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BRITAIN'S BEST RADIO MAGAZINE

MARCH 1999 £2.75

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ANTENNA**



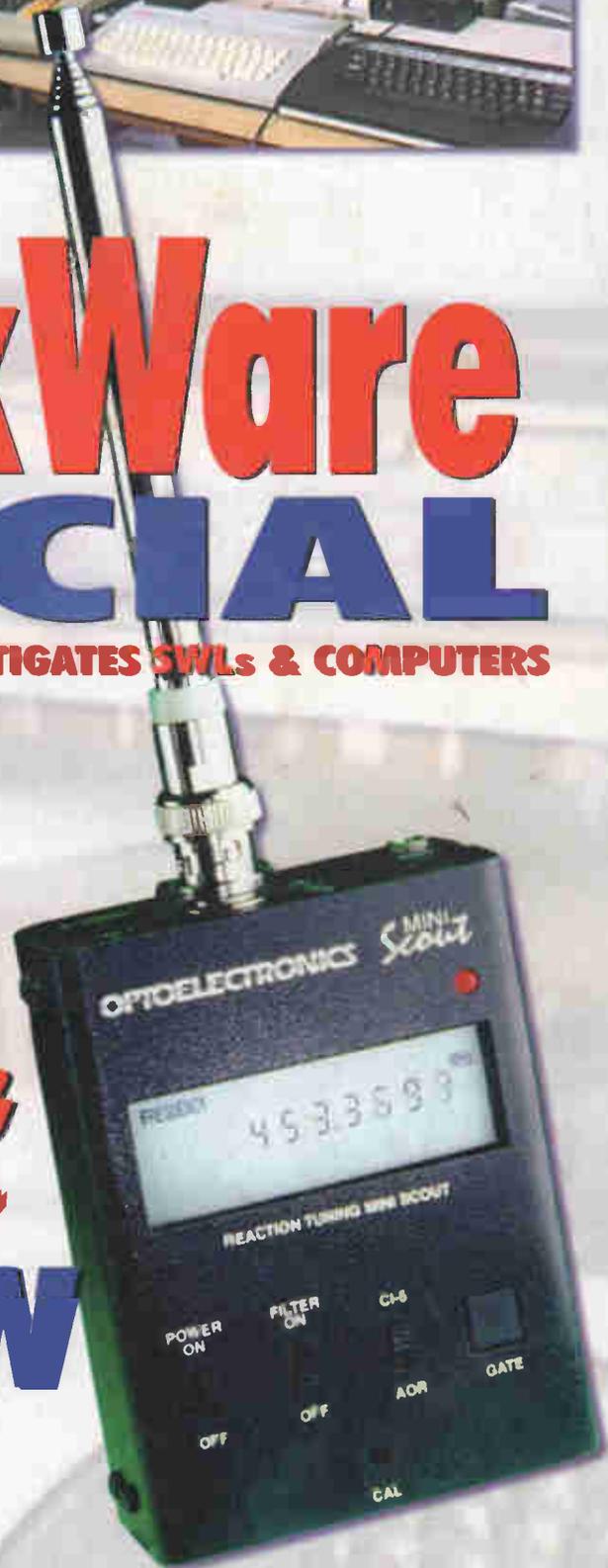
ShackWare SPECIAL

JERRY GLENWRIGHT INVESTIGATES SWLs & COMPUTERS

**JW on the
LP-1300**

**MINI
Scout
REVIEW**

**Spying
on the
Spies**



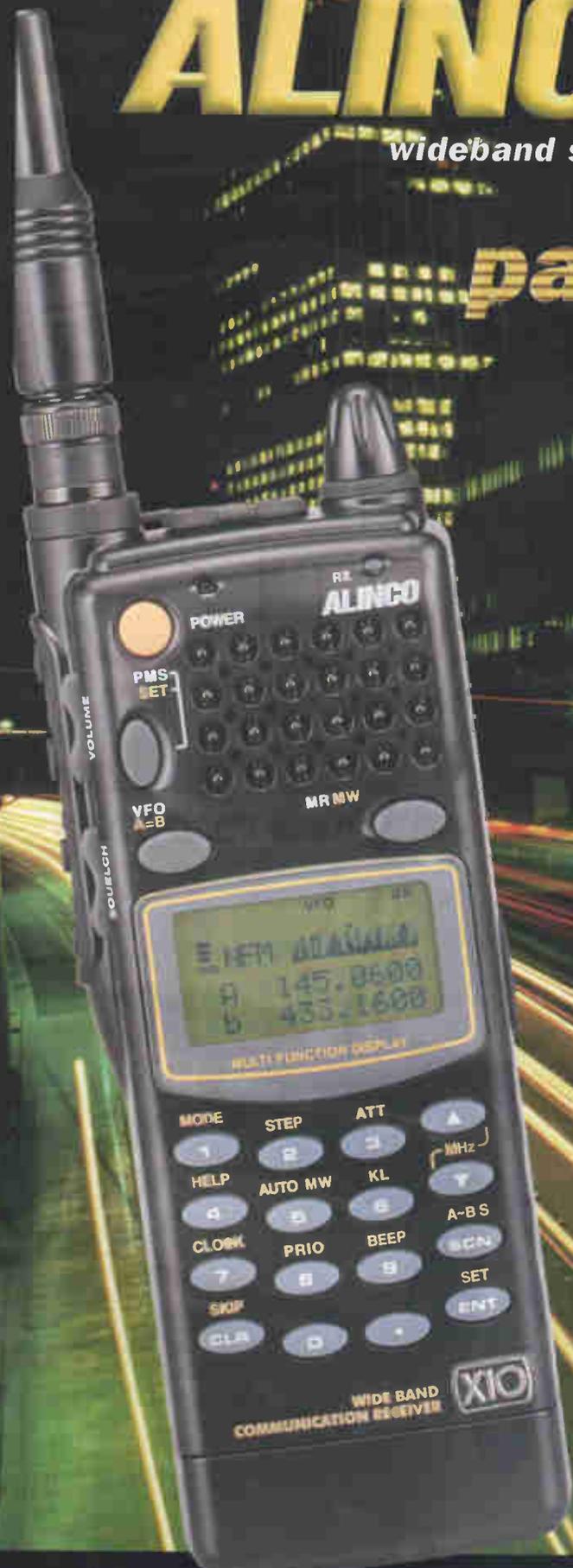
03 >

ALINCO DJ-X10E

wideband scanning receiver

packed

for action!



JUST LOOK AT THESE FEATURES!

- **RECEIVES**
100kHz - 2000MHz
- **MULTI MODE RECEPTION**
AM - WFM - NFM - SSB - CW
- **1200 MEMORY CHANNELS**
- **CHANNEL SCOPE SPECTRUM ANALYSER**
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SPECIFICATIONS
Frequency.....100kHz - 2000MHz
Memories.....1200
Scan Speed....25 ch/sec
Scan Steps....Selectable (50Hz - 500kHz)
in 20 fixed steps
Receiver.....Triple Superheterodyne
Dimensions...57(H) x 150(W) x 25.5(D)
Weight.....320g
(with EBP-37N Battery pack)

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- TURBO SCAN 100 Ch/Second
- TURBO SEARCH 300 St/Second
- Automatic Frequency Storage
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- 500 memory channels
- VFO Control
- Selectable Attenuator
- Selectable Delay
- Selectable Mode AM/WFM/NFM
- TURBO SCAN 100 Ch/Sec
- TURBO SEARCH 300 St/Second
- Alpha Numeric Display
- Automatic Store
- Frequency Transfer
- Auto Tape Record
- Data Skip facility
- Programmable Search

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A brand new low cost scanner that covers MARINE, POLICE, LAND MOBILE and more!

- 66 - 512 MHz (with gaps)
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new from
Bearcat

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£8 p&p



NEW LOW PRICE

YUPITERU MVT 7100 EU

Probably the most popular high end Scanner. It's easy to use and can receive just about anything going!

- 530kHz-1650MHz
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- 1000 Memories
- C/w NiCads & charger

£199.95
£8 p&p



PRICE MATCH

NEW LOW PRICE

YUPITERU MVT 9000 EU

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March 1999 Issue

Short wave

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ShackWare Special Feature

by Jerry Glenwright

35 Computers and SWLs

Computers have invaded and conquered virtually every aspect of our lives: in the home, place of work, at the supermarket and the video library, it's almost impossible to retreat from them. So, given that they're here to stay, Jerry Glenwright tells us how to make the best use of them.

37 Looking For A PC

If you're new to computers, still to make a purchase and have £50 or more to spend, there's only one real choice: the PC compatible. In this part of the 'ShackWare Special', Jerry explains a brief history of the PC, information on where to buy, which one is the most suitable for you and the different kinds of software and hardware now available.

41 On The Internet

Devil or angel, the Internet is here to stay, but it really does offer a truly wonderful amount of information, frequencies and software for the s.w.l. But if you're still wondering about whether to connect up, or indeed how to, then read Jerry's insight to the Internet and all will be revealed!

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COVER SUBJECT

Computers in the s.w.l.'s shack, are these days essential. Jerry Glenwright explains their place and gives some tips on not spending the 'earth' setting yourself up.

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To provide you with a ready reference here are the contact details of all our regular authors.

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magazine

Other Features

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In this month's 'In My Experience', John Wilson G3PCY reviews the Nevada LP-1300 Log Periodic and compares it with professional LPAs costing **ten times** the price!

28 Thorne Array

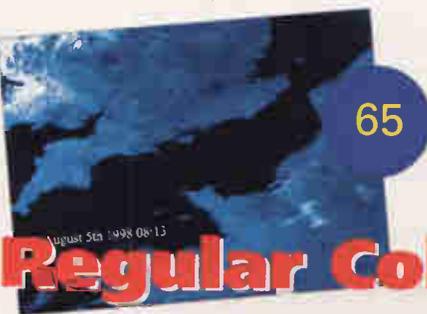
More antennas from SWM specialist Joe Carr K4IPV. This month Joe adapts an h.f. antenna for scanner band use.

32 Scouting About

Faris Raouf takes a trip about town with the new Mini Scout from Optoelectronics. Despite being relatively inexpensive, the Mini Scout is far from a simple device. Read Faris's review to see what he thought of it.

48 Spying On The Spies - Part 1

David White G3ZPA takes a trip back in time to reveal the history of Hanslope Park Radio Station. From how it all started, to success in deciphering some of the low grade enemy ciphers in use by the German intelligence system. A fascinating read.



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SWM Services

Subscriptions

Subscriptions are available at £30 per annum to UK addresses, £35 in Europe and £38 (Airsaver), £45 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £50 (UK), £59 (Europe) and £63 (rest of world), £74 (airmail).

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, 12 Hazelhurst Road, Castle Bromwich, Birmingham B36 0BH, Tel: 0121-681 4168.** A small catalogue containing components, projects and p.c.b.s is available, free, to anyone sending **Roy or Sue Martin** an s.s.a.e.

Photocopies & 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 that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for SWM are £2.85 each and photocopies are £2 per article.

Binders are also available (each binder takes one volume) for £6.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Prices include VAT where appropriate.

A complete review listing for SWM/PW is also available from the Editorial Offices for £1 inc P&P.

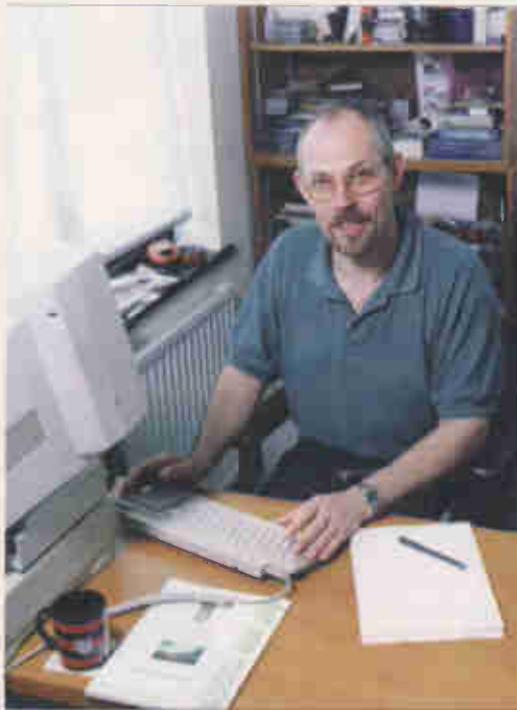
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Technical Help

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

ed's comments



Value For Money

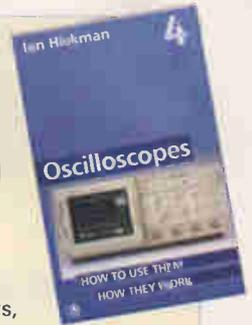
Specialist hobby magazines, such as the one you are reading, have a very difficult time funding extras for readers. By this I mean cover mounted items such as *Scan98*, from last year, and the forthcoming CD that will be included with the April issue of SWM - see page 39 for more details of this very useful radio accessory. The economics of small publishers are very closely managed. Huge budgets for purchasing equipment for review or just a tryout are the stuff editorial fantasies are made of. A reader just recently wrote suggesting, happy as he was with JW's reports on two classic professional receivers of recent history, that we go out and buy a Racal RA3791 receiver just to review. Whilst I wholeheartedly agree that SWM is the vehicle for the review of this current and indeed exotic h.f. receiver, we have readers who would happily spend the many thousands of pounds that the RA3791 costs on a new addition for the shack. In reality, I am left with having to arrange a loan of a specimen of this highly desirable radio so that we can feature it within our well thumbed pages in some (not too) distant issue. I am working on it be assured. I am convinced that it will be well worth the wait. Even if like me, you won't have the funds to buy one to try it for yourself, there is a definite pleasure in sharing someone else's written opinion of such a feat of engineering, especially when you trust the opinion of the writer. Guess who'll get the job?

So, to the point I started to make at the top of the page. We are faced, like all companies producing products - and SWM is a product. A crafted and cherished product - with the burden of increasing costs in the process of getting SWM to you, in a form that you can buy and read. Unfortunately we have no choice other than to

Oscilloscopes - How To Use Them & How They Work

Who is this book meant for? It is for anyone who is interested in oscilloscopes, how to use them and how they work. Oscilloscopes are essential tools for checking circuit operation and diagnosing faults, and an enormous range of models are available. But which is the right 'scope for you, which features are essential and which are not so important?

Ian Hickman's guide, now in its fourth edition, is the standard reference, which tells you not only what to look for, but how to get the most from your 'scope. This handy book is bound to be in demand. Order your copy now for **£16.95**.



increase the price of SWM, commencing next month.

Now, as you will have twigged, that's the April edition - the one that comes with a cover mounted CD. It really isn't an April Fool stunt.

Having posed the question on the subject of including high value items with SWM and whether or not readers would be prepared to pay extra for such items in the recent Reader Survey, the resounding answer was that an extra charge was acceptable. So, a special one-off price for the April issue of SWM will be £3.99. The cover price will revert to the new price of £2.99 for subsequent months. In essence then, the CD will cost you £1.00 which I believe represents real value for money, just like SWM itself. If all this sounds complicated, I agree. But it does represent a great bonus for, I hope, the vast majority of readers. Not to mention a few new ones that might be tempted by the CD alone, which, even if you are not a PC owner you can still enjoy listening to.

There will inevitably be those of you reading this who already have reached for a pen, the telephone or your keyboard. If you feel aggrieved that we are to charge for such an item, then I have two things to point out. Firstly there would have been no CD for you all to enjoy if we had not been able to mitigate the costs by charging. Secondly you can avoid both the price increase and the raised cost of the April issue by taking out a subscription now.

Racal

As I've been typing this Editorial page, the E-mail software on my computer has been persistently yelling, well beeping gently actually, at me because I've got some new mail to read. I just took a break to check what's there for me and I'm glad I did. I have had news that a specialist collector of Racal receivers is in a position to help those of you who are wondering, perhaps worrying about JW's comments and experiences with Racal and spares. This collector tells me he has established a supply line with Racal and is able to help readers with requirements for semiconductor based receivers. This means 1792/1784/1771/1772 sets, not RA17 et al. If you want to contact him then use the following E-mail address: ra1792@pavilion.co.uk Until next time

vy 73 es gd dx

Kevin Nice

Dear Sir

With regard to the 'Top QSL' letter published in the January 1999 issue, I would like to describe my experiences, and my methods of QSLing, with you.

I'm a 19 year old degree student, so the number of cards sent out direct is limited because of the financial implications. However, those I do send out have around a 90% success rate. I am a member of the RSGB and have been for the past two years. To say the least, I really make the most of the free QSL Bureau service. If I look at cards sent out one year ago there are around 3000. Already (bear in mind how long the bureau is expected to take) I have received around 500 cards in return, 300 back via the bureau and the remainder direct. That's 200 cards coming through my letterbox towards which I have paid **no** postage.

It is true that I use somewhat unusual methods, but the results speak for themselves. Many of these ideas came as a result of the first QSL I ever sent out. This first card was sent to Martyn Phillips G3RFX, who I heard when he was on one of his trips to Gibraltar. Martyn wrote back and gave me one or two pointers which I took on board and developed.

First of all, I design and print my own cards. The personal touch is important to Hams. Then I use a block of text telling them my age, what I'm studying, where I live, how long I've been an s.w.l., what modes and bands I'm interested in and my other hobbies. The number of QSLs I receive back with comments along the lines of "excellent information on your card!", are unreal.

One of the unusual ideas I use is to have a different card for each band. The only distinguishing feature is the picture in on the right hand side of the card. Again, this seems popular with people whom I've heard on more than one band.

Then there's the usual equipment information and the report boxes. I also include a line explaining which particular award I need their card for. I think this is important as it gives the Ham a real reason to send the card.

In the top left hand corner I have a box stating the number of countries I have confirmed on that particular band. Then there's the usual address and E-mail address information. That's the cards. Next, you need to make sure the report will be of interest to the recipient. Include comparison reports for stations in the same part of the world and note any stations calling that the Ham couldn't hear.

I also make the most of E-mail. There are several callbooks on-line which include E-mail addresses. If I hear a new one who has an E-mail address I'll drop them a line and ask them if they can send me a card via the bureau. Three out of ten will write back and ask for my mailing address, whilst the remainder usually say that that would not be a problem.

I hope this helps s.w.l.s improve their return rates. I have been QSLing since December 1996 and I currently have 165 countries confirmed on all bands.

Vy 73 to all.

Karl Drage - R5174461

Dear Sir

First of all, thank you for such an excellent magazine - I certainly enjoy it.

I was reading the top QSL by Frank, Shipston-On-Stow (January '99), which was excellent, yet very sad.

I've been more years than Frank at it, with thousands upon thousands of QSLs (by Bureau and direct). My

Dear Sir

After recently avoiding the last two *SWMs* because of 'satellites', I asked my wife to pick up the January '99 edition. What a surprise; DXTV, just what has this to do with short wave? I counted the radio pages, about 21 out of a magazine 94 pages total.

What a surprise to read people are throwing in the towel. Leave so called 'Radio Amateurs' to their own magazines, scrap QSL cards (do people stick them in their cars with the 'I've been everywhere' stickers?), scrap computers - I've had one and ditched it, by the time you've got the programme running the signal's gone.

I've also had multi-satellite and passed that on, so boring. What's happened to 'Valve and Vintage'? I've had to buy the dreaded *Practical Wireless* to keep up.

While we are on that subject, your so called sister magazine is cheaper and adverts are free. Why? My writing is getting worse because I am getting so worked up. Mobile 'phones have made 'Radio Amateurs' obsolete, CB is a dirty word.

Well, you did ask if there was anything to get off our chests. Stephen Sadler has got the right idea, stick to the old stuff. Recently after collecting a small inheritance I thought I could buy any receiver I wanted. What did I get? Another Racal RA17 and an AR88 (memories of Malaya). Well I think I've said too much so I will sign off.

**Mr. V. Neale
Brighton**

P.S. Anyone got an R1155 to sell? (Seriously).

Well, thanks Mr Neale. I welcome all comments regarding SWM. I am pleased that you feel moved enough to write and share your views. I must admit to being somewhat puzzled as to what you do want from your hobby. Then again perhaps it's a new hobby you need. I know our title is Short Wave Magazine, that is due to more to history than content. It has been stated before my predecessor and me- many times - we aim to cover as much of the spectrum and disciplines within the hobby as possible. My aim is to stay with the ever changing face of communications by including material that's topical and desired by the faithful readership.

There are a huge number of specialities that can be pursued with in radio monitoring. There is room for coverage of all of them in a magazine such as SWM. I mentioned Practical Wireless - which is, by definition, our sister magazine, i.e. it is produced by the same publisher - as it is produced specifically for those who operate on and listen to amateur bands.

As for amateur radio being made obsolete by mobile telephones I think you've missed the point. Telephones provide a way to connect at will to a specific respondent for a particular reason. As 'telcos' are commercial organisations the time spent in such interchanges has a cost implication to the users. Amateur radio is much more than just a means to talk, in any case, it's directly responsible for most of the commercial radio activity that currently takes place around the globe.

Whilst I too enjoyed my AR88, it wouldn't really be much good to me trying to decode 2400bps phase modulated signals, it would just drift a shade more than acceptable! But it still makes a terrific broadcast receiver not to mention the lovely valved smell.

I'm sorry that SWM doesn't align 100% with your listening interests. I guess it really is impossible to please everyone. - Ed.

experience **has always been**, the **percentage you receive** against **sent** is always low and disappointing. Even with the direct ones, people pocket your IRCs for some other DX person.

I've learnt it's no good worrying about it or giving up. We who choose to listen instead of having a licence must accept, in the eyes of many, we are bottom of the list. But, if you enjoy it and enjoy following the *Short Wave Magazine* **then stick with it, it's your life.**

I'm in my warm shack writing and listening for DX, better than looking at the 'goggle box'.

After all, when in my long experience you witness the operating standards- arguing on air - tuning on QSOs etc., etc. There's nothing to worry about. Just sit and enjoy life - have a good set, experiment and get your best antennas. We are not all affluent. Enjoy life listening, and receiving *SWM*. What could be better?

**Peter
Devon**

**Dear Sir**

I am a very avid DXer. As you are no doubt aware it has to be described as a somewhat isolating hobby, but nevertheless, one that I feel could be opened up, as it offers such interesting options. I would be very grateful of making contact with other DXers, particularly in Ireland. So, perhaps you could mention this in your next issue, with a view to forming a club. My contact is

**Caherhennessy,
Ballinarry,
Co. Limerick, Eire,**
'phone
00-353-86 8412152,
E-mail:
noelcar@hotmail.com
Noel Carmody
Eire

Noel, consider it done - good luck with the club. - Ed.

Is there something you want to get off your chest? Do you have a problem fellow readers can solve? so then drop a line to the Editor at QSL, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset, BH18 9PW.

THE BEST LETTER WILL RECEIVE A £20 VOUCHER TO SPEND ON ANY SWM SERVICE.

Your News

Don't forget to keep sending me information on your new products, (*photographs a definite must!*), as soon as details are released, together with any information on Open Days, Special Offers, New Catalogues and general items of news. Remember, mentions are **free**, so don't delay, send off your news today!



Winding of mesh filament for the Svetlana 3CX3000A7 and 4CX10,000D.

DX MEETING

The Manchester DX Meeting (run by members of the British DX Club) is to be held on **24 March 1999**, at the Lass O'Gowrie pub, behind BBC Manchester, off Oxford Road at 2000. This is only an informal gathering. Optional pre-meeting meal at Beijing Chinese restaurant, Portland Street, Manchester, at 1830.

CYBER TOUR

Svetlana invites you to take a fascinating cyber tour of Svetlana's tube manufacturing facility in St Petersburg, Russia. Go to The Tube Zone at www.svetlana.com and click on 'What's New' to view a series of photographs recently taken at the

Svetlana plant in St Petersburg.

In some circles, tube manufacturing is no longer considered to be high tech. However, it is a fascinating and intricate process steeped in the tradition of electronic manufacturing and well worth your time to take the photographic tour.

INTRODUCTORY OFFER

Waters & Stanton PLC have now been appointed distributors for the new range of NEXcell Ni-MH rechargeable batteries. Available in AA size (1.35A capacity) and AAA size (0.6A capacity), they are cadmium free and comply with EEC regulations.

Ni-MH cells have a much higher capacity than NiCads and have no memory problems. They are capable of large current discharges and so are ideal for use in hand-held radios and those hungry digital cameras!

Although there are a number of chargers currently available that can satisfactorily charge Ni-MH cells, Waters & Stanton will shortly be introducing a dedicated unit at a very competitive price. The cost of the cells will be £9.95 in packs of four (AA or AAA), but, as an introductory offer, Waters & Stanton are able to offer the first hundred applicants a pack of four cells for just £8 post paid. So, hurry and get ordering!

Waters & Stanton can be reached at **Spa House, 22 Main Road, Hockley, Essex SS5 4QS.**

SPECIAL EVENT

On **April 24th 1999** the **Hambleton Amateur Radio Society** will be putting on a Special Event in aid of Motor Neurone Disease Awareness Week. The club is working in association with the North Yorkshire branch of the Motor Neurone Disease Association.

NEW STAFF AT SMC

South Midlands Communications (SMC) have recently announced the appointment of **Colin Thomas G3PSM** as Business Development Manager for radio and associated equipment sales. His responsibilities include the UK Amateur and Commercial markets as well as Radio Systems technical sales support in the African export markets.

Geoff Brown G4ICD (ex GJ4ICD), world renown authority on the v.h.f. bands and in particular 6m, joins the SMC sales team as Retail Sales Manager at the Chandlers Ford premises. **Andy Sillence G4MYS** comes on board in support of retail sales and will also look after the p.m.r. hire equipment. Andy is well known as the keeper of the GB3EA 70cm repeater as well as a voluntary examiner for the US examinations.

Bob Coleman G0WYD moves across to the Radio Engineering side as Radio Production and Technical Support Manager, providing an after sales support service to the sales team as well as assisting with System Engineering under the leadership of Chris Lorek G4HCL.

Finally, **Norman Dilley G8YBT** continues in his expanding role of Sales and Marketing Manager embracing all aspects of the company business. Norman will operate from his base in Dartmouth in a tele-commuting role.

The station, **GB2MND**, will operate on all bands from the Buck Inn in the village of Thornton Watlass in North Yorkshire, and will be hoping for sponsorship from anyone interested. More details from the club secretary, **John Hampson G0VXH** on **(01845) 537546** or E-mail jonham@breathemail.net

RADFEST 99

Peterborough's Radio & Electronics Festival will be taking place again in May this year. Radfest 99 will be held at the Sacrewell Farm & Country Centre over the weekend of Saturday 15 and Sunday 16th

COSY CABIN

Accomodex Limited of Coventry have introduced an attractive, fully insulated new garden building, designed especially as practical and affordable accommodation for radio amateurs. Known as the Radio Cabin, the new building uses proven American housebuilding technology for its construction. The structure is built onto an immensely strong, height and level adjustable galvanised steel floor frame, which can be sited on a concrete pad or paving slabs, without the need for costly foundations.

The walls are formed by fixing exterior and interior claddings to a generously proportioned framework, and sandwiching insulating material between them. The outer cladding is of white painted, exterior grade composite board in shiplap formation and embossed with a 'grain' pattern to impart the look of real timber, but without the maintenance problems. This is the same material that is used extensively in American housebuilding and comes with a 20 year guarantee. You can paint it any colour using masonry paint.

May, with a **radio rally on the Sunday only.**

Last year's trial run was well received by CB users, computer hobbyists and Radio Amateurs alike. There will be all the usual rally attractions, with a large and varied range of amateur radio, CB, computer and general electronics traders who are expected to attend again this year.

The highly successful car boot sale will also be held on Sunday. Hot food and drinks will be available during the centre's normal opening hours, and on Saturday evening. All weekend activities include related exhibitions and demonstrations, including the return of the popular broadcast TV production unit. A free disco is planned for Saturday evening with a bar, subject to licence.

There will also be ample free parking, caravans and camping on site all weekend, disabled access and facilities. Open from 1000, admission is £2 for adults and 75p for children (includes free entry to farm centre).

For further details and booking information, please contact **Vince Edwards (Secretary PR&ES), 33 Eyrescroft, Bretton, Peterborough PE3 8ES, Tel: (01733) 331211, FAX: (01733) 810500, E-mail: g8ngz@compuserve.com** or check out their web site at: <http://ourworld.compuserve.com/homepages/g0rem>

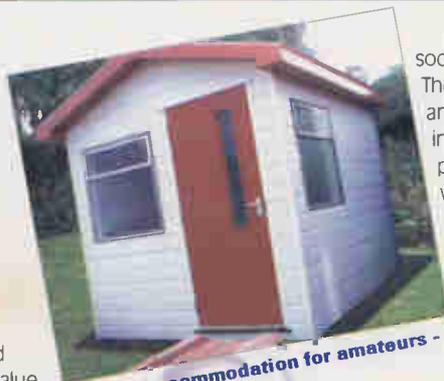
VOICE REPEATERS - ALMOST

The **Leicestershire Repeater Group** have virtually all the equipment required to put a 23cm voice repeater on the air. Unfortunately, with all the other work to do on the remote site, coupled with the routine maintenance and development of their three other voice repeaters GB3CF (2m), GB3LE (70cm) and GB3UM (6m), the present engineering manager does not have the time to devote to this new project.

Until recently, equipment for this band has been at a premium, but Standard have recently brought out a tri-bander (2m 70 & 23cm) at a price of £199. There is also discount available to groups purchasing five units when the price reduces to £169. Icom have also announced the introduction, from February, of their new T81E, the world's first

The building has an apex roof finished in attractive bitumen-impregnated fibreglass shingle tiles in a choice of colours to blend with any garden setting. Inside, the Radio Cabin is lined with an attractive faced laminate in a choice of colours to provide a neat, flush finish that does not require redecorating. Thermal insulation between the wall and ceiling claddings provides a U-value that Building Regulations class as suitable for permanent habitation and a moisture barrier is also incorporated.

In its basic form, the Radio Cabin comes complete with a single light and electrical socket point. Additional electrical



Garden accommodation for amateurs - the Radio Cabin!

sockets are available as optional extras. The building is 2.5m wide and comes in any length from 2.5m upwards, in increments of 0.6m. Doors can be positioned at either or both ends and windows can be fitted in the sides and/or to the ends to meet individual preferences.

Delivered to your home in flatpack form, ready for easy self assembly using the comprehensive instructions provided, the Radio Cabin can be erected by a couple of people in a day. Planning permission is not normally required, but you should check this out with your local authority. Prices start at £2295 plus VAT. Ring **(01203) 301301** for more information.

Send your news to Zoë Shortland at the Editorial Offices

quad band handie, operating on 2 & 6m, 70 and 23cm.

Anyone interested in assisting the group with this project, please contact the chairman, **John Senior G7RXS, QTHR**, either by E-mail: **SeniorJA@aol.com** or telephone on **0116-284 1517**.

New members are always welcome to join the group. The Leicestershire Repeater Group are holding their AGM on April 22nd at the East Midlands Electricity Sports & Social Club, Ayleston Road, Leicester, at 2000.

COVENTRY CLUB

Members of the **Coventry Amateur Radio Society** meet every Friday at Binley Church Hall, Brinklow Road, Coventry, commencing 2000. Visitors are always welcome. More information from the Secretary, **Robin Tew G4JDO** on **(01203) 673999**.

25TH ANNIVERSARY

The **Blackwood Radio, Computer & Electronics Rally**, formerly the Welsh Amateur Radio Convention, will celebrate its 25th anniversary this year by moving to a new venue. At its inception in 1974, the Convention met a need for a major event in Wales and in a short time became an annual engagement in the diary of the president of the RSGB. The Convention attracted many celebrated speakers, of which Tony England W00RE, Space Shuttle astronaut, was one of the most prestigious.

Changing the event's format to that of a Rally some years ago, and the loss of car parking space at the current venue (Oakdale Community College, in a South Wales valley), highlighted the need to seek out a new location. The home for this year's event on **Sunday 17th October 1999** will be The Newport Centre, which provides 1300 square metres of floor space, and is used for many major events.

The Newport Centre can be found adjoining the bus station, with free open air parking (Sundays), and just a quarter of a mile from the railway

rallies

Attention Please!

Would you like to have your Rally publicised? If so, all you have to do is put together as much information as possible about the Rally, i.e. date, location, times, who to contact, etc. and send it to the Editorial Offices.

March 7: The Wythall Radio Club are holding their 14th Annual Radio & Computer Rally at Wythall Park, Silver Street, Wythall, near Birmingham on the A435, just two miles from junction 3 of the M42. Doors open from 1000 to 1600 and admission is £1.50. There will be usual traders in three halls under a large marquee. Bring & Buy, bar and refreshment facilities are also on site. Talk-in S22. There will also be a car park and ride for easy and accessible parking. Contact **Chris GOEYO** on **0121-246 7267** or **0121-246 7268** or **g0eyo@compuserve.com**

March 13: The 6th West Wales Radio & Computer Rally will be held at Penparcau School, Penparcau, Gwynedd. Doors open 1030 to 1800 with disabled access from 1000. Admission is £1 per person. There are good parking facilities with easy access for traders and to all stalls. There will be a demonstration of catering facilities. Facilities also include Amateur Radio, Bring & Buy, computers (software and hardware), and much more. **Katy GW0SFO** on **(01545) 580675**.

March 20: The Lagan Valley Amateur Radio Society (Northern Ireland) will hold its annual rally at the Lagan Valley Hospital conference centre. Doors open 1000. Further details from **Reid MI0BOT** on **(01232) 258403**, E-mail: **gi4gty@qsl.net** or check out the Web site at **www.qsl.net/gi4gty**

March 21: The Tiverton South West Amateur Radio Club will be sponsoring and running their rally at the Tiverton Panner Market. Doors open at 1000. There will be a wide selection of traders, catering for all aspects of the hobby. There will be the usual excellent food and catering facilities around and in the Panner Market. More information from **Alan Sedgbeer G0MAS** on **(01884) 252259**.

March 21: The Bournemouth Radio Society are holding their 12th Annual Sale at Kinson Community Centre, Pelhams Park, Millhams Road, Kinson, Bournemouth. Doors open at 1030 and close at 1630. Talk-in from G1BRS on 2m (144MHz) S22. There will be Amateur Radio and Computer Traders, clubs and specialised groups, excellent refreshments and a Bring & Buy. Admission is just £1. More details from **Olive** or **Frank Goodger, 66 Selkirk Close, Merley, Wimborne, Dorset BH21 1TP** or telephone on **(01202) 887721**.

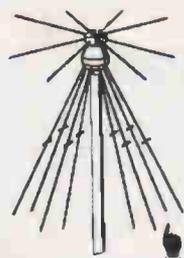
***March 21:** The Norbreck Amateur Radio, Computing & Electronics Exhibition is being held in the Norbreck Castle Hotel, Queens Promenade, Blackpool, Lancashire. Doors open 1100 (with disabled access at 1045). There will be over 100 trade stands, club stands, Bring & Buy stand, RSGB stand and book stall, amateur computer stands, construction competition, free car parking at hotel, a bus from an extra car park and wheelchair access to all the exhibitors. Admission is £2, OAPs £1 and under 14s go free. **Peter Denton G6CGF** on **0151-630 5790**

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. If you have any queries about a particular event, please contact the organisers direct. Editor

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1380 mm.

£39.95
ADD £6.00 P&P.

**H.F. DISCONE**

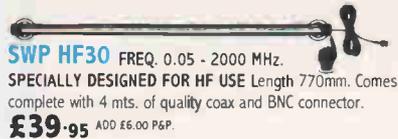
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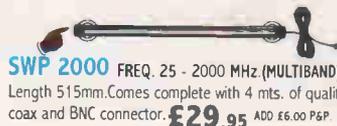
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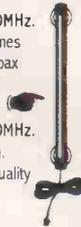
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unlike an omni
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It has 4 capacitor
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coil with TX capability

HEIGHT 1000 mm.

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G. SCAN II

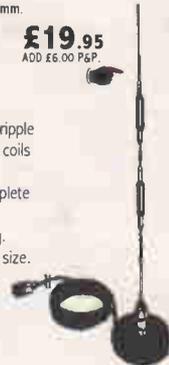
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Mobile Scanner Antenna.
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4mts of coax, terminated with BNC plug.
HEIGHT 620 mm.

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Desk Top Antenna with Tripple
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WHERE?

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Spring is almost here, and with it your opportunity to visit the **TENTH ANNIVERSARY LONDON AMATEUR RADIO & COMPUTER SHOW**. See over 100 exhibitors in clean, well-lit exhibition halls, with spacious aisles between the stands. There'll be traders in all kinds of amateur radio and computing equipment, from one-man surplus component sellers to commercial suppliers to manufacturers, plus Special Interest Groups, local clubs, lectures, Morse tests, a Bring & Buy, catering and bars.

