

The **SHORT WAVE** *Magazine*
SWW

& Scanning Scene

Internet Radio Explained

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The SHORT WAVE Magazine

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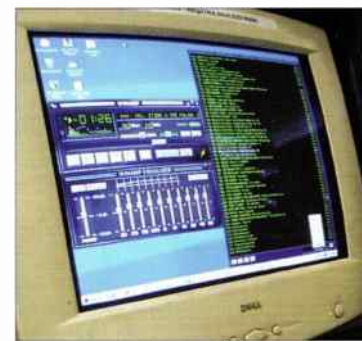
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ed's comments

This month, Martin Peters brings us the first part of an interesting look at so called Internet Radio. Part 1 looks at the concept. This is without doubt an area where there is growing popularity, but you can hardly claim that it's radio can you? Well that raises an interesting point.

Ironically, this type of delivery of programming may well turn into real radio, at least in part. There is a rapidly emerging community of individuals who are busying themselves with the creation of a 2.4GHz based 11Mb/s network using readily available wireless networking cards. Although these cards are intended to operate with a range of a few metres, it is possible to add external antennas and use the typical 30mW output to somewhat better effect. Using a redundant satellite dish, I understand that it's feasible to establish good point-to-point links in excess of 10km.

I reckon that this transition is indicative of the future of radio itself and I am far from alone in this line of thought. There are many that believe that the whole communications arena, be that emergency services, entertainment or personal to name but three, is moving to a digitally based system that may use radio as merely a 'transport layer' which is not really visible to the service user at all.

It will be very interesting to see how quickly this change takes place.

Coincidentally, one of our local, (to the SWM

Editorial Offices), amateur radio clubs - Flight Refuelling Amateur Radio Society (FRARS) are currently organising an antenna testing day specifically for 2.4MHz wireless network cards. This event is aimed at those who have constructed their own antennas. Very good results can be achieved by home construction, the resulting antennas generally being a factor of ten cheaper than the commercial alternatives.

If you are interested in wireless LAN/WANs then a look at the following web sites may well be worth your while,

<http://www.wavelan.com/template.html?section=61&page=1406&envelope=97> gnet at <http://205.159.169.11/>

and <http://www.consume.net/consume.html> I'm watching these developments closely.

If you live in Dorset or the surrounding area, then the FRARS web page regarding the testing day is well worth at visit <http://www.frars.org.uk/cgi-bin/render.pl?pageid=1050> maybe I'll see you there.

Happy Listening



74 73 Kevin

COMING NEXT MONTH IN SWM MARCH 2002

- ★ 'SHACKWARE' SPECIAL WITH JERRY GLENWRIGHT.
- ★ LISTENING BY COMPUTER - PART 2.
- ★ HOW I DO MY TESTING - JW TELLS ALL.
- ★ NO BATTERIES NECESSARY - TED ROGERS AND THE AC VALVE BY GIL MCELROY.
- ★ AND MUCH MORE...

*contents subject to change

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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; **KANGA PRODUCTS, Sandford Works, Cobden Street, Long Eaton, Nottingham NG10 1BL. Tel: 0115 - 967 0918. Fax: 0870 - 056 8608.**

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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 £3.25 each and photocopies are £3.25 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.

QSL



Is there something you want to get off your chest? Do you have a problem fellow readers can solve? If so then drop a line to the Editor at QSL, *Short Wave Magazine*, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

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

Dear Sir

Alinco DJ-X3 Scanner

Thank you for my prize, I still cannot get over the shock and jubilation of winning. I have had a great few days getting to know the DJ-X3 and can say it is one of the best scanners I have ever used. Thank you again for my prize and keep up the good work. I have been reading *SWM* since 1980.

Stephen Thompson
Cornwall

Dear Sir

John Wilson should have checked the design range of Wellbrook's ALA1530 loop. He states that it has a 'lower frequency limit of 500kHz'. In fact, its range is 150kHz to 30MHz, hence the designation '1530'.

As regards Jerry Glenwright's article on the Sanyo WS1000, I believe its every bit as good as he says, but he omits to mention that there isn't much to listen to of interest to listeners here in Europe or in N. America. One London station and three different BBC World Services. Not much use for what I wanted: the main BBC services whilst touring the Continent. WorldSpace's web site doesn't even give antenna pointing information for Europe, so what practical use is it?

J.M. Dunnott G4RGA
Somerset

Jim, John was in very close contact with Andy Ikin of Wellbrook over the course of the review. The 500kHz figure was a misprint and should have read 50kHz - as this is the latest specification for the ALA1530. Can I suggest that you let WorldSpace share you views on their web site inadequacies. - Ed.

Dear Sir

Every month as soon as I have collected the latest *SWM* out of my post box, the first thing I look for is to see what fare John Wilson has for us. I find the reviews of the older receivers most interesting. Possibly in the future, he could look at some other old classics, such as the HRO, SX28, CR100, EA12 and 940 so we can see how good or how bad they were in their time. Please keep the articles coming.

The main reason however for this letter is at the other end of the receiver spectrum and I am hoping that some readers out there may be in a position to assist me. I wish to restore a little solid state receiver produced by Johnsons (Radio), Worcester, known as 'Globe King' using one each OC171 and OC71 transistors, has three plug-in short wave coils. I need the circuit diagram and any other information as some bits appear to be missing.

From the more distant past, the late Jack Hum in the September 1991 *SWM* mentioned the 'All EF50 TRF Receiver' he designed and had originally appeared in *SWM* of August 1946. I would like to build this receiver according to the original specifications and would like to get a copy of the original circuit and article.

Any help will be greatly appreciated.

Neil Bousfield ZR2DR
South Africa

Neil, the list of receivers to give the 'JW Treatment' is growing fast. Hopefully a fellow reader can help with the Globe King circuit. For copies of old SWM articles - all are available - please see the SWM services panel on page 5 of this issue for more details. - Ed.

Dear Sir

I have bought *SWM* for many years and I have never written in before, but I say Tripe, that is what I think of JW and this month's column. I have just read six pages of what, quite frankly, I don't understand. You see, I am not on the 'net, as it is called, so I cannot see just what all this is about and why it should waste **six** pages of **my** magazine. The whole sorry text took up **six** pages. Yes, **six** pages of him telling us how clever he is. I have paid for this!

This is longer than most of his reviews and I do not wish to listen to him going on and on like a 'big girl's blouse'. Tell him to grow up! Let's hope we never have to put up with this again, and let's have something more interesting instead.

By the way, I was a radio operator in the Navy for many years and during the 60s I spent time looking after RA117E, amongst other equipment, and one of the things we used it for was 'Multi Frequency Telegraphy', that is where there were a

number of simultaneous teleprinter links on one 'circuit', as we called it. I cannot ever remember the Racal being used for s.s.b., at least not in my sections and never at sea.

I could tell a lot of stories, but this is not what this letter is about. Now, let's have a bit better content from here on, eh?

Bryan Shreeve
Essex

Brian, I'm sorry you feel this way, but I'm not sure why you see John's material as a problem. 'Racal Hit or Myth' was a look at just how easy it can be to misunderstand factual material pertaining to complex devices and procedures. This in-depth aside was published to clarify obvious misunderstandings regarding receiver performance measurements.

Your point regarding the use of the RA117E is most interesting. though incidental. I happen to regularly monitor the v.f.t. circuits you mention with my own RA1792 using the medium a.g.c. settings and 3kHz filter centred in the passband. It copes admirably! - Ed.

Dear Sir

I write this message as a form of complaint regarding the article 'Racal, Hit Or Myth', which appeared in December's *Short Wave Magazine*. I have never seen such an 'attack' in a hobbyist publication before and it lowers the magazine, the Editor and the author of the article quite literally to the gutter.

I read the RA17 Review and would like to point out the following. Mr Wilson states "an RA17" rather than "the RA17". In the original article in front of me now, it states "John Wilson G3PCY fulfils the many requests to investigate the classic British radio known otherwise as THE RA17". Note the use of 'THE'.

Also the statement "here goes with a look at another all-time great (or is it!)" implies THE RA17 not AN RA17, unless of course Racal only made the one RA17. The comments at the end of the article about it "not being a classic" imply that he is not referring to just the review model.

The comments on the RA17/RA117 a.g.c. and "Racal knew they had a problem" I cannot find anywhere in any article, or remember seeing it on Keith's

Dear Sir

I have just read a letter from Michael O'Beirne on the 'QSL' page. After listing several reasons why certain receivers are good, he goes on to say why really bother at all. Use your computer instead, well, here are some reasons why this is not always possible:

- 1) Not every radio listener has the equipment, and if you already have invested several hundred pounds, why bother with a computer.
- 2) You have to tie up a 'phone line, so it cost whatever to listen, depending on the time of the day, etc., this can cost a lot.
- 3) The Internet is still very unreliable with just as many problems with regards to both equipment, and with the problem of being ejected from your connection if you stay on too long.
- 4) Not every station of interest uses the 'net to broadcast, it is still possible to hear more of interest on a real receiver than the 'net will ever provide.
- 5) Computers used at home are rarely portable, so you are either going to have to stay in one room or run wires around.

6) What if you use your computer to do some real work, like writing letters or doing some other task?

7) The extra power consumption is another good reason not to use a computer.

I rest my case, there are many more reasons for not relying on computers for radio/audio work, but I am sure those listed will be enough for now. On another tack, that of radio received in strange circumstances a while back, a television crew were recording a programme when they were close to a metal chain link fence. This was around a radio relay site that day they picked up the transmission received from the fence. A rusty bolt or a corroded corner plate rectified the signal and the fence demodulated it giving a ghostly audio. I have heard of lattice masts also talking or radiating music mostly on damp nights.

One famous story was of a person that complained of hearing voices from nowhere. This was caused by badly made silver amalgam filling picking up in strong fields. There are many more strange tales out there if you look for them.

I expect a dry joint was the cause of the tape machine picking up the radio, probably in the tape head pre-amp stages. Bye for now - thanks for a good read as always.

Ian Johnson
Worcestershire



All in all Mr Editor, this is very poor journalism. It shows a lack of strength if you were persuaded to publish the article or a lack of judgement if you were not, which I don't know. I dare you to publish this unedited, I am sure you can find editorial space as you gave six pages to John Wilson's uneducational article.

You must apologise at the soonest to both Keith and your readers. Very, very poor. I hope never to see it again.

Mr B J Freight

Mr Freight, thank you for your letter. I have to place my hand firmly in the air for the introduction paragraph of 'Racal Hit or Miss'. You see, it was I who wrote those words not JW. This is the norm for the vast majority of the articles you'll find in SWM. It's the editorial team's job to compose the introductions. The instance of 'the' instead of 'a' is therefore not the doing of the author, you really shouldn't read too much into this.

The sourcing of spares for ex-professional receivers is something that from the outset, John Wilson has commented that extreme care should be taken. Indeed, he highlighted his own difficulties in even establishing contact with Racal to obtain prices for service replacement items. You will find the statement, "when you enter the world of professional service and spares you are potentially stepping into a very expensive environment" on page 55 SWM September 1998, this is the very review of the RA1792 that you say suggested you should acquire the set. It is known though, in Racal enthusiast circles, that the processor board can be the source of problems. Often it's nothing more than a defective battery or battery connection. But let me reiterate, from the beginning of our coverage of ex professional radios, John has done his utmost to warn readers of the potential financial risk in each and every one published.

Keith's Racal web site, as you point out, is indeed a very useful resource. I disagree strongly that SWM in any way has "attacked" Keith or his web site. Material from the site and quotes from Keith and his associates were used to illustrate points, with suitable permission.

'Racal Hit or Myth' was a technical article, authored by a well respected and highly competent radio engineer. Measurements were made using calibrated, certified test equipment. It also included the opinions of that same authors based on his many decades of experience in the radio arena. You may not have realised but that's John's style. As Editor of SWM, I choose what to include and what to reject for publication in the magazine.

The sole purpose of reviews of the kind that we are discussing is to present readers with a reasoned view so that they may make purchasing decisions on an informed basis. You are of course entitled to your opinion and I have no hesitation in sharing it with the rest of our readers. Once again, many thanks for writing. - Ed.

web site so, if it indeed was mentioned in an E-mail, then why concern us with it? I take it the messages were intended for the recipients only and not the rest of us?

Personally I would take the information given by a Racal employee over John Wilson any day, he of all people should know. To back this up, I mention a conversation I had way back with a chap at the RSGB museum. I had spotted a Racal like the one called the RA1218 on Keith's site. A chat with the chap there revealed that it was "a truly awful receiver and I am looking for an RA17 to replace it" From that I take it that the rest of the Army is out of step with John Wilson.

I cannot find, anywhere, any comment on the Racal site that the RA1792 is being "dammed because Racal did not fit it with a flippin attenuator" Where does it say that? Please tell. Speculation. Very Bad.

On the subject of the RA1792, I bought one, partly on the strength of John Wilson's review, it cost me over £900. The set went wrong. It transpired that the CPU was dead, common apparently. John Wilson did not tell me that.

My search for a new one was long and fruitless. A quote for a new one brought the price of £2400 + VAT. John Wilson did not tell me that either.

In the end I decided to cut my losses and dispose of the wretched thing, I had nearly finished my course and would be returning home soon any way, so the less junk to move the better.

Sadly some weeks after this Keith came up trumps with some spares, but it was too late as the set had gone. I am grateful to Keith for the (very) long time he spent trying to help, me, a total stranger. Would John Wilson have done that for me? Remember, this is an amateur site directed at amateurs to find out more about Racals.

Keith tells me he OWNS the equipment listed, they are not just articles borrowed to churn out yet another review. Can you possibly point me to the John Wilson Website where I can learn as much, and for FREE?

I used what I got for the RA1792 and bought a second-hand Kenwood R-5000, and you may be surprised to find that this set was one of Keith's recommendations. It is a very good set. His comments about owning a RA1792 if you are "just a user" are very true. I wish I had found this site before I bought the thing. Keith is very helpful and very knowledgeable and I will not stand by and watch him be attacked in a very unprofessional way.

Communiqué

News and Products

London Show

The **London Amateur Radio & Computer Show** is to be held at the Lee Valley Leisure Centre, Picketts Lock Lane, Edmonton, London on **Saturday 23** and **Sunday 24th March 2002**. Doors open at 1000 each day and daily admission is £3 for adults, £2.50 for OAPs and under 14s. There will be trade stands, special interest groups, bar and restaurants, disabled facilities, talk-in on 2m and 70cm, Bring & Buy, free parking, lectures, camping and an on-site multiplex cinema. The date chosen for the autumn 2002 show is the 23rd and 24th November 2002. More information from RadioSport on **(01923) 893929**, FAX: **(01923) 678770** or visit their web site at **www.radiosport.co.uk**

Special Event

The **Wrexham ARS** are taking part in the **Wrexham Science Festival** held at NEWI, a University just on the outskirts of Wrexham, on **Saturday 23rd March 2002** from 1000 to 1700, (the festival itself runs all week). The Society will be operating a Special Event Station with the callsign **GB2WSF** - they hope to include h.f., v.h.f., *UI-View*, ATV (including ATV to Internet Linking, permission from RA pending) and they will be running a webcam for the whole event, although in the final planning stages, details may change!

This Special Event Station forms a small part of the much larger 'Scientriffic' event, which is basically a hands-on exhibition of all things scientific - which has been attended by many well-respected and internationally renowned scientists.

More details can be found on Wrexham's special site: <http://www.qsl.net/gb2wsf> - although looking rather sparse at the moment, it contains links to the main festival organisers site and will eventually become the site for the 'story behind the event'.

Monitor Marconi Day

Aberdare, Rhondda Cynon Taff - December 12th 2001 - short wave listener and Webmaster for one of the UK's most respected Radio Hobby websites, **Graham Powell**, from Cwmdare, received signals from more than a hundred countries on the 100th anniversary of Guglielmo Marconi's historic wireless transmission.

On 12 December 1901, Marconi in Newfoundland, Canada, heard three short clicks, the Morse code letter 's', which was transmitted from his spark transmitter in Cornwall in the UK, making the first ever radio signal to cross the Atlantic.

There is a large difference between the hobbies of short wave listening and that of Amateur Radio. For the short wave broadcast listener there are only 158 countries that use the short wave band for transmitting, whereas for a radio amateur the world is divided into several more hundreds of countries for listening purposes.

Out of these 158 countries, only 73 use these frequencies for international broadcasting, the remaining 85 only use the short wave bands for semi-local use, making them extremely difficult to receive.

"It is these semi-local stations that make the most interesting listening" said Graham, who runs the 'Online DX Logbook' website. "To hear the 100 countries in one day meant a full 24 hours of listening. Each of the stations had to be positively identified before they could be logged. I ended up hearing a total of 112 positively identified countries on the day".

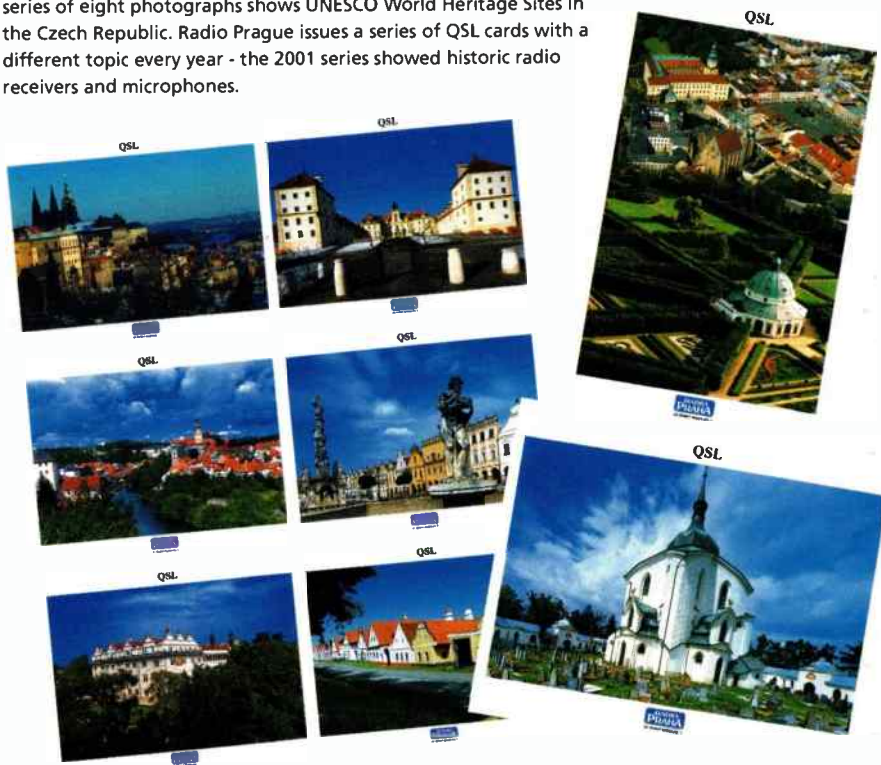
Graham continues, "Since the American action in Afghanistan, sales of short wave radios have rocketed by 500% in the US, with a large increase in sales here in the UK. Likewise I find that the number of users who visit my website has risen from several hundred to several thousand per week".

The 'Online DX Logbook' website can be found at **www.shortwave.org.uk**



Prague's New QSLs

Radio Prague have a selection of new QSL cards which will be sent to listeners in recognition of reception reports for programmes heard in 2002. The series of eight photographs shows UNESCO World Heritage Sites in the Czech Republic. Radio Prague issues a series of QSL cards with a different topic every year - the 2001 series showed historic radio receivers and microphones.



Manchester DX Meeting

The Manchester DX Meetings are arranged by members of the **BDXC (British DX Club)**, and have been running for over three years, in which time they have become popular regular events, attracting radio hobbyists and DXers from an increasingly wide area. The main discussion topics tend to be broadcasting - s.w., m.w., l.w., f.m., international, local, domestic, satellite, cable, pirate, etc., radio equipment, antennas and QSLing. All participants are welcome to throw in their own subjects, and

we have also covered utilities, amateur, scanning, airband, CB and many more. Meetings are held approximately six times per year, on Wednesday evenings or Saturday afternoon/evenings.

The next gathering will be on **Wednesday 13th February 2002**. An optional pre-meeting meal will commence at 1800, at the Tampopo restaurant, Albert Square, Manchester - behind the Town Hall - and then from 2000 in the Lass O'Gowrie public house on Charles Street, off Oxford Road, close to the BBC. Further details from **Tom Read** via E-mail aaw@bdxc.org.uk or telephone **(01625) 612916**.

New From W&S

Waters & Stanton have informed us of a couple of new products.

First up is the latest TNC from Kantronics in the USA. The KAM XL is Kantronics' third generation multi-mode TNC - a state-of-the-art design giving the customer operations on h.f., v.h.f. and u.h.f., while supporting d.s.p. modems and popular new modes of operation. Price **£419.95**.

Next in line is the new MFJ-461 Morse Reader - which enables Morse to be read in plain language on a liquid crystal display without connection to a receiver or transceiver. The unit will even read Morse sent at a fast rate, so its very useful for those learning or who have no knowledge of Morse - particularly useful for s.w.l. The unit is available from stock at **£84.95**.

More about these products and many more from Waters & Stanton direct at **Spa House, 22 Main Road, Hockley, Essex S55 4QS, Tel: (01702) 206835/204965, FAX: (01702) 205843, E-mail: info@wsplc.com** or visit www.wsplc.com



rallies

2002

February 10: The 11th Northern Cross Radio Rally is to be held at Thornes Park Athletics Stadium, Wakefield, W. Yorkshire. Easy access from M1 junctions 39 & 40 - well signposted and with talk-in on 2m and 70cm. Doors open 1100 (1030 for disabled visitors and Bring & Buy). Usual attractions, plus Morse tests on demand. Further details from **John G7JTH** on (01924) 251822 or E-mail: g7jth@wdrs.org.uk or visit the club page at <http://www.wdrs.org.uk>

February 10: The Harwell Amateur Radio Society are holding a Radio & Computing Rally at the Didcot Leisure Centre. This venue includes a large spacious hall, disabled facilities (including lift), bar, refreshments and good parking. Located three miles from the A34 between Oxford and Newbury (signposted from A34). Doors open from 1030 until 1530. More details from **Alan G8NVI** on (01235) 816379 or visit <http://www.hamradio.harwell.com>

February 10: The Cambridge & District Amateur Radio & Computer Rally is to be held at Lordsbridge Arena, Wimpole Road, Barton, near Cambridge. Entry is £2, concessions and disabled, £1.50. Doors open at 1000. There will be a car boot sale, Bring & Buy (mostly under cover) and a bar. Free parking. **John G0GKP** on (01954) 200072, E-mail: j.bonner@ntlworld.com or **Bob G0GVZ** on (01223) 413401, E-mail: bob.grimes@btinternet.com

February 24: The Swansea ARS are holding their 21st Annual Amateur Radio & Computer Show at the Swansea Leisure Centre on the A4067 Swansea-Mumbles coast road. Doors open 1030. There will be trade stands, a Bring & Buy, v.h.f. talk-in, demonstration station, repeater groups, radio interest groups, licensed bar and refreshments, etc. Admission is just £1.50, children 50p. Further information from **Roger GW4HSH** on (01792) 404422.

March 9: Crystal Palace and District Radio Club Spring fair takes place at St. John's Hall, Sylvan Road, London SE19, between 1030-1300 hours. There will be amateur radio, electronics, computing, tools, etc. on offer. Admission, including one free drink, is just £1, children free. **Bob G300U** on (01737) 552170.

March 10: The Wythall Radio Club are holding their 17th Annual Radio & Computer Rally at Wythall Park, Silver Street, Wythall, near Birmingham. Doors open from 1000 till 1600 and admission is just £1.50. There will be plenty of traders in three halls and a large marquee. There will also be bar and refreshment facilities on site, a Bring and Buy and a talk-in on S22. There will also be a unique free park and ride for easy comfortable parking. More information at www.wrcrally.co.uk or from **Martin G8VXX** on 0121-474 2077 evenings or E-mail: enquiries@wrcrally.co.uk

March 17: The Norbreck Amateur Radio, Electronics and Computing Exhibition, organised by the Northern Amateur Radio Societies Association (NARSA) at the Norbreck Castle Exhibition Centre, Blackpool. Don't miss the largest single day exhibition in the country! Morse tests will be available on demand. **Peter Denton G6CGF** on 0151-630 5790.

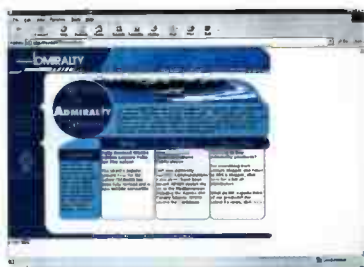
March 23/24: The London Amateur Radio & Computer Show is to be held at the Lee Valley Leisure Centre, Picketts Lock Lane, Edmonton, London. Doors open at 1000 each day and daily admission is £3 for adults, £2.50 for OAPs and under 14s. There will be trade stands, special interest groups, Bring & Buy and lots more. More information on (01923) 893929, FAX: (01923) 678770 or visit their web site www.radiosport.co.uk

RSGB's New President

The **Radio Society of Great Britain** is pleased to announce that **Dr. Bob Whelan G3PJT** has been elected as its new President. He will now be President for the next two years, 2002-2003. Bob Whelan said that he is looking forward to the challenges ahead in raising the awareness of the value of amateur radio as a way of interesting the next generation of radio engineers and scientists. Bob Whelan is a member of the Council of the Smith Institute and was previously a member of the National Physical Laboratory.

UKHO Launches New Web Site

Launched back in early December, Admiralty Leisure is a new web site specifically tailored to meet the needs of the Leisure market for maritime information. Created by the United Kingdom Hydrographic Office, Admiralty Leisure will be accessible via www.admiraltyleisure.co.uk or via link from the main UKHO website at www.ukho.gov.uk



Everyone who enjoys spending time on, in or by the water will find a wealth of useful information on Admiralty Leisure. As well as providing the latest product information on the UKHO's popular range of Admiralty Leisure products, the site includes news and events, all the most recent press releases and comprehensive FAQs.

Early in 2002, the UKHO will also be launching a Free of Charge Notices to Mariners database, upgraded to enable users to search for Notices by Chart, date or NM number. Forthcoming features will include items of interest to divers, canoeists, surfers and other beach and watersports enthusiasts.

More information from UKHO (Marketing Public Relations), Admiralty Way, Taunton, Somerset TA1 2DN.

New Edition

Now stocked in the SWM Book Store is the 2002 edition of the **Radio Listener's Guide**. This guides shows you the frequencies and locations of all the radio stations in the UK and Ireland. Information covers BBC and commercial radio stations, as well as new DAB (Digital Radio) services. You will also find information about the BBC World Service, overseas stations broadcasting to the UK as well as satellite and Internet radio. Order your copy now from the SWM Book Store for just **£5.25**.



