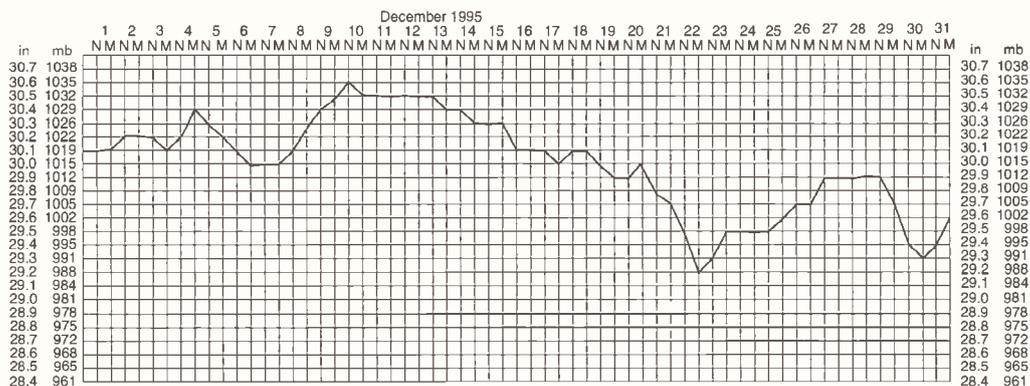
Propagation Extra

Fig. 1: Barometric pressure chart for December 1995 taken by Ron Ham at Storrington, E. Sussex.

I believe that it is still essential that those readers who have an ongoing interest in propagation still have access to the various pieces of information collated by Ron Ham. I have asked Ron to continue to provide his monthly barometric pressure charts in the same format as before. In the meantime I am trying to arrange for a regular supply of sunspot charts and other similar information. If there are any readers who would be prepared to provide such information on a regular basis, please get in touch with me at the Editorial Offices, Broadstone.

Ron has provided two barometric pressure charts for this issue, Fig. 1 covers the month of December 1995, Fig. 2 covers January 1996. In future each chart will cover one calendar month.

Fig. 2: Barometric pressure chart for January 1996 taken by Ron Ham at Storrington, E. Sussex.



SPECIAL OFFER

Garex GA-4 Wideband Preamplifier

Fit this preamplifier between the antenna and receiver to boost weak signals. Powered by an internal PP3 9V battery or an external 10 - 15V d.c. regulated power source, this neat unit has a minimum gain of 20dB @ 100MHz; 12dB @ 500MHz and 6dB @ 1GHz. Fitted with BNC connectors for the antenna and receiver leads.

Normal price is £35.95 inc. VAT and P&P.

The SWM Special Offer price is **£29.95** inc. VAT + **£1.00** P&P - a saving of **£5.00**.

Overseas readers please enquire as to price and availability. Please use the Order Form on page 78. Please allow 28 days for delivery. Units supplied may differ from the illustration.



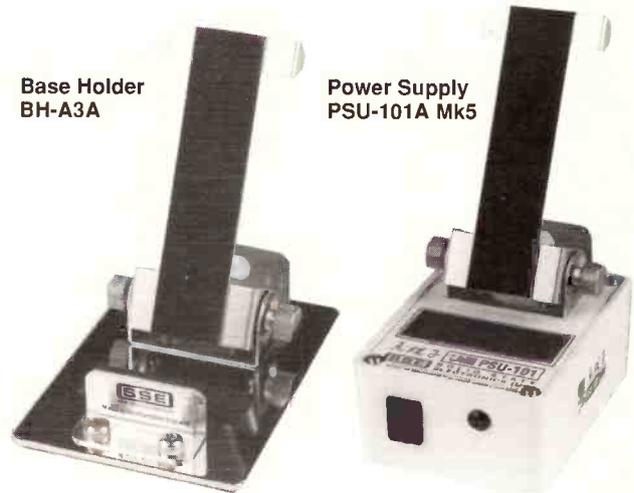


Solid State Electronics (UK)

HIGH QUALITY ACCESSORIES FOR SCANNING, MONITOR RECEIVERS. PMR. AMATEUR. MARINE CB ETC. DESIGNED AND MANUFACTURED IN THE UK BY RADIO USERS FOR OTHER RADIO USERS.

1. **JIM PSU-101A Mk5.** UK manufactured regulated 230V AC power supply NOW with ADJUSTABLE radio base holder, combined. For use with most pocket scanners. (Please state radio type). Ideal for handheld frequency counters from Optoelectronics, etc. 2 DC output sockets, one for radio the other for accessories. 12 volt DC output. A 9 volt output version for Tandy, Comtel, Netset etc available. (PSU - 101ATA). PRICE £34.95.
2. **JIM PSU-101AC Mk5.** As above but includes 12" fitted 50ohm coaxial cable assembly with BNC plug and socket for base antenna connection. PRICE £36.95.
3. **JIM BH-A3A.** Universal base holder. Now with ADJUSTABLE radio base holder, combined. Convenient, safe support of radio. Adjustable front stop. Heavy duty chromed base. TWO models "If you don't need the cable why pay for it". PRICE ONLY £12.95.
4. **JIM BH-A3AC.** As above includes 12" fitted 50ohm coaxial cable assembly with professional BNC plugs and sockets for base antenna connection TNC type plug available on request. Ideal Rx and Tx up to 4GHz. PRICE ONLY £16.95.
5. **JIM CH-A4.** Car mounting holder for hand-held scanners-transceivers with belt clip support. Safe and convenient use of scanner etc, in car, truck or boat. PRICE £8.95.
6. **JIM SM-A1.** High quality "S" meter for mobile/base scanners, CB etc, much copied but still No1. PRICE £25.00.
7. **JIM NF-943-2.** Professional quality RF notch filter, helps to remove, paging tones, music etc. from your scanner. Notch range adjustable approx 85-170MHz. Minimum loss up to 1GHz. Rugged design in metal box. PRICE £24.75.
8. **"FLEXI" Antenna EC-A0608.** Professionally designed and manufactured antenna for pocket scanners-transceivers, hand-held frequency counters, surveillance equipment etc. 7.5" long. Main frequency bands: 350-500MHz and 800-970MHz. PRICE £7.50.
9. **JIM WIA. AB-SW2.** Unique wire antenna for pocket scanners etc. HF, VHF, UHF. PRICE £16.95. (Info available on request)

Payment by postal order or cheque. Price includes postage (UK). for further information on SSE products, send A4 SAE to:



Solid State Electronics (UK)

6 The Orchard, Bassett Green Village, Southampton SO16 3NA
Tel: (01703) 769598

The logo is a registered trade mark of (UK)



Listen to Your World!

Subscribe to *Monitoring Times* and *Satellite Times* Magazines

Do you own a radio, a shortwave receiver, a scanning receiver, or a ham radio? Then *Monitoring Times* is your magazine! Each monthly issue of *MT* offers 20 pages of worldwide, English language, shortwave broadcast schedules; departments on aero, military, government, public safety communications; broadcast band, satellite television, long-wave coverage; reviews of new products and radio-related software; technical articles and projects for the hobbyist; feature articles, and much, much more.

If it's on the radio, it's in *Monitoring Times*!

Satellite Times is the world's first and only full-spectrum satellite monitoring magazine, exploring all aspects of satellite communications, including commercial, military, broadcasting, scientific, governmental and personal communications as well as private satellite systems. The satellite industry's most respected experts contribute to every bi-monthly issue of *Satellite Times*, addressing both amateurs and experts alike.

If it's in orbit, *Satellite Times* covers it!



MAIL THIS SUBSCRIPTION FORM TO: PW PUBLISHING LTD., FREEPOST, ARROWSMITH CT. STATION APPROACH, BROADSTONE, DORSET BH188 PW.

SUBSCRIPTION RATES INCLUDE SPEEDY AIR MAIL SERVICE!

1 YEAR *MONITORING TIMES* - £38 (12 ISSUES)

1 YEAR *SATELLITE TIMES* - £32 (6 ISSUES)

NAME _____

ADDRESS _____

POSTCODE _____

TELEPHONE _____

I ENCLOSE CHEQUE/PO (PAYABLE TO PW PUBLISHING LTD.) £ _____

OR CHARGE TO MY ACCESS/VISA CARD THE AMOUNT OF £ _____

CARD# _____

VALID FROM _____ THRU _____

SIGNATURE _____ TEL _____

CREDIT CARD ORDERS TAKEN ON (01202) 659930

FAX ORDERS TAKEN ON (01202) 659950

PLEASE VISIT OUR NEW SITE ON THE WORLD WIDE WEB:
www.grove.net

Satellite TV News

The latest from the Clarke Belt

The former Yugoslavia is rarely out of the news these days, in December the American peace-keeping force arrived in strength - and at the time of writing continues to arrive! News feeds coming out of Bosnia show heavy concentrations of soldiers, arms, logistics and air strength, even President Clinton arrived on January 13 for a single day out with the troops - only possibly outnumbered by the mass of media. The PR event was well stage managed and every step that Bill placed on Bosnian soil was recorded. CBS have maintained a high profile presence from their MCR at the Tuzla air base and have offered facilities for many European and US broadcasters. Interestingly a candid camera shot at CBS Tuzla showed the TV crew watching the activity on the tarmac as Bill prepared to leave. One of the engineers was listening to the BBC World Service - which was just audible on the camera mic. - using a Sony world band radio! Balkan outgoing feeds were carried both on Eutelsats 13° and 16°E, Intelsat K 21 and Orion 1 Atlantic (21° and 37°W respectively), the BBC favouring Orion. A Boxing Day feed however revealed the BBC using Eutelsat 13°E with 'BBC - UKI 20 GORNJI VAKUF, Transmission for AP-TV', a welcome sighting as AP-TV on this bird went digital some months ago.

Boxing Day evening provided an interesting period of Ice Hockey - the 1996 World Junior Hockey Championships via Orion Atlantic using 525-lines NTSC in Ku-FSS-Band -11.469GHz horizontal. Unusually the two audio subcarriers at 6.20/6.80MHz carried live effects only and no commentary.

Two Christmas evening programmes I considered first class, one via Hungary's 'Duna TV' on Eutelsat II F3 @16°E was an ORF-Austrian sourced offering based around a 'carols round Europe' theme, well known renditions sung on location in the snow, up mountains and on castles, etc. A simple, basic and enjoyable programme. In contrast, the Eutelsat 13°E NBC Super Channel downlink offered a mega glitzy, high profile, carol concert 'Christmas in Washington' with a cast of thousands, lights, camera cranes in a vast pillared auditoria. Various choirs, soloists, and groups sang those well loved Christmas numbers to an equally

vast audience including Bill Clinton who, on cue, was invited up on stage to join in the general sing-song. The production and technical input to this glossy almost Hollywood perfection entertainment was considerable and again really worth watching.

The 13°E Eutelsat hot spot played host to fellow columnists Keith Hamer and Garry Smith (of DXTV notoriety) who were seen discussing the rather select interest of test cards and TV graphic presentation on the EBN (European Business News) channel. EBN played out the insert several times during December, **Hugh Cocks** (Algarve, Portugal) also watching the test card package. Early January saw arrive on Eutelsat II F1 a new music channel 'ONYX TV', an adult biased channel catering for those not interested in 100% charts coverage. Onyx will include jazz, pop, country and western, blues, etc., etc., check out Transponder 22A - 11.146GHz horizontal.

From South Africa, **Ian Roberts** (Randpark Ridge) is also receiving PAS-4 with very strong Ku-Band signals (49dBW) requiring only a 95cm dish for a noise free picture. Various MPEG and analogue signals are received including four SABC channels. M-NET offers a scrambled analogue signal and within two years all signals will be 'MPEG'd'. A personal aside - I'm sending Ian an Astra 1D LNB which he intends to modify for 10.4GHz amateur radio work - this being an extremely cheap converter once modified.

Nearer to home and **Jean-Louis Dubler** (Montreux, Switzerland) reckons that the newly launched and slotted Telecom 2 C @3°E will be using more transponder capacity for professional users. Telecom 2B @5°W will be taking on board more broadcasters including France 3 and will soon become a dedicated broadcast bird using both analogue and digital. An interesting aside is that the Canal Plus cable signals in Lausanne, Switzerland using Nagravision decoders are unable to work with transcoded SECAM to PAL - subscribers are having special switching units fitted to bypass the SECAM-PAL transcoders where fitted.

Satellite News In Orbit Intelsat's new series of higher powered VI; VII-A and VIII satellites will offer new potential

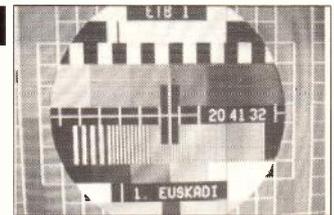
for VSAT operators (VSAT = Very Small Aperture Terminals), allowing use of dish antennas down to 1.8m. Intelsat have approved the slotting of their new VIII-5 satellite in March 1998 at 30°E, a prime slot for accessing both Africa and the Middle East.

Swedish TV are now transmitting two channels with MPEG-2 compression from the Tele-X craft at 5°E, check out 12.322GHz though receivers are not expected to be available until April/May 1996. Danmarks Radio will be downlinking their TV-1 terrestrial channel using MPEG in May 1996 from Intelsat 702 @1°W. Hughes will be constructing a new Norwegian satellite slotting in or around the 1°W slot, the Scandinavian hot-spot in the sky. Launching next year the THOR-II-A will carry 15 x 40W Ku-Band transponders. NRK-2 is likely to start late March onwards and satellite signal delivery is planned with MPEG-2 from 5°E and D2MAC from 1°W.

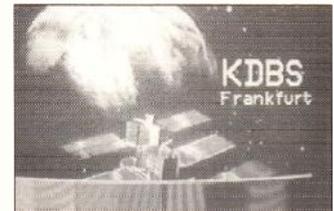
UK teleport news - Teleport London International (TLI) has just opened a permanent satellite link between London and Hong Kong using TDRS capacity. Associated Press TV (AP-TV) will be carried on this service to link with their SE Asian office - as with other AP-TV news circuits all transmissions will (unfortunately) be compressed. With mention of PAS-4 at 68°E so BT Broadcast Services have recently commissioned their new teleport at Martlesham Heath, Suffolk, which will access PAS-4 in C and Ku-Band using a selection of dishes up to 16m diameter. PAS-4 is low on the Suffolk horizon and is controlled remotely from the London BT Teleport. Martlesham will also act as a relay backlinking signals via PAS-4 through the UK and up onto PAS-1 at 45°W.

The Middle East broadcaster Orbit International that transmits scrambled digital TV from their Rome base are leasing Intelsat capacity at 18°W to transmit their total service package into North Africa and Western Europe from late Spring 1996 in Ku-Band allowing reception on small dishes. Orbit have recently added programming from TMC and Canal Plus bringing their programme package to more than 30 channels.

There's more Spanish programming expected on the Hispasat 1A/B satellites with news that Antena 3 will be launching five digital channels during 1996.



A John Locker test card snap, unknown. I suspect this is a Basque TV transmission.



Korean Broadcasting identification slide via Orion 1 Atlantic.



Eutelsat II F1 @13°E, a Telecom band SNG feed into the UK ex-Paris during non-heatwave weather! (VTM is a Belgium satellite uplinking company).



Happy Christmas scene from Tuzla, Bosnia, the barbed wire suggesting a crown of thorns, via Eutelsat II F3, 16°E Telecom band.



No comment, the sleigh and reindeers move across the sky.



A darker side of Christmas, the Reuters lease on Intelsat K 21°W.

The channels, aimed at a young audience, are - Cine de Siempre (Spanish cinema); Canal Fiesta (repeats); their version of Discovery Channel; Cine Color (Hollywood movies) and Telenoticias Antena 3 (24 hour news).

DX Television

There was little Sporadic-E activity during December apart from an opening to Spain on the 28th from the Santiago Channel E2 TVE-2 transmitter; reception lasted for less than a minute! Other Band I activity consisted of isolated instances of unidentified Meteor-Shower DX on Channels E2 and R1 (48.25 and 49.75MHz). Fortunately, anticyclonic weather conditions on the 9th and 10th produced strong tropospheric reception from Germany, France, Belgium and the Netherlands in Band III and at u.h.f. Signals penetrated well into central England and caused disruption to local reception in some areas. There was also a minor opening to the Netherlands on the December 16.

Reception Reports

Stephen Michie (Bristol) found that December 10 was the best day for signals with several unusual German stations present such as RTL on Channels E36 and E52 and SAT-1 with a sports programme on Channels E52 and E56 (RTL and SAT-1 transmissions are also available via the Astra satellite). The Belgian channels were transmitting in the 16:9 format: BRTN-1 and BRTN-2 were showing a stretched version of the Philips PM5544 test card and text pages, while RTBF-1 were displaying text pages and programme schedules.

Stephen's log for December 10 is as follows:
Netherlands: NED-1 Channels E6, E29 and E39; NED-2 E27, E32, E45 and E47; NED-3 E30, E35, E42 and E44.
Belgium: RTBF-1 E8; BRTN-1 E10 and E43; BRTN-2 E52.
France: Canal Plus on Channels L5, L7 and L9.
Germany: ARD-1 E11; ZDF E26, E35 and E37; WDR E45, E48 and E55; RTL E36 and E52; SAT-1 E52.

In addition, there were unidentified signals on Channels E7, E33 and E59. British transmitters received during the opening included Sudbury, Tacolneston, Dover

and Bluebell Hill.

Richard Wood (Redditch) has been DXing for just over a year, having been inspired by past reception reports in Ron Ham's column. Richard uses a Roadstar TV-400N that was obtained from the Argos catalogue store for under £50. The receiver covers v.h.f. and u.h.f. TV bands, but it caters only for the 6.0MHz UK/Eire sound standard. To resolve the different European sound systems, Richard uses a Tandy Realistic PRO-2006 scanner.

A 1m telescopic rod antenna is installed in the loft for Band I reception. Sporadic-E reception was evident on 23 days last June and on 19 days in July. The most regular catch was TVE-1 with RAI UNO a close second.

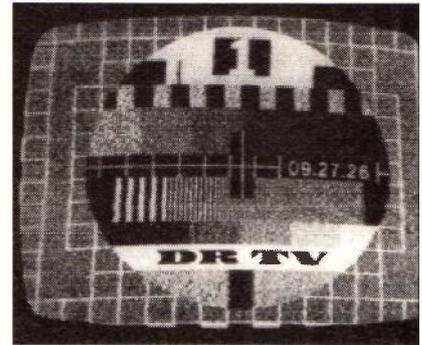
An 18-element u.h.f. antenna is employed for reception at u.h.f. and Band III, but personally speaking a dedicated array for Band III would be the only answer for effective results. Reception at u.h.f. from the Netherlands and Belgium occurred on December 10. The Dutch NED-3 service on Channel E30 from Lopik was first identified around midday showing a classical music concert. Further down the band, on Channel E25, the Belgian 2nd network test card was seen in the 16:9 format displaying the identification 'BRTN TV' at the top with '16:9 PAL PLUS' at the bottom. The sound channel carried Radio Een. UK stations LWT (Crystal Palace Channel E23) and Anglia TV (Sandy Heath Channel E24) were also identified during the opening.

Derek Fentem (Derby) realised DX conditions were active while attempting to watch semi-local Yorkshire TV programmes on Channel 25 from the Belmont transmitter. The picture began breaking up and a check through the u.h.f. band revealed strong Dutch signals from Lopik on Channels E27 (NED-2) and E30 (NED-3). The signals were of local quality and Teletext information could be resolved. The signal interfering with YTV was later identified as Belgium (BRTN-

2). A 32in Grundig multi-system TV receiver was used, fed from a wide-band u.h.f. grid-aligned for the local Waltham transmitter. Spurred on by the event, a rotator and mast-head amplifier will soon be installed.

Tim Bucknall (Congleton) identified several UK main transmitters during the tropospheric opening on the 9th. These included Hannington, Winter Hill, Midhurst, Oxford, Sandy Heath, Crystal Palace, Ridge Hill and Waltham. At 2305UTC colour bars were seen floating over the Winter Hill (Granada) transmissions on Channel 59 with the identification 'NOTTINGHAM TV NSC' across the centre! Could this be a pirate TV station on test in Nottingham, choosing a transmission channel within the local Waltham transmitter group? Considering the distance between Nottingham and Congleton (approximately 70km) the output power would have to be fairly high, even during a tropospheric opening. Can anyone shed any light on this mystery?

Last year a mystery test pattern consisting of a white circle on a blue background was being transmitted in Derby on Channel 30. The signal was intermittently broadcast over a period of three or four days with clear



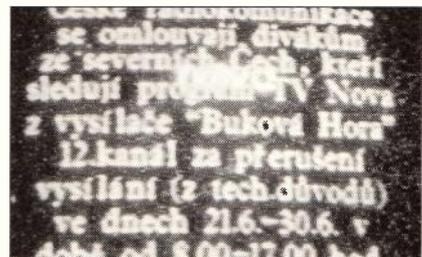
A distinctive test card from the Channel E10 Vestjylland transmitter in Denmark. This was received in Bristol by Stephen Michie during a tropospheric opening using a hand-held indoor Band III antenna.



Slovenian TV caption received by Stephen Michie (Bristol) on Channel E3.



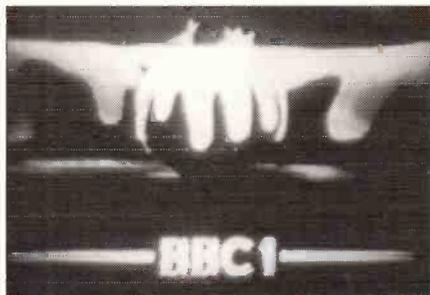
An easily-identifiable 'pause' caption from NED-2, received by Tim Tebbs of New Romney, Kent.



A technical announcement from the Czech Republic, received on Channel R2 by Stephen Michie. Can anyone translate it?



Unidentified Arabic caption seen by Bob Brooks on Channel E4.



One from the archives! The BBC-1 rotating Christmas Pudding Ident Symbol used between every programme in 1977, photographed by Keith Hamer.

reception possible over a wide area of the city. An ITC detector van was seen touring Derby with this strange test pattern displayed on the monitor!

FM DXing

FM DX reception is also pursued by many TV DX enthusiasts, especially during the Sporadic-E season when reception distances can be spectacular. The biggest problem for many DXers is identifying the source of

transmission, particularly when so many stations broadcast pop music. **Andrew Jackson** (Birkenhead) uses a radio incorporating RDS to enable the station identification to be displayed. Not all stations are equipped for RDS and consequently there are still a few Arabic f.m. transmitters, on unlisted f.m.

channels, that remain unidentified.

Tim Bucknall advises that the Meadowhall shopping complex in Sheffield now has its own f.m. transmitter on 106.2MHz.

The OIRT f.m. band (62-72MHz) is gradually being phased out throughout Eastern Europe. Most countries have already introduced some transmissions within the CCIR f.m. band (87-110MHz). According to Gösta van der Linden (Rotterdam, Netherlands) Estonia will

cease using the band by the year 2005.

Tinsel And Christmas Pud

For more than twenty years it has been a tradition for TV companies, particularly the BBC, to add a festive touch to their Christmas continuity captions. The BBC have always been leaders in this field with decorated globes, snowflakes and Santas! One of the most memorable was the Christmas pudding version of the famous rotating Globe Ident Symbol. Test Card F has been tinkered with on most Christmas Days by the BBC engineers at Television Centre. One year it sprouted holly in the corners, partially covering the focusing bars. Another year the noughts and crosses game on the blackboard was completed and in 1991, Carole Hersee (the girl in the centre circle) completely disappeared for a few minutes.

Unfortunately, test cards are only a memory on British

TV, apart from rare showings by the BBC in the dead-of-night! This Christmas, the offerings by the BBC were perhaps less spectacular due to the ever-changing graphics shown during the rest of the year. Channel 4 decided to transform the boring '4' symbol (that is now well past its sell-by date) into a silvery rotating Christmas tree.

For Central TV viewers the various graphics seemed to portray business as usual, unless there were a few small variations too subtle to notice. No doubt viewers in other ITV regions were treated to more obvious Christmas TV presentation pranks! If so, please write to us with details and, if possible, photographs or video recordings.

Contact Address

Please send DX-TV reception reports, equipment news, off-screen photographs and general information as soon as possible to the address at the head of the column.

**GUARANTEE YOUR MONTHLY SHORT WAVE SHOT AND
SAVE MONEY AT THE SAME TIME**

To be certain
you don't
miss out on
your
favourite
magazine -
take out a
subscription.

**Subscribe now
and save money**



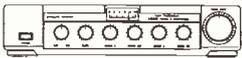
Twelve issues of *Short Wave Magazine* bought over the counter will cost you £30.00.



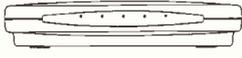
Twelve issues of *Short Wave Magazine* could cost you just £25.00 -

Please use the order form on page 78

NEW IMPROVED RR-50 SATELLITE RECEIVER WITH LATEST HIGH PERFORMANCE TUNER.



Manually controlled satellite receiver with communication facilities, fully variable I F bandwidth 12-26MHz adjustable, variable audio bandwidth 150-350KHz adjustable, +/- video switching for C/Ku band, 14.178 volt LNB options, System B/G/I modulator, plus all the usual facilities to lift weak signals out of the noise. MK11 model fitted with new tuner and latest improved pcb
£199.00



MULTISYSTEM DIGITAL VIDEO CONVERTER

- Input signal NTSC 3.58, NTSC 4.43 PAL, SECAM
- Output Signal NTSC 3.58, PAL (B,D,G,I)
- Input Auto Detecting
- Input Signal Indication (PAL,SECAM,NTSC) via LED's
- Video Input & Output via RCA Phono Socket
Line Conversion: 525 to 625 Lines
625 to 525 Lines
- Field Conversion 60 to 50 and 50 to 60 fields
- Power Supply DC 15 volts @ 450mA
- Accessories, set of leads & AC Adaptor

**Now Low Special Offer Price
£299.00.**

(All prices are inclusive of VAT, carriage delivery £9)



NEW UPDATED CATALOGUE

CONTAINS ALL THE USUAL WELL ESTABLISHED AND POPULAR PRODUCTS AND ALSO INTRODUCES:

- * New higher gain larger Triax Unix 100 & 52 element UHF Aerials
- * New range of Triax high performance diplexers
- * New range of multi-standard VHF/UHF PAL/SECAM/NTSC Colour TVs
- * New range of Video Systems Converters

AVAILABLE BY RETURN OF POST FOR ONLY £1. or ring with your credit card.

AKAI VS X475 EGN Multi-System VCr



- Multi-system 10 standard compatibility
- Covers VHF (Bands 1, 2 and 3) UHF plus in between cable channels
- Records, plays back and receives
- PAL system I (for UK, PAL system R/G (for Europe); PAL system O (for China) SE CAM system L (for France). SE CAM D/K (Eastern Block) SE CAM B/G (Middle East etc.); also NTSC
- 3.58 and 4.43MHz
- NTSC playback on PAL TV
- Quick response system
- Quick start
- Quick index search
- Quick intro scan
- IMS
- DX4 head
- Long play
- Remote handset
- On screen programming
- Dual mode digital tracking
- Multi-speed play
- 8 event - 1 year automatic tuner
- Next junction memory
- Auto voltage selector
- 4.5 Channel synthesizer tuner
- Child lock system
- Various auto functions
- Dimensions 425W x 92H x 315D

£499.00

Aerial Techniques



**11 Kent Road, Parkstone, Poole, Dorset BH12 2EH
Tel: 01202-738232 Fax:01202-716951**

AIR SUPPLY

**83B, HIGH STREET, YEADON
LEEDS LS19 7TA**

**NEW OPENING HOURS FROM
1 JANUARY: 10AM TO 5PM
TUESDAY TO SATURDAY,
CLOSED SUNDAY AND MONDAY**

**THE NORTH'S LEADING
SUPPLIER TO LISTENERS**

Stockists of scanners, short wave radios and quality accessories

2nd Editions Catalogue now out

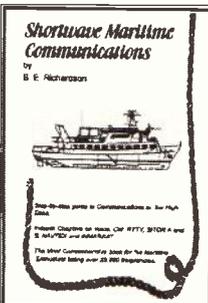
SEND **£1.50** refundable on purchase

PHONE: **KEN COTHLIFF** on

0113-250 9581

FAXIMILE: **0113-250 0119**

Personal and friendly service

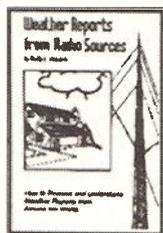


Shortwave Maritime Communications

It will show you how easy it is to monitor ships receiving instructions from their agent, air sea rescue, how to get out of some difficulty, what supplies are needed, or even a major shipping disaster!

The book is laid out with both the beginner and the well-seasoned maritime radio enthusiast in mind, providing the most accurate and detailed information in an easy-to-use format. The first few chapters show in detail with bandplans the various communication modes used by ships today, from Morse right through to Inmarsat. Two mammoth frequency lists give every coastal station worldwide with the shore and corresponding ship's frequency, plus the station's name, mode and callsign (200 pages A4). Regardless where in the world you live *Shortwave Maritime Communications* will provide you with endless hours of enjoyment.

Price **£16.50 + £1 UK p&p**. Overseas post Europe (airmail) and seairmail add **£5**, or airmail **£12** to other countries.



Weather Reports from Radio Sources

Step by step guide to monitoring weather reports from around the world. Written in non technical terms, explains how to understand transmissions and the system with the help of charts and tables. International frequency list includes VOLMET and its workings, and time, mode and location. Tune into hurricane reports from Miami to African weather bulletins from Brazzaville.

Price **£6 incl. UK post**. Add **£1** for Europe, or **£1.50** elsewhere.

The UK Scanning Directory

4th Edition - Lists over 20,000 Spot Frequencies

Here is the book every scanner owner has been waiting for! Listing over 20,000 spot frequencies 25MHz-1.615GHz, remains the biggest and best guide, and covers utilities, security, telephones, military and lots more we dare not mention!

Price **£17.50 + £1 UK post**. Overseas post add **£2** Europe & sea, or **£5** airmail.

Shortwave Maritime Comms.....	£17.50	Scanner Busters	£4.95
Intercepting Numbers Stations	£9.95	Eavesdropping on British Military.....	£18.75
Monitoring Yugoslav Conflict	£4.95	International Callsign Handbook.....	£18.50
Guide to SW Audio Sounds (tape)	£4.95	Grove Shortwave Directory.....	£18.75

Prices incl. UK post. Overseas post extra.

**Ask for free catalogue.
Many special book offers**



Allow 14 days delivery

INTERPRODUCTS (SW36)
8 Abbot Street, Perth PH2 0EB Scotland
Tel/Fax: 01738 441199



MOMENTUM COMMUNICATIONS

BRITISH BUILT QUALITY

SHORTWAVE RECEIVERS

LOWE	RRP	MOMENTUM PRICE
HF-150	£419	£379.95
HF-225	£499	£469.95
HF-225 EUROPA	£699	£649.95
HF-250	£799	£744.95
AOR		
AR-7030	TBA	TBA

DISCOUNTED PRICES

COMPLETE ANTENNA STARTER KITS FOR

★ INTERNATIONAL BROADCAST BANDS ★

★ AMATEUR BANDS ★

★ SWL DX'ING ★

★ AIRBAND ★

★ SCANNING ★

From: DEECOMM - GAREX - LAKE - SHENZI

MCL 1100 DATA DECODER

FOR THE SERIOUS UTILITY LISTENER WITHOUT A COMPUTER

From **£255**



Optional Monitor

STANDARD FEATURES:

- SMARTLOCK system for easy tuning.
- Full screen of readable text with on-screen tuning indication.
- Automatic decoding of RTTY, CV, FEC (NAVTEX) and ARQ.
- Auto or manual selection of transmission speeds.
- Extremely rapid lock onto signal.
- Connection for a parallel type printer.

Now available for MCL-1100 and DM-1000's

★ **SYNOPTIC UPGRADE** ★

Inc. SYNOP - TEMP - PILOT - AIREP



PHONE HOT LINE FOR DETAILS



01384 896879

6 & 7 Clarkson Place, Dudley Road,
Lye, West Midlands DY9 8EL

WINTER 1995/6 CATALOGUE



The new winter '95/96 edition has 280 pages packed with over 4000 products.

- ▶ New editions to our computer section further extending our range of PC components and accessories at unbeatable prices
- ▶ Free competition with a chance of winning a Hameg 30MHz oscilloscope
- ▶ 100's of new products including; Books, Component Packs, Connectors, Switches, Test Equipment and Tools.
- ▶ New range of oscilloscopes from Hameg and extended range of mobile phone batteries and accessories
- ▶ Latest PIC Microcontroller IC's and programmer
- ▶ New 70cms mobile transceiver for the novice radio amateur enthusiast
- ▶ 280 pages, 26 sections and over 4000 products from some of the worlds finest suppliers
- ▶ Available at most newsagents or direct from Cirkit
- ▶ Out 26th October 1995
- ▶ **Send for your copy today!**

£1.95
+ 30p p&p

Cirkit



Cirkit Distribution Ltd

Park Lane · Broxbourne · Hertfordshire · EN10 7NQ
Telephone: 01992 448899 · Fax: 01992 471314

LAKE ELECTRONICS

CT400 ANTENNA COUPLING TRANSFORMER

The CT400 is a broadband transformer, providing inductive – i.e. magnetic – coupling between a long-wire antenna and a low impedance feeder. It works on all the HF bands with wire antennas of virtually any length and is suitable for reception of all modes.

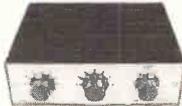
Entirely weather-proof, the CT400 can be easily fitted into any convenient enclosure of your choice. Full instructions and suggested mounting arrangements are, of course, included. Price? A mere £6.75 for one or £13.00 for two. Please add £1.00 P&P.



TU3 ANTENNA TUNING UNIT

Designed expressly for the keen SWL, using a long wire antenna, the TU3 features a "mode switching" arrangement which makes it one of the most versatile ATU's on the market. Professional in appearance and performance, available ready to use or in kit form, the TU3 must be a first choice in tuners!

£54.00 complete or £44.00 for a full kit containing ALL components AND hardware. P&P £4.00.



"CARLTON" 3 BAND RECEIVER

A Direct conversion Receiver covering the three most popular HF Amateur Bands, – 80m, 40m and 20m, the "carlton" receives USB, LSB and CW. Sensitive and selective, this easy-to-build little receiver will give you many fascinating hours of listening to stations from all over the world. It comes to you as a complete kit with no hidden extras to buy. ALL components, ALL the hardware, FULL instructions – all supplied! All you will need to provide will be a small soldering iron, a few basic hand tools, a pair of headphones (or a small 'speaker'), a battery and, of course, a few enjoyable hours of your time. £69.50 plus £4.00 postage.