10th Anniversary Show

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By Talk-in: 145.550MHz & 433.550MHz **Parking:** FREE - and plenty of it

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Internet: For detailed directions, floor plans, booking forms, etc, visit www.radiosport.co.uk

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The Centre's swimming pool, leisure, bar, catering facilities and adjoining shopping area, not to mention many other local places of interest, provide a great day out for the whole family. The organisers, Blackwood Amateur Radio Society, are confident that the new venue will re-establish the event as the major amateur radio event in Wales.

Further information from **Stuart Instone GW0NPL** on (01495) 243824, (07970) 777756 or E-mail: fireham@aol.com

NEW PRODUCTS

Produced in Spain for Waters & Stanton PLC is the FC 36A 36A portable power supply, complete with



front and rear terminals, digital read out, carrying handle and built-in speaker. This versatile unit is available now with a suggested retail price of £169.

Also, new from Optoelectronics in Florida, is the OPTOCOM wideband communications receiver and data decoder. This innovative new product is now available complete with software at a retail price of £499 inc. VAT.

More details available from **Waters & Stanton PLC, 22 Main Road, Hockley, Essex SS5 4QS, Tel: (01702) 206835/204965, FAX: (01702) 205843.** Don't miss April's SWM for our review of this new product - Ed.

NOW ON WEB

The **GW QRP Club**, formed in 1994 to encourage and promote low power amateur radio operation amongst the 4000 plus radio amateurs in Wales, has now opened a website on the Internet. The website can be found at www.gwqrp.free-online.co.uk Messages can be sent to dave@gw0uj.free-online.co.uk

Send your news to **Lee Shortland** at the Editorial Offices

PARTLY SOLD

The 1st December 1998 marked the end of thirteen years of Global Communications UK being solely owned by its founders, when 36% of the company was sold to four managers. Roger Pannell, one of the founders said "The company has always enjoyed an exceptional growth rate and now manufacturers more than 1 million accessories for satellite TV per year. To maintain this growth rate, it was felt necessary to strengthen and motivate the management, and what better form of incentive could we offer than being a part owner. It is hoped that by the end of 1999, all employees will become part owners of Global".

Next Month in Practical Wireless, the magazine that brings you Amateur Radio & So Much More

Coming Next Month in **PRACTICAL WIRELESS**

THE UK'S BEST SELLING INDEPENDENT AMATEUR RADIO MAGAZINE

Two Reviews: Richard Newton **G0RSN** reviews the **Alinco DRM06** 6m (50MHz) f.m. mobile transceiver and the h.f. **Highlander Antenna** from Talkabout Antennas.

James Brett G0TFP explains how he constructed a "practical" and "economical" '**Deviation Meter**'.

Convert a redundant TA32 to provide a 2-element, dual-band 'Practical Beam' for 18 & 24MHz bands? **Derek Holmes GW3JSV** explains how.

Peter Hyams GW4OZU shares his reflections on a childhood spent in his father and Uncle's shop where he passed the time playing with Second World War radios on '**Lisle Street**'.

Gordon King G4UFV, author of our new 'Looking At ...' series, describes the 'ins and outs' of '**Speakers and Headphones**'.

Brian Dance recalls childhood memories of a '**Macroelectronics Era**' when electronics was easily carried out without a microscope!

Radio Basics: Rob Mannion **G3XFD** explains how to get the best results from your receiver - whether it's a commercial model or 'home-brewed' along with some ideas for 'add on projects' to improve reception and ease-of-operating.

Tex Swann G1TEX builds a small valved audio amplifier and has more news and views for you in his bi-monthly column: **Electronics-in-Action**.

PLUS ALL YOUR REGULAR FAVOURITES INCLUDING:

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* Contents subject to change

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PLUS FREE NVA 319 SPEAKER WORTH £199.00

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The ultimate in SW active antennas. We have supplied dozens of these for critical high performance applications such as military and Government monitoring and hotel radio distribution systems. Covers 10kHz to 85Mhz with exceptional active amplifier specifications.
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AA150 active antenna
Originally designed to match our own HF150 receiver, this high performance small active antenna is only the size of a mobile whip, yet gives excellent results for those without long back gardens in which to put up a wire. Comes complete with a mains power unit and DC splitter box to enable it to be used with any make of receiver.
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An economy active antenna for HF using a specially designed amplifier whose gain increases with frequency, thus giving excellent results with older receivers. Only 90 cm long and complete with mains power unit.
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Bandscan Australia

This time I have a wide range of news across the Australian communications spectrum, including more on digital television and the sale of government owned transmission sites, and news of Internet by satellite and microwave radio developments. In addition I have a couple of Radio Australia (RA) reception reports and a swag of other news.

Minister

As reported last time, the Liberal-National Party coalition has been elected for another three year term. The Minister responsible for communications in the previous government retained his position and also managed to score the responsibility for information technology as well. The Department is now known as the Department of Communications, Information Technology and the Arts.

Transmission Agency

The Senate has finally passed legislation to enable the sale of the National Transmission Agency (NTA). The government claims benefits, including giving the Australian Broadcasting Corporation (ABC) and the Special Broadcasting Service (SBS) direct responsibility for their own transmission activities. This transfers the risk in capital funding the analogue to digital conversion process to the private sector, removing government from an activity they claim is better suited to the private sector. The latter sounds pretty ideological to me and the proof is still some way away. The government had planned to use administrative means to force the sale had the legislation failed to pass the Senate.

Meanwhile, bidders for the agency are concerned that current contracts with the major users, the ABC and SBS, cover only analogue transmissions. This means that an income stream is not assured after the digital conversion process is complete in ten or so years time. Sounds to me like the government is claiming that the risk in the process will be transferred to the private sector, the private sector being unwilling to bear that risk. No doubt the private sector will ask for some form of compensation or bid the sale price down to reduce their own risk.

The NTA network has 1700 transmitters spread over 550 transmission sites. The sale is expected to yield somewhere in the order of \$300 million (about £115 million). Major bidders include the British network operator Castle Transmission.

Digital Television

Steps towards the introduction of digital television are continuing with the allocation of an additional \$500000 (£190000) to the Australian Broadcasting Authority (ABA) to facilitate the process of conversion from analogue systems. The additional funds will be used so the ABA can complete the technical planning processes in time for the introduction of the first digital television broadcasts on 1 January 2001.

In the meantime, the industry is seeking a delay in the introduction of digital television in an attempt to avoid sales tax costs worth up to \$40 million (£15 million). Given that start-up dates are enshrined in legislation, the delay is not considered likely. In addition, critics are incensed that the industry should seek these tax breaks, saying that the industry has been handed spectrum space worth an estimated \$1000 million (£380 million) without charge.

The cost to consumers of buying new digital television receivers is becoming an issue too. It has been estimated that consumers will need to spend an additional \$11000 million (£4200 million) on digital television sets and set top boxes in the next ten years. Commentators are saying that consumers will need more than just high definition television; it will need to provide enhanced content, multiple channels and datacasting, for the change to digital television to be readily embraced by consumers.

Meanwhile, consumers are being warned to take great care with the purchasing of sets now claimed by retailers to be digital or digital ready. The ABA is warning that there are currently no sets available on the Australian market capable of receiving digital television. They say that any sets billed as being digital are still analogue sets that may use digital processing systems to create better picture quality. Technical specifications for Australia's digital television system will differ from US and European systems and will not be complete until early this year.

Digital television will be phased in until 1 January 2004, and will be broadcast side by side with analogue services until 1 January 2008.

Fourth Licence?

The Rupert Murdoch company News Limited is pushing for the creation of a fourth commercial television licence across Australian viewing areas, to coincide with the introduction of digital television. However, the government has said that consideration of a fourth commercial television licence is off the agenda until the end of the year 2006. The other issue here is that News has extensive penetration - put at 70% by some - into Australia's newspaper market. Australia's current cross media ownership rules do not permit News to own television stations because News is a foreign company, and because of the extensive newspaper holdings.

Internet By Satellite

The government has provided subsidies to 400 farm families across Australia to help them to connect to the Internet via satellite. Called Farmwide - a title like this seems obligatory these days - the trial will provide a satellite dish and electronic equipment worth up to \$1600 (£600) to participating households. These farm households will still pay \$50 (£20) per month for satellite transmission charges plus Internet Service Provider charges. This service allows Internet speeds of up to 400 kilobits per second.

The government is planning to use the trial as part of the planning processes needed to put in place a guaranteed 64 kilobit per second download speed for all Australians wherever they live.

Government Radio

The government radio networks story continues with a dispute in South Australia as to whether due processes were followed in the awarding of a \$60 million (£23 million) contract to Motorola for a government radio network. Allegations have been made that the state's Premier promised that Motorola would be the preferred bidder for the contract, in exchange for that company locating its software centre in the state's capital, Adelaide. The allegations have been denied by the Premier.

Microwave Radio

Research into the development of radios based on Gallium arsenide Monolithic Microwave Integrated Circuits (MMICs) is being supported with a \$5 million (£2 million) grant, awarded to the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Tadiran Microwave Networks Australia. Tadiran is the research and development subsidiary of the Israeli electronics company of the same name. These funds come from one of Tadiran's US companies. The aim of the research is to produce radios which are more cost effective and have better spectrum efficiency. It is intended to eventually manufacture in Australia.

Bandwidth Enquiry

The government has announced a National Bandwidth Enquiry which will look at the issues associated with telecommunications bandwidth availability and pricing within Australia. The enquiry will be an internal government department enquiry, overseen by an advisory council with responsibilities for the information economy. A major focus of the enquiry will be backbone telecommunications data networks and links within Australia and with other countries. It is intended that the report, when presented, will cover the period until the year 2004.

Radio Australia Reception

John Pussey from the Isle of Wight has been listening to Radio Australia's *Pacific Beat* on 9.500MHz at 2000UTC with SINPO at 22222. He uses a Realistic DX-394 and a 15m wire antenna.

Mike from Kent has E-mailed to say that on 19 December he pulled his best reception for some time for Radio Australia. Mike was listening to 9.500MHz also with his reception report for the period to 1930UTC. He was using d.s.b. and managed a minimum signal of S7 with a maximum S9+10; his meter is calibrated at 6dB per point. In a.m. mode Mike says he received S5 to S9.



Other News

Canberra, the capital city of Australia, is to get eight new radio channels to go with the existing 16. To the dismay of existing commercial radio operators, the expansion includes one new commercial radio service. These operators claim that the radio share of advertising budgets is already small and will not stretch further. In a market of only about 300000 people, this certainly does have a ring of truth about it. Other channels will be made available in the areas around Canberra in the south-eastern corner of New South Wales.

The Australian Broadcasting Corporation (ABC) has celebrated 75 years of broadcasting for its main Sydney radio station 2BL. Although not under the ABC umbrella until its own beginning in 1932, 2BL started life as 2SB where the SB was short for Sydney Broadcasters, and only later became 2BL, where BL was short for Broadcasters Limited.

A Melbourne company has won an Australia wide commercial broadcasting licence for a frequency just outside the normal medium wave band. The company currently operates a Greek language narrowcasting service in Melbourne on 1.629MHz.

Australia's national telecommunications carrier, Telstra, has now closed over two thirds of its rural and regional broadcast media access points across Australia. The media industry remains concerned that remote Australia stories will no longer be aired, because it will not be possible to freight video footage in time for any news to still be current on receipt.

Satellite transmission they say is expensive and prohibitive for smaller operators, but Telstra remains adamant that they need the line capacity for other services. The closure of such access points will no doubt continue.

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. My address is **PO Box 3307, Manuka, ACT 2603, Australia**. For personal replies please send two IRCs. Those with an Internet connection can E-mail me at greg@pcug.org.au

■ BRIAN ODDY G3FEX, THREE CORNERS, MERRYFIELD WAY, STORRINGTON, WEST SUSSEX RH20 4NS

LM&S



Sunday March 28 will be important for all listeners who enjoy searching the short wave bands because many of the International Broadcasters will introduce new transmission schedules on that day to allow for seasonal changes in propagation. Some of the data herein may well be rendered 'no longer applicable'.

It will also be important for everyone in the UK because all clocks here will be advanced by one hour and British Summer Time (BST) will commence. However, Universal Time Co-ordinated (UTC), which for most practical purposes is the same as Greenwich Mean Time (GMT), will still be quoted in broadcast schedules and in this column. Please ensure that the times in your reports are in UTC - not BST.

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.

Sometimes the broadcasts from Ríkisutvarpid (National Broadcasting Service, Iceland) on **189kHz** reached the UK in December. Their 300kW transmission was rated SINPO 42343 at 0818UTC on the 9th by **John Eaton** (Woking); 54444 at 0635 on the 11th by **John Slater** (Scalloway, Shetland); 23212 at 0040 on the 17th by **Sheila Hughes** (Morden); 'just audible' at 2200 on the 30th by **Fred Pallant** (Storrington).

Encouraged by a first reception of a broadcast from the Ukraine in November (see LM&S, February '99 SWM) Sheila Hughes kept a check on **171kHz** after 2300UTC. On December 15th the 1000kW transmission from Lvov (Ukrainian 2300-0100) rated 44333 at 2315.

Medium Wave Reports

Propagation over transatlantic paths proved to be favourable during some nights in December and a few of the broadcasts from m.w. stations in E.Canada and E.USA reached the UK. On the 9th **Harry Richards** (Barton-upon-Humber) heard WNRB Boston, MA on **1510kHz**, which he rated SINPO 24332 at 2345UTC. He heard them again on the 16th at 0130, peaking 24232.

On the 12th **Robert Connolly** (Kilkeel, Co.Down) logged CKVO in Clarendville, NF on **710** (33443 at 0100); CKOC in Hamilton, ON on **1150** (22332 at 0110); also WTOP in Washington, DC on **1500** (33322 at 0120). On the 20th CKOC was 22222 at 0140. Much to the surprise of **Adam Birchenall** (Coalville) reception of CJYQ in St.John's, NF on 930 was excellent at 0020 on the 29th.

Up in Shetland John Slater often searched the band from just before dawn. He heard CJYQ on **930** at 0810 on the 10th (SIO 343 and audible until 0900). On the 11th he logged WBBR New York, NY on **1130** (SIO 222 at 0630); CJFX Antigonish NS on 580 (SIO 333 at 0748); WCBS in New York, NY on **880** (SIO 222 at 0757); WEEI Boston, MA on **850** (SIO 333 at 0822); WTIC Hartford, CT on **1080** (SIO 333 at 0830); CFRB Toronto, ON on **1010** (SIO 222 at 0835).

John picked up WBBR again on the 22nd (SIO 333 at 0725); also WWKB in Buffalo, NY on **1520** (SIO 322 at 0730). On the 25th he heard VOMC St.John's, NF on **590** (SIO 322 at 0810); KDKA Pittsburgh, PA on **1020** (SIO 211 at 0830); CKVO on **710** (SIO 433 at 0825); WTOP on **1500** (SIO 211 at 0830); CHVO in Carbonear, NF on **560** (SIO 433 at 0835).

Also received at night were the sky waves from some of the many m.w. stations in the Middle East, Africa, Europe and Scandinavia - see chart. During daylight the ground waves from some local radio stations reached quite distant places - see chart.

Short Wave Reports

As mentioned last month, R.Budapest is now broadcasting in the **25MHz (11m)** band. Their transmission on **25.700** (Hung to Australia 1100-1200) was rated 45434 at 1100 by **Vic Prier** in

Colyton; 44333 at 1135 by **Rhoderick Illman** in Oxted; 45444 at 1145 by **Ross Lockley** in Galashiels; also 54544 at 1150 by **Simon Hockenhuil** in E.Bristol.

The occupants of the **21MHz (13m)** band during the morning include DW via Sri Lanka **21.680** (Eng to W.Africa 0600-0650), rated 25444 at 0649 by **Mike Casey** in Manchester; R.Romania Int **21.480** (Eng to Africa 0700-0756) 43333 at 0745 in Morden; R.Australia via Shepparton **21.725** (Eng to Pacific areas 0600-0858) 35543 at 0805 by **David Edwardson** in Wallsend; UAER, Dubai **21.605** (Ar to Eur 0615-1030) 42233 at 0935 in Colyton; RAI Rome **21.520** (It to Africa 0600-1300) 24443 at 1000 in Storrington; DW via Wertachtal? **21.600** (Eng to SE.Asia, Pacific 0900-0950) SIO 444 0900 by **Tom Smyth** in Co.Fermanagh; R.Austria Int, Moosbrunn **21.765** (Eng, Ger to Eur, Australasia 0830-1100) 44444 at 0930 by **Martin Venner** in St.Austell; R.Prague, Czech Rep **21.745** (Eng to Asia 1000-1030) 45444 at 1011 by **Martin Goodey** in St.Mary's, Isles of Scilly; Voice of Turkey **21.715** (Tur to W.Asia, Australia 0600-1100?) 44444 at 1020 by **Bernard Curtis** in Stalbridge; RFI via Issoudun **21.620** (Fr to E.Africa 0900-1300) 43444 at 1105 by **Robert Hughes** in Liverpool; Vatican R, Italy **21.850** (It, Fr, Eng to Eur, Asia 1100-1200) 44333 at 1120 by **Darren Beasley** in Bridgwater; R.Budapest, Hungary **21.560** (Hung to Australia 1100-1200) 55545 at 1145 in E.Bristol.

After mid-day they include R.Ukraine Int **21.510** (Eng to Australia 1200-1300), rated 54533 at 1225 by **Stan Evans** in Herstonceux; REE via Noblejas **21.700** (Sp to S.America 1200-1800) 34222 at 1245 by **Eddie McKeown** in Newry; BBC via Cyprus **21.470** (Eng to E.Africa 1400-1700) 35533 at 1410 by **Fred Wilmshurst** in Northampton; UAER, Dubai **21.605** (Ar to Eur 1400-1600) 43443 at 1415 in Kilkeel; R.Sweden, Stockholm **21.810** (Eng to N/C.America 1430-1500) 44444 at 1432 by **Tom Winzor** in Plymouth; Voz Christiana, Chile **21.500** (Sp to N.America 1100-?) 34333 at 1440 in Scalloway; WYFR via Okeechobee **21.745** (? , Ger to Eur, Africa? 1600-1750) 33333 at 1742 by **Thomas Williams** in Truro; WYFR via Okeechobee, USA **21.525** (Eng, Fr, Port to Eur, Africa 1600-2000) SIO 343 at 1751 in Woking; HCJB Quito, Ecuador **21.455** (Eng to Eur? [u.s.b. + p.c.]) 24232 at 1926 in Oxted.

In the **18MHz (15m)** band R.Norway Int **18.950** (Norw to S.America 1000-1030) was 44444 at 1000 in Oxted & 55544 at 1015 in St.Mary's, IoS; R.Denmark via R.Norway **18.950** (Da to S.America 1030-1100) 44444 at 1030 in Scalloway; Christian Science Broadcasting via WSHB Cypress Creek, USA **18.910** (Fr, Eng to C.Africa 1700?-1958) 43333 at 1705 in Stalbridge.

Quite a few broadcasters are active in the **17MHz (16m)** band. Before noon they include the BBC via Skelton & Woofferton, UK **17.640** (Eng to E.Eur, M.East, E.Africa 0700-1500), rated SIO 333 at 0733 in Woking; R.Australia via Shepparton **17.750** (Eng to Asia 0600-0900) 32223 at 0800 by **Gerald Guest** in Dudley; DW via Rwanda? **17.800** (Eng to Africa 0900-0950) 44333 at 0900 in Morden; R.Austria Int via Moosbrunn **17.615** (Eng to Asia 0930-1000) 44444 at 0941 in St.Mary's, IoS; AIR via Bangalore **17.387** (Eng to Pacific areas 1000-1100) 34333 at 1000 in Scalloway; R.Prague, Czech Rep **17.485** (Eng to W.Africa 1000-1030) 45444 at 1002 by **Tony Hall** in Freshwater Bay, IoW; BBC via Skelton, UK **17.705** (Eng to Eur, Africa 0900-1515) 35433 at 1045 in E.Bristol; R.Bulgaria, Sofia **17.500** (Ger to Eur 1200-1300) 45444 at 1100 in Colyton; R.Pakistan,

LONG WAVE CHART

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	C*, J*
153	Donebach DLF	Germany	500	A*, C*, D*, E*, F*, G, J, K, L*, M
162	Allouis	France	2000	A*, C*, D*, E*, F*, G, J, K, L*, M*
171	Nador Medi-1	Morocco	2000	F*, G*
171	B'shakova etc.	Russia	1200	A*, D*, G*, J*, L*
171	Lvov	Ukraine	500	C*
171	Sasnovy	Belarus	1000	J
177	Oriamburg	Germany	500	A*, C*, D*, E*, F*, G, J, K, L*, M
183	SaarLouis	Germany	2000	A*, C*, D*, E*, F*, G, J, K, L*, M
189	Gulfuskalar	W.Iceland	150	A, C*, F*, H
198	Droitwich BBC	UK	500	A*, D*, E, G, J, K, L*, M
207	Munich DLF	Germany	500	A*, B*, D*, E*, F*, G, J, K, L*, M*
207	Azilah	Morocco	800	F*
216	Roumoules RMC	S France	1400	C, D*, E*, F*, G, J, K, L*, M
216	Ganca	Azerbaijan	500	J*
225	Raszyn Resv	Poland	?	A*, B*, C*, D*, E*, F*, J*, K, L*, M*
234	Beidweiler	Luxembourg	2000	A, D*, E*, F*, G, J, K, L*, M
243	Kalundborg	Denmark	300	B*, C*, D*, E*, F*, G, J, K, L*, M
252	Tipaza	Algeria	1500	A*, C*, F*, J*
252	Atlantic 252	Eire	500	A*, C*, D*, E*, F*, G, J, K, L*, M
261	Burg(R Ropa)	Germany	85	A*, B*, E*, F*, G, J, K, L*, M*
261	Taldom Moscow	Russia	2500	J*
270	Topolna	Czech Rep	1500	A*, B*, C*, D*, E*, F*, G*, J*, K, L*, M*
279	Sasnovy	Belarus	500	A*, D*, E*, F*, G*, J*, K, L*, M*

Note. Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-

- (A) John Eaton, Woking.
- (B) Simon Hockenhuil, E.Bristol
- (C) Sheila Hughes, Morden.
- (D) Eddie McKeown, Newry
- (E) George Millmore, Wootton, IoW
- (F) Fred Pallant, Storrington
- (G) Robert Shacklock, Westwood
- (H) John Slater, Scalloway
- (I) Tom Smyth, Co Fermanagh
- (J) Ernie Strong, Ramsey, Cambs.
- (K) Andy Thompson, Lichfield
- (L) Phil Townsend, E.London.
- (M) Fred Wilmshurst, Northampton.

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Islamabad **17.835** (Eng to Eur 1100-1120) 54433 at 1110 in Herstmonceux; Israel R, Jerusalem **17.535** (Fr, Eng to Eur, N.America 1100-1135) 44554 at 1134 in Bridgwater.

After mid-day RFI via Fr.Guiana? **17.575** (Eng to Eur, Africa, Asia, Pacific 1200-1300) was SIO 444 at 1200 in Co.Fermanagh; R.Bulgaria, Sofia **17.500** (Eng to Eur 1200-1300) 44344 at 1205 in St.Austell; REE via Noblejas? **17.755** (Sp to S.America 0900-1900) 43242 at 1246 in Newry; R.Sweden, Stockholm **17.870** (Eng to N.America 1230-1300) 35544 at 1250 in Barton-upon-Humber; R.Romania Int **17.745** (Eng to Eur 1300-1356) 53533 at 1300 in Galashiels; R.Finland **17.660** (Fin, Eng to N.America 1300-1400) 44444 at 1312 in Truro; Channel Africa via Meyerton **17.895** (Eng to W.Africa 1300-1455 Sat/Sun) 32223 at 1400 in Stalbridge; BBC via Antigua, W.Indies **17.840** (Eng to S.C.America 1400-1700) 34443 at 1415 in Kilkeel; Africa No.1, Gabon **17.630** (Fr to W.Africa 0700-1100, 1200-1600) 43233 at 1425 in Liverpool; Israel R, Jerusalem **17.535** (Eng to Eur, N.America 1500-1530) 55444 at 1500 by **Clare Pinder** in Appleby; BSKSA P, yadh **17.775** (Bambara? to C.Africa 1600-1700) 25332 at 1620 in Storrington; VOA via Morocco **17.895** (Eng to Africa 1600-1900) 44444 at 1650 in Oxted; WHRI via Maine, USA **17.655** (Eng to M.East, Africa 1800-2000) 44444 at 1806 by **Vera Brindley** in Woodhall Spa; BBC via Ascension Is **17.830** (Eng to W.C.Africa 0730-2100) 45544 at 1846 in Northampton; WYFR Okeechobee, USA **17.555** (Eng to Eur 1900-1945) 54444 at 1905 in Plymouth; RCI via Sackville **17.820** (Fr, Eng to Eur, Africa 2000-2200) 25432 at 2122 in Manchester.

Noted in the **15MHz (19m)** band before noon were the BBC via Masirah Is, Oman **15.310** (Eng to S.Asia 0300-0815, 0900-1100, 1400-1700), rated SIO 222 at 0718 in Woking; R.Kuwait via Sulabiyah **15.110** (Eng to SE.Asia 0500-0800) 25444 at 0758 in Manchester; R.Australia via Shepparton **15.415** (Eng to Asia 0100-0400, 0600-0900) 44433 at 0815 in Herstmonceux; R.Japan via Ascension Is **15.220** (Jap to W.Africa 0700-0730, 0800-1000) 33343 at 0900 in Liverpool; Voice of Armenia, Yerevan **15.270** (Eng to Eur 1000-1030 Sun) 43543 at 1007 in Bridgwater; Voice of Nigeria via Ikorodu **15.120** (Eng to W.Africa 0500-1100) 55444 at 1015 in St.Mary's, IoS; R.Pakistan, Islamabad **15.530** (Eng to Eur 1105-1120) 34343 at 1105 in Colyton; Israel R, Jerusalem **15.640** (Eng to Eur, N.America 1130-1135) 35444 at 1130 in Northampton.

During the afternoon R.Bulgaria, Sofia **15.700** (Eng to Eur 1200-1300) was logged as 53454 at 1200 by **Robert Shacklock** in Westwood, Nott; RFI via Allouis? **15.195** (Eng to Eur, Africa 1200-1300) 34233 at 1237 in Newry; VOA via Philippines **15.425** (Eng to E/SE.Asia, Pacific 1000-1500) 34433 at 1240 by **David Hall** in Morpeth; Voice of Greece, Athens **15.630** (Eng to Eur, N.America 1240-1250) 44333 at 1240 in Morden; BBC via Nakhon Sawan, Thailand **15.310** (Eng to Asia 1100-1400) 33443 at 1245 in Kilkeel; R.Romania Int **15.390** (Eng to Eur 1300-1356) 54533 at 1300 in Galashiels; Swiss R.Int via Sottens **15.185** (Eng, Ger, Fr to C/S.Asia 1400-1615) 44444 at 1400 in Appleby; BBC via Skelton, UK **15.485** (Eng to Eur, Africa 0700-1800) SIO 222 at 1400 in Co.Fermanagh; R.Sweden **15.240** (Eng to N.America 1430-1500) 44444 at 1430 in Truro; RCI via Sines, Portugal **15.325** (Eng to Eur, M.East, Africa 1430-1500) 55555 at 1434 in St.Austell; WEWN via Vandiver, USA **15.745** (Eng to Eur 1000-2200) 33222 at 1435 by **Peter Pollard** in Rugby; WWCR Nashville, USA **15.685** (Eng to N.America, Eur 1100-2200) 33333 at 1447 in Woodhall Spa; BBC via Skelton & Rampisham, UK **15.565** (Eng to Russia, Eur 0600-1700) 54444 at 1530 by **Martin Cowin** in Kirkby Stephen; VOA via Botswana? **15.445** (Eng to Africa 1600-1800) 43333 at 1700 in Stalbridge.

In the evening the BBC via Ascension Is **15.400** (Eng to Africa 1500-2300) was 55444 at 1800 in E.Bristol; RNB Brazil **15.265** (Eng to Eur 1800-1920) SIO 444 at 1810 by **Philip Rambaut** in Macclesfield; HCJB Quito, Ecuador **15.115** (Eng to Eur 1900-2200) 22222 at 1903 in Plymouth; Voice of Nigeria via Ikorodu **15.120** (Eng to Africa, Eur 1600-2100?) 44333 at 2000 in Oxted; DW via Wertachtal? **15.275** (Eng to W.Africa 2100-2150) 45444 at 2110 in Freshwater Bay.

The broadcasters using the **13MHz (22m)** band include DW via Wertachtal **13.780** (Ger to S.Eur 0600-2000) rated SIO 232 at 0741 in Woking; R.Ukraine Int, Kiev **13.590** (Uk to Eur 0700-1800) 54455 at 0825 in Liverpool; SRI via Sottens **13.685** (Eng, It, Ger, Fr to Australasia 0830-1030) 55555 at 0830 in Newry; R.Kuwait via Kabd **13.620** (Ar to Eur, N.America 0930-1605) 44444 at 1149 in Oxted; R.Vlaanderen Int, Belgium **13.745** (Eng to Eur?, N.America? 1130-1200) 24332 at 1149 in Bridgwater; Austria Int via

Moosbrunn **13.730** (Ger, Eng to Eur, N.America 1200-1300) 44444 at 1200 in Rugby; AIR via Bangalore **13.710** (Eng to SE.Asia 1330-1500) 33453 at 1325? by **John Parry** in Larnaca, Cyprus; UAER, Dubai **13.675** (Eng to Eur 1330-1355) 43433 at 1350 in Herstmonceux; Vatican R, Italy **13.765** (Eng to Asia, Pacific 1345-1405) 54444 at 1403 in Plymouth; R.Sweden **13.740** (Eng to Pacific, Asia 1430-1500) 44444 at 1430 in Truro; DW via Wertachtal? **13.790** (Eng to Africa? 1600?-1650?) SIO434 at 1600 in Co.Fermanagh; UAER, Dubai **13.675** (Eng to Eur 1600-1640) 32233 at 1630 in St.Austell; VOA via Selebi-Phikwe, Botswana **13.710** (Eng to Africa 1600-2130?) 55434 at 1804 in St.Mary's, IoS; AIR via Bangalore **13.620** (Ar to M.East 1730-1945) 45534 at 1810 in Colyton; WHRI via Noblesville, USA **13.760** (Eng to E.USA, Eur 1600-2100) 34333 at 1836 in Woodhall Spa; WWCR Nashville, USA **13.845** (Eng to Africa 1400-0000) 22432 at 2050 in Freshwater Bay, IoW; R.Havana Cuba **13.720** (Eng to Eur 2030-2130) 33233 at 2100 in Appleby; RCI via Sackville, Canada **13.690** (Fr, Eng to Eur, Africa 2000-2300) 45444 at 2210 in Northampton.

In the **11MHz (25m)** band RCI via Skelton, UK **11.905** (Eng, Fr to Eur 0600-0700) was 44444 at 0615 in St.Austell; R.Brasil Central, Goiania **11.815** (Port 0700-0300) 34333 at 0658 in Scalloway; REE via Noblejas **12.035** (Sp to Eur 0700-1700) 55555 at 0734 in Woking; FEBC Bocaue, Philippines **11.635** (Eng to Asia 0930-1100) 34322 at 0930 in Newry; R.Australia via Shepparton



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	C,D*,E,G*,H,I,K,L,N	1260	Brunel CG, Bristol	I	1.60	I
585	R Solway	B	2.00	B	1260	Marcher G, Wrexham	I	0.64	C
603	Capital G, Litt'rbne	I	0.10	D,H,I,K,L,M,N	1260	SabrasSnd,Leicester	I	0.29	C,K,L,M,N
630	R Bedfordshire(3CR)	B	0.20	C,F,H,I,K,L,M,N	1260	R York	B	0.50	B
630	R Cornwall	B	2.00	B,I,J	1278	CI Gold 1278 W York	I	0.43	C,K
657	R Clwyd	B	2.00	B,H,I,K,L,M	1296	Radio XL, Birmingham	I	5.00	B,C,H,I,J,K,L,N
657	R Cornwall	B	0.50	B,I	1305	Magic AM, Barnsley	I	0.15	B,C
666	Gemini AM, Exeter	I	0.34	E,H,I,K,N	1305	Premier via ?	I	0.50	D,H,I,K,N
666	R York	B	0.80	B,H,K,L,M	1305	Touch AM, Newport	I	0.20	I
729	BBC Essex	B	0.20	D,H,I,K,L,M,N	1323	Capital G, Southwick	I	0.50	C,D,F*,H,I,N
738	Hereford/Worcester	B	0.037	B,C,H,I,K,L,M,N	1323	SomersetSnd,Bristol	B	0.63	B,J
756	R Cumbria	B	1.00	B,K	1332	Premier, Battersea	I	1.00	H,I
756	The Magic 756,Povvys	I	0.63	C,I,K,L,M,N	1332	CI Gold 1332, P'bo	I	0.60	B,C,K,L
765	BBC Essex	B	0.50	C,D*,F,H,I,K,L,N	1332	Wiltshire Sound	B	0.30	I
774	R Kent	B	0.70	A,D,H,I,K,M*,N	1359	The Breeze,Chelms'd	I	0.28	H
774	R Leeds	B	0.50	B,C,L	1359	CI Gold 09, C'try	I	0.27	B,C,K,L,N
774	CI Gold 774, Glas	I	0.14	B,C,I,L	1359	R Solent	B	0.85	C,D,H,I
792	CI Gold 792,Bedford	I	0.27	C,D,H,I,K,L,M*,N	1368	R Lincolnshire	B	2.00	K,L,M,N
792	R Foyle	B	1.00	B	1368	Southern Counties R	B	0.50	C,D,F*,H,I
801	R Devon & Dorset	B	2.00	B,E,H,I,J,L,M	1368	Wiltshire Sound	B	0.10	I
828	CI Gold 828, Luton	I	0.20	H,K,M,N	1413	Asian Sd, Rochdale	I	0.10	C
828	Magic 828, Leeds	I	0.12	C	1413	R Gloucester via ?	B	?	E,L,N
828	Asian Netwk Sedgley	B	0.20	C,L,M	1413	Premier via ?	I	0.50	H,I,K
828	2CR CG, Bournemouth	I	0.27	I	1413	Yks Dales R, Skipton	I	0.10	B,C
828	Townland R, Ulster	I	0.80	B	1431	The Breeze, Southend	I	0.35	C,H,I,K,M
837	R Cumbria/Furness	B	1.50	B	1431	CI Gold, Reading	I	0.14	D,H,I,N
837	Asian Netwk Leics	B	0.45	C,D,H,I,K,L,N	1449	R Peterboro/Cambis	B	0.15	B,C,K,N
855	R Devon & Dorset	B	1.00	I,K	1458	R Cumbria	B	0.50	B
855	R Lancashire	B	1.50	B,C	1458	R Devon & Dorset	B	2.00	B,I
855	R Norfolk, Postwick	B	1.50	H,K,M	1458	1458 Lite AM Manch'	I	5.00	C
855	Sunshine 855,Ludlow	I	0.15	C,F,H,I,N	1458	Sunrise, London	I	50.00	D,H,I,N
873	R Norfolk, W.Lynn	B	0.30	C,D,H,I,K,L,M,N	1458	Asian Netwk Langley	B	5.00	K,L
936	Brunel CG, W.Wilts	I	0.18	H,I,K,N	1476	CountySnd, Guildford	I	0.50	C,D,H,I,K,M,N
936	Yks Dales R, Hawes	I	1.00	B,C,K	1485	CI Gold, Newbury	I	1.00	H,K,N
945	CI Gold GEM, Derby	I	0.20	C,K,L,N	1485	R Humberside (Hull)	B	1.00	C
945	Capital G, Bexhill	I	0.75	D,F*,H,I,M	1485	R Merseyside	B	1.20	B,C,I,J,L
954	Gemini AM, Torquay	I	0.32	H,I	1485	Southern Counties R	B	1.00	D,H,I
954	CI Gold 954, H'ford	I	0.16	C,H,K,L,N	1503	R Stoke on-Trent	B	1.00	B,C,F*,K,L,N
963	Asian Sd, E.Lancs	I	0.80	B,C,I	1521	Heartbeat 1521AM,NI	I	0.50	B,I
963	Liberty R, Hackney	I	1.00	D,H,I,K,N	1521	Fame 1521, Reigate	I	0.64	C,D,F*,H,I,K,L,M,N
972	Liberty R, Southall	I	1.00	A,C,D,H,K,L,N	1530	R Essex, Southend	I	0.15	D,F,K,M
990	R Devon, E.Devon	B	1.00	B,H,I	1530	CI Gold W Yorks	I	0.74	B,C,F*,H,N
990	Magic AM, Doncaster	I	0.25	C	1530	CI Gold Worcester	I	0.52	I,L
990	CI.G, Wolverhampton	I	0.09	C,H,L,N	1548	R Bristol	B	5.00	I
999	C.Gold GEM Nott'ham	I	0.25	C,H,K,L,N	1548	Capital G, London	I	97.50	D,H,I,K
999	Red Rose 9-99 P'stn	I	0.80	B,C	1548	Magic AM, Merseyside	I	4.40	B,C,L
999	R Solent	B	1.00	D,H,I,M	1548	CI Gold, Sheffield	I	0.74	C
1017	CI G, Shrewsbury	I	0.70	C,H,L,N	1557	R Lancashire	B	0.25	B,C
1026	R Cambridgeshire	B	0.50	C,D,H,K,L,M,N	1557	CI Gold 1557, N hant	I	0.76	H,K,L,N
1026	Downtown R, Belfast	I	1.70	B,J	1557	Capital G, So'ton	I	0.50	H,I
1026	R Jersey	B	1.00	H,I	1584	London Turkish R	I	0.20	H,K
1035	RTL Country 1035	I	1.00	D,H,I,K,N	1584	R Nottinghamham	B	1.00	C,H,L
1035	R Sheffield	B	1.00	C,L	1584	R Shropshire	B	0.50	B,H
1035	N Sound 2, Aberdeen	I	0.78	B	1584	Tay, Perth	I	0.21	H*
1116	R Derby	B	1.20	B,C,H,K,L,M,N	1602	R Kent	B	0.25	C,H,I,K,L,M
1116	R Guernsey	B	0.50	H,I					
1116	Valley R, Ebbw Vale	I	0.50	E					
1152	CI G Amber, Nonwich	I	0.83	K					
1152	LBC A2 AM	I	23.50	D,H,I,K,N					
1152	Pic'ly A2, Manch'r	I	1.50	B,C					
1152	Xtra-AM, Birmingham	I	3.00	L					
1161	R Bedfordshire(3CR)	B	0.10	H,K,M,N					
1161	Brunel CI G, Swindon	I	0.16	H,I					
1161	Magic AM, Humberside	I	0.35	B,C					
1161	Southern Counties R	B	1.00	D,H,I					
1161	Tay AM, Dundee	I	1.40	H*					
1170	CI G Amber, Ipswich	I	0.28	K					
1170	GNR, Stockton	I	0.32	B					
1170	Capital G, Portsmouth	I	0.50	H,I					
1170	Signal 2, Stoke-on-T	I	0.20	C*,L					
1170	1170AM, High Wycombe	I	0.25	D,H,N					
1242	Capital G, Maidstone	I	0.32	H,I,M					
1251	C.G Amber, Bury StEd	I	0.76	B,C,D*,H,K,M,N					

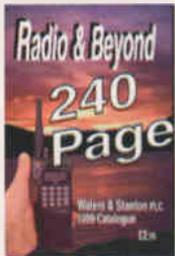
Note: Entries marked All other entries were logged during daylight or at dawn/dusk.