CLUB CORNER

The **Chelmsford Amateur Radio Society** meet at 1930 on the first Tuesday of each month at the Marconi Social Club, Beehive Lane, Great Baddow, Chelmsford. The club's recent foundation course proved very popular and was 50% oversubscribed. More information about club events, etc. from Secretary **David Bradley M0BQC** on (01245) 602838 or visit the club's website at www.g0mwt.free-on-line.co.uk

The **Loughton & Epping Forest Amateur Radio Society** meet at 1945 on alternative Fridays at The Old Rectory, All Saints' House, All Saints' Church, Romford Road, Chigwell Row, Essex. The Society maintain a regular programme of 'nights on the air', 'field days' and 'special event stations' which enable members to operate and help promote the society and amateur radio in the local community. More information from **Marc Litchman G0TOC**, Secretary, on 0208-502 1645 (evenings) or E-mail: g0toc@hotmail.com

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

LM&S



The latest reports for 'LM&S' indicate that the long winter evenings have encouraged some listeners to continue to search the l.w. and m.w. bands well into the night. Trying to identify a station can prove difficult and time consuming. It is often necessary to refer to a guide book, such as the *World Radio TV Handbook* (WRTH), to ascertain the most likely broadcaster(s) using the frequency in question. The detailed information in the guide for each one may reveal the programme/service carried on each allocated frequency. Tuning to one or more of the parallel frequencies may help to establish identity. When a weak transmission is heard under a more powerful one the tendency is to turn up the volume in an attempt to improve readability. This usually results in a cacophony of noise which may carry a long way in the dead of night and disturb anyone, especially if they are trying to sleep. The simple solution is to wear headphones - they can improve reception too!

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 November.

An extensive search of the band was made by **Ernie Strong** (Ramsey, Cambs) during four days and six nights spaced throughout the month. He found reception to be little different from normal and ended up with a pair of very sleepy eyes! On the 12th he noted Rikisutvarpid (RUV) via Gufuskalar, W.Iceland on **189kHz** as SINPO 13343 at 0035UTC; also Tbilisi, Georgia on **189** as 12222 at 0100. On the 19th he logged Bod, Romania on **153** as 22332 at 0425; also Kyiv, Ukraine on **207** as 13232 at 0440. Ernie has noticed a transmission on **216kHz** which he can hear fairly consistently under Roumoules. If you have any information which might help him to identify this co-channel station please send it to me at the above address.

Over in N.Ireland **Eddie McKeown** (Newry,

Co.Down) found he could usually receive after dark the broadcasts from RUV via Gufuskalar on **189**, but on the 25th he also heard them via Eidar, E.Iceland on **207**. The 100kW transmission on **207** rated 21221 at 1855 & 22222 at 0050, whereas the 300kW transmission on **189** was 33322 at 1853 & 34243 at 0049. In contrast, **Michael Wasley** (Scunthorpe) had no success in receiving the broadcasts from RUV until the 29th, when he heard on **189** some pleasant music very clearly at 2350. It was followed at midnight by the news in Icelandic. He noticed slight interference from Saarlouis, but found he could reduce it by off-tuning to **190kHz**.

Enhanced propagation conditions were observed during the evening of the 30th by **Fred Pallant** in Storrington. At 2055UTC he picked up the sky waves from the Radiotelevisione Italiana (RAI) 10kW outlet at Caltanissetta, Italy on **189kHz** and clearly heard a man and women talking in Italian.

Medium Wave Reports

The sky waves from some of the many m.w. stations in the Middle East, N.Africa, Europe and Scandinavia reached the UK after dark. Quite extensive logs were

compiled by some listeners - see chart.

Several stations in Algeria, Egypt, Morocco and Tunisia were among the many entries in the report compiled by **George Millmore** in Wootton, IoW. During the evening of the 27th **Eddie McKeown** picked up a broadcast on 1503, which he is fairly sure came from Bushehr, Iran (100kW). He logged the transmission as 31232 at 2021UTC.

In his latest report, **Simon Hockenhill** (E.Bristol) mentioned that the demolition of the power station at Lots Road, London, has resulted in the closure of the Lots Road transmitter, which carried the BBC R-4 programme on **720kHz**. It has been replaced by a slightly more powerful one at Crystal Palace, which uses a sloping wire antenna. It will be interesting to see how this change affects reception in London and other areas too.

Short Wave Reports

During the peak years of a solar sunspot cycle a transmission in the **25MHz (11m)** band can provide almost perfect reception even in the most distant places and there is clear evidence of this in the latest report from **Bill Griffith** (W.London) who is visiting New Zealand. Using a Sony ICF-SW55 portable plus 10m wire Bill has found reception of the broadcasts from Deutsche Welle (DW), Germany on **25.740** (Ger to Asia? 0800?-1400) and Radio France International (RFI) on **25.820** (Fr, Eng to E/C.Africa 0830-1300) to be excellent. On November 8 he logged DW as SINPO 55445 at 0830UTC and RFI as 54445 at 0900 on the 9th.

Good reception of the broadcasts from DW on **25.740** was also mentioned in the latest report from John Parry in Larnaca, Cyprus. He noted their transmission as a potent SINPO 45554 at 0805UTC.

Such reports raise the question as to why almost all of the international broadcasters have not thought it worthwhile to take advantage of the excellent propagation now prevailing in this band. There have been suggestions that modern high power broadcast transmitters will not tune down to the 11m band but that seems unlikely. There have also been excuses about the lack of an operational antenna but that argument is not very convincing since a large and complex antenna array is really not necessary for operation in this band.

What a missed opportunity this is - the BBC for example, could have provided a truly excellent daily service for listeners in Australia, New Zealand and some other countries too with just a single transmitter plus suitable antenna at one of the UK stations instead of a very limited service on the Internet. So what is the real reason for this lack of activity?

The transmissions from DW and RFI are beamed away from the UK, consequently reception here is dependent upon back scatter and other unreliable modes. The SINPO ratings quoted in the reports for DW on **25.740** were 55454 at 0900 in Newry; 44444 at 0910 by **Vic Prior** in Colyton; 55434 at 0920 by **Bernard Curtis** in Stalbridge; 35423 at 1021 by **Richard Reynolds** in Guildford; 35522 at 1105 in E.Bristol; 43333 at 1142 by **Thomas Williams** in Truro; 33333 at 1250 by **Robert Hughes** in Liverpool; 34343 at 1333 by Peter Pollard in Rugby.

Those for RFI on **25.820** were 44434 at 0915 in Stalbridge; 43444 at 0930 in Colyton; 25444 at 1016 by **Fred Wilmshurst** in Northampton; 45434 at 1019 in Guildford; 35522 at 1100 in E.Bristol; 33333 at 1140 in Truro; 34233 at 1200 in Rugby; 35243 at 1210 in Newry; 32232 at 1250 in Liverpool.

In the **21MHz (13m)** band the broadcasts from R.Australia have been reaching the UK. Their early morning transmission from Shepparton on **21.725** (Eng to Pacific areas 0200-0900) was rated 22322 at 0820 in Colyton & 44444 at 0805 in New Zealand. At 0900 they move to **21.820** for a broadcast to Asia (Eng 0900-1400). It was noted as 33333 at 1315 in Truro.

Long Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	E*,F*
153	Donebach DLF	Germany	500	A,B*,C*,D,E*,F*,H
153	Bod	Romania	1200	F*
162	Alloyis	France	2000	B,C*,D,E*,F,H
171	Nador Medi-1	Morocco	2000	A*,E*,F*,H*
171	B'shakovo etc	Russija	1200	A*,D*,H*
171	Lvov	Ukraine	500	F*
171	Sasnovy	Belarus	1000	B*
177	Oranienburg	Germany	500	B*,C*,D,E*,F,H
183	Saarlouis	Germany	2000	B,C*,D,E*,F,H
189	Gufuskalar	W.Iceland	150	C*,F*,G*
189	Caltanissetta	Italy	10	E*,F*
189	Tbilisi	Georgia	500	F*
198	Droitwich BBC	UK	500	B,C*,D,F*,H
207	Munich DLF	Germany	500	B,C*,D,E*,F,H
207	Eidar	E.Iceland	100	C*
207	Azilal	Morocco	800	A*,E*
207	Kiev	Ukraine	500	F*
216	Roumoules RMC	S.France	1400	B*,C*,D,E*,F,H
225	Polskie R-1	Poland	?	A,B*,C*,D,E*,F*,H
234	Beidweiler	Luxembourg	2000	B,C*,D,E*,F*,H
234	Krasnyy Bor	Russia	1200	F*
243	Kalundborg	Denmark	300	A,B,C*,D,E*,F*,H
252	Atlantic 252	Eire	500	C,D,E*,F*,H
261	Burg(R.Ropa)	Germany	85	D,F*,H*
261	Talpom Moscow	Russia	2500	F*
270	Topolna	Czech Rep	1500	A,B*,C*,D,E*,F*,H*
279	Sasnovy	Belarus	500	A*,C*,E*,F*,H*

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

Listeners:-

- (A) Simon Hockenhill, E.Bristol.
- (B) Sheila Hughes, Morden.
- (C) Eddie McKeown, Newry.
- (D) George Millmore, Wootton, IoW.
- (E) Fred Pallant, Storrington.
- (F) Ernie Strong, Ramsey, Cambs.
- (G) Michael Wasley, Scunthorpe.
- (H) Fred Wilmshurst, Northampton.

Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	OXer
2.310	ABC Alice Springs	Australia	2000	L
2.325	ABC Tennant Creek	Australia	2119	H
2.485	ABC Katherine	Australia	1620	C
3.240	TWR Shona	Swaziland	0327	G
3.255	BBC via Meyerton	S. Africa	1808	G,I
3.270	Nambian BC, Windhoek	Namibia	0001	D,G,L
3.300	R.Cultural	Guatemala	0423	M
3.315	AIR Bhopal	India	1556	H
3.316	SLBS Goderich	Sierra Leone	2345	D
3.320	SABC (RSG) Meyerton	S. Africa	0810	D,G,L
3.325	R.Tupi, Sao Paulo	Brazil	0536	M
3.335	CBS Taipei	Taiwan	1652	H
3.365	GBC R-2	Ghana	1845	G,H,L
3.365	AIR Delhi	India	1555	H,L
3.915	BBC via Kranji	Singapore	1655	C,F,G,L,M,O
3.950	Qinghai PBS, Xining	China	0005	E
3.955	R.Korea via Skelton	England	2200	B,G
3.955	R.Taipei via Skelton	England	1813	B,G,J,K
3.965	RFI Paris	France	2055	E,G
3.975	R.Budapest	Hungary	2230	J
3.975	R.Korea via Skelton	England	2100	J,L
3.985	Nexus, Milan	Italy	1814	G,L
3.985	DW via Julich	Germany	1850	A,E,F,G,K,O
4.005	Vatican R.	Italy	1815	E,G,L
4.760	AIR Port Blair	India	2341	G
4.770	FRON Kaduna	Nigeria	1830	D,G,L
4.775	AIR Imphal	India	1557	H,M
4.783	RTM Bamako	Mali	2006	G,H,M
4.790	AIR Itanagar	India	0010	D,M
4.790	Azad Kashmir R.	Pakistan	1651	G,H,L,M
4.800	CPBS 2 Beijing	China	2317	M
4.800	AIR Hyderabad	India	1559	C,H
4.820	R.Botswana, Gaborone	Botswana	2042	D,H,L,M
4.820	AIR Calcutta	India	1558	G,H,M
4.825	R.Cancao Nova	Brazil	0600	M
4.830	R.Tachira	Venezuela	0323	G
4.832	R.Rejloj	Costa Rica	0432	M
4.835	RTM Bamako	Mali	2004	F,G,H,L,M
4.840	AIR Bombay	India	1650	H,M
4.845	DRTM Nouakchott	Mauritania	2004	D,F,G,H,L,M
4.850	R.Yaounde	Cameroon	1910	G,L

Freq (MHz)	Station	Country	UTC	OXer
4.850	CNR 1	China	2204	M
4.850	AIR Kohima	India	1527	M
4.860	AIR Delhi	India	1649	G,H,I
4.880	AIR Lucknow	India	1649	C,H
4.890	RFI Paris	via Gabon	0400	D,G
4.890	R.Port Moresby	Pap.N. Guinea	2001	C,H
4.895	AIR Kurseong	India	1644	F,G,I,M
4.895	Pakistan BC	Pakistan	1642	H
4.910	AIR Jaipur	India	1640	F
4.915	R.Anhanguera	Brazil	0018	M
4.915	GBC-1, Accra	Ghana	2026	D,G,H,L
4.920	R.Quito, Quito	Ecuador	0636	M
4.920	AIR Chennai	India	1600	G,H,I
4.927	RFI Jambi	Indonesia	2212	M
4.930	R.Internacional	Honduras	0324	G
4.930	AIR Shimla	India	1601	H
4.930	Nambian BC, Windhoek	Namibia	1630	F
4.940	AIR Guwahati	India	1503	I,M
4.950	AIR Srinagar	India	1640	G,H,I
4.950	VDA via Sao Tome	Sao Tome	2008	H,M,N
4.960	AIR Ranchi	India	1732	C
4.960	Vanuatu BTC	Vanuatu	0905	C
4.975	R.Uganda, Kampala	Uganda	2014	D,G,H,M
4.980	Ecos del Torbes	Venezuela	2339	G
4.985	R.Brazil Central	Brazil	2125	G,H,M
4.990	AIR Itanagar	India	1602	H
5.005	R.Nacional, Bata	Eq. Guinea	2026	H
5.009	R.TV Malagasy	Madagascar	1646	H
5.010	Guangxi 2, Nanning	China	2207	C,M
5.010	AIR Thiruvapuram	India	0025	D,G,M
5.020	Solomon Is BC Honiara	Solomon Is	0850	C
5.025	R.Parakou	Benin	1624	F,G
5.025	R.Rebelde, Habana	Cuba	0303	G,M
5.025	R.Pakistan, Quetta	Pakistan	1514	I
5.025	R.Uganda, Kampala	Uganda	2029	G,H
5.030	AWR Latin America	Costa Rica	0630	M
5.030	RTM Kuching	Sarawak	2015	H
5.035	R.Aparecida	Brazil	2210	D
5.040	Jeyapore	India	1516	C,I
5.050	R.Tanzania	Tanzania	2016	G,H
5.060	PBS Xinjiang, Urumqi	China	0028	M
5.090	Taiwan 2, Sca, Beijing	China	1605	C
5.320	CNR 1	China	2215	D

Other broadcasters using this band during the day include Swiss R.Int via Sottens **21.770** (Eng, It, Ger, Fr to M.East, Africa 0830-1030), rated 44333 at 0850 by **Stan Evans** in Herstmonceux; R.Pakistan **21.465** (Eng, Ur to Eur 0800-1100) 54445 at 0920 in Stalbridge; R.Prague, Czech Rep **21.745** (Eng to E.Africa, S.Asia 1000-1030) 55544 at 1018 in Northampton; HCJB Quito, Ecuador **21.455** (Eng (u.s.b.)) 43333 at 1123 by **David Hall** in Morpeth; BSKSA Riyadh, Saudi Arabia **21.705** (Ar to W.Eur 0600-1500) 54444 at 1245 in Liverpool; BBC via Ascension Is **21.470** (Eng to S.Africa 1300-1900) 44333 at 1345 by **Sheila Hughes** in Morden; BSKSA Riyadh, Saudi Arabia **21.505** (Ar to W.Eur 0600-1500) 55555 at 1355 in Rugby; Channel Africa, Johannesburg **21.725** (Eng to Africa, Eur? 1300-1455) 44333 at

1404 in Newry; R.Prague, Czech Rep **21.745** (Eng to E.Africa, N.America 1400-1429) 44444 at 1422 by **Vera Brindley** in Woodhall Spa; BBC via Cyprus **21.660** (Eng to S.Africa 1400-1700) 43433 at 1518 in E.Bristol; Voz Cristiana, Chile **21.500** (Sp to S.America 1100-2100) 34433 at 1915 by **Rhoderick Illman** in Oxted.

The few occupants of the narrow **18MHz (15m)** band include R.Norway Int on 18.950 (Norw to Australia, N.America 1200-1230), rated 55555 at 1200 in Morden; R.Denmark via R.Norway **18.950** (Da to Australia, N.America 1230-1300) 45544 at 1235 in Northampton & 44444 at 1235 in Truro; R.Sweden **18.960** (Eng to N.America 1330-1400) 54554 at 1355 in Herstmonceux & 55555 at 1355 in Rugby; Family Radio WYFR via Okeechobee FL, USA **18.980** (Eng to Africa, Eur 1600?-2000) 54334 at 1830 in

DXers:-

- (A) Bernard Curtis, Stalbridge.
- (B) Stan Evans, Herstmonceux.
- (C) Bill Griffith, while in New Zealand.
- (D) David Hall, Morpeth.
- (E) Simon Hockenhill, E.Bristol.
- (F) Rhoderick Illman, Oxted.
- (G) Eddie McKeown, Newry.
- (H) Fred Pallant, Storrington.
- (I) John Parry, Larnaca, Cyprus.
- (J) Clare Pinder, while in Appleby.
- (K) Peter Pollard, Rugby.
- (L) Vic Prier, Colyton.
- (M) Richard Reynolds, Guildford.
- (N) Michael Wasley, Scunthorpe.
- (O) Thomas Williams, Truro.

Listeners:-

- (A) Simon Hockenhill, E.Bristol.
- (B) Sheila Hughes, Morden.
- (C) George Millmore, Wootton, IOW.
- (D) Ernie Strong, Ramsey, Cambs.
- (E) Fred Wilmshurst, Northampton.

Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum, London	I	0.80	C,D,E
603	C.G.Litt'brne	I	0.10	C,D,E
630	R.Bedfordshire(3CR)	B	0.20	A,B,C,D,E
630	R.Cornwall	B	2.00	C
657	R.Clywd	B	2.00	B,C,D,E
657	R.Cornwall	B	0.50	C
666	Cl.Gold 666, Exeter	I	0.34	A,C,D,E
666	R.York	B	0.80	D
729	BBC Essex	B	0.20	D,E
738	Hereford/Worcester	B	0.037	A,C,D,E
756	R.Cumbria	B	1.00	D
756	The Magic 756,Pewys	I	0.63	C,D,E
765	BBC Essex	B	0.50	A,C,D,E
774	R.Kent	B	0.70	B,C,D,E
774	R.Leeds	B	0.50	D
774	Cl.Gold 774, Glos	I	0.14	C,E
792	Cl.Gold 792, Bedford	I	0.27	D,E
801	R.Devon	B	2.00	A,C,D*
828	Cl.Gold 828, Luton	I	0.20	D,E
828	Cl.G 828 Bournemouth	I	0.27	C
837	Asian Netwk Leics	B	0.45	C,D,E
855	R.Devon	B	1.00	C
855	R.Lancashire	B	1.50	D*
855	R.Norfolk, Postwick	B	1.50	D
855	Sunshine 855,Ludlow	I	0.15	A,E
873	R.Norfolk, W.Lynn	B	0.30	C,D,E
936	Brunel CG, W.Wilts	I	0.18	D,E
936	Fresh AM, Hawes	I	1.00	C
945	Cl.Gold GEM, Derby	I	0.20	D,E
945	Capital G, Bexhill	I	0.75	C
954	Cl.Gold 954, Torquay	I	0.32	A,C
954	Cl.Gold 954, H'ford	I	0.16	A,E

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
963	Liberty R, Hackney	I	1.00	C,D,E
972	Liberty R, Southall	I	1.00	A,C,D,E
990	R.Devon, E.Devon	B	1.00	A,C
990	Magic AM, Doncaster	I	0.25	D
990	Cl.G, Wolverhampton	I	0.09	D*,E
999	C.Gold GEM Nott'ham	I	0.25	D,E
999	R.Solent	B	1.00	C
1017	Cl.G,WABC,Shr'shire	I	0.70	D,E
1026	R.Cambridgeshire	B	0.50	B,D,E
1026	R.Jersey	B	1.00	A,C
1035	RTL C'try(Ritz)1035	I	1.00	C,D,E
1116	R.Derby	B	1.20	D,E
1116	R.Guernsey	B	0.50	C
1152	Cl.G Amber, Norwich	I	0.83	D
1152	LBC 1152 AM	I	23.50	C,D,E
1152	Cl.G, Birmingham	I	3.00	E
1161	R.Bedfordshire(3CR)	B	0.10	B,D,E
1161	Southern Counties R	B	1.00	B,C
1170	Cl.G Amber, Ipswich	I	0.28	D
1170	Magic 1170, Stockton	I	0.32	D
1170	Capital G, Portsm'th	I	0.50	C
1170	Swansea Snd, Swansea	I	0.58	A
1170	1170AM, High Wycombe	I	0.25	E
1242	Capital G, Maidstone	I	0.32	C
1251	C.G Amber, Bury StEd.	I	0.76	D
1260	Brunel CG, Bristol	I	1.60	C
1260	SabrasSnd, Leicester	I	0.29	D,E
1278	Cl.Gold 1278 W.York	I	0.43	D
1296	Radio XL Birmingham	I	5.00	A,C,D*,E
1305	Premier via ?	I	0.50	C,D,E
1305	Touch AM, Newport	I	0.20	C
1323	Capital G, Southwick	I	0.50	C,E
1332	Cl.Gold 1332, P'bo	I	0.60	D,E
1332	Wiltshire Sound	B	0.30	C
1359	Breeze, Chelmsford	I	0.28	D

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
1359	Cl.Gold 1359, C'try	I	0.27	D,E
1359	R.Solent,Bournemouth	B	0.85	C
1368	R.Lincolnshire	B	2.00	D,E
1368	Southern Counties R	B	0.50	C
1368	Wiltshire Sound	B	0.10	C
1413	R.Gloucester via ?	B	?	E
1413	Premier via ?	I	0.50	C,D
1413	Fresh AM, Skipton	I	0.10	D
1431	Breeze, Southend	I	0.35	D
1431	Cl.Gold, Reading	I	0.14	C,E
1449	Asian Netwk, Peterbro.	B	0.15	D,E
1458	R.Devon	B	2.00	C
1458	Sunrise, London	I	50.00	C,D,E
1458	Asian Netwk Langley	B	5.00	A,D,E
1485	Cl.Gold, Newbury	I	1.00	A,E
1485	R.Humberside (Hull)	B	1.00	D
1485	R.Merseyside	B	1.20	C
1485	Southern Counties R	B	1.00	C
1503	R.Stoke-on-Trent	B	1.00	B,C*,D,E
1521	Breeze, Reigate	I	0.64	C,D,E
1530	R.Essex, Southend	B	0.15	D
1530	Big AM, W.Yorks	I	0.74	D
1530	Cl.Gold Worcester	I	0.52	A,E
1548	R.Bristol	B	5.00	C
1548	Capital G, London	I	97.50	C,D
1557	Cl.Gold 1557, N.hant	I	0.76	D,E
1557	Capital G, So'ton	I	0.50	C
1566	CountySnd, Guildford	I	0.50	A*,C,D
1584	London Turkish R	I	0.20	A*,B,D
1584	R.Nottingham	B	1.00	D,E
1602	R.Kent	B	0.25	B,C,E

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



Stalbridge; Christian Science Herald via WSHB Cypress Creek **18.910** (? Eng to E/C.Africa 1600?-2000) 32232 at 1720 in Colyton & 44333 at 1931 in Oxted.

There is a high level of activity in the **17MHz (16m)** band during the day. An early morning broadcast from World Harvest R. (KWHR) via Naalehu, Hawaii on **17.780** (Eng to E.Asia?) was received at 0535 in Morpheth and rated 33343. R.Australia's broadcast to Asia via Shepparton on **17.750** (Eng 0000-0500, 0600-1100) was rated 22222 at 0830 in Colyton, 24433 at 0945 in E.Bristol & 44434 at 1050 in Woodhall Spa. Their transmission on **17.795** (Eng to Pacific [Vanuatu, New Caledonia, Fiji & Tonga]) was rated 54445 at 0110 in New Zealand but it was not reported by listeners in the UK.

During the afternoon R.Bulgaria, Sofia **17.500** (Eng to Eur 1200-1300) was 33333 at 1248 in Truro; R.Finland via Pori **17.660** (Eng to W.Eur, N.America 1330-1400) 44444 at 1340 in Herstmonceux; RFI via Allouis? **17.620** (Eng to M.East, Asia 1400-1500) 32333 at 1400 by **Gerald Guest** in Dudley; Voice of Turkey **17.815** (Eng to Eur 1330-1430) 55555 at 1401 in Rugby; Channel

Africa via Meyerton **17.770** (Eng to Africa, M.East 1500-1530) 34333 at 1520 in Morden.

Later, Channel Africa via Meyerton **17.870** (Eng, Fr to W.Africa 1800-1900) was 45344 at 1804 in Newry; BBC via Ascension Is **17.830** (Eng to W.Africa 0800?-2100) 35343 at 1840 in Northampton; R.Nederlands via Bonaire, Ned.Antilles **17.605** (Eng to C/W.Africa 1830-2025, Dut 2025-2125) 44444 at 2003 in Oxted; WHRI via Maine, USA **17.650** (Eng to Eur, M.East, Africa 1600-2300?) 44344 at 2025 in Liverpool; VOA via Morocco? **17.895** (Eng to Africa 2000-2200) 55445 at 2055 in Stalbridge.

Quite often R.New Zealand has reached the UK in the **15MHz (19m)** band. Their early morning transmission to Pacific areas on **15.340** (Eng 0359-0705) was rated 44333 at 0600 by **Clare Pinder** in Appleby. Later, their broadcast to NZ peacekeepers in Bougainville, the Solomon Is and E.Timor on **15.175** (Eng 1006-1205) may be heard - it was rated 33333 at 1200 in Oxted. Much later, their broadcast to Pacific areas on **15.160** (Eng 1751-2216) was 22222 at 1938 in Newry.

R.Australia has also reached the UK in this band. Two frequencies were mentioned in the

Listeners:-

- (A) Simon Hockenhill, E.Bristol.
 (B) Sheila Hughes, Morden.
 (C) Eddie McKeown, Newry.
 (D) George Millmore, Wootton Lw.
 (E) Clare Pinder, while in Appleby.
 (F) Ernie Strong, Ramsey, Cambs.
 (G) Fred Wilmshurst, Northampton.

Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power (kW)	Listener
526	Vatican R.	Italy	5	F*	1125	RNE5 via ?	Spain	?	F*
531	Ain Beida	Algeria	600/300	A*	1125	Llandrindod Wells	UK	?	F
531	Berg	Germany	20	C*	1134	Zadar(Croatian R)	Croatia	600/1200	A*,C*,D*,G*
531	RNE5 via ?	Spain	?	D*	1134	CDPE via ?	Spain	2	C*,D*,F*
531	Beromunster	Switzerland	500	C*,F*,G*	1143	Stuttgart(AFN)	Germany	10	C*,D*
540	Wavre	Belgium	150/50	B*,C*,D*,F*,G*	1143	CDPE via ?	Spain	2	C*,F*
540	Sidi Bennour	Morocco	600	A*,B*,C*,D*,F*,G*	1179	Solvesborg	Sweden	600	A*,C*,D*,G*
549	Les Trembles	Algeria	600	A*,B*,D*,F*,G*	1188	Kuurne	Belgium	5	C*,D*,FG
549	Sasnovy	Belarus	1000	F*	1188	Reichenbach(MDR)	Germany	5	F
549	Nordkirchen (DLF)	Germany	100	F*	1188	Szolnok	Hungary	135	C*,G*
549	Thurnau (DLF)	Germany	200	B*,D*,G*	1188	San Remo	Italy	6	F*
558	Espoo	Finland	50	C*,D*,F*	1197	Munich(VDA)	Germany	300	A*,C*
558	RNE5 via ?	Spain	?	D*,F*	1197	Virgin via ?	UK	?	C*,D*,FG
567	Tullamore(RTE1)	Eire	500	C,D,E*,F*,G*	1206	Bordeaux	France	100	A*,C*,D*,F*,G*
567	RNE5 via ?	Spain	?	D*	1215	Virgin via ?	UK	?	C*,D*,FG
576	Muhlacker(SDR)	Germany	500	C*,F*,G*	1224	Vidin	Bulgaria	500	C*,F*
576	Riga	Latvia	500	D*,F*	1224	Lelystad	Holland	50	C*,D*,F
576	Barcelona(RNE5)	Spain	50	D*,F*	1233	Nitra	Slovakia	40	C*
585	Dirf Wien	Austria	600	D*	1233	Virgin via ?	UK	?	C*,FG
585	Paris(FIP)	France	8	C*,D*,F*	1242	Marseille	France	150	C*
585	Riyadh	Saudi Arabia	1200	A*	1242	Virgin via ?	UK	?	C*,F
585	Madrid(RNE1)	Spain	200	A*,D*,F*,G*	1251	Marcali	Hungary	500	C*
585	Gafsa	Tunisia	350	F*	1251	Huisberg	Netherlands	10	C*,D*
585	Dumfries(BBCScot)	UK	2	C*	1260	SER via ?	Spain	?	C*,D*
594	Frankfurt(HR)	Germany	1000/400	B*,C*,D*,F*,G*	1269	Neumunster(DLF)	Germany	600	C*,D*,FG
594	Dujda-1	Morocco	100	A*,C*,D*	1278	Dublin/Cork(RTE2)	Eire	10	C*,D*,FG
594	Muge	Portugal	100	F*	1278	Strasbourg	France	300	F*
603	Lyon	France	300	A*,C*,D*,F*	1287	RFE via ?	Czech Rep	?	C*,D*,F*
603	Sevilla(RNE5)	Spain	50	C*	1287	Lerida(SDR)	Spain	10	F*,G*
603	Sousse	Tunisia	50	C*,D*	1296	Valencia(CDPE)	Spain	10	D*,F*
603	Newcastle(BBC)	UK	2	A*,F*	1296	Drfordness(BBC)	UK	500	C*,F
612	Athlone(RTE2)	Eire	100	C,D,F	1305	Constantine	Algeria	20	F*
612	RNE1 via ?	Spain	10	D*,F*	1305	RNE5 via ?	Spain	?	C*,F*
612	Tallinn	Estonia	100	F*	1314	Kvitsoy	Norway	1200	A*,B*,C*,D*,FG
621	Wavre	Belgium	80	C*,D*,F*,G*	1323	W'brunn (V.Russia)	Germany	1000/150	C*,G*
621	Batra	Egypt	2000	F*	1332	Rome	Italy	300	C*,D*
621	RNE1 via ?	Spain	10	F*	1341	Lisnagarvey(BBC)	N.Ireland	100	A*,FG*
621	Barcelona(DCR)	Spain	50	C*	1341	Tarrasa(SER)	Spain	2	D*,F
630	Vigra	Norway	100	C*,D*,F*	1350	Cesvaine/Kuldiga	Latvia	50	D*
630	Tunis-Djedida	Tunisia	600	C*,D*,F*	1359	Madrid(RNE-FS)	Spain	600	C*,D*,F*
639	Praha(Liblice)	Czech	1500	C*,D*,F*,G*	1368	Foxdale(Manx R)	Is of Man	20	C*,D*,E
639	RNE1 via ?	Spain	?	A*,C*,D*,F*	1377	Lille	France	300	C,D,FG*
648	RNE1 via ?	Spain	10	F*	1386	Bilshakovo	Russia	2500	A*,B,C,D*,FG*
648	Badajoz(RNE1)	Spain	10	F*	1395	TWR via Filake	Albania	500	C*
648	Drfordness(BBC)	UK	500	A*,C*,D*,F*,G*	1395	Lopic	Netherlands	120/40	C*,D*,FG*
657	Firenze	Italy	100	F*	1404	Brest	France	20	C*,D*,G*
657	Madrid(RNE5)	Spain	20	C*,D*,F*	1413	RNE5 via ?	Spain	?	C*
657	Wrexham(BBCWales)	UK	2	A*,F*,G	1422	Heusweiler(DLF)	Germany	1200/600	C*,D*,FG*
666	Messkirch(Rohrd(SWF)	Germany	150	C*,F*,G*	1440	Marnach(RTL)	Luxembourg	1200	C*,D*,FG*
666	Siikuna(R.Vilnius)	Lithuania	500	C*,F*	1440	Damman	Saudi Arabia	1600	C*
666	Lisboa	Portugal	135	C*,F*	1449	Squinzano (RAI)	Italy	50	C*,D*
675	R10 FM	Holland	120	A*,C*,D*,F*,G*	1449	Redmosst(BBC)	UK	2	C*
684	Sevilla(RNE1)	Spain	500	A*,C*,D*,F*	1458	Filake	Albania	500	D*
683	Tortosa(RNE1)	Spain	2	C*	1467	Monte Carlo(TWR)	Monaco	1000/400	C*,D*,G*
683	Droitwich(BBC)	UK	150	D,FG	1476	Wien-Bisamberg	Austria	600	C*,D*,G*
702	Flensburg(NDR)	Germany	5	C*	1485	SER via ?	Spain	?	D*
702	TWR via Monte Carlo	Monaco	300	C*,F*	1494	Clermont-Ferrand	France	20	C*,D*,FG*
702	Presov	Slovakia	200	F*	1494	St.Petersburg	Russia	1200	C*
711	Rennes 1	France	300	A*,C*,D*,F*,G*	1503	Ardabil	Iran	50	C*
711	Laayoune	Morocco	600	D*,F*	1512	Wolventem	Belgium	300	A*,C*,D*,FG*
711	Murcia(CDPE)	Spain	5	F*	1521	Kosice(Cizicate)	Slovakia	600	C*,D*,G
720	Langenberg	Germany	200	F*	1521	Duba	Saudi Arabia	2000	C*
720	Lisnagarvey(BBC4)	N.Ireland	10	A*	1521	Castellon (SER)	Spain	2	F*
720	Sfax	Tunisia	200	D*	1530	Vatican R	Italy	150/450	C*,D*,F*,G*
720	Lots Rd,Ldn(BBC4)	UK	0.5	D*,F*,G	1539	Mainflingen(ERF)	Germany	350(700)	A*,C*,D*,FG*
729	Cork(RTE1)	Eire	10	C*,D*,F*	1539	SER via ?	Spain	?	F*
729	RNE1 via ?	Spain	?	C*,D*,F*,G*	1557	Nice	France	300	A*,F*
738	Paris	France	4	D	1575	Genova	Italy	50	A*,C*,D*,F*,G*
738	Barcelona(RNE1)	Spain	500	C*,D*,F*,G*	1575	SER via ?	Spain	5	F*,G*
747	Flevo(Hilv2)	Holland	400/200	C*,D*,F*,G*	1584	SER via ?	Spain	2	F*
756	Braunschweig(DLF)	Germany	800/200	C*,D*,F*,G*	1593	Holzkirchen(VDA)	Germany	150	D*,F*
756	Bilbao(EI)	Spain	5	C*	1602	Al Dakhla	Egypt	10	F*
765	Sottens	Switzerland	500	C*,D*,F*	1602	Vitoria(EI)	Spain	10	C*,D*,F*,G*
774	Enniskillen(BBC)	N.Ireland	?	C*					
774	RNE1 via ?	Spain	?	C*,D*,F*,G					
783	Leipzig(MDR)	Germany	100	C*,D*,F*					
783	Barcelona (CDPE)	Spain	50	F*					
792	Limoges	France	300	C*,D*					
801	Munche-Ismaning	Germany	300	C*,D*,F*					
801	RNE1 via ?	Spain	?	D*,F*					
810	Madrid(SER)	Spain	20	G*					
810	Westergien(BBCScot)	UK	100	A*,C*,D*,F*,G					
819	Batra	Egypt	450	A*,D*,F*					
819	S.Sebastian(EI)	Spain	5	C*,F*					
828	Rotterdam	Holland	20	C*					
837	Nancy	France	200	C*,D*					
837	Amchit	Lebanon	100	F*					
837	CDPE via ?	Spain	?	C*,D*					
846	Rome	Italy	1200	A*,C*,D*,F*,G*					
855	RNE1 via ?	Spain	?	C*,D*,F*,G*					
864	Paris	France	300	C,D*,F*,G*					
864	Socuellamos(RNE1)	Spain	2	F*					
873	Frankfurt(AFN)	Germany	150	C*,D*					
873	Zaragoza(SER)	Spain	20	D*					
873	Enniskillen(R.U.I)	UK	1	C*					
882	Barcelona	Spain	20	F*					
882	CDPE via ?	Spain	?	C*,D*					
882	Washford(BBCWales)	UK	100	B,C,D,E*,F*,G*					
891	Algiers	Algeria	600/300	A*,B*,D*,F*,G*					
891	Hulsberg	Netherlands	20	B*,C*					
891	Antalya	Turkey	600	F*					
900	Brno(CRo2)	Czech Rep	25	C*,D*					
900	Milan	Italy	600	A*,C*,D*,F*					
900	CDPE via ?	Spain	?	F*					
909	8'mans(KBBC5)	UK	140	D,F*,G					
918	Domzale	Slovenia	600/100	C*,D*,F*					
918	Madrid(R.Int)	Spain	20	F*					
927	Wolventem	Belgium	300	C*,D*,F*,G*					
936	Bremen	Germany	100	C*					
936	Venezia	Italy	20	D*					
936	RNE5 via ?	Spain	?	F*					
945	Toulouse	France	300	C*,D*,F*					
954	Brno (CRo2)	Czech Rep.	200	D*					
954	Madrid(CI)	Spain	20	C*,D*,G*					
963	Pori	Finland	600	A*,C*,D*					
963	Vitoria (EI)	Spain	10	F*					
972	Hamburg(NDR)	Germany	300	C*,D*,F*,G*					
981	Algier	Algeria	600/300	B*,D*,F*					
990	Berlin	Germany	300	C*					
990	R.Bilbao(SER)	Spain	10	F*					
990	Twyyn(BBC)	UK	1	C*					
999	Schwern (RIAS)	Germany	20	C*					
999	Madrid(CDPE)	Spain	50	C*,G*					
1008	SER via ?	Canaries/Spain	?	F*					
1008	Flevo(Hilv-5)	Holland	400	C*,D*,F*,G					
1017	Rhensender(SWF)	Germany	600	C*,D*,G*					
1017	RNE5 via ?	Spain	?	F*					
1035	Milan	Italy	50	F*					
1035	Lisbon	Portugal	120	C*					
1044	Dresden(MDR)	Germany	20	C*,F					
1044	Sebaa-Aioun	Morocco	300	D*,F*					
1044	SER via ?	Spain	?	D*					
1044	S.Sebastian(SER)	Spain	10	C*,F*					
1053	Zaragoza(CDPE)	Spain	10	C*					
1053	Talk Sport via ?	UK	?	C*,D*,F*,G*					
1062	Kalundborg	Denmark	250	A*,C*,D*,F*,G*					
1062	R.Uno via ?	Italy	?	C*,F*					
1071	Bilbao(EI)	Spain	5	C*,D*,F*,G*					
1071	Talk Sport via ?	UK	?	C*,F*,G					
1080	SER via ?	Spain	?	C*,D*,F*					
1089	Talk Sport via ?	UK	?						

latest reports: **15.240** (Eng to Pacific, E.Asia 0000-1000), rated 43333 at 0855 in Herstmonceux; **15.415** (Eng to E/SE.Asia 0600-0900) 32432 at 0815 in Colyton.

Also mentioned in the reports were the Voice of Nigeria via Ikorodu **15.120** (Eng), rated 44444 at 0610 in Morpeth & 33333 at 2055 in Liverpool; R.Kuwait via Sulabiyah **15.110** (Various incl Eng) 55544 at 0635 in Guildford; BBC via Singapore **15.360** (Eng to E.Asia 0500-0900) 44444 at 0830 in New Zealand; Voice of Hope (KVOH) via Julich, Germany **15.715** (Eng to M.East 1200?-?) 44444 at 1200 in Truro; R.Romania Int **15.365** (Eng to W.Eur 1400-1500) 44444 at 1400 in Dudley & 35553 at 1410 in Larnaca, Cyprus; R.Oman via Thumrait **15.140** (Eng to M.East 1400-1500) 34243 at 1416 in Newry; VOA via Kavala, Greece **15.205** (Eng to Eur, N.Africa, M.East 1400-1800) 43333 at 1530 in Morden; R.Pakistan **15.100** (Eng [News] to ? 1600-1615) 34333 at 1602 in Woodhall Spa; R.Japan via Moyabi, Gabon **15.355** (Eng to Africa 1700-1800) 24222 at 1745 in Rugby; AWR via Meyerton, S.Africa **15.295** (Eng to Africa? 2000-2030) 35544 at 2000 in Northampton; BBC via Ascension Is **15.400** (Eng to W.Africa 1500-2300) 35422 at 2010 in E.Bristol; R.Netherlands via Bonaire, Ned.Antilles **15.315** (Dut to W.Africa 2030-2130) 54454 at 2050 in Liverpool; WYFR Okeechobee FL, USA **15.565** (Eng to Eur, Africa 1900?-2200?) 44334 at 2105 in Stalbridge; VOA via Philippines **15.290** (Eng to E.Asia 0000-0030) 32322 at 0020 in Scunthorpe.

Noted in the **13MHz (22m)** band were Swiss R.Int via Julich, Germany **13.635** (Fr, Ger, It, Eng to Africa 0600-0800), rated 44433 at 0735 in Herstmonceux; Croatian R, Zargreb **13.830** (Cr to Eur) 45544 at 1022 in Northampton; R.Netherlands via Flevo **13.700** (Dut to M.East, S.Asia 1330-1430) 54454 at 1350 in Liverpool; WHRI via Noblesville, USA **13.760** (Eng to E.USA, Eur 1600-2100?) 34423 at 1720 in Colyton; Swiss R.Int via Julich, Germany **13.790** (It, Ar, Eng, Fr to Nr East, Africa 1630-1815) 22222 at 1730 in Truro; DW via Julich? **13.780** (Eng to Africa 1900-1945) 43333 at 1900 in Morden; R.Netherlands via Flevo **13.700** (Eng to Africa 1830-2025) 44444 at 2004 in Oxted; VOA via Botswana? **13.710** (Eng to Africa 1800?-2230) 35322 at 2008 in E.Bristol; R.Canada Int via Sackville **13.650** (Eng to Eur, Africa 2100-2159) 44444 at 2100 in Dudley & 44444 at 2105 in Rugby; R.Australia via Darwin **13.620** (Eng to SE.Asia 2200-0000) 24112 at 2215 in Newry.

Broadcasts from many areas reach the UK in the **11MHz (25m)** band and there is much to interest the listener. During the late afternoon R.New Zealand's broadcast to NE.Pacific on **11.725** (Eng 1650-1750) has been received here. It was rated 33333 at 1650 in Truro.

Other broadcasters using this band include R.Prague, Czech Rep **11.640** (Eng to Eur, M.East, Africa 1130-1200), rated 54544 at 1145 in Herstmonceux; R.Romania Int, Bucharest **11.940** (Eng to Eur 1400-1456) 53444 at 1450 in Liverpool; R.Netherlands via Tashkent **12.070** (Eng to Asia, Far East, Pacific 1430-1600) 45533 at 1450 in E.Bristol; R.Pakistan, Islamabad **11.570** (Eng to M.East, N.Africa 1600-1615) 44444 at 1600 in Morden; R.Japan via ? **11.970** (Eng to ? 1700-1800) 43333 at 1700 in Appleby; WWCN Nashville, USA **12.160** (Eng to N.America, Eur 1400-2200) 43333 at 1735 in Morpeth; AWR via Agat Guam **11.560** (Eng to Asia 1730-1800) 34333 at 1748 in Woodhall Spa; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) 55455 at 1800 in Rugby; All India R. (AIR) via Bangalore **11.620** (Eng to Eur 1745-1945) 32433 at 1830 in Colyton; R.Netherlands via Madagascar **11.655** (Eng to Africa 1730-2025) 34333 at 2006 in Oxted; R.Damascus, Syria **12.085** (Ger, Fr, Eng to Eur 1900-2105) 34333 at 2007 in Newry; VOA via Sao Tome **11.975** (Eng to Africa 2100?-2230) 23333 at 2106 in Storrington; R.Canada Int via Horby, Sweden **11.600** (Eng to W.Eur, M.East, Africa 2200-2259) 22222 at 2204 in Scunthorpe; AIR via Delhi? **11.620** (Eng to Pacific 2045-2230) 54434 at 2205 in Stalbridge.

Some of the early morning broadcasts in the **9MHz (31m)** band come from BBC via Cyprus **9.410** (Eng to W/SW.Eur 0400-0900), rated 44444 at 0614 in New Zealand; HCJB Quito, Ecuador **9.780** (Eng to Eur 0700-0900) 44444 at 0710 in Morpeth; Swiss R.Int **9.885** (Fr, Ger, It, Eng to Nr.East, Africa 0600-0800)

55544 at 0755 in Northampton; R.Australia via Shepparton **9.710** (Eng to Pacific areas 0800-0900) 43433 at 0810 in Herstmonceux.

During the afternoon R.Netherlands via Wertachtal **9.860** (Eng to Eur 1130-1325) was 55444 at 1225 in E.Bristol; R.Polonia (Polish R, Warsaw) **9.525** (Eng to Eur 1300-1359) 34232 at 1339 in Newry; VOA via Philippines **9.760** (Eng to Asia 1100?-1500?) 34333 at 1423 in Woodhall Spa; China R.Int via ? **9.785** (Eng to Asia 1500-1600) 24343 at 1535 in Rugby.

Later, the Voice of Greece, Athens **9.420** (Gr to Eur, Balk 1800-2050) was 32323 at 1820 in Colyton; R.Thailand, Udorn Thani **9.535** (Eng to Eur 1900-2000) 44333 at 1935 in Morden; China R.Int via ? **9.440** (Eng to Eur 1900-2000?) 34453 at 1955 in Larnaca, Cyprus; R.Australia via Shepparton **9.500** (Eng to Far East, SE.Asia & Pacific areas 1900-2130) 32222 at 2000 in Truro & 23232 at 2100 in Storrington; BBC via Cyprus **9.410** (Eng to W/SW.Eur, N.Africa 1600-2200) 54454 at 2055 in Liverpool; R.Romania Int, Bucharest **9.690** (Eng to Eur 2100-2155) 43333 at 2100 in Appleby; R.Canada Int via Abu Dhabi **9.805** (Eng to Eur, Africa 2100-2159) SIO 444 at 2143 by **Francis Hearne** in N.Bristol; R.Canada Int via Sackville **9.770** (Eng to W.Eur, Africa 2200-2229) 44334 at 2200 in Dudley; CBC North Quebec via Sackville, Canada **9.625** (Eng, Fr, Inuk, Cree 1155-0610) 44544 at 2209 in Guildford; WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs) 44434 at 2335 in Stalbridge; R.Netherlands via Bonaire, Ned.Antilles **9.845** (Eng to N.America 2330-0525) 43333 at 0001 in Scunthorpe.

Some of the broadcasts in the **7MHz (41m)** band are intended for listeners in Europe. Those mentioned in the reports came from WYFR Family R. via Okeechobee FL, USA **7.355** (Ger, Eng 0600-0800, also to Africa), heard at 0727 in Northampton; Sudwestfunk via Rohrdorf **7.265** (Ger 24hrs), rated 34433 at 0815 in Colyton; Vatican R, Italy **7.250** (It) 32322 at 1640 in Rugby; R.Prague, Cz.Rep **7.315** (Eng 1800-1827) 42432 at 1806 in Newry; R.Slovakia Int **7.345** (Eng 1930-1957) 55555 at 1940 in Morden; Voice of the Mediterranean, Malta via Russia **7.440** (Eng 2000-2100) 33333 at 2010 in Truro; R.Polonia (Polish R), Warsaw **7.165** (Eng 2030-2130) 54455 at 2030 in Dudley; RCI via Skelton, UK **7.235** (Fr, Eng 2000-2159, also to Africa) 44344 at 2100 in Appleby; AIR via Bangalore **7.410** (Hi, Eng 1745-2230) 55444 at 2207 in Scunthorpe.

In addition, a number of broadcasts to other areas can often be received here. Those noted came from the Voice of Nigeria, Ikorodu **7.255** (Eng to W.Africa 1900-2100), rated 54434 at 2219 in Guildford; R.Prague, Cz.Rep **7.345** (Eng to N.America 2330-2357) SIO 444 at 2339 in N.Bristol; R.Yugoslavia **7.115** (Eng to N.America 0100-0130, Not Sun) 54545 at 0120 in E.Bristol; World Harvest Radio (WHRI) via Maine, USA **7.580** (Eng to N.America) 44434 at 0925 in Stalbridge.

Many more broadcasts for European listeners may be received in the **6MHz (49m)** band. Some originate from R.Vlaanderen Int via Julich, Germany **5.985** (Eng 0800-0830), rated 44333 at 0800 in Appleby; Deutsch Welle (DW) via Julich? **6.140** (Eng Service) 44444 at 1100 in Dudley; R.Prague, Cz.Rep **5.930** (Eng 1800-1830) 55545 at 1810 in Colyton; R.Polonia (Polish R) Warsaw **5.995** (Eng 1800-1900) 44333 at 1830 in Morden; RAI Rome **5.970** (Eng 1935-1955) 43343 at 1935 in Newry; R.Budapest, Hungary **6.025** (Eng 2000-2026) 42222 at 2010 in Liverpool; R.Sweden, Stockholm **6.065** (Sw [Eng 1830, 2030, 2230]) SIO 444 at 2046 & 2231 in N.Bristol; R.Bulgaria, Sofia **5.800** (Eng 2000-2100) 55555 at 2055 in Herstmonceux; China R.Int via ? **5.965** (Eng 2100-2155) 32243 in Rugby; R.Canada Int via Skelton, UK **6.045** (Eng, Fr 2200-2259) 32232 at 2200 in Scunthorpe; R.Yugoslavia, Belgrade **6.100** (Serb, Ger*, Fr, Eng 2030-2230 [*Serb replaces Ger on Sats]) 42433 at 2216 in E.Bristol; R.Taipei, Taiwan via WYFR Okeechobee FL, USA **5.810** (Eng/Chin 2200-2300) 33333 at 2250 in Truro.

Noted to other areas were ORTM Bamako, Mali **5.995** (Fr 0555-0748, 1757-0000), rated 54534 at 2227 in Guildford; WHRI South Bend, USA **5.745** (Eng to N.America 2100?-1000) 45444 at 2320 in Northampton; BBC via Antigua, W.Indies **5.975** (Eng to Caribbean, C/S.America 2100-0600) 44433 at 2347 in Oxted; American Forces Network (AFN) via Puerto Rico **6.458** (Eng [u.s.b.]) 44343 at 0047 in Morpeth.



The SINPO code is used for broadcast station reports, here is an explanation of the code.

Signal Strength	
5	excellent
4	good
3	fair
2	poor
1	barely audible
Interference	
5	nil
4	slight
3	moderate
2	severe
1	extreme
Noise	
5	nil
4	slight
3	moderate
2	severe
1	extreme
Propagation Disturbance	
5	nil
4	slight
3	moderate
2	severe
1	extreme
Overall Merit	
5	excellent
4	good
3	fair
2	poor
1	unusable

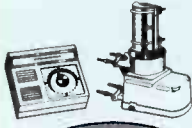
£99.95

LOG PERIODIC MLP32

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

ROTATOR AR-300XL

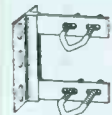
- * Rotation Torque-222Kg
- * Vertical Load-45Kg
- * Mast Size - 28-44mm
- * Control Box-230v AC
- * Cable-3 core
- * Direct Compass Bearings (Ideal for Light to Medium Beams, i.e. LOG PERIODIC above.)



£49.95

6" STAND OFF BRACKET

Complete with 'U' Bolts
9" stand off bracket £9.00



£6.00

MD37 SKY WIRE (LONG WIRE BALUN KIT)

25 METRES OF ENAMELLED WIRE INCLUDES 10M PATCH LEAD & INSULATOR

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



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- SINGLE 1 1/4"£7.00
- SET OF FOUR 1 1/4"£24.95
- SINGLE 1 1/2"£10.00
- SET OF FOUR 1 1/2"£34.95
- SINGLE 2"£15.00
- SET OF FOUR 2"£49.95

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

CONNECTORS

- PL259/9..... 0.75 each
- PL259/6..... 0.75 each
- PL259/7 for mini 8 1.00 each
- BNC (Screw Type) 8 1.00 each
- BNC (Solder Type) 8 1.00 each
- N TYPE for N582.50 each
- N TYPE for RF213 ..2.50 each
- S0239 to BNC1.50 each
- PL259 to BNC2.00 each
- N TYPE to S0239 ..3.00 each

CABLE

- RG213 MILITARY 0.85 per mtr.
- MINI 8 0.70 per mtr.
- RG58 STANDARD 0.35 per mtr.
- RG58 MILITARY 0.60 per mtr.

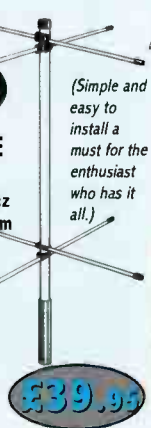
WEATHER SATELLITE ANTENNA

TURNSTILE 137

Freq. 137.5 MHz Length 1000mm

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

Complete with mounting hardware.