LAKE ELECTRONICS

7 MIDDLETON CLOSE, NUTHALL, NOTTINGHAM NG 16 1BX

TEL: 0115-938 2509 (CALLERS BY APPOINTMENT ONLY)

IN STOCK FOR IMMEDIATE DESPATCH

EDITION 5 OF OUR POCKET UK VHF/UHF AIRBAND FREQUENCY GUIDE

Issue 5 of our best selling truly pocket sized frequency book. Fully updated and this year includes 4 letter Airfield Codes and 2 & 3 letter Airline Codings.

PRICE HELD FOR THIS YEAR: \$4.45 POST PAID

STILL AVAILABLE:-

THE AIRBAND JARGON BOOK – PRICE: \$6.95 POST FREE

This book offers in one publication, a very down to earth guide of Air Traffic Control and the fundamentals of Airband Radios, and in the process the reader learns a lot about an aircrafts instruments. It will not only appeal to the complete beginner, we are sure even the most avid aviation enthusiast will find it a most interesting and informative read, as some subject matter is unique and not covered in other Airband and ATC Guides. If you still can't fathom out what is being said on your airband, this is THE book for you.

ON THE FLIGHT DECK VOL 1 – VIDEO – \$15.95 POST PAID

5 varied flights giving nearly 2 hours of aviation video with full ATC chit-chat.

We also stock Airband Radios, Scanners, Accessories, Antennas and have over 700 Aviation Book titles in stock, plus good advice always available. Now in our 9th year. If you can't visit send for our latest catalogue. For immediate despatch order direct, we accept VISA, ACCESS, Am-Ex, Diners etc.

New winter opening hours 8am till 7pm, 7 days a week.

THE AVIATION HOBBY CENTRE
VISITORS CENTRE MAIN TERMINAL
BIRMINGHAM INTERNATIONAL AIRPORT B26 3QJ
TEL: 0121-782 2112 FAX: 0121-782 6423

Don't miss the **LARGEST** single day show in the U.K.

NORBRECK

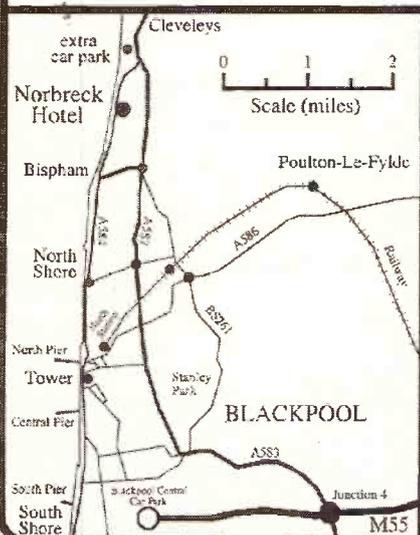
Radio, Electronics and Computing Exhibition

by the Northern Amateur Radio Societies Association at the

**NORBRECK CASTLE HOTEL EXHIBITION CENTRE
QUEENS PROMENADE, NORTH SHORE, BLACKPOOL**

on Sunday, March 17th, 1996

Doors open at 11 a.m.



- * Over 100 trade stands
- * Bring & Buy stand
- * RSGB stand and book stall
- * Organised by over 50 clubs
- * Facilities for the disabled (wheelchair access to all stands)
- * Overnight accommodation at reduced rates (contact hotel direct)
- * Club stands
- * Amateur Computer stands
- * Construction competition
- * Free car parking

RADIO TALK-IN ON S22

Admission £2 (OAP's £1, under 14's free) by exhibition plan

Exhibition Manager : Peter Denton, G6CGF, 0151-630-5790

Bandscan

Australia

Since my last column I have had an interesting experience on a search and rescue operation looking for a lost teenage girl in the Morton National Park which is just kilometres from my usual QTH. Morton National Park covers 1540 square kilometres of rugged bushland and is a very popular destination for bushwalkers from Canberra and Sydney. Although not a large operation, we were running transceivers on Police, State Emergency Services, Bush Fire Brigade and u.h.f. CB frequencies. Communications worked smoothly and the lost girl was found only hours after the operation got under way. With several parties on foot in the field and a base camp on the edge of the park without good reliable radio communications we would have been severely restricted.

News this time covers a wide range including news of industrial action at Radio Australia over funding cuts to pay for Australia Television, assistance to self-help radio broadcasters, more concerns over the environmental costs of cable television and a boost to country commercial radio.

Australia Television

The government has finally come good with more funds to keep the limping Australia Television (ATV) on air. They have provided a sum of \$A18.6 million (about £9 million) over three years to allow the Australian Broadcasting Corporation (ABC) to continue running the service. According to the Minister for Communications and the Arts Michael Lee the government recognises the success of ATV in building audiences in Asia. He says that ATV has doubled its Indonesian audience in the past year and that this raised profile should not be lost.

As I reported in 'Bandscan Australia' for September 1995 there have been several options considered for managing ATV losses. One of these options concerned the ways in which the resources of Radio Australia (RA) could be used to assist the fledgling satellite broadcaster.

As it turns out \$A2 million (£950,000) of the three year ATV funding announced by the Minister will come from savings on RA's transmission costs and a further \$100,000 directly from RA funds. Less than impressed with this funding arrangement are workers at RA who have undertaken industrial action to

stress their views. According to the unions involved at RA - the Community and Public Sector Union and the Media, Entertainment and Arts Alliance - RA has been underfunded for many years and has requested that ATV pay RA for the foreign language inserts RA provides for ATV programme. To make their point the workers at RA placed bans on providing these inserts to what would otherwise be an all English service. News services affected included Standard Chinese, Cantonese, Vietnamese, Indonesian and Thai.

The savings in ATV transmission costs are supposed to come from the closure of the Carnarvon transmitter site in western Australia. There are problems for the continuation of some services if this option is taken however as Carnarvon is ideally suited to serving the South China and Indonesia audience areas. It seems that moving these transmissions to Darwin is not a viable solution because the facilities at Cox Peninsula in the Northern Territory are optimised for the coverage of north Asia.

Self-help Broadcasting

Although many parts of the Australian continent have low population densities, the Australian government believes that these people should not be disadvantaged in their access to ABC and Special Broadcasting Service (SBS) transmissions. To enable small communities to buy and operate their own transmitters to gain access to these national broadcasting services, the government has instituted a self-help programme to ease the financial burden on these communities of providing these facilities. Until recently the government charged these groups an annual indexed fee of \$A1489 (about £715) for the use of National Transmission Agency (NTA) sites for retransmission. The new fee is \$A250 (£120) per annum. That doesn't sound like a lot of difference but appears to be a severe impost on small isolated communities on top of all other costs associated with re-broadcasting programme. These other costs typically include satellite dish and receiver for the programme feed, transmitter and running costs. It can include an antenna mounted on NTA masts but more usually NTA provides a combiner to push the signal out in conjunction with an existing service.

Reception in UK

Norman Locke has written from the Fens area giving me hope that a lot more transmissions from here are heard than I thought possible at this stage of the sunspot cycle. He tells me that RA and Radio New Zealand come in well several times a day and that he has heard Adventist World Radio from Saipan several times on 9.465MHz at around 1500UTC.

Of particular interest however Norman has logged Sydney Radio Marine on 8.722MHz at 1440UTC and between 1630 - 1700UTC he has heard Sydney Volmet on 6.676MHz, Hong Kong Volmet on 6.679MHz and Auckland Volmet. He has also logged Auckland Volmet at around the same time, Sydney Volmet on 6.679MHz at 0730UTC and Alice Springs on 2.310MHz.

Norman recommends the 80m amateur band for listening to ZL operators from 0630UTC and the 18MHz amateur band for ZLs and VKs from 0900UTC. He uses a Kenwood R-2000 with an a.t.u. and a 20m long end-fed six metres off the ground running south east to north west.

Boost to Commercial Radio

Country areas across the continent will get more commercial radio stations under an amendment to the Broadcasting Services Act announced by Minister Lee. These changes will make it easier for incumbent broadcasters in markets where there is only one commercial radio service to be allocated a second licence. There are 54 stations eligible under these changes: 17 in New South Wales, 5 in Victoria, 10 in Queensland, 4 in South Australia, 13 in Western Australia, 4 in Tasmania and one in the Northern Territory. The Minister believes that these stations will begin operating almost immediately because quite a few station owners are already geared up and ready to go. He says that these new stations will offer the possibility of youth formats and a more diverse range of musical tastes.

Other News

ABC and SBS early evening television news broadcasts will be more accessible to the over one million Australians with hearing impairment under a new government

programme. The programme, part of the government's Innovate Australia statement, will provide \$A6 million (£2.8 million) to fund closed captioning of these news broadcasts.

The government is exploring avenues to use the so-called 'V chip' technology to ensure that children do not view violent or other offensive material on television. The 'V chip' is at the heart of a parent controlled system linked to the current film and television ratings scheme. In a similar vein the government is toying with the idea of a free to air family television channel following approaches from parents and grandparents concerned at the level of violence shown on current television broadcasts. According to Minister Lee an inquiry will be conducted by the Australian Broadcasting Authority (ABA) into this and the possibility of an open learning channel.

All Done

And for those with an Internet connection it seems that a list of Australian radio stations on the net is available via <http://www.mit.edu:8001/activities/wmbr/otherstations.html>. When I tried during the compilation of this column I was unable to get the list apparently because of a technical problem at MIT.

I welcome any news and comments. In particular I am interested in any s.w.l. information on Australian stations heard by *SWM* readers so I can chase up more details and interesting snippets from this end. For personal replies please send two IRCs.

Amateur Bands Round-up

Listening to the Amateurs

Let's have all your news and comments, sent as usual for the start of the month.

My mast and beam are strongly guyed by synthetic rope and have survived several seasons. Looking out of the shack window, I was startled to see small birds attacking the rope. As soon as possible I intend to swing the beam down, inspect, and if necessary renew all the guys.

Talking of rope and guys, it is perhaps well to remind you that Nylon should not, repeat **not**, be used for mast guys. Nylon rope is intended for use where its ability to stretch is important; it can be stretched by up to a quarter before it gives way! Great for halyards for example, but just imagine what would happen in a gale if you used it for guys! Personally I prefer pre-stretched braided Terylene for this purpose, of a size to give a good safety factor. It is a wise move when buying synthetic rope, even from a boat chandler, to get him to describe it on the invoice as 'Nylon' or 'Terylene' or whatever. Then if he sells you Nylon when you think you've bought something less stretchy and you lose your antenna, you can claim from him! Most shops selling 'rope' just don't know t'other from which.

Letters

From Birmingham **John Collins** reports (Thanks for the Christmas card John) that he listened on 7 and 14MHz sideband. CO1OTA was noted on 14.195MHz around 0100 under a deep pile-up; John gave the routing for pasteboards but alas I can't read it certainly enough to quote. Not John's fault; I suspect that somewhere along the route there has been some rain!

Down to 7MHz and here he noted, at around 0200, the Moscow University club station with a couple of operators from Ukraine calling for cards to go to Kiev as Box 88 Moscow, they were saying, 'not safe'. Checking with the RSGB Bureau, I was informed that while there is some stuff coming in from Box 88, the outgoing traffic of the RSGB Bureau is now sent to Box 59.

Next I have a letter from **Dave G4VFO** from Bearsted

in Kent who writes to comment on my statement that a.m. was virtually non-existent on the amateur bands. That may be so on 3.5MHz upwards, Dave says, but a.m. is alive and well on Top Band. Between 0930 and 1100 daily, on around 1.984MHz Dave has a Net that normally numbers about ten call-ins but has totalled forty different calls checking in. Most stations are from Kent or Essex. Hastings have a Sunday morning a.m. net, 1100 on 1.990MHz, and there is also a group around Spalding area, and Dave reckons possibly others too.

In fairness, having mentioned the a.m. on Top Band, one has to say that the disadvantages of using a.m. 'phone are several. First, a given output device can produce far more 'talk power' by using 'sideband' rather than a.m.; secondly the bandwidth occupied by an a.m. signal can be successfully used under amateur conditions by three sideband contacts, thirdly you get rid of the horrible carrier whistles that made 'phone operation almost impossible before 'sideband' became popular; and fourthly the sad fact that while we used to talk about '100% modulation' such is quite impossible with any method I've ever seen used on the amateur bands. To try means simply more splatter!

The only circuit I know of that can do it used three triode valves and was designed to go along with the original product detector back in the 1940s to yield a 100% modulated a.m. signal with better than 1% distortion between microphone and 'speaker. The product detector became a standard of course, but v.h.f. f.m. outdated the transmitter scheme.

Dipole Centres

Readers will recall I have mentioned this topic several times. There's been nothing I know of on the market, and most home-brew answers have failed to prevent water getting in to the coaxial cable.

In front of me at this moment I have at last what seems to be the definitive answer to the problem, made by GW3JPT who is also

making traps for the G8KW/W3DZZ trap dipole design. Charles provides traps and centre fitting, you provide the wire and coaxial cable, perhaps taken from a stripped-down G5RV. I have bent the GW3JPT ear, and persuaded him to make centre fittings available as a separate part, for the many people who have a need.

Incidentally, these fittings are arranged so you can suspend them from a halyard - handy for the inverted-V addicts. I have one here on the beam that previously had no protection at all, and another is serving, with traps, in a novel configuration that can be summed-up as half of a trap dipole as an end-fed, operated against the other half as a multi-band counterpoise.

The weight of a GW3JPT centre fitting is around 60g, while a trap goes 125g. Contact him at: C. R. Reynolds GW3JPT, Beacon View, Bronwyllfa Road, Welshpool SY21 7RD.

In Barnsley, **Colin Dean** listens on Eighty sideband, for signals from such as A45ZZ, A92FZ, AP2NJ, C31SD, EX8VK, FG5HE, FM5GU, JA4DND, JY60MB, KG4CM, KP4GL, OD5NJ, OY1A, PJ7VP, TA2MD, UA0ABK, UN5F, VK4EFX, VU2NCD, XE7ILI, ZA5B, 4L7AT, 7X2DG, 9H1EU and 9K2CA. A quick flip to 7MHz unearthed FR5DX, PY0FZ, VP8CQS and XQ8ABF.

Simon Oliver hails from Ashford in Kent and is working with a correspondence course for RAE. Using an FRG-7 and about 100m of wire, Simon listened on Top Band, and picked up G0PEM, G3RGN, HB9JAP, 9A5W, G3YRO, ON7LY, LY2ZZ, G0KPW, F2YT, 2E0AJJ, SP5INQ, G3JMJ and TF3TF. On 3.5MHz, the log included CT1AHU, G3UZD, OZ8BU, G3KPW, G4OFY, G0NUD, G0REK, G0DLN, G0MUX, VE2AA, N3MLV, ZF8AA, G0IYZ, G4KYA, WD1CCS, U0PDR, EI4HW, VE2HQ, T93M, W4PZU, K4KL, K2OU, AA3JD, N8RR/P, K0IF, N4UU and N4HTZ.

One or two of you have noted in recent months how the low bands - Top Band and Eighty - seem to be livelier of late. Around sunspot minimum the maximum usable

frequency (m.u.f.) drops due to the lack of sunspots; also the effect of a quiet sun on the earth's magnetic field tends to reduce; therefore conditions on the low bands seem better, and of course the effect is made more noticeable by the fact that the bands above 14MHz are mostly dead and even 14MHz normally dies at around sundown.

Father Christmas brought **Karl Drage** in Woodford, Kettering, a nice new laser-jet printer to play with. (For me, of course, That Law dictates it - and Santa - would stick half way down the chimney!). Anyway, it results in a beautiful log presentation from which Top Band shows lower sideband from F6CTT, IK7YZI, LA3PU, RA1TAG, RV1CCP, VE3EJ, VE3YG, W8AH and WG3A. The same sideband, of course, on 3.5MHz, where the list is so long I must prune a little: 1A0KM is the call of the Sovereign Military Order of Malta based in Rome, but I suspect that this one just might have been someone pirating; then 4S7EA, 5B4ES, 9Gs 9Hs, 9K2MU, A71DX, A92FZ, AP2N, three C31s, D44BS, DU9RG, EA8s, GD4PTV, JA, JX9ZP, lots of A, K, N, W calls from East and middle USA, OD5NJ, PT7BZ, T14CF, T15RLI, UA0DM, VEs, VKs, four VOs, VU2NCF, VZ0AT for a new prefix on the bands that is probably from Australia, YC0LOW, YV5IVI, plus European SSTV stations. 7MHz c.w. was used for four stations, of which one was signing 'G7MN', plus l.s.b. from 4X6ME, 5Z4PL, 8P9EM, A71EM, CN8ET, FG5HR, HL1KFD, JAs, LUs, ODs, PYs, TR8IG, VE2BVV, Y11FM, YVs and ZPs.

10MHz gave log entries on c.w. for various Europeans, while there were also a couple on 14MHz. SSTV on this band dealt with 9H4AC, AC6BX, WB9VCL, ZL3MA and Europeans, while u.s.b. was used for the 1A0KM station again, 5N0RHE, 5N7YZC, A61AN, C31MO, CO6LE, FR5HR, assorted Americans, OD5s, VE, VO, VU2IKZ, XE2MEX, YB0RX, ZA1AJ, ZA5J and ZS4Y. On each band, of course, the Europeans appeared, but I've taken out most of these.

SSB Utility Listening

This month, I have quite a bit of information concerning Bosnia, and the current outbreak of peace in the former Yugoslavia.

A peace agreement between the warring factions was agreed at the Dayton Convention in Ohio during last autumn, and an official signing took place in Paris in the middle of December. As a result of this, the task of ensuring that the peace plan was adhered to fell to NATO forces. The official handover of this task occurred just before Christmas, and since then the amount of traffic on h.f. has increased considerably.

As is usual for the US forces, they have given a snappy name to their efforts: 'Operation Joint Endeavour'.

The USAF have set-up an air 'bridge-head' at the airfields of Tuzla (LQTZ) in Bosnia and Taszar in Hungary, so that they could fly-in their troops, supplies and equipment. This, almost immediately, fell foul of the bad weather in the region. Thick fog made landings impossible, snow made movement difficult, and a sudden thaw flooded many areas.

The airfield at Tuzla is not very large, and certainly unable to cope with the amount of air traffic the USAF expected to use, therefore, two 'staging-posts' were set-up in Germany, at Frankfurt Airport and Ramstein Airbase. Almost all the trans-Atlantic flight involved in the airlift are flying into one of these places. For the first week or so, the callsigns used by the trans-Atlantic flights were using callsigns in the 'Reach 79...' series, but this was eventually changed to 'Reach BH30...' - the 'BH' part of the callsign stands for 'Bosnia Hercegovina'. Once there, everything is unloaded, and placed into C-130 Hercules and C-17 Globemaster aircraft for the flights into Tuzla in Bosnia. The USAF flights from Germany into Bosnia are using the prefix 'IFO' to their flight numbers.

Since this is a NATO operation, all the NATO nations are getting involved in the airlift, as well as some non-NATO members. They have all been allocated callsigns for their flights, **Table 1**. Denmark, Norway, Portugal and Russia (CIS) are also involved, but their callsign prefixes are not known at the present. The USAF flights appear to

Table 1

IFA	Belgium	IFI	Netherlands
IFB	Canada	IFL	Spain
IFD	France	IFN	UK
IFE	Germany	IFO	USA
IFF	Greece	IFP	Turkey
IFG	Italy		

have been arranged so that C-130 flights use the callsigns 'IFO01' to 'IFO30', and C-5/C-17/C-141 flights use 'IFO50' to 'IFO80'.

The USAF also like to give code-names to the various Command Posts involved in missions such as this. This time, they appear to be using the code-name 'Kingfish' for the various Command Posts; the one at Ramstein in Germany is 'Kingfish Romeo', while 'Tango' and 'Uniform' have also been mentioned. **A. Hankins** reports hearing a USAF flight asking for details of the British airfield manager at Tuzla, and was told to call 'Blue Factory' on a u.h.f. frequency. Has anyone heard any other callsigns like these? To provide radar cover for the airspace above the region, the USAF has

sent a number of E-3 AWACS aircraft. These are flying from Incirlik in Turkey, and possibly Aviano in Italy. I presume that they are using scrambled comms, or mainly u.h.f., but most of them used the callsign 'Shuck' when they passed through British airspace on their way into Europe. These aircraft will be rotated quite regularly, so there will be plenty of opportunity to hear them as they cross the Atlantic. In fact, the E-3 callsigns heard on h.f. are usually the flight-crew; the radio and radar operators in the back of the aircraft have their own series of callsigns: Bandsaw, Challice, Darkstar and Dragnet.

As well as the Air Force airlift, there has been an increase in h.f. traffic from the ships and aircraft in the Adriatic Sea. Over the Christmas

period, two particular frequencies were very active. 6.723MHz was used by US forces for tracking operations, while 6.7215 was used by other NATO forces. At first I assumed that these were also AWACS aircraft, but when one station asked another for his 'PCS' (position, course & speed), and the reply was that his course and speed were 'zero, as we are stationary in the water', I realised that this had to be a ship! The callsigns used by these stations are the usual NATO tri-graph type (a mixture of letters and numbers), however on Christmas Eve the USAF callsigns became 'Rudolph', 'Cupid', 'Prancer', 'Dancer', 'Donner' and 'Blitzen', and on Christmas Day they used the names of American football teams. Other frequencies that are worth watching are 2.839, 2.841, 3.945 and 15.0285MHz.

Questions

Garry W. from Lincolnshire asks if I can suggest a suitable book that lists all the military callsigns that he hears on h.f., and comments that the ones he uses for v.h.f./u.h.f. listening seem to be of little use on h.f. Garry does not mention which callsign book he does use. Well, this is quite difficult to answer.

Sometimes you can make a 'best guess' at who or what you are listening to, but much of the time it will remain unknown. Sometimes you may need a number of books to enable you find out simple facts about a callsign. For the record, the two books that I use are the book *Callsign 95* by Photavia, (available from the *SWM* Book Store) and the *VHF/UHF Airband Frequency Guide* which covers both callsigns and frequencies and is available from Javation; who advertise regularly in *SWM*.

Steve Rooney writes asking for some more information about a callsign he heard. On 15 December he heard station 'Watchdog AN' working Speedbird London on 8.921MHz, and passed his position as 59°08'N 000°32'E, and said he would call again in one hour. The 'Watchdog' callsigns are used by aircraft contracted to the Ministry of Agriculture, Fisheries & Food (MAFF), and they are used for oil-rig and fisheries surveillance flights around the UK coastal waters. In the southern half of the UK, aircraft operating from Bournemouth use the callsigns 'Watchdog 91/93/94', while those in Scotland operate from Prestwick and use the callsigns 'Watchdog AN & DH'. I am surprised to see they logged on 8.921MHz, as they normally use 4.128 and 6.647MHz.

Traffic Log (all frequencies in MHz, u.s.b., all times in UTC)

1.857	(11/12/95, 19.30) Aberdeen Coast Guard passing information to an unknown station about a fire on board the 'Ben Riach' (an oil-rig in the North Sea). The radio-operator on the 'Ben Riach' then called Stonehaven Radio to report that the fire was under control and there were no injuries.
3.192	(8/11/95, 20.30) Warships '9WJ' and 'G6S' operating off the coast of Yugoslavia, tracking a ship at 41°53'N 018°25'E, travelling from Selenica, destination unknown. (11/11) Warship 'E5J' off the coast of Yugoslavia, reporting that vessel <i>La Rue Express</i> was at position 'Blue 058 065', and ship <i>Marem</i> was at 39°40'N 018°16'E.
3.924	(29/11, 09.36) Plymouth Ops requesting that Royal navy ship '0ZV' should contact Plymouth Radar on 281.725. (30/11, 16.15) Plymouth Ops working ship '3DI', asking that they rendezvous with 'the aircraft' at 49°32'N 005°20W. (6/12/95, 15.10) Plymouth Ops working Dutch warship 'A9M', asking that they confirm their position, as their last stated lat/long places them in a firing range!
4.477	(1/12/95, 15.40) station '2SF' repeating a message "Transmission for receiver adjustment and reception reports. Your reception reports will be welcome by Fax to +44 (131) 2446471".
4.675	(5/12/95, 15.47) Station 'NOW 5050' calling Bodo ATC, but getting no reply. Later, Bodo was heard calling Iceland ATC. The 'NOW 5050' callsign should be a Norwegian Air Force C-130 Hercules aircraft.
5.628	(29/11/95, 11.27) Honolulu ATC working flights 'Singapore 001' and 'Aloah 17', both with SelCal checks. (16/12/95, 10.35) Tokyo ATC working flights 'JAL 63', 'Malaysian 92' and 'Cathay 880', all with position reports.
6.688	(27/10/95, 11.30) Royal Navy ship with c/s 'C4P' in the English Channel working Portland Ops, reporting the arrival of helicopter 'Broadway 03'. '03 is the Bond Helicopters' helio based at Plymouth used to ferry RN officers.
6.697	(18/12/95, 18.20) 'MKL' working 'R3W', passing weather for RAF St Mawgan at 19.00. 'R3W' must have been a RAF Nimrod patrol aircraft.
7.918	(1/11/95, 12.15) USAF aircraft 'Spar 76' working an unknown station (possibly 'Andy?'), receiving a weather forecast for their destination. Hmm, not a regular 'Mystic Star' frequency, has anyone heard anything else on this frequency?
8.968	(10/12/95, 12.16) 'IAF 001' working Andrews GHFS, requesting a weather forecast for KDOV (Dover AFB) and KADW (Andrews AFB). This was an Israeli AF Boeing 707 en-route to the USA; Shimon Peres was in Washington the following day.
11.059	(2/12/95, 18.33) SAM 049 (USAF C-20 85-0049) working Andrews, en-route from Seville to Bangor. Another aircraft supporting the US Presidential visit to London and Belfast.
11.175	(3/12/95, 17.57) 'Gordo 12' working Ascension GHFS with a phone-patch to 'Raymond 21', reporting their e.t.a. as 22.55z. This was the USAF E-4 which visited RAF Mildenhall in support of President Clinton's trip to London and Belfast.
15.0285	(18/10/95, 13.19) Stations 'FT', 'Golf' and 'Red Crown' working together tracking ships and other targets in the northern Adriatic. Yet another 'Bosnia' frequency to listen to.

Airband

In January, Martyn Doig GW4COZ (Denbigh) tried to identify some n.d.b.s and I left you with a list of those that remained elusive. Many of you have filled in the blanks, so here are the ones that you've helped to identify (alphabetical order, frequencies in kHz). ACD: Alobendas, Spain, 417; BST: Lanveoc, France, 428; FNL: Fenland, England, 401; FNR: Bundoran, Eire, 402; GMN: Gormanstown, Eire, 335; LRW: a new one at Heathrow, 357; MVC: Merville, France, 327; ONT: Kleine Brogel, Belgium, 431; SBL: Sherburn-in-Elmet, Yorkshire, 323; SBY: Strubby heliport, Lincolnshire, 330; WC: Nam oilfield, North Sea, 358.

Of FNL and FNR, it isn't certain to which Martyn was referring. There's only one Morse dot and 1kHz difference! They've just got rid of the markers at Heathrow, but have now decided to install LRW although this doesn't appear to operate all the time. Can any Flemish speaker tell me what a Brogel is, please?

Thanks to **J. Brocklebank** (Ludford), **Syd Hawkes** (Burnley), **Peter Rycraft** (Wickham Market), **Bob Sayers** (Redditch), **Keith Seddon** (Stockport) and **Alistair Taylor** (Bracebridge Heath) for helping with the above information. You can also buy a list of n.d.b.s from Robert Connolly G17VX (21 Eleastan Park, Kilkeel, Co. Down, N. Ireland BT34 4DA). *Non Directional Beacons of Europe* (Arctic to N. Africa) costs £3.50 plus 50p UK postage. A new edition is due and I look forward to reviewing it here.

J. Brocklebank knows all about SBY: he works on it! The transmitter uses valves and the Morse ident is generated electro-mechanically. It feeds a simple L-shaped wire antenna.

On the Air

The main purpose of the Distress & Diversion (D&D) Cells (121.5MHz) at the London and Scottish Area Control Centres is to help aircraft in danger. Calls are either 'Mayday' if the threat to life is immediate, or 'Pan' if urgent assistance is required to prevent a serious situation

from developing. When no emergency is in progress, pilots and controllers help each other by mutual training in the form of the 'Practice Pan.' The aircraft pretends to be lost, D&D locates it and gives instructions for diversion to a suitable destination. For practice purposes, you ask to be 'diverted' to the aerodrome that you really wanted to land at anyway!

A new facility is the 'Training Fix.' Without going through the whole procedure, the aircraft is given its position and that's the end of the matter (A/C 107/1995 from the CAA refers). This is easier now that D&D can find the transmitter's position by auto-triangulation, a type of radio direction-finding.

What's happening on 231.625 and 264.825MHz, Pole Hill sector? See last December's column. **John Fenton** (West Rainton) suggests that both frequencies are still in use. Exactly which and when probably depends on workload at the time. One controller might even work both at quiet times, giving the illusion of duplex operation. This is called band-boxing.

Receiver Hardware

In January I covered the debate about 8.33kHz channel spacing, as proposed for part of the v.h.f. communications band. A/C 109/1995 describes the history of reduced channel spacing: each time, the spacing has been halved so as to provide double the number of channels. In 1954 it was reduced to 50kHz and twenty years later to the current 25kHz. Band extensions have also occurred: the band originally stopped at 132MHz but was extended by 4MHz in 1959 and then to the present 137MHz in 1990.

The official view is that most European states will require 8.33kHz spacing by 1/1/98 but the UK will delay until 1/1/99. These new channels will only apply to traffic on upper airways above FL200.

Look out for the Scanap AP-1000 receiver, when the AYP Electronics company introduces it later in the year. AYP's managing/technical director, **Ahmed Parekh**



Fuji FA 200-180. Christine Mlynek



Piper PA-23 Apache. Christine Mlynek



Towing a Spitfire - backwards! Christine Mlynek

(Great Barr) tells me that it will tune 8.33kHz channels in the v.h.f. and u.h.f. airbands. Do let me have a specification (or actual hardware!) to review, Ahmed.

Questions

Anonymous of Worcestershire wonders what the 'Dynamic Sciences Survey' does, and why it needs an allocation in the u.h.f. airband. This is a new one on me. I'm sure someone will write in with the answer.

Answers

In January I asked about the antenna farm at Edlesborough and I've had replies from **Andy Cadier** (Folkestone), **Brian Fearnelyough** (Wallingford), **Geoff Halligey** (Wales), **Brian Jacques** (Leighton Buzzard) and **Brian Westwood** (Dagnall). Once referred to as RAF Dagnall, it's now RAF Edlesborough - so there is an aeronautical link, after all! Probably established in World War II, it provides h.f. communications with RAF and Army bases elsewhere in the world. The transmitters are controlled from, and some receiving antennas are located at, RAF Stanbridge that is a few miles away near Leighton Buzzard. As well as wire antennas, Edlesborough has an impressive rotatable h.f. beam that looks like a log-periodic as far as I can tell from having driven past.

Andy (known to you as the

author of SWM's 'Off the Record') was stationed there in the early 60s. Nearer to Andy's present home is RAF Ash and nearby you'll find the NATS Ash radar head (primary and secondary co-located). Also in the area is the Swingfield NATS ground-to-air communications relay, serving LATCC.

Brian Westwood, ex-RAF radio operator, sent me on a nostalgic hunt through some old aeronautical charts. At Ellesborough, near Wendover, was an airways (fan) marker called Beacon Hill. I've found it, on airway A1 (they called it Amber 1 in those days) on a chart dated 12/66; a 2/68 chart does not show it. A1 (now called, boringly, Alpha 1) is further west nowadays, directly overflying RAF Benson.

You're familiar with i.l.s. marker beacons. All on 75MHz, they are overflowed during the final approach. The outer marker comes first, flashing a blue light in the cockpit and sounding low-pitched Morse dashes in the headphones. Next comes the middle marker, triggering an amber light and alternating medium-pitch dots and dashes. Inner markers aren't used these days, but they would trigger a white light and sound high-pitched dots.

Some airways also have the same beacon as an inner marker. Again, rare these days, they were common even in the mid-1960s as a way of indicating progress along the airway. Even now, the white marker indicator lamp in the cockpit is labelled 'Inner/Airways' to reflect its

Scanning

This month sees some sad news for those of us involved in aviation monitoring. Regular readers will know that I've been pushing **The Black Cat Aviation Group** and *Intercept* - both regular sources of information for scanner owners with a penchant for aircraft - military and civil. It seems indicative of the ills inherent in Britain today that both these sources of good, usable information have now shut down.

Black Cat went, to the best of my knowledge, first. Not, alas, in a blaze of glory but amidst a number of complaints as to treatment! **Oxford Ears** - regular amidst the paragraphs of this column - telephoned me to say that he was concerned about not getting his magazine - a comment repeated by **Norman D. Locke**, of Peterborough. Both these correspondents moaned about the lack of information surrounding the activities of BCAG but Oxford Ears went one further and contacted his Trading Standards Office for complaint. BCAG responded by sending back a cheque - that, alas, bounced - and this was followed a bit later by the promise of a postal order that - as we all know - will not bounce. To date, I have heard nothing as to whether this has been done. Mr. Locke is advised to contact his local TSO for details of how to recover his debt - as are all of you who have joined, or sent money to, BCAG.

Sadly, *Intercept*, the magazine of that group, has also ceased to exist. The editor, David Gregg has other commitments elsewhere and running the group became just a bit too much. Like the BCAG, that's another aviation group down the tubes. A great loss for those of us who constantly monitor the airbands - especially those concerned with the military. All, however, is not lost....

Paul Wey's Scanning Report is - as I have often said in these pages - the definitive guide to scanning. Concise, factual and accurate - as accurate as can be - Paul

will, I hope, step in and embrace the gap by expanding coverage of his already excellent publication to include military airband and civ. airband likewise. Paul's address has appeared in here regularly - please look to back issues for it or, alternatively, write to me - enclosing an s.s.a.e. No s.s.a.e., no reply. Sorry!

Now, an idea from **Pat**, of Yorks. Pat has written to me asking if I can air the idea taken up in *Monitoring Times* and ask you - the readers - to help. It goes like this:

You send in interesting frequencies from your area and, every month, I will attempt to pull out the best frequencies in terms of confidentiality (!) in a table. I anticipate this being popular so I will ask only this of you: If you decide to send in, keep the lists to a concise format! I have about 2000 words max to use via my Editor and while he is a generous man, the taking over of extra pages in the magazine may well be, um, viewed a bit *seriously!* If you have some active frequencies in your area, send them in. I'll try to list what I can, on a town/city basis - and, I hope, build up a picture of Britain, radio wise.

Pat also goes on to start with the following for Humberside and North Yorks. These are:

- | | |
|--------------|--|
| 82.1375 f.m. | Humberside North Bank snowploughs. |
| 87.4625 f.m. | N. Yorks Scarborough snowploughs. |
| 86.2250 f.m. | Humberside - South/ Motorway. |
| 168.0750 | Beverley Borough Council. |
| 453.3500 | Bond Helicopter Ops, Humberside Airport. |
| 456.3000 | Easington British Gas Terminal. |
| 456.1875 | Atwick underground storage caverns. |
| 456.6500 | Ferry Company Humberside. |
| 456.7250 | Ferry Company Humberside. |

Ferry Company Humberside.