Listeners -

- (A) Adam Birchenall, Coalville
- (B) Robert Connolly, Kilkeel
- (C) Martin Dale, Stockport
- (D) John Eaton, Woking
- (E) Simon Hockenhill, E.Bristol
- (F) Sheila Hughes, Morden
- (G) Rhoderick Illman, Dxted
- (H) Brian Keyte, Gt Bookham
- (I) George Millmore, Wootton, IoW
- (J) Tom Smyth, Co Fermanagh
- (K) Ernie Strong, Ramsey, Cambis
- (L) Andy Thompson, Lichfield
- (M) Phil Townsend, E London
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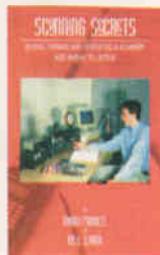
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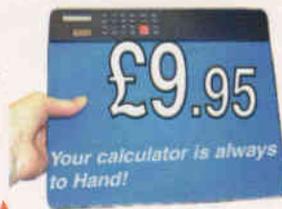
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10kHz to 1300MHz SSB FM AM computer receiver. The remote black box plugs directly into your PC. Because it can be positioned remotely from the PC, there is no problem with interference. This is the next generation of receivers - here now! Its performance knocked our socks off.

WATSON Hunter Counter

NEW

£59.95



Displays the frequency of nearby radio transmissions in an instant. Ideal for use with scanners

- * 10MHz-3GHz
- * 8 Digit Display
- * Battery Save
- * Hold button
- * 6hr batt. life
- * Ni-cads
- * Charger
- * Antenna

Radio Controlled Weather Centre

Radio Controlled Clock, Weather Trend, Remote Wireless Temperature Sensor Barometer + Much More



£69.95

- * 3-channel Temp (C or F)
- * Forecast, Trend, Memory
- * Clock (MSF Rugby)
- * Barometer
- * Day, Date, Month
- * Alarm & Zone Time
- * Low Batt. Indicator
- * Clear LCD readout
- * Requires 4 x AA cells
- * 182 x 133 x 28mm

This unit will grace any radio room. At last you have accurate time and a full weather report without stepping outside. The remote outside sensor sends data back up to 75ft away. Two optional additional remote sensors can also be purchased.

Radio Controlled Clock



RM-913

£19.95

- Locked to Rugby
- Ideal shack clock
- Time Day & Date
- Second time Zone
- 2 Alarm times
- 2-minute crescendo alarm
- Low battery indicator
- Requires 2 x AAA cells
- Size 110 x 86 x 42mm

Offered at an amazing price, this radio controlled clock will always be right! It automatically locks to the Rugby standard time signal. Ideal for radio rooms.

WMM-1 Multimode Modem

- * Packet, AMTOR, CW
- * SSTV, Fax, RTTY
- * NAVTEX, SYNOP
- * Transmit and receive
- * Needs PC 286 or better
- * Includes software
- * No external power required
- * Connects to RS-232

WATSON

£89.95





11.880 (Eng to Asia 0900-1100) 32223 at 1030 in Stalbridge; AWR via KSDA Agat, Guam **11.660** (Eng to Asia 1000-1100) 33333 at 1045 in Morden; R.Prague, Czech Rep **11.640** (Eng to N.Eur 1130-1157) 54444 at 1141 in Plymouth.

During the afternoon RCI via Sines **11.915** (Eng, Fr to Eur, Africa 1430-1600) was 44444 at 1450 in Rugby; BBC via Skelton & Woofferton, UK **12.095** (Eng to Eur, N.W.Africa 0600-2000) 54444 at 1522 in Kirkby Stephen & SIO 444 at 1600 in Co.Fermanagh; R.Pakistan, Islamabad **11.570** (Eng to M.East 1600-1630) 44444 at 1604 in Freshwater Bay, IoW; DW via Rwanda **11.810** (Eng to Africa 1600-1650) 23442 at 1616 in Manchester; R.Australia via Shepparton **11.660** (Eng to Asia 1330-1700) 44444 at 1620 in Morpeth; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1100-1730) 43344 at 1630 in Dudley; Israel R, Jerusalem **11.590** (Heb [Home Svce relay] to Eur, N.America 1500-1655) 44334 at 1642 in Oxted; Israel R, Jerusalem **11.605** (Eng to Eur. N.America

1645-1700) 55455 at 1650 in Liverpool.

From time to time R.New Zealand's broadcasts to Pacific areas on **11.675** (Eng 1650-1950?) have been received in the UK. They were rated 22222 at 1800 in Truro. Also heard during the evening were the Voice of Vietnam, Hanoi **12.020** (Eng to Eur 1800-1830), logged as SIO 333 at 1811 in Woodhall Spa; WWCN Nashville, USA **12.160** (Eng to N.America, Eur 1400-2200) 44423 at 1830 in Colyton; R.Nederlands via Flevo **11.655** (Eng to Africa 1830-2025) 35333 at 1837 in Bridgwater; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) 45334 at 1840 in E.Bristol; AIR via Bangalore **11.620** (Eng, Hin to Eur 1745-2230) 45433 at 1930 in Northampton; VOA via Morocco? **11.975** (Eng to Africa 1800-2230) SIO 444 at 2227 by Francis Hearne in N.Bristol; VOA via ? **11.695** (Eng to Caribbean 0000-0100) 24333 at 0050 in Barton-upon-Humber.

Better reception here of R.New Zealand's broadcasts has been evident in the **9MHz (31m)** band. Their 100kW transmission on

MEDIUM WAVE CHART

Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power (kW)	Listener
837	Ben-Abbas	Algeria	5	N*	1233	Virgin via ?	UK	?	C,D,M,N*,Q,Q
837	Nancy	France	200	I*,N*	1242	Marseille	France	150	C*,I*,P*
837	COPE via ?	Spain	?	C*,D*,I*,J*,P*	1242	Virgin via ?	UK	?	C,N*,Q
846	Rome	Italy	1200	C*,O*,I*,J*,N*,P*	1251	Marcali	Hungary	500	I*
855	Berlin	Germany	100	C*,I*	1251	Huisberg	Netherlands	10	I*,J*
855	RNE1 via ?	Spain	?	C*,D*,I*,J*,N*,P*	1260	Rhodes(VOA)	Greece	500	K
864	Santah	Egypt	500	C*,I*,J*	1260	SER via ?	Spain	?	C*,I*,J*
864	Paris	France	300	O,E,I*,J,O,N,P*,Q	1260	Guildford (V)	UK	0.5	D
864	Socuellamos(RNE1)	Spain	2	J*	1269	Neumunster(OLF)	Germany	600	C,D,J*,J*,M,N*,P,Q*
873	Frankfurt(AFN)	Germany	150	C*,H,I*,J*,P*	1278	Dublin(Cork(RTE2))	Eire	10	C*,D*,J*,M,N*,Q,Q*
873	Zaragoza(SER)	Spain	20	C*,I*,J*	1287	RFE via ?	Czech Rep.	400	I*,J*,Q*
873	Enniskillen(R.U.I)	UK	1	I*,M	1287	Lerida(SER)	Spain	10	J*,N*
882	COPE via ?	Spain	?	C*,I*,N*	1296	Valencia(COPE)	Spain	10	C*,D,N*,P*
882	Washford(BBCWales)	UK	100	C,D,H,J,N,Q,P*,Q	1296	Orfordness(BBC)	UK	500	C*,H
891	Huisberg	Netherlands	20	I*,J*	1305	RNE5 via ?	Spain	?	C*,I*,J*
891	Brno(CRo2)	Czech Rep	25	J*	1314	Kvitsoy	Norway	1200	C,D,E*,J*,M,N*,O,P,Q*
900	Milan	Italy	600	C*,I*,J*	1323	W'brunn (V.Russia)	Germany	1000/150	I*,I*,N*,P*,Q*
900	COPE via ?	Spain	?	J*	1332	Rome	Italy	300	I*,J*,Q*
909	B'mans Pk(BBC5)	UK	140	D,J,C,M,N,Q	1341	Lisnagarvey(BBC)	N.Ireland	100	C,D,E*,H,J,M,N*,O,P*
909	M'side Edge(BBC5)	UK	200	C	1341	Tarrasa(SER)	Spain	2	J*
918	Oornzee	Slovenia	600/100	C*,I*,J*,N*	1350	Nancy/Nice	France	100	J*
918	Madrid(R.Int)	Spain	20	C*,I*,J*,N*	1350	Cesvaine/Kuldiga	Latvia	50	D*,J*,N*
927	Wolvertem	Belgium	300	A*,C*,J,M,N,O,P*,Q	1359	Madrid(RNE-FS)	Spain	600	C*,I*,J*,N*,P*,Q*
927	Nitra	Slovakia	50	I*	1368	Foxdale(Manx R)	I.O.M.	20	C,F*,I*,J*,Q
936	Bremen	Germany	100	A*,C*,I*,J*,Q*	1377	Lille	France	300	E*,J*,N*,O,P,Q
936	RNE5 via ?	Spain	?	N*	1386	Bolshakovo	Russia	2500	C*,I*,J*,N*,P*,Q*
945	H.O	France	300	I*,N*	1395	Filake	Albania	1000	F*,I*,N*
954	Brno (CRo2)	Czech Rep	200	I*,J*,N*	1395	Lopic	Netherlands	120/40	D,J,J,M,N*,O,P*,Q*
954	Madrid(CI)	Spain	20	C*,I*,J*,N*	1404	Brest	France	20	C*,I*,J*,N*,O*,P*,Q*
963	Sofia	Bulgaria	150	I*,J*	1413	RNE5 via ?	Spain	?	C*,I*
963	Pori	Finland	600	C*,I*,J	1413	Pristera	Yugoslavia	1000	C*,J*,N*
963	Tir Chonail	Eire	10	M	1422	Alger	Algeria	50/25	J*
972	Hamburg(NDR)	Germany	300	A*,C*,I*,J*,Q*	1422	Heusweiler(DFL)	Germany	1200/600	C,D,I*,J*,M,N*,O*,P*,Q*
972	RNE1 via ?	Spain	?	C*,N*	1422	Samara	Russia	300	N*
981	Alger	Algeria	600/300	F*,I*,J*,N	1440	Mamach(RTL)	Luxembourg	1200	C,D,I*,J,M,N*,O*,P*,Q*
981	Megara	Greece	200	N*	1440	Damman	Saudi Arabia	1600	I*,J*,Q*
990	Berlin	Germany	300	C*,I*,J*,N*	1449	RAI via ?	Italy	?	C*
990	R.Bilbao(SER)	Spain	10	C*,I*,P*	1449	Redmoss(BBC)	UK	2	C,D,I*,J*
990	Redmoss(BBC)	UK	1	I,M	1458	Filake	Albania	500	N*
999	Schwern (RIAS)	Germany	20	C*,I*	1467	Monte Carlo(TWR)	Monaco	1000/400	C*,I*,J*,N*,P*,Q*
999	Madrid(COPE)	Spain	50	C*,I*,N*,P*	1476	Wien-Bisamberg	Austria	600	C*,I*,N*,O*,P*,Q*
1008	SER via ?	Canaries/Spain	?	C*	1485	SER via ?	Spain	?	N*,P*
1008	Flevo(Hilv-5)	Holland	400	C,D,I,J,N,O,P*,Q*	1494	Clermont-Ferrand	France	20	F*,I*,J,N*,O*,P*
1017	Rheinsender(SWF)	Germany	600	C*,D,E*,F*,I*,J*,N*,P*	1494	St.Petersburg	Russia	1000	F*,I*,J*,N*,O*,Q*
1017	RNE5 via ?	Spain	?	F*,J*	1503	RNE5 via ?	Spain	?	N*
1026	SER via ?	Spain	?	C*	1512	Wolvertem	Belgium	300	C,F*,J*,I*,N*,O*,P*,Q*
1035	Lisbon(Prog3)	Portugal	120	I*,J*,N	1512	Kocice(Citazice)	Slovakia	600	F*,I*,J*,N*,O*,P*,Q*
1044	Oresden(MDR)	Germany	20	I*,J*,N	1521	Duba	Saudi Arabia	2000	J*,N*
1044	Sebaa-Aiouin	Morocco	300	J*	1530	Vatican R	Italy	150/450	C*,F*,I*,J*,N*,O*,P*,Q*
1044	SER via ?	Spain	?	C*,I*,N*	1530	Vinnitsya	Ukraine	30	N*
1053	Zaragoza(COPE)	Spain	10	C*,I*	1539	Mainflingen(ERF)	Germany	350/700	C*,D*,I*,J,M,N*,O*,P*,Q*
1053	Talk R.UK via ?	UK	?	C*,I*,J*,N*,O,Q	1557	Nice	France	300	O*,P
1062	Kalundborg	Denmark	250	C*,I*,J*,M,N,Q*	1557	Kausas (R.Vilnius)	Lithuania	75	O*,P
1062	R.Uno via ?	Italy	?	I*,J*	1566	Samen	Switzerland	300	O*,I*
1071	R.France via ?	France	?	I*	1566	Sfax	Tunisia	1200	N*
1071	Brest	France	20	E*,J*	1575	Genova	Italy	50	I*,J*,N*
1071	Bilbao(EI)	Spain	5	C*,I*,N*,P*	1575	SER via ?	Spain	5	J*,N*,O*,Q*
1071	Talk Radio UK via ?	UK	?	C,O,N,O,Q	1584	Wien via ?	Spain	2	I*,J*,Q*
1080	SER via ?	Spain	?	C*,I*,J*,N*	1593	Holzkirchen(VOA)	Germany	150	I*,J*,N*,O*,Q*
1089	Talk Radio UK via ?	UK	?	C,O,J,M,N,O,Q	1602	SER via ?	Spain	?	C*,O*,Q*
1098	Nitra(Jarok)	Slovakia	1500	C,O,F*,I*,N	1602	Vitoria(EI)	Spain	10	C*,I*,J*,N*,O*
1098	RNE5 via ?	Spain	?	C*	1611	Vatican R	Italy	15	H*,N*,O*,P*,Q*
1107	AFN via ?	Germany	10	C*,I*					
1107	RNE5 via ?	Spain	?	C*					
1107	Talk R.UK via ?	UK	?	C,O,N,O,Q					
1116	Pontevedra(SER)	Spain	5	C*					
1125	La Louviere	Belgium	20	I*,J*,Q*					
1125	RNE5 via ?	Spain	?	C*,J*,N					
1125	Llandrindod Wells	UK	1	H					
1134	COPE via ?	Spain	?	C*,O*,Q*					
1134	Zadar(Croatian R)	Yugoslavia	600/1200	C*,I*,J*,N*,O*,Q*					
1143	AFN via ?	Germany	?	I*,J*,I*					
1143	COPE via ?	Spain	?	C*,I*,J*					
1170	Sasnovy	Belarus	1000	N*					
1179	SER via ?	Spain	?	N*					
1179	Solweborg	Sweden	600	C,D,E*,I*,J*,M,O*,P*,Q*					
1188	Kuurne	Belgium	5	O*,I*,J*,N					
1188	Reichenbach(MOR)	Germany	5	C*,I*					
1188	Szolnok	Hungary	135	N*,Q*					
1197	Munich(VOA)	Germany	300	C*,I*					
1197	Virgin via ?	UK	?	C,O,J,M,N*,O,Q					
1215	Virgin via ?	UK	?	C,O,J,M,N*,O,Q					
1224	Lelystad	Holland	50	C*,I*,N*					
1224	COPE via ?	Spain	?	C*					
1233	Liege	Belgium	5	C*,I*,J*					
1233	RFE via ?	Czech Rep.	40	P*					

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-

- (A) Adam Birchenall, Coalville.
- (B) Mike Casey, Manchester.
- (C) Martin Gale, Stockport.
- (D) John Eaton, Woking.
- (E) Simon Hockenhill, E.Bristol
- (F) Sheila Hughes, Morden.
- (G) Rhoderick Illman, Oxted.
- (H) Brian Keyte, Gt.Bootham.
- (I) Eddie McKeown, Newry.
- (J) George Millmore, Wootton IoW.
- (K) John Parry, Larnaca, Cyprus.
- (L) Clare Pinder, while in Appleby.
- (M) Tom Smyth, Co.Fermanagh.
- (N) Eirie Strong, Ramsey, Cambs.
- (O) Andy Thompson, Lichfield
- (P) Phil Townsend, E.London.
- (Q) Fred Wilmschurst, Northampton.

TROPICAL BANDS CHART

Freq (MHz)	Station	Country	UTC	DXer	Freq (MHz)	Station	Country	UTC	DXer
4.815	R diff TV Burkina	Burkina Faso	2025	B K Q	4.980	Ecos del Torbes	Venezuela	2248	A B C D F J K P Q
4.820	R Botswana, Gaborone	Botswana	1926	C F G J P S	4.985	R Brazil Central	Brazil	0025	B C H K Q
4.820	AIR Calcutta	India	1615	K	5.005	R Nacional, Bata	Eq Guinea	0536	J
4.820	Xizang, Lhasa	Tibet	1445	P Q	5.005	R Nepal, Kathmandu	Nepal	1736	K Q
4.822	R Mauritanie	Mauritania	0005	B	5.009	R TV Malagasy	Madagascar	1808	C K
4.828	ZBC R 4	Zimbabwe	1736	F K	5.010	R Garoua	Cameroon	2225	B
4.830	R Botswana, Gaborone	Botswana	1807	P	5.010	Guangxi 2, Nanning	China	2202	K
4.830	R Tachira	Venezuela	0034	A B J Q	5.010	AIR Thiru puram	India	0058	B J
4.832	R Recife	Costa Rica	0823	A F Q	5.020	Xizang-Tb, Lhasa	China	2332	P
4.835	R Tashkent, Copan	Guatemala	0015	B	5.020	La Vu Sahel, Niamey	Niger	2154	B C J K Q
4.835	RTV B, Bamako	Mali	2024	A B C F G J K D P Q	5.025	ABC Katherine	Australia	2141	K
4.840	AIR Bangalore	India	0034	A B F J K Q	5.025	R Parakou	Benin	2008	B C J K
4.845	ORTV, Nouakchott	Mauritania	1925	C, J, K	5.025	R Fidelida, Habana	Cuba	0035	A B J Q
4.850	R Yaounde	Cameroon	0015	B, C, F, J	5.025	R Uganda, Kampala	Uganda	2058	J K
4.850	AIR Kuchinga	India	0050	A B J L P Q, S	5.030	RTM Kuching	Sarawak	2123	K Q
4.860	AIR Delhi	India	0036	A, J, K, P Q	5.035	R Educacao Rural	Brazil	0232	A, B
4.865	PBS Lanzhou	China	2217	A B L P Q U	5.035	R Bangui	C Africa	0615	B, J, Q
4.870	R Cote d'Ivoire	Benin	2007	B, C, F, J, K, Q, S	5.040	Voz del Upano, Macas	Ecuador	0035	B
4.870	Voz del Upano	Ecuador	0015	B	5.047	R Togo, Lome	Togo	2134	B F J K Q
4.875	R Primavera, Boa Vista	Brazil	0900	Q	5.050	Haxia 1, V of Strait	China	2152	K
4.879	R Bangladesh	Bangladesh	1540	Q	5.050	AIR Aizawl	India	0040	B
4.880	R Dili, Dili Acreana	Brazil	0030	B	5.050	R Tanzania	Tanzania	1705	C J K P Q S
4.885	R Clube do Para	Brazil	2114	A B K Q	5.055	RFO Cayenne(Matoury)	French Guiana	2138	B K Q
4.885	KBC East Sce Nairobi	Kenya	1809	K	5.060	PBS Xinjiang, Urumqi	China	1455	P Q
4.880	R France Int	via Gabon	0358	A, F, J	5.085	R Pakistan, Karachi	Pakistan	2038	S
4.890	R Port Moresby	New Guinea	2000	D K Q	5.100	R Liberia, Totota	Liberia	2116	A K M
4.895	Voz del Rio Arauca	Colombia	0020	B	5.290	R Moundou	Chad	2034	S
4.895	Pakistan BC	Pakistan	1944	J K	5.320	CNR 1	China	2028	S
4.900	Haxia 2 V of Strait	China	2258	P					
4.900	SIBC Colombo	Sri Lanka	0020	B					
4.905	R Nat N'djamena	Chad	2059	S					
4.910	Tennant Creek	Australia	2148	K					
4.910	R Zambia, Lusalla	Zambia	2154	P					
4.915	GBC 1, Accra	Ghana	2019	A, B, E, G, J, K, Q					
4.915	KBC Cent Sce Nairobi	Kenya	2057	C, S					
4.915	R Cora de Peru, Lima	Peru	0907	Q					
4.920	R Quito, Quito	Ecuador	0505	A, F, Q					
4.920	AIR Chennai	India	0025	B, Q					
4.925	R S Miguel, Riberalta	Bolivia	2055	S					
4.927	RRI Jambi	Indonesia	2020	D, K					
4.930	R Internacional	Honduras	0239	A					
4.930	AIR Shimla	India	1405	L					
4.935	KBC Gen Sce Nairobi	Kenya	1956	J, K, P					
4.940	AIR Guwahati	India	1656	J, K, L, Q					
4.945	R Illimani, La Paz	Bolivia	0025	B					
4.950	AIR Srinagar	India	1615	B, G, J, K, Q, S					
4.950	VOA via Sao Tome	Sao Tome	2028	A, J, K, M, N, P, Q, U					
4.955	R Nac de Colombia	Colombia	0427	A, B					
4.960	VOA via Sao Tome	Sao Tome	0300	J					
4.965	R Alvorada	Brazil	0035	B					
4.965	Christian Voice	Zambia	1940	A, C, J, K, Q					
4.975	R Uganda, Kampala	Uganda	1956	A, C, J, K					
4.980	PBS Xinjiang Urumqi	China	2322	P Q					

9.700 (Eng to Pacific areas 0707-1015) was rated SIO 433 at 0910 in Macclesfield. Good reception was noted before noon from HCJB in Quito, Ecuador on **9.640** (Eng to S.Pacific 0700-1100), rated 54222 at 0809 in Woking; KTWV Guam **9.865** (Eng to E East 1000-1100) 35543 at 1005 in Wallsend; Swiss R.Int via Lenk? **9.535** (Eng, Ger, Fr, It to SW.Eur 1100-1330) 54455 at 1100 by **Martin Dale** in Stockport; R.Nederlands via Wertachtal **9.855** (Eng to Eur 1130-1325) SIO 444 at 1130 in Co.Fermanagh.

During the afternoon Kazak R.Int, Kazakistan **9.620** (Eng to Eur, Asia 1200-1220 Fri/Sat) was 44333 at 1200 in Morden; RFI via Allouis? **9.805** (Eng to Eur, M.East, Africa 1200-1300) 54444 at 1206 in Plymouth; R.Tashkent, Uzbekistan **9.715** (Eng to S.Asia 1330-1400) 44444 at 1338 in Kirkby Stephen; VOA via ? **9.645** (Eng to Asia, Pacific 1100-1800) 34453 at 1350 in Larnaca, Cyprus; BBC via Skelton, UK **9.410** (Eng to Eur, N/C.Africa 0400-2200) 45544 at 1355 in E.Bristol; RCI via Skelton, UK **9.555** (Eng, Fr to Eur 1430-1600) 32433 at 1505 in Rugby.

In the evening the BBC via Kranji, Singapore **9.740** (Eng to Asia, Australia 1800-2200) was 34333 at 1816 in Woodhall Spa; VOA via Morocco? **9.760** (Eng to Eur, M.East, N.Africa 1700-2200) 33333 at 1820 in Barton-upon-Humber; R.Thailand, Udorn Thani **9.535** (Eng, Ger to Eur 1900-2100) 22222 at 1930 in Truro; TWR via Meyerton, S.Africa **9.510** (Yoruba? to W.Africa 1930-2000) 35433 at 1950 in Storrington; VOIRI Tehran, Iran **9.022** (Eng to Eur 1930-2030) 43333 at 2010 in Stalbridge; China R.Int, Beijing **9.920** (Eng to Eur 2000-2157) 33333 at 2015 in Liverpool.

Later, R.Australia via Shepparton **9.500** (Eng to Asia, Pacific 1600?-2130) was 33233 at 2100 in Appleby; Voice of Armenia, Yerevan **9.965** (Eng to Eur, USA 2115-2145) 43344 at 2115 in Dudley; AIR via Bangalore **9.950** (Eng to Eur 2045-2230) 25343 at 2135 in Manchester; BSKSA via Riyadh **9.870** (Ar to N.Africa 1800-2300) 44343 at 2203 in Oxted; RCI via Sackville **9.755** (Eng [CBC progs] to USA, Caribbean 2300-0400) SIO 333 at 2324 in N.Bristol.

Some of the broadcasts to Europe in the **7MHz (41m)** band originate from R.Japan via Woofferton, UK **7.230** (Jap, Eng 0500-0700), rated 34233 at 0608 in Newry; Voice of Greece, Athens **7.450** (Gr, Eng 0600-0800, also to Australia) 54444 at 0618 in Plymouth; Christian Science BC via WSHB **7.535** (Various 0400-1000) 44444 at 0915 in Stalbridge; R.Bulgaria, Sofia **7.535** (Fr to

Eur 1800-1900) SIO 555 at 1815 in Macclesfield; R.Slovakia Int **7.345** (Eng 1730-1757) 55444 at 1746 in Freshwater Bay, IoW; AIR via Bangalore **7.410** (Hi, Eng 1745-2230) 45444 at 1800 in Woking; R.Slovakia Int **7.345** (Eng 1930-1957) 45555 at 1936 in Manchester; VOIRI Tehran **7.260** (Eng 1930-2028) 54544 at 1955 in St.Mary's, IoS; R.Bulgaria, Sofia **7.545** (Bul 1900-2200) 34333 at 2000 in Colyton; Polish R, Warsaw **7.285** (Eng 2030-2128) 54444 at 2030 in Appleby; Voice of the Mediterranean, Malta via Russia? **7.440** (Eng 2000?-2100?) 44343 at 2046 in Bridgwater; Vatican R, Italy **7.250** (Eng 2050-2110) 53333 at 2050 in Kirkby Stephen; WYFR via Okeechobee, USA **7.355** (Eng 2000-2200, also to Africa) 44444 at 2155 in Northampton; RCI via Skelton, UK **7.235** (Fr, Eng 2000-2230) SIO 433 at 2200 in Co.Fermanagh; R.Tirana, Albania **7.160** (Eng 2230-2300) 44444 at 2230 in Morden; Voice of Turkey **7.280** (Eng 2300-0000) SIO 333 at 2329 in N.Bristol; WHRI via Maine, USA **7.395** (Eng 0000-0300) 44444 at 0229 in St.Austell.

Noted to other areas were WJCR Upton, USA **7.490** (Eng to E.USA 24hrs) 31121 at 0650 in Liverpool; KNLS Alaska **7.365** (Eng to Asia 0800-0900) 34222 at 0810 in Scalloway; KTBN via Salt Lake City **7.510** (Eng to N.America 0000-1600) 24322 at 1155 in Galashiels; China R, Int **7.405** (Eng to N.America 1400-1557) 24222 at 1456 in Woodhall Spa; R.Prague, Czech Rep. **7.345** (Eng to N.America 2230-2257) 44444 at 2245 in Rugby; BBC via Kranji, Singapore **7.110** (Eng to Asia 2200-0045) 32332 at 2253 in Oxted; WRNO Marrero, USA **7.355** (Eng to N.America 2300-0300) 23322 at 0055 in Kilkeel.

Some of the many broadcasts to Europe in the **6MHz (49m)** band were detailed last month. Whilst beaming to other areas R.Pyongyang, N.Korea **6.520** (Eng to M.East, Africa 1900-2000) was 34423 at 1940 in Colyton; BBC via Antigua, W.Indies **5.975** (Eng to C.N.America 2100-0800) 42343 at 2243 in Oxted; WEWN Birmingham, USA **5.825** (Eng to N.America 2200-0500) 44544 at 2330 in Bridgwater; RCI via Sackville **5.960** (Eng, Fr to USA, Caribbean 2230-0100) 44444 at 2334 in St.Austell; R.Ext.España **6.055** (Eng to N.America 0000-0200) SIO 444 at 0027 in N.Bristol; KAIJ Denton, USA **5.810** (Eng to W.USA 0000-1400) 34443 at 0050 in Kilkeel; R.Habana, Cuba **6.000** (Eng to N.America 0100-0500) 44444 at 0430 in Manchester.



Old Lessons, often repeated for the beginner

This month John Wilson takes a close and analytical look at antenna performance. Both claimed and measured. John's experience and professional test equipment are put to use to reveal a high performance bargain.

In my experience, almost everyone in the hobby has some interest in antennas, because unless you have some kind of antenna connected to a receiver you won't hear very much. More claims are made about antenna performance than about women's skin preparations, and it has to be said that the claims for both types of product are often shrouded in fantasy and wishful thinking. There is at least one antenna manufacturer out there among you who admitted to me that one of his best selling products was originally made as a cut down advertising display and had no merit whatsoever, except that the general public insisted on buying it - so he made more antennas and more money whilst the fad continued. This reminded me of a time in the 1950s when every market place seemed to have a chap selling 'magic aerials' for broadcast receivers; antennas which turned out to be one microfarad waxed paper capacitors mounted in a cardboard tube with a wire coming out of one end which you connected to the aerial terminal on your favourite Cossor or Bush table radio. Yes, they seemed to work, but so would a piece of wet string under the signal levels being radiated by the BBC Medium Wave transmissions.

Not So Long Ago

Another more recent scandal erupted in America, when a company started advertising in *QST* Magazine an antenna which was a short wire dipole with a magic box of tricks at the centre feed point, purporting to be a fully automatic 1.5 to 30MHz antenna tuner. Truly magic was the fact that the tuner didn't require any power supply - it just hung up there in the middle of the antenna. How the people loved it, until the reports started coming in of smoke blackened PA sections in solid state transceivers. Eventually, the ARRL subjected one of these 'tuners' to X-ray examination and discovered that there did indeed appear to be a printed circuit board inside the impenetrably resin potted centre box, but being by now somewhat suspicious, they went further and broke into the potting compound to find that the printed circuit was just a scrap IBM computer board which had no connection whatsoever to the antenna elements. It wasn't only the burnt out transceivers which smelled in this little incident, and it just goes to show the wisdom of the old adage "Believe nothing anyone tells you, and only half of what you see with your own eyes."

The simple truth to remember is that frequency and wavelength are related by the laws of physics and there's no way that a half wave on 30MHz is going to be anything other than ten metres, and the guy who tells you that a whip antenna some half a metre long will receive from 100kHz to 500MHz with undiminished performance is talking undiluted horse feathers, and no amount of little plastic coated

loading coils scattered along its length will make a 500mm whip tune to a wavelength of 3000m (100kHz) when its basic quarter wave resonance is 150MHz. It's true that a whip can be tuned to resonance at a different frequency by use of a loading coil, but the new resonance is very sharp indeed, and bandwidth at resonance is usually less than 1% of the resonant frequency - quite the opposite of the wide band performance often quoted.

On With The Show

Just to head off the hordes of correspondents sharpening their quills and getting ready to write to the Editor, let me say that none of my comments so far apply to active antennas, some of which provide remarkable performance with modest dimensions - see for example my earlier review of the RF Systems AA-150, and the continued popularity of the sadly discontinued Datong active antennas. However, and to get to the point, I'm going to tell you about my experiences with a log periodic wide band antenna called the LP-1300, which has been advertised for some time by Nevada at an attractive price, for a device which offers more than 8dB of gain over a frequency range of 100 to 1300MHz. Is £99 an attractive price? It most certainly compares favourably with the log periodic antennas which I use every day at the EMC Centre, which will set you back at least ten times this amount. You may find it hard to believe that my main measuring antenna cost almost **twenty times** this price!

It was this startling comparison in prices which prompted me to ask Nevada if they would loan me an LP-1300 for review, so that I could let readers know what they will get when they consider their next antenna purchase. First some refresher notes.

The log periodic antenna has been around for a long time, but most references to it relate to its use as an h.f. device despite the fact that its wide band characteristics make it ideal for v.h.f. and u.h.f. work. The antenna consists of a series of dipole elements which smoothly increase in length and spacing along the length of the array. Elements are fed alternately in anti phase, normally achieved at h.f. by crossing over the feed line between each dipole element, but at v.h.f. the feed line is often made of solid tubing with adjacent dipoles connected alternately to each feed line, thus giving the feed crossover. As the frequency of operation increases, there is a steady transition along the array of those elements which are active, and in practice there is a group of elements operational at any frequency within the limits of the antenna design. It is this which gives the log periodic a gain over a dipole of around 8dB, but remember the caveat that when manufacturers quote antenna gain you must always check whether gain is

Continued on page 24...

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Comments from John Griffiths

I have to say that I'm not a fan of indoor antennas like this as indoor stick mounted antennas tended to look like a real amateur reception. However, I was surprised by the quality of construction of this piece of equipment and it appears to be up to the job it is designed to do. Without getting technical, the Apollo 2000 seems to be able to cover 0-1650MHz. I used it between 100-900MHz, upper end was surprised by what it was able to do. It received clear copy and there was good reproduction with very little background.

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Comments from John Griffiths

Putting the DC 2000 up gave me a tremendous boost in all aspects with the ancient AR 3000 coming along! Switch over - all received and I found that I could get out of normal - very good band - into all manner of areas that previously have been lost due to my location!