£39.95



SUPER SCANAIR BASE (Airband)

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

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

£29.95

SUPER SCAN STICK

Freq. Range 0-2000MHz Length 1000mm

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

£49.95

SUPER SCAN STICK II

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

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

MULTI SCAN STICK II

Freq. Range Receive (0-2000MHz) Transmit (144-146 MHz) Gain 4.00dbd (420-430 MHz) Gain 6.00dbd Length 1500mm Same as Super Scan Stick but with extra gain, makes it an even better antenna for the amateur and expert alike. (Ideal for the Ham Radio user)

£39.95

MULTISCAN STICK

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

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

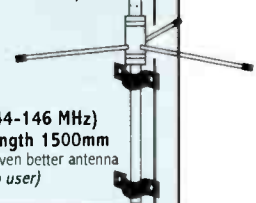
Comes complete with mounting hardware and brackets. (Ideal for the amateurs ham radio - user.)

£89.95

IVX 2000

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

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



MWA HF Wire Antenna Mk11

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

NEW LOW PRICE

£49.95

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

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

£29.95

SWP HF30 Freq. Range 0.05-30MHz Length 770mm

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

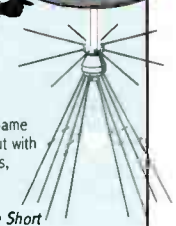
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HF DISCONE

Freq. Range 0.05-2000MHz Length 1840mm

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

£49.95



TRI SCAN III

Freq. Range 25-2000MHz Length 720mm

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

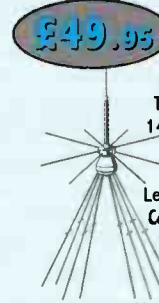
£39.95

ROYAL DISCONE 2000

(Stainless Steel)

Freq. Range Receive 25-2000MHz Transmit 50-52MHz 144-146MHz 430-440MHz 900-986MHz Length 1540mm Connector-N TYPE

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

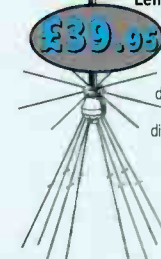


£49.95

SUPER DISCONE

Freq. Range 25-2000MHz Length 1380mm

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



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MRW-40 (Rubber Duck)

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

£19.95

MRP-2000 (Preamplifier)

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

£49.95

G. SCAN II

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

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

£24.95

MRW-100

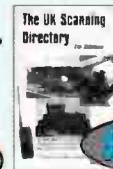
(Super Gainer) (Rubber Duck) Wideband extra sensitive Dedicated VHF/UHF all mode Length 400mm. PP £2.00

£19.95

MRP-125 (Preamplifier)

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

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R862 12 band analogue receiver.....£25

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R9921 MB Dig WB Radio with RDS.....£60

R881 Multiband digital world band radio ...£70

R9914 MB Dig WB Rad with SSB.....£85

R876 Multiband digital world band radio ..£115

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SANGEAN

ATS818 MB Dig WB radio with BFO....£100

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Bandscan America

The last three months of 2001 saw some very interesting DX targets appear. There were also interesting things going on behind the scenes. War brings changes to the broadcast scene in the affected area, and the war on terrorism has certainly left its mark. The Taliban's official station, the Radio Voice of Shari'ah (7.085 variable), was soon destroyed by US air attacks, a silencing that had no effect on North American listeners since no one here was able to hear it anyway.

The US Army soon began using 'psywar' broadcasts from an EC-130 flying over Afghanistan, although there was, and is, considerable doubt about the short wave part of the operation on 8.700MHz actually coming from the airplane. Most believe it's more likely these transmissions come from one of the former USSR republics near the target area. The broadcasts, going out as many North American DXers have heard 'Information Radio', although generally at a weak level and suffering from what sounds like layers of interference. Here in the Midwestern US, the signal seems to peak around 0100.

Some weeks later came the Voice of Afghanistan, operated by the London-based Afghan Broadcasting Company. This one is heard well on 9.950 during its 1330-1430 broadcast, which is believed to come from one of the Russian transmitter sites.

The US government may, by now, have returned its Radio Free Afghanistan service to the air. The US Congress has directed Radio Free Europe/Radio Liberty to get such a service into operation. Such a service existed during the Afghan-Soviet War, but was discontinued once the war ended.

There is also a chance that the Northern Alliance may get a station on short wave. Let's hope that any new official Afghan government voice will be more widely received.

The far right, anti-government, part pirate part clandestine station United Patriot Radio, which operated on 6.900 over most of the summer is history. It wasn't the FCC, which closed it down. A sheriff's deputy in Kentucky for having a broken taillight on his truck stopped owner/operator Steve Anderson. Anderson grabbed his rifle and proceeded to put a couple of dozen bullet holes in the deputy's squad car before taking off into the hills. After back up officers arrived, they found the truck abandoned some distance away and no sign of Anderson. Authorities are offering a \$5000 reward. DXers feel they would have been well rewarded had Anderson not refused to issue verifications!

Station News

Good News Broadcasting has purchased WRNO, New Orleans, long neglected and allowed to deteriorate. It's still operating on 7.355, but at such reduced power it has almost become a DX target! Their airtime has recently been filled with relays of a local f.m. station on 89.1MHz.

New from Colombia is Idea Radio, using 7.380 in English and Spanish. They give an address of **PO Box 25733, Bogotá**, E-mail **idearadio@hotmail.com** The broadcast is being widely heard in North America during local evenings.

The struggling Mexican Radio Transcontinental de America (XERTA) is back playing hopscotch on the 60m band. You might find them on 4.865, 4.840, 4.820 or 4.800 or even as low as 4.755. In addition to a flighty transmitter, they also have serious

modulation problems, which result in a very distorted signal.

A new station in Guatemala is Radio Amistad operating with 500W on 4.700 from San Pedro La Laguna, near the famous Lake Atitlan. The station operates from 1100 to 1200 and also during the late night early morning hours. We recently picked it up around 0100. This is a religious broadcaster operated by a Baptist group. Reception reports can be sent to **David Daniell, Asesor de Comunicaciones, Apartado Postal 25, Bulevares, MX, 53140, Mexico.**

Chile also has a new entry in the short wave listings. It's Radio Paarinacota on 6.010 operating around the clock with 1kW from Putre. Much, if not all of the time, they relay Santiago's Radio Cooperativa, which used to be on short wave years ago. The address for this one is **Casilla 82, Arica, Chile.** Unfortunately, Mexico's Radio Mil will make this one quite a challenge.

Yet another new Latin American station is Centro Radiofonico de Imbabura in Ibarra, Ecuador, now active on 3.380 variable, in Spanish. The schedule hasn't been figured out yet, but checks around 0000UTC might well turn it up. However, 3.380 is also used by Radio Chortis in Guatemala, which is likely to be the dominant signal.

The Only One

Radio Miskut is sometimes the only active station in Nicaragua since the two or so others operate on an irregular basis. Slowly upgrading its facility and expanding its broadcast hours, Miskut on 5.770 should be a fairly easy catch in Europe around 0000UTC. All the programming is in Spanish.

And that will about do it for this time. We'll have another 'situation report' on DX from the Western Hemisphere DX in May. Until then, good listening!



Adventist World Radio's Costa Rica station, Radio Lira International, is now part of Dr. Gene Scott's University Network.



Part of the transmitter site at Sackville, Canada, which carries most of the output of Radio Canada International.

Come & Go

The Honduran religious broadcaster, Voz de Misiones (HRMI) is being well heard again. This one tends to come and go and we suspect the engineer has to reach into his bag of tricks on a regular basis in order to keep it going. Currently it's doing quite well on 5.010, running to around 0400 with some English programming at the end of the schedule. This sometimes IDs as Radio MI or Radio Misiones Internacional.

Radio Ayopaya, Independencia, Bolivia is now active on 3.344 variable using 500W. The Quechua language broadcasts air from 0900 to 1200 and 2230 to 0130.

Recent Peruvian broadcasters being noted include:

3.173	Radio Municipal
3.230	Radio El Sol de los Andes, Juliaca
3.235	Radio Luz y Sonido, Huanaco
3.330	Ondas del Huallaga, Huanuco
4.389	Radio Imperio
4.421	Radio Bambamarca
4.576	Radio Uno, Chiclayo
4.750	Radio San Francisco, Solano
4.826	Radio Sicuani, Sicuani
4.855	Radio La Hora, Cusco
4.940	Radio San Antonio, Villa Atalaya
4.955	Radio Cultural, Amuata
5.009	Radio Altura, Cerro de Pasco
5.460	Radio Bolivar, Bolivar
5.486	Radio Reina de la Selva, Chachapoyas
5.853	Radio Americana, Nuevo Cajamarca
6.011	Radio LTC
6.045	Radio Santa Rosa, Lima
6.351	Radio Union, Lima
6.520	Radio Paucartambo, Paucartambo
6.817	La Voz de las Huarinjas, Huancabamba
6.895	Radio San Miguel, San Miguel de El Faique
6.975	Radio del Pacifico, Lima
9.720	Radio Victoria

Frequencies are generally somewhat variable.

■ **ANDY CADIER, 28 ROMNEY AVENUE, FOLKESTONE, KENT CT20 3QJ**

■ **E-MAIL:** off.the.record@pwpublishing.ltd.uk

Off The Record

In the light of the multitude of Communications Agency raids made against short wave pirates, particularly in Holland and Ireland, station operators are wondering just how much the publishing of station and programme details on the Internet is actually aiding the authorities.

The Swedish Report Service (SRS) who provide very comprehensive information is among those criticised. SRS have in return offered to withhold the names of stations should it be requested. The Dutch pirate station Alpha Lima International is among those that give full details of forthcoming broadcasts on the Yahoo Groups list server s.w.pirates. It is also thought that the publishing of broadcasting time and frequencies could in fact provide extra evidence against stations and be used in future prosecutions.

This criticism appears not to be directed at magazines, which largely respect the British legal requirements of not actually publicising details of unlicensed broadcasts. However, the point where the writing a news item actually becomes publicising details of a station is more than a little ambiguous without abandoning the whole concept of free speech.

Caroline On The Record

The Dutch record company Disky Communications have produced two sets of three compilation CDs featuring music that is supposed to be associated with Radio Caroline during the 60s and 70s. Each of these sets, *Caroline calling the 60s* and *Caroline calling The 70s* contain 56 tracks and cost £12.99 each and are available from Radio Caroline Sales and many music shops.

The deal is expected to create some revenue for Radio Caroline and also give the station some international publicity. Apart from their satellite service, Radio Caroline can be heard on the Internet and has recently become available on cable in northern areas of Holland.

Who's Who On The Radio

You only have to glance at the pages of the *SWM* Book Store to see several annual reference books giving technical and geographical information about British broadcast stations. However, if you are interested in the people who work in, or have worked in radio and wish to get an insight into their respective careers, details are not always easy to obtain.

Who's Who In British Radio 2002 is published by Dawn and Paul Rustling and contains almost 600 pages and is over twice the size of the 1996 edition. The hundreds of entries include national and local BBC personalities, commercial radio staff, freelancers, ex-pirate broadcasters, RSL operators and even those involved in community or hospital radio. The book features scores of black and white pictures of those involved in the many facets of radio broadcasting. It is also littered with factual and in many cases humorous anecdotes from the contributing engineers, administrators, journalists, producers and presenters. Reading the many entries, even of people you do not know, does create an insight into the development of British Radio and the motivation behind those in the industry.

A point worth mentioning is that deceased persons are not included so don't expect to see any of the old radio pioneers listed. From the radio anorak point of view, I was quite surprised at the piratical beginnings that some present day broadcasters have. Another interesting fact, particularly among ex-pirates, is just how many served and gained electronic or broadcasting experience while serving in H.M. Forces.

Lots of other fascinating facts become apparent as you read *Who's Who* that makes it a great read and a reference book all in one. Some personalities could help by keeping the publishers informed on their latest

moves, there are provisions updates and for the inclusion of newcomers to be included in future issues of *Who's Who In British Radio*.

For those with a 'net access further details can be found on www.broadcastdata.net or you can write to **Broadcast Data Ltd, PO Box 12, Willerby, Hull HU10 7YT**. *Who's Who In British Radio* is also available from any bookshop, the price is £29.95 and the ISBN number is 1 900401 04 5. Mail order customers are charged and additional £4.05 to cover post and packing.

Recreating The Past

Jon Myer writes saying that TV researcher Gill Hennessey is preparing a series of programmes on the theme of the 50s and 60s in colour for ITV. She is particularly interested in contacting people involved in offshore pirate radio during this era that have fresh stories to tell, rather than simply broadcasting the usual anecdotes from Tony Blackburn or Johnny Walker.

Over the years there were hundreds of people who worked in British offshore radio, all with different experiences and interesting stories to tell. For many it was an adventure and a job combined, with ships being rocked by meteorological storms and blasted by the politicians, but at the same time attracting a dedicated and enthusiastic following that has never been replicated since.

Digital Confusion

If you ask someone in the street what digital radio is you would be fortunate if you received the right answer. The confusion has been heightened by the broadcast industry dropping the Digital Audio Broadcasting (DAB) name and for simplicity calling it digital radio. They clearly did not consult with the retail trade who were already calling any radio with a numeric display as digital. So you now appreciate why shop sales people are confused when asked about digital radio. So when you hear a national s.w. station offering the competition prize of a digital radio, do they as a broadcaster really mean DAB for an overseas audience? Of course not, they really mean a digital display world band radio.

What the digital radio marketing people seem to have forgotten is that as time passes just about all electronic communications will be digital anyway and the term digital will become meaningless. With differing modes of digital transmission including in-band DRM and also satellite digital radio, there will digital signals everywhere. It would surely be simpler to give an official identification to each broadcast band so one could tell what kind of digital receiver they wanted and where in the spectrum it actually worked. I suppose the blame, if there is any, lies with the USA calling medium wave - a.m. and v.h.f. Band 2 - f.m. Why anyone should call a wavelength or frequency band after a mode of modulation seems ill advised, but for us to deliberately perpetuate the confusion it into a new technological age seems plain daft.



Pick Of The Pirates

Dave Williams writes from Southampton asking about f.m. pirates. As these are usually very local and I don't normally include them in 'Off The Record'. There are f.m. pirates in Kent, like Power Hit Radio, from a neighbouring town, that plays disco type music in stereo and RDS, but only has a relatively small range.

Short wave reception in the 48m band has been quite good of late and revealing Riverside FM a relay from Jolly Roger Radio and Radio Marabu from Germany. Swinging Radio England has been widely heard almost every weekend. Radio Alpha Lima from Holland is relaying other stations on 15.070MHz with view to reaching listeners in the USA and possibly beyond.

On The Internet

For the surfers among us that are into nostalgic or pirate radio, here a few websites that you may wish to view:

www.vintagebroadcasting.org.uk

www.piratememories.co.uk

www.offshoreradio.co.uk

wirelesswaffle.0catch.com

If you find any other pirate radio or anorak related websites that you feel 'OTR' readers may find interesting, do let me know. You can E-mail me via *SWM*, see head of this page, plain text and no attachments please.

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When monitoring on the "main" displayed frequency, you can simultaneously listen to a second station operating within 20 MHz of the main frequency in the AM and FM-Narrow modes. This can be especially helpful while monitoring public safety communications.



■Preset Shortwave Broadcast Station Memory Bank

Featuring a handy world map showing the station's location, the special Shortwave Broadcast Station Memory Bank includes several different frequencies from a number of popular shortwave stations, including Voice of America, BBC, Radio Japan, Voice of Russia,

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The World Clock will show you local time anywhere in the world and you can label the cities in each time zone according to your individual requirements.

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To aid in finding band activity, the VR-5000's Real-Time Band Scope, used while operating in the "VFO" mode, will sweep the band in search of activity, displaying the received signals graphically according to frequency and signal strength. The sweep width can be set to 1/2/2.5/5 or 10 MHz. The sweep rate can be set to 100/200/250/300 or 500 kHz, and you can adjust the channel steps for best resolution of the frequency range in use.



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Frequency range:
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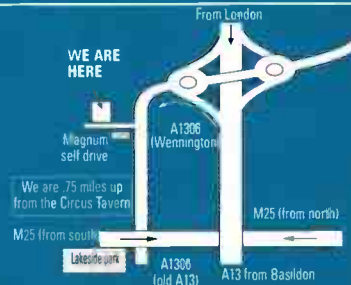


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Comments from John Griffiths

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THE VERTICAL CYCLOPSE



This new short wave listeners antenna was initially made specifically for one of our commercial customers but we felt the general public would find it of great interest. At only just over 7 feet high this vertical short wave receiving antenna will give amazing results from 0.2-30MHz and thanks to its commercial construction you simply erect it and away you go. Length 7'6". Coax supplied: 20m and PL-259 plugs supplied.

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A superb quality active antenna with a very high intercept point ideal for weak signal reception without increases in radiated noise. A truly amazing antenna! Freq: 100kHz-30MHz. Bomb-proof over loading figures, 90cm long, mains PSU + controller supplied (coax optional). Atmospheric-noise compensated sensitivity.

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Ready assembled wire antenna offering low noise reception on long, medium, short wave (100kHz-40MHz)

12.5mtrs long. Magnetically coupled transfer system ensures reduced static noise levels and allows unwanted build-up to leak harmlessly to earth without damaging the receiver. (Subject to recvr. being earthed).

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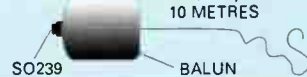


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items of interest

Listening by



WRN control room. Courtesy WRN.

Comp

This month Martin Peters sets off on a journey through the world of alternative listening - the phenomena that is 'Internet Radio'. Are you ready to join the action?

The Introduction

Technologies are converging. Just a few years ago listening to the radio meant just that. Turning on and tuning in to a limited number of broadcasters by means of a conventional radio.

1988 and the launch of Astra heralded the beginning of satellite radio for the man in the street. High quality programming from a selection of European broadcasters is there for the taking. However, choice - unless opting for an expensive, multi-satellite system - is limited and the service, just like listening to the



Computer Part 1

radio, non-interactive.

It's the advent of the World Wide Web that has taken the industry by storm - how it can connect any number of points on the globe, reliably and near-instantaneously, making broadcasting to computers - web casting - a viable and exciting proposition. In the wake of its success, ever more broadcasters are turning to the Internet as their preferred medium.

So, if you have a computer sitting in the corner and want to expand your radio-listening horizons and haven't yet dipped your toe into this aspect of the hobby, this feature is for you.

In this step-by-step introduction to Internet broadcasting I'll outline the hardware and software you'll require for getting on-line, for listening in and watching - Internet TV is also with us - the best of what the web has to offer.

Hooking the computer up to your hi-fi is advised and we'll cover this too. There is a growing number of products that will allow you to achieve this using a variety of techniques.

We'll cover the wealth and diversity of the broadcasters that are out there - just a mouse-click away - and you'll even discover how to set up your very own on-line radio station. That's right. The technology allows you to produce and broadcast programming to a world-wide audience - **and** you don't need a licence!

There are thousands of stations already broadcasting on the web. There are sites and software packages to help you sift through them all - we'll take a look at the best.

We'll round off with a whistle-stop tour of some of

the more specialist web sites with audio content that will be of interest to the radio enthusiast.

So, if you're ready to join the action - hear the latest news from, say, Radio Nepal, remotely tune web-controlled radios around the planet, listen to the NYPD via an on-line scanner, or even take your first steps to becoming the next broadcasting legend with your own radio station - read on.

Who's Out There?

It's almost easier to list the broadcasters who do **not** provide their programmes on-line. Broadcasters the world over have taken web casting to their hearts.

Why go to all the trouble and expense of commissioning, operating and maintaining a string of short wave transmitter sites when the end result is often marginal, interference-prone reception in

the target area?

In contrast, for a relatively small investment, local radio stations can reach a global audience they never dreamed of. Meanwhile, the major players in international broadcasting make full use of what the Internet offers with interactive pages plus a wealth of information and relevant links.

All this with the added advantage trouble-free reception and, in the case of archived material, at the convenience of the listener.

There are now literally thousands of radio stations, from the four corners of the globe, all eager for you to take a listen. From the BBC, Voice of America and Germany's

Deutsche Welle through local stations at home and abroad to one man hobby stations updated once a week (or less) - it's all just a mouse-click away. And the list is growing every day.

No longer do clandestine, anti-government radio stations have to worry about their transmissions being jammed by the authorities. They say what they need to on the Internet and beat the system.

During the recent crises in Serbia, independent station B92 came under constant pressure from the Milosovic regime to toe the party line. When they failed to comply, their terrestrial transmitters were taken off the air, the authorities citing some spurious technicality as the reason. B92 changed its name to B2-92 and carried on broadcasting via satellite. When its studios were raided



The screenshot shows the BBC Radio website interface. At the top, there are navigation tabs for 'CATEGORIES', 'TV', 'RADIO', 'COMMUNICATE', 'WHERE I LIVE', and 'INDEX'. Below this, the date 'Sunday 11th November 2001' is displayed. The main content area features a grid of program listings for various BBC radio stations. Each listing includes the station name (e.g., RADIO 1, RADIO 2, RADIO 3, RADIO 4, RADIO FIVE LIVE, WORLD SERVICE), the program name, and a 'LISTEN' button. There are also sections for 'WEB CAMS' and 'What is BBCi?'. The overall layout is typical of early 2000s web design.

Listening by Computer

and sealed up, the station's final recourse was to produce programmes from a variety of makeshift studios and broadcast over the Internet.

Besides closing the country's telephone system down there was very little the government could do.

Pressure groups and anyone with anything to say - and I do mean, anything - have equal access to the Internet 'airwaves'. This really is a case of power to the people.

transmissions to North America and Australia citing a burgeoning Internet audience as part of the rationale.

Premature? Maybe. Certainly a sign of things to come.

Swiss Radio International no longer broadcasts to Europe and have pledged to wind



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Established Broadcasters on the Internet

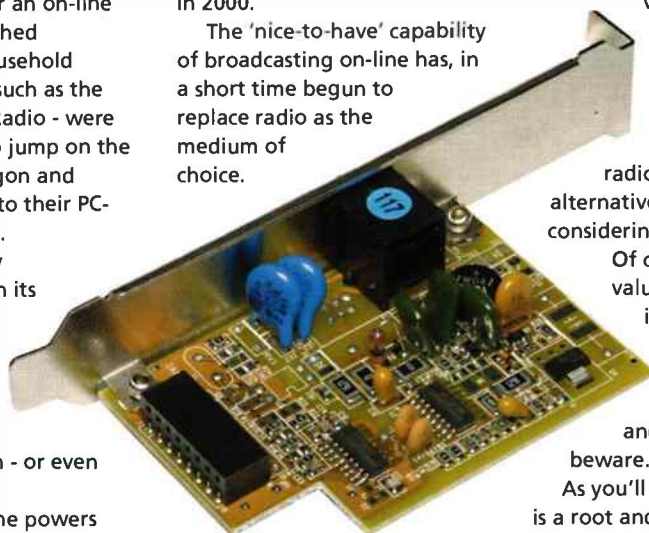
Before some bright spark had the idea of creating radio stations purely for an on-line audience, established broadcasters - household names in the UK such as the BBC and Capital Radio - were relatively quick to jump on the Internet bandwagon and provide a service to their PC-bound consumers.

Nowadays, any broadcaster worth its salt has, not only an on-line presence, but will also invite the listener to interact and listen - or even watch - the show.

So eager are the powers that be, to embrace the technology of the moment, that during the summer of 2001, BBC World Service decided to drop their conventional short wave

down their short wave operation whilst Radio Nederland had already stopped broadcasting one of their most popular media programmes, via conventional means, early in 2000.

The 'nice-to-have' capability of broadcasting on-line has, in a short time begun to replace radio as the medium of choice.



So, what can you expect to find when surfing the web sites of the major players? Lets take a look at on, my favourite, *BBCi*, formerly *BBC On-line*, long

regarded as the benchmark against which others' sites are compared.

www.bbc.co.uk will take you to the home page. If you aren't thrown off course by the myriad of time consuming distractions on

offer, click on the *RADIO* button radio then click on the station of choice.

Did I say "myriad of time consuming distractions?" What I meant to say was "a host of value-added

features that ensure that a visit to the web site, and not just flicking on the radio, is the only alternative worth considering." That's better.

Of course, it is these value-added,

interactive treats that entice the listener to click by the site, time and again - but beware.

As you'll know, the Internet is a root and branch affair. Get distracted at your peril. Just one click to an innocent looking link and it's not long before you're learning all there is to know about collecting in-flight moist towels.

<http://members.aol.com/MoistTwi/>, by the way.

On the day of writing, logging onto the BBC home page offered me the opportunity to check out some summer recipes for the barbecue, dip into the ladies' finals at Wimbledon and submit my observations regarding the number of squashed hedgehogs on the road.

Then there's the drop-down box, listing around a hundred home pages relating to a variety radio and TV shows from the Beeb, each one guaranteed to put you off the scent.

It may be long after you log out, switch off, put the cat out and go to bed that you'll suddenly remember why you went surfing in the first place.

You can shortcut to the latest news, sports headlines and the weather, centred on your home town.

Then there's links to everything from gardening to music, religion to food.

Where was I? Ah yes - Internet Radio feature. See what I mean?

So click on the Radio link. Immediately you are transported to the radio home page where you'll be invited to listen to your station of choice.

The live streams available through the radio home page are Radios 1 through 5 and the

World Service. Five new digital-only channels are also featured and these will become active when the stations launch.

Let's stick with Radio 4 awhile. Click the logo to take you to their home page. Once there, you can navigate around to your heart's content, visiting an array of programmes that feature on the station.

Web casting via the Internet can either be live, in parallel with whatever is being broadcast over the air, or on-demand. An on-demand programme is archived on the radio station's servers and can be listened to at the users' convenience. Live broadcasts are more liable to interruption, falling victim to the various bottlenecks in the system.

When listening on-demand, more of the stream can be buffered into the computer so any glitches in the download are ironed out without causing problems.

The Radio 4 web site makes good use of on-demand programming. Click on 'Listen Again' for a full list of what's available. There's a choice of over fifty full-length programmes - take your pick from *Farming Today* to *Home Truths*, which, incidentally, I can thoroughly recommend. If the programme is over seven days old it's removed from the site. Still, it's a significant step toward putting you in control of when you hear the programmes that take your fancy.

Remember I started out by saying that technologies are converging. Well, here's a case in point.

From the Radio 4 home page, click on *The Today Programme*, the station's flagship news and current affairs programme, six mornings a week. Clicking on the Webcam button brings you images from the studio, 0600 to 0900 on weekdays, 0700 to 0900 on Saturdays.

So, is this alternative television or radio with pictures?

When the programme wraps up for the day the camera is switched off. Never fear. During the web-cam's



down time you're invited to take a tour of the Today studio, the Control Room or the News Room. Navigate around 360° panoramic still shots of all three and you begin to appreciate just how much, in terms of person power and effort, goes into making this programme work so well.