Pat has actually sent in a great deal more - and thanks for those - but space limits the full spread!

Ian McCallum of Glasgow writes next - with some ideas I feel sure will be of interest to those who are strapped for some of the lucre in life - which includes me, I will confess! Ian has a

problem in that he lives close to a few high-power transmitters and these interfere with his hobby of civil airband listening. Unable to afford the high cost of commercial gear, Ian has made some filters that work - and that he feels he should share with the wider audience of the column.

These are stub filter or quarter wave traps and consists of 50Ω coaxial cable cut to the frequency that needs to be blocked out. Ian starts by saying find the frequency of the offending transmitter and, using this formula, cut the coaxial cable to length.

Required length (m) = 0.25 x Velocity Factor of cable x frequency (MHz) ÷ 300.

(The velocity factor of solid polyethylene dielectric coaxial cable is 0.66).

Using a 'T' connector, connect the length of coaxial cable to one end, and the antenna to the other. Connect to the scanner.

You **must** leave the free end open circuit! If you don't, it will not work! Insulation can be made by dipping into epoxy resin, so insulating the coaxial cable.

If you try this, please drop me a line and let me know how you got on. Ian swears that it's cured his problem - at a fraction of the cost! On the subject of cost cutting, **Jim**

Woodhead of Sheffield writes in with news that Argos are stocking a TV/f.m. antenna - catalogue number 535/4225 - at the lordly price of £12.50. Used with Jim's VT-225, Realistic 2006 and an ex-military R216 v.h.f. set, has convinced him it's the biz, having a spread of around 80-950MHz, and Jim's so chuffed with it he's getting

another one! Proof, indeed, that you lot are really very good when it comes to spotting bargains everywhere! This antenna is supported by a letter from **Pete Rogers** of Pontefract who also goes on to say that "some claims made by antenna manufacturers border on the unbelievable - and maybe the Advertising Standards people would be interested in them!"

Michael from the West Country writes in with some frequencies from the Plymouth area, fairly active he reports since FOST shifted from Portland. Using two Bond Helicopter Dauphins - callsigns Broadway 03 & 04. Frequencies are shown in **Table 1**.

Mike also reports that Brymon Airways are using their old style callsigns and a new 3-digit style that seems to fit with British Airways - who, as Mike so rightly points out, own Brymon! As for the *Scanning Report* - address is on its way.

Steve wrote in with a print-out of fire brigade frequencies running into a few pages and space, this month, does not allow me to print it. I will, however, run it next month. My apologies but I will get it in!

H.G. Miller, J.J. Hooker and **L.D. Wilson** support the **Mike Dodds** school of

thought that the VT-225 suffers from white noise at around 243.5MHz. This letter is supported by a few others who also ask if it's an internal fault? Again, I sussed my own out and found that, although there is a hiss at 243.5 on my own, it's not bad. Oxford Ears also reports likewise - plenty of noise, that is! Mr. Wilson goes on further, suggesting that

it is internal noise, and why didn't Yupiteru place all of the 'birdies' in a chart as Realistic do? He also states that his set suffers 145MHz breakthrough when tuned to 156.0MHz, that the programmed steps do not allow scanning to resume after transmission has ended when on location at certain airfields - i.e. the squelch

remains open. That the I.c.d. becomes corrupt at times. Mr. Wilson suggests that maybe an attenuator would help? Any ideas Yupiteru?

Mr. Wilson also asked how the Air 33 performs - regulars will recall I have one aloft here at the QTH. This antenna is really very good, enabling me to follow on when the

Scanmaster is going 'down'. I have tried alternating my AOR AR-2000 between antennas here but this isn't conclusive as the VT-225 is a better set on airband. What can I say about it except that it has a better signal strength and is, easily, more suited to airband listening than the Scanmaster Base? On the

subject of the VT-225 I will say I find this set to be good - loyalty to it, maybe - and whilst it may have its niggles, it is still a credible performer.

Godfrey Manning who writes the 'Airband' column wrote in to ask if anyone can help him? Godfrey is a cricket fan and wishes to know if anyone has ever intercepted the radios used by umpires at test matches? He says the sets are bulky, not hand-helds, and that a microphone can be seen sticking out of their coats! Anyone able to help with this one?

Oxford Ears writes in with some interesting stuff. Lyneham was heard with a USAF aircraft *en route* to Brize on 379.125, call sign IFOR - possibly an IFOR flight *en route* - or on return - from the Bosnia area. Tankers heard on 312.45 out of Mildenhall and also comms on 284.975 - but no real ID. Once more, interesting military stuff around this location! I wonder how I ever managed in North Wales!

Lastly, thanks to **Mike Beaumont** for assisting Kirk Gill with a request for a dry battery charger after Kirk

wrote in to ask if anyone knew where he could get one. Mike passed on adverts and a circuit for one plus a technical paper. This was more than gratefully received by Kirk, who was an electronics engineer at some time in the past! Shows that we can all help when we can and that requests do work - sometimes!

Meanwhile, I'm hard at it studying for the RAE. I may well enter as an external in the May examination - I need the break from social work theory and essays! It's harder than I recall, but maybe I'm getting old? Hopefully, I may well come out of this with a 'B' callsign and will be able to get up and running and out on the bands! Would be nice to chat to some locals! If you're after entering, or are on an RAE course, good luck!

That about wraps it up for now, folks! Remember to keep writing with anything you may wish to explore, or with news that you may have.

Table 1

Plymouth Roborough Tower	122.60
Approach	133.55
Navy LARS	121.25 / 379.85
Ops / Portland LARS	386.70
Ops	369.925
Ship / Hel;o	337.95
Ship / Hel;o	233.925
Ops	231.10
CAP 'Thursday War'	281.725
Portland Ops	274.325 - used occasionally.

GAREX ELECTRONICS

WIDEBAND SCANNERS

All major brands available, with the all-important service back-up from a Company who pioneered the UK scanner market; we are completely independent so contact us for impartial advice.

WIDEBAND SCANNER AERIALS

"REVCONE" premium quality British VHF/UHF Discone 16 element for all-round coverage, SO239 connector £38.95 or N-Type connector for improved UHF performance £39.95. "REVCONE PLUS" with improved low frequency coverage £48.95. "REVCONE EXTRA" ready to go package; discone, 10m co-ax fitted PL259, mast clamps, BNC plug £49.95.

"RADAC" NEST OF DIPOLES

Imitated but not equalled. Receive 25-1300MHz, outperforms discones with guaranteed Tx performance on 2m and either 4m or 6m: £74.95. Special VHF/UHF Airband RADAC: 108-136MHz and 220-400MHz £74.95.

"NOMAD" PORTABLE SCANNER AERIAL

Lightweight design using ribbon cable elements: rolls into a small bundle for ease of transport, hang from any convenient point, ideal for travelling, with 4m co-ax and BNC plug. £16.95.

NEW ACTIVE "NOMAD"

With built-in wideband preamp complete with supply/splitter box (internal battery or external 9-15v supply) £29.95.

SCANNER AERIAL FILTER

Is your scanner useless due to breakthrough? Then this product could solve your problem: a specially designed tunable filter to be fitted in-line with the aerial feeder, reduces breakthrough from strong VHF signals, (e.g. Band II, pagers, police) also includes HPF to reduce SW & MW interference, BNC connectors £27.95.

VHF PREAMPLIFIERS

Miniature (only 34x9x15mm), any frequency in the range 40-300MHz, up to 25dB gain. Assembled, but unboxed pcb. Stock versions: 6m, 4m, 2m, 137MHz (W-Sat) £12.95. Airband (118-136MHz) (reduced gain due to frequency spread) £12.95. Other frequencies in the range 40-300MHz to order: £14.95.

VHF AIRBAND PREAMP 118-137MHZ

16dB gain, boxed ready for use, powered by internal battery or external 9-15 volts DC, BNC connectors, £29.95.

VHF MARINE BAND PREAMP 156-162MHZ

20dB gain (other details as Airband model) £29.95.

PYE AERIAL RELAYS

12v operation, handles 50 watts up to 200MHz £2.00 5+ £1.60 each.

FLEXIBLE 1/4 WAVE AERIALS

Discover a whole new world of signals: full-length 1/4 waves are several dB better than "rubber ducks". BNC plug. Available for VHF Airband, UHF Airband, 2m, 70cms also other VHF & UHF bands to order. VHF models: £11.95, UHF: £9.95.

Write, phone or fax for lists. **Callers by appointment only, please.**

ALL PRICES INCLUDE UK CARRIAGE AND VAT AT 17.5%

GAREX ELECTRONICS

Unit 8, Sandpiper Court, Harrington Lane, Exeter EX4 8NS

Phone: (01392) 466899 Fax: (01392) 466887



practical Wireless ANTENNA SPECIAL

REVIEWED:

- * The G3TPW MkII CobWebb Antenna
- * THE ADI AR-146 144MHz Mobile Transceiver

BUILD:

- * A Multi-band Vertical Antenna System
- * A Potent Quad for 144MHz
- * A Remote Antenna Position Indicator

FEATURES:

- * Make One or Buy One? - h.f. antenna round-up
- * Kites, Amateur Radio & Fresh air

SPECIAL PRIZE COMPETITION:

- * WIN The G3TPW CobWebb Antenna!

CAN YOU AFFORD TO MISS IT? -

ON SALE 14 MARCH 1996 -

PLACE YOUR ORDER TODAY!

Plus all your regular monthly favourites!

NOVICE NATTER ☆ CLUB SPOTLIGHT

☆ ANTENNA WORKSHOP ☆ BITS &

BYTES ☆ VALVE & VINTAGE ☆

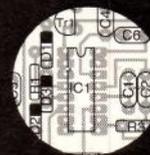
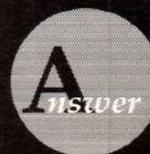
REGULAR REPORTS ON ALL BANDS ☆

NEWS & FEATURES ☆ COMPETITIONS

AND

LOTS MORE.....

**EVERYTHING
FOR THE AMATEUR RADIO
PROFESSIONAL**



PHOTAVIA PRESS

AIRWAVES 95



THE UK'S MOST COMPREHENSIVE AND UP TO DATE HF / VHF / UHF AVIATION FREQUENCY DIRECTORY

ATIS - RADAR - TOWER - VOLMET - GROUND - APPROACH - AIR TO AIR - AFS
AREA RADAR - AIR REFUELLING - AIRLINE OPERATIONS - STUDS - RANGES
SSR SQUAWK CODES - GROUND OPERATIONS - AEROBATIC TEAMS
UK / EUROPEAN CIVIL AND MILITARY AREA RADAR - AIR DEFENCE RADAR - ETC

AIRWAVES 95 HAS BEEN COMPLETELY UPDATED WITH OVER 700 NEW OR AMENDED FREQUENCIES. NEW MAPS SHOW UK TRANSMITTER SITES AND FREQUENCIES. MILITARY TACAN ROUTES, AIR REFUELLING AREAS, UK AREA RADAR SECTORS AND FREQUENCIES PLUS AIRWAYS AND REPORTING POINTS, AIRFIELD RUNWAY DESIGNATORS HAVE ALSO BEEN INCLUDED. THE COMPREHENSIVE CHANGES TO THE LONDON CONTROL SECTOR & TMA FREQUENCIES HAVE BEEN FULLY INCORPORATED INTO THE TEXT & MAPS.

THE HF SECTION HAS BEEN EXPANDED AND UPDATED, INCLUDING THE ADDITION OF OVER 450 NEW CIVIL AND MILITARY FREQUENCIES. THIS INCLUDES THE NEWLY REORGANISED US MILITARY HF GLOBAL NETWORK AND THE NEW RAF FREQUENCIES.

AIRWAVES 95 IS SUPPLIED ONLY FROM US, WITH AN UPDATE SHEET OF THE LATEST FREQUENCY INFORMATION.

UK PRICE £7 - 95 / EIRE & EEC £8 - 95 / INCLUDING P & P

NEW - NEW - PUBLISHED EARLY DECEMBER 95 - NEW - NEW

CALLSIGN 96

THE NEW SECOND EDITION OF OUR AVIATION CALLSIGN DIRECTORY WITH OVER 1700 ADDITIONS AND CHANGES. CALLSIGN 96 IS NOW WIRE SPIRAL BOUND AND HAS BEEN EXPANDED BY OVER 35%. THIS REPRESENTS MORE THAN 40 EXTRA PAGES OF INFORMATION, WHICH THIS YEAR IS NOW PRESENTED IN TWO EXTRA FORMATS.

THE MILITARY SECTION CONTAINS WELL OVER 5000 TACTICAL CALLSIGNS. INFORMATION INCLUDES: CALLSIGN, AIRCRAFT TYPE, AIRARM, CODE UNIT OR SQUADRON, BASE, PLUS GENERAL REMARKS. THE MILITARY SECTION IS NOW LISTED FOR THE FIRST TIME IN BOTH CALLSIGN ORDER AND ALSO UNIT / SQUADRON ORDER.

THE CIVIL SECTION LISTS ALPHABETICALLY, OVER 2000 CALLSIGNS IN CURRENT USE WITH AIRLINES AND OTHER OPERATORS FROM OVER 180 COUNTRIES. THE INFORMATION INCLUDES: CALLSIGN - 3 LETTER ATC PREFIX - AIRLINE / OPERATOR AND COUNTRY OF ORIGIN. THIS INFORMATION IS NOW ALSO LISTED BY ATC 3 LETTER PREFIX.

UK PRICE £8 - 50 / EIRE & EEC £9 - 50 / INCLUDING P & P

AIRWAVES EUROPE

PUBLISHED SEPTEMBER 95, OUR LATEST AIRBAND DIRECTORY IS PRINTED IN A SIMILAR FORMAT TO AIRWAVES 95 AND BY POPULAR REQUEST IS WIRE SPIRAL BOUND. AIRWAVES EUROPE LISTS OVER 5000 HF / UHF CIVIL AND MILITARY AVIATION FREQUENCIES FROM 36 COUNTRIES AND THEIR DEPENDENCIES IN EAST AND WEST EUROPE.

ALBANIA - AUSTRIA - BELGIUM - BELORUSSIA - BOSNIA - BULGARIA - CROATIA - CYPRUS
CZECH REPUBLIC - DENMARK - ESTONIA - FINLAND - FRANCE - GERMANY - GREECE
HUNGARY - ICELAND - ITALY - LATVIA - LITHUANIA - LUXEMBOURG - MALTA - MOLDOVA
NETHERLANDS - NORWAY - POLAND - PORTUGAL - ROMANIA - RUSSIAN FEDERATION
SLOVAKIA - SLOVENIA - SPAIN - SWEDEN - SWITZERLAND - TURKEY - UKRAINE - YUGOSLAVIA
(PLUS THE CIVIL AND MILITARY AREA RADAR FREQUENCIES OF THE UK)

UK PRICE £9 - 50 / EIRE & EEC £10 - 50 / INCLUDING P & P
CHEQUES / EUROCHEQUES / POSTAL ORDERS / PAYABLE TO PHOTAVIA PRESS
SORRY NO CREDIT CARDS

21 DOWNLANDS - PULBOROUGH - WEST SUSSEX - RH20 2DQ - UK
TEL : 01798 - 872100 Email : airwaves@photav.demon.co.uk

JAVIATION

CARLTON WORKS, CARLTON STREET, BRADFORD BD7 1DA

(01274) 732146

Frequency & Callsign List - Together

Our most successful publication ever - updated December '95. Not only have we updated the contents but we have included an Index and improved the Ring Binding. The frequency section is upto our usual high standards and the military callsign section has nearly 7,000 entries which all add up to over 230 pages.

£12.50 including postage

VHF/UHF List

Our VHF/UHF list has been updated for December. This is essentially exactly the same as the boom above but without the extensive callsign section. The price remains £7.50 including postage.

Military Callsigns

Nearly 7,000 Military callsigns with aircraft type & operating units. This is essentially the same data that we use in our combined frequency & callsign book detailed above.
£6.50 including P&P

Uniden 9000XLT

Looking for something for the home? Interested in searching our those elusive UHF Air to Air's you can never find? The new 9000XLT has full 25-550 & 760-1300MHz coverage, 500 memory channels of which 250 can have "alpha tags" but will scan/search 100 channels per second. Searching 350.00-400.00MHz in 25kHz steps takes 20 seconds, searching the entire UHF airband in one go takes a little over 60 seconds! Use 50kHz steps and that time is halved. Good sensitivity and good looks. **£399 including VAT** and carriage. We also have the handheld equivalent UBC3000XLT which has all the same scan/search features as the desktop model for **£299**.

Part exchanges on radios welcome, please give us a call if you are looking for something "cheaper" on the secondhand market as our stock changes all the time and we might just have what you after!

Amateur ARC Radio Communications ARC Ltd

TUE TO SAT
10AM-5PM

Good news for all scanner enthusiasts AOR have reduced the price of their Scanners! AOR models have always been popular sellers, but now demand will be even greater so phone now to take advantage of this special offer!

TEL: 01925 229881
Fax: 01925 229882

AR-8000

A new breed of receiver which combines full computer compatibility with advanced wideband technology. THE ONLY scanner to cover 500kHz-1.9GHz. Our best selling scanner to date.

RRP £410 ARC Price £PHONE



NEW ON THE MARKET YUPITERU MVT 7200

The Quality & Performance of the MVT-7100 plus lots of additional features - phone for details
Deposit £49 12x£33.33
Total £449
ZERO APR



cash price
£399

Optoelectronics Scout

This mini frequency finder will capture & memorise frequencies that can be recalled directly into the AR-8000 **£399**

Buy your Opto scout now & we will mod. your AR-8000 FOC

AR-5000

AOR have kept the price of this new high performer base/mobile wide band receiver to below £1800. We have received our first delivery & its very impressive. Why not come & see for yourself.

Deposit £177, 12 x £131
£1749 ZERO APR

ICOM IC-R7100DC

The ultimate UHF/VHF receiver covers everything from

25MHz-2GHz. 2 year guarantee
Deposit £309, 12 x £95
Total £1449
ZERO APR

DRAKE R8A

New improved Version incorporates more memory, better ergonomics, improved AGC & More Plus all Filters Fitted
Deposit £299, 12 x £83
Total £1295 ZERO APR

AR-2700

500kHz - 1300MHz
Full coverage with f.m. & a.m., optional 20 second voice recording module
RRP £269
ARC Price PHONE



AR 3000A

100MHz-2036MHz with lots of extra features including an RS-232 interface for computer control. Remember the saying "all good things come in small packages" well the AOR-3000 proves it's true.
Deposit £97, 12 x £71
Total £949 ZERO APR



FREE WINDOWS SOFTWARE WORTH £95

Skycan desktop discone £49.95	WEP 300 Police Style Earpiece £9.95	Scanmaster QS-200 Mobile Holder £9.95	Scanmaster Base £39.95 Discone £49.95
---	---	---	---

SECONDHAND BARGAINS

NRD-525 + UHF converter/computer interface	£950.00
AR-3000	£TEL
MVT-7100	£250.00
Kenwood R-5000 1 month old	£TEL
NRD-525	£800.00
FRG-100 in mint condition	£425.00
Drake R-8E display model	£949.00
FRG-9600 + HF converter	£350.00
IC-R1 handheld	£250.00
PK-1000	£275.00
PK-88	£90.00

Plus Lots More.....

INSTANT FINANCE AVAILABLE
at low APR rates

ACCESS ★ VISA ★ SWITCH - ALWAYS WELCOME
FREE PARKING AVAILABLE

**38 Bridge Street, Earlestown,
Newton-le-Willows,
Merseyside WA12 9BA**

Info In Orbit



The emergence on to the Internet of an information source for GOMS - the CIS

Geostationary Operational Meteorological Satellite (their equivalent of METEOSAT) - bodes well for future information on GOMS operations. This site appeared two days before the press deadline for 'Info' causing me to re-organise this article to carry this welcome announcement from Russia. The Space Monitoring Information Support laboratory point out that it may not be updated properly yet, but it seems likely to be in the future.

The web address is:
http://smis.iki.rssi.ru/goms_2.html

GOMS Status

GOMS is described as 'in experimental mode at 76° east, and supports reduced imaging mode (every three hours), and heliogeophysical measurements (hourly)'. The announcement states that 'flight tests are coming to an end. Some anomalies were revealed...' It seems that because of malfunctions in onboard optical instruments in the visible channel, not more than 15% of visible images may be used. The visible channel (0.46 to 0.7microns) has a ground resolution, at the sub-satellite point, of 1.25km, and resolves 256 grey levels during its 15 minutes scan time. One infra-red band is listed (10.5 to 12.5µm) with a third band (6.0 to 7.0µm) scheduled to be included on GOMS-2.

A considerable amount of information about GOMS is given on the web pages, including details of the radiation and magnetometry system, which is likely to supplement that from the American GOES constellation. Several frequency bands are used, ranging from 0.402GHz for data collection platforms (DCP), to 8.2GHz for processed television for transmission to other centres.

The Planeta-C Ground Data Microprocessing Centre is developing the technology of GOMS data acquisition, and now archive up to 10 days images. They have a network for users to access operational data. The published information includes a request that they be provided with suitable hardware to decrypt METEOSAT high resolution imagery, and they are planning to provide EUMETSAT with data on digital data storage (DDS) cartridges.

OKEAN-SICH TX Schedule!

Following the emergence on to the Internet of the GOMS web page, a few days later Alex Ivanov of RPA Planeta, Moscow, released a schedule of OKEAN and SICH transmissions for the week starting 29 January! The schedule, obtained from RPA Planeta, Moscow, included a description of which instruments would be operating! Some of the times were not during UK passes. If this schedule becomes a regular feature then I shall make these listings available on a regular basis.

Back in the UK

December's snow gave UK weather satellite watchers a rare opportunity to see not only the extent of snow coverage, but the ability to monitor weather movements, even if not to actually predict where snow would fall next. In Plymouth, we had virtually no snow - although the nearby moors experienced some light falls. Coverage was monitored fairly easily by satellite, particularly the polar orbiters, as seen in several pictures sent for inclusion in this column. While seeing northern counties grappling with heavy falls, it was amazing that children here were complaining about the lack of it; my daughter Cathy, now in her first year at university, has never seen snow fall in Plymouth.

Dennis West of Winslow sent an image taken from METEOR 3-5 at 1017UTC on December 29 (one of a set), showing the snowfalls in Britain. I had actually recorded these very passes, because of the clarity of the snow in the images.

Snow Pictures from the USA

Several Americans kindly made their NOAA images of the snow falls on America's east coast, available to me for publication. Shown in **Fig. 3** is an image of the eastern US, obtained from the visible/near-ir channel of the AVHRR instrument aboard the NOAA-14 polar orbiting WXSAT on 10 January 1996 at around 1914UTC, on the ascending pass of orbit 5312. Note the snow cover in the mid-Atlantic from the 'Furlough Blizzard of '96'. **Geoff Chester** of the Smithsonian Institution,

captured and processed this image. The north-eastern coast is shown, together with the lakes, some of which appear to have ice sheets. The image shows sections of the Appalachian Mountains, and the areas covered by snow are clearly seen.

In **Fig. 4** you can see the New York blizzard of January 12, imaged by METEOR 3-5 and received by **John W Huecksteadt AC4CA** of Alpharetta. His WXSAT equipment includes an Icom R-7000 v.h.f./u.h.f. receiver, used in wide band f.m. mode and fed from a turnstile antenna fitted with a pre-amp. His OFS Wfax demodulator and software run on a Pentium PC.

Bill Schwittek owns the American company MultiFAX of North Carolina, and uses a 7-element crossed Yagi antenna to feed a 137MHz pre-amp. A Yagi like this requires tracking of the a.p.t. signal, so Bill uses the Yaesu G-5400 AltAz rotors and the Kansas City Tracker. His company's MultiFAX MF-R1 WXSAT receiver and MF-EXT3.1 demodulator feed the image capture software - the MultiFAX MFMAP7 program - which has the satellite tracking/rotor control built-in.

Bill originally sent me this picture as unencoded mail, but unfortunately, these tend to arrive corrupted. Bill therefore placed his image on the Dallas Remote Imaging Group's server, from where I collected it. An excellent image, it shows the snow line reaching all the way down to North Carolina. It is sharp and many land features are visible. This image comes from a much larger one, and Bill also kindly offered to provide images from the MultiFAX archives, from which this image originated.

Current WXSATs

OKEAN-4 and SICH-1 activity has continued, though I have heard few of the transmissions that were reported. These two satellites carry visible-light, radar and microwave scanners, and the format of their transmissions is not always predictable. **Jim and Hilda Richardson** of Strathkinness sent me a list of OKEAN transmissions that they had monitored. Living in the far north of Britain they are in a favoured location for receiving transmissions from these two satellites because of reports that both often transmit near the north-polar regions.

Fig. 1: GOMS visible-light image, courtesy Dr Alexander B Uspensky, Director General RPA 'PLANETA'.

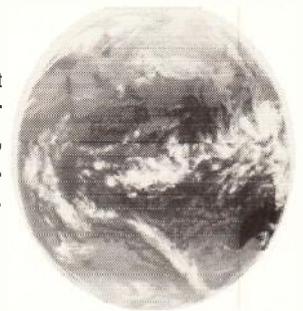


Fig. 2: METEOR 3-5 image of December 29 from Dennis West.



Fig. 3: NOAA-14 January 10 from Geoff Chester (USA).



Fig. 4: From John W Huecksteadt.



Fig. 5: From Bill Schwittek.

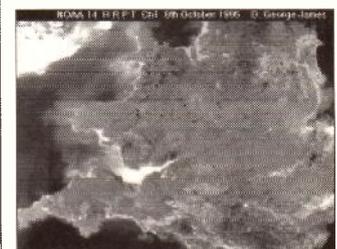


Fig. 6: Channel 1; 8 October 1995 from D George James.

On January 16, OKEAN-4 was transmitting a radar image during its 1725UTC high elevation pass over Britain. At one time, transmissions only took place within receiving distance of Russian ground stations. Sometimes we can receive a transmission from OKEAN or SICH while they are over the western Atlantic - and presumably within range of a Russian ship.

Jim sent me a FAX showing a GOES image, received from Kevflavik on 9318kHz, and a list of transmission times of satellite images by Kevflavik, for those wishing to monitor the h.f.: 0930UTC, 1100, 1200, 1300, 1400, 1600, 1700, 1800, 1900, 2130 and 2200UTC.

Winter visible-light pictures from the NOAA WXSATS continue to slowly improve as the sun's mid-day elevation increases.

CIS (Russian) Launches for 1996

My enquiries about future launches of CIS WXSATS led me to the Co-ordinational Scientific Information Center of the Russian Space Forces, and to N Sheinok. He has sent me an extraction from the Federal Program on Development of Hydrometeorological ensuring system for economics of the Russian Federation, in 1994-1996 and until 2000.

My interpretation of the above table is that SICH-1 may be shown as OKEAN-8, and that a METEOR class 3M is scheduled for launch this year. My thanks to the CSIC for this information.

GOES Manoeuvres

The American geostationary WXSAT GOES-9 replaced GOES-7 at 135° west, after being drifted there during a period of a few weeks. It was scheduled to arrive at its new (GOES-west) station around 22 January 1996. The transfer was performed around

(from METEOSAT). Occasionally, readers send details of equipment used to receive h.r.p.t. and PDUS imagery. My own PDUS system is non-operational.

D George James of Elgin in Scotland sent me a selection of h.r.p.t. (high resolution picture telemetry) images on disk. For those readers not familiar with this type of image, it is the original data from the advanced, very high resolution radiometer (AVHRR) sensors on NOAA wxsats. Part of this original data is transmitted as h.r.p.t. at 1698.0MHz, 1707.0MHz or 1702.5MHz, depending on which satellite is being monitored. Data comprises five channels of imagery in different wavebands (visible and infra-red). A channel 1 image from the band 0.55 to 0.68 microns (micro-metre) - the visible-light channel can be seen in **Fig. 6**.

Maximum resolution is about 1.1km immediately below the satellite. From this stream of data, lower resolution a.p.t. (automatic picture transmission) is derived by simply discarding some of the data to produce reduced resolution imagery. This is then transmitted on 137.62 (or 137.50)MHz, to a.p.t. users.

There are significant differences in the operation of a.p.t. and h.r.p.t. systems. The v.h.f. signal (on 137.62MHz) can be received using a fixed, crossed-dipole antenna, often mounted at the top of a chimney or similar high site. Telemetry from polar orbiting WXSATS should be heard adequately at nearly all elevations, unless significantly obstructed. To receive an adequate signal from polar orbiters transmitting in the 1700MHz band requires a dish, the position of which must be controlled to track the WXSAT from horizon to horizon, or to similar limits. This tracking system forms an extra expense for h.r.p.t. users, but there is software available to control dish mounts fitted with suitable interfaces, and many hobbyists have built their own systems, some even building the highly specialised receiver.

George uses a Timestep h.r.p.t. system, with a Yaesu az-el rotator operating a 1m self constructed parabolic dish, not yet permanently installed. George tracks manually and suggests that this is not really very difficult. Data is fed

to a 486 PC for processing.

He also monitors a.p.t. and WEFAX, the latter using a Dartcom down convertor. George comments that as a beginner with no knowledge of satellites, he found it very difficult to get information, until he found *SWM* and 'Info'. He also became a member of RIG (the Remote Imaging Group). His image shows most of England and Wales enjoying the clear skies that were a feature of summer 1995.

Schedule for launches:

	1994	1995	1996
OKEAN-01 (n.7,8)	1	1	-
RESOURCE-01 (n.3,4)	1	-	1
METEOR-3 (n.8)	-	1	-
ELECTRO (GOMS)	1	-	-
METEOR-3M	-	-	1

January 11, with GOES-7 being powered off and GOES-9 starting transmissions near the latter stages of its move. GOES-7 is being drifted eastwards. My thanks to Michael Soracco of NOAA for this information.

Letters and Images

The majority of letters and pictures received for this column concern a.p.t. in the 137MHz band (from the polar orbiters), and WEFAX images

Launches

I have an interest in all satellite launches, and for readers with similar interests I am including this short summary

Feb 16 - NEAR Delta 2 launch (asteroid Eros orbiter)

Feb 20 - Soyuz TM-23 Launch (Russia)

Feb 22 - STS-75, *Columbia*, Tethered Satellite System (TSS-1R)

Feb 28 - Raduga Proton Launch (Russia)

Mar 01 - Astra 1F Proton Launch (Russia)

Mar ?? - MSX Delta 2 Launch, *Seastar Pegasus* Launch

MIR QSLs

My own interest in MIR is as a passive monitor of the voice link on 143.625MHz. **Frank Slater** of Spalding is somewhat more adventurous and has asked me for an address to send confirmation of contacts via amateur radio. Unfortunately, I do not have an address for this; while I make enquiries, if anyone can provide me with one I shall be happy to give it.

Satellite Software

My recent review of PC Track generated a lot of interest. Shortly before the review was published,

New Web Page!

At the time of writing I am shortly expecting to be allocated a web page on the internet. When completed, this should provide a summary of current WXSAT operations, together with some astronomy links, and should act as a supplement to 'Info', not as a replacement!

a new version (311) was issued, so this was distributed. The latest version of JVFAX (7.1) also hit the Internet a few weeks ago; copies of any of these programs, as well as the latest versions of all PC satellite software can be obtained by sending me a disk and pre-paid envelope. I would appreciate the sum of 50p being included, per program (to a maximum of £1.50), towards the cost of downloading, etc. I do regular 'archie' searches of the Internet to ensure that my copies are the most up-to-date available. Add to these the latest Kepler elements and we are well away!

One Sunday afternoon (January 14) at 1645UTC, I retrieved Kepler elements issued at 1643UTC! After collection, the dates showed the elements were just a few hours old! These were then printed out and despatched to the mid-month group on my monthly Kepler lists - see later.

Shuttle Pack

This includes the entire manifest, all published radio frequencies, hints on reception and information on obtaining launch passes. Please send 50p and an s.a.e.

Monitoring with Discones

Len Nosworthy of Polegate has a discone feeding his AOR scanner and wondered whether this was suitable for Shuttle monitoring. I have a discone mounted in the loft, but because of its low gain, I use a wide-band pre-amplifier fitted at the head end. This combination enables me to monitor a wide cross-section of satellites, ranging from the 400MHz band down to below 100MHz. I believe that wide-band pre-amps are essential for monitoring with discones, though I have not done tests to establish what signal levels can be detected. There is the additional problem of terrestrial signals being received, but on balance, I have been pleased with the combination. Len mentions that his great grandfather was a mariner in Nelson's time (Nosworthy is an old-Devonshire name).

Kepler Elements - MIR and Shuttle

Different options are available:

- 1: For a print-out of the latest WXSAT elements, the Shuttle and MIR, send an s.a.e. and 20p coin or separate, extra stamp. Transmission frequencies are given when operating. This data originates from NASA.
- 2: I also send monthly Kepler print-outs to many people. To join the list please send a 'subscription' of £1 (plus four self-addressed, stamped envelopes) for four editions.

Frequencies

NOAA 14 a.p.t. on 137.62MHz;
NOAA 12 a.p.t. on 137.50MHz;
NOAA beacons on 136.77 and 137.77MHz; METEORs currently use 137.85MHz; OKEAN-4 and SICH-1 use 137.40MHz occasionally.

- 3: You can have a computer disk file containing recent elements for the WXSATS, and a large ASCII file holding elements for thousands of satellites, with a print-out identifying NASA catalogue numbers. Please enclose £1 with your PC-formatted disk and stamped envelope.

Timestep

PROsat II is used by most leading Weather Satellite enthusiasts. They have come to rely on the vastly superior features of **PROsat II**. Features such as 1,000 frame full screen full colour animate, 3D, direct temperature readout, latitude-longitude overlays and country outlines from NOAA, and Windows export make Timestep products preferred by most serious users. All satellites are catered for including the awkward Japanese GMS and the very infrequent Soviet Okean series. All current SVGA cards are supported. NOAA images contain full resolution visible and infrared data in a stunning 2.4Mb file!

If you really are serious about Weather Satellites, phone or write us now for a colour catalogue and find out why the world's experts including Arthur C. Clarke use and recommend our equipment.



Advanced Weather Satellite users will by now have read about our new **TRACK II** prediction software. Full screen colour graphics and 6 simultaneous satellites are just some of the amazing features. For the ultimate in detail we offer **HRPT** digital systems with five 1.1km ground sensors, towns and rivers are clearly visible. For everyday use we also have the **PDUS** digital Meteosat system that takes 2.5km data every 30 minutes. Timestep **PDUS** colour animate is used several times a day by Anglia Television because of its very high resolution combined with spectacular colour. Forecasters will appreciate temperature calibrated 30 minute interval images.

A full range of separate Antennas, Preamplifiers, Cables, Receivers and accessories are held in stock.