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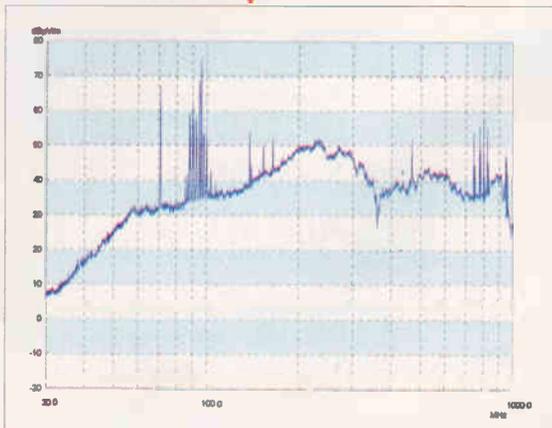
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In My Experience

...continued from page 20



Graph 1: The 'Pro' antenna's response with the noise generator.

given as dBi (gain referenced to an isotropic source) or dBd (gain referenced to a dipole). I always think that it is more realistic to use dBd in real life because you get a better idea of the improvement expected over a 'real' antenna rather than that of a theoretical isotropic source. However, since dBd is 2.14dB less than the same gain expressed as dBi, some

manufacturers will use dBi to make their antenna seem better...that's life. Just be aware of it.

Direct Comparison

I thought that the best way to test the LP-1300 was to compare it directly with a professional log periodic on my open area test site over a high quality ground plane, and where I know the performance of my measuring antennas very well indeed. Standard performance checks on this site

are carried out using a broad band noise source placed at a distance of 10m from the antenna, then running a frequency swept measurement from 30 to 1000MHz using a calibrated test receiver, in my case a Rohde & Schwarz E5-VS10. For anyone in the EMC business who might read this I should mention that I removed the antenna factor correction for the

professional antenna because I didn't have an antenna factor calibration for the LP-1300 and I couldn't afford the time at my test house daily rates to derive one. For the hobby user this simply means that the signals recorded are directly comparable between the two antennas used in the tests.

The antenna elevation for the noise generator check was set at 2m above the ground plane and the results are shown in **Graph 1** for the professional antenna and in **Graph 2** for the LP-1300. You can see that from 100MHz upwards the results are virtually identical, and below 100MHz there is a marked drop in signal from the

LP-1300. This is simply because the LP-1300 is specified from 100MHz upwards whilst the professional antenna is designed to continue down to 30MHz. The spikes poking above the noise from the generator are obvious to any keen listener as the signals from f.m. broadcasts just below 100MHz, pager systems between 150 and 170MHz and u.h.f. TV between 750 and 850MHz. The single signal at 71MHz in **Graph 1** is our local fire brigade out and about. It doesn't appear on **Graph 2** because as you all know these transmissions are normally of short duration.

Pretty good so far, but what about a more realistic installation? I took away the noise source and raised the antenna position to 4m above the ground plane to compare actual signals directly. The signal strength plot **Graph 3** is the professional antenna and **Graph 4** the LP-1300. Once again you can see the lower gain of the LP-1300 below 100MHz but at all other frequencies the received signals are virtually identical. It is very clear that the LP-1300 has been very well designed, and is performing as a top class log periodic should. I did take a look above 1000MHz using a spectrum analyser instead of the test receiver and there is some evidence that in this frequency range the LP-1300 out performs the professional antenna, but of course the LP-1300 is actually specified to run to 1300MHz. On a performance comparison therefore the LP-1300 can be said to be the equal of the pro., but that isn't the whole picture because I have to compare the mechanical side of things.

The Hardware

The LP-1300 elements are made of alloy rod for the lower frequencies, with (I think) stainless steel for the high frequency elements. The rods are threaded to screw into the support booms which are also the driving transmission line, and lock nuts are provided on each element to ensure that they don't move once fitted. A nice touch is that the higher frequency elements are cranked inwards so as to be in perfect alignment with each other, and this perhaps explains the better performance up at 1GHz and above. It's a bit hard to explain, but use of the staggered elements in a v.h.f. log periodic in order to simplify the feed line cross over results in the elements being slightly out of line with each other. The designer of the LP-1300 must have thought about this as a compromise and came up with the cranked element approach as a solution. Well done. There are actually 16 elements in all, in a boom length of 1.5m, so its not outrageously large and could easily be mistaken for an f.m. broadcast antenna by your inquisitive neighbours.

The professional antenna looks like it has its elements welded into the feed line, and is also heavily painted in a resin based coating to protect it from the weather, whereas the LP-1300 comes naked as nature intended. This can soon be remedied by a coat of 'ScotchKote' which I have always used and recommended to antenna builders as an excellent weatherproofing for aluminium elements. ScotchKote is a 3M product and can often be obtained from good builder's merchants. The professional antenna also has a pair of low

frequency elements mounted on the rear end which is the reason for the performance extension below 100MHz, and the feed line terminates in a fixed weatherproof N-Type socket, whereas the LP-1300 uses a flying connector. Never mind, here's another trick which we used on all our v.h.f. antennas when I was with the Marconi



Company in West Africa. You obtain a roll of 'Sylglas' tape from the same friendly builder's merchant and wrap it around all the cable terminations after you have made the connection. I must tell you that there are two types of Sylglas, one having an aluminium foil backing (which you definitely don't want) and the other (which you do want) appearing and feeling just like a bandage coated with brown dog droppings. If you swallow your natural revulsion and wrap this stuff around your coax connectors, you will be amazed to find that years later the connectors are still shiny and easy to unfasten. If it works at the top of the 121m mast at Aboh repeater station outside Enugu in Nigeria in temperatures of 40°C and humidity approaching 100%, it will work for you, believe me.

Pros & Cons?

So, in my opinion if you buy an LP-1300 you have made a very good choice, for both electrical performance and mechanical construction. Mounting hardware is supplied with the antenna and this consists of the usual type of cross bracket and U-bolts with which most of us are familiar. I did all my tests in vertical polarisation since most v.h.f. and u.h.f. signals of interest to the hobby listener will be in that polarisation. However, if you intend to mount the antenna vertically polarised then you should use a length of plastic or fibreglass tubing for the section which passes through the antenna otherwise you will seriously distort the radiation pattern and ruin its performance. I believe that Nevada keep suitable tubing in stock at reasonable prices. Now, has anyone spotted the possible drawback?

Which is? The log periodic is a directional antenna with a typical front to back ratio of 15 to 20dB, depending on the original design parameters chosen. This clearly means that the LP-1300 will have to be rotated if maximum signals are to be obtained, but you don't need a great deal of motor torque to rotate such a light antenna and there are a number of modestly priced rotators on the market. To my mind, the great advantage in having a directional antenna is that you can use the attenuation off the back of the array to get rid of interfering signals which you don't want, rather like you might use a ferrite rod antenna at lower frequencies to minimise interference pickup. The LP-1300 coupled to a suitable rotator would make a top notch receiving set-up for the serious listener, the main advantage being the quoted 8.5dBd gain at any frequency from 100 to 1300MHz. What other antenna can give you that?

A Matter Of Scale

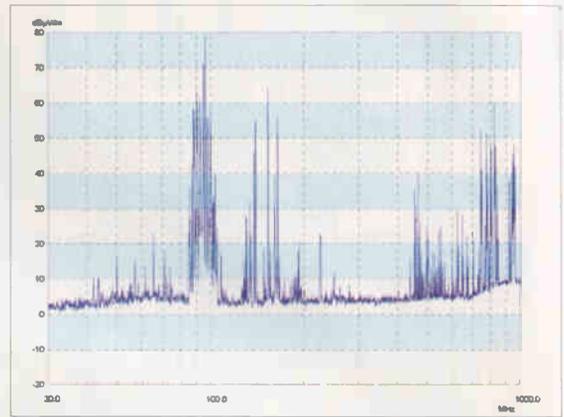
Fine; let me address the short wave listeners who are asking "What about the h.f. frequencies?" Let's remember that the longest element on a log periodic will be a half wave at the lowest frequency of operation. That makes a log periodic antenna operating down to the 80m band a staggering 40m wide...not exactly the sort of thing you can rotate with your £49.95 TV rotator is it? Nevertheless, large h.f. log periodics do exist, with the finest examples I can remember being by the side of the A1 at Alconbury, where the US Air Force rotate horizontal arrays which are simply **immense**. The antenna catalogue of my favourite manufacturer (how did you guess it's Rohde & Schwarz?) contains mouth watering details of rotatable h.f. arrays but I don't want to even ask the price. Those of you unfortunate enough to have to work in central London should take an upward glance at the roofs of major Embassies of foreign governments where you will find the ends of log periodics peeking shyly over the skyline - don't ask about planning permission; the rules don't apply, just as parking tickets are generally ignored by the same people. Just you try to erect

an antenna covering 7MHz upwards, with the longest element some 20m across - see what your District Council planning officer has to say about it.

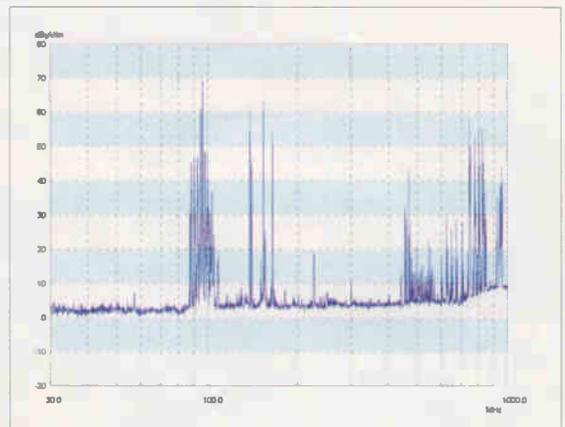
Mind you, all is not lost if you have a tall house because for long distance propagation it's often vertical polarisation which rules the day, and the big advantage of a vertical log periodic is that the longest element can be the one nearest the single support needed, with the rest of the elements tapering down towards the ground. It also helps that the feed point is at the sharp end, which is therefore close to the deck - very convenient. I happened across just such an antenna when driving down a road close to the North Devon coastal path just south of Hartland. My wife thought I had gone completely mad when I suggested that we pull over and walk the dog to the cliff edge. What she didn't realise was that I had seen a tall lattice mast alongside the public footpath, and I wanted to take a look at it. I was mightily impressed when I got closer and realised that here was a classic vertical log periodic, the longest element of which I 'guesstimated' to be cut for about 4MHz. The alignment of the antenna was to the north west so it pointed on a great circle path to North America. The feeder went into an unmanned insulated cabin and I haven't the faintest idea what it was for but I wish I could have hooked up an AR7030 to the bottom of the feeder and had a listen. I won't tell you the grid reference in case I get a knock on the door and vanish without trace for having violated the Official Secrets Act by which I am still bound, as are many of my contemporaries who did hilarious military service in the dying days of National Service - but that's another story. Does anyone else out there remember the STR-18, the Beverley and RAF Abingdon? If you do, why aren't you a member of the Beverley Association?

More On LPAs

Finally, for those who want to read further about the log periodic, may I recommend the ARRL *Antenna Handbook*, or taking a browse via the Internet. Just use one of the many Search Engines, specify "log periodic" and see what comes up, including a design spread sheet for free. Look out for a *design tool on the forthcoming Cover mounted CD - Ed.* Mind you, I tried this and it told me that the antenna I needed should have 99 elements on a 20m long boom and I don't think I can quite get that past the planners. Happy listening. **SWM**



Graph 3: Off-air response 4m up a pole for the 'Pro' antenna.



Graph 4: And same again with the LP-1300. Note the lower but usable gain below 100MHz.

The LP-1300 in the sky.



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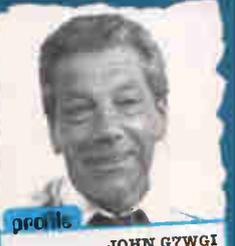


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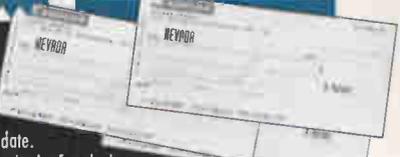
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Thorne Array Antenna - F

More antennas from SWM specialist Joe Carr K4IPV. This month Joe adapts an h.f. antenna for scanner band use.

Antennas for v.h.f./u.h.f. are special cases for at least two reasons. One is that they are small enough to make construction relatively easy compared with high frequency (h.f.) short wave antennas of similar design. For example, half wavelength at 3MHz is 49.7m, while at 300MHz it is only 0.497m; a 100:1 size difference. Second, the length to diameter ratios of v.h.f./u.h.f. antennas are small compared with h.f. antennas. As a result, velocity factors are different, so some of the design equations are a bit different. The latter factor also affects things like element tapering. At 3MHz one can usually ignore the effects of element tapering, but at 300MHz it becomes important.

Antenna users tend to be a bit parochial in their selections, mostly because of prior habits and customs. For example, an h.f. antenna user rarely thinks in terms of vertical collinear antennas, while v.h.f./u.h.f. users rarely think in terms of wire array antennas. The unfortunate thing is that wire arrays are capable of producing some very good performance on v.h.f./u.h.f. frequencies for very little effort and low cost. Let's look at an example: the v.h.f./u.h.f. version of the Thorne Array antenna.

Thorne Array

The Thorne array (Fig. 1) is a variant on the Bobtail Curtain array, but is upside down. The traditional Bobtail antenna consists of three quarter wavelength radiators spaced half wavelength apart, and connected at the top ends. The feedline is attached at the bottom of the centre leg through an L-C tuning network. In the Thorne Array, the configuration still has three quarter wavelength radiator elements ('A') spaced half wavelength apart ('B'). The two outer elements are connected together at their bottom ends.

The coaxial feeder is attached so that the centre conductor is connected to the centre element, and the shield is connected to the centre point of the conductor between the two outer elements.

The three-element Thorne array of Fig. 1 has an azimuth radiation pattern similar to a dipole, but with sidelobes (Fig. 2). It has a bi-directional 'figure-of-8' shape. This antenna provides 7 to 10dBd gain (i.e. gain over a dipole), and is vertically polarised. Because antennas obey a law of

reciprocity, they work the same on receive as they do on transmit. In other words, the direction of maximum radiation on transmit is the same as the direction of maximum sensitivity on receive.

The lengths and spacing of the elements are calculated from:

$$A_{(m)} = 72.72/F_{(MHz)} \quad (1)$$

and,

$$B_{(m)} = 145.44/F_{(MHz)} \quad (2)$$

Example

Calculate the element's length and spacing for a Thorne array antenna operating on the weather broadcast channel 162.55MHz.

1. $A_{(m)} = 72.72/F_{(MHz)}$
 $= 72.72/162.55$
 $= 0.447m$
2. $B_{(m)} = 145.44/F_{(MHz)}$
 $= 145.44/162.55$
 $= 0.895m$

One way to design antennas for various frequencies is to design it for one frequency, and then scale it to others. This procedure works so long as all of the dimensions are scaled by the same factor. At a frequency of 100MHz, for example, the dimensions of the Thorne array are $A = 0.727m$, and $B = 1.45m$. To find the dimension for any frequency (A' and B'), divide A and B by the desired frequency and multiply by 100. This method is

somewhat trivial for this case, but the technique also works on Yagis and other antennas where the calculations are a bit more involved.

Construction

There are any number of ways to build the v.h.f./u.h.f. Thorne array. Because this antenna is sized for the higher frequency bands, there are approaches to construction that are open that cannot be easily used in the lower bands. Two approaches are shown here: the hanging wire method and the brass tubing method.

Hanging Wire Construction

The hanging wire type of construction is shown in Fig. 3, with additional details given in Fig. 4. As seen in Fig. 3, the three radiator wires are suspended between two dowels. The wires should be between 1.5 and 2.0mm stranded copper or copper-clad steel wires. The dowels should be heavy enough to support the weight and not bend in the middle.

For most antennas (except at the very low end of the v.h.f. region) either 9 or 12mm wooden dowels can be used. The antenna can be suspended from

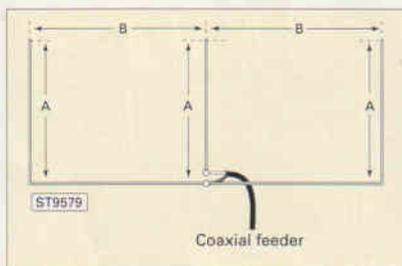
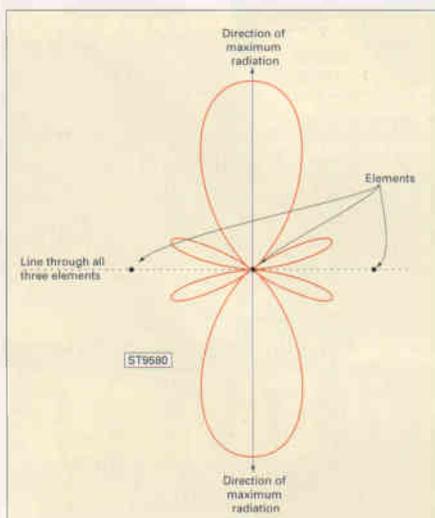


Fig. 1: Thorne Array antenna.

Fig. 2: Azimuth pattern for the antenna.



r VHF/UHF Scanner Bands

an overhead support with a rope tied to either end of the upper dowel. An alternative support is to use 12 or 25mm square timber rather than dowels. The square variety tends to be a little less strong than the dowels, but are also more easily available.

The detail for the hanging wire is shown in **Fig. 4**. The detail for supporting the wires at the upper dowel is shown in **Fig. 4a**. The trick is to tie off the radiator wires so that they are mechanically stable, but remain erect when the antenna is hung from above.

In the elegant approach shown in **Fig. 4a**, plastic or nylon screw eyes are attached to the dowel, and then the wire is looped through the eye terminal, wrapped over itself several times and then soldered.

Another approach is to dispense with the screw eye altogether. Drill holes in the upper dowels that are wide enough to pass the wire, but not much larger. Cut the wire about 75mm too long. Pass the wire through the dowel, and then back down to the radiator

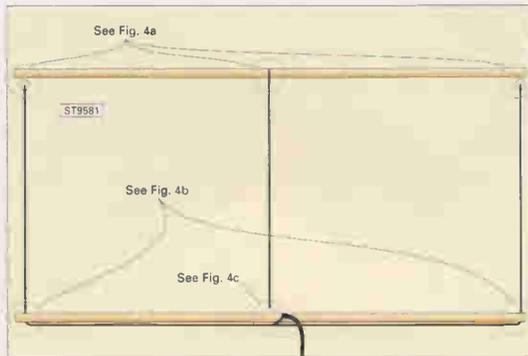


Fig. 3: Hanging wire form of construction.

only large enough to pass the wire through, is drilled in the dowel. A small brass washer is placed on the wire to secure it.

Start at one end of the dowel by passing enough wire to form a single radiator element through the dowel from bottom to top. Before tying the wire off at the top support (as in **Fig. 4a**), place the small brass washer over it. Next, run the remaining wire along the bottom of the dowel to the hole on the other end. Secure the wire to the dowel every few inches with either black electrical tape or nylon wire ties. Pass the free end of the wire through the hole at the other end, from bottom to top. Before tying off this second radiator element at the top (per **Fig. 4a**), insert the small washer over the wire.

Once the wires are secure and adjusted to the right length, and little matters like v.s.w.r. are checked (if you intend to do that), then you can secure the washers. Hold them tight against the

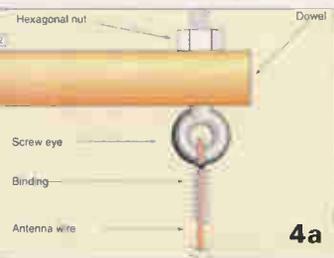
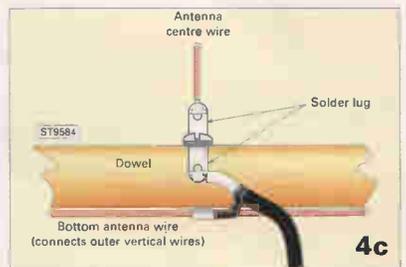


Fig. 4: Detail for Fig. 3: a) top end connections; b) Bottom end connections; c) centre connections.

assembly will be skewed when hung from an overhead support. The screw eye method can be adjusted to compensate for small length differences. Of course, in any event, should length differences be significant, then the antenna will not work as

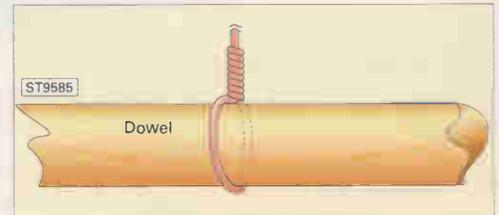
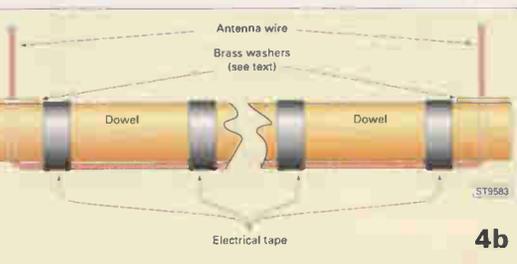


Fig. 5: Alternative method for securing wire.



planned.

Detail for the bottom dowel is shown in **Fig. 4b**. Cut the wire to provide enough length for two radiator elements (2 x A) and two half wavelength sections (2 x B), plus some extra for making the topside connections per **Fig. 4a**.

dowel and then solder them to the wire. These washers will prevent the dowel from riding up on the wire. On the two antennas of this sort that I built the 'ride up' problem occurred on Band II (100MHz) model, but didn't occur on the 220MHz (US) amateur

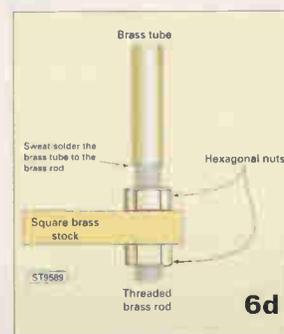
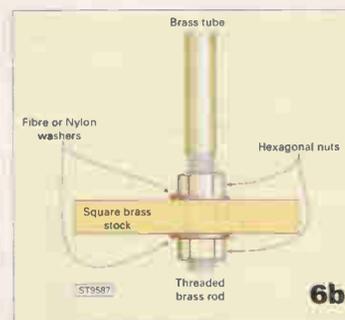


Fig. 6: Brass rod construction: a) threaded rod and tubing for radiator elements; b) Centre radiator construction; c) Fibre or Nylon shoulder washer; d) End radiator element construction.

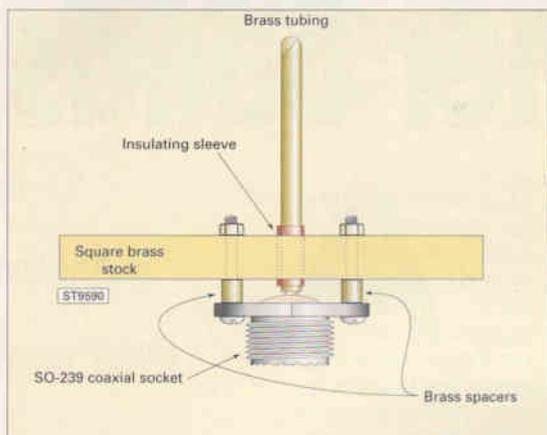


Fig. 7: Attachment of an SO-239 coaxial connector to brass stock: a) (above) side view; b) (right) bottom view.

three times, then passed over the outside of the dowel to the wire on the underside and then soldered. Be sure to wrap the wire properly in any event, so that you don't depend on the solder for mechanical strength. Its purpose is to provide protection against corrosion, not mechanical strength.

The detail for the centre radiator element and the feedpoint connection to the coaxial cable transmission line is shown in **Fig. 4c**. In this version, the centre radiator element is connected to a large solder lug that is fastened to the dowel with a machine screw that passes all the way through the dowel. The alternate method shown in **Fig. 5** can also be used.

Connect the centre conductor of the coaxial cable to the centre radiator element, and the braid to the exact midpoint of the bottom wire connecting the two outer elements. The cable poses a bit of a problem because it will break if not supported. You might consider mounting an SO-239 or BNC coaxial connector (as appropriate for your receiver) on a small bracket on the dowel at the feed point. Alternatively, you might try the method I used: strain relieve the feeder for 30-50mm by taping it to the bottom dowel.

Brass Tubing Construction

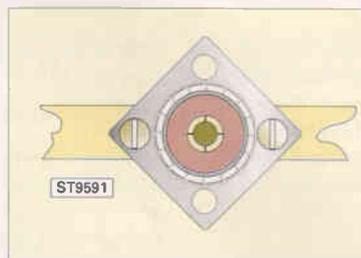
The brass tubing approach to construction can be used at frequencies above about 120MHz if you are willing to make the bottom conductor two pieces, or 240MHz if you want to make it one piece (which is stronger).

The brass stock used to make this antenna is the type of round and square brass tubing sold in hobby shops. Look for the kind of store that caters to model builders. They usually have a display of brass rods, tubing and square stock in lengths up to 600mm (which is what sets the lower frequency limit). Of course, if you can find longer stock (e.g. brazing rods), then lower frequencies can be accommodated.

The construction of the brass stock Thorne array is shown in **Fig. 6**. The conductive section between the outer elements is made of 9mm or large square brass stock, while the radiator elements are made of cylindrical tubing. **Figure 6a** shows the construction of each radiator element. The brass tubing is slipped over a threaded brass rod. As little as 9mm of the threaded rod needs to be inserted into the tubing.

band version. I suspect that the difference is in the amount of flexing that existed in the larger antenna.

An alternative method for securing the outer wires to the dowel is to use separate short lengths of antenna wire to form a bridge across the dowel. The tie-wire can be wrapped (as in **Fig. 5**) around the upper wire two or



It is sweat soldered in place.

An alternative for those who can't find the small diameter threaded brass rods is to use #6 or #8 brass machine screws instead. In one experiment, I used 50mm long nickel plated machine screws with the heads cut off. Because it is not necessary to run the nut to the top of the cut-off screw, the cut can be made with a hacksaw. If you have one of those crimping tools that has a set of screw cutting holes, then a cleaner job can be done of it.

Various imperial sizes of tubing were tried, though none of them are a perfect fit with standard screws, but there are a couple alternatives. First, you could use a tap and thread the inside of the brass tubing used for the radiator element. Or you can file down about 9mm of the screw of the end where the cut was made just enough to make it a snug fit inside the tubing. In the case of the 6mm tubing, the opposite problem occurs. In that instance the inside diameter was a loose fit for the screw. In that case, it is possible to build up the threads with solder (or wrap them with copper foil), and then insert it into the brass tubing under heat.

The centre radiator element construction is shown in **Fig. 6b**. This element is insulated from the boom connecting the two outer elements, and is connected to the centre conductor of the coaxial cable.

In order to keep the centre radiator insulated, it is necessary to mount it with nylon or fibre shoulder washers (see detail **Fig. 6c**). These insulating washers have a shoulder or ridge that fits into the mounting hole, so that the rest of the washer is flush to the surface. It keeps the radiator element centred. The element is secured with two hex nuts, one on the top surface of the brass rod and the other on the bottom.

The construction detail for the end elements is shown in **Fig. 6d**. The mounting is the same as for the centre element except that no insulating washer is needed. The end radiator elements are mounted directly to the square brass boom.

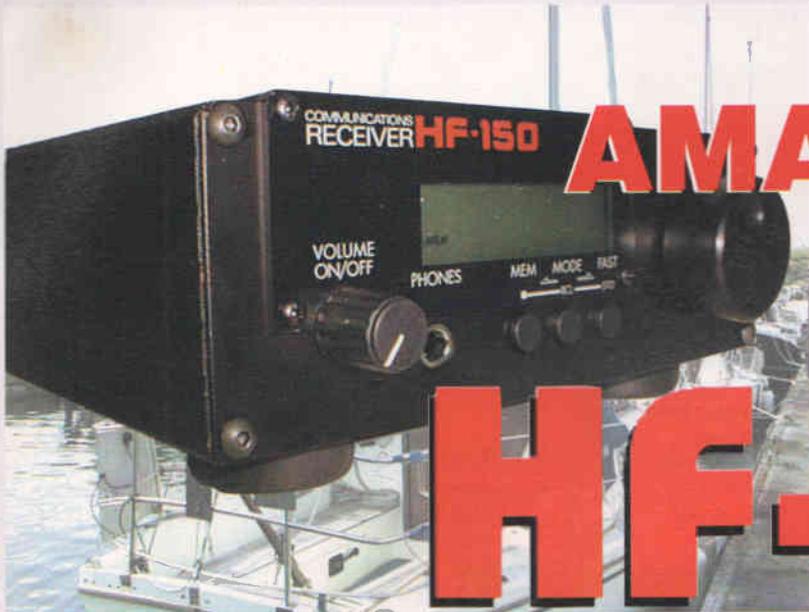
If you want to use a coaxial connector for the feeder, then consider something like **Fig. 7** as a possibility. The SO-239 coaxial connector is mounted with just two mounting screws 'sideways' on the square brass stock. The side view is illustrated in **Fig. 7a**, while **Fig. 7b** shows a bottom view of the arrangement.

The centre radiator element is a brass tube. Select a size tubing that has an inside diameter just wide enough to slip over the centre pin of the SO-239. A piece of insulating sleeving or tape is used to insulate the radiator element from the brass boom as it passes through the coaxial connector. The overall length of the centre radiator is calculated from the back of the coaxial connector, not from the top of the boom. This distance is not very much, but it becomes significant at v.h.f./u.h.f. scanner band frequencies.

Conclusion

The Thorne array is a variant of the Bobtail curtain that can easily be adapted to the v.h.f./u.h.f. scanner bands. It is relatively easy to construct, and offers some gain over a dipole. And best of all...it's cheap (my thrifty Scottish heritage shows even after 250 years).

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- Intermediate Frequency First IF 44.999MHz to 45.000MHz: second IF 455kHz.
- Display 5 digit LCD showing frequency to nearest 1kHz, receiver mode, and memory number.
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- Tuning steps 8Hz in LSB, USB, AMS modes; 60Hz in AM mode.
- Step size increases with rapid spin-wheel rotation. Keypad frequency entry is to 1kHz resolution.
- Memories 60 memories holding frequency and mode. Data held in Memory function EEPROM for >10 years.
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- IF Filters Wide: 7kHz, Narrow: 2.5kHz.
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 < 0.2 mV 500kHz to 30MHz with whip amplifier
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Scouting About

Just about beating off the 'flu, Faris Raouf takes a trip about town with the new Mini Scout from Optoelectronics and his scanner.

If you've ever wondered how some people seem to be able to work miracles with their scanners, somehow managing to have found out what frequency the security people at Zzap! clothing in the high street use, or which set of frequencies are most commonly used by staff on the London Underground in order to communicate with the office, you won't be alone. The fact is that many of these people have probably just been lucky or are extraordinarily diligent and have spent hours trying to track a particular signal down. More than likely, however, they'll have been using a frequency counter of some sort, this type of near-field test instrument detecting and usually digitally displaying the frequency of local r.f. signals.

Plummeting Prices

Unfortunately, the full blown Scout costs nearly £350, thanks mainly to its rather sophisticated memory facilities into which it can store up to 400 received frequencies for later reference, taking it out of reach of the average radio enthusiast. But now the Scout has a little brother, aptly named the Mini Scout, which has no built-in memory facilities but otherwise retains most of the features of its more powerful sibling, and costs just £169.

Despite being relatively inexpensive, the Mini Scout is far from a simple device. Indeed, it is really quite a complex beast internally since, in order to be of any real use, a frequency counter like this must be able to reduce false signals, something the Mini Scout does by statistically evaluating received signals using a built in microprocessor rather than the simpler signal filtration methods some other counters make use of. Add a few other bits of clever circuitry, and the end result is a near-field frequency counter almost immune to false signals, that digitally displays the frequency of any signal 10 to 20dB stronger than the noise floor (or any other signal that may be present), and can instantly Reaction Tune an attached scanner to that frequency. What's more, the Mini Scout can do this for any signal between 10MHz and a useful 1.4GHz, higher than many scanners can receive, and can work independently for several hours thanks to a built-in NiCad battery pack.

The Proverbial Black Box

Physically, the Mini Scout is really quite small, its solidly-constructed black metal case measuring just 65mm wide, 84mm high and 29mm deep, with a plastic belt clip stuck onto its back panel to allow it to be used 'hands-free'. The top panel features a power input socket, a 50Ω BNC antenna socket, and a 2.5mm jack socket TTL interface marked CI-V which is used to connect the Mini Scout to a scanner. Both a 12V power supply and an antenna, a simple but very effective telescopic device, are supplied as standard with the Mini Scout, but a scanner interface cable is not - you'll have to make a suitable lead yourself or buy a ready-made one, this option adding up to £25 to the price of the unit.

Controls & Indicators

All the Mini Scout's controls and indicators are sensibly located on its front panel. The controls consist of three tiny sliding switches, one used to switch the unit on or off, another to activate its Filter mode, and the third to switch its Reaction Tune facility between CI-V and AOR modes, plus a square button to set the gate time. Above these is a relatively large

but non-illuminated I.c.d. panel featuring a ten-digit numeric area plus a sixteen-segment bar-graph signal strength meter. Above and to the right of this is a red I.e.d. which illuminates each time the Mini Scout successfully makes a measurement.

In Use

Using the Mini Scout is simplicity itself - all you have to do is turn it on and select whether or not you want to set it to 'Filter mode' or not, using the Filter switch. With the 'Filter mode' off, Reaction Tuning isn't possible and the Mini Scout works like a normal, free-running frequency counter, displaying the frequency of any signal it can pick up along with its strength. The resolution of the frequency displayed depends on the Gate setting, this being adjusted by pressing the Gate button, each press advancing through the four possible settings. For the fastest possible reaction, setting one should be used, this providing a measurement resolution of 10kHz and taking just 8ms for each measurement.

Conversely, if you are after the best resolution, setting four should be used, this having a resolution of 10Hz but taking 810ms for each measurement. Settings two and three offer intermediate resolutions of 1kHz and 100Hz, with measurement times of 14ms and 90ms respectively. Unfortunately, the only way to know what Gate setting you currently have selected is by looking at the position of the decimal point on the frequency display, five digits being displayed after the point in gate setting four, and just two in setting one.

Moving the Filter switch to the On position activates the Mini Scout's special filtering algorithm and very effectively reduces or eliminates random counting, noise and false signals. The net result is that unless the Mini Scout is picking up a true near-field signal, the display will read 0.00000, 0.0000, 0.000 or 0.00MHz, depending on the Gate setting. The moment a true signal is picked up, however, it flashes onto the screen and, if you have an Icom CI-V-compatible receiver, an AOR AR8000 or '8200, or a Radio Shack PRO-2005/6/35/42 (with an Opto OS456/353 interface) along with a suitable interface cable, as long as you've set the Mini Scout's AOR/CI-V switch correctly to select the communications language the Mini Scout should use, your scanner will also instantly tune to the displayed frequency, allowing you to listen to the transmission.

Out And About

The moment I had unpacked and fully charged the Mini Scout, I co-opted my wife Alison into giving the unit a full test. No, I didn't get her to turn into a transmitter, but instead made her sit in the passenger seat to hold and monitor the Mini Scout, plus an AOR AR8200 connected via an interface lead, as I drove around town. The results were excellent; outside the Ambulance station, the Mini Scout picked up traffic in the 166MHz region, just as I'd expected, and tuned the scanner in for me. A local taxi firm was making a lot of noise around 200MHz. Closer to home, a couple of old 49MHz walkie-talkies could be picked up, though only at extremely close range because of their mW power output, and a brush with a local CB enthusiast proved most enlightening.

Unfortunately, a rather painful and protracted bout of 'flu prevented me from doing more than a few days testing, but even so I'm utterly convinced of the usefulness of this little beast. I like it so much, in fact, that **Waters & Stanton Electronics, Tel: (01702) 206835** will almost certainly be getting back a cheque instead of the review sample they so kindly provided. (Oh come on Faris, we need it back to take some photos! - Ed.)