The BBC's web site is recognised as one of the best

around. Most major national and international have a significant on-line presence. My advice is to get stuck in and find out for yourself, what each has to offer.

Internet-Only Radio Stations

So much for the big boys - well established radio stations that

compliment their traditional output with web casting.

There's a whole new generation of programme makers out there producing material intended for broadcasting exclusively on the web.

And because the Internet is beyond any substantial form of regulation, you are likely to hear a few things that would have the main stream broadcasters clapped in irons.

Not only that, because it's easy - and cheap - to broadcast over the Internet, anyone can do it - even you.

Internet only stations are a breath of fresh air, especially in the UK, where we are force-fed a diet of inane, 'Morning Crew' chatter and over ten minutes an hour of commercials - mostly for double glazing and mobile 'phones, both of which I have, thank you.

Yes, Internet-only radio can deliver a 24 hour-a-day feast of non-stop, ad-free music of choice to your PC - for free! Not a bad deal.

Some stations consist of no more than giant servers, churning music out from a pre-programmed playlist. Others



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SANYO WS-1000 WORLD SPACE DIGITAL RECEIVER



£149
Plus £6.00 Carr.

Comes complete with detachable mini flip-up dish and with 5m of cable. Receives digital broadcasts from the WorldSpace Satellite. Runs from supplied AC mains adaptor or optional batteries Audio output via internal mono speaker, external optional stereo headphones or stereo line out via phono connectors as well as a S/PDIF digital audio output. It also has 32 memories complete with remote control and a port for multimedia services. Amazing performance; amazing price.

HITACHI KH-WS1 WORLD SPACE DIGITAL RECEIVER

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



£149
Plus £6.00 Carr.

YUPITERU MVT-9000EU MK2 100kHz - 1.99GHz

Covering the complete radio spectrum from long wave to UHF, you have a complete station in your pocket. Features include NFM, WFM, NAM, WAM, LSB, USB, CW, * 7 Frequency steps * 1,000 Memories in 20 banks * 500 Pass memories * 10 Priority channels, * Band Scope display * Duplex receive function lets you hear both sides of the conversation * Fast tune function, * Built-in AM antenna * Dual frequency display * Fast keypad entry. * Rechargeable batteries, AC charger and helical antenna.



Phone
Plus £8.00 Carr.

Uniden-Bearcat UBC-220XLT



Ideal for general listening, this scanner covers all the major bands from 66MHz - 956MHz AM and FM. 200 memories and a very fast scanning speed make this a very attractive buy. You also get the flexible short antenna, AC charger and batteries. Very popular with Airband listeners.

£119
Plus £6.00 Carr.

AOR-8200 SERIES 2 500KHZ - 2040MHZ



This wide range scanner is fitted with a data port for computer control. Features include USB, LSB, CW, FM, WFM * Programmable steps * 1000 memories in 20 banks * Alphanumeric display * Built-in AM antenna * 8.33kHz steps for air band * Rechargeable ni-cads, AC charger and helical antenna.

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VR-120 RECEIVER

* 100kHz - 1300MHz * AM, FM, WFM * 12 Channel steps * 640 Memory Channels * 64 frequency skip channels * 21 Smart Search * 8 Search bands * 1 Priority channel * Dual watch * B-Character Alpha-tags * Preprogrammed broadcast frequencies * VFO search feature * PC programmable with optional ADMS-3 kit. * Antenna: BNC * Supply 9.0-13.8V DC * 2 x AA cells * Battery voltage: 2.2-3.5V DC (nominal 3V)



£159
Plus £6.00 Carr.

YUPITERU MVT-7100EX 100kHz - 1.65GHz



Probably the best value for money, it has stood the test of time and is very sensitive. Offers USB, LSB, CW, AM, FM, WFM, * 1,000 memories * 500 Pass channels * 12 Tuning steps * Fast scan speed * Rechargeable batteries, AC charger and telescopic antenna.

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UBC-3000XLT

- * 25MHz to 1.3GHz
- * 400 Ch/20 Banks
- * 10 Priority Channels
- * Automatic store
- * Twin Turbo Scan & Search
- * Scan rate: 100 ch per sec
- * Data skip feature
- * Selectable Attenuator
- * Modes: AM, WFM, NFM
- * LCD with back light
- * Ext spkr jack 3.5mm
- * Ext earphone jack 2.5mm
- * Rechargeable battery (5hrs)
- * Power requirements 6.5V DC
- * Size 68 x 88 x 38mm
- * Weight 368g



£169
Plus £8.00 Carr.

AOR AR-8600



AOR's exciting new scanner:
* 500kHz - 2040MHz * FM AM SSB CW
* 1000 Memories * 2000 pass frequencies
* 37ch sec scan * 8.33kHz airband steps
* RS232 PC interface fitted
* 10.7MHz IF for SDU5500
* Accepts up to 5 slot-in cards
* Detachable MW bar aerial

Phone
Plus £8.00 Carr.

Fairhaven RD500VX Radio Database Receiver



£749
Plus £6.00 Carr.

The Fairhaven RD500VX is an advanced all mode, all band radio database receiver. It covers from 0 to 1750MHz with all mode capability. As well as the normal USB, LSB, CW, FM and AM modes it also includes synchronous AM, stereo FM, wideband FM, Data, TV sound and video.

Yupiteru MVT-7300



- * NFM, WFM, NAM, WAM, USB, LSB, CW
- * 521kHz - 1320MHz
- * 1,000 memory channels
- * High sensitivity
- * Signal strength meter
- * High speed scanning & searching
- * MDN/lor button
- * Descrambler function
- * Telescopic rod antenna
- * Clock timer function
- * Variable colour display
- * Key illumination
- * Clone function
- * 8.33kHz airband spacing
- * 12V DC/230V AC mains

£259
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NOW WITH NICADS & CHARGER

BEARCAT UBC - 9000XLT BASE STATION



£239
Plus £8.00 Carr.

The 9000XLT features Twin Turbo scan & search modes with 10 user definable priority channels. User selectable modes covering AM, FM and Wide FM modes. Selectable receiver attenuator, delay, Alpha tagging and data options are available direct from the keyboard. For unattended operation the 9000XLT has an automatic tape recorder DN/DF and tape output feature!

AOR-7030 RECEIVER 0kHz - 32MHz



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Plus £8.00 Carr.

Needing little introduction, this receiver has become a classic of design. Features USB, LSB, CW, AM, FM, * 100 Memories * Dual VFOs * Resolution to 10Hz * Clock and Timer * Variable Bandwidth * Wide Dynamic Range * Seamless Tuning using Single Loop DDS * Clear LCD Readout * Infrared Remote Controller * AC Power Supply.

YAESU VR-5000



Phone
Plus £8.00 Carr.

Yaesu's exciting new scanner:
* 100kHz - 2599MHz * FM AM SSB CW
* Real-time band scope
* DSP Noise and notch filters (with optional DSP-1)
* 2000 Memories * Optional digital voice recorder
* Large digital display * Super HF performance
* Ultra sensitive * Fully programmable

YAESU VR-500



This lovely little scanner from Yaesu offers superb performance.
* 100kHz - 1300MHz
* 1000 Memories
* 100 Skip channels
* 10 Search bands
* B Character alphanumeric display
* Band scope Priority monitoring
* PC programmable
* Smart search feature
* Alpha numeric recall
* Size 58 x 95 x 24mm

£199
Plus £6.00 Carr.

ICOM IC-R8500 "EDITORS CHOICE"



The IC-R8500 has a wide frequency range continuously from 0.1 to 2000MHz. It's ideal for the radio amateur or shortwave listener. The IC-R8500's all mode capability allows reception of a variety of different modes, from the world over. SSB (USB, LSB), CW, AM, FM and WFM are included, along with several 'specialty' modes, CW narrow, AM wide, AM narrow and FM narrow are available (Requires optional FL52A).

IC-R75 RECEIVER 30kHz - 60MHz



The IC-R75 has received rave reviews in the Amateur Radio Press. It's a very serious short wave receiver with coverage right up to the exciting 6m Ham Band. Features include USB, LSB, CW, AM, FM * 101 Memories * Super High Dynamic Range * Synchronous AM detection * Twin Pass Band Tuning * Digital Signal Processing (with optional UT-106) * Automatic Notch Filter * 101 Alphanumeric Memories * RF Gain/Squelch * Clock * Numeric keypad * Alternator * 2-level Pre-Amp * Scanning.

ICOM IC-R10E 500KHZ - 1300MHZ

USB, LSB, CW, AM, FM, WFM
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feature * Data output port *
* Programmable scanning *
Ni-cad pack, AC charger and
helical antenna.



DMTR-21

The DMTR-21 the All Weather Solar/Dynamo/ Rechargeable Radio with Torch and Siren operates whatever the conditions. Does not become inoperable because the batteries run out. A variety of methods ensure that the internal Ni-Cad is charged even in the most demanding of conditions.



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Transmit & Receive: SSTV, PSK32, PACTOR, FAX, CW, RTTY, 1200 Baud Packet (using a variety of programs from CD-ROM)

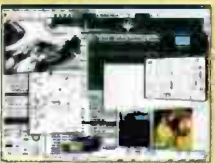
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Mode: USB, LSB, CW, AM, FM, WFM. Connect this up to your PC and enjoy high quality reception with an amazing station data base and memory log. Can be used remotely from PC. Requires PC (not included).

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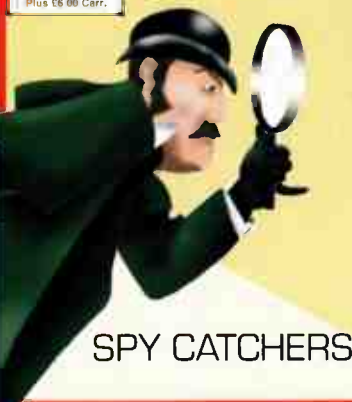
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Zoom into any FM transmission between 30MHz and 900MHz and monitor the audio. It takes a fraction of a second. The WR-5001 comprises a complete receiver with auto tuning, skip button, squelch adjustment and built-in speaker. The WR-5002 is similar, but adds an auto-hold control and a bargraph signal meter. It also adds a CI-V port for reaction tuning loom and AOR receivers fitted with this feature. These monitor receivers are designed for nearfield use and the range is from a few hundred metres to around 1km, depending on frequency and power of the transmitter.

WR-5001 £99.95 WR-5002 £159.95

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The classic wire antenna tuner for short wave listening. Covering 1.8 - 30MHz, it includes our exclusive G-switch, which improves front-end selectivity. Just connect a random length of wire and connect a coax cable from ATU back to receiver.

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OPTOELECTRONICS DS-1000 DIGITAL COUNTER

- * Frequency range: 10MHz - 2.6GHz
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- * Signal strength -45dBm to -5dBm
- * 1,000 memories 65,000 hits per memory
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R-861 PORTABLE SW WITH RDS



- * 153kHz-29.999MHz, 87.5 - 108MHz
- * AM, SSB (USB/LSB), FM (FM Stereo)
- * AM wide/narrow filter * Tone control
- * AM RF Gain control * Stereo through earphones
- * 307 memories - 261 SW, 18 MW, 18 FM 9 LW plus priority station
- * RDS (Radio Data System) Station name, Auto time set * 3 individual alarm timers
- * 110/230V auto-switching AC adaptor

£199.95
Plus £6.00 Carr.

MFJ-461 MORSE CODE READER



Morse tutors, all you do is hold it close to your receiver and it instantly displays CW on the 32 character high contrast LCD. It has automatic speed tracking, a serial port - if you wish to connect to a computer to display the text on a bigger screen. It can also be connected to your receiver's audio if required. Truly pocket sized at 57 x 82.5 x 25.5mm and 156g.

£84.95
Plus £6.00 Carr.

GARMIN GPS-V

£469.95
Plus £6.00 Carr.

WITH WAAS for even greater accuracy

The GPS V is one versatile navigator that delivers automatic routing, detailed mapping and WAAS capability - all in a compact handheld GPS. It comes with the MapSource City Select CD, which gives you access to detailed street-level maps with locations of restaurants, hotels and other services. Use the GPS V to look up a location and it will automatically calculate a route and guide you to your destination with turn-by-turn directions and audible beeps that alert you to upcoming turns.

Ten-Tec RX-340 Professional DSP HF Communications Receiver

£3995
Plus £8.00 Carr.



I found this receiver to be the closest thing to perfection that has passed through my test facility over the last 10 years - and I heartily recommend it to you John Wilson - Short Wave Magazine. The Ten-Tec RX-340 is a multi-mode, professional grade, general coverage synthesized receiver. It utilises extensive Digital Signal Processing (DSP), which brings the performance of commercial grade communications receivers into the affordable top end of the amateur market.

WMR-918 WEATHER MONITOR STATION

NEEDS NO
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The new Oregon Scientific model provides everything you need to record comprehensive weather data without the need for wire connections. Ideal for schools and colleges, Marinas, airfields and helipads.

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BAR-888U RADIO CONTROLLED WEATHER CENTRE



Desktop display with radio-locked clock to Rugby atomic standard, inside and outside temperature recorder (with wireless remote sensor), barometer plus 24-hour forecast trend and day/date information.

Order: BAR-888U

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CB 80-CHANNEL HANDHELD BOTH CEPT & UK CHANNELS!



This high performance compact CB handheld offers superb performance and with both CEPT and UK channels can be used anywhere in Europe. LCD display dual watch scanning emergency ch. rubber duck etc. Requires B or AA cells or external 12V supply.

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SPECIAL

Listening by Computer

will allow you to de-select artists from the list, leaving only your favourites. Most sites have a tie-up with a retail outlet selling CDs allowing you to buy the music being played. This, along with banner ads it how these sites eke out a living. Switch off the screen and these distractions need not worry you.

Or why not get down to some other chores on the computer whilst the music runs in the background. Britney Spears is, right now, serenading me while I write. She says "Hi!".

Internet only radio is **the** place to hear, as yet, unsigned bands, burning with the desire to make it big. Now I feel I have to warn you that, after

listening to some of what's on offer, there's a good reason why a lot of these acts have not, as yet, been snapped up.

Be that as it may, you can catch some original - and actually, quite good - material. You may even be one of the first to enjoy the pre-fame fumbblings of the next Oasis.

A number of Internet only stations are just a one-man band and purely a labour of love - or the product of an over-inflated ego - depending on how charitable you're feeling.

As such, unless the 'station manager' leads a **very** empty life, programmes will usually

last an hour or so and get updated, for example, once a week.

This is just the kind of outfit you can easily run yourself and soon I'll be telling you how.

More next month...

SWM

Player Software You'll Need

Radio stations broadcasting over the Internet generally use one of the two preferred streaming protocols. Historically, *Real Audio* got its foot in the door first with nearly all stations preferring this method to carry the programme streams.

More recently, *Media Player* has become the firm favourite. The reasons for this are two fold. Firstly, the de-facto player, *WinAmp* is supplied as part of *Windows 98* - no need to download another player - and secondly, the MP3 files are heavily compressed, allowing high quality files to be streamed live to listeners with only a modest Internet connection.

Both the *Real Player* and *WinAmp* (for those *Windows 95ers* amongst you) are free to download. The first from www.real.com and the second from www.winamp.com

Next time we'll take a look at, amongst other things, Internet TV and hooking up your PC to the hi-fi.

Hardware

So what will you need, in terms of hardware, to enter the world of Internet radio? The good news is that, chances are, if you own a computer, you already possess most, if not all, of what is required to get up and running.

Unless your computer is a gas-powered contraption dating from the Dark Ages, you are well on the way to getting on-line. Any PC dating from the mid-nineties, or newer, will be perfectly adequate for taking advantage of most of what the Internet has to offer. Anything with a 'Pentium' (BingBangBingBong) or equivalent processor will serve you well.

Go for hard drive of at least 1GB and 32MB of RAM. There are some fairly chunky dollops of software you'll want to be installing (of which more, later) so I recommend you have a CDROM drive fitted. The speed is not a crucial factor. You'll only be installing each program once so if it takes a little longer that you'd like go and make a cup of tea.

You'll need to have a sound card fitted and you'll want a couple of loudspeakers and, if the PC is in the same room as the TV, a pair of headphones. There's a wide selection of sound cards available. Unless you have visions of, some time in the future, using your PC as a multi-track recording studio, you won't be needing anything fancy.

Where you may wish to splash out a little is in your choice of 'speakers.

It would be a falsehood to say that all Internet broadcasts are true hi-fi. They are not. That said, quality can be impressive, considering the streams have, in many cases, been squeezed down a telephone line. A shame then, to place a weak link in the chain at the last moment. The cheapest computer speakers available are truly naff, sometimes just a 75-100mm driver in a small enclosure. A modest investment of, say £20-25 will make a tremendous difference to the audio quality you can expect from your system. Rest assured that in the course of time more and more stations will broadcast superior quality as improvements in the technology allow.

Whilst on the subject of audio quality, be advised that as computers become ever faster, greater cooling is called for. There are leading-edge PCs out there with four fans, all in constant operation. My own PC has but two, and even these can be objectionable. The quality of the fans used by PC manufacturers varies so try and have a listen before you buy.

Of course, you'll need the all-important modem - that vital piece of equipment that connects your computer to the telephone line. These can be fitted internally or externally and range in speed from 14.4Kb/s (K = 1024, bits per second) to 56Kb/s. Go for 56. If you're paying for your Internet connection by the minute it'll cut down your 'phone bills whilst surfing. In addition, the number of 'net congestion' and 'buffering' messages you experience will be minimised.

If you're considering an Internet connection via cable, wireless - or even satellite - then you'll not be requiring a conventional modem and we'll be discussing the pros and cons of options open to you next time.

More good news now. If you intend to purchase a new system from a store in the high street, a complete system with Pentium III processor, monitor, huge amounts of hard drive, more RAM than you can eat, sound card, 'speakers, CD ROM drive and internal 56Kb/s modem can be had for under £450

Watch out for the expensive extended warranty service some outlets have on offer. These can run to hundreds of pounds and, let's face it, three years after you buy your shiny new, state-of-the-art computer, it will be technically obsolete. That's the PC market-place for you. The system I bought in 1992 for £1100 - the envy of all - sold, after much advertising in the local rag, for £100 in 1998.

An older, pre-enjoyed machine can be had for a song. No warranty here of course so make sure you get a demonstration including, if you can, the modem. Modems can be sensitive little devils that do not take kindly to, for instance, lightning storms in the locality. Top tip - if you are experiencing a local thunder storm, disconnecting your PC's modem from the 'phone line could save you a certain amount of gnashing of teeth (and expense) later.

Genesis Of A DXpedition- Miscou Capers - Part 2

Jacques d'Avignon continues with his mission to avoid interference.

D-Day Has Finally Arrived

After a two-day drive from Ottawa, Ken and I finally arrive at the cottage on the beach in Miscou. It is too late to install any of the large antennas, so we resort to setting up a Wellbrook ALA1530 on the beach and see what can be heard. The site is quiet as it was in May and the signals on l.w. and m.w. are pounding in.

Our first DX logging is a station on 1206kHz with Arabic sounding music and time pips on the half hour instead of the hour. We believe that it is Iran or Israel. On l.w. the n.d.b.s are booming in from all around and it takes me the whole evening to identify and list the 'local pests'. The l.w. broadcasters are being received at a level that we have never heard them before: France Inter 162, Iceland 189 and Atlantic 252 are present at loudspeaker level.

We finally succumb and get some well-deserved sleep thinking about the antennas that have to be erected the next day. Kevin, having unable to liberate himself from work early, arrived later in the weekend after a long trip of over 1920km driven in two days.

Antennas & Associated Equipment

The antennas are installed on the first day. We tried to follow the original plan, but we ran into some technical and logistics problems early in the building operations. Eventually we arrived at the

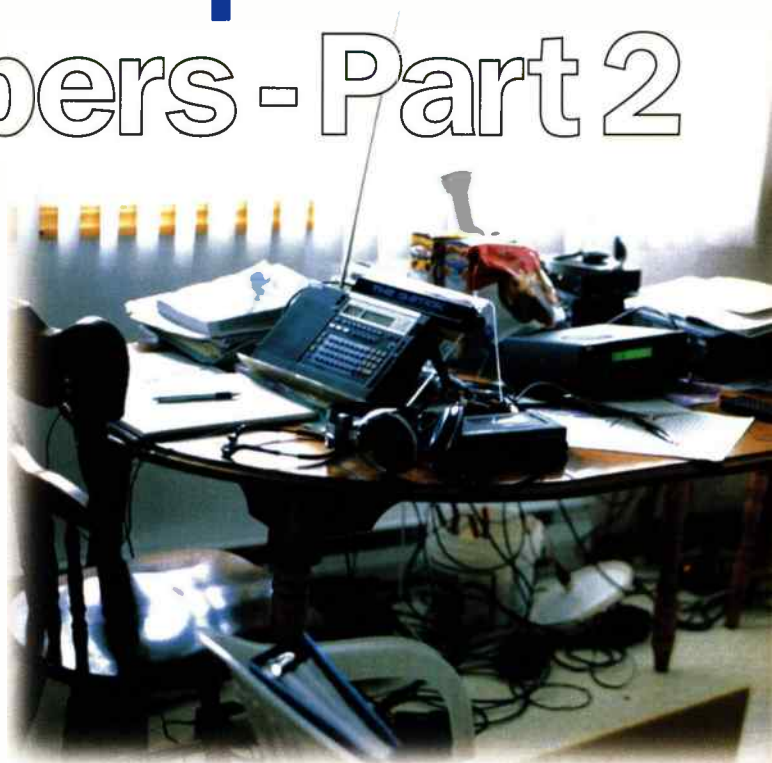


Fig. 2.7: Photos of the two Wellbrook loops. Courtesy Jacques d'Avignon.

following set-up: a triangular loop using an experimental Wellbrook unit head-amp, a 300m terminated Beverage aimed at Europe that we have to bend because of the layout of the terrain and a

150m unterminated Beverage pointing to Africa.

The Africa antenna was intended to be 300m, but we found out when we reeled in the wire at the end of the week that there was a break about half way! The ground rods used for terminating the beverage antennas reached very moist soil in less than 2m.

We found that a terminated Beverage is not completely immune from receiving signals from

the reciprocal direction, because even a 300m long wire is not that directional on long wave frequencies. Many n.d.b.s located on the antenna's reciprocal azimuth were received clearly during

the day and night. For example, several n.d.b.s located in the northeast USA were present every night on the wire aimed at Europe.

The triangular loop was located near the beach, and plastic bags filled with sand were used as anchors for the guy wires. Regular tent pegs could not hold firm enough in the sand.

This experimental loop antenna had a circumference of approximately 18m. A larger unit was originally built, but we experienced intermodulation distortion on many frequencies. Two m.w. stations located about 48 and 80km across open water from our location caused the distortion. There was little to attenuate their high power daylight signals. The experimental loop was not as sensitive as the Beverage antennas, but could be of some use to someone who has room to install a loop larger than the Wellbrook ALA1530.

Each of the Beverage antennas fed a Wellbrook antenna splitter/amplifier. The triangular loop was used as a back-up and was available to anyone who needed it. A 12V battery powered all the Wellbrook

Fig. 2.6: Listening post.
Courtesy Jacques d'Avignon.



equipment plus receiving accessories such as d.s.p. filters and antenna phasing units.

Propagation Conditions

We were very lucky the first few days to have superb propagation conditions, but then a solar storm occurred and we had to contend with A-index in the 30 to 35 range, and a K-index that ranged from 4 to 6. Conditions got so bad that it became impossible to even hear the forecast from WWV on any of their frequencies.

Luckily, propagation did favour long wave reception, and during daylight hours (we were in UTC-03) we had continuous reception of Iceland on 189kHz and France Inter on 162kHz. Europe 1 on 183kHz and Morocco on 171kHz were heard later in the afternoon. The other broadcasters on 153, 177 and 198 were also heard, but not as well as the others. Even

with the solar storm, the ongoing proton events, and polar cap absorption, the l.w. and m.w. conditions throughout the week could be described as excellent.

We were also involved in another type of DXing. Because the cottage did not have a 'phone, I brought along a cell 'phone to keep in touch with events back home. I was able to establish reliable 'phone communications with the outside world via cells located about 80km away over the sea that normally serves the Gaspé area. The propagation at 900MHz was excellent until the last day when the rain attenuated signals.

Logs

On m.w., Ken was able to hear and log 20 countries such as: Kuwait, Angola, Senegal, Libya, Spain, Iran and the Azores. Some of his best loggings can be seen below. In addition, we heard the continuous n.d.b. of 'Rowan Gorilla 5', a drilling platform

off the coast of Nova Scotia.

No n.d.b.s from mainland Europe or Iceland were logged. I believe that the ongoing polar cap absorption during the week has something to do with this situation. This condition was puzzling, not only to us, but also to regular n.d.b. chasers on the east coast of Canada.

Two time stations from mainland Europe: HBG in Switzerland and DCF77 Mainflingen were also clearly heard one night. It is quite possible that the time station in Rugby was also present that night, but it transmits on the same frequency as WWVB (60kHz) making it impossible to determine which station was being heard. Both signals were strongly beating against each other.

A few n.d.b.s located on the eastern seaboard of the USA and several Canadian low power beacons were also logged.

We had to contend with two long wave signals that caused interference on some segments of the band: the raspy Loran C transmitter located in northern Maine that caused mild to severe interference on a segment from 75 to 120kHz and some harmonics as high as 300kHz.

Several DGPS (Differential Global Positioning System) stations located on the St. Lawrence River, Newfoundland, and the eastern seaboard also created interference. These stations now occupy a large segment in the middle of the n.d.b. frequency assignment and screech 24 hours/day! There is really no method to block this signal and we will have to live with this interference for many years to come. It is my understanding that this plague has now reached Europe in late 2001. Europeans have been lucky to have a few years reprieve compared to the problems their brothers in North America have had to endure for the past few years.

Call	Location	Date	Comments
891	ALGERIA	29 Sept	Alger Chaine 1, Alger. Strong at 0000 with man singing in Arabic. Time pips, ID and news read by woman at 0001 (every Algerian station seems to run one minute behind the rest of the world).
1088	ANGOLA	02 Oct	R. Nac de Angola, Mulenvos. Fair at 2216. Phil Collins' One More Night at 2221. Played through the half hour. Several announcements in Portuguese.
1305	SENEGAL	02 Oct	Soc Nat de RTV Senegalaise, Dakar. Fair to good with talk in French with 'African' accent then song by woman with guitar accompaniment at 2220. Announcements by male at 2222 followed by talk by woman through 2230. Drum music and singing at 2232 then more talk by male. Mentioned Dakar several times.
1385.93	GUINEA	29 Sep	RTV Guineenne, Lab. Fair to good with man talking in presumed French, then music at 2222.
1502.01	ANGOLA	04 Oct	Em. Prov. de Benguela. African music at 2222 and non-stop music until 0000. Time pips on the hour followed by talk in Portuguese by males. Mentioned Luanda. Strong signal for the next hour.
1521	SAUDI ARABIA	01 Oct	Duba. Strong at 2250 with man speaking in Arabic.
1548	KUWAIT	30 Sep	VOA, Kuwait City. Strong with pop music then announcements by woman in English at 0026. Program called Earth and Sky at 0028. Time check at 0030 then news in Special English.