Timestep PO Box 2001 Newmarket CB8 8QA England
Tel: 01440 820040 Fax: 01440 820281

C.M.HOWES COMMUNICATIONS

Mail Order to: **Eydon, Daventry, Northants. NN11 3PT**
☎ 01327 260178



Top Value RECEIVING ATU

Covers 500kHz to 30MHz. Increases wanted signals by impedance matching, and at the same time helps reduce spurious signals and interference. Kit contains case with smart printed front panel plus all other parts and hardware. Reviewed in the Dec. '94 SWM. Great performance and value!
CTU8 Factory Built: £49.90 **CTU8 Kit: £29.90**



NEW! HOWES CTU9 ATU

By popular demand! All the features of the CTU8 (500kHz to 30MHz, T-Match, SO239 sockets etc.) plus additional built-in balun, bypass switching and extra screw terminals for connecting balanced feeders, single wires, and a separate earth connection. A fully featured ATU that should suit almost every listener's needs. Real value, kit or ready built!
CTU9 Factory Built: £69.90 **CTU9 Kit: £39.90**



NEW! EASY ANTENNA SWITCHING

with the new HOWES ASU8 Antenna Selector Unit. Switch between up to three SW receiving antennas, and gain extra control over signal levels with the 0, 5, 10, 15, 20 & 25dB step RF attenuator. Matches CTU8 & CTU9 styling. Smart, convenient, easy to build with case and all parts! **ASU8 Kit: £27.90.**

Easy to build HOWES Kits. Top value ready-built HOWES ATUs

The famous HOWES Active Antennas

AA2 150kHz to 30MHz ACTIVE ANTENNA

The neat compact answer for those with limited space, holiday use, mobile operation etc. Two selectable gain settings, local or coax powering (12 to 14V). Good strong signal performance, IP3 +38dBm. Easy to build, and much liked by customers!
AA2 Kit: £8.90 **Assembled PCB Module: £13.90**

AA4 ACTIVE ANTENNA FOR SCANNERS

Covers 25 to 1300MHz. Broad-band performance in a neat, compact package. Just 410mm (16") long. Excellent performance in a small space!
AA4 Kit: £19.90 **Assembled PCB Modules: £27.90**

AB118 AIR-BAND ACTIVE ANTENNA

Optimised for long distance reception on 118 to 137MHz air-band. Tuned antenna with pre-amp & band-pass filter. Hear ground stations you've never heard before!
AB118 Kit: £18.80 **Assembled PCB modules: £25.90**

MB156 MARINE BAND ACTIVE ANTENNA

156 to 162MHz marine band active antenna system. "Pulls in" those distant signals!
MB156 Kit: £18.50 **Assembled PCB modules: £25.60**

WIDE-BAND PRE-AMP, 4 - 1300MHz.

Boost those signals with the HOWES SPA4! Low noise IC amp with 10dB switched attenuator. Over 15dB gain. Good dynamic range, IP3 +15dBm. 50 Ohm. Coax powered for shack or masthead use. Just the job for use with discones etc. in weak signal areas!
SPA4 Kit: £15.90 **Assembled PCBs: £22.90**

MULTI-BAND SSB/CW RECEIVER

The DXR20 covers 20, 40 & 80M bands with optional extra band modules for 160M, 30M, 15M or 10M amateurs or 5.45MHz HF air. Many high performance features in this excellent direct conversion design!
DXR20 Kit: £39.90, DCS2 "S meter" Kit: £10.90, HA20R hardware pack: £28.90



Please add **£4.00 P&P**, or **£1.50 P&P** for electronics kits without hardware.

HOWES KITS contain good quality printed circuit boards with screen printed parts locations, full, clear instructions and all board mounted components. Sales, constructional and technical advice are available by phone during office hours. Please send an SAE for our **free catalogue** and specific product data sheets. Delivery is normally within seven days.

73 from Dave G4KQH, Technical Manager.

Decode

All the Data Modes

Readers who received Disks 1, 3 or 3a from my Readers' Offers between January 6 and the 24, may suffer infection from a mild computer virus. Note, Disks 2 and 4 are definitely clean. The virus is known as FORM_A and resides in the boot sector of both hard and floppy disk drives. Fortunately, the virus is very well known and can be painlessly removed by most computer virus protection programs. If you don't have access to a suitable program, I can supply an evaluation copy of McAfee's *VirusScan* for DOS. The program comes with on-disk documentation plus I've written a simple batch file to clean your C: drive. All you have to do is copy the files on the floppy to a new directory, and type CLEAN to fix the hard disk and FLOPPY to clean floppy disks through drive a: For your evaluation copy of *VirusScan* just send £1.00 plus a sticky self addressed label. All disks sent after the 24th are definitely clean! Many thanks to **Geoff Allgood** from his prompt warning.

JVFAX Update

You may be aware that copies of *JVFAX 7.1* have been around for a while. I have yet to receive an official copy from Eberhard for distribution, but I understand that the only difference between 7.0 and 7.1 is the removal of the CompuServe copyright gif file facilities. Although gif files are in common use, they are actually protected by a CompuServe copyright and shouldn't be used without permission. As and when I receive my official copy of 7.1 from Eberhard, I'll send them out.

Internet Update

Andy of Bristol has written to let me know that the Brunel Amateur Radio Society has set up its own page on the Web. The location is <http://www.brunel.ac.uk:8080/~xxsubars>

The closure of the BBC Networking club means I need to rethink my Internet access arrangements. The Pipex Network that supplied the BBC Networking Club has been very reliable over the past few months, so I will probably take-

up their new DIAL service. This will inevitably mean a change of E-mail address, but Pipex have agreed to keep the old BBC address active until November '96. If you're into Web browsing, Netscape Navigator continues to dominate the market and the latest version (v2.0 beta 6b) is very impressive with support for frames and the new interactive Java scripting.

PIAB - Bananas!

Oh, did I make a mistake last month. Little did I know that Joerg Klingenfuss has a great sense of humour and occasionally puts intentional errors in his books. I was caught-out when I copied out the QSL address for PIAB from the *1996 Guide to Utility Stations*. **Mike Chace** E-mailed me to point out that the station name I had translated as Pressure and Information Manipulation station of this our Banana Republic! The correct name is Presse und Informationsamt der Bundesregierung that translates to Press and Information Agency of the Federal Government.

My thanks to Mike for pointing this out so politely.

Rome Medical Service

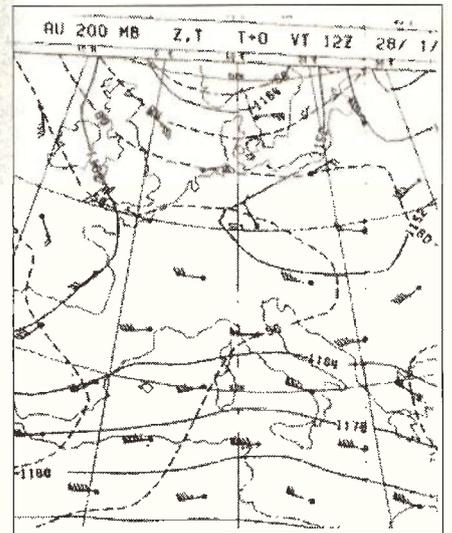
Lee Williams of Birmingham has monitored the transmissions from IRM (Rome Medical Service) on 12.748MHz only to receive the occasional ID. Lee wonders what the station is used for and does it ever send any plain text messages. Can anyone help with some background on this station and its role in life?

Dream Station?

No doubt you will have spotted the photo of **B. Burt** of Greenock's impressive receiving station. This comprehensive station comprises no less than ten h.f. receivers with some real classics such as two Racal RA-17s. B. Burt has a question concerning the use of his three Sailor R106 receivers. He would like to use them for FAX reception, but is having trouble working out the crystal frequency. From the data sheet the receiver appears to be a fairly conventional superhet



B. Burt's dream station in Greenock.



Zoomed weather chart from Rome Met, received using JVFAX 7 and Lowe HF-150.

with an intermediate frequency of 600kHz. As is common with older maritime equipment, lower sideband is used for all transmissions below 10MHz. As a result, the clarifier control may not have a wide enough range to allow for both upper and lower sideband reception.

You should be able to receive FAX images with the receiver set to lower sideband, but the picture will have the black and white levels inverted. Most FAX systems can handle this and can be set to invert the received image. If you have any further information on the use of these receivers for FAX reception I would be very pleased to hear from you.

Absolute Beginners

With so many people updating their computers and radio equipment around the Christmas period, my postbag has been groaning with requests for information on how to get started with the data modes. Whilst my *FactPacks* cover a number of specific queries, it's a long time since I covered some of the real basics. So I'm sure regular readers will forgive me if I take some column inches in an attempt to introduce some new blood to this fascinating aspect of the listening hobby.

So let's start with the obvious question - what are the data modes? For the purposes of this column, data modes are really any non-voice signal that can be found on the h.f. bands. Although I'm not strictly limited to the h.f. bands, there are so few decodable signals outside the h.f. bands that it's not generally worth the hassle. I've spent a lot of time and money exploring the satellite bands, only to find that everything up there is very well encrypted and I've yet to find anyone who's decoded anything of interest.

Of course if you know different please write and let me know. The only exception to this is the wonderful images transmitted by the weather satellites. However, these are very well covered in Lawrence Harris' 'Info In Orbit' column.

When I say non-voice signals I mean all the whirs, werbles, warbles and whines that are to be found throughout the h.f. bands. At this point I ought to make it quite clear that you will not be able to decode all the data signals that are to be heard on the h.f. bands. This can be either because they are not data signals at all, i.e. jamming/interference, or they are very advanced military or modern commercial systems. With these latter types, even if you decoded the basic transmission you would probably find the message is also encrypted - the result is that you can't tell whether the characters displayed on your screen are correct or not!

The 'Decode listener' tends to concentrate on the older transmission systems that are still in use throughout the world. Some of these systems have been around a very long time and are extremely well understood. The other benefit of these systems is that decoding systems are widely available on the retail market at very reasonable prices.

Perhaps the most basic and familiar of the data modes is Morse code. This simple yet reliable system is still in common use throughout the world, mainly by the maritime fraternity. Its main benefits are simplicity and reliability - an experienced operator can accurately copy Morse signals under the most appalling conditions where most other systems have long since failed. The other area where Morse continues to survive is with the amateur radio enthusiast. As a fan myself, I get great pleasure from operating across Europe using Morse code and the simplest of low power transceiver's.

The next most common data mode is Radioteletype, also known as RTTY. This is a logical

step up from Morse as the operator uses a machine very similar to a typewriter to send the message. At the receiving end the message is printed-out as plain text so eliminating the need for specially trained radio operators. RTTY is now in common use for all manner of transmissions from Press broadcasts through to weather data. In addition to the basic RTTY signals described so far there are a whole range of variants around that extend the reliability of RTTY to make it suitable for use on today's crowded bands.

Other signals that attract particular interest are FAX transmissions. The systems found on the h.f. bands are not like the modern high speed office FAX, but a much older analogue system. As with RTTY, this has the advantage that the images can be received with very reasonably priced equipment. Most FAX listeners use their equipment to receive weather charts from all over the world. In addition to basic weather charts you will also find that many satellite images and some press photos are re-transmitted over the h.f. bands. Understandably, these are always particularly popular with listeners.

Before you get onto receiving your first data signals, you might like to listen to one or two just to familiarise yourself with the sounds. This can save a lot of time later-on as I often get letters from new listeners who have bought a decoding system, but don't know where to start because they can't recognise the most basic signal types. I don't think I need to cover Morse, so let's start with a simple RTTY signal. One of the most reliable is the weather transmission from Bracknell Met. on 4.489MHz. To hear this station you need to set your receiver to upper sideband reception and tune about 1-2kHz

below 4.489MHz i.e. 4.487MHz. When properly tuned, you should hear a fairly rapid warbling sound as the transmitter switches between two tones.

Next try listening to a FAX signal. These are not always quite so regular and you will often find these just sending a steady carrier. So to hear your FAX signal set your receiver to upper side band again and try tuning to Northwood on 4.610MHz. You are likely to hear one of three possible sounds: a) steady carrier giving a single tone, b) regular blip twice a second or a cyclic grating/rasping sound. This latter sound comes from a FAX station while it's actually sending a chart.

Receivers and Decoders

Okay, so you know what the data modes are, how do you get to receive them? Starting with the receiver, all you need is an h.f. receiver that's able to resolve single sideband signals. Whilst the best solution is to go for one of the many communications receivers on the market, you can achieve very passable results with a modern portable receiver. A good example here is the range of receiver's from Sony. The only word of warning here concerns FAX reception. Because a FAX image takes around 15 minutes to receive your receiver needs to be very stable if you're to receive good quality pictures reliably. This means you will either need a communications receiver or one of the better portable receivers.

Having sorted out your receiver, you now need to consider how to decode the data signals. There are basically three types of decoding systems available for this. The first, and often simplest to use, is the stand alone system. This type of

Frequency List

This month's selection of frequencies from readers comes thanks to **Geoff Allgood, Lee Williams, Day Watson**, and other unnamed contributors. Remember, your logs don't have to contain lots of exotic loggings - I need confirmation of all the regular stations just as much. If you would like to contribute to the list, just send (post or E-mail) your log to the address at the head of the column.

111.8	FAX	120	576	OLT21	0851	PRAGUE MET
117.4	FAX	120	576	DCF37	1216	OFFENBACH MET
134.2	FAX	120	576	DCF54	1954	OFFENBACH MET
2.043	SITOR/A	100	170	-	0737	German Ships
2.720	FAX	60	576	RDE73	1647	SAMARA MET
2.8407	SITOR/A	100	170	-	0732	GERMAN CG NET
2.842	ARQ/E	72	400	RFFW	1835	
3.360	FAX	90	576	RPN71	2312	KIEV MET
3.606	ARQ/E	192	170	-	2258	UNID
3.6569	FAX	60	576	RVZ73	2211	ARKHANGELSK MET
3.710	FAX	60	576	RGJ61	2231	SAMARA MET
3.810	FAX	90	576	RST75	0752	MINSK MET
3.8327	ARQ/342	200	800	RFFA	2040	FF PARIS
3.850	RTTY	50	400	ETD3	2218	ADDIS ABABA AIR
3.9225	ARQ/E	85.7	170	-	0730	UNID
4.271	FAX	120	576	CFH	0015	CF HALIFAX
4.489	RTTY	75	400	GFL26	1126	Bracknell
4.7072	ARQ/342	192	400	RFFVAY	1954	FF SAREJEVO
5.150	FAX	90	576	RVO73	1634	MOSCOW MET
5.2215	ARQ/342	96	400	TYE	2320	CONOTOU AIR
5.240	RTTY	50	400	YZI213	1718	TANJUG News
5.325	FAX	60	576	RCW75	1935	ALMA ATA MET
5.474	RTTY	50	670	CSY	2312	SANTA MARIA AIR
5.4774	ARTRAC	125	170	HGX21	0721	MFA BUDAPEST
6.346	c.w.	-	-	HWN	1100	French Navy
7.684	RTTY	50	400	RVM53	1315	Moscow Met
7.843	RTTY	50	400	CNM20.1X	1330	MAP Rabat
7.959	RTTY	50	400	9BC23	2037	IRNA News
8.049	RTTY	50	400	9BC25	2018	IRNA News
8.573	c.w.	-	-	LGB	1150	Rogaland Radio
9.114	RTTY	50	400	HGG31	1023	MTI Budapest
9.1540	RTTY	50	800	D4B	0805	SAL AIR
9.278	RTTY	100	400	OMZ	0814	MFA Prague
9.3179	FAX	120	576	NRK	1320	USN KEFLAVIK
9.3600	FAX	120	576	OXT	0022	COPENHAGEN MET
9.797	RTTY	50	400	-	1137	ROMPRESS
10.600	RTTY	50	400	XVN37	1210	VNA Hanoi
11.080	RTTY	50	400	SYR	1047	SANA
11.680	RTTY	75	400	BZP51	1526	XINHUA
12.186	RTTY	50	400	-	1511	JANA
12.213	RTTY	50	400	YZI234	1506	TANJUG
12.227	RTTY	75	400	BZB63	1402	XINHUA China
13.030	c.w.	-	-	SVB3	1600	Athens Radio
14.637	RTTY	75	400	-	1211	XINHUA
15.462	RTTY	50	400	-	0829	JANA Tripoli
16.117	RTTY	50	400	6VK317	1123	PANA Dakar

decoder is either completely self-contained with its own display, or it may use an external TV or video monitor to display the decoded data. Examples of this type are system are to be found in the Momentum EasyReader 1100, the range of Universal decoders or maybe even the top flight Wavecom 4100 reviewed in the May '95 SWM.

The second type of decoding system uses what's become known as data controller. This is a unit that takes the audio signal from the receiver, decodes it, and presents it as a digital signal for display on a computer. Although you could argue that the use of a computer is wasteful, its main benefit comes from using the data controller for transmission as well as reception. In this case, the data controller is used to look after the communications link whilst the computer looks after the messaging systems.

The final, and most popular system, is the computer based decoders. There are particularly popular because they are very versatile and often the cheapest way to get into the data modes (providing you have a computer). There are many systems around, but many new listeners start with the **HAMCOMM** and **JVFAX** programs offered through this

column. These two programs give access to FAX, slow scan TV, Morse, RTTY and ARQ. Making the connection between your receiver and the computer requires a special, but simple, interface. The interface uses a simple op-amp to limit the incoming signal and can be bought ready-built for around £17, or you can build your own for just a few pounds.

So, what can you expect to receive? For RTTY reception, by far the most popular stations are the numerous press broadcasts from many of the third world countries. These always provide a fascinating slant on the current news items. In addition to news, there are stations sending aircraft flight plans and a number of coded weather stations. Morse transmissions are mainly limited to radio amateurs and maritime ship-to-shore use.

FAX is always very popular as there's a wealth of weather charts and satellite images from all over the world, plus a few press photos. I hope this introduction has opened the door to the data modes for some of you. If you need more detailed help, take a look at my **FactPacks** - they have been produced to answer most of the more common problems.

Readers' Special Offers

Here's the latest list of Readers' Special Offers. Whilst I do my best to return orders promptly, please allow up to two weeks for delivery.

IBM PC Software(1.44Mb disks):

- Disk A (Order Code DKA) - *JVFAX 7.0, HAMCOMM 3.0 and WXFAX 3.2*
- Disk B (Order Code DKB) - DSP Starter plus Texas device selection software.
- Disk C (Order Code DKC) - *NuMorse 1.3*
- Disk D (Order Code DKD) - *UltraPak 4.0*
- Disk E (Order Code DKE) - *Mscan 1.3 and '2.0*

Printed Literature:

- Beginners Utility Frequency List* (Order Code BL)
- Complex Signals Utility Frequency List* (Order Code AL)
- Decode Utility Frequency List* (Order Code DL)
- FactPack 1 Solving Computer Interference Problems* (Order Code FP1)
- FactPack 2 Decoding Accessories* (Order Code FP2)
- FactPack 3 Starting Utility Decoding* (Order Code FP3).
- FactPack 4 JVFX and HAMCOMM Primer* (Order Code FP4).
- FactPack 5 On the Air with JVFX and HAMCOMM* (Order Code FP5).
- FactPack 6 Internet Starter* (Order Code FP6).

For the printed literature just send a self-addressed sticky label plus 50p per item (£1.50 for four, £2.50 for 7 and £3.00 for 9). For software send £1.00 per disk (£1.75 for 2, £2.50 for 3, £3.00 for 4 or £3.75 for all 5) and a self-addressed sticky label (don't forget I provide the disk!).

Shenzi
PO Box 35, Richmond, N. Yorks DL11 7YX

Shenzi balun
£19.95 £1.50 p&p

Shenzi PR01 £24.95 £2.00 p&p

As we are the manufacturers of the famous Long Wire Baluns shown in other companies ads, we can now offer our own kit of Balun and tuner for all scanners at an amazing price. We also supply complete kits, including the aerial, insulators etc. Phone or write for price list.

01325 374229 tel & fax

THE VINTAGE WIRELESS LISTING
 Published regularly containing 100s of out of print old and collectable wireless and amateur radio books and magazines and now incorporating "The Vintage Hardware List" that contains for sale vintage communications receivers, domestic radios, valves, vintage components etc. Send six first class stamps for current catalogue or £3.75 for next four issues.

ESSENTIAL NEW BOOKS

Janes Military Communications 12th edition 1991-1992. JUST ARRIVED!
 A vast volume of 814pp. Large format. Wraps. Contains descriptions, photographs and basic details of the worlds military communications equipment. Brand new. Published at over £100. **SPECIAL PRICE** £35 postage £5. Overseas postage extra.

JANES RADAR AND ELECTRONIC WARFARE SYSTEMS 1990 - 1991. A vast volume (2nd Edition). Giving technical details of the world's radar systems, electronic warfare equipment; electronic counter measures, (ECM). Ground, naval and airborne. Brand new. Published at over £100. Special offer £35 + £5 postage. (Overseas postage extra).

Eddystone Communications Receiver Data 1950-1970
 A facsimile reprint of the circuit diagrams, general description and some service notes for sets from 1955-1970. 50 pages. £9.50 incl post.

Communications Receiver Type CR100.
 Complete handbook. 56 pages, full circuits layout and alignment notes. Large format. £7.95 including p&p.

Wanted for Cash
 Valve communication receivers, working or not. Items of govt. Surplus wireless equipment. Pre 1975 wireless and TV books and magazines.

(Dept SW) CHEVET SUPPLIES LTD.
 157 Dickson Road, BLACKPOOL FY1 2EU
 Tel: (01253) 761858. Fax: (01253) 302979. Telephone orders accepted.

AFFORDABLE PACKET
COMMODORE 64/128...ATARI ST...IBM COMPATIBLE PC...SPECTRUM

It is now possible to use the above computers to run Packet Radio with an outlay of much less than £100!!

Commodore, PC and Spectrum systems allow HF and VHF working, while the Atari system only offers VHF. PMS facilities are available on the Commodore, and the Spectrum if a microdrive is fitted. Digipeating facilities are offered on all versions. The Spectrum modem can also be supplied with a centronics printer port. We supply a fully tested modem, with a free copy of suitable software.

Commodore 64, Atari ST and PC Modems **£55.00**
 Baycom Agency

Spectrum Modem..... **£75.00**
 Spectrum Modem with printer port..... **£85.00**
 S.A.E. for details. £4.50 Post & Packing

J. & P. ELECTRONICS LTD.

Unit 45, Meadowmill Estate, Dixon Street,
 Kidderminster DY10 1HH Tel: (01562) 753893

JV FAX - HAMCOMM - PC HF FAX
PKTMON12 and DL4SAW SSTV

Read Mike Richard's review in 'SWM DECODE March '94'.
 Demodulator for these popular programmes - connect to audio output, plug the 25 way connector into your PC and monitor.

Fax RTTY Morse Packet and SSTV at a REALISTIC price.
 UK/Eire price £16.99 inc VAT and P&P - overseas £19.99.
 25 way to 9 way Adaptor. UK/Eire £3.00 inc. overseas £5.00

All products carry full money back guarantee.

JVFAX7 + HAMCOMM3 + PKTMON12 on 3.5" HD £2.50
 inc P&P. DL4SAW SSTV £2.50 for 386 or above with VESA compatible graphics (please check before ordering).

Pervisell Ltd, 8 Temple End, High Wycombe, Bucks HP13 5DR
 Tel: (01494) 443033 Fax: (01494) 448236

NEW!! SCANCAT GOLD IMPROVED!
 SINCE 1989, THE RECOGNIZED LEADER IN COMPUTER CONTROL

Once you use SCANCAT with YOUR radio, you'll NEVER use your radio again WITHOUT SCANCAT!

SCANCAT supports most radios by:
 AOR, DRAKE, KENWOOD, ICOM, YAESU and JRC (NRD)

Plus PRO-2005.6 & 2035/OS456, Lowe HF-150, and Watkins-Johnson HF-1000

SCANCAT 6.0 FEATURES

- Search between any 2 frequencies.
- Search by ANY increment.
- Create Disk files.
- Import from most text formats to a working SCANCAT file.
- Log found frequencies to files while scanning.
- Scan Disk Files Frequencies.
- Spectrum Analysis to Screen OR Printer.

SCANCAT - GOLD FEATURES

- Link up to 15 frequency disk files.
- D-BASE IMPORT w/DUPLICATE filters.
- Scan HF & VHF Icom's simultaneously.
- PRINT to ANY printer, or Disk File.
- Automatic BIRDIE LOCKOUT.
- Link up to 15 search banks.
- IMPORT virtually any database.
- Search by CTCSS & DCS TONES with PRO2005.6/2035 (& ICOM/DC440).
- MULTIPLE search filters.

PLUS - POWERFUL COMMERCIAL FEATURES SUCH AS:

- Demographic search for frequency co-ordination and 2-way Usage Analysis.
- Detailed logging to ASCII type files with DATE, TIME, Sig Str, Air Time.
- UNLIMITED file sizes with our exclusive SCANCAT filing method.
- Exclusive "MACRO" control by frequency of Dwell, Hang, Resume.
- Sig. Threshold and even 6 separate programmable, audible alarms.
- Command line options for TIMED ON/OFF (Unattended) logging/searches.

**** SCANCAT is not copy protected - use on as many computers as you need ****

Plus, the included SCANPORT allows you to convert your favorite BBS. D Base or text files to a running SCANCAT file: 100+ page manual included. Requires a 640K MS-DOS computer w/RS-232C serial port-hard disk recommended. Manufacturer's Interface not included.

SCANCAT GOLD	£89.00	OPTOScan 456 kit.....	£199 (£6 s/h)
SCANCAT 6.0	£49.00	UPGRADE TO GOLD	£19.00
SQUELCH DETECT CABLES	£19.00	from any version	
		PLUS \$5.00 SHIPPING & HANDLING \$7.50 FOREIGN	

COMPUTER AIDED TECHNOLOGIES
 P.O. Box 18285, Shreveport, LA 71138
 Phone. 318-636 1234 (24 hrs) or FAX 318-686 0449(24 hours)

Also Available in the UK from your favourite dealer
 inc. LOWE ELECTRONICS & JAVIATION

PW PCB SERVICE

PRACTICAL WIRELESS PCB SERVICE

Printed Circuit Boards for *Practical Wireless* constructional projects are available from the PW PCB Service.

The boards are made in 1.5mm glass-fibre and are fully tinned and drilled.

Orders and remittances should be sent to:

Badger Boards, 80 Clarence Road, Erdington, Birmingham B23 6AR.

Mark your envelope **PW PCB Service.**

Cheques should be crossed and made payable to: **Badger Boards.**

When ordering PCB's please state the article title, magazine cover date and the Board Number. Please print your full name and address clearly in block capitals and do not enclose any other *Practical Wireless* correspondence with your order.

Please allow 28 days for delivery.

BADGER BOARDS
Telephone: 0121-384 2473

LM&S

Long, Medium and Short Waves

Although the solar sunspot minimum period just now has resulted in generally poor propagation conditions in the higher frequency s.w. bands some interesting reports have been compiled by the listeners who searched them. Enhanced conditions have been evident in the lower frequency bands and instances of freak reception have been reported - see text.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless otherwise stated, all logs were compiled during December.

Final approval has now been granted for the rebuilding of the 646m high long wave mast radiator near Konstantynow, Poland which collapsed during maintenance over three years ago. The work will commence in the spring and when completed the mast will once again be the highest in Europe. Initially the output from the transmitter on 225kHz will be limited to 75kW but it may well be increased to 2000kW in 1998. Good reception of Polski R-1 should then be obtained in the whole of Europe and N.Africa.

In the meantime Polski R-1 on 225kHz will continue to be carried by the 150kW reserve transmitter at Raszyn. In some areas of the UK reception from Raszyn is unsatisfactory. It was noted as SINPO 15342 at 1030UTC by **Simon Hockenull** in E.Bristol; 14332 at 1336 by **Ted Harris** in Manchester and 33333 at 2125 by **Sheila Hughes** in Morden.

Medium Wave Reports

Favourable conditions for the propagation of m.w. transmissions over transatlantic paths were evident during some nights in December. The broadcasts from quite a few stations in E.Canada and E.USA were received in the UK - see chart. **Robert Connolly** (Kilkeel) compiled his list between 0145 & 0245 on November 29. The early hours of December 2, 4, 13 & 15 proved rewarding for **Paul Bowery** in Burnham-on-Crouch. Although WBBR in New York, NY on 1130 was identified at 0220 by Simon Hockenull he could not resolve any others. Up in Shetland **John Slater** (Scalloway) found the early hours of the 9th and around 0800 on the 10th favourable. A fairly extensive list was compiled during the nights of the 9th, 11th, 13th & 18th by **David Edwardson**

in Wallsend. On the 30th **Gerry Haynes** (Bushey Heath) checked the band from 0315 until 0415 and logged six stations in E.USA.

The sky waves from some stations in the Middle East and N.Africa also reached the UK after dark - see chart. At 0305 on the 13th Paul Bowery found that most of the BSKSA high power outlets in Saudi Arabia were carrying the same musical programme. He was able to receive Quarayat on 549 and 900, Duba on 594 and Dammam on 1440, all for the first time; also Duba on 1521.

Up in Galashiels **Ross Lockley** found the conditions on December 8 to be the best he can remember for m.w. local radio Dxing. He says "On 1152 Amber R (Norwich) was the dominant station for hours at a time, even blotting out Clyde 2 (Glasgow) during the daytime. BBC R.Devon on 1458 was loud and clear. BBC Guernsey on 1116 was overriding Derby". Whilst driving around Galashiels he set the car radio to 'Auto Seek' and it locked on to a strong signal from R.Mercury Xtra on 1521 with a traffic report!

Further to the local radio changes which **John Wells** observed in E.Grinstead (LM&S January'96 SWM), **Laurence Mason** (Hassocks) has informed me that Mercury have relinquished their interest in the Guildford area stations. County Sound is now back on 1476 and is being run by a new company. Mercury Extra AM is still serving Reigate and Crawley on 1521. With regard to Amber Radio, **Peter Utting** (Lowestoft) tells me that they took over the m.w. outlets of R.Broadland and SGR on September 24.

Short Wave Reports

Due to the solar sunspot minimum the **25MHz (11m)** band will be unused by broadcasters in 1996.

The propagation conditions in the **21MHz (13m)** band vary from day to day, but it is still being used by a number of broadcasters. Quite often R.Australia's broadcast to Asia via Darwin on 21.725 (Eng 0630-1100) has reached the UK. It was rated 33333 at 0930 by **Thomas Williams** in Truro; 43443 at 1000 by **Norman Thompson** in Oadby; 35434 at 1020 in E.Bristol; 25332 at 1045 by **Eric Shaw** in Chester.

Other broadcasters using this band include R.Pakistan Islamabad 21.475 (In to S.E.Asia 0900-1000) 34333 at 0944 by **Rhoderick Illman** in Oxted; DW via Julich? 21.680 (Eng to S.E.Asia 0900-0950) heard at 0945 by **Phil Townsend**

Long Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	I*
153	Donebach	Germany	500	A B C* D E* G* H I J* K* M
153	Bod	Romania	1200	B G* H
162	Allouis	France	2000	A B C E* F* G* H I J K L* M
171	Nador Medi-1	Morocco	2000	K
171	Kaliningrad	Russia	1000	A B C D E* G* H I J K* M*
177	Oranienburg	Germany	750	A B C* E* G* H I K*
183	Saarouis	Germany	2000	A B C E* F* G* H I J K L* M
189	Caltanissetta	Italy	10	B* J*
198	Droitwich BBC	UK	50	A C E F* G* H J K L* M
198	Westerglen BBC	UK	50	B
207	Munich	Germany	500	A B C* D E* G* H I J K* L* M
207	Azilah	Morocco	800	I*
216	Roumoules RMC	S.France	1400	A B C D E* F* G* H I K L* M
225	Raszyn Resv	Poland	150	A* B C D E* H I J* K* L* M
234	Beidweiler	Luxembourg	2000	A B C E G* H I J* K M
234	Grigoriopol	Moldova	1000	A*
234	St.Petersburg	Russia	1000	B*
243	Kalundborg	Denmark	300	A B C D E G* H I K M
252	Tipaza	Algeria	1500	A* H I* K* M*
252	Atlantic 252	S.Ireland	500	A B C E* F* G* H I J K L* M
261	Burg(R.Ropal)	Germany	200	A B C D H I K M
261	Taldom Moscow	Russia	2000	A* B G* J* K* L*
270	Topolna	Czech Rep	1500	A B C D E* G H I K L* M
279	Minsk	Belarus	500	A B E* G* H I* J* K* L* M

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:

- (A) Paul Bowery, Burnham-on-Crouch.
- (B) Kenneth Buck, Edinburgh.
- (C) Ted Harris, Manchester.
- (D) Simon Hockenull, E.Bristol.

- (E) Sheila Hughes, Morden.
- (F) Stephen Jones, Oswestry.
- (G) Eddie McKeown, Newry.
- (H) George Millmore, Wootton, IOW.
- (I) Fred Pallant, Storrington.
- (J) Tom Smyth, Co.Fermanagh.
- (K) Andrew Stokes, Leicester.
- (L) Norman Thompson, Oadby.
- (M) Phil Townsend, E.London.

in E.London; UAER, Dubai 21.605 (Eng to Eur 1030-1055) 44433 at 1045 by **Stan Evans** in Herstmonceux; R.Portugal Int via Sines 21.655 (Port to W.Africa, S.America 1100-1200 Sat/Sun) 44434 at 1105 by **George Tebbitts** in Penmaenmawr; Vatican R, Italy 21.850 (Port?, Sp, It to C/S.America 1100-1215) 33333 at 1200 in Scalloway, Shetland; BBC via Ascension Is 21.660 (Eng to W/E/S.Africa 1100-1700) SIO333 at 1225 by **Philip Rambaut** in Macclesfield; RFI via Issoudun 21.620 (Fr to E.Africa 0700?-1555) 34443 at 1410 by **John Eaton** in Woking; BBC via Limassol, Cyprus 21.470 (Eng to E.Africa 1300-1700) 33323 at 1430 by **Bernard Curtis** in Stalbridge; WYFR via Okeechobee, USA 21.745 (Eng to Eur 1600-1700?) 25433 at 1621 in Manchester.

The propagation conditions in the **17MHz (16m)** band are unreliable. When favourable, R.Australia via Carnarvon 17.715 (Eng to Asia, Pacific 0100-0900) was rated 35233 at 0825 by **Eddie McKeown** in Newry; DW via Sri Lanka 17.820 (Eng to S.E.Asia, Australia, NZ 0900-0950) 34323 at 0918 in Oxted; R.Pakistan, Islamabad 17.895 (Ur to Eur 0900?-?) 33223 at 0935 in Stalbridge; Voice of Russia 17.750 (Eng [WS]) 33222 at 1000 by **Clare Pinder** in Appleby; R.Prague, Czech Rep 17.485 (Eng to M.East?, Africa? 1000-1027) 35433 at 1015 by **Darren Beasley** in Bridgwater; R.Vlaanderen Int, Belgium 17.595 (Eng to Africa 1000-1030) SIO233 at 1015 in E.London; R.Austria Int via Moosbrunn 17.870 (Ger, Eng to Australia 0800-1100) 34443 at 1020 in Wallsend; UAER Dubai 17.825 (Eng to Eur 1030-1055) 33333 at 1030 in Scalloway; BBC via Skelton, UK 17.705 (Eng to Eur 0900-1615) 22222 at 1052 by **Martin Dale** in Stockport; R.Pakistan, Islamabad 17.895 (Eng to Eur 1100-1120) 44333 at 1100 in

Morden.