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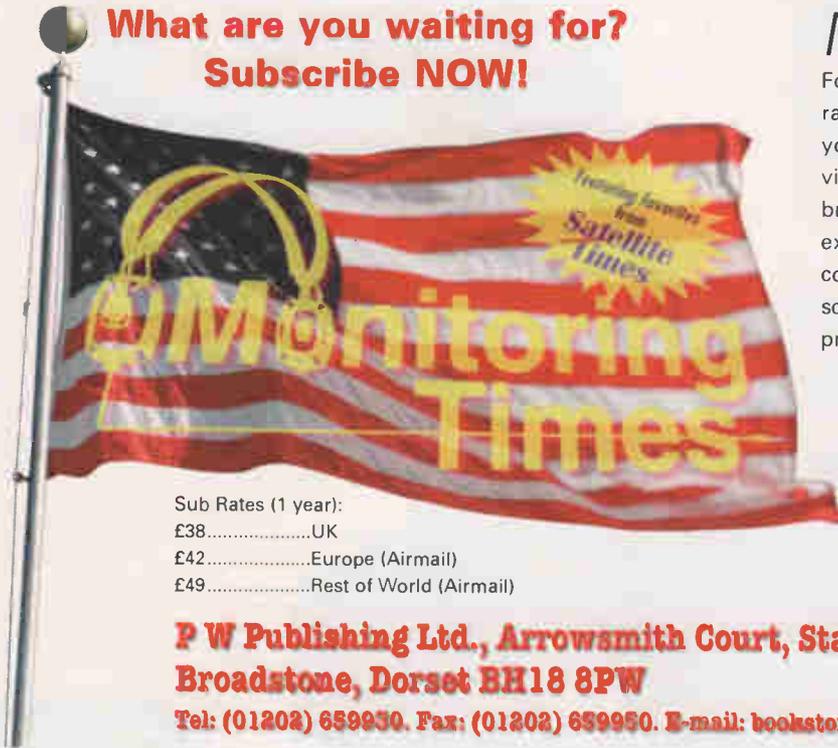
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SWM 399

Computers and SWLs

By Jerry Glenwright

Jerry Glenwright takes a break from the toil of nappy changing and other paternal duties, brought about due to the recent arrival of his new daughter, to produce for all you computerised listeners - both current and potential - this 'ShackWare' Special.

Back in the sci-fi happy 50s and 60s, the techno-pundits of the day predicted that by the end of the century we'd all be flitting about wearing individual flying suits, popping a simple pill in place of meals, enjoying regular holidays around the solar system and organising every aspect of our everyday lives, work and hobbies with personalised computers, each powerful enough to lend themselves to virtually any task faster and more accurately than the human brain.

Well, we all know how crowded public transport and the roads are, so the flying suits never quite got off the ground. MacDonald's has a turnover greater than some South American countries, so it seems that no-one swallowed the food pill idea either, and as for holidays to the moon, the closest most of us will get is watching that Aldrin bloke advertise life insurance on the tele! Mind you, the pundits didn't get it all wrong...

Invaded & Conquered

Computers have invaded and conquered virtually every aspect of our lives: in the home, place of work, at the supermarket, the video library, when you get a bill from one of the utilities, it's almost impossible to retreat from them. Unless of course you're a short wave listener, in which case you can slip away into your shack, stroke a loving finger over the tactile beauty of an Eddystone's band-spread knob, tune out computers and tune in the world.

Well, it's a nice picture, but it simply isn't an accurate one. We all know that for better or worse, the computer has followed us in there. Initially, via a sneaky foot in the door - an inoffensive Sinclair Spectrum decoding amateur RTTY in the far corner perhaps, or a Morse tutor running on an Atari 5T in the moments when you're not actually chasing DX - but nowadays, by simply marching in, big, brash, shiny boxes with giant 17in monitors and enough electronic hash to jam a broadcast station in the next county!

Tools Of The Trade

It isn't all bleak however. Computer mags may have taken over your local W H Smiths, but neither Editor Kevin (nor Dick before him) would ever let them take over the content of *SWM*. It's simply that computers are such useful tools to s.w.l.s, that to ignore them is to cut out a significant and very enjoyable part of this great hobby of ours.

Almost every issue, columnists such as Mike Richards

and Lawrence Harris feature PC software that stretches the boundaries of what can be done with utility and satellite decoding, and of course there's my own bi-monthly 'ShackWare' column, dedicated to squeezing the last useful drops from older machines so you can save your cash for the real goodies in your shack.

At the end of the day, the problem (if it is a problem) is perhaps a deeper one: as s.w.l.s and amateurs, we just love messing about with technology, and that technology is irrevocably linked with the multi-purpose PC - would you really want to go back to your old framestore?

Use And Abuse

So given that they're here and here to stay, how best can we make use of them? Perhaps their most obvious use is in decoding the data modes, and there's a wealth of software, both commercial and shareware, which will enable you to take the output from your receiver via a line, extension speaker or even a phones socket, and feed it into a computer, usually via some kind of interface, for decode to the screen or printer.

The two most popular packages of recent years that do just that are *JVFAX* and *Hamcomm*. *JVFAX* is used to decode FAX and 55TV transmissions in a variety of formats, and can also be used to decode APT with suitable signal rectification. *Hamcomm* decodes the 'text' data modes such as RTTY, c.w., AMTOR, SITOR and so on. Both pieces of software support a variety of interfaces, including perhaps the most popular of all time: the simple 'comparator' interface.

This is an easy home-brew device suitable as a project for novices and experienced alike, and consists of an op-amp IC and a few diodes. It accepts a signal from your receiver and feeds it to the serial port of your PC. It's a quick and dirty interface that really does the trick splendidly well. For those who cannot solder, commercial versions are available from *SWM* advertisers for well under £20.

The comparator is highly popular precisely because it's



A selection of Atari 8-bits and accessories. The machine on the far right is a rare American 1200XL, never sold in the UK, and just above it can be seen an Indus GT disk drive with, above that, an 830 acoustic coupler!

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On The Internet

Devil or angel, the Internet is here to stay, but it really does offer a truly wonderful amount of information, frequencies and software for the s.w.l.

Perhaps the biggest explosion in the world of 'communications' over the past five years has been the meteoric rise in public access to the Internet. There's no need to deliver yet another dull history of its military origins as reshaped a thousand times in every computer magazine. All we, as s.w.l.s, need to know is a basic understanding of what the Internet actually is (so that we can use it to best effect), what it offers us and how we can access it to get at the goodies, and it has to be said that there really are a huge number of goodies for s.w.l.s!

Nuts And Bolts

Plunging straight in then, the Internet is a world-wide connection ('network') of computers using (usually but not exclusively) ordinary telephone lines. This network enables each computer to pass information to any other computer anywhere on the network.

The information - 'packets' of data - is passed via the most favourable route available at any given time using unique addresses known as URLs. What it means to us is that the network, and thus computers all around the world, are always available for access at any time of the day or night if you have an Internet account, irrespective of whether some machines in the network might be 'down'. This ability to re-route around downed parts of the network is a legacy of the Internet's military origins, where data had to be guaranteed to 'get through' even under nuclear strike conditions.

Coat Of Many Colours...

So the *physical* Internet is more or less a big network of computers, but what of the *logical* Internet - the bit you see on a computer screen and interact with? Actually, the Internet is a loose collection of distinct 'services' such as E-mail and the World Wide Web, Usenet and FTP file download sites (in this context 'site' equates to a computer somewhere in the world).

A not very good analogy is your local library where the library building itself is the physical Internet and the books within the library are the logical Internet (WWW, E-mail, etc.), with each shelf of books broken down further into content, the message in an E-mail or a s.w.l.s web page devoted to radio issues.

Let's look at the individual services. Perhaps the most talked about face of the Internet is the World Wide Web, the bit which presents you with pictures, fancy text, animations and sound whenever you access a 'web page' or 'site'. The web is what's being discussed whenever you see a web site address such as

<http://ourworld.compuserve.com/homepages/hffax>
Don't waste thought working out why the address is

constructed the way it is, being able to access it is as much as we need to know!

Web pages are accessed using a piece of software known as a web 'browser'. When this software is running, you type in an address and the software handles all the other actions sufficient to access that web site wherever it is in the world and display it on your screen. And when the site has been displayed, you use the browser to scroll through the data, print it, save it to disk and so on.

A typical site will have an opening screen of text and perhaps a pic or two describing what it's all about. There may be software to download, 'links', which can be clicked to take you on to related sites, sounds to listen to and more. It's all surprisingly intuitive for anyone with even a passing familiarity with a computer, especially one which uses a graphical operating system such as the PC with *Windows 95/98*, or the Apple Mac.

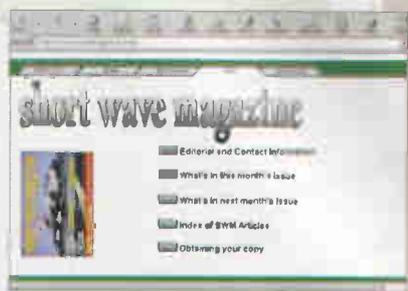
The World Wide Web is a relatively recent innovation in the life of the Internet. One of the first services, and still one of the most popular is Usenet, the 'news' service.

Think of a pinboard in a college hallway or in your canteen at work. People pin up messages, for sale notices and so on and other people come along and read them and perhaps pin up one of their own in response. Occasionally, two individuals might communicate directly after having read each other's postings on the pinboard.

Now imagine many thousands of these pinboards, all stored electronically in computers around the world, and all able to be accessed and posted to almost immediately day or night by anyone, anywhere (anyone, that is, with an Internet account). That's Usenet.

Think of almost any subject under the sun that interests you and there'll be an active Usenet newsgroup devoted to it, with interested people contributing anecdotes, help, advice, questions or sales and wants. From short wave listening to making models of famous public buildings out of matchsticks, an interest in old cars to admirers of the female (and male!) form, they're all there, strutting their stuff on the Usenet newsgroups.

It must be said that abuse, too, (known as 'flame wars' or 'being flamed'), plays its part. Flaming used to be reserved for those trying to advertise commercial services, or novices who asked silly questions when the answers were already before them. Nowadays, with the global



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Radio Havana. Cuba's web site and DX program details...

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If you want DSP in a receiver and can't quite afford the NRD-545 then maybe you should study the new IC-R75 from Icom. Available this spring, this fantastic new short-wave receiver is a real must for the enthusiastic listener. PC Control, 30kHz-30MHz, DSP, Twin PassBand tuning, crisp sharp audio, make this a delight to use. Deposits are now being taken for March/April delivery.

Icom IC-PCR100

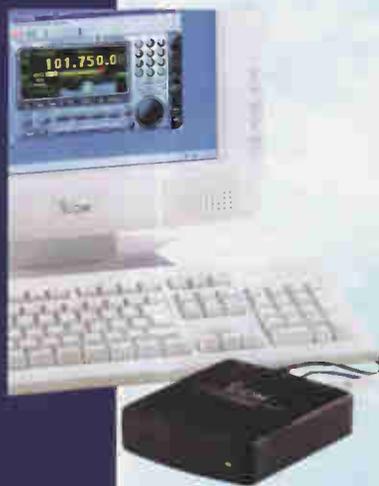
The same as its big brother the PCR-1000, but excluding SSB & DSP. Just plug this very small black box into your Win 95/98 PC and you have an instant 10kHz-1300MHz FM/WBFM & AM receiver.

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If you actually take a look around at the receiver market and compare with fifteen years ago I'm sure you will notice there isn't quite the choice of equipment available today. Never mind. With startling performers like the new NRD-545 who cares? A summary? John Wilson paid the ultimate tribute, saying:

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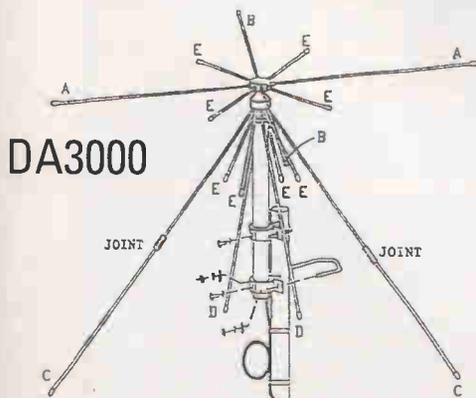
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Spying On The Spies

David White
G3ZPA takes a
trip back in
time to reveal
the history of
Hanslope Park
Radio Station.

Part 1

How did it all start? Well, in early 1939 the government's internal security department, known as MI5, were practically forced to start a small department for the detection of illicit wireless signals throughout Britain which might affect the country's security.

This was called the Radio Security Service and was given much priority as the government realised that war with Germany seemed inevitable. During that summer, many prisoners were moved out of 'C' block in Wormwood Scrubs Prison in North West London and several cells were taken over to be used as headquarters of this highly secret organisation.

A special mailbox was set up, known as PO Box 485, Howick Place, London SW1, which gave not a clue as to its real purpose. Recruitment began of suitable candidates, but how to go about this secret detection work was a major problem, which was only solved in a rather unique way by a new recruit from the aristocracy, Ralph Sheldon, who became a Lord in 1933 by succession from his father, and was known as Lord Sandhurst.

It was he who decided to approach Arthur Watts, who was then the President of the Radio Society of Great Britain. Arthur was invited to an interview, which took place in one of the prison cells, and it made such an impression on him that he decided to take the whole RSGB council into his confidence.

Voluntary Interceptors

The result was that hundreds of licensed radio amateurs, who were members of the Society, were asked to volunteer for a secret unpaid task in their spare time. They became the Voluntary Interceptors (VIs) who, throughout the period 1939-41, were listening for enemy agents and radio guidance beacons in Britain.

Well, they never heard any, but they did stumble on what was an ever growing network of enemy spy radio transmissions in Germany and all occupied European countries, which was found to be the enemy intelligence network. In the meantime, the Foreign Offices' tiny

communications department, which had been run by Harold Eastwood since 1925, had sought to expand its communications network by radio as the telephone, diplomatic courier and cable system on which they relied was increasingly being curtailed by events in Europe.

Accordingly, he proposed the purchase of a lease of a suitable area of land in north

Buckinghamshire, which after a survey was deemed to be eminently suitable. This was the mansion of a country estate along with its farm and was called Hanslope Park and included the large lodge at Bullington End.

Country Houses

The government was now requisitioning many large country houses all over the country and the one chosen for the Foreign Offices diplomatic wireless traffic was located at Whaddon Hall, adjacent to the village of Whaddon, near Bletchley Park in Buckinghamshire, as it was more convenient in location to the new Government Code and Cypher School at Bletchley Park.

On 1st September 1939, all radio amateurs in the UK had their radio transmitters confiscated and these were collected in small green Post Office vans. However, many of these amateurs were asked either to become Voluntary Interceptors in their own homes or to join the Radio Security Service, which they did in increasing numbers as the war progressed.

Deciphering Success

In December 1940, two of the RSS Officers, Walter Gill and Hugh Trevor Roper, actually succeeded in deciphering some of the low grade enemy ciphers in use by the German intelligence system (ABWHER), which they did in the evenings after work at their Ealing flat which they shared. Colonel Worledge, the commanding officer of the RSS, was very impressed with this and asked Hugh Trevor Roper to write a complete document on what had been deciphered.

This he did and Major Worledge sent the results off to various interested parties, which included the new headquarters of the Special Intelligence Service at Bletchley Park. The result was an explosion in the upper echelons of the war office that was started by Major Cowgill of the SIS, which ultimately led to Colonel Worledge being retired from RSS and the whole communications system being brought under the control of the SIS communications section, known as MI8(c) as from June 1941.

The main problem, as perceived then, was that the RSS had transgressed onto MI6 territory, which was supposed to deal with all overseas matters and this fledgling RSS was only set up to deal with internal matters, but what made it worse was the RSS had broken the codes a whole month before Bletchley Park had succeeded in doing so.

New Headquarters

MI6 had set up its own communications section at the instigation of Admiral Hugh Sinclair under the direction of the communications supreme Brigadier Richard Gambier-Parry, who headed MI8(c). He had set up Special Communications Unit Nr 1 (SCU1) with its headquarters at Whaddon Hall and now that he had RSS under his control, he decided to militarise the whole system.

As the RSS had been so brilliantly successful at Wormwood Scrubs, they realised that they simply

Central receiving station,
Hanslope Park, 1980.



could not leave the interception of this most important of enemy intelligence to part time listeners and looked around for new headquarters with their own analysis and monitoring facilities. What hastened this decision was bombs falling in and around the prison.

So, on October 3rd 1940, the RSS moved into new headquarters at Arkely View near Barnet, where they commandeered a number of large houses. Arkely was also used for intercept as was Ravenscroft, which was a little nearer to Barnet.

The secret cryptic address became famous as PO Box 25, Barnet. Gambier-Parry in the meantime had recruited an assistant, Major Ted Maltby, who had been a colleague in the peace time radio industry, and he was requested to take full control and the setting up of the proposed new full time intercept station at Hanslope Park.



Central receiving site in the early 1980s, showing engine shed and antenna mast storage in foreground.

Moving In

August 1941 saw the first administration staff moving into the mansion there and in September 1941, the very first two wireless operators arrived to clean out the Corn bins of the Granary in the farm. These were Wilfred Limb and William Chittleburgh, both licensed radio amateurs. They set up six American National HRO communication receivers in the Corn bins and thus was started the full time intelligence intercept station.

Throughout the winter of 1941-1942, many brick-built accommodation huts were built for the operating staff, and a large building at Bullington End, known as The Lodge, was used as an intercept station with many HRO communication receivers being set up on trestle tables. The antennas were end fed with wires sloping upwards at an angle of 50°, and one antenna shared between two receivers.

The use of the Granary was discontinued in 1942 when The Lodge was in full operation. But all this was only temporary while the brand new intercept station was being built.

Major Dick Keen, who had been the DF (direction finding) expert at Marconi in Great Baddow, visited Hanslope Park many times to assist in the setting up of the radio direction finding system to the new concentrator unit, which was fitted in the new station and enabled the operators

to speak to the supervisor by microphone from the bays to the concentrator. It also had a Morse key to transmit instructions to all the direction finding stations on an open communal land line.

When the operating staff moved into the new station they were confronted with a polished green cork linoleum floor, and this was also fitted to the desk tops of all the bays.

Antenna System

The antenna system now consisted of seven Rhombics, arranged at 15m height, five Vee beams at 23m and many end fed general purpose antennas sloping upwards at 45°, similar to the ones at The Lodge and Arkely View in Barnet.

An Australian named Ernie Buick was put in charge of the team of men who erected this huge antenna system using standard GPO telephone poles spliced end to end to bring them up to the required height. A specialist was called in and

Park House, Hanslope Park.



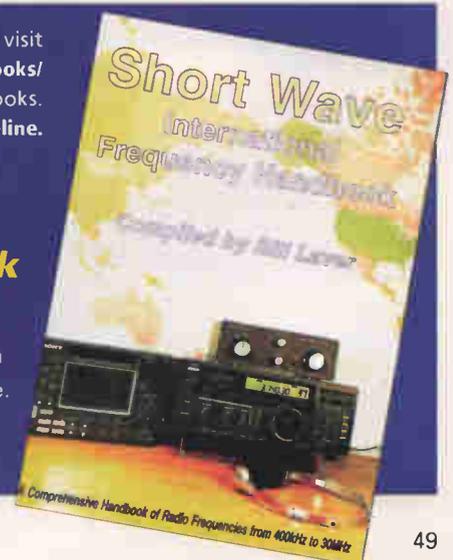
Book Profile

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assisted in setting up a new system of wide band amplifiers. His name was Dud Charman and along with many famous radio amateurs, such as Lou Varney G5RV and Pat Hawker G3VA, a total of 115 of these radio amateurs were put to work on the full time interception of the enemy wireless intelligence system.

Many important visitors to Hanslope Park had it impressed on them how the Voluntary Interceptors first discovered the enemy signals and then, when Hanslope was informed, could eavesdrop on these signals on a 24 hour basis. It was considered to be such an important intelligence spy centre that Lord Gort, General Alexander, Field Marshall Montgomery and General Eisenhower all came together, with Brigadier Gambier-Parry showing them around.

Gambier-Parry had also been responsible for commandeering the entire stock of approximately 70 American Packard cars from a dealer on the western outskirts of London with suitable remuneration from the War Office. The new purpose built intercept station was finally opened at the beginning of May 1942.

First Officer

The first commanding officer of the station was Captain Prickett, but he was soon replaced by Reg Wigg G6JS, one of the radio amateurs who was much more skilled in understanding these civilian amateur radio operators. They were told to put on the uniform of the Royal Corps of Signals for security purposes, and all 66 HRO communications receivers were dedicated to the reception of Morse code signals.

At the end of 1942, a further intercept sister station was constructed at Forfar in Scotland. This station was quite large and was used for SCU3 and SCU4 and had 26 operating bays. It also had its own direction finding station nearby.

Back in 1942 the system was that the Voluntary Interceptors detected each new secret signal and sent their reporting log into the large analysis section at Barnet, which became known as Discrimination, they in turn informed Hanslope to look out for these signals. However, one of the problems of interception was knowing the location of the source of these clandestine radio transmissions.

Up until then, the RSS had relied mainly upon



Part of the wireless telegraphy cabin, 1970.

the GPO intercept and direction finding stations at Gilnahirk in Belfast, Thurso in Scotland, St Erth in Cornwall and Sandridge near St Albans. It was deemed by MI8(c) that their performance had not been satisfactory and therefore the contract with the GPO was terminated in 1941 and the whole system came under the umbrella of Special Communications Unit Nr 3, as from the autumn of 1941.

With the addition of extra direction finding stations at Wymondham in Norfolk and Bridgewater in Somerset came a superb intelligence gathering unit, ostensibly under the control of the Royal Corps of Signals to which many of the staff belonged, but they were paid by Section 8 and not the army. Never has there been such a large gathering of amateur radio operators whose sole purpose was electronic spying on the enemy wireless intelligence, and no real recognition or acknowledgement has ever been given to them or the VIs who were instrumental in discovering it.

The RSS had always been thought of as an important unit and even while still in Wormwood Scrubs prison had been allocated a teleprinter link to Bletchley Park. This was continued after the move to Barnet and also was linked to Hanslope with its open communal line to the direction finding stations, where either speech or Morse code instructions could be sent using Post Office type sounders.

...to be concluded

Next month, we find out about an experimental radio direction finding hut and a secret radio station.

"Never has there been such a large gathering of amateur radio operators whose sole purpose was electronic spying on the enemy wireless intelligence"

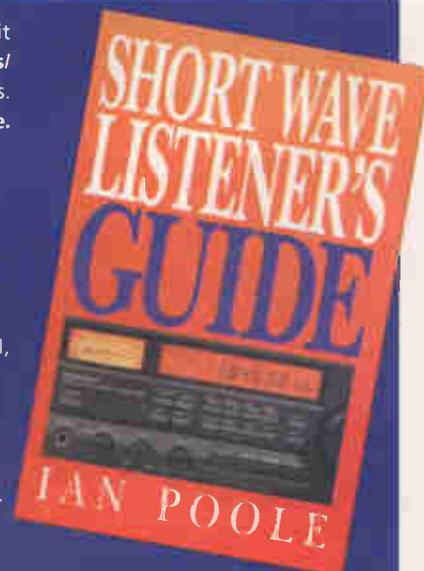
Book Profile

Short Wave Listener's Guide

Ian Poole, one of the leading writers on radio, is the author of this complete practical guide to short wave listening. This guide explains what short wave listening is, how radio waves travel, what equipment is needed to receive a signal, how to set up and run a short wave listening station and how to obtain an amateur radio licence.

Each topic is covered and clearly explained and illustrated. The practicalities of short wave listening are discussed, from buying a new or second-hand radio and making and erecting an antenna, to selecting ancillary equipment to enhance the operation of receivers and antennas. A definite must for the short wave enthusiast. **£14.95.**

See pages 76 & 77 in this issue or visit www.pwpublishing.ltd.uk/books/ for lots more information on radio-related books. Internet users can order on-line.



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Amateur Bands

A double-dose of letters this time; firstly, thanks to all those who sent Christmas cards, and particularly to Harry Richards in Barton-on-Humber who sent his, even though he had no news this time.

Let's start with Philip Davies from Market Drayton, 'cos we hear from him so rarely! He regrets not being more adventurous in the way of receivers, and reckons that now it'd be all but impossible to restore, say, an HRO or AR88D to meet original specifications. Given that you can test the valves and get replacements for any that are down, if you have the test gear, getting such a receiver up to snuff should be easy. By changing the old carbon resistors (which will have surely drifted out of tolerance) and the capacitors with modern types, you might well find the performance better than new!

Philip used his Icom R72 on 3.5MHz to hear PA6PCH, which was marking the closure of Scheveningen Radio PCH after 94 years of operation. Another interesting one, this time on 14MHz, was to log the QSO between GB100EGL (East Goodwin Lightship) with GB100SFL (South Foreland Light). This was by way of a double commemoration - the original Marconi transmissions, and then a few months later the first distress call when the lightship was hit during fog conditions.

New countries for Philip during the year were Tromelin, Kerguelen, Amsterdam Is, Temotu, Wake and Midway in the Pacific and Pratas in the S. China Sea.

FBC Prefix

Back in the October '98 issue we asked readers about the FBC prefix. No-one commented, so Gerard Nicholson from Co. Cork jumped in. They were all connected with the 1998 World Cup football in France. Each of the ten venues had its own callsign, TM1CMF through to TM0CMF. The first special call was noted as TM8CMF in Lyon in early June, and the last was TM3X in late July.

Gerard lists some sixty-plus of these special calls, plus another seventeen Gotaways. How nice to get a list of Gotaways - it tells me the owner is doubly careful that he has identified the right end of the contact in a pile-up. A question now - were there any special-event calls issued in Britain in connection with the Euro '98 events?

On a different tack, Gerard lives in a valley and wonders about replacing his Icom R7000HF for something containing a v.h.f. converter. Personally, were I in Gerard's position, I'd hang on to the Icom. I too live in a valley, and what I hear on v.h.f. is either across town, via the local repeater, or a near vertical OSCAR pass. I'd be looking for a small but useful bit of kit which I can take up to the top of the hill either by car or back-pack...I'd get someone to 'phone me when a 'lift' occurs. Up on the hilltops lightweight and a simple antenna that packs small are best.

The latest International Listeners Association *Just Listening* was in the pile; they cover all facets of the short wave listening hobby, and yours truly reckons membership well worthwhile. Contact Trevor GW40XB at 1 Jersey Street, Hafod, Swansea SA1 2HF, telephone (01792) 426449.

On The Bands

Now eastwards to the Isle of Sheppey where Ted Trowell lurks in Minster-on-Sea, although in December he seems to have had another visit to the hospital. Ted stuck to the c.w. mode; on Top Band we note A45XR, 5B4AOC, K1UO, LX1NJ, HB0/HA6ZV/P, HB0/DK7YY, up to 7MHz for VP2V/WJ7R, FG/N6RT, JA5ATN, JH4NG, JA5PL, 8Q7IO, HB0/HA6PS/P and to 10MHz to log TA/KU0J, YV1NX, N2KKW.

At 14MHz Ted noted VQ9JC, 9K2MU and HV5PUL, but on 18MHz he only mentions V26B. 21MHz was a bit more productive by way of XE3AJM, VE7SL, PP6CW, PY2ROE, TY8A, E30GA, CN23AMV, CO2OR - but 24MHz did better with ZS4NR, 3DA0CA, 7Q7HB, W7IUO, W6RF, HK7/SM5HV, S92YN, CX3AL, DK8YY/HI8, VE3FU/NP2, HF0POL, 9H3WD, V26A, TLSA, YV1NX, N7JJN and WS6X. 28MHz offered LU9GBR, XE3AJM, CO2OR, CX3EU, 3DA0CA, KP4Y, TI2OY, A45XR, LU4FC, JY8ZW, KL2A/KP2A, E30GA, KP3W, ZF2NT, P43JB, XE3UT, CE3LZR, HK1HHX. So much for November, December's tally included Top Band contacts at 2100-ish with AL7R, ZB2FK, EA6ACC, T77C, UQ4QNG/MM in the Baltic. 7MHz flushed 6Y2A, T11C, J3A,

J3W5UDAS, J68GA and VU2WAP, while on 14MHz D44BC, TF3HP, 8P9Z, W6XR, rN0/OK1AUT, and W0AIH. 18MHz yielded KP2AD, while 21MHz came up with VO6A, VO1MP, W6BA. The crop on 24MHz included PT7WX, ZF2AH, KP2AD, and on 28MHz Ted found ZS6KR, A61AJ, J45T, ZW5B, HS1RU, 9H0A, VP5M, N0TM, KP3G, W6PBI, LU0H and CO8ZZ. It's interesting to compare the two lists - successive months but no other changes.

Oxford next, and Paul Goodhall who has been working hard plus overtime which cut into his radio time - but as he says the boodle is handy! Coming home late, when all the family were asleep, indicated a few sessions on 3.8MHz. The gain from overtime appeared under the Christmas tree, where an MFJ-462B Multi-Reader was found and rapidly added to the operating set-up. Paul heard FT5ZH under a pile-up of people using partial calls and he wonders how either they or the DX station can be sure who's who. In simple terms, they can't, usually, and this old scribe believes that the DXAC should outlaw any DXpedition who accept part calls. Doubtless the fashion will change, and some other bit of lunacy will sweep the DX scene!

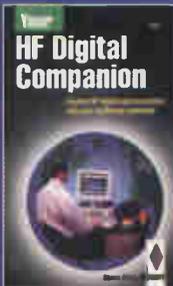
On to Karl Drage's E-mail, who notes that he played in the CQ WW and had a claimed score of 867000 which is double the previous year. On v.h.f., Karl had a listen during the *Leonids* and logged 9A2RD, 9A2TD, DF3AG, DH7FT, DJ5BU, DL3IAE, EA3TI, HG1DLZ, IK2EAE, OM5RW, S51AT and YU1IO. On 50MHz Karl logged G3XFA during a weak Aurora event, while 28MHz c.w. accounted for 5B4AGC, 6Y5/K2KW, GU4YOK, LU5FCH, LU8WSE, LW8NDG, PU8DX, VEs, Ws, XE1IDJ, while the telephony from 5Z4IC, 6Y5/K7CO VEs, Ws and XZ1N was noted. Down to 24MHz phone and HL20NN, TY8A, VU3HKQ, HZ1N, then to 21MHz to copy c.w. from SU1KW, assorted Ws, YL8ORP and sideband from 8Q9P. 18MHz c.w. showed all W call areas, ES4MM, AA2FAM MM, UA9LGL, VE3IAY, YL80XX plus sideband from 9H1DF, A71/9K2AI, R1FJV, Ws and XZ1N. 14MHz c.w. was a bit thin with 4Z5OB and s.s.b. from VK9LX and XZ1N. Turning to 7MHz, the c.w. log shows 4L1MA, 5H3US, AA6XX, K6SRZ, K6VX, KD6ZC, N7FF, N7ML, W6SL, W7OE and s.s.b. from 5B4/RZ3TX, 8Q7DV, A61AQ, AA3GZ, CE10MA, CE3FIP, CN8TW, CN8VB, CO2VQ, CX2SA, CX3UG, E30GA, HJ3JCA, JY4NE, LU7HG, LW6EMJ, LW8OYC, OX3SA, PP5ZY, PR7MH, PT7BR, PY1HE, PY2LSR, PY2NYT, PY2VVC, PY8EA, TL5A, VE1RJ, VE1SK, VE2KH, VE3CDK, VK6AGI, VP2EY, W1QC, W4JS, XZ1N, YC6OEM, ZP3CTW, ZP5DBC, ZP5SBE, and ZP9JKA. Finally, Eighty where dots and dashes from W1MK were copied along with audio from CN8RM, DS5RNM, JJ6WSX, N7VA, OY4TN, PJ8/W8EB and KZ1N.

Three letters from John Collins in Birmingham. John sticks to 7MHz and noted a YL operating the GB100SFL station around teatime, plus 9A6DCR, 5B4ADA, SV9ANK, UU5JA, AA3GZ, VE9QB, VP2EY, WP4LLH and 3C1GS. All wanted cards via the Bureau except VP2EY who gave HB9SL. An interesting one was ON7FF (for 'Flanders Fields'), operator Henri, who was asking for ten IRCs with a report, to Box 32 Ypres 8900 Belgium. 9A3MR was noted calling from the island of Murter, RS57 but poor propagation.

Around 0030UTC John noted a '1X8PZ' (oh dear!) plus UN7LG who asked for cards via KU9C. A BBC2 TV programme interested John - showing Daventry as it was in 1935, and an h.f. radar. Finally, John enclosed a letter from the Military Communications and Electronics Museum which was too late to be covered here, but has been 'put into the system' for the 19-set addicts.

Colin Dean in Barnsley, logged FT5ZH on both 28 and 21MHz. His normal area is 7MHz, where November's letter mentions A61AS, C31CA, DS5RNM, E30GA, FS5PL, HH7PV, HS0/IK4MRH, HS0/JA6GIJ, JAs assorted, OD5PI, OX3SA, RVOAM, SU1GS, SV9ANH, TA1E/M, UN7JRG VE8TA, VK6AGI, ZA1MH, 1X5AA, 4L/ON4CFI, 4S7BRG, 5A1A, 9G1MR, 9K2RA and 9K2UB. For 3.5MHz we can take December's crop - A61AJ, A92FZ, CO6XN, EK6GC, FM5DN, several JAs, RA0WA, SV0SS, TI2SW, UN9FB, UN0LE, VK5, VK6, W6KW, XE1VV, YB0AI, '1X1AU' 4L2M, 5B4/RZ3TX, 9K2MU and 9Y4SF

A very late E-mail from Simon Smith concerns the '3VABB' heard on 14.187 at 0827 on January 7 - 3V8BB in Tunisia probably!



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Conclusion

There you have it. We've over-run space but everyone got their mention. Letters as usual to me to arrive by the first, either to the E-mail address or to PO Box 4, Newtown SY16 1ZZ.

Propagation Forecasts

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.

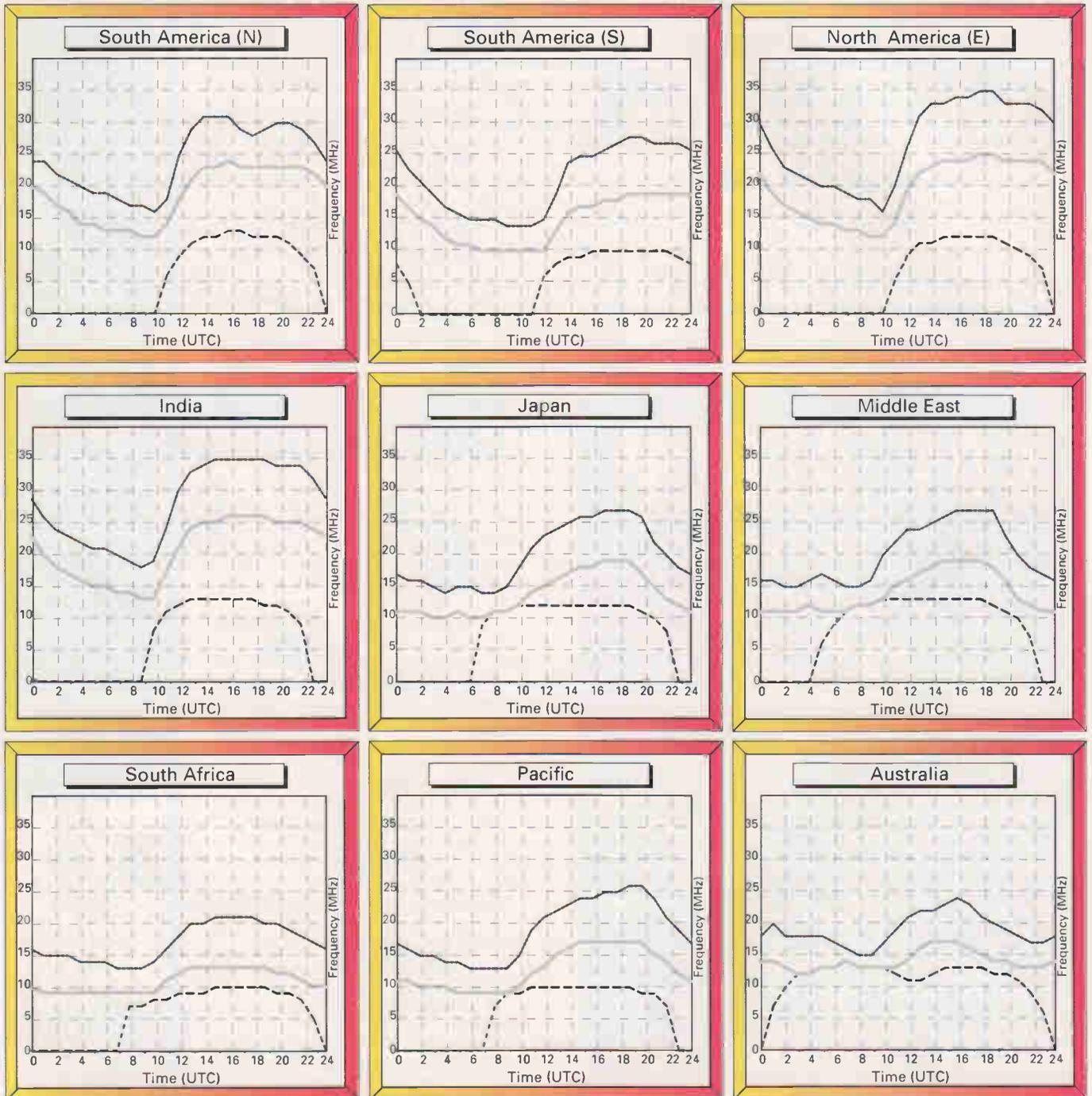
Lastly, the upper dashed line, represents the maximum usable frequency (MUF) a 50%

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.