Twenty countries were logged on long wave with the following n.d.b.s being the most notable:

Callign	Location
ASN	Ascension Island
ALB, AZL & QC	Azores
PSY	Madeira
OZN, JH, NA, FH & SJ	West coast of Greenland
ZLS	Bahamas
POS	Trinidad
ZDX	Antigua.

An Unusual Visit

One night while we were immersed in listening we heard a loud knock at our front door. When we opened the door we were surprised to find a representative of the Royal Canadian Mounted

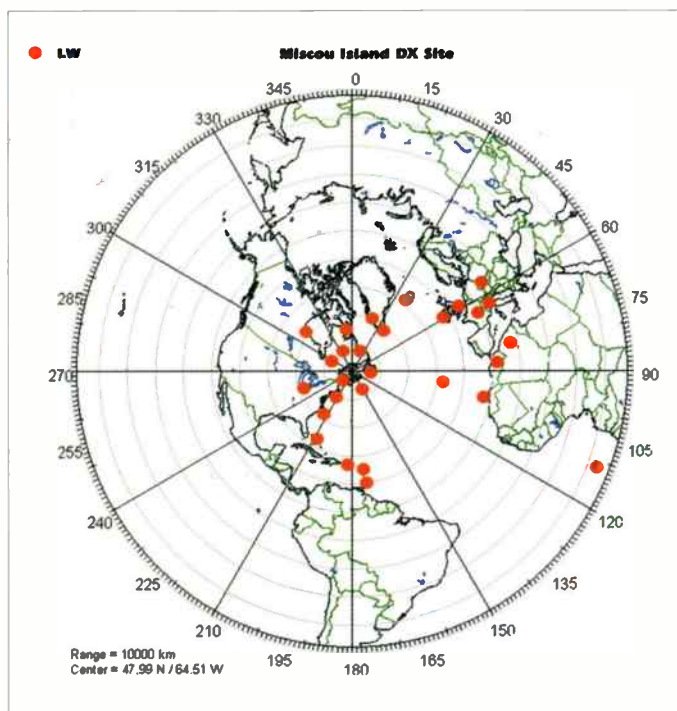


Fig. 2.8: The location of most of the I.w. intercepts from Miscou.

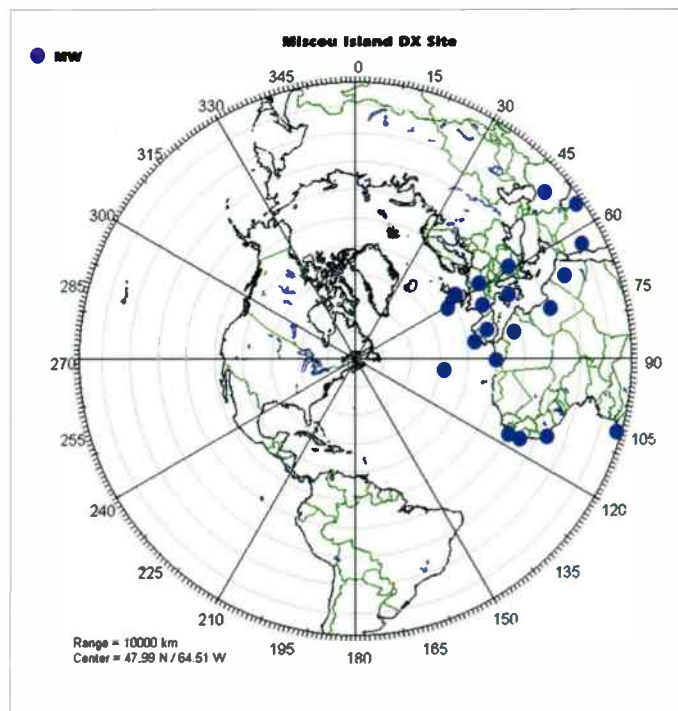


Fig. 2.9: The team's m.w. intercepts from the Miscou DXpedition.

Police! It appeared that someone had lodged a complaint that "...there were these three suspicious strangers laying wires all over the place and spending all their time listening to the radio ...". It soon became obvious to the constable that we were 'respectable' individuals and that we were simply immersed in an unusual hobby. We had a pleasant chat and identified ourselves so that he could fill out the required paperwork and close the case.

This was not an unexpected visit after the September 11th incidents in North America.

We still do not know who made the complaint, but we have our suspicions!

Aftermath

What do you do when you come back from a DXpedition? The first task is to finish compiling your logs while your memories of events are still fresh. No matter how good and accurate your field notes are, there is always something that has to be researched before closing the logbook. Reviewing and cleaning the tapes is another task that

helps confirm some of the more difficult loggings.

Finally do a 'post-mortem' of the events of the week: missing connectors, broken antenna wire, etc., and see what could be improved for the next DXpedition.

Summary

The Miscou DXpedition took over nine months to organise, it was a very interesting project to which I devoted many hours of 'phone calls, letter writing and simply planning all aspects of the exercise.

One piece of advice I can give to anyone interested in organising such a DXpedition is to make sure that the site chosen is r.f. quiet. Visit the site to ascertain that it has everything you need: such as suitable accommodation, sources of food, (in Miscou the closest full store was located about 32km

away), electronic supplies and other necessities. It also helps if the participants know how to cook. They should also be prepared to help keep house and hopefully can get along with each other.

Judge your travel time carefully, this might not be important in Europe where the coast is close to most DXers, but in North America the coast can be as far as 3200km away and that makes for a very long drive!

How many days for a DXpedition? We found that one week of listening or laying wires all over the place is about the maximum length of time for a DXpedition if no other activities are planned. If side trips or other activities are planned, then two weeks might be more suitable.

Are we going back? Yes, we are going back next autumn, and hopefully a little later, mid-October would be desirable. We hope to increase our loggings in the I.w. and m.w. range and maybe hear the new Norway station on I.w. Are we going back to the same location? This answer is not clear! We are still looking at the possibility of going to St. Anthony in Newfoundland for the ultimate DXpedition. Only time will tell. **SWM**



Fig. 2.10: At the end of the day. Courtesy Ken Alexander.

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RA 1795
RA 1795

RACAL

The Racal equipment continues to arrive at JW's doorstep. Next up, it's the turn of the RA1795.

I feel rather like someone who stepped on board a raft for a pleasant trip across a river, only to find that I am heading for white water rapids and can't get off. The Racal equipment continues to arrive, courtesy of some very generous owners, and I'm beginning to understand what we have lost in this country by the successive failures of our company managements to use the expertise and ethos of our one-time great enterprises, which were fuelled by some brilliant engineering teams who led the world. Racal was one such

incompetence and greed.

Having once said that the spectrum above 30MHz was a foreign country, I was taken aback by the arrival of an RA1795, the coverage of which does indeed start at

20MHz, but then goes onward and upward to 1GHz which is a little out of my normal reviewing patch, but interesting enough to make a pleasant change.

First Look

The RA1795 couldn't be anything other than a Racal product when you take a first look at the front panel, and anyone having this receiver and an RA1792 mounted in the same rack would have an enviable receiving set-up. Unlike the RA1792, the RA1795 uses seven segment I.e.d. panels for display of frequency, channel and

looked at other Racal products of this era, and is as comprehensive as one might expect. One 4 x 4 matrix covers frequency entry, memory store and recall, self test and local/remote control switching. A second 4 x 4 matrix handles mode selection, a.g.c. time constant selection and bandwidth. A vertical set of four keys selects frequency or channel mode, b.f.o. tune and scan, and finally, two keys below the main keypads are linked to the tuning knob to select fast or slow tuning rates.

With the exception of the 0 to 9 numeric keys and the bandwidth up and down keys, all the others have an I.e.d. in the face of the key top to show what functions are selected and operating. It all looks complicated at first, but then so does a typewriter keyboard and it's not long before everything falls to hand quite naturally.

The big plus point about having a button for everything is that an operator doesn't have to go searching through a menu structure in order to change the a.g.c. time constants or find the memory store and recall - it's all there on the panel. Admittedly that means a larger panel, but to my eyes equipment never looks more attractive than when it's nineteen inches wide, five and a quarter inches high and painted Racal two-tone grey.

Fine Tuning

The RA1795 tunes continuously from 20MHz to 1GHz, although it is possible that you may come across a receiver which was not fitted with the u.h.f. section, in which case the frequency coverage stops at 512MHz. Equally important is the fact that the half octave band pass filter

bank for 20 to 512MHz was listed by Racal as an option, so do check these things before parting with money.

The smallest tuning increment is 10Hz, but this can be increased by selecting 'Fast' tune rate. The tuning knob is large and heavy and spins nicely in the British receiver tradition. Automatic speed-up is provided and this works fairly seamlessly in practice, although for v.h.f./u.h.f. listening the interesting frequencies are usually known to the user and so greater use is made of the direct frequency entry from the keypad.

As in the RA1792, the keys are designed to be used by real human beings and operate with a satisfying positive feel. They are also large enough to make it almost impossible to hit the wrong key by accident. As in other receivers of this series, the operator has to tell the receiver what he wants it to do before doing, so for frequency entry you prod the 'FREQ' button, enter the frequency, followed by a prod at the 'ENTER' button.

Below 100MHz you have to remember to enter a leading zero, e.g. 056 for 56MHz, but above 100MHz you simply key in the whole frequency without any decimal points, e.g. 13105 for 131.05MHz, then hit 'ENTER'. One facility missing from the design is that of being able to select a tuning increment from the keypad; in other words if you enter, say, a marine band frequency such as 156.00MHz you can't then use the tuning knob to move around in 25kHz or 12.5kHz increments. This is a facility found on more modern receivers, but we are looking at a receiver from the 1980s, so unfortunately it's not provided.

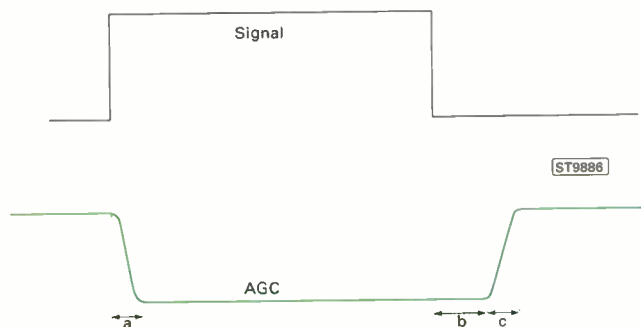


Fig. 1: The a.g.c. time constants available with different reception modes are listed in Table 1.

company, and their peak seemed to be in the 1970s and 1980s when they were designing some stunning equipment. I also write as an ex-Marconi man who has watched disaster overtake a once great company driven to extinction by management

bandwidth. I have to say that compared to a non-backlit RA1792, I much prefer the I.e.d. display of the RA1795 (does this count as heresy, and shall I expect a visit from Torquemada?).

The massive keypad is familiar to those who have

Table 1: AGC time constants.

Mode	AGC	Attack (a) (ms)	Hang (b) (ms)	Decay (c) (ms)	LED on
a.m./f.m.	No choice	60	0	150	norm
s.s.b./c.w.	short	60	220	120	short
	norm	60	1800	250	norm
	long	60	1800	1200	long
Pulse	no choice	1	0	100	norm

Eight Digit Format

Operating frequency is shown in eight digit format with a decimal point between the 1 MHz and 100 kHz digits, the least significant digit being 10Hz, which is of course the minimum tuning step of the receiver. To the left of the frequency display is the memory channel number reading 00 to 99. Each channel stores frequency, mode, bandwidth, b.f.o. tuning and gain control setting (if the r.f. gain is being used as an a.g.c. threshold).

If the a.g.c. is operating without a manual pedestal the COR (carrier operated relay) setting is stored. The carrier operated relay function operates in a similar fashion to the more familiar (to the hobbyist) 'Squelch' and is designed to silence the audio output in the absence of an antenna signal. Adjustment of the carrier operating level is by a rotary control on the front panel. As with all v.h.f. and/or u.h.f. receivers, the provision of no-signal silencing is almost essential, particularly when listening in f.m. mode, since the no-signal noise can drive the operator to distraction. The COR system additionally provides isolated contact closures available via the rear panel connectors, and these could easily be used for switching external devices such as a tape recorder for unattended monitoring.

The i.f. bandwidth is shown in smaller digits below the channel number display, with single annunciators alongside for various facilities, including the ominous 'fault' indicator. As I say in most of my review articles, it is to be hoped that you never see this indicator showing unless you are either an experienced receiver 'fixer' or know someone who is. Owning a 'premium' ex-professional receiver is rather like owning a Ferrari Dino 246 - wonderful to drive and boast about having in one's possession,

but requiring specialist attention should anything go wrong. Bear this in mind whenever you are tempted to buy such things and don't complain if you have not heeded this well-meant and regularly repeated advice. Let's move on

Signal Strength

Two horizontal bar graph scales show signal strength (uncalibrated) and centre-zero tuning indication, whilst the remaining rotary controls handle i.f. and a.f. gain. There is a useful, but tinny sounding internal monitor speaker which can be switched off when you use a decent external speaker unit.

The final 4 x 4 keypad matrix has been described earlier, but there are a few comments about the actual operation. Receiver i.f. bandwidth is selected using up/down keys, with the selected bandwidth being shown in the main frequency display panel. However, whilst the full complement of filter bandwidths is available in all other modes including c.w., the u.s.b. and l.s.b. modes have the bandwidth fixed at 3kHz.

The a.g.c. is selectable only in s.s.b. and c.w., but as you can see from **Fig. 1** taken from the RA1795 manual, the a.g.c. attack time is much longer than that in an h.f. receiver. Manual gain control is selected by the 'MAN' key, and there is provision for adding the manual gain control as a pedestal to the a.g.c. system.

At The Rear

On the rear panel we find all the usual facilities provided in a professional receiver, including outputs for connection to a spectrum display and/or signature analysis equipment. Stories abound that the RA1795 was put into service in 1982 to accompany the Task Force which went to the Falklands, and was therefore used for SIGINT purposes down there. The stories may or not be true, but it's

certainly true that the RA1795 can, and probably was, used for SIGINT applications. However, the readers of this article would probably use the RA1795 as a general purpose v.h.f./u.h.f. receiver, so how did it perform?

Quick & Easy

Frankly, it's a joy to use. Direct frequency entry is quick and easy, whilst the memory storage, retrieval and scanning work well, although scanning is limited to groups of ten channels at a time.

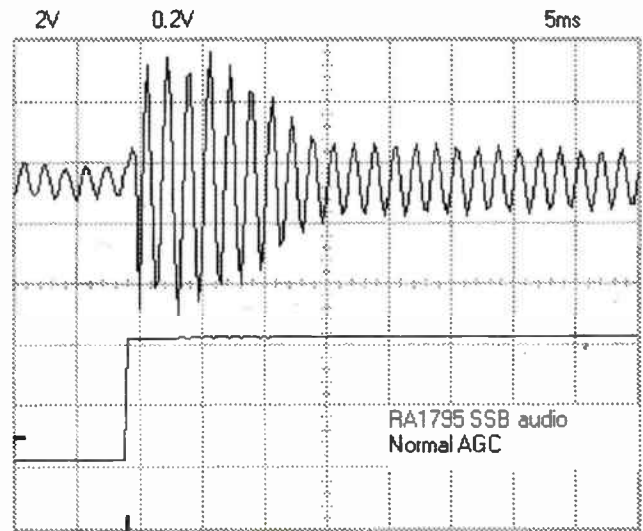


Fig. 2: The audio output 'pop' is quite clear to be seen.

Recovered audio in every mode is crisp and clean, and the ability to sit in the middle of a busy band, such as the a.m. aircraft communications band with the i.f. bandwidth opened up to 300kHz, means that you can hear anything that happens within the 300kHz segment.

When used this way, the centre-zero tuning meter swings to left or right to indicate the location of the incoming signal, and the 'FAST' manual tune enables you to get to the signal quickly, tuning until the 'TUNING' meter sits in the centre of its display. Tuning down to 20MHz meant that I could listen to amateur and CB signals, even to sporadic-E propagation from the Baltic States and Northern Italy,

and in moments of reflection I could tune to Radio 3 on Band 2 or even TV sound up around 800MHz.

I would just love to try it out with a spectrum display, but I think that these devices are not so easy to find, and if available, display a spectrum limited to 9MHz wide by the 21.4MHz filtering between the second mixer and the rear panel output socket.

Not Included

Features not provided include the ability to set tuning steps so that one could tune an amateur band in 12.5kHz, or the aircraft bands in 8.333kHz increments. I also missed the facility to do a frequency sweep with programmed start, stop and step frequencies, both these features

now being commonplace on hobby scanners.

However, entering a known frequency of interest puts you right on the spot, and the presence of so much clever tracked front-end filtering means that your ears are not plagued by strange spurious signals and noises in the night. The synthesiser is extremely clean which again contributes to the lack of spurious responses (see later measurements).

Circuit Architecture

It goes without saying that a high performance receiver covering 20MHz to 1GHz might be a little more complex than the average h.f. unit, and this is

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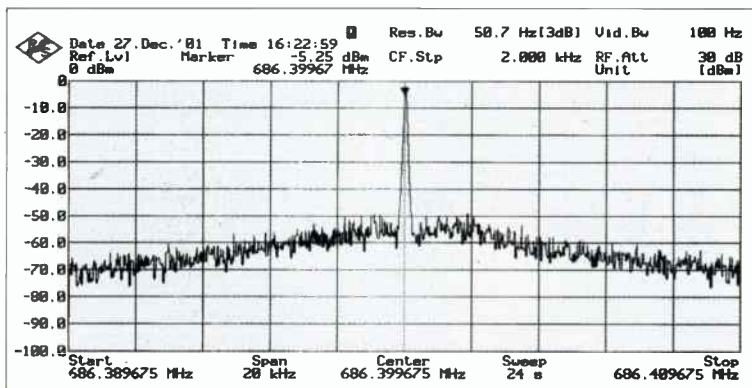


Fig. 3: RA1795 local oscillator spectrum, receiver tuned to 25MHz.

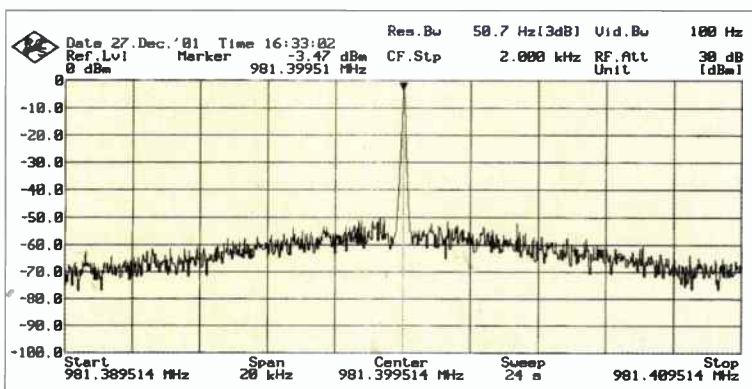


Fig. 4: RA1795 local oscillator spectrum, receiver tuned to 800MHz.

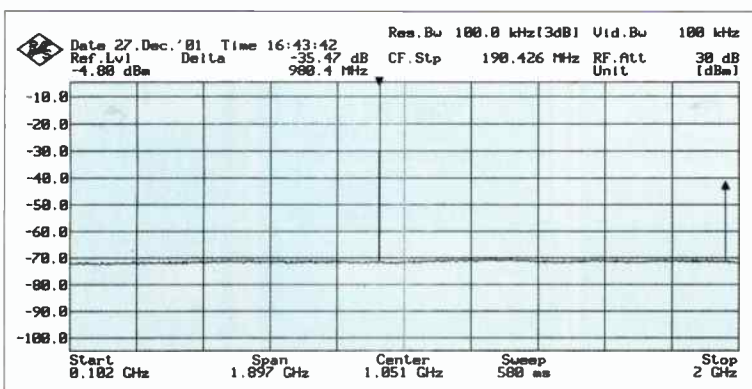


Fig. 5: RA1795 local oscillator showing wide band cleanliness, receiver tuned to 800MHz. Local oscillator frequency 980.4MHz and second harmonic at 1.96GHz. No other signals from 100MHz to 2GHz!

certainly the case with the RA1795. Rather than start at the antenna, it might be better to come at it from the other end and work backwards from the demodulation system. The final i.f. is at 1.4MHz so all the demodulation takes place at this frequency.

For f.m. modes, two CA3189 limiter / amplifier / demodulators are used, one operating with i.f. bandwidths of 50kHz and below, the other handling the 100 and 300kHz i.f. bandwidths. A d.c. voltage output from both these f.m. demodulators is amplified

and used for automatic frequency control when in f.m. mode.

Demodulation of s.s.b. and c.w. uses the well known MC1496 mixer, the b.f.o. injection frequency being preset at ± 1.8 kHz for l.s.b./u.s.b. selection, whilst for c.w. the b.f.o. is operator tunable up to 7.8kHz on either side of the i.f. centre frequency. Demodulation of a.m. carries on the Racal custom of being synchronous, using the s.s.b./c.w. mixer chip with the demodulating carrier being fed from the narrow band f.m.

limiting amplifier which regenerates the incoming a.m. carrier, but with the modulation stripped off it by the limiter.

I'm not sure that this an entirely satisfactory procedure, bearing in mind the heavy modulation indexes (indices?) used in broadcasting, and can't help feeling that the limited carrier must still contain original modulation components - but it seems to work in practice so does it matter?

Pretty Complex

The same board contains a complex a.g.c. system using separate attack, hang and decay times, but the end result according to the handbook performance details is disappointing. In all modes other than pulse detection, the attack time is a fixed 60ms which is far too long for s.s.b. or c.w. There was noticeably overload 'popping' when listening to strong s.s.b. signals on the 21MHz amateur band, but to be fair, the RA1795 is more likely to be used in a.m. or f.m. modes further up the spectrum, so once again it perhaps doesn't matter for this particular receiver.

Figure 2 shows the audio output 'pop' quite clearly. The a.g.c. distribution is carefully

executed, with electronic attenuation before and after the 1.4MHz i.f. amplifiers and filters, with control also being extended back to the front end of the receiver. With signals such as a.m. aircraft which vary enormously in strength, the a.g.c. system coped admirably

and made listening quite a pleasure.

Common Board

The i.f. filtering is carried out on a common board which takes in an i.f. of 21.4MHz and carries out preliminary filtering using bandwidths of 50, 100 or 300kHz, depending on the bandwidth used in the second stage filtering. The 21.4MHz filtered i.f. is converted in a high level balanced mixer down to 1.4MHz, filtered by an LC network having a bandwidth of 300kHz and then amplified by 26dB before final filtering using crystal filters at 1.4MHz.

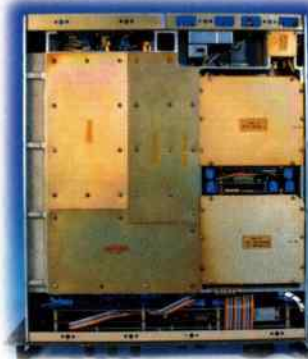
Normal supplied bandwidths are 3, 10 and 20kHz, with a further filter position being available for special options. Once again you may find different versions of the filter pack available in second user receivers, so do check what you are buying!

Conversion

How does the r.f. get down to 21.4MHz? Well, perhaps it's an appropriate time to leap to the antenna socket and progress through to the 21.4MHz i.f. stages. The antenna input is routed to a switch which selects v.h.f. (20 to 512MHz) or u.h.f. (512MHz to 1GHz), all under firmware control from the main processor. The v.h.f. spectrum is fed to a bank of half octave r.f. filters, and it is these which give the RA1795 a real edge over lesser receivers when it comes to rejection of out-of-band signals and their consequent intermodulation products.

No less than seven filter networks are used, covering 20 to 27MHz, 27 to 38MHz, 38 to 56MHz, 56 to 85MHz, 85 to

131MHz, 131 to 205MHz, 205 to 323MHz and 323 to 512MHz. Mightily impressive don't you think? There follows a 14dB gain r.f. amplifier with an a.g.c. controlled PIN diode attenuator



between it and the first mixer, an MD173.

For the v.h.f. range a local oscillator tuning range of 681.4 to 1173.4MHz is required, giving a first i.f. of 661.4MHz, well above the signal input range. The local oscillator range is covered by two transmission line oscillators with an overlap between 830 and 880MHz. The oscillators are phase locked using a two speed lock system, fast lock for quick frequency changes, followed by a slower lock which improves the phase noise performance of the oscillators when the receiver is tuned to a signal.

The 661.4MHz i.f. is amplified and further filtered before being fed to the second mixer where more filtering and amplification is provided before mixing in a high level mixer with a phase locked 640MHz local oscillator to give the 21.4MHz i.f.

Frequencies between 512MHz and 1GHz pass from the antenna to what Racal call the u.h.f. preselector board, but which actually contains two channels with 17.5dB of gain, each channel also being track tuned to follow the receiver frequency. Both amplifier channels have a.g.c. applied to give gain control via PIN diode attenuators.

The outputs of the two channels are combined to be fed to the first mixer board where they go straight into the same MD173 mixer used for the v.h.f. ranges, but in this case the local oscillator tunes 693.4 to 1181.4MHz giving an i.f. of 181.4MHz from the r.f. signals between 512MHz and 1GHz.

The 181.4MHz i.f. has a separate 20dB amplifier with further filtering and a.g.c. control before heading straight into the second mixer where the local oscillator is phase locked at 160MHz (notice how neatly Racal use a divide by 4 from the v.h.f. 640MHz conversion oscillator to get to 160MHz whilst still retaining the phase lock). 181.4MHz minus the 160MHz LO gets us equally neatly to 21.4MHz and after that everything is plain sailing.

Unlike some of my other reviews, I know I have spent more text describing some of the

basic architecture of the RA1795, but as an engineer, I am fascinated by the attention to detail which the Racal design shows - anyone reading the manual cannot fail to be impressed. Even the circuit drawings are beautifully presented and almost worthy of framing.

RF Performance

Starting with the sensitivity checks, I measured at the centre frequency of each front-end band pass filter all the way from



20MHz to 1GHz and was not surprised to find that the sensitivity remained constant at all frequencies. Actually there was a slight increase in sensitivity at the higher end of the tuning range, unlike lesser receivers which tend to 'droop' at the high end.