After mid-day, R.Tunisia Int via Sfax 17.500 (Ar, Fr to ? 0600-1700) was SIO544 at 1245 in Macclesfield; R.Cairo via Abis 17.595 (Eng to S.Asia 1215-1330) 43343 at 1320 by **Chris Shorten** in Norwich; RFI via Issoudun? 17.620 (Fr to Africa 0700-1800?) 34453 at 1411 in Woking; RFI via Moyabi, Gabon 17.560 (Eng to M.East 1400-1500) 44433 at 1430 in Herstmonceux; BBC via Antigua, W.Indies 17.840 (Eng to N/C.America 1400-1615) 43434 at 1445 in Penmaenmawr; Africa No.1, Gabon 17.630 (Fr to W.Africa 0700-1600) 55555 at 1520 by **Denis Mulkeen** in Co.Mayo; DW via Antigua, W.Indies 17.765 (Ger to S.America 1200-1700) 35544 at 1528 by **Fred Pallant** in Storrington; RCI via Sackville, Canada 17.820 (Fr to Eur, Africa 1500-1600 Sun) 34443 at 1530 in Kilkeel; BBC via Ascension Is 17.830 (Eng to W/C.Africa 0730-2100) 44544 at 1600 in Oadby; WYFR Okeechobee, USA 17.760 (Eng to Eur, Africa 1700-1945) 35544 at 1711 in Manchester; BBC via Ascension Is 17.880 (Fr to Africa 1745-1900) 25343 at 1830 in Chester.

Many broadcasters are using the **15MHz (19m)** band to reach selected target areas. Among those noted during the morning were R.Pakistan, Islamabad 15.470 (Eng to Eur 0800-0848) rated 33333 at 0820 by **Richard Bealey** in Exeter; AWR via Slovakia 15.620 (Eng to Africa 0900-1000) 44333 at 0920 in Morden; China R.Int via Russia 15.440 (Eng to Eur 0900-1055) SIO333 at 0928 by **Francis Hearne** in N.Bristol; BCC via Pali, Taiwan 15.125 (Chin to C.Asia 2100-1700) 55534 at 0940 by **Richard Reynolds** in Guildford; AIR via Aligarh? 15.050 (Eng to N.E.Asia 1000-1100) 34443 at 1005 in Kilkeel; Voice of Malaysia, Kajang 15.295 (Ma to S.Asia 0830-1025) 34333 at 1010 in Scalloway; BBC via

Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power (kW)	Listener
520	Hof-Saale (BR)	Germany	0.2	A*	891	Huisjeberg	Netherlands	20	A,H*,N*	1377	Lille	France	300	A,C,H*,I,N,P
531	Ain Beida	Algeria	600	E*,N*	900	Brno (Cro2)	Czech Rep	25	H*	1377	Ukraine	Ukraine	50	A*
531	Torshavn	Faeroe Is.	100	A*,P*	900	Milan	Italy	600	A*,H*,N	1386	Athens	Greece	50	A*
531	Leipzig	Germany	100	A,B*,H,I,N,O*	900	Qurayyat	Saudi Arabia	1000	A*	1386	Nakuru (KBC)	Kenya	20	N*
531	RNE5 via ?	Spain	?	H*,M*,N*	909	B'mans PK(BBC5)	UK	140	A,I,N	1386	Boishakovo	Russia	2500	A*,B*,H*,N*,P*
531	Beromunster	Switzerland	500	A,B*,I,P	909	M'side Edge(BBC5)	UK	200	B	1395	Lushnjë(Tirana)	Albania	1000	C,H*,P*
540	Wavre	Belgium	150/50	A,B,H,I,N,P	918	Plesvec(Sloveni nR)	Slovenia	600/100	A*,D*,H*,N*	1395	Lopic?	Netherlands	?	A,B*,H*,N
540	Solt	Hungary	2000	A	918	Madrid(R,Int)	Spain	20	A*,D,N	1404	Brest	France	20	A*,C,N*,P
540	Sidi Bennour	Morocco	600	F*,H*,M*,N*	927	Volvertem	Belgium	3000	A,H*,I,M*,N,P	1404	Ukraine(UR2) via ?	Ukraine	?	A*
540	Vitoria(EI)	Spain	10	O*	927	Evora(RRE)	Portugal	1	A*	1413	Masirah Is(BBC)	Oman	1500	N*
549	Les Trembles	Algeria	600	E*,H*,N*	936	Bremen	Germany	100	A,B*,H*,N*,P*	1413	Spain	?	N*	
549	Sasnovy	Belarus	1000	A	936	RNE5 via ?	Spain	?	H*,N*	1422	Heusweiler(DLF)	Germany	1200/600	A*,B*,C,H*,N*,P
549	Thurnau (DLF)	Germany	200	A,B,H,N*,P	945	Toulouse	France	300	A*,D,H*,P	1422	Valmiera	Latvia	50	A*
549	Quarayat	Saudi Arabia	2000	A	945	Rostov-na-Donu	Russia	300	A*	1431	Kopani	Ukraine	500	H*
558	Espoo	Finland	100	O	954	Brno (Cro2)	Czech Rep.	200	A*,H*,P	1440	Marnach(RTL)	Luxembourg	1200	A,B*,C,I,N,P
558	Rostock(NDR)	Germany	20	H*	954	Madrid(CI)	Spain	20	A*,H*,N	1440	Damman	Saudi Arabia	1600	A*,H*
558	RNE5 via ?	Spain	?	H*,M,N*	963	Pori	Finland	600	A,B,C,H*,N	1449	Squinzano	Italy	50	A*
567	Berlin	Germany	100	H*	963	Ti Chonaill	Ireland (S)	10	G,M*,N	1449	Redmoss(BBC)	UK	2	H*,M
567	Tullamore(RTE1)	Ireland (S)	100	A,B,C,E*,G*,M,N,O,P	972	Hamburg(NDR)	Germany	300	A,B*,H*,M*,N*,P*	1458	Lushnjë(Tirana)	Albania	500	N*
567	RNE5 via ?	Spain	?	H*,N*	981	Alger	Algeria	600/300	H*,N*,P*	1467	Monte Carlo(TWR)	Monaco	1000/400	A*,D*,H*,N*
576	Muhlacker(SDR)	Germany	500	A,B*,H*,N	981	Megara	Greece	200	A*	1485	AFN via ?	Germany	1	N*
576	Riga	Latvia	500	A	981	Coimbra	Portugal	10	A*	1485	SER via ?	Spain	?	M*,N*,P*
576	Barcelona(RNE5)	Spain	50	A*,H*,P*	990	Berlin	Germany	300	A,B,H*,N	1494	Clermont-Ferrand	France	20	A*,C,N,P
585	Paris(FIP)	France	8	A,I,N,P	990	R.Bilbao(SER)	Spain	10	N*	1494	St.Petersburg	Russia	1000	A*,B*,C*,H*,I*,M*,N*,P*
585	Madrid(RNE1)	Spain	200	A*,E*,H,I,M*,N*,P*	990	Tywin(BBC)	UK	1	A*	1503	RNE5 via ?	Spain	?	A*,N*
585	Dunfries(BBCScott)	UK	2	A*	999	Torino	Italy	20	A*	1512	Volvertem	Belgium	600	A,B*,D*,H*,J,K,M,N,RQ*
594	Frankfurt(HR)	Germany	1000/400	A,B*,E*,H,N*,O,P*	999	Madrid(COPE)	Spain	50	A*,H*	1521	R.Beijing	China	500	L*
594	Muge	Portugal	100	A*,H*,N*	1008	Las Palmas(SER)	Gran Canaria	10	N*	1521	Kostel(Cizatec)	Slovakia	600	H*
594	Duba	Saudi Arabia	2000	A*	1008	Fievol(Hiv-5)	Holland	400	A,H,I,N,P	1521	Uba	Saudi Arabia	2000	A*,M,N*
603	Lyon	France	300	A*	1017	Rheinseiner(SWF)	Germany	600	A*,B*,H*,M*,N*,P*	1530	Vatican R	Italy	150/450	A*,C,H*,N*,P*
603	Sevilla(RNE5)	Spain	50	F*,H,N*	1017	RNE5 via ?	Spain	?	H*	1539	Mainflingen(DLF)	Germany	700	P*
603	Newcastle(BBC)	UK	2	M	1026	Milan	Italy	50	A*	1539	SER via ?	Spain	?	N*
612	Athlone(RTE2)	Ireland (S)	100	A,B,C,G*,M,N,O,P*	1035	Lisbon(Prog3)	Portugal	120	H*,N*	1539	R.Elche-Elx(SER)	Spain	2	A*
612	Sebba Aioun	Morocco	300	N*	1044	Dresden	Germany	250	A*,B*,H*,N*	1557	Nice	France	300	A*,M
621	Wavre	Belgium	80	A,B,H,I,M*,N,O,P	1044	Sebba-Aioun	Morocco	300	N*	1566	Mjadzel	Belarus	10	A*
621	RNE1 via ?	Spain	10	N*	1044	SER via ?	Spain	?	N*	1566	Sfax	Tunisia	1200	N*
621	Barcelona(OCR)	Spain	50	H*	1053	Zaragoza(COPE)	Spain	10	H*	1575	Genova	Italy	50	A*,H*,N
630	Dannenberg(NDR)	Germany	100	B,F*	1053	Talk Radio UK via ?	UK	?	A,M,N	1602	SER via ?	Spain	?	N*
630	Vigra	Norway	100	A*,H,N*	1062	Kalundborg	Denmark	250	A,C,H,I,N	1602	Vitoria(EI)	Spain	10	A*,N*,P*
630	Tunis-Djedeida	Tunisia	600	A*,D*,H*,M*	1062	R.Uno via ?	Italy	?	A*	1611	Vatican R	Italy	15	A*,N*,P*
639	Prahla(Liblice)	Czech	1500	A,H*,D	1062	Squinzano	Italy	25	H*,N*					
639	RNE1 via ?	Spain	?	F*,H*,N*,P*	1071	Brest	France	20	C,I					
648	RNE1 via ?	Spain	10	H*,N*	1071	France-inter via ?	France	?	H*					
648	Orfordness(BBC)	UK	500	A,B*,C,I,N*,O,P	1071	Lille	France	40	A,P					
657	Neubrandenburg(NDR)	Germany	250	H*,O*	1071	Bilbao(EI)	Spain	5	N*					
657	Napoli	Italy	120	A*,N*	1071	Talk Radio UK via ?	UK	?	A*,N					
657	Madrid(RNE5)	Spain	20	N*,P*	1071	Talk Radio UK via ?	UK	?	A*,N					
657	Wrexham(BBCWales)	UK	2	A,B,D,N	1080	Katowice	Poland	1500	A*,H*,N*					
666	Messkirch(Rohrdt(SWF))	Germany	300/180	A*,N*	1080	Toledo(OCR)	Spain	5	N*					
666	Stikunai(R.Vilnius)	Lithuania	500	A	1080	SER via ?	Spain	?	N*					
666	Lisboa	Portugal	135	A*,H*	1089	Krasnodar	Russia	300	H					
666	Barcelona(COPE)	Spain	10	N*	1089	Talk Radio UK via ?	UK	?	A,B*,I,N,P					
675	Marseille	France	600	A*,H*,O*	1098	Nitra(Jarok)	Slovakia	1500	A*,H*,N*					
675	Lopci(R10 Gold)	Holland	120	A,B,C,H,I,N,P	1098	RNE5 via ?	Spain	?	H*					
684	Sevilla(RNE1)	Spain	500	A*,H*,N*,O*	1107	AFN via ?	Germany	10	H*,N*					
684	Avlaj(Beograd-1)	Yugoslavia	2000	A,P*	1107	Talk R.UK via ?	UK	?	A,B*,I,M,N					
693	Droitwich(BBC5)	UK	150	A,B,F*,I,M,N,O*,P*	1116	Bari	Italy	150	A*,M					
702	Flensburg(NDR)	Germany	5	A,H*,M*,N*	1125	La Louviere	Belgium	20	A					
702	Monte Carlo	Monaco	40	P*	1125	Novoc	Croatia	100	A*,H*					
702	TWR via Monte Carlo	Monaco	300	A*	1125	RNE5 via ?	Spain	?	N*					
702	Banska	Slovak Rep.	200	A*	1134	Zadar(Croatian R)	Yugoslavia	600/1200	A*,175*,N*,P*					
702	Zamor(RNE1)	Spain	10	H*	1143	Stuttgart(AFN)	Germany	150	A*,H*,N*					
711	Rennes 1	France	300	A,C,H*,I,N*,O*,P*	1143	Boishakovo(Mayek)	Russia	10	A*					
711	Heidelberg	Germany	5	B*,N*	1143	COPE via ?	Spain	2	H*,N*					
711	Layoune	Morocco	600	N*	1152	RNE5 via ?	Spain	10	N*					
711	Murcia(COPE)	Spain	5	A*	1161	Strasbourg(Flint)	France	200	A*,H*,N*,P*					
720	Langenberg	Germany	200	A	1161	S.Sebastian(EI)	Spain	50	N*					
720	Lisnagavey(BBC4)	Ireland (N)	10	M,N*	1170	Beli Kriz	Slovenia	300	A*					
720	Norte	Portugal	100	A*,H*	1179	SER via ?	Spain	?	N*					
720	Lots Rd.Ldn(BBC4)	UK	0.5	A,B,F*,N,O*	1179	Solvesborg	Sweden	600	A,B*,C,D*,H,N*,O*					
729	Cork(RTE1)	Ireland (S)	10	A*,G,H*,I,M,N*	1188	Kuurne	Belgium	5	A,H*,P					
729	RNE1 via ?	Spain	?	H*,N*	1188	Reichenbach(MDR)	Germany	5	B*,N*					
738	Paris	France	4	A,H*	1188	Szolnok	Hungary	135	A*,N*					
738	Poznan	Poland	300	A*,H*	1189	Munich(VOA)	Germany	300	A*,H*,N*					
738	Barcelona(RNE1)	Spain	500	A*,H*,N*,O*,P*	1197	Virgin via ?	UK	?	A,B,C,I,N					
747	Fievol(Hiv2)	Holland	400	A,B,C,H,I,N,O*,P	1206	Bordeaux	France	100	A*					
747	Cadix(RNE5)	Spain	10	H*	1206	Wroclaw	Poland	200	A*					
756	Braunschweig(DLF)	Germany	800/200	A,B,H,I,N,O*,P*	1215	Filake	Albania	500	A*					
756	Redruth(BBC)	UK	2	M*	1215	Virgin via ?	UK	?	A,B,I,M,N					
765	Sottens	Switzerland	500	A*,H*,J,N*,O*	1224	Lelystad	Holland	25	A*,H*,N					
774	RNE1 via ?	Spain	?	H*,N*	1224	COPE via ?	Spain	?	N*					
783	Burg	Germany	1000	A,B*,H*,N,O*,P*	1224	Virgin via ?	UK	?	M*,N					
783	Tartus	Syria	600	M*	1233	Liege	Belgium	5	A*,H*					
792	Limoges	France	300	A*	1233	Virgin via ?	UK	?	A,C,M*					
792	Lingen(NDR)	Germany	5	A*	1242	Marseille	France	150	A*,H*,N*					
792	Sevilla(SER)	Spain	20	H*,N*	1242	Virgin via ?	UK	?	A*,B,N					
801	Munchen-Ismaning	Germany	300	A*,H*,N*,P*	1251	Marcali	Hungary	500	A*,H*					
801	RNE1 via ?	Spain	?	F*,H*,N*	1251	Huisberg	Netherlands	10	H*,N*					
810	Volgograd	Russia	150	A*	1260	SER via ?	Spain	?	H*					
810	Madrid(SER)	Spain	20	F*,H*	1260	Gulldford(V)	UK	?	A,M*					
810	Westerglen(BBCScott)	UK	100	A,C,O,F*,M,N,O*,P*	1269	Neumunster(DLF)	Germany	600	A,B*,H*,N*					
819	Batra	Egypt	450	A*,D*	1278	Strasbourg	France	300	A*,N					
819	Toulouse	France	50	A,H*	1278	Dublin(Cork(RTE2))	Ireland (S)	10	A*,B,G,M*,N*,P					
819	Warsaw	Poland	300	A*,H*	1287	REE via ?	Czech Rep.	10	A*,H*,N*,P*					
819	S.Sebastian(EI)	Spain	5	N*	1287	Lerida(SER)	Spain	40	N*					
828	Hannover(NDR)	Germany	100/5	H*,N*	1296	Valencia(COPE)	Spain	10	A*					
828	Rotterdam	Holland	5	A,N	1296	Orfordness(BBC)	UK	500	A*,B*,M*,P*					
828	Barcelona(SER)	Spain	50	F*,N*	1305	Genova	Italy	5	A*					
837	Nancy	France	200	A,I,M*,P*	1305	Rzeszow	Poland	100	A*,H*					
837	COPE via ?	Spain	?	H*	1305	RNE5 via ?	Spain	?	N*					
846	Rome	Italy	540	A*,H*,N*,O*,P*	1314	R.Due via ?	Italy	?	A*					
855	Berlin	Germany	100	H*	1314	Kvitsoy	Norway	1200	A,B*,C,H,N,P					
855	R.Bucharest	Romania	750	A*	1323	W'brunn (V.Russia)	Germany	1000/150	A,B,H*,N*					
855	RNE1 via ?	Spain	?	H*,M,N*,P*	1332	Rome	Italy	300	A*,H*					
864	Santah	Egypt	500	F*	1341	Lakhegy	Hungary	300	A*,N*					
864	Paris	France	300	A,B,C,F*,I,M,N	1341	Lisnagavey(BBC)	Ireland (N)	100	A*,B*,N*,P					
873	Frankfurt(AFN)	Germany	150	A,C,H*,N*,P*	1350	Nancy/Nice	France	100	A*,H*,M*,N,P					
873	Zaragoza(SER)	Spain	20	H*	1350	Cesvaine/Kuldiga	Latvia	50	A*,H*					
882	COPE via ?	Spain	?	H*	1359	Arganda (RNE-FS)	Spain	600	H*					
882	Washford(BBCWales)	UK	100	A,B,D,I,N,P	1368	Fordale(Marx R)	I.O.M.	20	C*,D,M,N*,O*					
891	Algiers	Algeria	600/300	A*,D*,H*,N*	1368	RAI via ?	Italy	?	A*					

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:
 (A) Paul Bowery, Burnham-on-Crouch.
 (B) Ted Harris, Manchester.
 (C

Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener	Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum, London	I	0.80	A,D,I,K	1170	Amber, Ipswich	I	0.28	A
585	R.Solway	B	2.00	B,H	1170	GNR, Stockton	I	0.32	H
603	Boss 603, Cheltenham	I	0.10	B,D,J,K,L*	1170	SCR, Portsmouth	I	0.12	I
603	Invicta SG, Litchfield	I	0.10	A,E*,F*,I,M	1170	Signal G, Stoke-on-T	I	0.20	K
630	R. Bedfordshire (SCR)	B	0.20	A,D,K,L*,M	1170	Swansea Snd, Swansea	I	0.58	B,H
630	R. Cornwall	B	2.00	B,J,*	1170	1170AM, High Wycombe	I	0.25	L*,M
657	R. Croyvd	B	2.00	B,D,G*,I,J,L*,M	1242	Invicta SG, Maidstone	I	0.32	A,L*,M
657	R. Cornwall	B	0.50	B,I	1242	IoW Radio, Wootton	I	0.50	B,I
666	Gemini AM, Exeter	I	0.34	D,E,I,*	1251	Amber, Bury St Edmund	I	0.76	A,H,L*,M
666	R. York	B	0.80	B,K	1260	Brunel CG, Bristol	I	1.60	I
729	BBC Essex	B	0.20	A,I,K,M	1260	Sabras Snd, Leicester	I	0.29	K,L*
738	Hereford/Worcester	B	0.037	B,I,K,M	1260	R. York	B	0.50	B
756	R. Cumbria	B	1.00	B,H	1296	Radio XL, Birmingham	I	5.00	A,D,H,J,K
756	R. Maldwyn, Powys	I	0.63	I,J	1305	Gt Yks G, Barnsley	I	0.15	BL*
765	BBC Essex	B	0.50	A,I,K,L*,M	1305	Premier via ?	I	0.50	A,I,K
774	R. Kent	B	0.70	A,I,L*,M	1305	Touch AM, Newport	I	0.20	I
774	R. Leeds	B	0.50	B	1323	S Coast R, Brighton	I	0.50	A,I,M
774	3 Counties SG, Glos	I	0.14	B,I,K	1323	Somerset Snd, Bristol	B	0.63	B
792	Chiltern SG, Bedford	I	0.27	A,I,K,L*,M	1332	Premier, Battersea	I	1.00	AJ
792	R. Foyle	B	1.00	J	1332	WGMS CG, Peterboro'	I	0.60	A,B,K,M
801	R. Devon & Dorset	B	2.00	A*,B,D,I	1332	Wiltshire Sound	B	0.30	I
828	Chiltern SG, Luton	I	0.20	A,M	1359	Breeze AM, Chelmsford	I	0.28	A,M
828	Magick 828, Leeds	I	0.12	B	1359	Mercia CG, Coventry	I	0.27	K
828	ZCH CG, Bourne-mouth	I	0.27	I	1359	R. Solent	B	0.85	I
837	R. Cumbria/Furness	B	1.50	B	1359	Touch AM, Cardiff	I	0.20	B,H
837	R. Leicester	B	0.45	A,I,K,L*,M	1368	R. Lincolnshire	B	2.00	A*,K
855	R. Devon & Dorset	B	1.00	I	1368	Southern Counties R	B	0.50	A,E,I,M
855	R. Lancashire	B	1.50	B	1368	Wiltshire Sound	B	0.10	I
855	R. Norfolk	B	1.50	A,I,M	1413	Premier via ?	I	0.50	A,H,J,K
855	Sunshine 855, Ludlow	I	0.15	A,C	1431	Breeze AM, Southend	I	0.35	A,M
873	R. Norfolk	B	0.30	A,B,I,K,L*,M	1431	ZIO CG, Reading	I	0.14	B,H,J,K
936	Brunel CG, W/Wilts	I	0.18	B,I	1449	R. Peterboro/Cambis	B	0.15	A,I,K
945	Derby (Gem AM)	I	0.20	A,B,I,K,L*	1458	R. Cumbria	B	0.50	B,H
954	Gemini AM, Torquay	I	0.32	E,I,*	1458	R. Devon & Dorset	B	2.00	B,H,I
954	Wyvern, Hereford	I	0.16	C,K	1458	Fortune, Manchester	I	5.00	H
963	Viva, Southall	I	1.00	A,I,K	1458	R. Newcastle	B	2.00	H
990	R. Devon & Dorset	B	1.00	B,I,M	1458	Sunrise, London	I	50.00	A,H,I,K*
990	WABC, Wolverhampton	I	0.09	K	1458	Radio WM	B	5.00	D,K
999	Gem AM, Nottingham	I	0.25	A,J,K	1476	County Snd, Guildford	I	0.50	A,B,H,I,M
999	Red Rose G, Preston	I	0.80	B	1485	R. Humberside (Hull)	B	1.00	A*,K
999	R. Solent	B	1.00	A,I,M	1485	R. Merseyside	B	1.20	B,H
1017	WABC, Shrewsbury	I	0.70	B,I,K	1485	Southern Counties R	B	1.00	A,E,I,M
1026	R. Cambridgeshire	B	0.50	A,K,M	1503	R. Stoke-on-Trent	B	1.00	B,H,I,K
1026	Downtown, Belfast	I	1.70	B,H,J	1521	Mercury Xtra, Reigate	I	0.64	A,B,E*,H,I,M
1026	R. Jersey	B	1.00	B,I	1530	R. Essex	B	0.15	A,H,I,M
1035	Country 1035, London	I	1.00	A,H,I,J,K	1530	Gt Yks G, Hudders'f'd	I	0.74	B,H
1035	R. Sheffield	B	1.00	B,K	1530	Wyvern, Worcester	I	0.52	H,I
1035	N. Sounct, Aberdeen	I	0.78	H	1548	R. Bristol	B	5.00	I
1107	Moray Fth, Inverness	I	1.50	J	1548	Capital G, London	I	97.50	A,I,K
1116	R. Derby	B	1.20	A,B,E,H,K,L*,M	1548	City G, Liverpool	I	4.40	A*,B,J,K*
1116	R. Guernsey	B	0.50	A,B,E,H,I	1548	Max AM, Edinburgh	I	2.20	A*,H
1152	Amber, Norwich	I	0.83	A,H	1557	R. Lancashire	B	0.25	B,H
1152	Clyde 2, Glasgow	I	3.06	H	1557	Mellow, Clacton	I	0.125	A,H
1152	Lon. Newstalk, London	I	23.50	A,I,L*	1557	Northants SG	I	0.76	K
1152	Pic'ly G, Manchester	I	1.50	B	1557	Sth Coast R, So'ton	I	0.50	I
1152	Plym Snd AM, Plymouth	I	0.32	B	1584	KCBC, Kettering	I	0.04	K
1152	Xtra-AM, Birmingham	I	3.00	K	1584	London Turkish H	I	?	A,I
1161	R. Bedfordshire (SCR)	B	0.10	A,K,L*,M	1584	R. Nottingham	B	1.00	K
1161	Brunel CG, Swindon	I	0.16	B,I	1584	R. Shropshire	B	0.50	B,I
1161	Southern Counties R	B	1.00	A,E,I	1584	Tay, Perth	I	0.21	H
1161	Tay AM, Dundee	I	1.40	H	1602	R. Kent	B	0.25	A,I,M

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-

- (A) Paul Bowery, Burnham-on-Crouch.
(B) Robert Connolly, Kilkeel.

- (C) Francis Hearne, N. Bristol.
(D) Simon Hockenhill, E. Bristol.
(E) Sheila Hughes, Morden.
(F) Rhoderick Illman, Oxted.
(G) Stephen Jones, Oswestry.
(H) Ross Lockley, Stirling.

- (I) George Millmore, Wootton, IoW.
(J) Tom Smyth, Co. Fermanagh.
(K) Andrew Stokes, Leicester.
(L) Norman Thompson, Oadby.
(M) Phil Townsend, E. London.

Transatlantic DX Chart

Freq kHz	Station	Location	Time (UTC)	DXer
USA				
710	WOR	New York, NY	0357	D
770	WABC	New York, NY	0102	C
850	WEI	Boston, MA	0020	C
880	WCBS	New York, NY	0106	C,D
1010	WINS	New York, NY	0326	C,D
1130	WBRR	New York	0340	D,E,F
1180	WHAM	Rochester, NY	0336	D
1500	WTDP	Washington, D.C.	0107	B,C
1510	WNRB	Boston, MA	0100	A,C,D,F
1520	WWKB	Buffalo, NY	2308	C,F
1560	WQEW	New York	0504	C
1600	WWRL	New York, NY	0215	B
CANADA				
560	CHVO	Carbonear, NF	0810	C
580	CJFX	Antigonish, NS	0100	F
590	VOCM	St. John's, NF	0010	A,B,C,F
850	CKGA	Gander, NF	0650	C
920	CJCH	Halifax, NS	2329	C
930	CJYJ	St. John's, NF	0045	A,B,C,F
940	CBM	Montreal, PQ	0659	C
980	CBV	Quebec, PQ	0115	C
1010	CFRB	Toronto, ON	0118	A,B,C
1150	CKOC	Hamilton, ON	0155	B

DXers:-

- (A) Paul Bowery, Burnham-on-Crouch.
(B) Robert Connolly, Kilkeel.
(C) David Edwardson, Wallsend.
(D) Gerry Haynes, Bushey Heath.
(E) Simon Hockenhill, E. Bristol.
(F) John Slater, Scalloway.

Oadby; SRI via Sottens? 13.635 (Eng, Fr, Ger, It to Far East, S.E. Asia 1100-1300) 45243 at 1100 in Newry; Voice of Russia 13.785 (Eng [WS]) SIO322 at 1200 by **Tom Smyth** in Co. Fermanagh. After mid-day, WYFR via Okeechobee 13.695 (Eng to N. America 1300-1400) was rated 34344 at 1302 in Burnham-on-Crouch; UAER, Dubai 13.675 (Eng to Eur 1330-1355) 43233 at 1330 in Appleby; DW via Sackville, Canada 13.790 (Ger to N. America 1400-1600) 33333 at 1500 in Penmaenmawr; WWCR Nashville, USA 13.845 (Eng to E. USA 1400-0100) SIO333 at 1615 in Macclesfield; Croatian R, Zargreb 13.830 (Cr, Eng to Eur 24hrs) heard at 1700 in E. London; WHRI South Bend, USA 13.760 (Eng to E. USA, Eur 1500-2200) SIO322 at 1803 in Woking; WEWN Birmingham, USA 13.695

(Eng to Eur 1830?-2057) 34233 at 1851 in Bridgwater; DW via Sines, Portugal 13.790 (Eng to W. Africa 1900-1950) 35333 at 1930 in Chester; RCI via Sackville 13.650 (Fr, Eng to Eur, Africa 1945-2200) 24232 at 1955 in Oxted; VOA via Selebi-Phikwe, Botswana 13.710 (Eng to Africa 1630-2200) 43323 at 2150 in Stalbridge. Good reception from many areas has been evident in the **11MHz (25m)** band. During the morning the BBC via Masirah Is 11.760 (Eng to M. East 0300-0915) was 43433 at 0750 in Bushey Heath; R. Aparecida, Brazil 11.855 (Port 0800-0300) 44534 at 0850 in Guildford; SRI via ? 12.075 (It, Eng, Fr, Ger, Port to Australia, S. Pacific 0830-1100) heard at 0900 in Truro; Israel R, Jerusalem 11.590 (Heb to Eur, USA 0400-1530?) 34333 at 1014 in Oxted; R. Denmark via RNI 11.830

(Da [Eng 1st Sun of month] to Eur 1030-1100) 55555 at 1053 in Bridgwater; SRI via ? 12.075 (Eng, Fr, Ger, It to Far East, S.E. Asia 1100-1300) 55555 at 1102 in Newry. During the afternoon the Voice of the Mediterranean via Cyclops, Malta 11.925 (Eng, Ar to N. Africa 1400-1600) was SIO333 at 1400 in Co. Fermanagh; R. Japan via Sri Lanka 11.895 (Eng to S. Asia 1400-1500) 32332 at 1415 in Herstmonceux; BBC via Kranji, Singapore 11.750 (Eng to Far East 1100-1800) 45444 at 1455 in Woking; RCI via Skelton, UK 11.935 (Eng, Fr to Eur, M. East 1430-1600) 32232 at 1500 in Oadby; RCI via Sines, Portugal 11.915 (Eng, Fr to Eur, Africa 1430-1600) 43333 at 1505 by **Stan Watkins** in S.E. London; R. Australia via Carnarvon 11.660 (Eng to S. Asia 1430-2057) 45444 at 1525 in E. Bristol; FEBA Mahe, Seychelles 11.870 (Eng to S.E. Asia 1500-1600) 12431 at 1530 in Chester; WEWN Birmingham, USA 11.580 (Eng to USA 1600-1800) SIO333 at 1607 in Macclesfield; SRI via ? 12.075 (Eng, Fr, Ger, It to S/C. Asia 1500-1700) 33333 at 1610 in Kilkeel; BBC via Skelton, UK 12.095 (Eng to Eur, N/W. Africa 0400-2215) 24333 at 1655 in Manchester; Vatican R, Italy 11.625 (Eng to Africa 1730-1800) 33323 at 1730 in Morden; R. Japan via Sri Lanka? 11.930 (Eng to M. East, N. Africa 1700-1800) 43333 at 1735 in Norwich. Later, HCJB Quito, Ecuador 11.960 (Eng to Eur 1900-2200) was noted by Laurence Mason in Hassocks; DW via Sri Lanka? 11.785 (Eng to W. Africa 1900-1950) was SIO333 at 1943 in N. Bristol; BBC via Ascension Is 11.750 (Eng to S. America 2000-0200) 33323 at 2045 in Stalbridge; R. Globo, Rio de Janeiro, Brazil 11.805 (Port 0900-0330) 35533 at 2055 in Wallsend; AIR via Bangalore 11.620 (Eng, Hi to Eur 1745-2230) 45434 at 2145 in Burnham-on-Crouch; R. Japan via Moyabi, Gabon 11.865 (Eng to Eur 2100-2200) 44444 at 2149 by **Peter Pollard** in Rugby; REE via Noblejas, Spain 11.775 (Eng to Africa 2200-2300) 44344 at 2200 in Appleby; R. Nac da Amazonia, Brazil 11.780 (Port 0900-0200) 35443 at 2325 in Co. Mayo. The conditions in the **9MHz (31m)** band enable many broadcasts to reach our shores. During daylight they include R. New Zealand Int 9.700 (Eng to Pacific areas 0715-1206) rated 34333 at 0855 in Appleby; 33333 at 1040 in Chester; R. Australia via Carnarvon 9.510 (Eng, Chin to Asia 0800-1200) 35553 at 1025 in Wallsend; R. Australia via Darwin 9.615 (Eng to Asia 1100-1755) SIO222 at 1100 in Co. Fermanagh and 34434 at 1600 in E. Bristol; SRI via Lenk? 9.535 (Eng to SW. Eur 1100-1130) 44444 at 1105 in Stockport; R. Tashkent, Uzbekistan 9.715 (Eng to Asia 1200-1230) 34443 at 1205 in Galashiels; R. Mediterranean Int via Nardor, Morocco 9.575 (Fr, Ar to N. Africa, S. Eur 0500-0100) SIO433 at 1400 in E. London; WYFR via