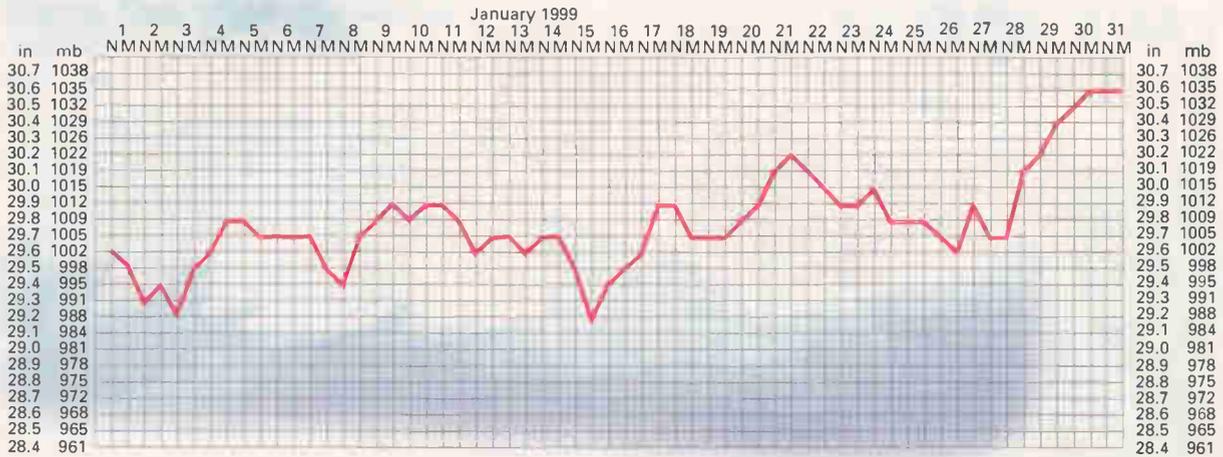
Good luck and happy listening.

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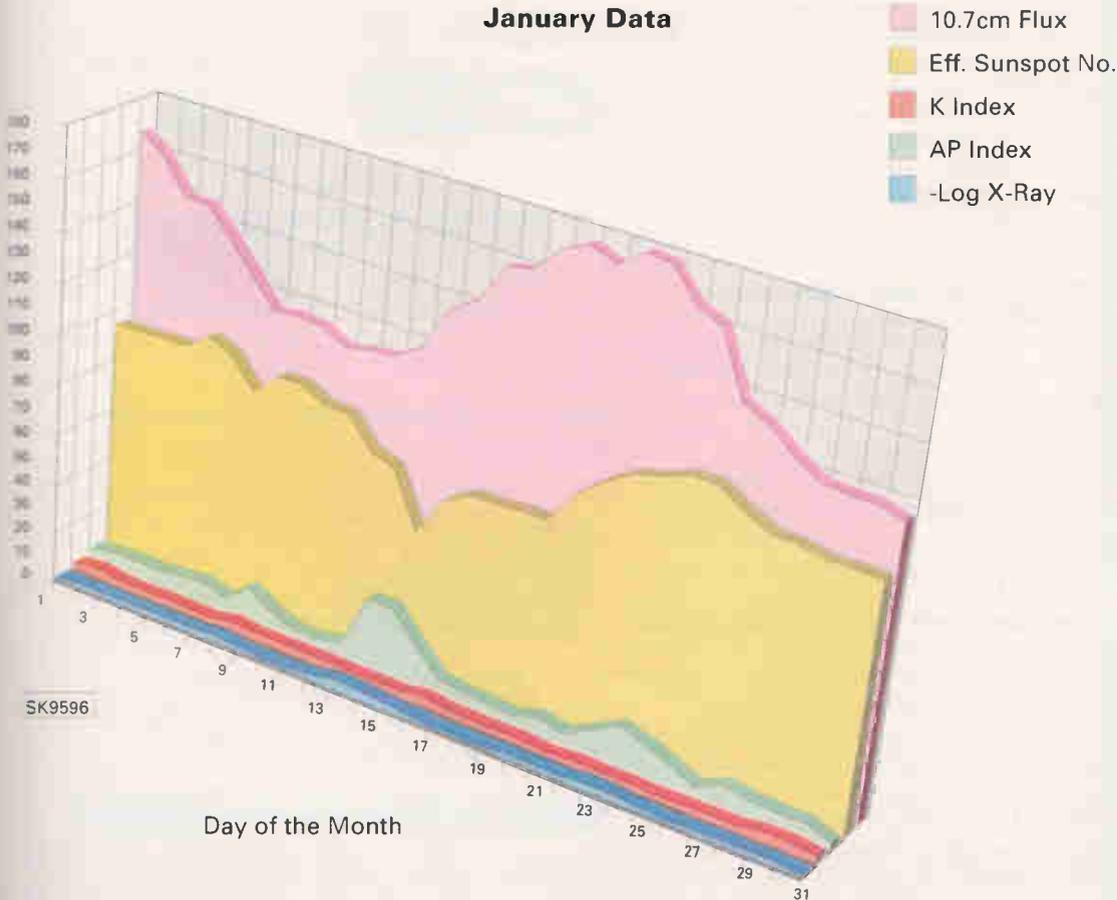


Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, January 1999.



January Data



guide to the chart

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SSB Utilities

Winter is now well and truly with us. I know that January was very warm in some parts, but the northern parts of the UK suffered some appalling weather. During high winds in January, the support for my G5RV antenna broke, and it was a few days before I discovered what had happened. I made hasty repairs over a weekend, but high winds the following week brought the whole lot down once again.

I'm glad to say that everything is now back up in the air again, and I learnt some valuable lessons during this episode. My antenna is a full-size G5RV that is held up with some simple string - the string is the weak-point that will break long before the antenna or support mast will break. As I found to my cost, this string can break at the most inconvenient time. Now I know to check my antenna and support mast after every bout of abnormal weather, and I also try to check every few days that the antenna is still where it is supposed to be, rather than wrapped around a neighbour's tree.

This prompts me to remind you that if you have an external antenna that is a permanent installation, then it should also be checked on a regular basis.

Reach SELCALs

During December, I heard about some interesting US Air Force flights crossing the Atlantic on their way to the Middle East. As everyone knows, Operation Desert Fox took place in Iraq just a few days before Christmas, and a lot of USAF aircraft were hastily transferred into the region. This involved much mid-air refuelling as the aircraft flew across the Atlantic and along the Mediterranean Sea.

This is quite a common event that probably happens a lot more than most people realise. I was quite surprised to hear that the refuelling tanker aircraft were heard working Gander and Shannon ATC stations and passing SELCAL details. This is a change from the norm, as these aircraft do not normally have SELCAL equipment.

In fact, I spoke to some tanker pilots a few years ago regarding SELCAL equipment, and they all said they did not think that their aircraft would ever have the necessary black boxes fitted. I later found out that the aircraft were all KC-10 Extender aircraft (variants of the DC-10 commercial airliner), and I understand that it is likely that only this type of aircraft will be equipped with suitable SELCAL equipment.

So this is where I would like to ask for the help of the readers of this column. I have been very interested in SELCAL codes for many years, and I would like to know if anyone has heard similar flights and can send me details of the SELCALs quoted by the aircraft. If you hear any USAF flights working aeronautical ATC stations, and the aircraft give out a Selcal code, I would be interested to hear all about it.

Santa Maria

Staying with the North Atlantic ATC system for the moment, if you have ever spent any time listening to aircraft crossing the Atlantic, you cannot fail to miss the distinctive sound of Santa Maria ATC. Now, one of the radio operators at Santa Maria ATC has set-up a web-page that gives all sorts of information about the station and the way that it operates.

It contains details of the equipment used, and some photographs of the Radio Operators and Controllers at work. There is also a description of the SELCAL system and a list of v.h.f. and h.f. frequencies used by Santa Maria. Their h.f. frequencies are all given two-letter designators - does anyone know why, and whether any other ATC station does this?

One real bonus with the web-site is that you can electronically send a QSL request, and receive a QSL in return. Although I have not personally tried this, I have heard from

several people who have had some success with this.

If you have access to the Internet, just surf to: <http://www.terravista.pt/aguaalto/2010> I have looked for similar web-sites for the other NAT stations (Gander, New York, Shanwick and Iceland), but I was unable to find anything. Has anyone ever found any web-sites for these stations?

JMC 99

By the time you read these words, the first of the 1999 Joint Maritime Conference (JMC) courses will be just about to start. Each year, I always receive requests for advance information on the dates for these exercises, and this year I am able to provide a little bit of suitable information.

The JMC exercises are held in the UK coastal waters around Scotland and the northern UK.

They give NATO military maritime forces a chance to practise tactics and test equipment, and they usually use a lot of h.f. frequencies for communications. It gives anti-submarine aircraft a chance to detect and track submarines, and for surface ships to help in the search.

I do not have the exact dates of this year's JMC exercises, but I can pass-on the approximate dates. Each exercise lasts for a two-week period - Monday of the first week through to Friday of the second week. During 1999 they will be held at the end of February and start of March (presumably 22nd February until 5th March), and also during June and September.

Unfortunately, I do not have a list of frequencies that they will use for the exercise, but in past exercises that have used frequencies in the 4-6MHz range. Bear in mind that there are usually two sets of frequencies being used, as the aircraft and ships involved are split into two, to represent two imaginary countries. Each country will have its own forces, and its own frequencies.

Airnav

The January 1999 issue of *SWM* contained a review of the *Airnav* tracking program, and I have already had a few E-mails from people asking for more information in acquiring copies of the program. These were all answered very quickly, including several protracted E-mail messages concerning difficulties in downloading the software from the web-site. Hopefully by now, everybody who asked for help will have succeeded in downloading a copy of the program.

The author of the program, **Andre Brandao** from Portugal, has contacted me to let me know that there are now some updated files on the web-site, and are available for downloading. The first of these is a new database containing over 10000 aircraft entries. The other two new files are maps that can be incorporated into the existing series of maps. The new maps both cover the North Atlantic region.

This is especially handy for those of us in Europe, as this is probably the busiest area for h.f. air traffic. If, like me in the original review, you have problems creating your own maps for *Airnav*, the ones from the web-site are just perfect.



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Airband

This year, Chris and I plan to be at the Pickett's Lock show on Sunday March 14 and at Friedrichshafen on Thursday June 24. Apologies to anyone who tried to find me at the latter show last year, an unexpected occurrence meant that I had to cancel the trip.

Let's Fly (To the Eclipse)

If you want to see the total eclipse on August 11 then you could try flying. That way, you might be able to climb above any cloud cover and even extend the view of totality by flying along the path of the moon's shadow. One drawback is that aircraft windows aren't that clear for photography. Whatever you do, look through the correct protective filters or else risk going blind! If anyone's interested, write in and I'll publish sources of such filters. They're not expensive, cheaper than a pair of eyes.

One offer is a ride in a Beech 200, probably a round trip from Biggin Hill. Predicted flight time to see the eclipse is just under three hours and seats are being sold at £499 each by **Peter Mugridge, PO Box 134, Epsom, Surrey KT19 9WH, FAX: (01372) 726616**. This is cheaper than some other similar offers that I have heard of.

Note, however, that many people have had the same idea and that includes private pilots. Not all light aircraft will actually be able to climb above the typical tall clouds that are encountered in the summer. The airspace will be crowded with everyone wanting to fly along the band of totality at once. It'll be dark! So keep a good lookout and remember that conditions may come as a surprise if you're a pilot without a night rating.

In The Air

Where are the aircraft going that overfly **Les Griffiths** (Sheffield)? He lives under UB4 and sees aircraft in upper airspace turning east towards Humberside or UB1/UR4. I also see that Les is just north of Lincolnshire Military Temporary Reserved Airspace.

Perhaps the observed flights are turning on a direct route for the north Continent under direct radar vectoring. Possibly their flight path is restricted by the nearby military airspace. If anyone has more detailed local knowledge, please write in.

Les would also like to identify N1505. Now, if this is a United States registered aircraft then it could be a DC-8. However, the example that I have listed is N1505U and was subsequently re-registered. Also, the DC-8 is now old and hence becoming rare, especially in the UK.

If readers can confirm the identity of this flight then write in. Did you know that a prototype just managed to break the sound barrier briefly while in a shallow dive?

Receiver Hardware

Do you remember the saga of the antenna bought by **Mrs P. Gent** (Aylesbury) in January's issue? Mrs G. now tells me that it's a Watson W50 dual-band antenna designed for transmitting by radio amateurs in the 144-146 and 430-440MHz bands. So, I'm not

surprised that performance is poor outside of those narrow bands. It's unsuitable as a general-purpose v.h.f. receiving antenna.

Now, the problem lies in the not inconsiderable cash investment that this device represents. Any offers from readers wanting to purchase it will be forwarded by me if you enclose a blank, stamped envelope. But, if no-one else wants it, then Mrs G. should consider if she has been sold what she asked for. If not, assuming also that there wasn't a genuine reason for the dealer to misunderstand her requirements, then perhaps a refund or exchange would be in order.

Scottish Airways

I did promise that I'd re-publish the frequencies for these if need be and **Kenny Williamson** wants them, so here they are (all MHz). Pity that LATCC won't permit me to print the equivalent information for their airspace.

Antrim **123.775**, Central **132.725**, Dean Cross **129.225**, Forth High **134.775**, Forth Low **124.5**, Hebrides **133.675**, Moray **126.25**, Southwest **125.675**, TMA Inbound **126.3**, TMA Outbound **124.825**, West Coast **127.275**.

Where are the sector boundaries? A nice map is provided by **Manager ATC (Airways), National Air Traffic Services Ltd., Scottish and Oceanic ACC, Atlantic House, Sherwood Road, Prestwick, Scotland KA9 2NR**. Remember to send a pre-paid reply envelope to hold one A4 sheet. Forth Low replaces the old Border Radar north of airway W911D.

The low/high divide is FL255. Not all new sectors correspond to the old ones that they replace. At quiet times, Central and Southwest will bandbox onto Dean Cross, whereas Forth Low would bandbox onto Forth High.

Hebrides carries traffic in transit to/from the oceanic control area (under Shanwick) and Reykjavik. TMA inbound arrivals in the Dean Cross sector under control of LATCC, are handed over to Scottish and descended before leaving the sector and handed off to TMA Inbound. Outbounds climbing to at least FL250 will be handed off to Dean Cross for further climb to cruise level prior to being taken over by LATCC.

Radio Procedures: Marine Liaison

In last November's *SWM* (page 66) **C.R. Holme** (Bournemouth) asked if aircraft can communicate directly with the Coastguard in emergency or to report an oil slick. I still haven't been able to discover a direct link frequency despite enquiries. I'm sure that, like me, many readers are interested in the maritime world as well as in aviation. So I recommend to you our new 'All At Sea' column by **John Hodgkinson**.

John kindly wrote to me with a summary of the usual frequencies that might be shared by aircraft and ships, or else could be used during search and rescue operations at sea. None permit direct contact with the Coastguard in the v.h.f. airband which uses a.m.

Coastguard aircraft (usually helicopters, some operated



Abbreviations

ACC	Area Control Centre
AIAA	Area of Intense Aerial Activity
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
a.m.	amplitude modulation
ATC	Air Traffic Control
CAA	Civil Aviation Authority
DC-	Douglas Commercial
FIR	Flight Information Region
FL	flight level
f.m.	frequency modulation
GASIL	General Aviation Safety Information Leaflet
h.f.	high frequency
ICAO	International Civil Aviation Organisation
kHz	kilohertz
LARS	Lower Airspace Radar Advisory Service
LATCC	London Area & Terminal Control Centre
MHz	megahertz
NATO	North Atlantic Treaty Organisation
SID	Standard Instrument Departure
STAR	Standard Terminal Arrival Route
TMA	Terminal Manoeuvring Area
UIR	Upper Information Region
u.s.b.	upper sideband
v.h.f.	very high frequency

DH.90 Dragonfly. *Christine Mlynck.*



Cherry. *Christine Mlynck.*



Airband

Continued

privately as described below in connection with Portland) have marine channels 0 (156.0) for primary communication, 16 (156.8) distress and 6 (156.3MHz) ship liaison (not the ship in distress but others helping in the rescue), all f.m.

On h.f. the most likely Maritime Rescue Co-ordination Centre channels are 3.023 (night) and 5.680MHz (day), both u.s.b. RAF Nimrods ("Mighty Hunters" as in Elgar's *Enigma Variations*, write in if you want me to explain) can also work through Portlandhead typically on 4.807, 6.634 and 8.960MHz u.s.b.

Steve Rogers (Jotron (UK) Ltd.) is involved in the manufacture of ship-borne radio equipment and reminds me that the new Global Maritime Distress Satellite System operates around 406MHz and replaces the old Morse distress channel on 500kHz. Ships of greater than 300 tonnes gross displacement can also work rescue aircraft directly on airband distress frequency 121.5 and NATO Scene of Search frequency 123.1MHz.

Frequency & Operational News

Microflight aircraft will no longer be registered in the special G-M series. Instead, so it says in *GASIL* 6 of 1998 from the CAA, the normal registration sequence will now be used for new registrations. This means that a microflight can no longer be identified from its radio callsign.

Ex-service personnel (and others) will be saddened at the passing of another air base. This time it's the Royal Navy helicopter facility at Portland. From the radio point of view, *AIC* 142/1998 tells us that little changes. The Coastguard machine of Bristow Helicopters is staying, the Danger Areas remain active, and Plymouth Military Radar will maintain the existing LARS and Danger Area Crossing services (124.15 and 300.175MHz). Portland AIAA is renamed Yeovilton South, the existing Yeovilton AIAA becoming Yeovilton North.

Further information in the form of *AIP* amendments via **Martin Sutton** (CAA). New ICAO codes are listed in **Table 1**.

Aerodromes: Manchester/Barton loses runway 06/24. Netherthorpe arrivals from the north or west first contact Sheffield Approach 128.525MHz to avoid conflicting traffic. Various SID/STAR instrument procedures have had minor revisions, the replacement designations are shown in **Table 2**. Heathrow also gets BIG 1F, a new STAR. Write in if you want me to explain what SIDs/STARs are.

Airways: In the south-east coast area the following new airways have been created: G39 (Lambourne to FIR boundary at RAPIX), L613 (Detling to FIR boundary at new point SOVAT), (U)M733 (Biggin to (U)FIR boundary at new point GURLU), Y8 (Southampton, new point CAMRA, WAFFU, GURLU).

Also, UA2 and UB4 go no further south than SANDY, point DEVAL being removed. This also affects UL613 which crosses the UIR boundary at SOVAT instead of DEVAL. Then, (U)A20 are now (U)T420, (U)FIR boundary crossing at new point ALESO, points CLIFF and NASDA being removed, point TIGER added. On W70 and W71, point VAXEL has been replaced by close-by point VABIK. New reporting point is GUSSI on W3D just south of Inverness.

Radar: Note that Brize Norton ATC is the new name for Brize Radar.

Table 1: New ICAO Location Indicators.

ICAO Code	Aerodrome
EGCO	Southport/Birkdale Sands
EGHY	Truro
EGNU	Full Sutton
EGNY	Beverley/Linley Hill
EGTU	Dunkeswell

Table 2: Revised SIDs/STARs

Aerodrome	Old SID/STAR	New SID/STAR
Gatwick	TIM 1B	TIM 2B
Gatwick	TIMBA 1E	TIMBA 2E
Heathrow	BIG 2A	BIG 3A
Heathrow	BIG 2B	BIG 3B
Heathrow	BIG 2C	BIG 3C
London/City	ALKIN 1C	ALKIN 2C
London/City	ALKIN 1D	ALKIN 2D
London/City	ALKIN 1F	ALKIN 2F
London/City	ALKIN 1G	ALKIN 2G
Luton	LRL 1Q	LRL 2Q
Stansted	CLN 3R	CLN 7R
Stansted	CLN 1S	CLN 4S
Stansted	LRL 1Q	LRL 2Q

All letters and information received up to January 14 have been answered or included. The next three deadlines (for topical information) are March 8, April 6 and May 10. Replies always appear in this column and it is regretted that no direct correspondence is possible. For those in the UK, it is quicker to write than to E-mail as someone in the Broadstone Editorial offices has to print out my E-mails and post them anyway! Don't forget to state a locator, such as a town, if you insist on E-mailing.

DX Television

Reception during December was mainly odds and ends but overall they created quite an interesting month, despite the distinct lack of Christmas DX pressies on the 25th! Meteor-Shower activity and several small lifts in tropospheric conditions helped to beef-up the log and there was even an F2 opening on Channel R1.

Meteor-Shower Reception

The *Geminids* Meteor-Shower, peaking on December 14th, proved considerably more productive than the November *Leonids*. **Peter Barber** (Coventry) monitored Band I frequencies from 0815 until late afternoon. Conditions were lively for most of that time, and by 0909 at least five sightings per minute were encountered, but the biggest treat was a prolonged display of lines and broken pictures at 0930 during which the Spanish TVE-1 logo appeared at least four times. Also of interest was a noticeable fall-off in signal strength during the final thirty minutes of activity as the Geminids radiant sank towards the north-west horizon. **Stephen Michie** (Bristol) also noted the bursts of TVE-1 plus lots of Scandinavian snatches throughout the day.

Tropospheric Reception

Gordon Still (Ruislip) reports a tropospheric lift on December 16th with French signals on u.h.f. Channel L21 and at Band III on L9. Pictures in SECAM colour with sound (Canal Plus was unscrambled at the time) were resolved around 1840UTC. Amazingly all this was achieved using a multi-system Casio l.c.d. receiver with its built-in antenna! The following day, RTBF-1 from Belgium on Channel E8 (Wavre) was logged at 0100UTC by **Simon Hockenull** in Bristol. Stephen Michie, also in Bristol, identified TV Drenthe, a Dutch regional station, on Channel E25.

F2-Layer Activity

Tim Bucknall (Congleton) was the bearer of glad tidings with the exciting news that F2 signals were present on Channel R1 during the morning of the 9th. Simon Hockenull (Bristol) has now confirmed that his Arabic signal (November 13th) on Channel E2 was indeed via F2 propagation (the pictures were characteristically very smeary). **Brian Williams GWOGHF** (Penarth) is keeping an eye on 30-45MHz using an IC746 as a receiver with pre-amplifier and spectrum analyser 'scope. USA/Canadian p.m.r., Highway Patrols and utilities around 32MHz have already been heard using f.m. Whilst monitoring for TV carriers, Brian noticed f.m. telephone conversations, some simplex and other duplex, between 31 and 39MHz. Does anyone know if these are legal?

We have also had reports of English and Swedish CBers accidentally being re-broadcast via a Russian military repeater on 48.610MHz on December 16th!

Problem Neighbours

Why is it that an antenna installation other than a humble, run-of-the-mill, standard 11-element antenna riggers' 'special' is immediately blamed for bubbles oozing out of the neighbour's dishwasher, or a mouse's head lovingly baked into their freshly delivered pizza? Answers on a post-card please!

In Stockport, a neighbour of **Martin Dale** is convinced that Martin's rotatable installation is responsible for his deteriorating Sky satellite TV reception! The problem is usually convincing neighbours that your installation is not to blame by emphasising that the antennas in question are *not* transmitting signals.

Problems of this nature had never materialised here in Derby until recently when a 'new' neighbour suddenly appeared on the doorstep late one evening, fag-in-mouth, tattoo-festooned arms, ranting on about the football being disrupted once again by "those ***** aerials". Her intermittent loss of reception turned out to be



Fig. 1: One of the Identification Symbols radiated by BBC Choice, available via Digital Terrestrial Television (DTT). The current series of Idents depicts a 'choice' (in keeping with 'BBC Choice') of three meanings for one central theme, in this case, 'fans'. Keep looking and you'll get the message.

■ KEITH HAMER & GARRY SMITH, 17 COLLINGHAM GARDENS, DERBY DE22 4FS

December DXTV Log

Our thanks to Stephen Michie (Bristol), Gordon Still (Ruislip), Tim Bucknall (Congleton) and Peter Barber (Coventry) for submitting logs. All times shown are in UTC.

Day	Log
1	France (Canal Plus) L5 (enhanced tropospheric).
2	France L5 (tropospheric).
3	Spain (TVE-1) E3 between 0957 and 0958.
7	Unidentified Meteor-Shower (MS) signals at 0803 on E3.
8	Unidentified signals between 1115 and 1132 via MS.
9	F2 signals on R1 during the morning.
12	Build-up of MS activity from 2300.
13	France L5.
14	Lots of MS activity (Geminids) throughout the day in Band I. Identified countries include: Spain (TVE-1) E3; Sweden (SVT-1) E3; Norway (NRK-1) E3; Denmark (DR-TV) E3. Minor tropospheric lifts with Belgium (VRT TVI) E10 and France L5.
15	MS reception: Denmark E3; Sweden E3
16	Tropospheric: Belgium E8 (RTBF-1) and E10 (VRT TV1); France (Canal Plus) L5, L7, L8, L9 and L10; France (2nd Network) L21; Netherlands (NED-1) E4, (NED-2) E27 and 47, (NED-3) E30 and 44; Netherlands (TV Drenthe) E25; Unidentified signals on Channel E7 (possibly NED-1).
17	Tropospheric: Belgium E8 (RTBF-1) and E10 (VRT TV1); Netherlands E4 and E7; Unidentified signal on E5; France L5, L7 and L9.
18	Netherlands (NED-1) E4 (enhanced tropospheric).
19	Belgium (VRT TV1) E10 (tropospheric).
20	MS activity on E4 between 1435 and 1439.



Fig. 2: One of the special Christmas Identification Symbols featuring a reindeer shown between programmes on BBC-1 in 1998.



Fig. 3: An alternative BBC-1 Identification Symbol with two penguins used during Christmas.



Fig. 4: The BBC-2 Identification Symbol seen many times during the 1998 Festive Season.

nothing more than a dry-joint in the tuner button assembly. A good thump (to the TV, not the neighbour) soon restored the picture. She promised to tell her live-in lover about the cure when he returned from the pub during the early hours. The next day they were as pleasant as lambs and asked if the TV could be repaired, but the generous request was never accepted and as far as we know, they are still bashing the living daylight out of the poor receiver!

Do Portable Antennas Really Work?

About two years ago, Gordon Still (Ruislip) purchased an Eagle v.h.f./u.h.f. set-top antenna from a Radio Shack store in New York. It is a type commonly referred to as a 'Rabbit Ears' antenna where two extendible rods protrude forming a 'V'-shape. These were widely available in the United Kingdom in the days of 405-line TV. A Casio multi-standard 68mm l.c.d. TV was purchased from a store in Tottenham Court Road, London. The receiver covers systems PAL B/G/H (for Europe), I (UK and Éire) and SECAM B/G and H (Middle East, Greece, etc.) and L (France) with auto-tuning on both v.h.f. and u.h.f. bands.

During the last Sporadic-E season, when reception was strong via a D-100 DX-TV Converter coupled to a Grundig TV, the Eagle v.h.f./u.h.f. antenna feeding the Casio l.c.d. TV was tried with surprising results. Signals resolved in Band I included Italy, Portugal, Sweden and Lithuania. The antenna has worked successfully during tropospheric openings in Band III with reception from Belgium (RTBF-1 and VRT TV1) and France (Canal Plus).

Danish Changes

Peter Barclay (Sunderland) advises that the TV-2 network has undergone a subtle revamp to its on-screen graphics and presentation. Although the logo remains unchanged, the opening sequence has been altered; music is no longer played for several minutes with a programme schedule prior to the first programme commencing. Instead, the list of programmes is shown for approximately two minutes without sound.

The TV-2 network usually closes down for a couple of hours from 0900UTC Monday to Friday. Most transmitters show text pages with no sound (except Tommerup E22 and Svendborg E32

which show the PM5534 test card with tone throughout the closedown period) for at least the first hour followed by the PM5534 until a few minutes before programmes are due to commence.

The TV Nord regional transmitters (Nibe E35 and Tolne E37) have selections of classical music accompanying their periods of text pages - a practice which seems to be unique to this TV-2 region.

Gösta van der Linden (Netherlands) has sent a list of proposed digital terrestrial TV allocations. One u.h.f. multiplex is allocated to each main transmitter but there is an interesting listing for the Thisted outlet being on Channel E3. Could this be a listing error perhaps? At Helsingør, a new local TV station called 'TV øresund' has opened on Channel E58. The ERP is not known, although it is likely to be small.

DX Contacts

Nigel Evans (Aylesbury) has supplied an updated E-mail address for other DXers who may wish to contact him about the hobby. It is: nigel.evans@eventail.freemove.co.uk

David Glenday (Scotland) has sent a Christmas card featuring snowmen and a frisky dog, but unfortunately no home address. So, David, please get in touch again with details of your current address.

Spanish Regional TV

The Valencian regional service 'Canal 9' is using the PM5534 test card with 'CANAL 9' at the top and 'TV VALENCIANA' in the lower black rectangle.

Keep On Writing!

Please send reception reports, off-screen photographs, news and information by the first of the month to:- Garry Smith, 17 Collingham Gardens, Derby DE22 4FS.



Fig. 5: Clock caption radiated during Christmas by one of the television stations in Australia.



Fig. 6: One from the archives which is almost 30 years old. The ATN logo used in the Midlands from November 15th 1969, with the introduction of colour TV on commercial channels and BBC-1. Colour began on BBC-2 on July 1st, 1967.

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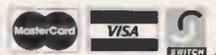
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Info in Orbit

Another interesting month in the weather satellite (WXSAT) scene! The Chinese *FENGYUN-2* satellite was 'repaired', more Gulf activity provided reasons to monitor the region around Iraq, and yet more weather records were broken as winter progresses. New documentation on the future move to digital WXSAT transmissions was released in October, giving technical details about what is in store.

FENGYUN-2 Rescued

Zhao Licheng is a scientist from the National Satellite Meteorological Center (NSMC) currently visiting Colorado State University's Co-operative Institute for Research in the Atmosphere (CIARA). During his visit he announced that China's geostationary meteorological satellite *FENGYUN-2* had restarted the broadcast of S_VISSR (stretched high resolution) data to the international community. The data is open to all countries, and can also be obtained from the Internet (see below).

FENGYUN-2, located at longitude 102°E, failed earlier last year, and reports from suitably equipped southern hemisphere observers in Australia (from where *FENGYUN-2* could be monitored) indicated that no telemetry was being received. Later in the year there were sporadic reports of periods of telemetry.

I contacted China's Satellite Meteorology Centre, and received a reply from **Shi Jinming**, the director of the computer division. He confirmed that *FENGYUN-2* now broadcasts six times every day: 0300, 0400, 0500, 0600, 0700, 0800UTC and that they plan to place near-real-time images on the web.

Technical information about the data format is available from: <http://www.cma.gov.cn> at which the National Satellite Meteorological Centre can be accessed. Web site of NSMC: <http://nsmc.cma.gov.cn>

It would be interesting to see *FENGYUN-2* images relayed by *METEOSAT*, although the latter's schedule is fairly full!

Operating WXSATs

Although *METEOR 3-5* remained transmitting a.p.t. (low resolution images) during January, here in Britain we could not receive them. The plane of the satellite's orbit slowly precesses around the earth, and *METEOR 3-5* has been travelling northwards to the pole, crossing the evening terminator before reaching our latitude. By the end of January it will be in daylight during afternoon passes due to the continued precession of its orbit past the evening terminator, so we should hear it by the time this is published.

Meanwhile, on 11 January at 1527UTC, I unexpectedly logged a transmission from *METEOR 2-21* on 137.85MHz, evidently re-activated by the spacecraft controllers. It remains transmitting a signal of poor quality, and may be switched off by late January, by which time *METEOR 3-5* will be heard once more in northern latitudes.

The three NOAA WXSATs have continued transmissions, and some contrast enhancement to the visible-light images from *NOAA-14* shows the wealth of detail still available in early afternoon winter images.

Transmissions from *SICH-1* and *OKEAN-4* have been few. I heard only one transmission from *SICH-1* during December, and nothing from *OKEAN-4* until 10 January, although there have been occasional reports on the Internet concerning suspected transmissions.

Iraq Monitoring

With *METEOSAT-5* positioned at longitude 62°E, and *METEOSAT-7* re-transmitting some of *METEOSAT-5*'s Primary Data images at least once per hour, it was interesting to see to what extent the region of the Gulf could be monitored during the 'Desert Fox' events. In the days prior to Christmas, I monitored a sequence of re-transmitted images that originated from INDOEX. They showed the Gulf region, much of which was cloud-free for a few days, giving an opportunity to look for aircraft trails.

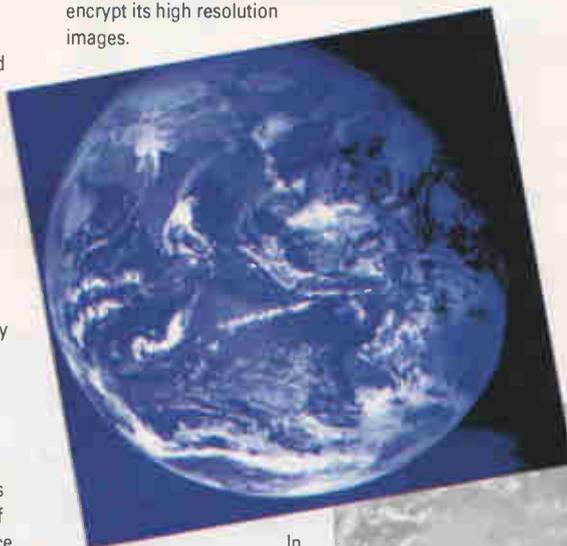
Figure 3 shows an interesting feature that I will leave 'Info' readers to identify. The retransmitted INDOEX images have lower resolution than the originals.

High Resolution Images From Readers

I have received several NOAA h.r.p.t. images from correspondents. **Figure 4** is from **Roger Ray** of Telford, and **Fig. 5** is from **Peter Schoen** of Germany. I can but wish...!

Primary Data Encryption

After monitoring the flow of high resolution (Primary Data) formats from *METEOSAT-7*, it seemed curious to realise that I could see details of the weather around almost the entire planet - but not where I live. Even China does not encrypt its high resolution images.



In order to see the European weather, I had to disconnect the Primary Data receiver and re-fit the 1691MHz pre-amp input to my WEFAX receiver. As a keen amateur astronomer, the changing cloud situation is important to me; a clear sky is only useful if it is going to last for some

FY-2 IR F 25 DEC 98 08:01(UTC)



Fig. 1: FENGYUN-2 infra-red image 6 January 0522UTC, from Chinese web page courtesy CSMC.

Fig. 2: FENGYUN-2 visible-light image 6 January 0700UTC, from the NASA and University of Hawaii web site: <http://rad.gsfc.nasa.gov/goesg/earth/Weather/main.html>

Fig. 3: INDOEX (METEOSAT-5) Primary Data image of 21 December transmitted from *METEOSAT-7* at 0918UTC.



Fig. 4: NOAA-25 h.r.p.t. image 5 August 1998 received by Roger Ray.

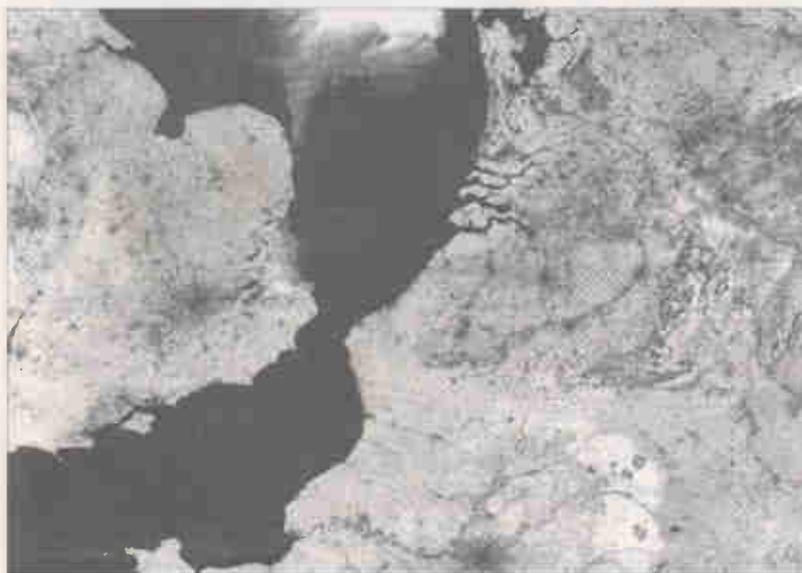


Fig. 5: NOAA h.r.p.t image from channel two received by Peter Schoen in June. (SCAN)

hours. The ability to animate infra-red images from METEOSAT-7's D2 European format is valuable and allows me to anticipate far more accurately than the official forecasts. OK, I'll get off my anti-encryption soap box now!