Using the 10kHz bandwidth in a.m. mode, measurements were made at 24, 33, 43, 61, 108, 166, 260 and 418MHz with the sensitivity being -109dBm for 12dB SINAD at every frequency. The same frequencies were measured in f.m. mode using the 10kHz filter and 3kHz deviation at 1kHz and the results were identical to those for a.m.

In the u.h.f. range using the same test configuration the sensitivity measured at -111dBm right up to 1GHz. In s.s.b. mode using the 3kHz filter, sensitivity measured between -118dBm and -119dBm in the v.h.f. range, and rather better at -120dBm in the u.h.f. range. Finally I made measurements in f.m. mode using 50kHz deviation and a bandwidth of 100kHz and the sensitivity still remained at -108dBm.

Now there are current v.h.f./u.h.f. receivers which can better this sensitivity, but few could equal the spurious-free performance of the RA1795 which is due partly to the multiple tuned front-end filters,

but mostly due to the cleanliness of the synthesiser in this remarkable receiver.

My Routine

Although the RA1795 was not designed as an h.f. receiver, I subjected it to the same measurement routine and **Fig. 3** shows the close-in spectrum of the first conversion oscillator with the receiver tuned to 25MHz. This is clearly not as good as the RA1772 or RA1792, but satisfactory for a v.h.f. receiver.

Figure 4 shows the same test with the receiver tuned to 800MHz, but take a look at **Fig. 5** which shows the local oscillator signal at 980.4MHz with the receiver tuned to 800MHz, and its second harmonic at 1.96GHz, but absolutely no other signals at all. With wide band

oscillator performance like this it's no wonder the receiver is outstandingly spurious free.

Third order intercept is quoted as +5dBm and measured by Racal using a signal spacing of 150kHz. I did the measurements as I normally do them for h.f. receivers, but at the 150kHz spacing and found that at 50MHz the intercept point was +6dBm, at 200MHz, +8dBm and at 500MHz an unexpected +15dBm. I re-measured this last result, but in the u.h.f. range at 515MHz just above the band changeover point, and achieved a result of +7dBm, so it seems that this particular receiver was performing above specification quite easily.

Second order intermodulation performance is measured by Racal using two widely spaced frequencies and resolving the difference frequency at 150kHz away from the lower of the two unwanted signals. I did this measurement at Racal's test frequencies of 131.35 and 262.85MHz, resolving the difference at 131.5MHz. This gave a second order intercept point of +79dBm and a dynamic range of 105dB.

I then repeated the test using what I thought was a more likely scenario, that of two closely spaced v.h.f. signals such as those in the heavily populated 150MHz region where BT and

other wide-area pagers operate, resolving not the difference but the sum frequency. I chose two signals at 150 and 150.15MHz, resolving the sum at 300.15MHz, which gave a second order intercept of +97dBm and a dynamic range of 114dB. Boy does that preselection work well! And finally:-

Mixing Measurements

Reciprocal mixing measurements which show up the close-in synthesiser cleanliness. I did the measurements using 150MHz as the wanted signal, with the following results:

Spacing (kHz)	dBc/Hz
10	-91
20	-99
50	-106
100	-116
200	-125
500	-135

Comparing these figures to the RA1792 which achieved -146dBc/Hz at 100kHz, it is clear that the RA1795 is not an h.f. receiver, but for its design purpose the results are excellent.

Conclusions

The RA1795 was and still is a remarkable receiver. Modern receivers such as the Icom R8500 may have more flexibility and additional operating features, but not the build quality nor the ruggedness of the Racal receiver, and the spurious-free performance of the RA1795 is really impressive. I would like to have seen a calibrated signal level meter rather than a simple bar graph display, but equally I would like to own a RA1795.

At the risk of being a pain, I will remind you yet again that ex-professional receivers can be expensive to repair, and require specialist knowledge, so do assess your own capabilities before jumping in with an open wallet. Mind you, I did have occasion recently to check up on availability and price of a Kenwood R5000 control board and at £200 plus the cost of labour, even this receiver could be costly to fix.

As always, *Caveat Emptor.*

SWM



It's conquered the United States, now it's set foot here. Mike Burgess G7HID was intrigued to see how well Bearcat's new base scanner with trunk tracking capability performed.

trunk tracking with the

Uniden Bearcat UBC780XLT

This is the scanner that has taken the United States by storm. Released in the USA in

December of 2000 as the BC780XLT, it had been on the drawing board of Uniden for more than a year, with little snippets of information being released over that time by the manufacturer, 500 channels, 25 to 1300MHz (with breaks) frequency coverage, large four line display with user programmable Alpha Numeric tagging, computer control and full Trunking capability.

When it was first released, supply could not keep up with demand, but this settled down after a few weeks and soon many reports from users started to appear on the Internet, mostly positive and many stating that it was a lot better than they had expected. Now me being me, I took these initial

reports with more than a pinch of salt.

Trunking Capability

The reason for my interest in how well the scanner performed was its Motorola Trunking capability, a unique Trunking protocol that has only two main users in the UK, as a number of London and Staffordshire Emergency Service scannists will agree. As I already have a portable Trunking scanner, the Uniden BC245XLT, another scanner was not at the top of my wish list, but I kept an eye on reviews and reports, I suppose to keep up to speed on an interesting facet of our hobby.

In May of 2001 the scanner was released in Australia as the UBC780XLT, with the main difference being the full 25 to 1300MHz coverage and the more UK user friendly default frequency steps of 12.5kHz

rather than the 5 and 10kHz steps on the US model. Again feedback from users tended to be very positive.

At about the same time a whole raft of software appeared on the scene offering to make the user programming of the '780 a breeze, and some offering the facility of full PC control of the scanner, with prices ranging from free to about £70.

Around July and August of 2001 reports started to appear from UK users that had privately imported BC780XLTs from the US, yes they worked well on the Trunked systems in London and Staffordshire and the '780 appeared to be a good general purpose scanner.

What's It Like?

Then in early November I get a 'phone call from Chris at Martin Lynch in Ealing, letting me know that they

had just received a shipment of newly CE approved UBC780XLTs and did I want to pop over and have a look at one?

So after telling the wife that I was going to see a radio friend (guaranteed to discourage the wife from coming with me), and a short 30 minute drive later, I am fiddling with a '780 with one hand and drinking a cup of coffee from the other. At this point my credit card jumps out of my wallet and offers to buy me a '780! As I leave Martin's shop with the new scanner, I bump into two other scannists whose credit cards had also jumped out of

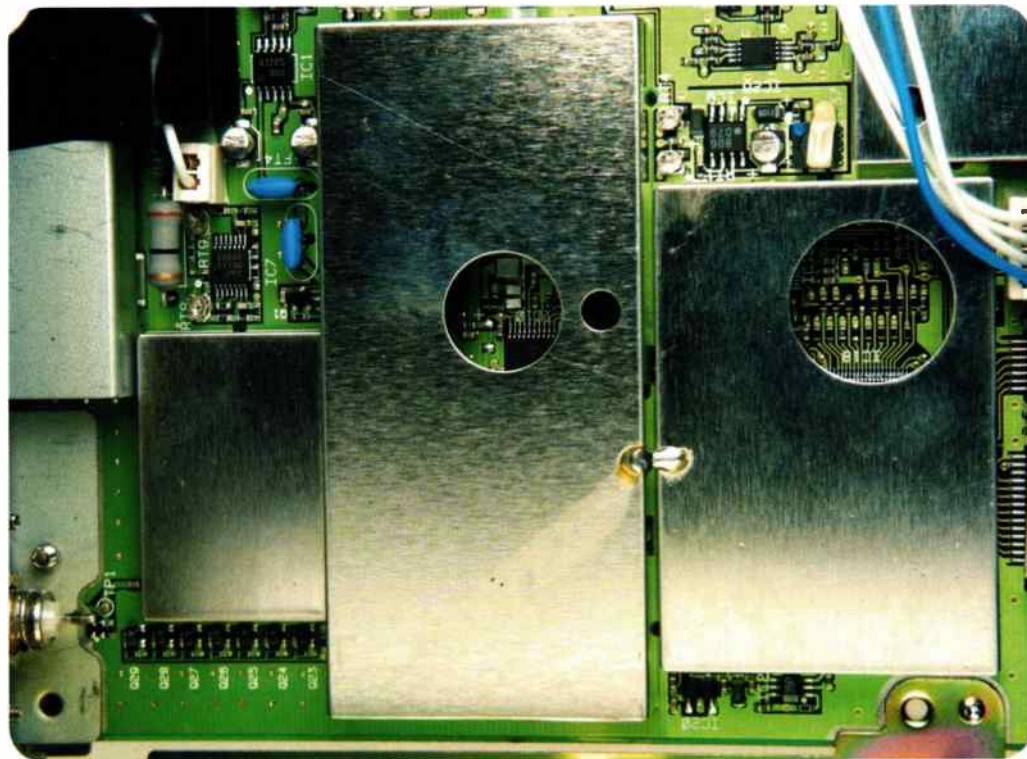


their wallets and made the same generous offer.

After getting home I opened the UBC780XLT box, inside was the scanner, a telescopic whip antenna with BNC connector, 240V a.c. to 13.8V d.c. 700mA mains adapter, mobile mounting bracket with screws, two 12V d.c. mobile power cables and an operating guide. The scanner is roughly the same size as a broadcast car radio, being only slightly narrower and higher, the internal speaker is on the underneath of the chassis just behind the flip down stand for fixed use.

The mains power supply has a d.c. input connector on the output cable and a two pin 'Euro' mains plug on the input cable, so a shaver adapter plug is a must. At the rear of the scanner there is d.c. input connector, BNC antenna socket, 9-pin D-type socket, 3.5mm external speaker socket and 3.5mm 'Tape Out' socket.

After plugging in the mains supply and connecting my Diamond X50 2m and 70cm collinear that is on the roof at about 10m, I switched on the scanner. The first thing that hits you is the **big** well



The initial received signals were comparable with my Icom PCR1000 on the same antenna. The seven bar 'S' meter on the right hand side of the display is best described as 'busy', with one or two bars flickering away in a no signal condition and bringing up all the

the top left hand corner of the front panel, this toggles between v.f.o. tuning and stepping through the programmed channels. You can enter a u.h.f. 433MHz frequency and the scanner will automatically go into n.b.f.m. mode with 12.5kHz tuning steps, but if you do this on 145MHz, it will give you 5kHz steps, a reminder that the scanner was originally designed for the US market. Even worse if you enter a 185MHz Band 3 frequency, you end up with a w.b.f.m. mode in 100kHz steps.

The mode and step sizes are easily changed by a couple of key presses on the key pad, but can be slightly annoying. Helpfully there are five preprogrammed search ranges in the '780, but only two, Air Band and Marine Band are of any use in Europe let alone the UK, the other three - mouth wateringly labelled Police, Railroad and u.h.f. CB - are again left overs from the US market.

Entering a frequency into memory from v.f.o., Manual entry or Search modes is simple, just hit the Enter key while tuned to the desired frequency, **but** make sure you are sat on an empty programmed channel, otherwise you end up

overwriting a channel that you earlier programmed into memory.

Scanning and searching through channels or frequencies is simple, using the 'Scan' and 'Man' or 'Srch' and 'Hold' keys, there are user programmable delays of between 0 and 4 seconds, individual channel attenuation, and even programmable channel recording and activity alarms. Also built into the '780 is a CTCSS facility, as used by most UK amateur repeaters, this facility can be switched on and off on a per channel basis and allows for CTCSS search on any active channel or a CTCSS valid tone detect feature (if a tone is programmed into channel memory), nice.

The Clever Stuff

Now we get onto the clever stuff. The scanner has 500 memory channels and these are split up into 10 banks of 50 channels each, each of these banks can be given a 16 character name, which is displayed on the bottom line of the scanners display. For instance, if you name Bank 3 'FIRE SERVICE', every time a memory channel between 101 and 150 is displayed, FIRE SERVICE will also pop up on



lit display and illuminated keys, and after a brief read of parts of the 90 page *Operating Guide*, I entered a few favourite frequencies in the scanners memory using the numeric keys followed by the 'E'nter key.

bars up on a slightly noisy signal.

Tuning Around

Manual tuning around is achieved by pressing the v.f.o. tuning knob located in

AR8600

MOBILE - BASE - TRANS-PORTABLE

The AR8600 is an extremely versatile **all mode** receiver (530kHz - 2040MHz) which can be used virtually anywhere, mobile, base or trans-portable... powered from an external 12V d.c. power supply, optional d.c. lead from a 12V vehicle or from an optional internally fitted NiCad battery pack. A strong twin metal case with die cast front panel characterises the multi-purpose role. All mode receive capability is provided including Single Side Band with programmable tuning steps down to a resolution of 50Hz with the frequency established by a highly accurate Temperature Compensated Crystal Oscillator



(TCXO). An RS232 port further extends the capabilities with free supporting control software available from the AOR web sites.

Although many microprocessor features have been adopted from the trendsetting AR2000 Series-2 hand portable receiver, **the AR8600 RF front-end is an all new (*high sensitivity) design with a first rate switched attenuator and preselection around VHF to ensure the highest levels of adjacent channel rejection with software spuri cancellation.** In addition to a hinged telescopic whip aerial, the AR8600 is supplied with a **detachable plug in medium wave bar aerial** which locates on the rear chassis of the receiver for localised medium wave monitoring. An additional BNC socket is mounted on the rear chassis so that **10.7MHz i.f. output** may be extracted for use with external spectrum display and vector analyser units such as the AOR SDU5500. The TCXO ensures **high stability** with **minimal internal spuri** and is usually only seen in top of the range (more expensive) models such as the AR5000 and AR7030.

The chassis is manufactured from two metal compartments, effectively a **metal chassis inside a metal cabinet...** this provides excellent screening characteristics and great robustness highlighting its multi application role. The **front panel** is also manufactured from **die-cast aluminium**. Size is 155(W) x 57(H) x 195(D) excl. projections, weight less than 2kg.

The all important **8.33 kHz airband channel step is correctly implemented.** **Computer control** is available via a standard 9-pin RS232 D-type connector on the rear chassis, just a standard RS232 cable is required for connection to a PC, the extensive RS232 command list is printed in the operating manual. In addition, '**optional internal SLOT CARDS**' (which fit into the rear chassis of the AR8600) extend the capabilities even further, five cards may be fitted with two operational simultaneously. **Supplied with:** Swivel base telescopic whip aerial, MW bar, comprehensive illustrated operating manual with RS232 listing, d.c. lead.

AR8600 - up to FIVE HOURS portable operation from the BP8600 optional internal battery

There are many qualities which make the AR8600 a unique award winning package, as a trans-portable receiver the optional internal battery pack (BP8600 £49.00 inc VAT, carriage extra) extends the versatility even further. When travelling to an airport, airshow, racetrack or wherever, the ability to remove the receiver from the vehicles power and carry on monitoring without the need for a separate hand-portable receiver is a great plus point.

Initially designed to provide up to two hours of operation, tests have shown that once the internal battery has been **fully charged** using an optional **15V regulated DC power supply**, the monitoring time extends to around **FIVE HOURS** (with back-lit LCD lamps off).

There are many other options available: mobile mounting bracket (MM8600), tape record lead (CR5000), RS232 lead (8600PC), free PC software from the AOR web site (or available on CD-ROM priced at £5), five slot cards (CTCSS, tone eliminator, record/playback, external memory, analogue voice inversion), Collins mechanical substitute IF filters for SSB and AM. If you are undecided whether you need a hand-portable receiver or a base station, take a closer look at the AR8600... virtually two concepts in one compact cabinet.



```
PRI
PRIO NFM
MKR 145.0000
144M HAMBAND
S_ _ _ _ _
```

```
ADJ
2UFO NFM 14.0k
U-A 145.2100
U-B 76.1000
S_ _ _ _ _
```

```
DUP
2UFO NFM 20.0k
U-A 439.9000
U-B 88.0000
_
```

```
AFC
2UFO NFM 20.0k
U-A 1295.0000
U-B 88.0000
_
```

```
COPY 232C
LOAD SAVE
ALL-DATA
Next
```

```
AUT
SCAN-GROUP 1
ABCDEFGHIJ
abcdefghij
BANK LINK
```

```
AUT
2UFO AM 25.0k
U-A 123.5000
M-WRITE E25
PROTECT OFF
```

```
HLD
80.000 ↔ 10M
MKR 80.000
```

```
AUT
EDIT MEM-CH
MEM LSB 0.05k
#29 14.200
BANK/CH SEL
```

Note: Operational times are for guidance but depend upon the style of operation (volume level, backlight, scanning etc) and are not guaranteed.

NEW MODELS FOR 2002

AOR products have been used commercially & by governments for many years, in fact the current range has been particularly successful in penetrating this market with implementation growing monthly around the globe.

To further this success, AOR will be introducing two new models during 2002, the first designed & built in Japan and the second designed & built in the UK. Both receivers are designed with computer control in mind, the Japanese unit having a detachable front panel and coverage to 3GHz. The UK unit combines DSP and FFT technology to provide features never before seen in this market sector. Although designed & priced with commercial customers in mind, we can be sure (from past experience) that a number will find their way into the hands of hobbyists, and as time passes, undoubtedly the units will percolate through to the hobbyist used market place - perhaps one day *JW* will review them (new & old) in these pages!

Full details to follow.

AR7030 - THE PROFESSIONAL CHOICE



The **AR7030** is a tremendously popular short wave all mode receiver, (0 - 32MHz), **still beating off the competition.**

AR7030, the professional choice.

Excellent strong signal handling, low noise local oscillator (producing extremely low reciprocal mixing figures) and excellent audio fidelity. Receiver of the Year 1996/97 WRTH, 5-star award and editors choice Passport to World Band Radio for several successive years.

DRM - digital AM radio below 30MHz

As reported in the October 2001 issue of *SWM* (following our attendance at the IFA exhibition in Berlin), the Fraunhofer institute selected the AR7030 receiver for DRM evaluation by broadcasters (Fraunhofer is the DRM software development team). Their choice was based upon the exceptional performance / price delivery, in particular excellent strong signal handling, good AGC characteristics, low noise and fast access to virtually every feature via PC control. Further information on DRM, the part played by the AR7030 and Fraunhofer is available from:

<http://www.aoruk.com/drm.htm> The DRM consortium web site is located at: <http://www.drm.org>



★★★★☆ **AR5000+3 awarded four stars by both the authoritative Passport To World Band Radio and World Radio & TV Handbook**

AR5000

True base receivers are few and far between, some have simply evolved from the hand held equivalents with little tangible improvement in performance or facilities over their smaller counterparts - *the AR5000 is not like this!* High performance, top quality build and true wide coverage all mode receive. The "+3" version offers even more with synchronous AM, AFC and Noise Blanker. Popular with government agencies throughout the world. **AR5000c** Frequency coherent version for commercial applications, special order.

Commercial & government operators have selected the AR5000, AR5000+3 and AR5000c in great numbers over recent years resulting in the model being recognised within their organisations in the same manner as many household brand names & products. For counterintelligence surveillance, the AR5000 (often partnered with the SDU5500) forms the cornerstone of modern day monitoring. System training often revolves around the AR5000 which leads to even wider implementation across departments. Transform *your* hobby to a commercial grade listening post with the AR5000, **the professional choice.**

AR5000+3 - Sync AM, AFC, NB

The "+3" version offers even more with synchronous AM (upper side band, lower side band and double side band with excellent lock range), AFC (Automatic Frequency Control for accurately tracking moving transmissions or unusual band plans) and Noise Blanker.

SDU5500 The SDU5500 is a Spectrum Display Unit providing practical and cost effective spectral monitoring for band occupancy and identification of new transmissions.

AR8200 Series-2



The **AR8200** represented a beacon when first released, technology marches forward with the AR8200 Series-2 keeping the innovative concept and forward thinking alive and bright.

530kHz - 2040MHz all modes (WFM, USB, LSB, CW, AM, narrow AM, wide AM, NFM, super narrow FM), no gaps with computer port (via optional 8200PC), free PC software via the AOR web sites. The list of features is vast, including 8.33kHz airband channel steps, automode selection bandplan (with override), optional slot cards.

Supplied with: Extensively illustrated 'English language' operating manual, 1000mAh NiCad rechargeable batteries, mains charger, DC lead for car use, belt hook, wrist strap, telescopic whip aerial, medium wave bar aerial.

AOR (UK) LTD 4E East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA England

AOR Tel: **01773 880788** Fax: 01773 880780
info@aoruk.com www.aoruk.com E&OE

Uniden Bearcat

UBC780XLT

the bottom line.

Now to compliment this, you can also give all your memory channels a 16 character name as well, this is displayed on the third line of the display just above the Bank name. So for instance, you give channel 101 the name 'CH3 Trumpton', every time this channel is displayed it will show on the display as:

CH3 TRUMPTON FIRE SERVICE

Entering names into the channel and bank data is fairly simple, using the v.f.o. knob to select characters, the 'up' and 'down' keys to shift position and the 'Enter' key to accept, a bit like sending an SMS on a mobile 'phone'.

Once you have entered a few names for banks and channels, you will notice that the display becomes fairly crowded showing: Ch No, Bank No, Status, Delay, frequency, Mode, CTCSS, S Meter, Ch Name and Bank Name. In some circumstances this can be a bit OTT, the Americans call it information overload.

The designers have planned for this, allowing you to mask off all frequency, CTCSS and 'S' Meter information, leaving just the Ch No, Bank No, Status, Ch Name and Bank Name, this is brilliant for scanning your programmed channels as it shows **who** you are listening to rather than **how**. If at any time you wish to see the masked information, it is recalled just by pressing the v.f.o. knob.

My Interest

My special interest in the UBC780XLT is it's Motorola Trunking capability. All radios on a trunking system are computer controlled, they are given instructions on what channel to tune to and when to transmit, etc., this information is passed over

the system's control data channel.

The '780 uses this same information to keep track of what is going on in the system, who is talking to who, etc. All clever stuff, but can be a problem to get your mind round when first entering this interesting area of the scanning hobby - all I will say is, you do not have to know how a television works to watch the pictures!

To scan a Motorola Trunking system a couple of extra bits of frequency information are required to be entered into the scanner.

Each of the 10 memory banks can be set up for conventional or trunking, once this is done, as long as you can receive a reasonable signal from the system, you should start to hear conversations. However, instead of seeing any channel name appearing on the screen, you will see a 4 or 5 digit number - this is the number allocated to a 'Talkgroup' - and just like the Channels and Banks, you can name them, and each trunking Bank has room for 100 (10 Banks of 10) Talkgroup names, these can be searched and scanned just like conventional frequencies and channels.

You can also scan conventional and trunked Banks at the same time, and this it does seamlessly, going through each active Talkgroup and conventional active channel in turn. Additionally you can lock out Talkgroups and/or conventional channels, or hold on any Talkgroup or channel.

Programs To Help

As mentioned earlier, a number of software writers have written programs to aid in entering all the frequency and naming information for the '780 family, so rather than entering everything via the scanner keypad, you can enter it onto a computer, then download it to the radio. One clever software writer has written a small Shareware program that will copy the contents of one '780 to a computer file, this file can then be sent to another '780 user and he can download the file contents to his '780 - cloning at a distance.

This makes a good 'Starter Pack' for a new '780 user and a number of self

controlling a '780 via a PC is a bit lacking, the external programming and cloning of '780's protocol is fine, but to get it to go to a particular frequency in such and such mode at so and so steps has software developers pulling their hair out.

What About TETRA?

One question that I keep getting asked is will it 'do' TETRA? No and nor will it 'do' GSM mobile 'phones or the more common type of trunking in the UK - MPT1327, but there is a third party add on solution in the pipeline for this. As a conventional or trunking scanner, it works well and is surprisingly immune to the usual paging and RAM data breakthrough



help UBC780XLT net based user groups have embraced the idea and carry copies of 'cloned' Trunk Trackers from their members local areas. One group in the UK that has a number of '780 users is: <http://groups.yahoo.com/group/MetRadio/>

In the six weeks that I have had my UBC780XLT, it has become my main scanner and is hard to fault, but a couple of things have cropped up. If you use the '780 mobile in a noisy vehicle, the internal speaker is just not loud enough (Uniden put a **big** resistor in series with the speaker), but if you use an external speaker - the problem is solved.

It seems that the computer protocol for

that I would normally suffer.

At the time of writing, most of the serious UK scanner stockists are selling the UBC780XLT at prices between £339 and £349, so if you are interested, have a 'phone around for current prices. **SWM**

Thanks go to **Nevada** for providing a review sample. They can be contacted at **Unit 1, Fitzherbert Spur, Farlington, Portsmouth PO1 1TT, Tel: 023-9231 3090, FAX: 023-9231 3091, www.nevada.co.uk** **Martin Lynch & Sons** can be found at **128, 140-142 Northfield Avenue, Ealing, London W13 9SB, Tel: 020-8566 1207, FAX: 020-8566 1120, www.hamradio.co.uk**

The Other Man's Shack

Dartford in Kent is the location of this month's Ex Radio Caroline DJ *SWM* Reader and occasional contributor, Hugh Neal. Kevin Nice tells us more.

For some reason Hugh is unnecessarily defensive about his comprehensive listening set-up saying, "As you will no doubt note from the original digital

with inbuilt surge protection and an uninterruptable power supply - mainly for Hugh's computer gear.

As an ex Radio Caroline DJ, Hugh's main area of interest is h.f. broadcast band pirates.



photographs, my shack is very much a 'work in progress' - I hope to make substantial improvements when time and funds allow!"

Well it looks good to me Hugh, I know people who'd give their right arm for such a shack.

Everything is based on a reinforced 3m long workbench that is actually a kitchen worktop with industrial wall fittings and extra strong legs. There is a gap at the back at the rear by the wall, allowing cable access to the 24 mains sockets



Receivers - HF

- JRC NRD-345
- Racal RA17 mint from 1968
- Sony ICF2001D

- Ten - Tec DSP 350 h.f. Receiver is a likely purchase, subject to John Wilson's review!
- Antenna - 30m random wire suspended at 8m. This is fed via a magnetic balun into a Global AT-2000 a.t.u.

VHF & UHF Gear

- AOR AR8000 hand-held scanner
- Alinco DJ5E 2m/70cm hand-held transceiver with extended receive
- Icom IC 251E 2m base station all mode

- 100 watt Microset SR100 linear amplifier
 - FDK Multi 700E 2m 25W f.m. transceiver
- The v.h.f./u.h.f. antenna is a dual 2m/70cm Colinear mounted on a 3m aluminium pole on the chimney.

12m Versatower for which planning permission is pending. The shack audio is handled by the benchmark Cambridge Soundworks DTS 3500 Dolby Digital, EAX surround sound processor/amplifier into a 5.1 audio speaker surround sound system with full remote control - 80W r.m.s. per channel.