Freq (MHz)	Station	Country	UTC	Dxer	Freq (MHz)	Station	Country	UTC	Dxer
2.310	ABC Alice Springs	Australia	2015	C,E,F,G,I,O	4.830	R.Tachira	Venezuela	2327	A,C,E,F,I,M,T
2.325	ABC Tennant Creek	Australia	2019	C,E,F,G,I,O	4.832	R.Reioj	Costa Rica	0605	E,F,I,T,V
2.340	Fujian 1, Fuzhou	China	2255	F	4.835	R.Tezutlilan, Coban	Guatemala	0149	I
2.485	ABC Katherine	Australia	2030	C,E,F,G,I,O	4.835	RTM Bamako	Mali	2110	A,C,I,K,N,O,T,V,Y
2.650	KCBS Pyongyang	N. Korea	2025	E,F,I	4.840	Heilongjiang, Harbin	China	1405	A,E,F,I,V
3.200	TWR Manzini	Swaziland	1923	G	4.840	AIR Bombay	India	1444	E,G,I,N,T
3.215	R.Onion	S.Africa	2210	O	4.840	R.Andahuaylas	Peru	2355	C,I
3.220	CPBS 1, Beijing	China	2115	C,E,G,I,O,T	4.845	R.Frides, La Paz	Bolivia	0310	I
3.220	KCBS Wonsan	N. Korea	2337	F	4.845	RTM Kuala Lumpur	Malaysia	1454	E,G,I,V
3.220	R.Kara, Lome	Togo	0038	C,G,I	4.845	ORTM Nouakchott	Mauritania	1940	A,C,I,O,T,V,Y
3.222	Vatican R.	Italy	1943	G	4.850	R.Yaounde	Cameroon	2114	C,M,T
3.223	AIR Simla	India	1516	E,G,I	4.850	AIR Kohima	India	0029	I,X
3.230	R.Sol de los Andes	Peru	1741	D	4.850	Ulan Bator 1	Mongolia	1438	I
3.230	SABC Meyerton	S.Africa	2045	C,G,I,M,T	4.860	R.Federacion	Ecuador	0311	I
3.240	TWR Shona	Swaziland	1808	G,I	4.860	AIR Kingsway(Feeder)	India	1849	G,I,K,N,O,V,X
3.245	AIR Lucknow	India	1517	E,G,I,V	4.865	R.Alvorada, Londrina	Brazil	0152	I
3.250	R.Pyongyang	N. Korea	1520	E,G	4.865	PBS Lanzhou	China	1236	C,E,F,G,I,K,P,T,V,X
3.255	BBC via Maseru	Lesotho	2115	B,C,F,G,I,O,T	4.865	L.V del Cinaruco	Colombia	2355	C
3.270	R.Ecos del Oriente	Ecuador	0435	I	4.870	R.Cotonou	Benin	2110	A,I,K,M,N,O,T,V
3.270	SWABC 1, Namibia	S.W.Africa	2115	C,G,O,T	4.870	Voz del Upano	Ecuador	0010	C
3.277	AIR Srinagar	India	1528	I	4.875	R.Roraima, Boa Vista	Brazil	0015	C,I
3.290	Namibian BC,Windhoek	S.W.Africa	2004	C,G,N,T,V	4.879	R.Bangladesh	Bangladesh	0050	E,G,I,T
3.300	R.Cultural	Guatemala	0016	E,F,I,T,V,X	4.880	R.Difusora Acreana	Brazil	2335	C,X
3.306	ZBC Prog 2	Zimbabwe	2120	A,C,G,N,O,T	4.885	R.Clube do Para	Brazil	2150	D,F,I,M,T,X
3.315	AIR Bhopal	India	1518	C,G,I,V,X	4.885	R.Difusora Acreana	Brazil	0312	I
3.316	SLBS Goderich	Sierra Leone	2115	A,C,G,I,O,T,V	4.885	KBC East See Nairobi	Kenya	1847	C,I,N,O,V
3.320	Pyongyang	N. Korea	1530	E,G,V	4.890	R.Port Moresby	New Guinea	1536	E,F,I
3.320	SABC Meyerton	S.Africa	2115	C,G,I,O,T	4.890	ORTS Dakar	Senegal	1859	I,V
3.325	R.Liberal	Brazil	0440	I	4.895	R.IPB AM C'po Grande	Colombia	0621	C,I,T
3.325	FRON Lagos	Nigeria	2116	C,I,M,O,T,V	4.895	Voz del Rio Arauca	Colombia	2325	A,C,E,T,V
3.335	TWR	Swaziland	1750	C	4.895	AIR Kurseong	India	0152	G,I
3.335	CBS Taipei	Taiwan	1935	B,E,G,I,N,O,V	4.895	Pakistan BC	Pakistan	1522	E,G,I,O,V
3.345	AIR Jaipur	India	0030	V	4.895	RTM Kuching	Sarawak	1435	I
3.345	AIR Jammu	India	1519	C,E,G,I,N,P	4.900	V. of the Strait 2	China	1237	D,E,G,I,V
3.345	Channei Africa	S.Africa	1934	G	4.900	SLBC Colombo	Sri Lanka	1900	G,I,O,T,V
3.350	KCBS Pyongsong	N. Korea	1530	V	4.905	R.Religio, Rio	Brazil	0153	E,I
3.355	R.Nac.Luanda	Angola	1710	V	4.905	R.Nat'N'djamena	Chad	1938	C,I,M,O,T,V,X,Y
3.356	R.Botswana	Gaborone	2020	C,G,I,M,N,O	4.905	CPBS 1, Beijing	China	2120	E,I
3.365	GPC R-2	Ghana	2052	A,C,I,J,M,O,T,V	4.907	Phnom Penh	Cambodia	1430	I
3.365	AIR Delhi	India	1520	E,G,I	4.910	Tennant Creek	Australia	2132	G,O
3.375	R.Nacional S Gabriel	Brazil	2345	C	4.910	RTG Conakry	Guinea	2355	C
3.380	NBC Biantyre	Malawi	1730	C	4.910	AIR Jaipur	India	1324	E,G,PV
3.390	R.Candip Bunia	Zaire	1720	C,I	4.910	RRI Bukittinggi	Indonesia	1615	E,I
3.815	Taiwan 1 Sc, Beijing	China	2010	E	4.915	R.Anhanguera	Brazil	0825	C,F,I,T,V
3.905	RRI Banda Aceh	Indonesia	1555	E	4.915	PBS Guangxi, Nanning	China	1514	C,E,G,I,V
3.915	BBC via Kranji	Singapore	2028	A,C,F,G,I,M,N,O,T,X,Y,Z	4.915	GPC 1, Accra	Ghana	2115	A,C,D,F,I,J,M,N,T,V,X
3.925	NSB (R. Tampa)	Japan	2115	E,F,V	4.915	KBC Cent See Nairobi	Kenya	1749	I
3.930	Nei Menggu-Mo,Hohhot	China	1415	E	4.915	R.Cora, Lima	Peru	0805	E
3.930	KBS Seoul	Korea	1415	E	4.920	R.Quito	Ecuador	0700	E,F,I,T,V
3.940	PBS Hubei Wuhan	China	2315	E,V	4.920	AIR Madras	India	1533	E,F,G,I,N,T,V,X
3.945	AIR Gorakhpur	India	1535	E,F,G,I,V	4.925	R.S.Miguel,Riberalta	Bolivia	2335	E,I
3.950	Qinghai PBS, Xining	China	2345	C,E,F,I,P,T,V	4.931	R.Internacional	Honduras	0314	I
3.955	BBC via Skelton	England	2106	B,C,J,M,W,X,Y,Z	4.935	R.Capixaba, Victoria	Brazil	0716	I
3.960	Xinjiang PBS, Urumqi	China	1450	C,E,F,I,P	4.935	KBC Gen See Nairobi	Kenya	2052	I,M,N,O,T,V
3.965	RRI Paris	France	2107	B,C,M,X,Y	4.935	R.Tropical, Tarapoto	Peru	0005	C,E
3.970	N. Menggu PBS,Hohhot	China	1449	I	4.940	V of Strait, Fuzhou	China	1415	V
3.970	R.Korea via Skelton	England	2000	I,M,Z	4.940	AIR Guwahati	India	1534	E,G,I,N,T,V
3.975	R.Budapest	Hungary	2000	B,C,I,J,K,L,M,Q,R,U,X,Y	4.940	R.Abidjan	Ivory Coast	1825	C
3.975	RRI Surabaya	Indonesia	1540	E	4.945	R.Difusora	Brazil	0158	I
3.985	RRS	Italy	1628	B,H,I,Y	4.950	R.Nacional, Muluenvos	Angola	2049	C,G,T,V
3.985	China R via SRI	Switzerland	2200	O,W	4.950	PBS Xilinot, Hohhot	China	2341	I
3.985	SRI Beromunster	Switzerland	1846	C,I,M,X,Y	4.950	V. of Fujang	China	1315	E,V
3.990	Xinjiang BS, Urumqi	China	1410	E,G,I,V	4.950	AIR Jammu	India	1535	G,I,V
3.990	BBC via Limassol	Cyprus	1651	B,P	4.950	R.Madre de Dios	Peru	2200	T
3.995	DW via Julich	Germany	2108	C,H,I,M,X,Y	4.955	R.Marajara, Belem	Brazil	2343	T
3.995	DW via Meyerton	S.Africa	1850	I	4.955	R.Nac. de Colombia	Colombia	0105	C,E,F,I,K,P,T,V
4.000	RRI-Kendari	Indonesia	1550	E,V	4.960	R.Federacion, Sucua	Ecuador	0100	C
4.003	RRI Padang	Indonesia	1540	E	4.960	Hanoi 2	Vietnam	1423	G,I,T
4.035	Xizang PBS, Lhasa	Tibet	1525	E,F,G,P,V	4.965	R.Alvorada	Brazil	0025	C
4.081	Ulan Bator 1	Mongolia	1515	E	4.965	Christian Voice	Zambia	1910	C,G,I,O,V,X
4.330	Xinjiang BS, Urumqi	China	1408	E,F,G,I	4.970	PBS Xinjiang	China	1409	A,C,E,G,I,T,V
4.409	R.Eco, Reyes	Bolivia	2340	E	4.970	R.Rumbos, Caracas	Venezuela	0159	I
4.460	CPBS 1, Beijing	China	1436	E,G,I,V	4.975	Fujian 1, Fuzhou	China	1425	I,V
4.470	R.Movima	Bolivia	2345	E	4.975	R.Uganda, Kampala	Uganda	2050	C,I,N,O,S,V
4.485	R.fecuencia,Celendin	Peru	0021	X	4.980	PBS Xinjiang, Urumqi	China	1420	E,G,I,V
4.500	Xinjiang BS, Urumqi	China	1427	D,E,F,G,I	4.980	Ecos del Torbes	Venezuela	2330	A,C,D,E,F,I,K,M,N,T,V,X
4.549	R. Dif.Tropico	Bolivia	2329	F	4.985	R.Brazil Central	Brazil	0015	A,C,E,I,T,V
4.650	R.Santa Ana	Bolivia	2355	E	4.990	Huanan 1, Changsha	China	1433	C,E,G,I
4.735	Xinjiang, Urumqi	China	1444	A,E,F,G,I,T,V,X	4.990	FRON Lagos	Nigeria	0315	A,C,I,M,V
4.750	R.Bertour	Cameroon	2028	O	4.990	R.Ancash, Huaraz	Peru	0315	E,I
4.750	Xizang BS, Lhasa	Tibet	1419	E,E,G,I,P,T,V	5.005	R.Nacional, Bata	E.Guinea	2021	F,G,K,M,O,T,V
4.753	RRI Ujung, Padang	Indonesia	2120	E,I,T	5.005	R.Nepal, Kathmandu	Nepal	1616	C,E,F,G,I,T,V
4.755	R. Educ. CP Grande	Brazil	2215	C,E,T,V	5.009	R.TV Malagasy	Madagascar	1703	G,I
4.760	Yunnan PBS,Kunming	China	2310	C,D,E,G,I,N	5.010	R.Garoua	Cameroon	2039	C,I,N,O,T,V
4.760	AIR Port Blair	India	1521	E,G,I,V	5.010	Guangxi 2, Nanning	China	2355	E,I
4.760	ELWA Monrovia	Liberia	2129	A,C,G,I,M,O,Q,T,V,X	5.010	AIR Thiru puram	India	0120	E,F,M,V
4.760	R.Frontera	Venezuela	0302	I	5.015	R.Brazil Tropical	Brazil	0156	I
4.765	R.Integracao	Brazil	2335	C	5.020	PBS Jiangxi Nanchang	China	1319	C,O,E,F,G,I,N,V
4.765	Brazzaville	Pep.Rep.Congo	2114	O,T	5.020	La V du Sahe, Niamey	Niger	1943	A,C,D,G,I,M,N,O,T,V,Y
4.765	RRI Medan	Indonesia	1505	E	5.020	SLBC Tamil Home Sce.	Sri-Lanka	1648	G,I
4.770	Centineta del Sur	Ecuador	2320	C,I	5.025	R.Parakou	Benin	2025	A,C,I,M,N,O,T,V,X
4.770	FRON Kaduna	Nigeria	2114	A,B,C,I,M,N,O,R,T,V,X	5.025	R.d'Transamazonica	Brazil	0316	I
4.775	AIR Guwahati	India	0045	E,F,G,I,N,P,T,V	5.025	R.Rebelle, Habana	Cuba	0102	A
4.783	RTM Bamako	Mali	2113	A,C,I,M,N,O,T,V	5.025	R.Uganda, Kampala	Uganda	1755	C,I,V
4.785	Zhejiang PBS,H'gzhou	China	1425	V	5.030	AWR Latin America	Costa Rica	0108	I,T
4.785	R.Tanzania	Tanzania	1740	I,M	5.035	R.Aparcida	Brazil	2345	A,C,I
4.790	Azad Kashmir R.	Pakistan	1346	E,G,I,K,V	5.035	R.Bangui	C.Africa	2013	C,I,T
4.790	R.Atlantida	Peru	0146	I	5.040	PBS Fujian, Fuzhou	China	1423	E,I,V
4.795	R.Douala	Cameroon	2139	T,X	5.040	L.V. de Yopal	Colombia	2205	E,T
4.795	La Voz de los Caras	Ecuador	0715	E,I	5.045	R.Cultura do Para	Brazil	0020	C,E,I
4.800	R.Nac Amazonas	Brazil	0247	M	5.047	R.Togo, Lome	Togo	2107	A,C,I,L,M,N,O,T,V,X
4.800	CPBS 2 Beijing	China	1430	C,E,G,I,T	5.050	GFBC Nanning	China	1250	E,G,I
4.800	R.Buenas Nuevas	Guatemala	0304	I	5.050	AIR Aizawl	India	1527	D,I
4.800	AIR Hyderabad	India	1531	A,E,G,I,N,V	5.050	R.Tanzania	Tanzania	1800	C,I,L,M,V
4.800	Maseru	N. Lesotho	1853	C,D,G,I,M,N,O,T,V,X	5.055	RFO Cayenne(Matoury)	French Guiana	0615	C,E,I,T
4.805	R.Nac Amazonas	Brazil	0050	C,D,E,N,T	5.055	TWR Manzini	Swaziland	0320	I
4.815	R.Difusora, Londrina	Brazil	2346	C,E,I,T	5.060	PBS Xinjiang, Urumqi	China	2350	C,D,F,G,I,K,L,T,V
4.815	Ruff TV Burkina	Quagadougou	2120	A,C,D,M,N,O,T,V	5.060	Sist d'Em Progreso	Ecuador	0324	I
4.820	La Voz Evangelica	Honduras	0028	I,X	5.065	R.Candip, Bunia	Zaire	1643	C,G,X
4.820	AIR Calcutta	India	1531	E,G,I,V	5.075	Caracol Bogota	Colombia	0745	C,E,F,P,T,V,X
4.820	Xizang, Lhasa	Tibet	1520	A,D,G,I,V	5.090	Taiwan 2 Sce,Beijing	China	1430	E,G,I,V
4.825	R.Cancas Nova	Brazil	0730	D,I,T	5.097	R.Eco, Iquitos	Peru	0305	I
4.825	V of Selva	Peru	0148	E,I	5.125	Taiwan 1 Sce,Beijing	China	1420	E,I,V
4.828	ZBC R-4	Zimbabwe	1743	C,G,I,O,T,V	5.163	CPBS 2, Beijing	China	1418	I
4.830	R.Botswana, Gaborone	Botswana	1914	G,I,K,M,V					

Tropical Bands Chart

Dxers:-

- (A) Darren Beasley, Bridgewater.
- (B) Paul Bowery, Burnham-on-Crouch.
- (C) Robert Connolly, Kilkeel.
- (D) John Eaton, Woking.
- (E) Jim Richards, Bryn.
- (F) David Edwardson, WallSEND.
- (G) PGordon Smith, Kingston, Moray.
- (H) Ted Harris, Manchester.
- (I) Gerry Haynes, Bushey Heath.
- (J) Simon Hockenhill, E.Bristol.
- (K) Sheila Hughes, Morden.
- (L) Rhoderick Illman, Oxted.
- (M) Eddie McKeown, Newry.
- (N) Denis Mulkeen, Kiltimagh, Eire.
- (O) Fred Pallant, Storrington.
- (P) Phil Parry, Larnaca, Cyprus.
- (Q) Clare Pinder, while in Appleby.
- (R) Clare Pinder, Glasgow.
- (S) Peter Pollard, Rugby.
- (T) Richard Reynolds, Guildford.
- (U) Chris Shorten, Norwich.
- (V) John Slater, Scalloway.
- (W) Tom Smyth, Co.Fermanagh.
- (X) Andrew Stokes, Leicester.
- (Y) Phil Townsend, E.London.
- (Z) Thomas Williams, Truro.

VOFC Taiwan 9.280 (Chin to China 1102-1605) 45333 at 1442 in Bushey Heath; China R.Int, Beijing 9.785 (Eng to S.Asia 140-1557) 33333 at 1536 in Norwich; Voice of Hope, (KHBN) Palau 9.965 (Fil, Eng, Hin, Ur to S.Asia [Eng ident 1450]) 43422 at 1555 in Herstmonceux; Channel Africa, Meyerton 9.530 (Eng to Africa 1600-1700) 44343 at 1600 in Co.Mayo.

After dark, VOIRI Tehran, Iran 9.022 (Eng to Eur 1930-2027) was 44433 at 2012 in Bridgewater; Voice of Indonesia 9.525 (Eng to Eur 2000-2030) 33333 at 2015 in Scalloway; Voice of Turkey, Ankara 9.445 (Eng, Fr to Eur 1930-2130) 32322 at 2031 in Rugby; R.Australia via Carnarvon 9.645 (Eng to S.Asia 2100-2300) 22222 at 2100 in Truro; VOA via Gloria, Portugal 9.760 (Eng to Eur, N.Africa M.East 1900?-2200) 23222 at 2156 in Oadby; R.Bulgaria, Sofia 9.700 (Eng to Eur 2200-2300) SIO444 at 2224 in N.Bristol; BBC via Skelton, UK 9.410 (Eng to Eur, N/C.Africa 0300-2300) 44444 at 2255 in Penmaenmawr; R.Nac del Paraguay 9.735 (Sp 0800-0400) 24533 at 0008 in Guildford; R.Universo via Curitiba, Brazil 9.565 (Port 24hrs) 23333 at 0105 in Burnham-on-Crouch.

Some of the more distant stations noted in the 7MHz (41m) band were Monitor R.Int via WSHB 7.535 (Eng [Various Sat/Sun] to Eur 0400-0958) rated 43333 at 0500 in S.E.London and 44444 at 0815 in Morden; R.Korea, Seoul 7.550 (Eng to Eur 0800-0900) 33222 at 0800 in Appleby; WEWN Birmingham, USA 7.465 (Eng to Eur 1000-1200) 45555 at 1002 in Manchester; WJCR Upton, USA 7.490 (Eng to E.U.S.A 24hrs) 24222 at 1147 in Oxted; AWR (KSDA) Agat, Guam 7.455 (Chin [Eng ident] 1200-1600) 44333 at 1318 in Bushey Heath; R.Thailand via Ulanthani? 7.295 (Eng to Eur 1900-2000) 42432 at 1900 in Newry; R.Australia via Carnarvon 7.260 (Eng to S.Asia 1430-2100) 42442 at 1900 in Co.Mayo; Voice of Nigeria, Ikorodu 7.255 (Eng to W.Africa 1900-2100) 21331 at 1943 in Bridgewater; AIR via Aligarh? 7.410 (Hi, Eng to Eur 1745-2230) 34343 at 2037 in Rugby; Monitor R.Int, via WSHB 7.510 (Eng to Eur, Africa 2000-0000) 43333 at 2140 in Stalbridge; WRNO New Orleans, USA 7.355 (Eng to E.U.S.A 2300-0300) 25221 at 0010 in Chester.

In the 6MHz (49m) band HCJB Quito 6.050 (Eng 0700-0830) was 55555 at 0705 in Norwich; WHRI Noblesville, USA 5.760 (Eng to E.U.S.A 0400-10

TRADING POST

Please write clearly in **BLOCK CAPITALS** - up to a maximum of 30 words plus 12 words for your address, and send it together with your payment of £6.00 (£4.00 subscribers), to Zoe Shortland, Trading Post, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

If an order form is not provided due to space constraints, a form from a previous issue can be used as long as the cornerflap or Subscriber Number is attached as proof of purchase of the magazine.

Adverts appear on a first-come-first-served basis. If there is not enough space to feature a Trading Post ad in the issue you request it is automatically entered into the next one. All queries to Zoe Shortland on (01202) 659910.

We cannot accept advertisements from traders, or for equipment which is illegal to possess, use or which cannot be licensed in the UK.

For Sale

AOR AR1000 hand-held scanner, 8-600MHz, 1000 memories, manual, case, rechargeables, as new, £165. Collectors sets: Hammarlund HQ170A, amateur bands 1.8-148MHz, excellent condition, £140. CR100 with spare valves, manual, v.g.c., £85. Tel: Thearne, East Yorkshire (01482) 869682.

AOR AR3000 multi-mode scanner, 500kHz to 2036MHz, continuous, no gaps, a.m., n.b.f.m., w.b.f.m., u.s.b., l.s.b., c.w., boxed with manual and metal whip antenna, very good condition, £550 o.n.o. Tel: Kent (01795) 660896.

AOR AR3000A + base scanner, mint condition, one year old, boxed with manual and power pack, cost new £999, will sell for, £650. Doug, Tel: Orpington (01689) 820190 mornings or evenings.

AOR AR3000A, v.g.c., boxed with all accessories, £500 o.n.o. Yupiteru VT-225 aviation/marine bands, v.g.c., boxed with all accessories and leather case, £140 o.n.o. Martin Essex. Tel: Staffs area (01283) 716619 or 01543 444244 (work).

BBC computer plus disk drive plus colour monitor and printer, excellent condition, £250. Tel: Welling, Kent 0181-855 3652.

CR100 and R209 MkII for spares or repair, £50 the pair or will split. Tel: Dyfed (01970) 890563 not Sundays please.

Datong active antenna, one year old and checked by Datong, £40. J. Muller, 50A Egginton Road, Hilton, Derby DE65 5FG. Tel: (01283) 734320.

Drake R8E all-mode h.f. receiver, mint, boxed with manuals, £700 o.n.o. Marconi TF801a r.f. sig. gen. valve 10-300MHz, £40. Telereader RTTY/c.w. terminal, ASCII Baudot internal monitor + keyboard, £200 o.n.o. Steve G7VVF, London. Tel: (0956) 544202 mobile.

FRG-100, boxed and unmarked with manual, asking £350 including postage. Sennheiser head phones HD-560 Ovation II, half price, £50. Tel: South London 0181-785 7314.

Grundig Yachtboy 500, rarely used, boxed, mint with mains unit, etc., £125 o.v.n.o. Also Roberts R808, immaculate, boxed, £65. Tel: Brighton (01273) 306901 evenings.

Howes DCRX54 h.f. airband receiver for oceanic listening to aircraft, ideal for Selcals, excellent condition, £70 o.n.o. Mr G Gill. Tel: Bramhall 0161-440 8418.

Icom IC-R1 hand-held scanner with BC-02, BP-90 c/w NiCads, AD-14 and LC-59, excellent condition, boxed, etc., £250 o.n.o. or p/plex for £100. David Fraser, Inverurie, Aberdeenshire. Tel: (01467) 625038.

Icom IC-R7000 v.h.f. base station receiver, 25/2000MHz, 99 memories, a.m., n.f.m., w.f.m., s.s.b. plus Dressler ARA1500 active antenna, 50/1500MHz, both in mint condition with manual and original packing, £525. Peter. Tel: Saundersfoot (01834) 811761 before 9pm.

Icom IC-R72 receiver, mint condition with box and manual, also a.t.u. and long wire balun, £550. John, Derby. Tel: (01332) 347707.

Kenwood R-5000 short wave receiver, extra a.m. and

s.s.b. crystal filters fitted. Mint, purchased October '94, little used, £875 o.n.o. Tel: Bangor (01248) 351694.

Kenwood R-5000, with v.h.f., s.s.b. and c.w. filters, boxed, manuals and extension speaker, excellent condition, £750 o.n.o. BMK Multiterm for IBM and Atari, c.w., SSTV, RTTY, AMTOR and FAX, £100. Tel: Pinner 0181-429 0257.

Lowie HF-150 receiver and Sony AN-1 active antenna, both immaculate, includes all manuals and boxes, both less than a year old, £280 o.n.o. John, Essex. Tel: (01206) 304063 (day), (01206) 798814 (after 5pm).

Lowie HF-150 receiver in good condition, boxed with manual, p.s.u., magnetic balun antenna, £250 o.n.o. Mark, Stoke On Trent. Tel: (01973) 222696.

Lowie HF-225 receiver 30kHz-30MHz, keypad, manuals and boxed, as new, £360 o.n.o. ERA Microreader £80 o.n.o. Or £430 for lot o.v.n.o. Tel: Doncaster (01302) 725845 after 1pm.

Lowie HF-225 receiver, keypad, f.m./synch a.m. board, p.s.u., £375 o.n.o. ERA Mk2 Microreader, c.w./RTTY decoder, Morse tutor, p.s.u., £85 o.n.o. Both little used, manuals and boxed. Tel: Huddersfield (01484) 646242.

Lowie SRX-30, analogue, digital kHz read-out fitted, excellent, £120. Codar PR40 pre-selector, £35 excellent. Heathkit amateur RA1 receiver, £25. Items of test equipment for sale. Tel: Sussex (01444) 241567.

Martelec JVFX1 1 interface for satellites, FAX, SSTV, as new, boxed including manual and leads, £65 including postage. Dressler active antenna 0-30MHz including clamps, leads, will post or collect, £30. Charlie. Tel: Castledief, West Yorkshire (01977) 555177 evenings.

National HRO receivers, one working, one for spares, p.s.u., speaker, 13 coils, £75 the lot, collect only. Drake T4XC with p.s.u., £175. Jim Taylor, 5 Luther Road, Winton, Bournemouth BH9 1LH. Tel: (01202) 510400.

National HRO, handbook, spare valves and plug-in coils. Working until original power supply failed, £50. Tel: St Albans (01923) 673698 any reasonable time.

NRD-525G with matching NRD speaker, both excellent, with manual and IBS (Larry Magne) white paper report, late production model, superb performer, £625, no offers please. Bill Johnston. Tel: Bournemouth (01202) 422273.

Opto Scout 3.1 MK2, new December '95, unused, £300 or with new AR-8000, £600. Tel: Isle of Wight (01983) 865612.

Panel meters, 6in, 1mA f.s.d., moving coil, also centre zero types, large selection, sell singly or lot, offers. Also old copies of *Wireless World*, 1970s, offers please. Tel: Surrey 0181-391 0545 any reasonable time.

Professional Radio Equipment RA2290, 20-1000MHz £1750, RA1772 0-30MHz, £750. RA1784 0-30MHz, £1250. RA6775 0-30MHz, computer controlled, £750. RA1792 0-30MHz £1250 all immaculate manuals supplied. Tel (01323) 483966.

R-5000 unmarked, boxed with manual, £525. NTR-1 digital filter, mint, boxed, £100. Global 2000 a.t.u., £50. Nevada MS-1000 scanner, boxed, hardly used, £150 with discone. Buyer collects. Peter Perkins. Tel: Hemel Hempstead (01442) 251755.

Racal RA1217 professional receiver, excellent condition, £300. Rediffusion R500 synthesised receiver, memories, direct entry, four filters, current model, like new, swap RX or sale, offer? Eddystone 1837/2 digital receiver, five filters, £350. Icom IC-R7000 h.f. like new, £625. Lowe HF-125, boxed, excellent receiver, £180 o.n.o. Tel: Middlesex 0181-813 9193.

Radcoms late 50s to present, offers? BC221 frequency meter, £20. Commodore 128+, p.s.u., £25. Levell micro voltmeter, £25. Avo B150 universal bridge, £15. Advance signal generator, £15 with handbooks. Tel: High Wycombe (01494) 530018.

Redifon R551N commercial h.f. receiver, 15kHz to 30MHz, complete with cabinet, all in very good condition, no mods. Tel: Warringham, Surrey (01883) 627038.

Satellit 700, £290, Electric Typewriter, £35, Record player, all speeds, stereo, £40, all excellent condition, all together, £325. Tel: Bristol 0117-924 1800.

ScanMaster w/band antenna, freq. 25-1500 N-type connector, mounting brackets, £20. Sky Scan antenna mag mount, 24-1300MHz, 4m cable, N-type connector, £15. Mr Rigby. Tel: Morecambe (01524) 833506 answerphone.

Sony AN1 s.w. antenna f.e.t., r.f. amplifier batt/d.c. power, boxed, instructions, complete, £20. Sony power pack for above, new, unused, boxed, cost, £35, sell for £25. Mr Rigby. Tel: Morecambe (01524) 833506 (answerphone).

Sony ICF-SW7600 receiver, boxed, v.g.c., £85. Collins TCS12 ex-navy 1.5-12MHz communications receiver and p.s.u., £30. Tel: Warrington (01925) 763686.

Sony ICF-SW7600 short wave receiver, boxed with manual, accessories and mains unit plus 12V d.c. adapter, £90. Tel: Aylesbury (01296) 630578.

Sony SW-77 receiver, excellent condition, including manuals and frequency guide. Also AN-1 active antenna included. A good match with the SW-77, only used internally, £160 o.n.o. A. Ashford. Tel: Bournemouth (01202) 531407.

Timestep PROSAT II satellite receiving system for NOAA, Meteor, Okean and Geostationaries, runs on a 286, £115. Amstrad PC2286/40HDD 14in VGA to run it on, boxed, manuals, £200. Tel: Christchurch, Dorset (01202) 485409.

Timewave DSP9+ digital audio filter, new, fits any receiver/transceiver, £185. Wanted any Atlas h.f. equipment and Yaesu FT-180 working or broken. Dave. Tel: Romford (01708) 374043.

Two Sandpiper folded J antennas, 118 to 136MHz, 220 to 400MHz, 2dB gain, new 1995, antennas only used indoors, mint condition, £10. Tel: Newmarket (01638) 578314.

Yaesu FRG-100 receiver, unmarked, boxed as new, £360. Trio R300 receiver, £90. Tel: Derby (01332) 739440.

Yaesu FRG-7 receiver, 0.5-30MHz in original box with manuals, all v.g.c., unmarked condition, one owner now retiring, log book, including Lowe longwire balun, £140. Ern. Tel: Bexhill on Sea (01424) 842008.

Yaesu FRG-7700 communications receiver, £150. Roger Ball. Tel: North Staffs (01538) 300548.

Yaesu FRG-7700, memory unit fitted, Yaesu FRT-7700 a.t.u., Yaesu FRV v.h.f. unit 118-150 with manuals, excellent condition, £350. Tel: Hull (01482) 813439.

Yaesu FRG-8800 receiver, 150kHz to 30MHz, plus FRV-8800 v.h.f. converter, 118-174MHz, as new, £350 or offers. CR100 valve receiver, 60kHz to 30MHz working OK but tatty case, £40 o.n.o. Richard Tunstall. Tel: Crewle (01270) 256016 pref. 8-10pm.

Yaesu FRG-8800, 150kHz to 30MHz receiver with FRT-7700 a.t.u., mint condition, bought new for retirement, hardly used, £295. Tel: Bucks (01494) 563434.

Yaesu FRG-8800, 150kHz-30MHz, all mode with FRT-7700 a.t.u., fitted with v.h.f. 118-174 converter, boxed with manual, excellent condition. Books and accessories plus long

wire balun included, £450 o.v.v.n.o. John. Tel: Ipswich (01473) 713215 after 6pm.

Yaesu FRT-7700 antenna tuner and manual, £27. American WWII headphones, model HS-16A army (unused), £12. Shenzi h.f. long wire balun, £12. All carriage paid. Tel: Glasgow 0141-959 7466.

Yupiteru 8000 base/mobile scanner, 8-1300MHz, serial 30700471, with accessories, manual, receipt, packing, mint, £200. DSS 1300 desk top antenna, mint, £25 or £215 both items, share postage. Tel: Tyne & Wear 0191-526 7902.

Yupiteru MVT-7100 boxed, immaculate with leather case, stand, etc., £250. Tel: Luton (01582) 410646.

Yupiteru MVT-7100 boxed, mint condition, complete with manual, NiCads, charger, a.t.u., desk stand, frequency books, various other books and leads, cost over, £470. Accept, £250 or very near offer. Tel: Newcastle Upon Tyne 0191-496 0818.

Yupiteru MVT-7100, boxed with accessories, Howes a.t.u., books, etc. Changing to s.w. RX. Quick sale required, £220 only. Tel: Birmingham 0121-430 4660.

Wanted

Apple Lisa computer working or not. Enrico Tedeschi, 54 Easthill Drive, Portslade, Brighton BN41 2FD. Tel/FAX: (01273) 410749 anytime or (0850) 104725 (mobile).

Early wireless, pre WWII, any condition considered. Jim Taylor, 5 Luther Road, Winton, Bournemouth BH9 1LH. Tel: (01202) 510400.

Eddystone 940 valve receiver in good condition. I'll pay shipping. Peter Pompe, 38 Val du Prince, B-1950 Kraainem, Belgium. Tel/FAX: 322/731 62 84.

Eddystone EC10, EB35, EB36, EB37, 960, 930, 890, 870A, Mimco cabin feeder, EC958, etc. Also scrap sets for spares. A few doubles for sale. Lepino, Surrey. Tel: (0374) 128170 anytime.

Hallicrafters S-36-A, preferably in full working order, complete, unmodified and in good condition. Describe and state price delivered to: E. F. C. Owen, 28 Charfield Road, Reigate, Surrey RH2 7JZ.

Icom IC-R7100 base scanner, must be in very good condition and full working order. Laurie. Tel: Romford (01708) 721558.

Lowie HF-225 in good condition, selling 220 mixed, unused, i.e.s (includes obsoles), £15. Tel: Glos (01242) 230225.

Military radio equipment, modern or vintage. Receivers, transmitters, etc., British, German, USA. Will buy outright or have sets for exchange. Also military hardware wanted, Ham radios, airband, etc. Ben. Tel: Kidderminster (01562) 743253.

R-5000 with v.h.f. or without or a complete set-up, in very good order, plus manual, cash. George. Tel: Bedford (01234) 214197.

Spy/Clandestine radio sets wanted by private collector, British, Polish, American, Russian, German, etc., good price paid, send full details to: Bill MacDonald, 40 Latchett Road, London E18 1DJ or Tel: 0181-505 0838 evenings.