New Digital WXSAT Data Formats Released

The Co-ordination Group for Meteorological Satellites (CGMS) issued a document

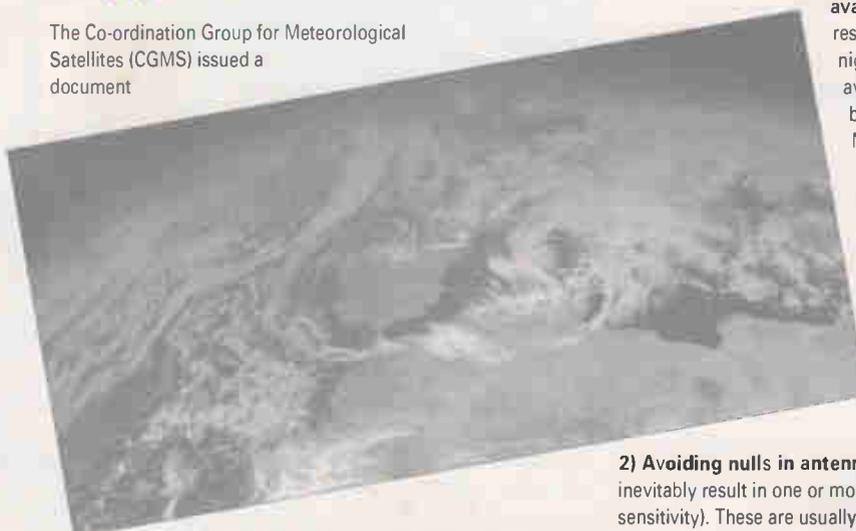


Fig. 6: Winter solstice (21 December) un-encrypted METEOSAT-7 mid-day visible-light image.

(CGMS03) in late October enticingly titled 'LRIT/HRIT Global Specifications'. It details a number of topics concerning the move to full digital transmission of WXSAT imagery and data, planned within the next few years.

The new digital mission (LRIT) - Low Rate Information Transmission - will replace WEFAX, currently transmitted by geostationary WXSATs. LRIT is intended for use on low rate communication links, mainly at 10Kb/s up to 256Kb/s.

High Rate Information Transmission (HRIT) is intended for use on high rate communication links, mainly at 0.256Mb/s through 10Mb/s. For the CGMS definition, the limit of 256Kb/s marks the boundary between low and high resolution transmissions systems.

The nominal carrier frequency will be either: 137.1000 or 137.9125MHz, with a bandwidth (containing 99% of total power) not exceeding 150kHz. The 137MHz LRPT subsystem should radiate a right-hand circularly polarised signal at the spacecraft interface.

This document has been made available from the WMO's web site and contains a considerable amount of technical data defining the formats of different types of telemetry. It accompanies a similar one for LRPT (Low Rate Picture Transmission), also issued in portable data format (pdf) for reading with the Acrobat file reader program.

Copies of the above files can be obtained via the web pages of the World Meteorological Organisation, or I can provide copies on disk (please remember that s.a.e. and disk!).

Correspondence

E-mail plays an increasing role in communications, and the welcome introduction of free Internet accounts in Britain, largely as a curious result of high telephone charges, means that this may continue to grow. The funding of free Internet services (excluding telephone charges) is available through a sharing of the profits from individual calls. This prompted me to move to one of the new ISPs.

Readers should continue to E-mail me through the magazine's contact address given at the top of this column. I plan to add more links to official information sources from my new web site: <http://www.itchycoo-park.freemove.co.uk>

Following the appearance of the 'Weather Satellite Special' in November, Nigel Evans of Aylesbury sent an E-mail. He writes that he became interested in all manner of data transmissions, following an earlier interest in monitoring standard voice traffic. Nigel found the 'Special' to "open up a whole new dimension to my hobby". Thanks, Nigel - that was one of my aims!

Nigel suggested a number of topics for coverage. I will look at each in turn.

1) Capturing high quality picture transmissions - are images of the UK at night available?

This specific type of high resolution image content - Britain at night - is not normally routinely available. Such images are obtained by the American Defense Meteorological Satellite Program (DMSP) constellation, and may eventually become freely available following the planned merging and de-classification of the DMSP. High resolution picture transmission (h.r.p.t.) is available from the operational NOAA WXSATs transmitting in the 1700MHz band, and I plan to include features on this.

2) Avoiding nulls in antennas? Most antenna designs inevitably result in one or more nulls (areas of lower antenna sensitivity). These are usually design-specific, so from the

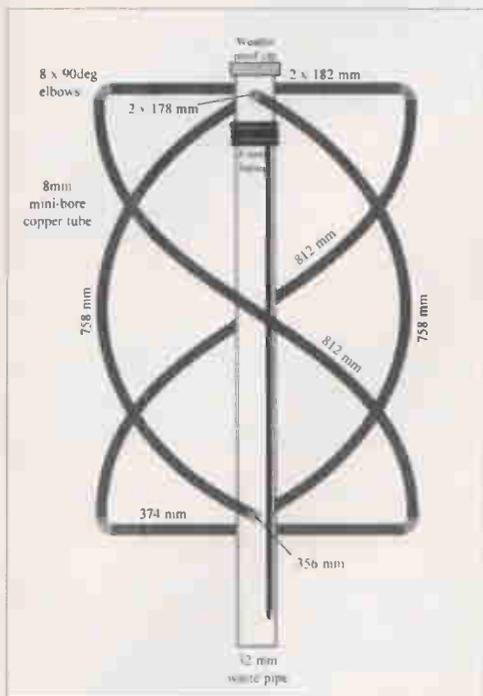


Fig. 7: Design for typical WXSAT QFH.

consideration for anyone seriously interested in setting up a system to receive WXSAT signals and effectively decode their images. It is essential that someone just starting an interest in this hobby should realise that excellent quality images can be obtained using the correct equipment. So what is the correct equipment?

A general purpose scanner is not suitable - neither is a random length of wire or a discone antenna. It is quite easy for someone to attach a length of wire to a utility scanner, tune to 137.62 (or 137.50) MHz, hear a NOAA signal, feed it to a computer running a decoding program, and wonder why the resulting unsynchronised mess does not look 'right'. A proper antenna and receiver are essential.

More than one type of antenna can be used successfully for receiving the WXSATs. Telemetry from the NOAAs is right-circularly polarised; METEOR telemetry is linearly polarised. The right-circularly polarised crossed dipole is perhaps the most common WXSAT antenna, but many people have reported success using a quadrifilar helix antenna (QFH). Other types - when suitably cut - are also capable of receiving good quality signals.

The receiver must also be specifically for WXSAT use (an essential caveat before purchase), and incorporate adequate filtering to eliminate pager interference. Remember that the signal construction from WXSATs is unique; a signal representing image brightness (clouds, land and sea) amplitude modulates a 2.4kHz carrier, and the resultant signal then frequency modulates the main r.f. carrier.

An effective receiver bandwidth of over 35kHz is required to accommodate Doppler frequency shifts. Hardly surprising that special circuitry is required to re-construct the image for display on a computer.

limited types available, one can choose an antenna that has the best reception pattern for our needs and budget. By testing reception near ground level, the basic characteristics can be checked, and this will reveal any serious problems - such as a wrongly connected phasing harness. When enough passes have been monitored, it can be mounted on a mast. One cannot avoid nulls - only minimise their effects.

3) Could you provide details of how to make a home-made quadrifilar helix antenna?

It would be possible for me to include another feature on this type of antenna, but a full description of the whole process would involve a large amount of space, with possibly a limited number of people actively interested in building one. **Bob Cobey** very kindly sent me a complete description of the construction process on some sheets of A4; these were duplicated on request for several readers. **Figure 7** shows the basic design of this antenna and **Fig. 8** is the resultant reception pattern - both diagrams kindly supplied by Bob.

4) How do you block out the interference from pagers?

Anyone tuning to the 137MHz band with a general purpose scanning receiver, cannot fail to hear occasional bursts of 'noise' and other 'interference'. Some of these are signals associated with personal pager units using frequencies allocated by the Department of Trade and Industry. Other powerful signals heard in this band originate from the ORBCOMM communication satellites that use several frequencies tightly packed between those of the WXSATs.

To minimise this 'interference', we have to buy (or build) a receiver with circuitry specifically tuned to reject non-WXSAT signals within the 137MHz band. This is a vital

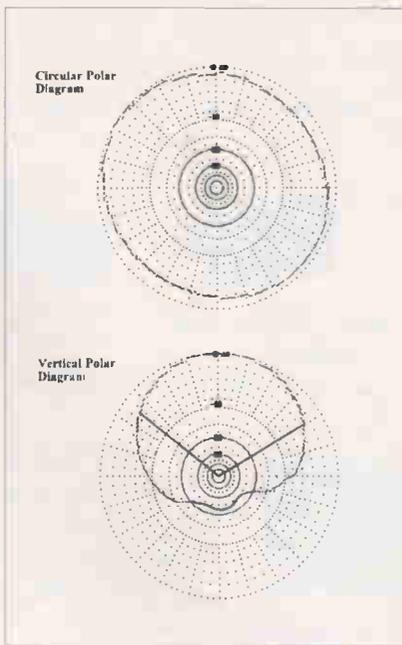


Fig. 8: Receive pattern for a typical QFH.

READERS' OFFER

Kepler Elements - MIR and Shuttle

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Shuttle Launch Schedule

STS-93 (Columbia) - recently re-named as the Chandra X-ray Observatory (formerly AXAF), has a planned launch no earlier than 8th April. This five-day mission will be in a 153 nautical miles orbit at 28.45° inclination - that is, not readily seen from Britain.

STS-96 (Discovery) - The second US International Space Station flight. The payload is the spacehab double module (SDD). Target launch date is 13 May, for this mission; 173 nautical miles high orbit and 51.6° inclination orbit.

A comprehensive listing of all Shuttle flights and payloads, together with associated information is available from me as the *Shuttle Pack*. Please include £1.50 and stamped s.a.e. for the A4 booklet.

Frequencies

- NOAA-14 transmits a.p.t. on 137.62MHz.
- NOAA-12 and -15 transmit a.p.t. on 137.50MHz.
- NOAAs transmit beacon data on 137.77 or 136.77MHz.
- METEOR 3-5 (or METEOR 2-21) uses 137.85MHz.
- OKEAN-4 and SICH-1 use 137.40MHz occasionally.
- METEOSAT-7 (geostationary) uses 1691 and 1694.5MHz for WEFAX.
- GOES-8 (western horizon) uses 1691MHz for WEFAX.
- MiR (packet) 145.55 and voice on 143.625MHz.

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Satellite TV News

Satisfactory photography off-screen is achieved using a shutter speed of around 1/15th at about f4 using 200asa film. Unfortunately my camera inadvertently was knocked onto 1/60th shutter, the result three films later was the loss of all Iraqi war and other never to be repeated satellite pictures. Some of the error pictures with black bars across have been included - well, it does example the effect of an incorrect shutter speed!

My first column of the incoming year reports a violent end to the outgoing year, with Iraq rattling her sabre over UN arms inspections. December 16th and the following three nights saw the UK/USA air forces in action, bombing and launching missiles into Baghdad and surrounds, on targets considered of strategic importance to the Iraqi regime. The destruction, timed at midnight Baghdad time, hits a peak viewing time in Europe and the spectacle of 20th century battle live in the mainstream evening news seems bizarre - just before bedtime and the cup of Horlicks. Perhaps we are approaching a situation of virtual battle where everyone sits at home and pushes buttons to send missiles into the enemy camp!

The media circus of course were well arrayed and prepared in various hotels around Baghdad, the missiles undoubtedly programmed not to hit media crew hotels, although there were some near misses. *Eutelsat W2* (16°E) carried most of the primary hop live feeds out of the war zone into Europe and beyond. **Jim Scofield** (Lake, IoW) for example, found 11 digital feeds outgoing between 12.505-12.558GHz horizontal, six of them were permanently on-air. Several of these were secondary hopped into the States via *Intelsat K* 21.5°W and *Orion-1* 37.5°W.

Intelsat K carried in analogue at one time 5° Westbound feeds, mainly reporters, commentary into their local news, whilst digital Westbound carried continuous output from the 16°E primary hops. Switching confusion became obvious at one stage with the PanAmSat test pattern being transmitted via *Intelsat*! CBS presenter **Mark Phillips** (not the Princess-Anne 'Mark') worked hard at his presentation on the W2, 12.558GHz-H feed back to his home network, Jim Scofield commented that he never seemed to rest over the four days of air strikes.

Other Arab broadcasters of course reacted with their own version of the military activity. **Roy Carman** (Dorking) watched a Libyan TV news broadcast put out anti-American footage suggesting that the US were putting troops onto Iraqi soil (with John Wayne?). The Arabic 'Al Jazeera channel' carried live news pictures from the banks of the Tigris - the Arabic crew

worked hard and were always first at damage sites - the BBC actually retransmitted some of their pictures as 'live' - an hour after Al Jazeera unplinked out of Baghdad!

Reuters carried continuous video ex Iraq on their digital leases, the quality was pin-sharp as were the 'morning after' pictures of live street views from hotel rooms. We're used to indifferent quality with war pictures; current technology seems too good, creating Hollywood quality pictures. Even a recently discovered Hitler coloured home movie shot by his mistress has been digitally enhanced, and the results are remarkable (carried recently by CBS, NY).

Our readers' comments suggest that much more immediate news traffic is now carried as digital rather than analogue, whereas the more feature type material, such as sports programme inserts, are still analogue. An example is the almost daily feed into GMTV by 'UKI-149' and early morning of January 13 the crew were atop Beachy Head following the mega cliff fall, as usual on *Intelsat K* in analogue.

This column has been a difficult one to create this month, mainly due to the mass of completely varied signals ranging from collapsing balloons, raging wars, a live rocket launch to planet Mars, a new year beginning together with a new currency - I've left out sport completely this time, sorry to **Dean Rogers** (SE2)!

With much of the dramatic news traffic speeding West, the public's attention has been diluted from the East bound news of the White House and Bill Clinton's indiscretions and impeachment proceedings. One interesting live actuality was the launch of the 'Mars Polar Lander' January 3, an outside broadcast production by the NASA TV facility on the 11.566GHz Reuters digital lease on 'K'.

The probe will land on the Mars Southern Polar Cap and dig for victory, sampling soil and ice. The launch followed the usual pattern but differed in that early into flight a camera on the side of the rocket was used to transmit pictures of the receding earth, clouds and then the dramatic jettisoning of the 1st stage solid fuel rockets; the quality was truly amazing.

I found a new digital signal! Checking out W2 @ 16°E with a normal analogue receiver in 'fast scan' it halted at 11.021GHz-H, inputting that frequency into the RSD digital receiver with FEC/bit rate on auto and then 'search' - up jumped 'Winchester Teleport' on colour bars (NTL - just up the road from me at Crawley Court). The receiver flagged up an ident '9MHz PAL 2 Audio' - check bits 5632; FEC 3/4.

And another digital oddity seen once more on 'K' was January 5 at 11.590GHz-V (bits 20145, FEC 3/4) at 2300 hours, colour bars with "London via 332.5E is 605 Tiernan Cha". I take this to mean that an incoming signal to London is sent via *Intelsat 605* (27.5°W) and originates from Tiernan, China. Any other suggestions?

Christmas Day live action wound up for the UK at 2000 hours UK with the unfortunate splash-down by Richard Branson and his balloon in the Pacific. NBC Hawaii kept open the digital circuits into the west coast, USA and onwards into Europe via Reuters 11.566GHz-H on *Intelsat K*. Helicopters from Barbers Point, Honolulu, airlifted the now damp ballooning trio back to terra firma. Safe from the heavy seas, interviews were fed back into the main networks courtesy KHNL-TV.

Roy Carman reported that the Iraqi Satellite Channel (digital and analogue) was knocked off the air with the 'Desert Fox' air strikes and staggered back to a propaganda normality on December 28 with test card in the morning and the 29th with programming telling 'porkies by the dozen' and how they struggled against all odds to get back on-air with a background of stirring patriotic music. A new test card hit the airwaves during December, the digital 'Palestine Satellite Channel' appeared on the *NileSat-1* bird, 7°W at 11.823.38GHz-V using the Phillips 5544 test card. This frequency is had been used by



Dean Rogers snapped BT uplinking Italian football via *Eutelsat 16°E* digital recently.



Telegloba is a French language network active in Eastern Canada, this test pattern carried on *PAS-3R* @ 43°W.



Christmas Day and helicopters rescued Richard Branson from the Pacific Ocean, live footage carried on digital capacity via *Intelsat K*.



Christmas Day and the MCR BT Washington crew put a camera on themselves whilst joking to their counterparts in BT Tower, London.

one of the Egyptian educational channels HORAS-2.

And still in a (sort of) Arabic theme, I checked out *Arabsat-2A* @ 26°E in 4GHz, C-Band on December 23. Odd to see the *Treasure Hunt* series once more being repeated but via the Saudi TV-2 channel at 2200UTC on December 23 (3.966GHz RHC analogue) and still in undubbed English with no subtitles.

Sherlock Holmes followed - also in English! Saudi is completely noise free on my 1.5m dish with TE @ LT-07 (of 32 TE steps). I was delighted to see Jordan TV appear within a digital package on *Hot Bird* @ 13°E, at last a real quality PM5534 test card from Jordan!

The world still continues in analogue and the BBC's Scottish UKI-234 SNG (satellite news gathering) van appeared afternoon of December 28 in the floods and winds of Scotland with a live news insert detailing lost power, floods, etc., this on *Telecom 2C* @ 3°E (12.604GHz-V).

Three days later and UKI-234 had motored down to Edinburgh to welcome in the start of 1999 and from about 2045 they were 'up' continuously with live programme inserts - the climax was the impressive firework display from Edinburgh Castle. Just up the band at 12.641GHz-V Reuters Paris office were offering less startling New Year's celebrations from an office type venue, suits making with the drink welcoming in 1999 and the new Euro currency, a mirror ball type effect spun large 'e' Euro letters over the celebrating party goers - how boring!

December into January had piles of signals, despite the birth of satellite digital, analogue is truly alive and well...and all being received by our readers on small dishes in back yards!

Feedback On Satellite Special

Several letters have been received after the December '98 *SWM* was published, generally complimentary, at least there are readers out there! We even have one reader in the distant parts of Northern Alberta, Canada, by name of **Michael Stonebridge**.

Michael comments that digital TV 'over there' relates to DTH entertainment TV, news feeds (he calls them 'wild feeds') remain in analogue in a land where C-Band is king. He uses a 3m mesh dish at his new home, but found that performance was down on that achieved by the solid 3m spun dish at his former home.

Michael is a veteran satellite operator having been active since 1982 and been through several receivers, now using a General Instruments G550i IRD and a 35° feed/polorotor/LNB Chaparral package - dish is tracked with a 0.91m Von Weis actuator arm. The system is used for entertainment now since living in the country (St. Isidore) he's many miles from the nearest cable outlet and has only two local off-air English speaking TV channels.

Michael simply erected his 3m dish on a steel concreted-in post, no council planners were aware, the nearest neighbour is 1km distant. Whereas I suggested prime focus dishes here for

domestic use go up to about 1.8m, large dishes in North America are common with 3m spun solid dishes in use and mesh dishes up to 7.5m in back gardens.

I also commented on sticking mechanical polarisers, Michael uses a Chaparral and this has worked happily down to local temperatures of -45°C, a frequent temperature in Northern Alberta. We wish Michael well in the cold Northern backwoods of Canada (actually 56°11'N 117°08'W).

Orbital News

For stock market enthusiasts the new 'La Chaine Financiere' should be good news which is now airing via the French TPS digital package. It's a joint partnership between a banking group, newspaper and a brokerage house. The subscription channel provides financial/investment information and also offers interactive financial transactions.

The Television Corporation of Singapore has announced a March '99 start for a pan-Asian satellite news channel. Start-up costs will be \$12m through to 2000 and a further \$22m until 2005.

Good news for sports fans, the UK 'Parallel Sport' and NBC have formed 'CNBC Sports International' offering 12 hours of sports each weekend for both Asian and European networks, already major Asian, European and South African golf tournaments have been signed up.

The EBU have confirmed a 12 year minimum lease on 4 x 72MHz wide transponders on the new 7°E *W3* bird once launched. This will provide the EBU with up to 20 video channels across the four transponders.

The *W3* satellite will offer enhanced European, North African and Middle East coverage and access into the Indian Ocean. Intelsat have confirmed the purchase/construction of a new satellite in the 9XX series. The 905 should be delivered into orbit Spring 2002 over the Indian or North Atlantic Oceans - the actual position will depend on the success of numbers 901 - 904.

Another new satellite hopefully on the air (timetabled to launch February 16, '99) is *Arabsat-3A*, an all Ku-band bird and slotting alongside the all C-band *Arabsat-2A* at a very commercial spot of 26°E, covering both the Middle East and Europe.

The BBC America channel has signed another digital deal to give the channel downlink airing in the PrimeStar package across 2.2 million subscribers. BBC capacity currently on the rival EchoStar's DISH channels will add another 1.8 million potential subscribers to the BBC America channel.

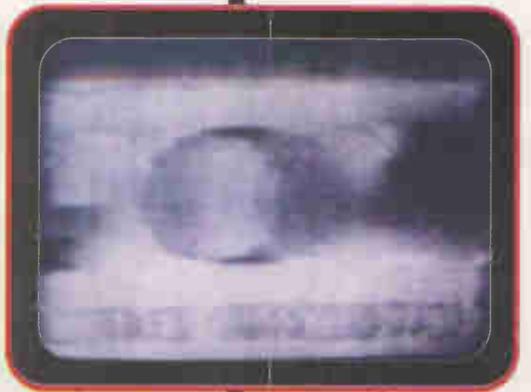
And finally the 1997 *Leonids* Meteor Shower last November didn't offer the mega meteor storm as predicted for either 1998 or 1999. Satellite groups had expressed concern at the withering hail of meteors blasting their birds out of the skies; with 1998 passing and no losses, the owners are now sweating on the mother of all meteor showers in 1999!



Live action was carried on many networks during operation 'Desert Fox'.



A rare catch of Hawaii ensuring that the satellite transponder doesn't switch pending interviews with balloonist Richard Branson and CNNI.



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Scanning

Last month I promised I'd cover quite a few interesting things in my next column, including some details on Tetra and a round-up of some of the best PC-based scanner control software. But, amazing as it may seem, I've actually been on holiday, my first for over a year, and so writing about those things are going to have to wait for a while.

Of course, for a busy journalist, the term 'holiday' generally doesn't mean the same thing as it does to the rest of the population, normally involving doing quite a lot of work, since deadlines wait for no man! In the case of this particular holiday, though, the work was rather fun, as it involved writing the review of the Optoelectronics Mini Scout which you'll find on page 32, and choosing a new scanner to replace my trusty Yupiteru MVT-7100, a process I thought would be very useful to share with you, since one of the commonest types of letter and E-mail I receive is of the "what scanner should I buy?" type.

Choice Of Three

Choosing a scanner is never an easy process since there are so many excellent models on the market, so the first thing I did was to narrow my choice down to just three: the Icom IC-R10, the Yupiteru MVT-9000 and of course the AOR AR8200. I'll go into why I chose these particular models in a moment, but before I do, I must thank **Jeff Stanton, of Waters & Stanton PLC, 22 Main Road, Hockley Essex SS5 4QS, Tel: (01702) 206835** who not only agreed to let me borrow all three of these scanners in order to compare them in the flesh, but also sent them out to arrive at my parent's home in Wales, the location for my holiday, the day after I spoke with him.

Icom IC-R10

So why did I choose these three particular models? Well, I was after the very best hand-held scanner on the market, which explains why I chose the AOR and Yupiteru models, both of which are stuffed to the gunwales full of features. But if you've read my previous columns, you'll know I'm rather fond of Icom products and own an IC-R8500, and so I didn't want to exclude the possibility of adding another Icom to my collection, hence the inclusion of the IC-R10.

Unfortunately, as I'd rather expected but hoped would not be the case, the IC-R10 was the first of the three scanners to fall by the wayside. This was a great shame, as of the three it exudes by far the most quality, feels very good and very solid to use, is very compact (though not as compact as the new IC-R2, of course) and comes with an excellent manual. It also has the advantage of being fitted with a very standard and very simple to use CI-V computer-control interface.

But at the end of the day, it doesn't have the sheer number of facilities as the other two scanners, its memory facilities aren't quite as flexible, and its frequency hunting capabilities just don't quite match those of the Yupiteru and AOR units.

Yupiteru MVT-9000

The next victim of my tests turned out to be the Yupiteru MVT-9000. Again, this is a lovely scanner offering a very large number of amazing and above all useful features, and proved to be very sensitive too. But although I know a simple to follow manual written by a user is available to download from the Internet somewhere, the fact is that the one that comes in the box has to be the worst-written manual of all time, and quite frankly I found it to be absolutely impenetrable.

It was so bad, in fact, that had I not understood the basics of the MVT-9000's operation because of my intimate familiarity with the MVT-7100, with which it shares a number of features, I wouldn't have had much of a clue where to begin, let alone try out some of its more advanced features. It is also put at something of a disadvantage because of its lack of computer control interface, and also the fact that its styling leaves something to be desired, at least to my eye.

AOR AR8200

So that leaves me with the AOR AR8200. Its manual is reasonably well written, it has more features than you could shake a whole forest of sticks at, is solidly built and in fact looks much more attractive and is far more compact in the flesh than it appears in the many pictures of it you'll see strewn around the magazine. To be fair to the other two scanners, however, it is far from perfect.

For a start, its text entry facility, which you can use, for example, to add an alphanumeric tag along with a frequency into one of its 1000-odd memory locations, is possibly one of the worst designed you'll ever come across, requiring far more key presses and a great deal too much hair loss than I feel is reasonable just to enter a few letters. And instead of a large, top-panel-mounted frequency adjustment dial mounted next to the volume and squelch controls, the AR8200 uses a small side mounted thumb-wheel, which is something of a user-interface disaster, considering almost everything you can do with this can also be done using the four-way rocker-control located just below it.

Its bandscope facility could do with some refinement too, though of the three scanners the AOR is still by far the best, and of all the features this scanner offers, it is this that made me choose the AR8200, despite its imperfections, rather than decide to wait for the newer models from all three manufacturers that are bound to find their way to us before long.

In closing, I feel I must point out that I'm not saying you should avoid the Icom and Yupiteru scanners. Both are excellent products in their own individual ways and will be far more suitable than the AOR model for many users - in particular, both are significantly less expensive than the AR8200, though unless you are a MVT-7100 or MVT-7200 owner, before buying the Yupiteru MVT-9000 I would strongly advise you to locate and download a copy of the less incomprehensible user manual. (*For those of you without Internet access, you can get a copy as it's included on our cover CD provided with the April issue of SWM - Ed*).



Next Month

Next month I'll try to bring you all the regular bits you've come to expect in the Scanning column, together with news of some interesting frequencies I came across whilst in Wales.

■ JOHN HODGKINSON - ALRS, c/o SWM EDITORIAL OFFICES

■ E-MAIL: aas@pwpublishing.ltd.uk

All At Sea

Firstly, a round-up of the latest casualties on the Coast Radio station closure scene. Scheveningen Radio (PCH) closed on New Year's Eve 1998, after 94 years as one of the premier European maritime coast radio stations.

This has been well publicised on the Amateur Radio network, with Scheveningen running a special event on December 19 and 20 1998, operating on W/T and R/T, and using its primary maritime frequencies. I have no doubt that many people listened to this momentous occasion!

Scheveningen's responsibilities for medical services, weather and navigational warning broadcasts have now been taken over by IJmuiden Coastguard, who, incidentally, occupy the same facilities as Scheveningen did before their demise. IJmuiden CG now broadcast on 3.673MHz at 0333UTC (GMT), then every four hours until 2333UTC. Broadcasts consist of storm warnings, weather forecasts and navigational warnings for the North Sea and Dutch coast. Alerting for these broadcasts will take place on the new GMDSS frequencies of v.h.f. Ch70 and m.f. 2.1875MHz from their network of coastal and inland v.h.f. and m.f. transmitters. Those with appropriate decoders will be able to copy the 2.1875MHz announcements.

Public correspondence services previously handled by Scheveningen have now been transferred to satellite, and will be operated by Dutch Telecom Company, 'Station 12', using the Burum Land Earth Station (LES). All very well and good if your vessel is fitted with satellite, but what about the small fishing boat who can't afford satellite equipment but wants to 'phone ashore, perhaps to his family or his agent, and is out of cellphone range? There is not a lot down for him, I'm afraid! But this is progress - or so they say!

The next one to bite the dust is the large German station at Norddeich (DAN). The same story again, closure took place on New Year's Eve 1998, with complete cessation of all services. Norddeich has been in service as a maritime coast radio station since well before the First World War, and will be sorely missed by the maritime community. Both m.f. and h.f. services closed some time ago, leaving a network of v.h.f. stations covering the North Sea and Baltic coasts. This network is now defunct, with public correspondence being handled by a private company using the name of 'Schiffsmeldedienst', or by its English name 'The Hamburg/Cuxhaven Vessel Reporting Service'. They are building their own network of v.h.f. transmitters, and are hoping to fill in the large hole left by the closure of Norddeich.

To date, three sites are up and running at Stade, Cuxhaven and Nordsee. Compared with the fourteen sites operated by Norddeich, it is apparent that the march of progress has again left the mariner in the mire, as far as telephoning ashore in Germany is concerned. Weather broadcasts and navigational warnings will be transmitted by Schiffsmeldedienst, as agreed with the German Weather Service. Search and Rescue will be co-ordinated and handled by the Marine Rescue Co-ordination Centre (MRCC) at Bremen on v.h.f. Ch16, Ch70 and m.f. 2.1875MHz.

Lack Of Customers

Lynby Radio (OXZ) in Denmark are ceasing service on h.f. W/T, as of February 1 1999. They are obviously suffering from the same lack of customers who still use Morse code as Portishead Radio, although the remedial action in this case is not so drastic. Nevertheless, I suppose the staff at Lynby must be sweating on what will happen in the near future. My own opinion is that the outlook should be fairly rosy, as

Lynby has been fitted with DSC for the GMDSS, and will assume the same responsibilities as the Coastguard has done in Holland, Germany and the UK. All public correspondence facilities will remain as normal, using radio telephone on m.f., h.f. and RadioTelex on h.f. These services can obviously be adjusted as necessary to suit traffic conditions, but the outlook for Lynby looks extremely good, considering!

It was mooted long ago, as far back as the late 1980s, that Lynby would become the 'European Super Station'. This provided some 'chewing the cud' and a few laughs for the chaps on the long night shifts at GKA, as everyone firmly believed that this could never happen! Portishead Radio was the biggest and the best and would never relinquish its position to a smaller, foreign station. The old proverb 'Never count your chickens', etc., springs to mind!

No Watchkeeping

Again with the implementation of the GMDSS, the requirement for watchkeeping on 500kHz is no longer a mandatory requirement. Some countries have opted to remain open on this frequency purely to 'sweep up the scrapings', so to speak, of vessels operating under third world flags of convenience, albeit GMDSS fitted by law, but still carry a Radio Officer because they cannot afford to, or refuse to, fit new equipment which will allow the RO to be dispensed with. These countries are obviously in the minority.

Others are considering ceasing 500kHz watchkeeping, preferring to wait and see how the GMDSS will perform when used in anger. The vast majority have come out in favour of completely scrapping it, as reports that have been trickling into this office for the last couple of months indicate.

Canada, Japan, Bermuda and Norway will close 500kHz watchkeeping on February 1 1999. The USA, one of the prime motivators behind the GMDSS, and the first country to allow American registered vessels to sail deep sea without a Radio Officer way back in the early 1980s, closed their 500kHz distress watch in 1996.

Station News

France has announced that Marine Safety Information (MSI) bulletins will now cease from the France Telecom stations at Boulogne, Brest, St Nazaire, Bordeaux-Archachon and Grasse. Marseille will continue for the time being, for operational reasons. The French Coastguard, Centres Regionaux Operationels de Surveillance et de Sauvetage (CROSS), will assume responsibility for MSI on v.h.f. and m.f., operating as per the GMDSS. The m.f. R/T frequencies to watch are 2.182MHz, which is now no longer the distress and calling frequency, 1.650, 2.677 and 1.696MHz for the Mediterranean area. Listeners on the South Coast should hear CROSS Griz-Nez on v.h.f. Ch79 (161-575MHz).

News on the home front sees the announcement by British Telecom of its intention to close its coast radio station network, beginning at the end of June 1999, Portishead being one of the first stations to be axed. Discussions are taking place between British Telecom and the Maritime and Coastguard Agency (MCA), regarding the transfer of distress and safety services and the control of the NAVTEX service. A 'seamless' transfer is planned, with the UK Coastguard hoping to operate on some of BT's old m.f. frequencies, subject to licensing by the RA. It would be premature to publish any frequencies that will be used, as discussions are still in the early stages with nothing finalised as yet. When more is known, I will publish a list for SWM readers.

Good News!

Now for some good news! The ever omnipotent Globe Wireless has announced the opening of a new station located in Seoul, South Korea. Operations commenced on December 15 1998, using frequencies in all maritime bands with the station callsign HLF. Globe are leasing transmitters in agreement with Korea Telecom and are operating as follows:

Transmits	Receives
4.2735	4.1885
6.344	6.2985
8.473	8.3715
8.497	8.3745
12.712	12.469
12.727	12.472
17.079	16.6785
19.910	18.8234

Globe Wireless welcomes signal reports and I should imagine that any from this part of the world, bearing in mind that Seoul is a new station and is under constant review and fine tuning, would be most welcome.

QSL reports should be E-mailed to Michael Beck, Globe Wireless QSL manager, on qsl@globewireless.com

Watchers Of The Waves - A History of Maritime Coast Radio Stations in Britain

The author, Brian Faulkner, qualified as a Radio Officer and spent six years at sea working on a variety of ships for the Marconi

Company and Bibby Line before coming ashore and joining the Post Office at Portishead Radio. Starting with the early days of radio, from 1896 to 1995, the author then goes on to

report on the early stations, like Bolt Head, Grimsby, Holyhead, Lizard, etc.

With chapters on individual coast radio stations too, like Land's End and Malin Head Radio, this book is an extremely fascinating read, with lots of interesting photos too. £13.50.