Top prices paid for your German gear of WWII vintage. Looking for receivers, transmitters, accessories. Will collect. Lissok, Rue M. Poedts 9, B-1160 Brussels, Belgium. Tel: 00-322 6737115.

Urgently seeking Racal add-ons, s.s.b. adapter, I.f. adapter, frequency meter, any adaptor to suit RA17L, your price or will swap B40, BC312A, both excellent. Tel: Leek (01538) 385735 anytime.

Exchange

Yaesu FT-707 transceiver, manual and mic., good condition plus Yaesu FRG-7700 receiver, manual, service manual plus 500kHz I.p.f., v.g.c., display fault but receives perfect. Would exchange both for Icom ICR-71E. Tel: Gosport (01705) 793832 anytime.

SWM
MAR 96
TP

BOOK STORE



TO ORDER: PLEASE USE THE ORDER FORM ON PAGE 78 OR TELEPHONE THE CREDIT CARD HOTLINE ON (01202) 659930 (24 HOURS)

The books listed have been selected as being of special interest to our readers. They are supplied direct to your door. Many titles are overseas in origin.

LISTENING GUIDES

Airband

AIR BAND RADIO HANDBOOK 5th Edition

David J. Smith
Air band radio listening enables you to listen-in on the conversations between aircraft and those on the ground who control them, and is an increasingly popular and fascinating hobby. A new chapter on military air band has been added. The author, an air traffic controller, explains more about this listening hobby.
190 pages £8.99

AIR & METEO CODE MANUAL 14th Edition

Joerg Klingentuss
Detailed descriptions of the World Meteorological Organisation Global Telecommunication System operating FAX and RTTY meteo stations, and its message format with decoding examples. Also detailed description of the Aeronautical Fixed Telecommunication Network amongst others.
358 pages £20.00

AIRWAVES 95

The Complete HF/VHF/UHF Aviation Frequency Directory
Much of the more obscure (especially military) information is made accessible in this volume. Not only are facilities/activities listed, giving their frequencies, but also there are reverse lists - when the frequency is known, the allocated user can be found.

Airways sectors are listed so much more clearly than in the Supplements. The main transponder code groups are included. In fact, the book covers all the way from h.f. up to u.h.f.
100 pages £9.95

AIRWAVES EUROPE

This spirally bound book is published in a similar format to *Airwaves 95* and contains over 5000 aviation frequencies. There are v.h.f./u.h.f. civil and military airband frequencies given for 38 countries and their dependencies in east and west Europe. A must for airband enthusiasts both in the UK and Europe.
124 pages £9.50

CALLSIGN 96

The Civil & Military Aviation Callsign Directory
Intended for the aircraft and radio enthusiast to use as a stand alone reference, or as a partner to *Airwaves 95*. Over 5300 military and 3000 civil callsigns are covered in detail.
108 pages £8.50

FLIGHT ROUTINGS 1995

Compiled by T.T. & S.J. Williams
This guide was produced with the sole aim of assisting airband listeners to quickly find details of a flight, once they have identified an aircraft's callsign. Identifies the flights of airlines, schedule, charter, cargo and mail, to and from the UK and Eire and overflights between Europe and America.
140 pages £6.50

HIGH IN THE SKY

Davis Barker & McKenzie
This new edition comprises ten sections. The first seven sections are an introduction of radios, antenna and radio communications, information about airways, sections covering v.h.f. and h.f. aeronautical communications, and a brief look at ACARS. The majority of the book is taken-up by section eight, which lists all known Seicalls in three different sequences (by airline/operator, by Seicall and by registration). The 9th section is devoted to Seicalls used by executive jets, these are separate, since these Seicalls are not always fixed. Mostly re-written this volume contains the all-important frequency listings for the aeronautical networks, airlines, the military and the commercial networks.
166 pages £6.95

THE AIRBAND JARGON BOOK

Ron Swinburne
Designed to give the newcomer some guidance on what to expect from Airband and how to extract the most from listening to it.
This guide is essential reading for those not involved in the aviation industry. It gives a valuable insight to many aspects of aviation. Explained are the principles of Airband reception, aircraft instrumentation, radio services, weather navigation, etc. and air traffic control, to list but a few. Read this book and you could well be hooked.
72 pages £6.95

UNDERSTANDING ACARS 2nd Edition

Aircraft Communications Addressing and Reporting System
Ed Flynn
Here is the information you need to understand and decode the Aircraft Communications Addressing and Reporting System, otherwise known as ACARS. Deals with the equipment needed as well as message format and type.
80 pages £9.95

WORLDWIDE AERONAUTICAL COMMUNICATIONS FREQUENCY DIRECTORY 2nd Edition

Robert E. Evans
This book covers aeronautical radio communications, voice and digital, within the range of h.f. and v.h.f./u.h.f. frequency bands. Commercial, military and para-military operations are included. Divided into logical sections, it provides useful information and frequencies on almost anything and everything airband.
260 pages £19.95

WORLDWIDE AERONAUTICAL HF RADIO HANDBOOK

Maryn R. Cooke
This book lists high frequencies used by aircraft and aeronautical ground stations. It's divided into sections,



Military, Civil, etc. and is designed for use by those who have previous little knowledge of h.f. communications as well as those who are already 'hooked'.
124 pages £6.95.

Broadcast

A GUIDE TO THE WORLD'S RADIO STATIONS BP355

Peter Shore
As in *Broadcast Round-up*'s column in *PW*, Peter Shore has laid this book out in world areas, providing the listener with a reference work designed to guide around the ever-more complex radio bands. There are sections covering English language transmissions, programmes for DXers and s.w.l.s. Along with sections on European medium wave and UK l.m. stations.
266 pages £5.95

POP WENT THE PIRATES

Keith Skues
A very comprehensive history of Pirate Radio. Thanks to *Pop Went The Pirates* the whole era of people seeking to provide a popular alternative radio service, under quite considerable opposition, will be remembered. I don't suppose we will ever see or hear the like of it again.
£15.95

RADIO LISTENERS GUIDE 1996

Clive Woodyear
This is the eighth edition of this radio listener's guide. Simple-to-use maps and charts show the frequencies for radio stations in the UK. Organised so that the various station types are listed separately, the maps are useful for the travelling listener. Articles included in the guide discuss v.h.f. aerials, RDS, the Radio Authority and developments from Blaupunkt.
81 pages £3.95



Datamodes

GUIDE TO FAX RADIO STATIONS

15th Edition
Joerg Klingentuss
The new edition of this super reference book covers the world's facsimile stations, their frequencies and methods of working. There is a section covering the equipment needed to receive FAX over the radio. To give you an idea of what is available there are many pages of off-air received FAX pictures.
392 pages £20.00

GUIDE TO UTILITY STATIONS

14th Edition
Joerg Klingentuss
This book covers the complete short wave range from 3 to 30MHz together with the adjacent frequency bands from 0 to 150kHz and from 1.6 to 3MHz. It includes details on all types of utility stations including FAX and RTTY. There are 19549 entries in the frequency list and 3590 in the alphabetical callsign list plus press services and meteorological stations. Included are RTTY & FAX press and meteo schedules. There are 11800 changes since the 10th edition.
604 pages £35.00

POCKET GUIDE TO RTTY AND FAX STATIONS

Bill Laver
A handy reference book listing RTTY and FAX stations, together with modes and other essential information. The listing is in ascending frequency order, from 1.6 to 26.8MHz.
57 pages £3.95

RADIOTELETYPE CODE MANUAL 13th Edition

Joerg Klingentuss
This book gives detailed descriptions of the characteristics of telegraph transmission on short waves, with all commercial modulation types including voice frequency telegraphy and comprehensive information on all RTTY systems and c.w. alphabets.
96 pages £14.00

Frequency Guides

1996 Super Frequency List

Joerg Klingentuss
This new CD-ROM has been designed for use with IBM PCs or clones running Windows 3.1. The CD-ROM comes complete with its own viewing software and includes 14000 frequencies that have been extracted from the Klingentuss *Guide to Utility Stations*. This frequency listing is supplemented by 1000 abbreviations and 1200 formerly active frequencies. As this list was last updated in January '95 it's well up-to-date.
£25.00

PASSPORT TO WORLD BAND RADIO 1996

This book gives you the information to explore and enjoy the world of broadcast band listening. It includes features on different international radio stations, receiver reviews and advice as well as the hours and language of broadcast stations by

SWM BOOK STORE

(01202) 659930 (24 HOURS)

Internet orders: bookstore@pwpub.demon.co.uk

frequency. The 'blue pages' provide a channel-to-channel guide to world band schedules.
528 pages £14.50

SHORT WAVE INTERNATIONAL FREQUENCY HANDBOOK

This book contains a comprehensive frequency listing covering 400kHz - 30MHz and is packed with everything from the basics of short wave listening to explaining FAX and RTTY. In this updated version there are many new broadcast and utility stations listed.
188 pages £12.95

UK SCANNING DIRECTORY 4th Edition

This spiral bound book lists over 20000 UK spot frequencies from 25MHz to 1.6GHz. Articles on scanning in the UK.
335 pages £17.50

WORLD RADIO TV HANDBOOK 1996 (50th Anniversary Issue)

Country-by-country listing of l.w., m.w. & s.w. broadcast and TV stations. Receiver test reports, English language broadcasts. The s.w.l.'s 'bible'.
608 pages £17.95

General

EAVESDROPPING ON THE BRITISH MILITARY

Michael Cannon
For the very first time a book has been published showing how to monitor British Military communications. All you need is a short wave receiver, lots of time and patience, and this secret world will open up to you, providing many hours of enjoyment. Also included is the largest British military callsign list ever to be published.
166 pages £17.50

THE COMPLETE SHORT WAVE LISTENER'S HANDBOOK 4th Edition

Hank Bennett, Harry Helms & David Hardy
This book is a comprehensive guide to the basics of short wave listening. Everything you need to get started as an s.w.l. is explained in a clear and easily understood manner. Receivers, antennas, frequencies, propagation, Q-codes, etc. are all covered.
321 pages £18.95

SHORT WAVE COMMUNICATIONS

Peter Rouse G1DKD
Covers a very wide area and so provides an ideal introduction to the hobby of radio comms. International frequency listings for aviation, marine, military, space launches, search and rescue etc. Chapters on basic radio propagation, how to work your radio and what the controls do, antennas and band plans.
187 pages £4.50

SHORTWAVE MARITIME COMMUNICATIONS

B. E. Richardson
Laid out with both the beginner and well-seasoned maritime radio enthusiast in mind this book provides the most accurate and detailed information in an easy-to-use format. In addition to the two substantial frequency lists provided there is information on all the various communication modes used by ships today.
195 pages £16.50



Satellite

AN INTRODUCTION TO AMATEUR COMMUNICATIONS SATELLITES

BP290 A Pickard
This book describes several currently available systems, their connection to an appropriate computer and how they can be operated with suitable software. The results of decoding signals containing such information as telemetry data and weather pictures are demonstrated.
102 pages £3.95

AN INTRODUCTION TO SATELLITE COMMUNICATIONS BP326

F. A. Wilson
A simple, (with the minimum of mathematics) beginner's book covering satellite communications in a practical way. It provides a handy basic reference source on this complex subject and is aimed at up-dating someone who is familiar with radio communications.
230 pages £5.95

NEWNES GUIDE TO SATELLITE TV

Derek Stephenson
This book, the 3rd edition, is a hard bound volume, printed on high quality paper. The author is a satellite repair and installation engineer and the book covers all information needed by the installation engineer, the hobbyist and the service engineer to understand the theoretical and practical aspects of satellite reception

with dish installation and how to trouble-shoot when picture quality is not up to anticipated reception. Mathematics has been kept to a minimum.
371 pages. £18.95

SATELLITE EXPERIMENTER'S HANDBOOK 2nd Edition

Martin Davidoff K2UBC
The book is divided into four main sections - History, Getting Started, Technical Topics and Appendices. It provides information on spacecraft built by and for radio amateurs. In addition, it discusses weather, TV-broadcast and other satellites of interest to amateurs. 313 pages. £14.50

SATELLITE TELEVISION

A layman's guide
Peter Pearson
Pictures from space, that's what satellite television is all about. Orbiting satellites, 35000km high, receive TV signals from stations on the earth and re-transmit them back again. This book explains all you need to know to set up your own satellite TV terminal at home, dish and accessories, cable and tuner.
73 pages. £1.00

SATELLITE TELEVISION INSTALLATION GUIDE

5th Edition
John Breeds
A practical guide to satellite television. Detailed guide-lines on installing and aligning dishes based on practical experience.
76 pages. £15.00

WEATHER SATELLITE HANDBOOK

5th Edition
Dr Ralph E. Taggart WB8DQT
This book explains all about weather satellites, how they work and how you can receive and decode their signals to provide the fascinating pictures of the world's weather. Plenty of circuit diagrams and satellite predicting programs.
192 pages. £15.50

WRTH SATELLITE BROADCASTING GUIDE

1996 Edition, Bart Kuperus
This brand new publication, written by one of the experts from the respected World Radio TV Handbook, will be a great help to everyone interested in the world of satellite radio and television. Featuring over 300 pictures and graphics. All the information you need to know about installing your own satellite system.
366 pages. £17.95



Scanning

AN INTRODUCTION TO SCANNERS AND SCANNING BP311

I. D. Poole
This book is ideal for anyone wanting to know what scanning is, and how it works. There are also chapters on radio in general, covering antennas, radio waves and how they travel, types of transmissions, broadcasting and amateur radio. All in all a superb starter book.
152 pages. £4.95

SCANNER BUSTERS

D. C. Poole
This guide to the methodology of beating the electronic ban on Scanning, deals with the subject of scrambling and encryption systems. The author explains in simple terms how p.m.r. works, the new digital cellular radio telephone systems, spread spectrum, frequency hopping and emergency services communication. How to get more from your scanner and a list of frequencies to listen to are also covered. It is a great reference for both new scanner owners and veterans alike.
64 pages. £4.95

SCANNERS 2 INTERNATIONAL

Peter Rouse GU1DKD
The companion book to the best selling *Scanners* provides even more information on the use of v.h.f. and u.h.f. communications bands. It gives details on how to construct accessories to improve the performance of scanning equipment. The book is international in its scope and contains frequency allocations for all three ITU regions, including country-by-country variations.
261 pages. £9.95

SCANNERS 3 PUTTING SCANNERS INTO PRACTICE. New Edition 4th Revision

Peter Rouse
This is the fourth revised and completely updated edition of *Scanners*, the complete v.h.f./u.h.f. radio listeners' guide and contains everything you need to know to put your scanner to better use. There is vastly more information than ever before on frequency listing; in particular actual frequencies used by coastal stations, airfields and emergency services. Also for the first time h.f. (short wave) bands, as many scanners now cover these frequencies.
271 pages. £9.95

SCANNING SECRETS

Mark Francis
The mysteries of monitoring explained. Advice on buying and operating your scanner. Where to listen and how to gather obscure frequencies. The myths and folklore exposed. All the information need to unlock the potential of your scanner.
280 pages. £16.95

AMATEUR RADIO

Antennas & Transmission Lines

25 SIMPLE AMATEUR BAND AERIALS BP125

E. M. Noll
63 pages. £1.95

25 SIMPLE INDOOR AND WINDOW AERIALS BP136

E. M. Noll
50 pages. \$1.75

25 SIMPLE SHORT WAVE BROADCAST BAND AERIALS BP132

E. M. Noll
63 pages. £1.95

25 SIMPLE TROPICAL AND MW BAND AERIALS BP145.

E. M. Noll
54 pages. £1.75

AERIAL PROJECTS BP105

Practical designs including active, loop and ferrite antennas plus accessory units.
96 pages. £2.50

ALL ABOUT VERTICAL ANTENNAS

W. I. Orr W6SAI & S. D. Cowan W2LX
Covers the theory, design and construction operation of vertical antennas. How to use your tower as a vertical antenna and compact vertical designs for restricted locations. All about loading coils and a.t.u.s.
192 pages. £8.50

SWM BOOK STORE



(01202) 659930 (24 HOURS)

Internet orders: bookstore@pwpub.demon.co.uk

ANTENNA IMPEDANCE MATCHING (ARRL)

Wilfred N. Caron
Proper impedance matching of an antenna to a transmission line is of concern to antenna engineers and to every radio amateur. A properly matched antenna as the termination for a line minimises feed-line losses. Power can be fed to such a line without the need for a matching network at the line input. There is no mystique involved in designing even the most complex multi-element networks for broadband coverage.
195 pages. £14.50

ANTENNAS AND TECHNIQUES FOR LOW-BAND DXING (ARRL)

John Devolere ON4UN
This unusual book will be of particular interest to 1.8, 3.5 and 7MHz operators as it's packed with information on antennas and operating tips for 'Top Band to Forty' fans. There are chapters on low band propagation, operating techniques, equipment and for the computer minded there's a chapter on newly-available low band software.
393 pages. £14.50

ANTENNAS FOR VHF AND UHF BP301

I. D. Poole
Antennas are a very important part of any receiver or transmitter and in this book the author gives a general background to antenna operation as well as describing antennas that are suitable for v.h.f. and u.h.f. operation. Chapters include Basic Concepts, Feeders, The Dipole, Aerial Measurements and Practical Aspects. There is something of use for everyone with an interest in antennas in this book.
104 pages. £4.95

ARRL ANTENNA BOOK 17th Edition

This volume now in its 17th edition contains essential information regarding propagation and constructional details of just about every type of antenna known to man. Included is a 3.5" diskette contain in PC programs for Yagi analysis, propagation forecasting, transmission line analysis and other. A definite must.
732 pages. £21.95

ARRL ANTENNA COMPENDIUM Volume One

Fascinating and hitherto unpublished material. Among the topics discussed are quads and loops, loop periodic arrays, beam and multi-band antennas, verticals and reduced size antennas.
175 pages. £10.00

ARRL ANTENNA COMPENDIUM Volume Two

Because antennas are a topic of great interest among radio amateurs, ARRL HQ continues to receive many more papers on the subject than can possibly be published in QST. Those papers are collected in this volume.
208 pages. £10.00

ARRL ANTENNA COMPENDIUM Volume Three

Edited by Jerry Hall K1TD
As the title suggests, this book is the third in the continuing series on practical antennas, theory and accessories produced by the ARRL. The book reflects the tremendous interest and activity in antenna work, and provides a further selection of antennas and related projects you can build.
236 pages. £12.50

ARRL ANTENNA COMPENDIUM Volume Four

The fourth volume in the ever popular series contains 38 previously unpublished articles, covering a wide range of antenna related topics - all the way from the maths intensive, heavyweight discussions to fun antennas for specific purposes, such as a balloon supported Field Day loop.
For the first time in the series there is a disk included with the book, which contains source data used to model many of the antennas. In short, there's something for virtually every antenna enthusiast.
204 pages. £15.50

BEAM ANTENNA HANDBOOK

W. I. Orr W6SAI & S. D. Cowan W2LX
Design, construction, adjustment and installation of h.f. beam antennas. The information this book contains has been compiled from the data obtained in experiments conducted by the authors, and from information provided by scientists and engineers working on commercial and military antenna ranges.
268 pages. £8.50

BUILD YOUR OWN SHORTWAVE ANTENNAS 2nd Edition

Andrew Yoder
This practical handbook puts at your fingertips the information you need to build your own short wave antennas. Clear diagrams and photographs show how to construct a variety of inexpensive antennas and masts.
208 pages. £14.95

CUBICAL QUAD ANTENNAS 3rd Edition

William Orr W6SAI and Stuart Cowan W2LX
Sub-titled 'How To Build And Adjust Quads' this book has been rewritten and brought up to date again. The theory of how quad antennas work in easy digestible form. See how to make quad antennas for bands between 10 and 50MHz.
£11.50

EXPERIMENTAL ANTENNA TOPICS BP278

H. C. Wright
Experimenting with antennas is a great way to learn. With this author's approach it's also informative and enjoyable.
70 pages. £3.50

G-QRP CLUB ANTENNA HANDBOOK

Compiled and edited by P. Lislely G3PDL & I. Nicholson KA9WRI/GWOLND
This book is a collection of antenna and related circuits taken from Sprat, the G-QRP Club's journal. Although most of the circuits are aimed at the low-power fraternity, many of the interesting projects are also useful for general use. Not intended as a text book, but offers practical and proven circuits.
155 pages. £6.99

HF ANTENNA COLLECTION (RSGB)

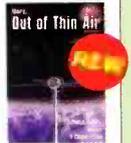
Edited by Erwin David G4LOI
This book contains a collection of useful, and interesting h.f. antenna articles, first published in the RSGB's *Radio Communication* magazine, between 1968 and 1989, along with other useful information on ancillary topics such as feeders, tuners, baluns, testing and mechanics for the antenna builder.
233 pages. £10.99

HF ANTENNAS FOR ALL LOCATIONS (RSGB)

Les Moxon G6XN
This book provides a reference source for all h.f. antenna work, whether it be for fixed, mobile or using test equipment. In effect it is a manual on antenna work, with useful tips, projects and ideas.
322 pages. £13.99

MORE OUT OF THIN AIR (PWP)

More Out of Thin Air has been revised, rewritten and updated from the original *Out of Thin Air*. This new edition is a compendium of antenna theory, design and construction and contains plenty for the antenna enthusiast to enjoy. Articles included are: Slim Jim Vertical Antenna for 144MHz. A five-element Beam Antenna for 70MHz. Antenna Ideas for the Novice and G2BCX 16-element Beam Antenna to name a few.
112 pages. £6.95



INTRODUCTION TO ANTENNA THEORY BP198

H. C. Wright
This book deals with the basic concepts relevant to receiving and transmitting antennas, with emphasis on the mechanics and minimal use of mathematics. Lots of diagrams help with the understanding of the subjects dealt with. Chapters include information on efficiency, impedance, parasitic elements and a variety of different antennas.
86 pages. £2.95

PRACTICAL ANTENNAS FOR NOVICES

John Heys G3BDQ
In this guide, written especially for newly qualified holders of the UK novice Licence, John Heys describes in detail how to build simple but efficient antennas for each of the Novice bands up to 434MHz, as well as useful ancillary equipment to ensure that they are working correctly. A complete chapter is devoted to the safety and common-sense aspects of installing and using a transmitting antenna. This book will be invaluable not only to Novices, but also to any beginning amateur looking for easy-to-build antenna systems that really work.
52 pages. £5.99

PRACTICAL ANTENNA HANDBOOK 2nd Edition

Joseph J. Carr
As the name suggests, this book offers a practical guide at everything to do with antennas, from h.f. to microwaves. It also has sections on propagation, transmission lines, antenna fundamentals and a helpful introduction to radio broadcasting and comm-unications. The book neatly balances a practical approach with the minimum of mathematics, good diagrams and a lively text.
437 pages. £23.95

PRACTICAL WIRE ANTENNAS RSGB

John Heys G3BDQ
Many radio enthusiasts have to be content with wire antennas. John Heys' practical approach to wire antennas provides plenty of ideas and projects to help get the best out of a simple system. A helpful book, and good reference source.
100 pages. £8.50

RADIO AMATEUR ANTENNA HANDBOOK

W. I. Orr W6SAI & S. D. Cowan W2LX
Yagi, Quad, Quagi and LPY beam antennas as well as vertical, horizontal and sloper antennas are covered in this useful book. How to judge the best location, DX antenna height, ground loss and radials.
188 pages. £8.50

RECEIVING ANTENNA HANDBOOK

Joe Carr
Your receiver is only as good as your antenna. This book is a complete guide to high performance receiving antennas. It is a comprehensive examination of antennas intended specifically for receiving purposes. An essential addition to your technical library, the listeners' antenna bible.
189 pages. £17.50

SIMPLE, LOW-COST WIRE ANTENNAS FOR RADIO AMATEURS

W. I. Orr W6SAI & S. D. Cowan W2LX
Efficient antennas for Top Band to 20m, including 'invisible' antennas for difficult station locations. Clear explanations of resonance, radiation resistance, impedance, s.w.r., balanced and unbalanced antennas are also included.
188 pages. £8.50

W1FB'S ANTENNA NOTEBOOK (ARRL)

Doug DeMaw W1FB
This book provides lots of designs, in simple and easy to read terms, for simple wire and tubing antennas. All drawings are large and clear making construction much easier. There is no high-level mathematics in this book, just simple equations only when necessary to calculate the length of an antenna element or its matching section.
123 pages. £7.50

YAGI ANTENNA DESIGN

Dr James L. Lawson W2PV
This book is a polished and expanded version of a series of articles first published in *Ham Radio* following on from a series of lectures by the author, who was well-known as the expert on Yagi design. Chapters include simple Yagi antennas, loop antennas, effect of ground, stacking and practical antenna design.
210 pages. £10.95

Beginners (inc RAE)

AMATEUR RADIO FOR BEGINNERS (RSGB)

Victor Brand G3JNB
An ideal book for the absolute beginner to the amateur radio hobby. Well illustrated and an interesting read.
65 Pages. £3.50

AN INTRODUCTION TO AMATEUR RADIO BP257

I. D. Poole
This book gives the newcomer a comprehensive and easy to understand guide through amateur radio. Topics include operating procedures, jargon, propagation and setting-up a station.
150 pages. £3.50

AN INTRODUCTION TO THE ELECTROMAGNETIC WAVE BP315

F. A. Wilson
This little book deals effectively with a difficult abstract subject - the invisible electromagnetic wave. Aimed at the beginner, the book with its basic approach to electromagnetics, antennas, waves, propagation and constraints is a good starting point. Complete very simple but clear diagrams and the minimum of mathematics.
122 pages. £4.95

THE BEGINNER'S HANDBOOK OF AMATEUR RADIO 3rd Edition

Clay Laster W5ZPV
This book is a good practical introduction to amateur radio. A variety of constructional projects are included to give the beginner experience in designing and building an amateur radio station. Even includes valves.
398 pages. £17.95

ELECTRONICS SIMPLIFIED - CRYSTAL SET CONSTRUCTION BP92

F. A. Wilson

Especially written for those who wish to take part in basic radio building. All the sets in the book are old designs updated with modern components. It is designed for all ages upwards from the day when one can read intelligently and handle simple tools. 72 pages. £1.75

ETI BOOK OF ELECTRONICS

Dave Bradshaw

Published in association with *Electronics Today International* magazine, this book is both a theoretical and practical introduction to electronics. It clearly explains the theory and principals of electronics and each chapter includes a project for the beginner to make. The projects a loudspeaker divider, continuity tester, 'brown-out' alarm, freezing alarm, mini-amplifier and burglar alarm. 208 pages. £10.95

HOW TO PASS THE RADIO AMATEURS' EXAMINATION (RSGB)

Clive Smith G4FZH and George Benbow G3HB

The background to multiple choice exams and how to study for them with sample RAE paper for practice plus maths revision and how to study for the exam. The majority of this book is given to sample examination papers so that candidates can familiarise themselves with the examination and assess their ability. 88 pages. £7.99

THE RADIO AMATEURS' QUESTION & ANSWER REFERENCE MANUAL Fifth Edition

Ray Petri G0DAT

This book has proved itself over four editions and now appears with many updates and innovations in its long awaited fifth edition. Ideal for the class or independent RAE student, it has over 1240 examples of the multiple choice examination questions, an excellent data reference section and an important and useful guide on using electronic calculators. £13.95

RAE MANUAL (RSGB)

G.L. Benbow G3HB

The latest edition of the standard aid to studying for the Radio Amateurs' Examination. Updated to cover the latest revisions to the syllabus. Takes the candidate step-by-step through the course. 127 pages. £7.99

RAE REVISION NOTES (RSGB)

G.L. Benbow G3HB

If you're studying for the Radio Amateurs' Examination, this book could be useful. It's a summary of the salient points of the Radio Amateurs' Examination Manual, the standard textbook for the exam. It's A5 size, and therefore can be carried with you wherever you go. Easy-to-read, it's divided into 13 chapters with topics like receivers, power supplies, measurements, operating procedures, licence conditions and a summary of the formulae all dealt with. 92 pages. £4.99

REVISION QUESTIONS FOR THE NOVICE RAE (RSGB)

Esde Tyler G0AEC

In effect Esde Tyler's book could be considered as being a training manual for the NRAE. Answers are supplied and the book provides a useful reference source. 60 pages. £5.00

THE NOVICE LICENCE STUDENT'S NOTEBOOK

John Case G4WHWR

This is the recommended course book for anyone taking the Novice Licence. Covering all aspects of amateur radio and electronics it would be useful to anyone starting out in amateur radio. Every left hand page is for your own notes of explanation. 124 pages. £5.99

SHORTWAVE RADIO LISTENING FOR BEGINNERS

Anita Louise McCormick KABKGI

This book provides all the hands-on information you need to get off to a quick start in short wave listening. An excellent introductory guide, it describes in easy-to-understand non-technical terms how short wave radio works, available equipment and where to find it, what stations can be heard and how to become a licensed radio amateur. 176 pages. £9.95

TRAINING FOR THE NOVICE LICENCE A MANUAL FOR THE INSTRUCTOR (RSGB)

John Case G4WHWR

Aimed at the Novice Licence instructor this manual provides the syllabus and an excellent framework textbook to help novice, instructor and beginner alike. An excellent basic reference work. 101 pages. £6.50

W1FB'S HELP FOR NEW HAMS (ARRL)

Doug DeMaw W1FB

This book covers everything from getting acquainted with new equipment to constructing antennas, station layout, interference and operating problems to on-the-air conduct and procedures. 155 pages. £8.95

Callbooks

AMATEUR RADIO CALL BOOK AND INFORMATION DIRECTORY (RSGB)

1996 Edition

This year's Call Book covers callsigns up to G0WJF, G7VOT and 2E0A/MO and 2E1E/DZ. Following the introduction in the 1995 Call Book of a surname and town index the RSGB have continued to widen its appeal by introducing a WAB square listing and IARU locator for most entries. As well as this you can expect to find all the usual information on Band plans, Contests, Licensing, Morse, Propagation, RAYNET and much more. 529 pages. £11.23



RADIO AMATEUR CALLBOOK INTERNATIONAL LISTINGS 1996

74th Edition

The only publication listing licensed radio amateurs throughout the world. Also includes DXCC Countries list, standard time chart, beacon lists and much more. Over 1400 pages. £20.95

RADIO AMATEUR CALLBOOK NORTH AMERICAN LISTINGS 1996

74th Edition

Listings of US amateurs (including Hawaii). Also contains standard time chart, census of amateur licences of the world, world-wide QSL bureau, etc. Over 1400 pages. £20.95

Computing

AN INTRODUCTION TO COMPUTER COMMUNICATIONS BP177

R. A. Penfold

Details of various types of modem and their applications, plus how to interconnect computers, modems and the telephone system. Also networking systems and RTTY. 72 pages. £2.95

ELECTRONIC PROJECTS FOR YOUR PC BP320

R. A. Penfold. 102 pages. £3.95

HOW TO EXPAND, MODERNISE AND REPAIR PCs AND COMPATIBLES BP271.

R. A. Penfold

Recently revised, this book has seven chapters dealing with IBM PC/ATs or 'clones'. Starting with an overview of PCs and hardware, before describing upgrading disks, video and memory. Three chapters cover repairs, building a PC from bits, and recent developments. A good grounding in PCs. 166 pages. £5.95

INTERFACING PCs AND COMPATIBLES BP272

R. A. Penfold. 86 pages. £3.95

NEWNES COMPUTER ENGINEER'S POCKET BOOK Third Edition

Michael Tooley

An invaluable compendium of facts, figures, circuits and data which is indispensable to the designer, student, service engineer and all those interested in computer and microcomputer systems. This enlarged third edition covers a vast range of subjects at a practical level, with the appropriate explanatory text. 256 pages. £12.95

PCs MADE EASY. Second Edition

James L. Turley

A friendly, comprehensive introduction to every personal computer - including Macs! This book is packed with valuable tips on every aspect of computer technology available today and will help you to get comfortable with your computer - fast. 438 pages. £15.95

EMC

INTERFERENCE HANDBOOK

William R. Nelson WA6FOG

How to locate & cure RFI, for radio amateurs, CBers, TV & stereo owners. Types of interference covered are spark discharge, electrostatic, power line many 'cures' are suggested. 250 pages. £9.50

THE RADIO AMATEUR'S GUIDE TO EMC (RSGB)

Robin Page-Jones G3JWI

This paperback book provides essential information and reading for anyone who has an EMC (interference) problem. With the help of the well-illustrated text and techniques, much of the mystery from the troublesome world of electromagnetic compatibility is removed. 117 pages. £7.99

Historical

1934 OFFICIAL SHORT WAVE RADIO MANUAL

Edited by Hugo Gernsback

A fascinating reprint from a bygone age with a directory of all the 1934 s.w. receivers, servicing information, constructional projects, circuits and ideas on building vintage radio sets with modern parts. 260 pages. £11.60

WORLD AT THEIR FINGERTIPS (RSGB)

This book comprehensively covers the fascinating history, techniques, equipment used and personalities behind amateur radio from the very beginnings of the hobby to the late 1960s. John Clarricoats G6CL. 307 pages. £6.00

Maps and Log Books

AMATEUR RADIO LOGBOOK (RSGB)

This standard spirally bound amateur radio log book has 100 pages and is marked out with the format required in the UK. There are columns for date, time (UTC), frequency, power (in dBW), station worked/called, reports, QSL information and remarks. £3.00

NORTH ATLANTIC ROUTE CHART

This is a five-colour chart designed for the ATC in monitoring transatlantic flights. Supplied folded. 740 x 520mm. £6.50

QTH LOCATOR MAP OF EUROPE

This comprehensive map of the European call/sign area has now been updated and enhanced. This well thought out, coloured map covers from N. Africa to Iceland and from Portugal in the west to Iran in the east. Folds to fit into the 145 x 240mm clear envelope. 1080 x 680mm. £5.95

RADIO AMATEURS MAP OF THE WORLD

This brightly coloured map clearly showing call/sign prefixes for the world and is up-to-date with recent European boundary changes. Supplied folded in a clear plastic wallet. 980 x 680mm. £5.95

RECEIVING STATION LOG BOOK (RSGB)

£3.50

Microwaves

ARRL UHF/MICROWAVE EXPERIMENTER'S MANUAL

Various Authors

A truly excellent manual for the keen microwave enthusiast and for the budding 'microwaver'. With contributions from over 20 specialist authors. Chapters covering techniques, theory, projects, methods and mathematics. 446 pages. £14.50

Morse

INTRODUCING MORSE

Collected Articles from PW 1982-1985 48 pages. £1.25

Operating and Handbooks

AMATEUR RADIO OPERATING MANUAL (RSGB)

Ray Ekersley G4FTJ

This book is now in its fourth edition and is designed to cover the essential operating techniques required for most aspects of amateur radio. It takes the reader through procedures such as setting-up a station, DXing, contests, data communications and special event stations to name a few. Both newly licensed and experience operators should find this book invaluable. 249 pages. £11.65.



AMATEUR RADIO TECHNIQUES RSGB

Pat Hawker G3VA

Anyone who enjoys Pat Hawker's 'Technical Topics' in *Radio Communications* will enjoy this book. An amateur radio manual itself, this paperback book, the 7th edition, can only be bettered by a new edition. A truly excellent reference source with a practical bias. 368 pages. £9.50

ARRL HANDBOOK FOR RADIO AMATEURS 1996 (ARRL)

Now in its 73rd Edition this 1200 page book is packed with information on everything from What is Amateur Radio? through Practical Design to Construction Techniques and Operating Practices.

For the first time the *ARRL Handbook* includes a disk of software which should prove useful and practical to all amateurs. The disk contains a Windows database, TST/IND which is a list of parts suppliers and addresses. Also included on the disk are software applications for F. Network Design, SSVT, active filter design and a shortened dipole design, etc. 1200 pages. £25



ARRL OPERATING MANUAL

Another very useful ARRL book. Although written for the American amateur, this book will also be of use and interest to the UK amateur. Topics covered range from short wave listening through operating awards to repeaters, operating and satellites. 684 pages. £14.50

COMPLETE DX'ER

Bob Locher

This book covers equipment and operating techniques for the DX chaser, from beginner to advanced. Every significant aspect of DXing is covered, from learning how to really listen, how to snatch the rare ones out of the pile-ups and how to secure that elusive QSL card. 204 pages. £8.95

HINTS AND KINKS FOR THE RADIO AMATEUR

Edited by Charles L. Hutchinson and David Newkirk

A collection of practical ideas gleaned from the pages of *QST* magazine. Plenty of projects to build, hints and tips on interference, c.w. and operating and snippets of information from amateurs who've tried and tested the idea. 129 pages. £9.50

MARINE SSB OPERATION

J. Michael Gale

How do you stay in touch when you sail off over the horizon and into the blue? What you need is a single sideband radio, a marine s.s.b. This book explains how the system works, how to choose and install your set and how to get the best out of it. There is also a chapter on amateur radio with the emphasis on the increasingly important maritime mobile nets. 96 pages. £11.95

MARINE VHF OPERATION

J. Michael Gale

A v.h.f. radiotelephone is essential equipment for any sea-going boat, but what can you do with it? Who can you call, and how do you make contact? Which channel do you use, and why? What is the procedure for calling another boat, calling the family through the telephone system, or making a distress call? This book will tell you. 48 pages. £7.95

RADIO COMMUNICATION HANDBOOK (RSGB)

6th Edition

Dick Biddulph G8PDS

This long awaited new edition has been extensively up-dated and is full of diagrams and photographs. This book is a complete handbook/reference work and project book all rolled into one. The final innovation is that the necessary p.c.b. templates for the featured projects are provided at the end of the book making them much easier to work from when making your own p.c.b.s. 750 pages. £20.00

SETTING UP AN AMATEUR RADIO STATION BP300

I. D. Poole

Ian Poole G3YWX provides a helpful guide for anyone setting up an amateur radio station and covers: station design, construction, antenna, equipment, lay-out and the construction and use of basic test equipment, and helpful 'on the air' operating hints. 81 pages. £3.95

Packet

PRACTICAL GUIDE TO PACKET OPERATION IN THE UK

Mike Mansfield G6AWD NEW EDITION

Introduces the concept of packet radio to the beginner. Problem areas are discussed and suggestions made for solutions to minimise them. Deals with the technical aspects of packet taking the reader through setting up and provides a comprehensive guide to essential reference material. 220 pages. £10.50

PACKET: SPEED, MORE SPEED AND APPLICATIONS (ARRL)

There is a lot to see, learn and do with packet. You don't need to be a 'guru' to join in the fun. This collection of articles and updates from ARRL, *Computer Networking Conference Proceedings*, TAPR's *Packet Status Register*, QEX, *DST* and the *ARRL Handbook* promises an exciting ride for both packeteers and future packeteers. Hang onto your seat and start-up your modem! 144 pages. £12.95

YOUR GATEWAY TO PACKET RADIO

Stan Horzepa WA1LOU

What is packet radio good for and what uses does it have for the 'average' amateur? What are protocols? where, why, when? Lots of the most asked questions are answered in this useful book. It included details of networking and space communications using packet. 278 pages. £8.95

YOUR PACKET COMPANION

Steve Ford WB8IMV

This American book goes to considerable lengths to explain in simple terms how the radio amateur can get going on packet, how it works and what the various systems are. There are chapters dealing with assembling a packet station, sending and receiving packet mail and exploring advanced networking systems. Your Packet Companion goes a long way to explain some of the mysteries of packet radio. 170 pages. £5.95

Propagation

AN INTRODUCTION TO RADIO WAVE PROPAGATION BP293

J.G. Lee

How does the sun and sunspots affect the propagation of the radio waves which are the basis of our hobby? They affect the ionosphere, but differing frequencies are treated differently. Find out how to use charts to predict frequencies that will be the most profitable. What effect will noise have on the signal? Find out with this book. 116 pages. £3.95

Access VISA MasterCard AMERICAN EXPRESS
(01202) 659930 (24 HOURS)
Internet orders: bookstore@pwpub.demon.co.uk

LOW PROFILE AMATEUR RADIO - OPERATING A HAM STATION FROM ALMOST ANYWHERE (ARRL)

Jim Keaman KR1S

This book delves into the techniques of being a 'hidden Ham'. There are chapters on specialised equipment, operating techniques and antennas to name but a few. If you have a fascination for spy type radio equipment or like the idea of having a complete h.f. or v.h.f. rig built in a suitcase, then this little American book is for you. 124 pages. £7.50

QRP

G-QRP CLUB CIRCUIT HANDBOOK

Edited by Rev G. Dobbs G3RJV

This paperback book has been compiled from circuits published in the G-QRP Club journal Sprat from the years 1974 to 1982. Essentially it's a collection of circuits and projects covering everything from receivers, transmitters, antennas and accessories together with test QRP test equipment. This book is aimed at the keen constructor and provides all the information required to build the host of projects described. 96 pages. £8.50

QRP CLASSICS (ARRL)

Edited by Bob Schelgen

Operating QRP is fun. The equipment is generally simple and easy to build, but often performs like more sophisticated commercial equipment. Some QRP Field Day stations operate a full 27 hours on a car battery - it's the perfect equipment for emergency communication when the power fails. Extracts from QST and the ARRL Handbook. 274 pages. £10.50

W1FB's QRP NOTEBOOK (ARRL)

2nd Edition. Doug DeMaw W1FB

The new improved and updated 2nd edition of this book, covers the introduction to QRP, construction methods, receivers and transmitters for QRP. This workshop-notebook style publication, which is packed with new designs for the keen QRP operator, also covers techniques, accessories and has a small technical reference section. 175 pages. £7.95

GETTING THE MOST FROM YOUR MULTIMETER BP239

R. A. Penfold

This book is primarily aimed at beginners. It covers both analogue and digital multi-meters and their respective limitations. All kinds of testing is explained too. No previous knowledge is required or assumed. 102 pages. £2.95

HANDS-ON GUIDE TO OSCILLOSCOPES

Barry Ross

Covers all aspects of oscilloscope use. This book is aimed at the novice and assumes a minimum of previous knowledge and should be of use to engineers, scientists and electronic enthusiasts alike. If you have an oscilloscope this book is a must. 228 pages. £17.95

HOW TO USE OSCILLOSCOPES & OTHER TEST EQUIPMENT BP267

R. A. Penfold

Hints and ideas on how to use the test equipment you have, to check out, or fault find on electronic circuits. Many diagrams of typical waveforms and circuits, including descriptions of what waveform to expect with particular faults, or distortion in audio amplifiers. 104 pages. £3.50

MORE ADVANCED TEST EQUIPMENT CONSTRUCTION BP249

R. A. Penfold

A follow on from Test Equipment Construction (BP249) this book looks at digital methods of measuring resistance, voltage, current, capacitance and frequency. Also covered is testing semi-conductors, along with test gear for general radio related topics. 102 pages. £3.50

MORE ADVANCED USES OF THE MULTIMETER BP265

R. A. Penfold

This book is primarily intended as a follow-up to BP239. Getting the most from your Multi-meter. By using the techniques described in this book you can test and analyse the performance of a range of components with just a multi-meter (plus a very few inexpensive components in some cases). The simple add-ons described extend the capabilities of a multi-meter to make it even more useful. 96 pages. £2.95

PRACTICAL TRANSMITTERS FOR NOVICES

John Case G4HWR

This book contains a selection of 'easy to build' transmitter designs which are suitable for the UK Novice bands (including microwaves). Although the book is primarily aimed at Novices it should also interest any amateur who is building transmitters for the first time. Chapters include: Methods of construction, Amplifiers and Filters, Tools and how to use them and Suppliers of components and many more. 126 pages. £9.00

TEST EQUIPMENT FOR THE RADIO AMATEUR

Clive Smith G4FZH

In its 3rd edition, this book provides many up-dated test equipment project designs for the radio amateur, complete with p.c.b. template (in the rear of the book). Areas covered include: current and voltage measurements, oscilloscopes, frequency, r.f., antenna and transmission line measurements. 170 pages. £9.00

VHF

ALL ABOUT VHF AMATEUR RADIO

W. I. Orr W6SAI

Written in non-technical language, this book provides information covering important aspects of v.h.f. radio and tells you where you can find additional data. If you have a scanner, you'll find a lot of interesting signals in the huge span of frequencies covered. 100-300MHz & 50, 420, 902 & 1250MHz bands. 163 pages. £9.50

AN INTRODUCTION TO VHF/UHF FOR RADIO AMATEURS BP281

I.D. Poole

An excellent book to go with the new Novice or full call sign. Nine chapters and an appendix deal with all aspects and frequencies from 50 to 1300MHz. Topics include propagation, descriptions of the bands, antennas, receivers, transmitters and a special chapter on scanners. 102 pages. £3.50

ELECTRONICS

50 (FET) FIELD EFFECT TRANSISTOR PROJECTS BP39

FG Rayer

50 circuits for the s.w.l., radio amateur, experimenter or audio enthusiast using f.e.t.s. Projects include r.f. amplifiers and converters, test equipment and receiver aids, tuners, receivers, mixers and tone controls. 104 pages. £2.95

A REFERENCE GUIDE TO BASIC ELECTRONICS TERMS BP286

F. A. Wilson

As its title suggests, this book covers the basic terms involved in electronics and with its short, clear and precise explanations is a helpful guide and useful textbook for the beginner and anyone preparing for an examination. 472 pages. £5.95

A REFERENCE GUIDE TO PRACTICAL ELECTRONICS TERMS BP287

F. A. Wilson

A reference guide laid out in alphabetic order with an index, this book provides a useful source for the experienced and beginner alike. 431 pages. £5.95

AUDIO ELEMENTS OF ELECTRONICS - BOOK 6 BP111

F. A. Wilson

This book studies sound and hearing, and examines the operation of microphones, loudspeakers, amplifiers, oscillators, and both disk and magnetic recording. Intended to give the reader a good understanding of the subject without getting involved in the more complicated theory and mathematics. 308 pages. £3.95

BEGINNERS GUIDE TO MODERN ELECTRONIC COMPONENTS BP285.

R. A. Penfold

This book covers a wide range of modern components. The basic functions of the components are described, but this is not a book on electronic theory and does not assume the reader has an in-depth knowledge of electronics. It is concerned with practicalities such as colour codes, deciphering code numbers and suitability. 166 pages. £3.95

CIRCUIT SOURCE BOOK 1 - BP321

R. A. Penfold

Written to help you create and experiment with your own electronic designs by combining and using the various standard 'building block' circuits provided. Deals with filters, amplifiers, voltage comparators, etc. 182 pages. £4.95

CIRCUIT SOURCE BOOK 2 - BP322

R. A. Penfold

Complimentary to Circuit Source Book 1, helps you create and experiment with your own electronic designs by combining and using the various standard 'building block' circuits provided. Covers signal generation, power supplies and digital electronics, etc. 214 pages. £4.95

NEWNES AUDIO AND HI-FI ENGINEER'S POCKET BOOK Third Edition

Vivian Capel

A concise collection of practical and relevant data for anyone working on sound systems. The topics covered include microphones, gramophones, compact discs, tape recording, high quality radio, amplifiers, loudspeakers and public address. 210 pages. £12.95

NEWNES ELECTRONICS ENGINEER'S POCKET BOOK

Kelth Brindley

This convenient sized volume is packed with information which everyone involved in electronics will find indispensable. This book is an invaluable compendium of facts, figures and formulae. Managers, designers, students and service personnel will find it useful at all stages in electronics processes. 306 pages. £12.95

POWER SUPPLY PROJECTS BP76

R. A. Penfold

This book gives a number of power supply designs including simple unregulated types, fixed voltage regulated types and variable voltage stabilised designs. 89 pages. £2.50

PRACTICAL ELECTRONIC FILTERS BP299

Owen Bishop

A useful introduction to the complex world of filters and their design where the author avoids the mathematical approach. The theory of filters, their design and an information on dozen or so practical projects are provided. 189 pages. £4.95

PRACTICAL ELECTRONICS HANDBOOK

Ian Sinclair

"The best value handbook on electronics you can buy", so claims the sleeve notes of the 4th edition. They're not far of the mark either. The volume covers a wide range of disciplines. These include passive and active discrete components, i.c.s both analogue and digital including A/D and D/A. Microprocessor and systems. Much reference data is also included. A book worthy of space in your library. 439 pages. £13.95

TEST EQUIPMENT CONSTRUCTION BP248. R.A. Penfold

Describes, in detail, how to construct some simple and inexpensive, but extremely useful, pieces of test equipment. Stripboard layouts are provided for all designs, together with wiring diagrams where appropriate, plus notes on their construction and use. 104 pages. £2.95

W1FB's DESIGN NOTEBOOK (ARRL)

Doug DeMaw W1FB

This book is aimed at the non-technical amateur who wants to build simple projects and obtain a basic understanding of amateur electronics. Your workshop does not need to be equipped like an engineering lab to be successful as an experimenter. Don't let a lack of test equipment keep you from enjoying the thrills of experimentation. 195 pages. £8.50

Data

ARRL ELECTRONICS DATA BOOK

Doug DeMaw W1FB

Back by popular demand, completely revised and expanded, this is a handy reference book for the r.f. designer, technician, amateur and experimenter. Topics include components and materials, inductors and transformers, networks & filters, digital basics and antennas and transmission lines. 260 pages. £8.95

ELECTRON TUBE LOCATOR

George H. Fathauer

Published by Antique Electronic Supply (Arizona). A spirally bound (opening flat) style book, this should prove to be of great interest to valve collectors, historians and anyone trying to identify particular valves. The author provides a comprehensive list of American and British Service valves and civilian equivalents and the valve base details are provided, with description of valve type and although there's no comprehensive valve characteristic information, the filament voltages and currents are given in a clear and precise style. Ideal for the researcher and collector. 350 pages. £19.95

ESSENTIAL CHARACTERISTICS (TUBES & TRANSISTORS)

(Original Publishers General Electric)

Re-published by Antique Electronic Supply (Arizona). This stiff covered, novel-sized paperback facsimile book is printed on good paper and is packed throughout with information, and connection details (base pin charts) on receiving valves, special purpose valves, cathode ray tubes, thyristors, vidicons and many others (including semiconductor). Highly recommended as a valuable reference book. 475 pages. £9.95

FURTHER PRACTICAL ELECTRONICS CALCULATIONS & FORMULAE BP144

F. A. Wilson. 450 pages. £4.95

PRACTICAL ELECTRONICS CALCULATIONS AND FORMULAE BP53

F. A. Wilson

Written as a workshop manual for the electronics enthusiast, there is a strong practical bias and higher mathematics have been avoided where possible. 249 pages. £3.95

PRACTICAL ELECTRONIC DESIGN DATA BP316

Owen Bishop

In essence this book is a helpful collection of designer's 'building block' circuits, information, connection data and back-up information complete with an index. 327 pages. £4.95

RADIO AMATEUR AND LISTENER'S DATA HANDBOOK

Steve Money

This is a unique collection of useful and intriguing data for both the traditional and modern radio amateur as well as the high-tech listener. Familiar radio topics are covered - abbreviations and codes, symbols, formulae and frequencies - while the newer features of the hobby radio world - decoding, airband, maritime, packet, slow scan TV, etc. are also dealt with. 240 pages. 0/5

RCA RECEIVING TUBE MANUAL

(Original Publishers Radio Corporation Of America)

Re-published by Antique Electronic Supply (Arizona)

This novel-sized stiff covered paperback book is absolutely fascinating for anyone interested in valves. In reality it's a designer's handbook with potted details, characteristic curves, information and descriptions of typical applications for each valve listed. It's even got a section showing receiver circuits and applications. Excellent reading and reference. 384 pages. £10.50

RCA TRANSMITTING TUBES

(Original Publisher Radio Corporation of America)

Re-published by Antique Electronic Supply (Arizona)

This is a stiff covered paperback novel-sized book. And if you've got an interest in transmitting with valves, this is a useful reference source for valves up to 4kW input. The RCA authors have included some interesting practical circuits using their valves, including some for s.s.b., v.h.f. and others. Highly recommended reference source. 318 pages. £9.95

Projects

COIL DESIGN AND CONSTRUCTION MANUAL BP160

B.B. Babani. 105 pages. £3.95

HOW TO DESIGN AND MAKE YOUR OWN PCBs BP121

R. A. Penfold

The purpose of this book is to familiarise the reader with both simple and more sophisticated methods of producing p.c.b.s. The emphasis of the book is very much on the practical aspects of p.c.b. design and construction. 66 pages. £2.50

MORE ADVANCED POWER SUPPLY PROJECTS BP192

R. A. Penfold

The practical and theoretical aspects of the circuits are covered in some detail. Topics include switched mode power supplies, precision regulators, dual tracking regulators and computer controlled power supplies, etc. 92 pages. £2.95

PROJECTS FOR RADIO AMATEURS AND SWLS BP304

R. A. Penfold

This small book covers the construction and use of radio frequency and intermediate frequency projects, and audio frequency projects. Under the first heading ideas include a crystal calibrator, an antenna tuning unit, a wave trap, a b.t.o. and other useful projects. On the audio side projects include a bandpass filter, a by-pass switch, a c.w./RTTY decoder and many other practical ideas and suggestions for the home constructor. 92 pages. £3.95.

SHORT WAVE SUPERHET RECEIVER CONSTRUCTION BP276

R. A. Penfold

A general purpose receiver to build, from antenna to audio, described in understandable English. 80 pages. £2.95

SIMPLE SHORT WAVE RECEIVER CONSTRUCTION BP275

R. A. Penfold

Before discussing projects and techniques, the author provides essential information on theory, propagation, receiver designs and techniques. Finally, the author provides design for and describes the construction of practical receivers. 88 pages. £3.95

**ORDER NOW ON
(01202) 659930**

(24 HOURS)

**OR PLEASE USE THE ORDER FORM ON
PAGE 78.**

SWM BOOK STORE



(01202) 659930 (24 HOURS)

Internet orders: bookstore@pwpub.demon.co.uk

HURRY.....The Dayton HamVention Flight '96 Calling At New York & Dayton is Boarding At Gate PW



Come & Fly With Practical Wireless on the HamVention Holiday May, 13-21 1996. Don't Miss The Flight....We're Looking Forward To Your Company!

The PW Dayton HamVention holidays have established themselves on the amateur radio travel calendar. In 1996 you can join us on a two-centre trip and have the option to extend the holiday and 'Flexi-Fly' wherever you wish in the USA. And like the passengers who travel aboard the Cunard Line's *Queen Elizabeth II*, you too can enjoy the sights of New York!

Following many years of Ohio's late April variable weather, the organisers have moved the Dayton HamVention date to mid-May when it should be warmer and drier! Unfortunately, the

change brings the return airline flights into the summer season, with the inevitable increase in cost. To get over the increased flight and accommodation costs, professional tour organisers - Gullivers Groups & Incentives Ltd. - have come up with an interesting two-centre package based on New York and Dayton.

London To New York

The 1996 PW HamVention Holiday departs from London (Gatwick) on **May 13**, when we'll fly direct to New York with Continental Airlines. On arrival, the party will be transferred by bus to the Edison Hotel in Manhattan for a three night stay.

Following the opportunities to explore and enjoy the sights of New York, the party will fly to Dayton on Thursday where we'll be staying in the Englewood Holiday Inn for four nights. The Holiday Inn has a good sized indoor heated swimming pool, a bar and restaurant, and there are a good selection of reasonably

priced 'diners' nearby, together with the excellent 24-hour opening Meijer's department store only a short walk away.

The HamVention opens Friday lunchtime ('Flea' market open from 6am) and runs until Sunday afternoon and there's plenty of good shopping in the nearby shopping malls (public transport is frequent and is good value in Dayton). The HamVention bus service departs from the Hotel car park and although a small charge was made in 1995, we understand that the service will be free this year (subject to confirmation).

The party then departs from Dayton on the Monday lunchtime **May 20**. We then fly on to New York to join our connecting flight, arriving in London (Gatwick) on Tuesday morning **May 21**.

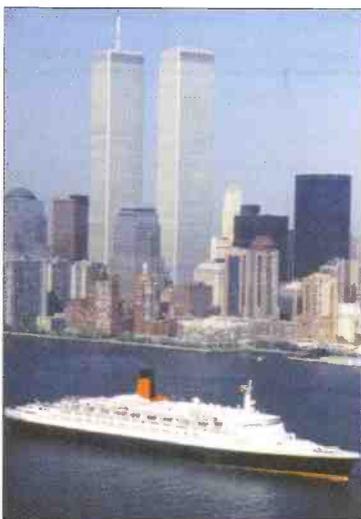
You can join the 1996 HamVention Holiday for **£785*** per person. The £785* cost is based on two people sharing a twin-bedded room but single rooms are available for a supplement.

The price includes: economy class flights London to New York, New York to Dayton and return to UK. Also included are three nights accommodation in New York, four nights in Dayton, return airport/Hotel transfers, entrance fees to HamVention, UK and US Airport taxes, US State and City Taxes and VAT.

Extend Your Holiday

You also have the option to extend your stay in the USA after the HamVention by either 'going it alone' or by taking advantage of a special Air Pass available from Gullivers, which allows you to Flexi-Fly anywhere within the USA. For example, a £160 Air Pass would provide you with three additional flights to **anywhere** in the USA. Further details on this and other options are available on request.

*** Prices correct at time of going to press and may be subject to change due to currency fluctuations.**



Cunard Line's RMS *Queen Elizabeth II* in New York with Manhattan and the twin towers of the United Nations Building in the background.

(Photograph courtesy of Cunard)

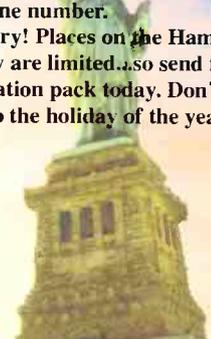


Queen Elizabeth II passing Liberty Island, complete with its famous occupant! A gift from the French people to America, the statue is of copper sheet on a metal frame. It was first erected in France and sent to the USA as a giant 'Jigsaw Puzzle'. You can join the PW party and take an optional trip to the statue in 1996, during the HamVention Holiday two-centre holiday. If you've got the energy and determination you could admire the view from the statue's head or (if you're really keen) make your way up the steep staircase to the observation balcony under her torch!

(Photograph courtesy of Cunard)

To receive your information pack and obtain other details, telephone Donna Vincent G7TZB at the *Practical Wireless* Editorial offices on (01202) 659910. Alternatively, write to Donna, marking your letter: 'Dayton HamVention '96' providing your name, address (and if possible) a daytime telephone number.

Hurry! Places on the HamVention Holiday are limited. Also send for your information pack today. Don't miss the flight to the holiday of the year with PW!



**ELECTRONICS
VALVES &
SEMICONDUCTORS**

Phone for a
most courteous quotation

**0181-743 0899
Fax: 0181-749 3934**

We are one of the largest stockists
of valves etc, in the U.K.

COLOMOR (ELECTRONICS) LTD.

170 GOLDHAWK ROAD
LONDON W12 8HJ



ATTENTION! All 'Air Master' users

Introducing: FLIGHT DATABASE and ACARS Analysing for WINDOWS
Process and analyse the largest of ACARS log files in minutes! Then automatically transfer the
*information into various databases to produce many useful reports.

(Based on flight number, registration & route)

SAE FOR DETAILS FROM

FLIGHTDECK, 192 Wilmslow Road, Heald Green, Cheadle, Cheshire SK8 3BH
Tel: 0161-499 9350. Requires: 386 min, 4mb RAM, Win 3.11 or 95. \$52.95 inc p/c

PC SCIENTIFIC & TECHNICAL PROGRAM LIBRARY

Low cost specialist software and GOOD QUALITY PROGRAMS THAT WORK are our forte.

We have the largest scientific and technical software library as well as the best mainstream programs available anywhere. Software supplied on CD ROM or Floppy. Discover the true gems of shareware with our 300,000 word hypertext book "The Encyclopedia of Shareware". Over 4000 programs listed, and described in 178 different categories. For your copy send £2.50 or phone/fax your order. Major credit cards accepted. You also receive a money saving special offer voucher.

PDSL, Winscombe House, Beacon Road, Crowborough, Sussex TN6 1UL.
Tel 01892 663298 Fax 01892 667473

JAYCEE ELECTRONICS LTD

20 Woodside Way, Glenrothes, Fife, Scotland KY7 5DF
Tel: 01592 756962 (Day or Night) • Fax No. (01592) 610451

Open: Tuesday-Friday 9-5; Saturday 9-4

KENWOOD, YAESU & ICOM APPROVED DEALERS

A good stock of new and secondhand equipment always in stock



For ALL your AIRBAND needs &
lots MORE! See 'The EXPERTS'

FLIGHTDECK

Catalogue £1.00 from Dept. SW, 192 Wilmslow Rd, Heald Green
Cheadle, Ches. SK8 3BH. Tel: 0161-499 9350 Fax: 0161-499 9349

Open: 9.30am - 5.30pm Mon to Sat. Closed Wednesdays

**THE INTERNATIONAL GROUP FOR
WEATHER SATELLITE ENTHUSIASTS**

RIG - THE REMOTE IMAGING GROUP

RIG publishes a quarterly journal containing: Many images from space, some in colour. Orbital elements and satellite predictions. Articles about the interpretation of weather images, equipment construction and software. Helplines to advise beginners. All the news about weather satellites.

RIG supplies (to members only): receivers and hardware at a discount shareware of relevant programs, images on disk and CD-ROM.

Send for free information pack (UK readers SAE please) to:-
RIG-S1, 34 Ellerton Road, SURBITON, Surrey KT6 7TX, UK

WEATHER

MONITORING AT A GLANCE

★ ★ Computer Datalogger Available ★ ★

Prices from
only £199
WIND SPEED
& DIRECTION
only

Features (dependent on model)

* WIND SPEED & DIRECTION

* ELEGANT MAHOGANY CABINET (choice of light or dark)

* BAROMETRIC PRESSURE

* HUMIDITY & DEW POINT

* RAINFALL

* SUNSHINE Hrs.

* 12-24V or MAINS

* OUTSIDE TEMPERATURE
with MIN & MAX - C & F

* COMPUTER INTERFACE

Send for colour
brochure now to:

**R & D
ELECTRONICS**

Tel (01843) 866662

Fax (01843) 866663

Beaufort House, Percy Ave, Kingsgate, Broadstairs, Kent CT10 3LB



Simple Installation

ADVERTISERS INDEX

Aerial Tech56	Icom UK.....cover iii	PDSL.....84
Air Supply56	Interproducts.....56	Pervisell.....72
AOR UK Ltd.....39	J & P Electronics.....72	PhotAvia Press.....66
ARC Ltd.....66	Javiation.....66	Photo Acoustics.....30
ASK Electronics.....47	Jaycee Electronics.....84	Practical Wireless.....63,65
Aviation Hobby Centre.....58	Klingenfuss.....63	R & D Electronics.....84
Chevet Books.....72	Lake Electronics.....58	RadioSport Ltd.....23
Circuit Distribution.....57	Lowe Electronics.....10/11,32,	Remote Imaging Group.....84
Colomor Electronics.....84cover iv	Shenzi Comms.....72
Computer Aided Technologies.72	Martin Lynch.....42/43	SMC Ltd.....37
Fairhaven.....84	Momentum Comms.....57	Solid State Electronics.....52
Flightdeck.....84	Monitoring Times.....52	SRP Trading.....48
Garex Electronics.....65	Multicomm 2000.....26	Timestep Weather Systems.....69
Haydon Comms.....14/15	Nevada Comms...cover ii/1,18/19	Waters & Stanton.....24/25
Hoka Electronics UK.....46	Norbreck Rally.....58	
Howes,CM.....69	Optoelectronics.....2	

PUBLISHED on the fourth Thursday of each month by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Printed in England by Southernprint (Web Offset), Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (01202) 622226. Distributed by Seymour, Windsor House, 1270 London Road, Norbury, London SW16 4DH. Tel: 081-679 1899, Fax: 0181-679 8907. Telex: 881245. Sole Agents for Australia and New Zealand - Gordon and Gotch (Asia) Ltd.; South Africa - Central News Agency Ltd. Subscriptions INLAND £25, EUROPE £28, OVERSEAS (by ASP) £30, payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. SHORT WAVE MAGAZINE is sold subject to the following conditions, namely that it shall not without the written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

ICOM

IC-R7100

CE approved

EMC Approved Rx PLUS All-Mode Window Scan!

The IC-R7100 takes you straight into the new information era with latest VHF and UHF communications technology, plus the potential of continuous high-sensitivity coverage from 25MHz to 2GHz. Features include:

- Window Scan watches for 2 signals alternately
- Superior CPU with 5 basic scans
- 900 Memories in 9 memory banks including; programmed, selected mode, selected number and auto-memory write
- SSB (USB/LSB), AM (normal/wide), FM (normal/narrow) and wide-FM
- Keyboard Frequency Entry
- 24-hour clock with ON/OFF timer
- Optional TV/FM adaptor.

IC-R72E

As Above But Covering HF Bands



As you know, ICOM manufacture a top range of base-stations, mobiles and handheld transceivers and receivers covering all popular Ham frequencies. You can contact us any way you choose, we're even on the Internet now, so surf along to: <http://www.worldserver.pipex.com/nc/icom/sw.htm> - Icom (UK) Ltd. Sea Street Herne Bay Kent CT6 8LD.

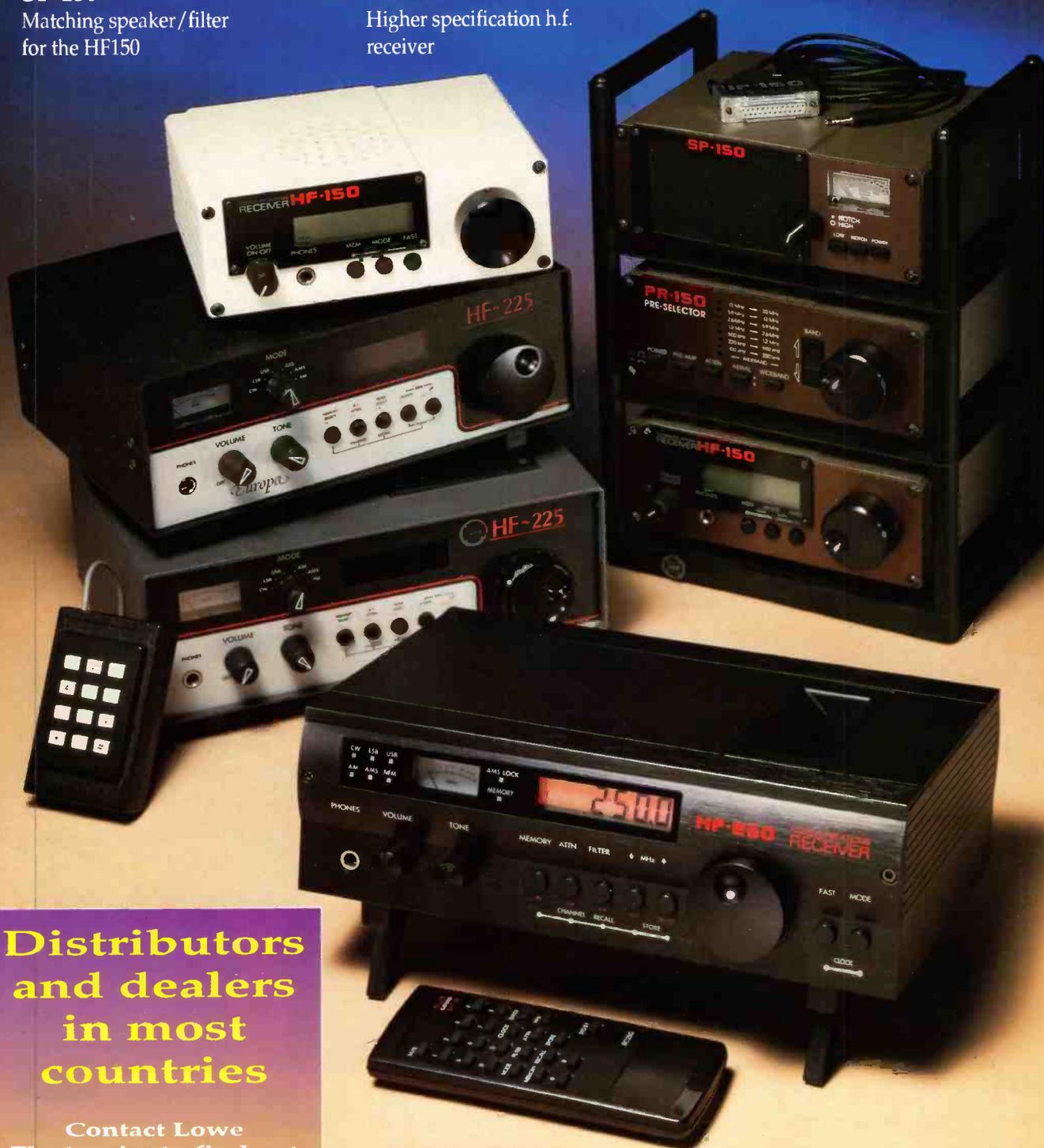
Call: 01227 741741 (24hr). Fax: 01227 741742

Count on us!

The Lowe receiver range

Famous
the world over

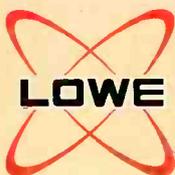
- **HF-150**
Your first 'real' receiver
- **HF-150M**
Marine version of the HF150
- **SP-150**
Matching speaker/filter for the HF150
- **PR-150**
RF preselector for the HF150
- **RK-150**
Stack and rack system
- **HF-225**
Higher specification h.f. receiver
- **HF-225E**
Super high performance model
- **HF-250E**
New top line receiver



**Distributors
and dealers
in most
countries**

Contact Lowe
Electronics to find out
your nearest dealer

Tel: (01629) 580800
Fax: (01629) 580020



Manufactured by:
Lowe Electronics,
Chesterfield Road,
Matlock, Derbyshire, DE4 5LE, UK