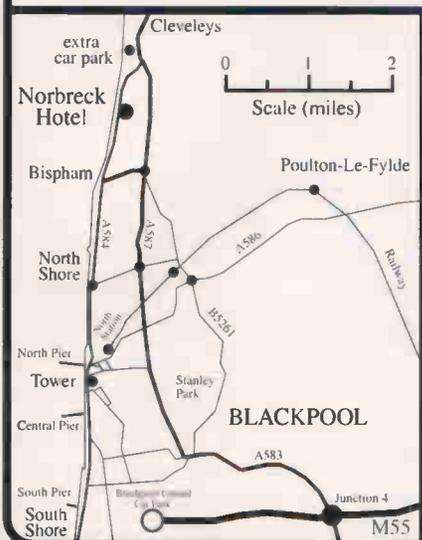
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ARA 40

Technical performance

Frequency range 40kHz-40MHz at full performance 40MHz-108MHz
2.3dB gain

Output impedance 50-75 ohm coaxial

Connector to Rx PL comes as the standard. Other standards can be fitted upon request

Gain 5dB +/-0.2dBs

Intercept Point +45dBm IP 3rd order (10MHz/12V)

DC power supply 11.5-13 volt DC at 70mA typ. (230V mains adaptor for 12V DC is supplied with the antenna)

Mast diameter 30-50mm can be fitted

Dimensions **ARA40** 115cm total length with glassfibre whip. Antenna tube 40mm x 140mm
ARA40 TEL 125cm total length with telescopic whip extended. 45cm minimum length. Antenna tube 40mm x 140mm
Ideal for portable radio

ARA 60

Technical performance

Frequency range 40kHz-60MHz (full performance) 60-120MHz
2-3dB less gain

Output impedance 50-75 ohm coaxial

Connector to Rx PL type delivered as standard. Other standards can be fitted on request

Gain 10dB +/-0.2dBs

Intercept Point +50dBm IP 3rd order (10MHz/12V)

DC power supply 11.5-13 volt DC at 80mA typ. (230V/12V DC stabilised mains adaptor is supplied with the antenna)

Mast diameter 30-50mm can be fitted

Dimensions 115cm total length. Antenna tube 50mm x 160mm
Ideal for base stations

ARA 2000

Technical performance

Frequency range 50-2000MHz

Output impedance 50-75 ohms coaxial

Gain 19dB -1000MHz
18dB -1400MHz
16dB -2000MHz

Noise figure 1.5-2dB -1000MHz
1.8-2.5dB -1500MHz
2.5-4dB -2000MHz

3rd order IP +35dB typical

Output impedance 50-75 ohms coaxial

Connector standards N type connector at the antenna. BNC male connector to the receiver

Power supply 12V DC at 160mA DC. Power supply for 230V AC is delivered comes with the antenna

Dimension Length 450mm.
Diameter 90mm

Weight 2kg

Accessories Mains wall plug adaptor (230V A/12V DC). Interface unit (remote supply unit)
12m coaxial cable and mast mounting clamps

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■ BRIAN ODDY G3FEX, THREE CORNERS, MERRYFIELD WAY, STORRINGTON, WEST SUSSEX RH20 4NS

Maritime Beacons

LONG WAVE MARITIME RADIOBEACON CHART

Freq (kHz)	C/S	Station Name	Location	DXer
284.5	LZ	[D] Lizard Lt	S.Cornwall	A,B,C,D,E,G*,H,I*,N,O,P
284.5	MA	Cabo Machichaco	NE Spain	A,B*,C*,E,F*,G*,H*,I*,L*,N*,O*,P*
284.5	PR	Porkkala	Finland	B*,C*,N*
285.0	NP	Nieuport W Pier	Belgium	A*,B,C,I*,M,N,P
286.0	TR	[C] Tuskar Rock Lt	Co.Wexford	A,B,C,D,E,G*,H,I*,J,N,O,P*
286.5	BC	[C] Baily Lt	Co.Dublin	J
286.5	FI	Caia Figuera	Malorca	A*,B*,C*,E*,H*,I*,N*,P*
286.5	FT	Cap Ferret Lt	SW France	A,B*,C*,E*,G*,H*,I*,N*,P*
287.3	HA	Haifa Lt	Israel	A*
287.3	IB	I Berenga	Portugal	I*
287.5	CV	Cabo Carvoeiro Lt	Portugal	A*
287.5	DO	Rosedo Lt	France	I*
287.5	FR	Faerder Lt	Norway	A*,B*,H*,I*
287.5	IB	I Berenga	Portugal	A*
287.5	MD	Cabo Mondego	Portugal	A*,I*
288.0	HH	Hoek van Holland	Holland	A,I*
288.0	KL	Skinna Lt	Norway	A*,C*,H*,I*
288.0	OH	[C] Old Hd Kinsale	Co.Cork	H,J
288.5	CT	Pt de Combril Lt	France	I*
288.5	FI	Cabo Finisterre Lt	N.W Spain	A,B*,E,I*,N*,P*
288.5	UD	Cabo Salou	S.Spain	I*
288.5	YM	Ijmuiden Lt	Holland	A,B,C,F*,G*,I*,M,N
289.0	BY	[C] Baily Lt	Co.Dublin	A,E,I*,J
289.0	RN	[C] Rhinns - Islay	Is of Islay	A,B*,E,G*,H,J
289.5	SN	Ile de Sein NW Lt	France	A*,I*,N,P
290.0	AV	Aveiro	Portugal	A*
290.0	FD	[C] Fidra Lt	F of Forth	A*
290.0	MR	Montedor	Portugal	A*
290.5	DY	[C] Duncansby Hd	NE Scotland	A
290.5	SB	[C] S Bishop Lt	Pembrok	A,B,C,D,E,G*,H,I*,J*,N,P
290.5	VI	Cabo Villano Lt	N.Spain	A,B*,C*,E,F*,G*,H*,I*,N*,P
291.0	SM	Pt St Mathieu	France	D,I*,N,P
291.0	SU	Cabo San Sebastian	Co Spain	A*,C*
291.5	SJ	[C] South Rock LV	Co Down	A,B,E,G*,H,I*,J,N
291.9	LT	La Isleta	Canaries	A*
291.9	NA	Punta Lantaila	Canaries	A*
292.0	MH	Mahon, Minorca	Balearic Is	C*,P*
292.0	SJ	[C] Souter Lt	Sunderland	B,C,E,G*,H,I*,N
293.0	CP	[D] St Catherine's	Is of Wight	D,B*,C,E,F*,G*,I*,M,N,O,P
293.0	SY	Sinoy Lt	Norway	A*,H*,I*
293.5	BL	[D] Butt of Lewis	Is of Lewis	A*,H,J
293.5	RO	Cabo Sillero Lt	N Spain	A*,I*
294.0	PH	Cap d'Alpreeh	France	A,B,C,D,E,F*,G*,I*,M,N,O,P
294.5	PA	Pakrineem Lt	Estonia	A*
294.6	NO	Cabo de la Nao	Spain	A*
295.0	DV	Djupivogur	Iceland	A*
295.0	SN	Sleimes Lt	Norway	A*,I*
295.5	CR	La Corbiere Lt	Jersey C.I.	A,B,C,E,H,I*,N,O,P
295.5	CB	Cap Couronne	France	I*
295.5	JA	Jaroslawiec	Poland	A,E,H*,L*
295.5	RE	La Rochelle	France	A
296.0	GR	Goeree Lt	Holland	B,C,E,I*,J*,M,N,O
296.0	KN	Skrova Lt	Norway	A*,C*,N*
297.0	FG	Pt de Barfleur Lt	France	A*,D,E,G*,I*,O,P
297.5	PS	Cabo Penas Lt	N.Spain	A,H*,I*
298.0	GX	Ile de Groix	France	H,I*,N,O,P
298.0	TA	Cabo Gata	S Spain	A*,I*
298.5	RR	[C] Round Is Lt	Is Scilly	A,B,C,D,E,F*,G*,H,I*,J,M,N,O,P
299.0	AD	Ameland Lt	Holland	A,G*,I*
299.0	BN	Les Baleines	W.France	A*,I*
299.0	O	Tarifa	S.Spain	A*
299.5	NP	[D] Nash Pt Lt	S.Wales	A,B,C*,D,G*,H,I*,N,O,P
299.5	SK	Stomvaer Lt, Rost	Norway	H*
299.5	VR	Urvaer Lt	Norway	A*,H*,I*
300.0	CL	Olech Pt Lt	W.Scotland	A*
300.0	MZ	[D] Mizen Head	Co.Cork	A,C,E,I*,N,O,P
300.0	TI	Cap d'Antifer Lt	N.France	D,I*
300.5	LA	Lista	Norway	A*,B,C,E,F*,G*,H*,I*,K*,L*,N,P*
301.0	CA	Pt de Creach	France	A,B,C,D,E,F*,G*,H,N,O,P
301.0	ER	Eierland Lt	Holland	A,C,I*
301.0	HA	Pt del Hank	Morocco	A*
301.1	RG	Raufarhofn	Iceland	A*
301.5	OU	[C] Dungeness Lt	Kent	B,C,D,E,F*,G*,I*,M,N,O,P
301.5	KD	[C] Kinnards Hd Lt	NE Scotland	A*
301.5	L	Torre de Hercules	N Spain	A*,I*
302.0	RB	Cherbourg Ft W Lt	France	A,B,C,D,E,F*,G*,H,I*,M,N,O,P
303.0	O	Rota	SW Spain	A*,P*
303.0	FB	[D] Flamborough Hd	Yorkshire	A,B,C,D,E,G*,H,I*,K*,M,N,O,P
303.0	MY	Cabo Mayor Lt	N.Spain	F*,N,P*
303.0	YE	Ile d'Yeu Main Lt	W.France	A*,I*,P
303.4	VC	Cape St Vincent	Portugal	I*
303.5	BJ	Bjornsumund Lt	Norway	A*,B*,C*,E,G*,H,L*,M*,N*
303.5	FN	Feinstein Lt	Norway	C,I*,N,D*
303.5	IA	Uanes Lt	N.Spain	A*
303.5	OR	Punta de Llobregat	S Spain	C*,N*
303.5	VL	Vieland Lt	Holland	I*
304.5	PS	[D] Pt Lynas Lt	Anglesey	A,B,C,E,G*,H,I*,J,N,O*
305.5	FP	[C] Fife Ness Lt	SE.Scotland	A,B,C,E,N
305.7	DA	Dalatangi Lt	Iceland	C,H*

Freq (kHz)	C/S	Station Name	Location	DXer
306.0	FN	[C] Walney Is Lt	Off Lancs	A,B,C,E,G*,H,I*,N,O*,P*
306.5	H	Hel Lt	Poland	A*,K*,L*
306.5	UT	Utsira	Norway	A*,B,C,E,H*,I*,N,O*,P*
307.0	GL	[C] Eagle Is Lt	Co Mayo	A,E,H*,J
307.0	LE	Leba Rear	Poland	A*,L*
307.5	RS	Ristna	Estonia	A*,C,E,H*,M*,N*,O*,P*
308.0	PI	Cabo Espichel	Portugal	A*
308.0	RC	Cabo Roca	Portugal	A
308.0	RO	Roches Douvres Lt	France	A,G*,I*
308.5	NZ	St Nazaire	France	C,I*,N*
309.5	BA	Punta Estaca Bares	N Spain	A*,C*,E*,H*,I*,L*,N*
309.5	FA	Fruholmen Lt	Norway	A*
309.5	MA	Marstein Lt	Norway	A*,I*,N*
309.5	PB	[C] Portland Bill	Oorset	A*,B*,C,D,E,F*,H,I*,M,N,O,P
310.0	ER	Pt de Ver Lt	N France	A*,C,D,F*,I*,N,P
310.0	KL	Kiel Lt	Germany	K*,L*
310.5	AS	Castellon	Spain	A*
310.5	GV	Genova	Italy	A*
310.5	RO	Rozeiwie	Poland	A*
311.0	NF	[D] N Foreland Lt	Kent	B,C,D,E,F*,G*,I*,M,N,O,P
311.5	GD	[D] Girdle Ness Lt	NE Scotland	A,B,C,H*,N,O*
311.5	LP	[D] Loop Hd Lt	Co Clare	A,E
311.5	SB	Sumburgh Hd Lt	Shetland Is	E,H*,N,O*
312.0	OE	Oostende	Belgium	A*,H*,J,O*,P
312.0	UH	Eckmuhl Lt	France	A*
312.5	AK	Akmenrags	Latvia	A*
312.5	AP	Mys Anapskiy Lt	Ukraine	I*
312.5	BA	Baltysk	Russia	A*,N*
312.5	BT	Mys Taran Lt	Latvia	A*
312.5	CS	Calais Main Lt	France	A,B,C,D,I*,M,N,P
312.5	KA	Klaipeda Rear Lt	Lithuania	A*,N*
312.5	LB	Liepaja	Latvia	A*
312.5	SR	Skardsfjara	Iceland	A*
312.5	VS	Cabo Estay Lt	N Spain	G*,H*,I*,O*
312.5	WW	Ventspils	Latvia	A*
313.0	HA	Halten Lt	Norway	A*,I*
313.0	PA	Cabo de Palos Lt	S Spain	A*,C*,F*,I*,P*
313.0	TY	[D] Tory Is Lt	Co Donegal	A,B,E,H,J
313.5	BR	Cap Bear Lt	S France	I*
314.0	HK	Hakklingen Lt	Norway	I*
314.0	PQ	Porquerolles	S France	I*
314.0	VU	Ile Vierge Lt	France	A,B*,C,D,E,F*,G*,H*,I*,L*,M,N,O,P
314.0	WU	Wustrow Lt	NE Germany	A*
314.5	CM	[C] Cromer Lt	Norfolk	A*,B*,C,E,G*,H*,I*,M,N,O,P
314.5	SK	Strandhnofn	Iceland	A*
314.5	TL	Punta D Penna	Italy	P*
315.0	ND	Nidden	Lithuania	A*
316.0	IN	Ingolfshofdi Lt	Iceland	A*
328.0	HB	Holsteinborg	Greenland	I*
337.0	MY	Myggenaes	Faeroe Is	A*,H*,I*,N*,O*,P*
343.0	SC	Scoresbysund	Greenland	I*
372.0	OZN	Prins Chris's Sund	Greenland	A*,C,H*,I*,N*
381.0	AB	Akraberg	Faeroe Is	A*,C*,G*,H*,I*,N*,O*,P*
404.0	NL	Nolso	Faeroe Is	A*,C*,G*,H*,I*,M*,N*,O*,P*

DXers:-

- (A) Robert Connolly, Kilkeel.
- (B) Brian Heath, Stapleton.
- (C) Brian Keyte, Gt.Bookham.
- (D) George Millmore, Wootton, IoW.
- (E) Albert Moore, Douglas, IoM.
- (F) Fred Pallant, Storrington.
- (G) Peter Pollard, Rugby.
- (H) Victor Robb, Belfast.
- (I) Peter Rycraft, Wickham Market.
- (J) Tom Smyth, Co Fermanagh.
- (K) Andrew Tett, while near Hamburg, Germany.
- (L) Andrew Tett, while in Røgeleje, Denmark.
- (M) Eric Tubman, Whitstable.
- (N) Fred Wilmshurst, Northampton.
- (O) John Woodcock, Basingstoke.
- (P) Ross Workman, Shoreham-by-Sea.

Note:

Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Beacons marked [C] will be cloned down
Beacons marked [D] will radiate DGPS data

The propagation conditions during some nights in October, November and December enabled the sky waves from beacons located in quite distant places to reach the UK.

Those at La Isleta (LT) and Punta Lantaila (NA) on the Canaries, which share 291.9kHz, were amongst the entries in an extensive log compiled by Robert Connolly (Kilkeel) - see chart.

The beacon on Mys Anapskiy Lt, Russia (AP) on 312.5 was received at night by Peter Rycraft (Wickham Market) - a new one for him. He also heard at night two beacons in Greenland Holsteinsborg (HB) on 328.0 and Scoresbysund (SC) on 343.0, both of which are rare for him. The Prins Christian Sund beacon (OZN) on 372.0, which is on the tip of a peninsular in S.Greenland, was heard at 0803UTC on December 12 by Brian Keyte (Gt.Bookham), also by four DXers at night - see chart.

Three beacons on the Faeroe Is Myggenaes (MY) 337.0; Akraberg (AB) 381.0 and Nolso (NL) 404.0 were heard at night by Victor Robb (Belfast), Fred Wilmshurst (Northampton), John Woodcock (Basingstoke) and Ross Workman (Shoreham-by-Sea). Exceptionally good conditions were noted during the evening of December 30 by Peter Pollard (Rugby) - he logged nearly twenty beacons in a period of about 15mins! The ident (VI) from Cabo Villano, N.Spain was clearly received on 290.5.

A loop designed by Kenneth Buck (Edinburgh) has been constructed by Brian Heath (Stapleton). It is proving to be a good performer and several beacons not previously heard have been received. By using the directional properties of a loop Albert Moore (Douglas, IoM) was able to reject the signal from Loop Head Lt, Co.Clare (LP) on 311.5 and log Sumburgh Head, Shetland (SB) which is now co-channel.

Quite a few of the beacons around the coastline of the UK were received by several listeners during daylight - see chart. However, some of them may have been closed down by the time this article arrives on the UK newstands (February 25), because the decommissioning of the UK l.w. maritime radiobeacons is now under way. An indication of those affected by the first phase of the closures is given in the chart. Some remaining will be radiating data in the form of differential corrections for use with the 'Global Positioning System' (GPS), a brief outline of which was included in the December '98 'Maritime Beacons' column.

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MilAir

Collating together several E-mails, it seems that four correspondents heard a two-part Coronet fighter deployment to the USA on January 22. Further investigation identified these aircraft as two flights of six, 23rd FS (Fighter Squadron) F-16s, on route to Nellis Air Force Base in Nevada. They were being deployed to take part in the exercise *Red Flag 99-2*.

The first flight of six was TREND 41-46, first heard on Dutch Military on 242.15, transferring to London Military East on frequency 232.025. They then made a rendezvous for air refuelling with tankers Cacti 01/02/92 and used the boom frequencies 240.7 and 289.6. Three air-to-air frequencies were noted in use at different times, 141.2, 142.1 and 141.45. One correspondent also reported that the aircraft were heard using their 23rd FS operations frequency, 283.375.

The second flight, TREND 51-56 soon followed, and were supported by two further F-16s from Spangdahlem which acted as air-spare aircraft. No unserviceability was reported to any of the 12 main deployment aircraft, and so PYTHON 1/2 returned to Spangdahlem. The flight then passed up the East Coast of the UK to Leuchars on Tacan route TB7, and then crossed the country to enter the ocean at 56°N, 10°W. Scottish Military frequencies noted in use were 252.475 and 268.575. The tankers stayed with the flight until the oceanic entry point, Cacti 02 left the flight at 56°N, 10°W, Cacti 92 left at 20°W and Cacti 01 remained with the flight for the oceanic crossing.

Strange Structures!

Dave L. sent me an E-mail with some pictures attached, showing a strange scaffolding-like structure which he has seen in Derbyshire. He writes, "Can you help, the enclosed photographs were taken near Carsington Reservoir on the way to Matlock. Are they some sort of military antenna, or a beacon for commercial aircraft?"

From the location you describe, this is almost certainly the Trent VOR/DME. This raised circular structure, which looks a bit like a meccano kit, is an aeronautical beacon which uses the ident 'TNT' on frequency 115.7MHz. This beacon is the junction between two of the primary UK Northbound airways, Upper Alpha Two and Upper Papa Six. Any Air traffic, civil or military, will use this beacon if travelling on these two airways. VOR/DME equates to, VHF Omnidirectional Range beacon with Distance Measuring Equipment. Very basically, this gives an aircraft its bearing to or from the beacon and its range from that point. This is the main type of navigational beacon in use around the UK, although Trent is perhaps not one of the better known.

Lakenheath

Dave S. writes to me regarding an F-15C Eagle that arrived at Lakenheath recently. The aircraft is a very rare USAF visitor to the UK and comes from the 12th FS, based at Kadena AFB in Japan. A second source tells me that it is one of several aircraft currently deployed to Incirlik in Turkey for an exercise. It apparently arrived for maintenance and was soon towed into one of the North-side hard shelters. Dave wants to know if anyone made a note of the 12th FS callsign used on its arrival, and I have just received late news that the callsign is KNIFE01.

Spadeadam

Julien H. is off to Scotland for a week in early April to stay with a friend who is in the RAF at Lossiemouth. He apparently lives under the approach to Runway 23, which sounds to me like a good spot to engage in a spot of MilAir listening. To break his journey, he hopes to call in at Spadeadam range for a few hours and asks me if I know any good places to watch the low level flying, and which frequencies to try.

Spadeadam is the only Electronic Warfare Training Range in the UK, and is only one of two in Europe. The range covers about 280km² and is located on the West side of the Northumberland National Park (dare I say it - even if you see no activity on the range, it is a very scenic place to visit). The range is a large area and aircraft do not always follow a predictable path through it, so be prepared for the unexpected and possible disappointment. As a general guideline, the ground targets at Wiley Sike and Spadeadam Farm are the favourite sites for activity. The reader should be aware that live bombing only takes place once or twice a month, so unless you are aware that bombing is planned, a visit can be a bit of a lottery.

I must admit it is a good three years since I was last at Spadeadam, but assuming nothing has changed, there are a couple of good places to view the low-level activity. The best place for viewing the bombing area of the range is called Wiley Sike. You will almost certainly approach the area on the A69, which runs from Carlisle to Hexham. If you locate the village of Greenhead on the A69, take the B6318, which routes North and then West to Gilsland. Just past Gilsland take a right turn onto a minor road, which if memory serves me correctly is signposted to Moscow (honest, it's a tiny village just up the road!). I'm not certain, but I think it is also signposted to Wiley Sike House. As you get to Moscow the road takes a sharp turn to the right, and then tracks along the Southeast side of the range. Wiley Sike is on the left about two miles up this road, there are a couple of dumped T-33s located there which act as a simulated airfield.

There are many places on this road where a good view of low level aircraft is possible. The other place to try is Spadeadam Farm. From Gilsland on the B6318, go past the Wiley Sike turning and continue straight on for 4.8km. Take the right turn, which goes to Desoglin and the Farm. It is quite close to the other group of ground targets and can be a good place to view the action.

The most recent frequencies I have for Spadeadam range are 369.15 primary and 340.3 secondary, although others I have seen listed include 257.0, 351.65 and 360.75. For aircraft routing into and out of the range don't forget to try a few London Military North and Scottish Military frequencies. Finally, a word of warning, and I assure you I speak from bitter experience - it can be very cold up there. The last time I was there was the week before Easter and the freezing wind absolutely howled through Wiley Sike - I swear it had come straight from Siberia. So take some warm clothes with you, Julien!

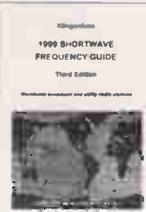
This month's photo is a Tornado F.3 of RAF 25 Squadron - see you next month.



Tornado F.3 of RAF 25 Squadron

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Decode

New Zealand ZKLF Radio

For those of you that like to try some DX FAX reception I thought you might like to try ZKLF radio in New Zealand. This station is just about as far away as you can get from the UK, so represents a fair challenge!

I can offer a few tips that might help. First of all you need to pick your time. One of the very best times is at first light in the morning. By listening at this time, you make best use of the enhanced propagation that occurs during the transition from night to day. You will also find that the levels of man-made noise are very much lower in the early morning.

You should also make sure you have a decent antenna and start by using a fairly narrow (around 2.4kHz) i.f. filter. Once you've found the station, you can then experiment with the receiver filtering to find the best compromise between noise reduction and image detail.

You will find ZKLF transmitting on the following range of frequencies: 5.807, 9.459, 13.550.5 and 16.3401MHz. Remember, if you listen to the station with your receiver set to u.s.b., you will need to tune 1.9kHz lower than the frequencies I've shown.

Once you've successfully found the station, you would be well advised to look out for their FAX schedule, which is sent at 0430 and 1630 everyday. This will give you full details of the charts and ensure you can catch the information you want. **Figure 1** details the latest schedule I could find.

If you want to take a look at the Web page for this station, it can be found at <http://www.met.co.nz/home>

US Coastguard Schedules

To give you a good selection of FAX stations to try, the following list shows the outline schedules for most of the US Coastguard Radio FAX transmissions. Actually, receiving any of them relies on you choosing the correct frequency and time. For the inexperienced, you can of course just use trial and error. You will find that you soon pick-up the best combination of time vs frequency, providing you keep good records in the form of a listeners' log.

Boston (NMF) 6.340.5, 9.110, 12.750MHz

Broadcast Start: 0230, 0800, 1430, 2005

Schedule: 0243, 1903

Ice Charts (Seasonal, Feb - Sep): 1600Z1, 1810Z1

Figure 1: ZKLF Schedule.

Time (UTC)	Chart
0300 - 0315	0000UTC MSL Analysis Tazman Sea - New Zealand
0315 - 0330	0000UTC MSL Analysis South West Pacific
0430 - 0445	Facsimile Schedule
0900 - 0915	0600 MSL Analysis Tazman Sea - New Zealand
1030 - 1045	0000 MSL Analysis South Pacific
1500 - 1515	1200 MSL Analysis Tazman Sea - New Zealand
1515 - 1530	1200 MSL Analysis South West Pacific
1600 - 1615	MSL Prog valid 1200 South West Pacific H+30
1630 - 1645	Facsimile Schedule (this table or similar)
2030 - 2045	1800 MSL Analysis Tazman Sea - New Zealand
2300 - 2315	1200 MSL Analysis South Pacific
2345 - 2400	MSL Prog valid 0000 South West Pacific H+30

New Orleans (NMG) 4.317.9,

8.503.9,

12.7899MHz

Broadcast Start:

0000, 0600, 1200,

1800

Schedule: 0630:

1830

Kodiak (NOJ)

2.054, 4.298,

8.459MHz

Broadcast Start:

0400, 1000, 1800, 2200

Schedule: (Mon, Fri) 1838

Pt. Reyes (NMC) 4346 (except 2300), 8682, 12730,

17151.2, 22527 (2300) kHz

Broadcast Start: 0245, 0815, 1100, 1415, 2015, 2300

Schedule: 1104, 2324

Honolulu (KVM70) 9.982.5, 11.090, 16.135,

23.331.5MHz

Broadcast Start: 0533,

1150, 1733, 2350

Schedule: 0533, 1150,

1733, 2350

(NB: this last station is Department of Defence not Coastguard). All times UTC.

If you want to use the Internet to get the latest information and schedules for these stations, the site to go for is http://www.nws.noaa.gov/om/marine/radio_fax.htm

Tuning JVFAX

Another request for help,

this time from **Colin**

G7HBI. Colin has

developed an interest in

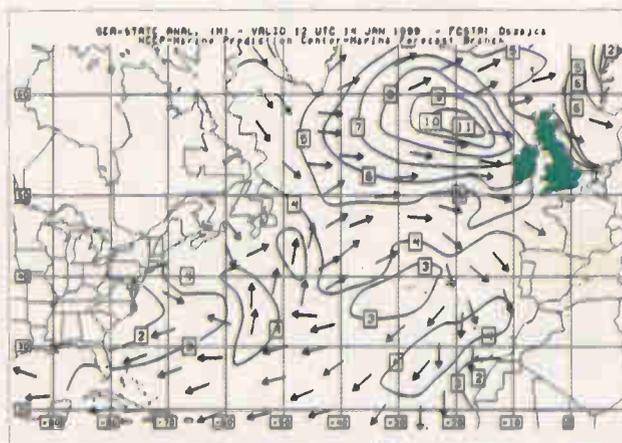
SSTV reception, but is

unsure of how to

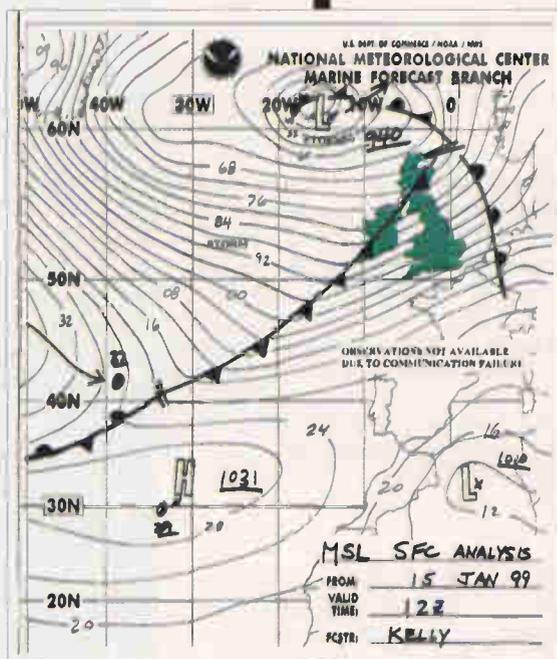
use the JVFAX tuning indicator. Fortunately, this is a simple one to tackle. There are two parts to the JVFAX tuning indicator that deal with the synchronisation and tuning respectively. A rough drawing of the indicator can be found in **Fig. 2**.

One of the many differences between a FAX signal and a SSTV signal is the use of a synchronisation pulse to mark the start of each line of the image. The transmission basically runs thus: synch pulse, picture line data, synch pulse, picture line data, etc. Now the synchronisation pulse is displaced to a slightly different frequency to that of the main line information in an attempt to provide a very clean synch pulse.

As a result of using this transmission



North Atlantic Weather Chart from NOAA.



Typical UK weather Chart.

technique, the listener has to make sure the tuning is spot on so that the synch pulse can be extracted properly. There's also a need to make sure the picture detail is received OK. It's this combined requirement that has led to the development of the dual tuning indicator used in *JVFAX*.

When you are correctly tuned to a SSTV station you should ideally have the central vertical line above the S mark as high as possible, and a spread of lines between the B (black) and W (white) markers. The trick when tuning a signal is to select the best compromise between an even spread of signal between the B & W markers, whilst maintaining the S markers as high as possible. Like most things in life, tuning an SSTV signal usually involves some sort of compromise!

Improve Your FAX Printing

If you like to produce print outs of your favourite FAX charts you may be missing out on the quality of the printed FAX. If you're using the excellent *JVFAX* for your FAX reception you can often get an improvement in the result by using *JVFAX*'s printer test to optimise the printed output. The printer test is available from the main menu.

When you hit 'P' for the printer test you are presented with a graphical display along the top of the screen showing a plot of how the 64 possible print patterns are matched to the 16 print intensity levels. If you press 'P' again, *JVFAX* will print a grey scale which should show 16 different shades.

You will probably find that, either the dark ones are indistinct or the lightest ones are pure white. If this is the case, you can use the UP/DOWN and LEFT and RIGHT keys to change the values to produce a better print. You will find that this takes a degree of trial and error, but it's well worth the effort for the improved output quality.

If you get in a mess don't worry, just press 'Q' to quit and choose 'N' when it asks if you want to save the changes. This will restore the settings to the default values. If you've managed to improve the print-out, you need to remember to save the changes so that all future FAX prints will use the new settings.

Help Required!

I've had a few pleas from readers that I hope some of you can help me with. The first comes from **John Garnett** down in Truro. John has recently installed *JVComm 32* and *WXSat 2.4* on his PC and is having a few problems. John reports that *JVComm 32* is brilliant and works extremely well with very little set-up required. The problem comes with *WXSat*, which will only offer-up black or grey screens when receiving FAX from Bracknell.

However, if John starts *JVComm 32*, and then minimises it, lo and behold *WXSat* works perfectly! The simple answer, of course, is to junk *WXSat* and stick with *JVComm 32*, but that would be avoiding the challenge!

I suspect the problem lies in the

configuration of the sound card and it may well be worth taking a careful look at the settings in *WXSat*. You could also make sure there are no hardware conflicts by examining the *Windows '95* device manager, (accessed via Control Panel).

Just to complete the picture and give the best chance of a solution, John's PC is a Pentium 75MHz with 40Mb RAM. This sound card is *Soundblaster 16*. If you have any bright ideas, please drop me an E-mail and I will pass it on to John and print it in the column.

Lazy FAX!

Whilst all this h.f. FAX stuff is very interesting, you could be forgiven for getting frustrated if it's the weather data that you're really after. The simple answer is to get the charts via the Internet! Not surprisingly, the US are probably the best source of a wide range of charts and satellite pictures.

One of the best I've found for FAX charts is the NOAA site at

<http://weather.noaa.gov/fax> This

site holds FAX charts for the entire globe updated every few hours - it really is stunning stuff! I've shown a few examples in the column so you can see the quality.

Readers' Special Offers

If you'd like a copy of *Hamcomm/JVFAX*, etc. I've arranged a very special offer with the Public Domain and Shareware Library (PDSL). They have put together a library set of all five disks for just £12, all inclusive.

Using PDSL also makes ordering simpler as they accept all the usual credit cards so you can order by 'phone - you don't even have to write a letter. Please direct all orders and enquiries about this disk set to **PDSL Winscombe House, Beacon Road, Crowborough, Sussex TN6 1UL, Tel. (01892) 663298** and request library volume: H008739abcde. IBM PC Software (1.44Mb disks):
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 Disk B - *DSP Starter* plus Texas device selection software.
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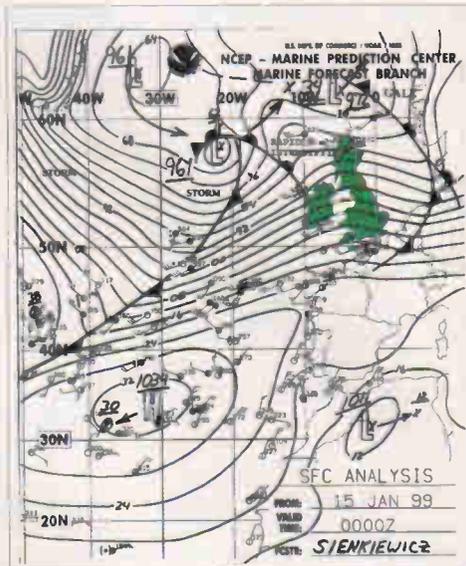


Chart showing the snow storms of 15/1/99.

DISPLAY

(R)un (S)top

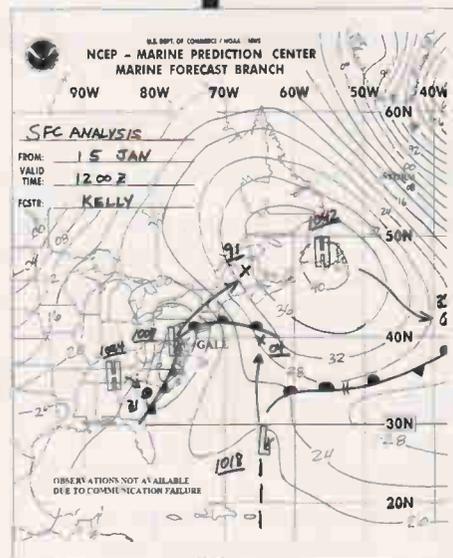
Vert. status:
wait vsync

Hor. status:
synchronizing

V(I)S code:

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Figure 2:
A rough drawing of the indicator



North Atlantic Storm Chart.

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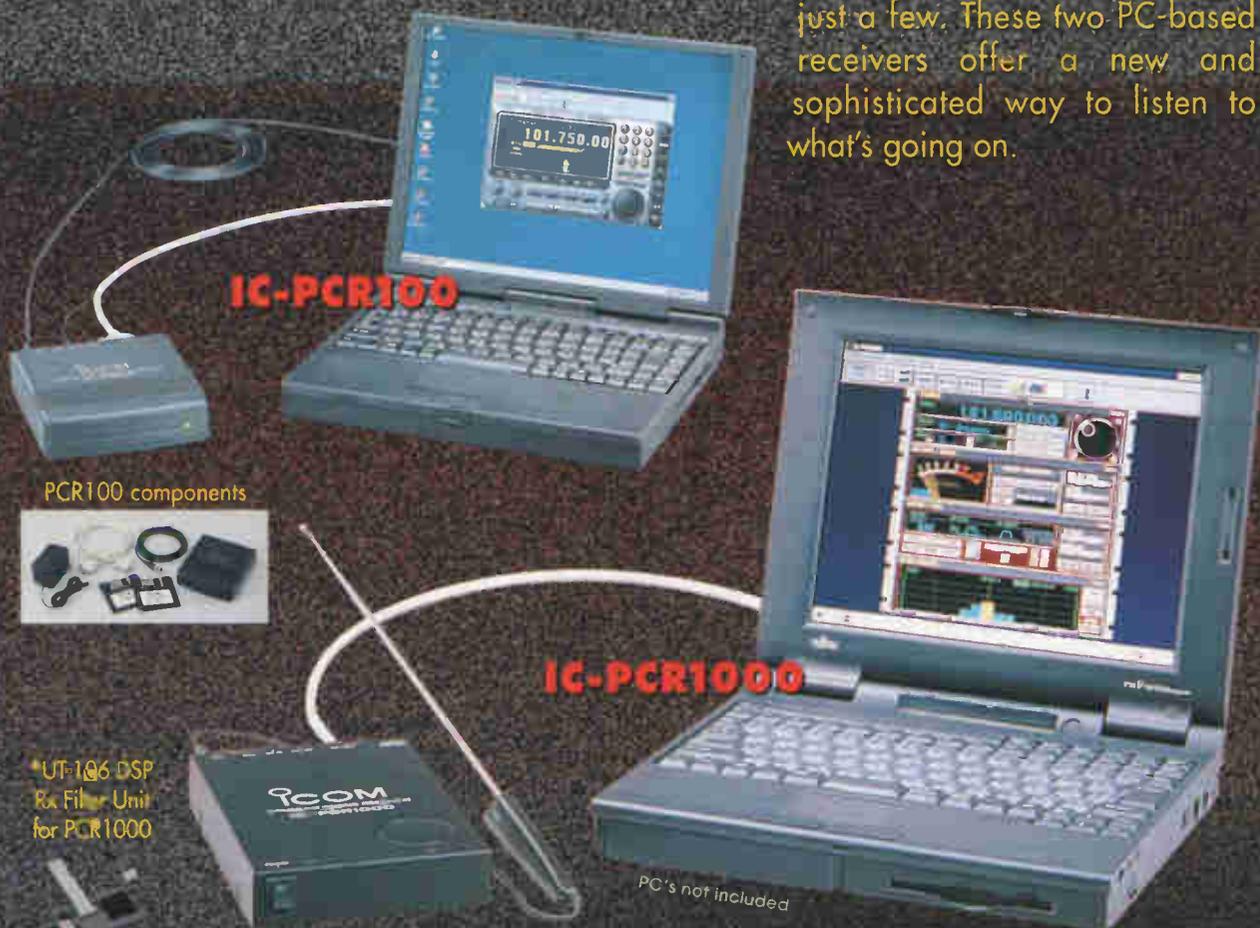
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