On the computing front, Hugh has harnessed the serious power of a 1.2GHz Athlon processor with 512Mb 133MHz SDRAM. Storage is via 80GB 7200 r.p.m. IBM Hard Disk, Plextor 12x write, 8x rewrite, 42x read CD-RW and a Sanyo DVD ROM drive. On the visual interface side of things, a NVidia GE Force 2 64 Meg 3D Graphics card paints the pictures and a SoundBlaster Live! Platinum sound card with frontal break out box handles the audio. Back-up media is by way of an Iomega 250Mb Zip drive and the final element of this impressive system is an Iiyama Vision Master Pro 450 19" flat screen monitor.

All this lot runs under a dual boot Windows XP Professional and Red Hat Linux 7.2 Operating systems.

For computing on the move, Hugh utilises a Compaq iPaq pocket PC which can be docked with the main PC. **SWM**

If you'd like to share your shack with fellow *SWM* readers

- you too Eric... then send details and pictures to; **The Other Man's Shack, Short Wave Magazine, Station Approach, Arrowsmith Court, Broadstone, Dorset BH18 8PW.**

Located on the banks of the River Thames near Dartford, Kent, Hugh says he needs as much height as possible. To this end he has plans for a

Attention-123!

8BY (M16)

I recently discussed this French station, and as so often happens with Numbers Stations, as soon as you've published details, the operators change their tactics! I've just completed an intensive monitoring session on 8BY, making what I said a while ago out-of-date.

I spoke of the carrying over of addressee numbers from one transmission to the next, maybe even over a period of days. 8BY no longer does this, although ANs are carried over occasionally, however, they skip transmissions. For example, 505 may appear in the traffic list for 0740, at 0840 an entirely different list is most likely to be sent, then maybe 505 will pop up at 0940 or 1040. There is no clear pattern to this behaviour as far as I can tell. Another less frequent habit is to send a particular traffic list and repeat exactly the same list over several transmissions, i.e. carrying over the whole list. Lately, these lists have contained between 3 and 7 addressee numbers.

This is an easy station to monitor as transmissions last 20 minutes every hour of the day from h+40 to h+60 and three parallel frequencies are used. An off characteristic which I've noticed for years is the frequent breaks in keying (but never within a character), as if a loop tape is in use.

E10 (Mossad)

Unusual activity has been noticed on the 'idler networks'. On Sunday 11 November, three of these were all sending messages (repeated for hours on a loop). Appearing as usual at h+45 for half an hour, it is very rare for even one of these networks to send a message. Three together is unprecedented. (Normally the idler format - call followed by 2 is sent day in day out. The networks involved were:

Net	Group Count	MHz
VLB	18	7.605
SYN	25	7.811
CIO	31	8.025

All operate on two parallel frequencies, but these were not checked in this case.

MIW has been sacrificed in this operation, KPA sending 12 groups on 7.969MHz. Whatever was going on it was of great importance to Israeli intelligence.

General

On the whole, activity over the October/November period had dropped considerably. For example, the Russian M12 and E6 were almost at an all time high in September and early October. Yet in November I only managed to find a handful of M12s and one E6, although I must have missed a good number. The CIA's E5 has also suffered a great reduction in transmissions.

The British networks E3 and E3a continue as usual, and worldwide these are now by far the busiest of all. It is strange that the USA with its claims as greatest world power, has so few agent-running communications compared with Russia, Britain, France, Cuba and Israel. Even the Czechs and the mysterious M13 are busier at present. As I've said previously, I suspect M16 is handling CIA messages.

Morse is still the stronghold of French and Eastern European operations (the French never operating in voice, to my knowledge).

An interesting development has been the reporting of Family I (Russian) transmissions in a strange language, probably Pashtu, aimed at Afghan agents. This was reported on Sunday 28th October at 1200 on 17.460MHz and 1300 on 15.770MHz, using an identical format to S6, etc. The Russians go out of their way to provide a native language service when necessary, using powerful a.m. broadcast-quality transmitters.

Peter of Saffron Walden, queries an MCW Morse station beginning and ending with odd tone sequences. This is the long-established M7, run by the Czechs and intended for auto-recording without the agent present. It uses a similar format to M10, but is far less common and less predictable. Naturally, it only needs to operate on single frequencies - unlike M10 which always uses two parallels. Occasionally, it works in conjunction with M10's rare special unscheduled transmissions, sharing its IDs, but usually its independent.

A small but significant change has taken place to M13 (family XV). This very active slow Morse station no longer ends in the familiar three long dashes. It now ends in three zeros (short dashes), the same final ending as Families IXa and XIV. Does this mean that it has aligned itself in some way with these? Whatever the reason, **somebody** has purposefully decided to make this change.

Egypt (Family XII)

The link between the French musician Jean-Michel Jarre and Egypt turns out to be closer than I previously thought. The station E9, which begins with his music, has an Arabic companion V8, whose music appears to be that of an Egyptian, Umm Kalthoum, who died in 1975. In May 1998, president Hosni Mubarak, along with the Egyptian Minister of Culture, Dr. Farouk Hosni, and their Antiquities chairman, Dr. Ali Gaballah, attended a bizarre ceremony in Paris where a golden capstone was unveiled on the ancient obelisk in the Place de la Concorde, next to the Paris meridian pyramid. Dr. Hosni confirmed that Jarre would perform at Giza on 31st December 1999, for 12 hours and at midnight a golden capstone would be lowered onto the summit of the Great Pyramid (on the old Egyptian meridian). At the last minute, pressure from Moslem fundamentalists put a stop to this ceremony claiming it to be a Zionist-Masonic plot. The 8.5m capstone was never used, and a reduced ceremony was televised world-wide.

In July 1990, Jarre had organised a similar event in Paris to commemorate the Revolution using a makeshift pyramid in line with the obelisk. A few years later, Jarre organised another event at London's Canary Wharf (on the Greenwich meridian) and designed as a giant obelisk topped by a glass pyramid. France's closest links with Egypt date back much further than Napoleon's expedition and the Egyptian government's choice of J-M Jarre is perhaps a little less odd in this light.

Letters

Several readers have asked about joining ENIGMA. The original ENIGMA no longer exists, but our two booklets (the numbers station Bible!) are still available at the above address for £7.50 the pair. Although a little out-of-date now, they remain the only thorough introduction to this complex subject.

However, ENIGMA 2000 (which arose out of ENIGMA) still exists and can be contacted at <http://reachus.at/enigma> and e2k_news@hotmail.com They produce an excellent newsletter, although I criticise the listings of logs rather than a more in-depth coverage of a station's habits. However, I realise how difficult this can be without a large number of monitors who thoroughly understand the subject.

My mention of Montreathmont Moor (in Angus, not Fife - my mistake!), in the last column resulted in an interesting letter from James of Dunfermline. He said that this site was used by Watson-Watt in his early radar experiments, aiming his beams at the Bell Rock Lighthouse 19km out.

Another site nearby, Craigowl Hill was a strict no-go area for walkers in the 1970s - who were 'escorted off to preserve State Secrecy'. Interestingly, he believes that this site was linked to Lawrence Kirk, Montreathmont's receiving site. I too was aware of this site in the 70s and can confirm that it was a BT 'backbone' microwave site carrying, amongst other things, NATO radar plots from Saxa Vord and Buchan early warning radars. (It probably still does). However, it also carried a dedicated military system known as 'Boxer', linking key communications sites together, known as RAF Pitraevie, and quite possibly Lawrence Kirk and CSOS Hawklaw, etc. The US Navy had a relay there passing intelligence intercepts from the large h.f. site at Edzell. The network linked all USN interests in Scotland N. Ireland, from the northern h.f. sites at Forss and West Murkle to the l.f. transmitter (callsign NST) dear Derry. Today, there is still a military element at Craigowl, and you are quite right about the site also being an air-traffic control relay.

Last minute news - **MX**: A strong 'B' single letter transmission (SLT) was noted in the 7.039MHz cluster band, competing with weaker 'C' and 'S'. 'B's are very rare.

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SSB Utilities

Culmhead

RGA from Somerset wrote to update me on my comments about the 'radio station' at Culmhead in Somerset. I said that it was a former BBC World Service transmitting station, but he says that this is total nonsense.

RGA says that during WWII the Culmhead site, an airfield, was known as RAF

Churchstanton, hosting strike aircraft flown by Czech and probably Polish squadrons. It was renamed RAF Culmhead towards the end of the war and was largely neglected until it was handed over to the Foreign Office during 1956.

The Foreign Office constructed an h.f. receiving station for

use by GCHQ. The site became operational in 1957 and continued in this rôle until it ceased operations in February 1999. The antenna farm and equipment were completely dismantled, the buildings were sold to a property company, and the former airfield (the antenna farm) was handed back to the Burnworthy estate from whom it had been requisitioned during the war. During 2001 the estate was used by the MAFF and the Army in connection with the foot-and-mouth disease.

I must say that I now believe what RGA has to say about the site, as he says that he worked at the radio station from April 1983 until it closed in June 1999, so he knows its full history - which never had anything to do with the BBC. Mind you, that could have been a reasonable cover story I suppose...



Letters

I have been neglecting your letters in recent months, so now I am going to try to catch up with those received in the last few months.

The first letter this month is from **Geoff Grundill** in Cumbria. He has been listening to the 'main USAF military aircraft frequencies' (he means the GHFS/'Scope Command'), but wants to know where he can find details of h.f. frequencies used by a number of specific users in the UK. Geoff would like to know the h.f. frequencies for RAF Mildenhall, British Aerospace Warton, RAF Boscombe Down, and any 'SAS helicopter' frequencies.

RAF Mildenhall has been covered in this column in the past; the only h.f. users there are the Special Operations aircraft and helicopters based there. Almost all of the good frequency guides have lists of their frequencies, and the two guides that I use (*Airwaves 2001* and *Military Air Scan 2001*) both contain the list - both these books are available from the SWM Book Store.

As far as I am aware, neither BAe Warton or RAF Boscombe Down have any h.f. frequencies, but I am willing to be corrected if anyone can provide details. As for the last request, their helicopters are not equipped with h.f. antennas, so I can only assume that they are not equipped with h.f. equipment.

The next letter is from **Tony Barrett** in Devon, who has

just moved house into a very rural location. His first comment is that he is surprised just how electrically quiet the h.f. bands seem to be when compared to his previous location in a busy estate. I am always envious of those who live in the countryside away from as much electrical interference as possible, and for those with enough 'real estate' to install a decent sized antenna, the possibilities are limitless. Tony is using a DX-394 receiver, and just three or four metres of wire for an antenna, but he is hoping to install a larger and longer antenna soon.

This relatively simple set-up is certainly proving to be a worthy performer, as Tony reports that he has been hearing New York ATC on 8.879MHz, and also Brisbane ATC. Brisbane was working a 'Reach' flight heading for Diego Garcia in the middle of the Indian Ocean - one of many flights heading this way since September. Tony would like to know where the transmitter site for Brisbane ATC is located, does anyone know?

Tony also comments that he heard Cocos & Keeling Island a few years ago, but has not heard it recently, and he wonders if it is still active. Reading Tony's comments about Cocos reminds me that I have not heard this station for many years, but that is mostly due to the times that I listen, and that I usually never listen to the ATC communications from this region.

A letter from **Christopher Wiltshire** (actually an E-mail) in Norfolk contains some questions about possible alternative antennas for his receivers. Chris monitors both the civil and military aeronautical frequencies, as well as the usual US Forces GHFS/SCOPE COMMAND frequencies. Chris is fortunate in that he has two receivers, both with separate antennas. The antennas in each case are simply 16m wires feeding the receivers via baluns. He says that despite several houses around him, most signals around the world are received quite well.

Chris is moving house soon to elsewhere in the region, and the new location is 'electrically quiet' and surrounded by fields; Chris plans to do some antenna farming and is considering erecting a full size G5RV antenna. Chris would like to know if he installed a G5RV would he manage to hear those previously weak elusive "hard to get" stations, or even hear some previously unheard parts of the world?

Well Chris, if I had the choice I would retain one of your current random wires, and try a G5RV as your second antenna. Then you can compare the results of both antennas to see which one works best on the frequencies that you listen to. A G5RV is no more difficult to install than a simple random wire, and although the instructions will specify that you install the antenna both straight and horizontally, there is plenty of scope for variations.

My own G5RV has been installed like a loop in a loft, and is currently sloping from 10m at the top to just 6m at the bottom, with a 'sag' to 4m in the middle; I have even tried it as an 'inverted V' - they all work. Personally I prefer simple wire antennas rather than expensive verticals or beams, mainly due to the much lower cost, the ease of installation and the results achieved. They are also usually much easier to move around, to remove completely if necessary, they are generally almost invisible, and also do not attract as much attention from local planning authorities.

Whether you receive signals from new and different parts of the world with your new antenna depends upon many factors, and is usually the subject of many chapters in books covering antenna theory and propagation theory. Personally I prefer the 'results' theory - if I can hear the signals, then I'm happy.



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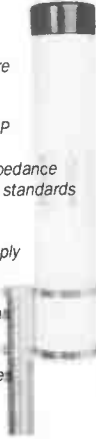
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Scanning Scene

Most of us have read about the concerns of various groups regarding the safety of TETRA systems. A reader sent me a press cutting from Manchester's *Metro News*. In the article the writer highlights the alleged danger of 'pulsed' transmissions. The newspaper man obviously had about as much technical knowledge as I do, but the concerns of some people is that the rate at which the data is sent on air maybe dangerous to the health of the user.

TETRA is a system whereby data is split into time slots and sent on the radio. It therefore follows that there will be a definite frequency to these data slots. The concern is that the frequency of these data pulses may cause harm to users. It seems that there are as many opinions on this one as there are experts.

In these increasingly litigious days, it seems unlikely that the authorities would implement a system that will cause harm to its customers. I mean the police chiefs and the Home Office are constantly in the media beefing about the costs of police pensions, so just how stupid would they be to create more sickness amongst staff by giving them a duff radio set.

My bet is that a fair bit of thought has gone into this Airwave TETRA radio. A whole lot of money will be spent by the authorities and made by business. The emergency services will get a system which they'll be happy with, until some other slick salesman comes along and persuades them to spend our money on a different one!

Try Listening

Ever tried listening to manned spaceflight. It's not just for the specialist you know. When the space shuttle launches they use a.m. radio to chatter to their mates in Houston.

This contact will continue until they are established in orbit when they hook up via a satellite link to the control centre. I can't guarantee that

you'll hear anything, but it's worth a try. The frequency in use is 259.700 a.m. You'll need a scanner with an external antenna hooked up to it.

I use a Bearcat UBC9000XLT fed by a discone and I run the audio into the excellent *Scanner Recorder* program, but any software audio recorder will do. Bear in mind that these guys are really pouring on the coal to get into orbit and their spacecraft is barrelling along at a fair lick.

With a half decent set-up you will hear any transmissions that they make to Houston while they are within your area of sky. This may only be a couple of minutes. The maximum length of transmission that I have captured was around five seconds during a launch of the *Endeavour* spacecraft. When they let off the *Discovery* shuttle in December I caught around two seconds of transmission which made no sense at all.

The Russian module of the *ISS* can also be heard if they are using the radio when overhead. They tend to use 143.625 f.m. Don't forget that you may hear amateur packet, and sometimes voice, on 145.800 f.m.

My Discone

In the previous paragraph I mention that I now have a discone. In the past I've avoided using this type of antenna because they really tell everyone that a wide band receiver is in use. It had to be done. I felt that I needed something to listen more efficiently to low v.h.f. transmissions coming in from overseas.

In the end I decided that the discone was the best, cost effective, choice. It's mounted on top of a small tower in a field adjacent to my little house. I felt that I could get away with a discone because I live in a remote area and there's no one to see the

antenna. I've looked at it from a few hundred metres away and it's most difficult to spot.

This particular antenna also has a transmit element for 50MHz which I've found useful. The tower consists of the top 3m section of a lattice tower which I begged from a friend. Bolted to this via steel brackets and U-bolts is an eighteen foot scaffold pole giving me just over 6m of height. The whole thing is set into a 1m cube of concrete in the ground.

The coaxial cable in use is RG-213 which I find adequate for general reception. Although the unit sways alarmingly in the wind, it has withstood a force ten gale which blew down two of my trees. I'm certainly pleased with my discone, but in a built up area they certainly announce your scanning interest to passers by.

As I have written on previous occasions, the low v.h.f. conditions have been good recently. Now, towards the middle of December with tropospheric ducting taking place due to fairly static high pressure, the higher v.h.f. bands are also getting lively. A mate of mine using 2m amateur band has just been asked to clear the calling frequency by a guy in Sweden!

I find that monitoring amateur bands is usually a good indicator of conditions and accordingly have all the 50MHz and 2m repeater channels loaded in one of the scanners. It's surprising where the signals come in from and then it gives you an idea that a particular band is open.

A friend in Worcestershire was listening on 11th December and consistently received the Metropolitan Police frequencies on 152MHz. He was also hearing Channel 16 v.h.f. marine band (156.800) from Coastguard services in Liverpool and Humberside as well as their colleagues in Ostend. I have an amateur packet station set up in the

north of Scotland and when I interrogated the thing one morning it was showing that it had received signals from a station in Athens, Greece, during the night. Things

have certainly been jumping on v.h.f.

Courier Company?

Are you in the London or South East area? On 138.30625 f.m. there are transmissions that indicate that the user is a courier company. If they are such an operation they may be in difficulties as that frequency should be the sole property of the police. I wonder whether they know.

I've been peeking at a photograph snapped of a large van and trailer marked up as a Railtrack 'Rail Incident Command Support Unit'. The antennas on the roof presumably were for the railway's own radio system and perhaps the British Transport Police who were also in attendance at the police station where the picture was taken. Also aloft on the roof was a unit marked as 'Nightscan'. This is a fancy name for a lighting unit. Has anyone seen any of these units around in the past or has anyone got any information on what radios are inside these wagons?

Famous SWM

Now, you know I don't get out much, but there is a daytime TV soap opera called *Crossroads*. The tale concerns a bunch of people that run a hotel that seems to be devoid of customers. Some of the staff decided to start a pirate radio station.

They looked at adverts for transmitting equipment in a magazine...you've guessed it. *SWM!* Will someone tell the writers...*Short Wave Magazine* doesn't sell that stuff. Best you check Ebay on the web boys. I don't watch this serial by the way. I was told about it - honest!

■ ROGER BUNNEY, 35 GRAYLING MEAD, FISHLAKE, ROMSEY, HANTS SO51 7RU

Satellite TV News

The hostilities in Afghanistan have slowly drawn to a ceasefire as the final pockets of Taliban resistance were hammered into submission - though whether a mountain terrorist campaign will continue remains to be seen. *Europe*Star-1* @ 45°E has continued to transmit most warfront footage, though NBC have been utilising Eutelsat's *SESAT* @ 36°E. There has, however, been a marked reduction in uplink activity as the final stages of the conflict have drawn to a close.

An unusual satellite transmission on November 18th offered footage shot from within a van, the windows of which has been blanked out with red filter gels to prevent the cameraman being seen! 'Red' pictures showed buildings on the Kabul airfield (Mazar El Sharif?) being prepared for occupation by possibly US Special Forces. A passing group of local Afghans appeared showing more than a little interest and a meeting was convened between the locals and two Special Force members which ended amicably - this over an APTN feed, 11.565GHz-V (SR 5632 + FEC 3/4). These were obviously a forward group as only in late November were uniformed detachments such as the 10th Mountain Division arriving at the same airfield.

Unfortunately, several journalists have been killed in recent weeks. One camera unit was seen recording pictures at the front line with the Northern Alliance fighters near Kabul, but the unit itself came under fire from the Taliban and had to very quickly retire!

Roy Carman (Dorking) commented in his recent letter over NBC's use of *SESAT*, 11.475GHz-H using an unusual SR 9130 + FEC 7/8. The possible reason for adopting such 'unusual' digital parameters, departing from the usual SRs of 5632 or 6111 + FEC 3/4. With the generic parameters just listed, any broadcaster seeking to 'lift' incoming footage from Afghanistan would normally opt onto *Europe*Star* and preset the receiver to known frequencies and parameters - easily available on the 'net from sources such as 'Feedhunters'.

Using *SESAT* and then adding alien parameters will produce more difficulties, many receivers don't have the facility for flexible FEC adjustment and very few have auto search capacity. Interesting since the *SESAT* feed identifying as 'Islamabad 3 (NBC)' featured the Northern Alliance fighters and their weapons in operation - such as the Katoushkas anti tank gun - often fitted to Landrovers - here used as an 'area weapon' rather than 'anti tank' depending on rounds used.

Both 82mm and 120mm mortars were in use alongside the Katoushkas' dug into the hillside. The operators "openly enjoying this release of death and destruction". As the footage continued with US fighter bombers arriving overhead, the picture cut to a promotion trailer for 'Home Box Office, India'! But even seemingly innocent pictures can often show armaments, techniques and other military information to the skilled eye - undoubtedly all footage seen out of Asia in recent times is studied closely by intelligence sources.

November 14-17th revealed a rapidly changing situation in the region as the Taliban were progressively overthrown and by the 18th - pictures showed local technicians re-erecting their Band 3 'Batwing' TV transmitting antenna as Kabul TV hit the airwaves again, though the Taliban stopped all TV during their five year occupation, they agreed to basic studio maintenance.

Tragedy Continued

Elsewhere in the world tragedy continued...just too late for last month's copy date was the Airbus A300 crash onto the Queens Rockaway area on November 12th killing all on board. Flight 587 out of New York's JFK however was not brought down by terrorism, but apparently by airframe failure just a minute or so after take-off. Pictures of the morning crash (mid afternoon UK time) quickly became established over the 'usual' *NSS-K* 21.5°W Reuters feed frequencies. I checked out *PAS-3R* @ 43°W and the 'Fox News Channel' (11.579GHz-H, SR 19875, FEC 3/4) which also carried live pictures from the crash site and some dramatic 'viewers home video' scenes just a few seconds after the plane impacted.

I rarely mention the 1°W slot, I tend to avoid this one with its mega D2-MAC Thor signals, but Edmund checked out content the other night and found on the *Intelsat 707* 1°W/Thor 1,2,3,0.8°W slot test patterns - 11.014 and 11.174GHz-H - the former being a 'Canal Digital' bouquet carrying various TV and radio channels. One interesting catch on 1°W was 'Satellite Media Services' running SR 3149 @ 11.459GHz-H with IRN radio material though with digital drop out on a small dish.

In fact, checking over the whole 1°W satellite slot there's only TV-4 Sweden in clear PAL, 11.389GHz-H over Thor. *Intelsat 707* in Ku is totally MPEG, but C-Band (3.7-4.2GHz) carries just a few African analogue TV channels, the rest are all MPEG again.

You're too late to check out your bank's latest news, both the Nat West Bank and Royal Bank of Scotland TV channel corporate offerings that appear from time to time on W2, 16°E - 11.304GHz-V digital (SR 30000 + FEC 3/4) encrypted from early December.

Moving along the Clarke Belt to the Russian *Express 3-A* satellite parked at 11°W, Stefan Hagendorn's (Germany, Internet News) reports that the often moving Kurdsat has now popped up on this satellite, in MPEG-2 clear @ 11.469GHz-V (SR 3254+2/3). Rather more difficult to catch is the AMOS satellite, 7°W and Stefan advises 'Video Cairo-Sat' has been seen at 12.010GHz-V (2892+3/4) and 'Ajman TV' on 12.295GHz-V (2893+3/4). Spread from the *Telecom 8°W* slot can make for AMOS reception problems being that the bird spots into Central Europe and the Middle East making for more of a DX challenge.

But the world goes ever onwards, *Intelsat 801* at 31.5°W on December 6th carried a number of lengthy political speeches under the general banner 'La France Qui Change' - it went on - and on! For French speaking political anoraks note down '11.025GHz-V. SR 5632 + 3/4 with a service ident '801. CANAL240F2'.



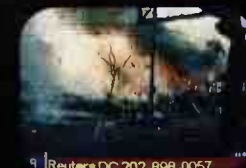
New York, 28th October and the *Family Memorial Concert* next to the still smoking debris of the Trade Centre Towers, via *NSS-K*.



Queens District, New York, November 11th and a resident's home camera pictures seconds after the A300 crash into Rockaway, via *PAS-3R*.



'Fox News Edge - End of Feed' via *PAS-3R* (with service id).



Live pictures on the Reuters *NSS-K* lease out of Queens, NY.



Local Afghans gather near to US Special Forces watching technical installation work. Note the red filtering stuck to the van windows to avoid the cameraman being seen.



US Special Forces men mingle and make friends with the locals. Both pictures via *Europe*Star-1*.



CNN arrive in town!

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DX Television

The excellent F2 conditions continued well into November, although there was a noticeable fall-off in intensity around the 20th. Sporadic-E reception was a little more elusive than the previous month, but an opening did emerge on the 2nd into Spain and also on the morning of the 18th, with a good representation of signals from south-east Europe. The *Leonids* Meteor-Shower event on the 18th was rated as top-notch with pings galore on the f.m. and TV bands.

Reception Reports

On the 1st, a short F2 opening materialised at 1150, but it had disappeared completely by 1210. Later at 1815, **Simon Hockenhull** (Bristol) encountered Auroral-E activity affecting Channels R1, R2 and R3.

F2 returned to normal on the 2nd with an opening to Thailand already established by 0900. At 0945 weaker signals from Iran (IRIB-2) were dominant, but by 1125 Spanish signals flooded the channel, thanks to Sporadic-E. A programme without a logo was also seen, but as credits rolled at 1158, the signal vanished!

On the 7th from 0855 on E2, sample text pages were resolved. These resembled the old BBC Ceefax headings with text data occupying the bottom half of the sync bar. Dubai was the prime candidate, but other DXers claim that the sync bar is empty.

On the 19th, USA/Canadian signals on Channel A2 (55.25MHz) may have penetrated the Netherlands towards late afternoon. At the time, high-level 50MHz signals from Polish and Croatian amateurs were heard in Tennessee, USA.

Propagation Nightmare

The morning of the 18th was somewhat of a nightmare, albeit a pleasant one, with **three** types of propagation affecting Band I. **Peter Barber** (Coventry) monitored continuous activity between 0720 until 1202.

F2 was firmly established by 0825 when **Ian Milton** (Ryton) identified Syria on E2. At 1015 Simon Hockenhull measured R1 carriers at 49.740 and 49.755MHz. By 1025 Iranian (IRIB-2) various pictures were present on 48.239MHz, followed later by a religious service at 1040. **Peter Chalkley** (Luton) described E2 signals at 1055 as of 'Middle East appearance'.

Sporadic-E emerged with signals from Italian services RAI UNO and the private network TELE A+, located just below E2. By 1130 RTL KLUB (Hungary) made a welcome appearance on R2. **Stephen Michie** (Bristol) also witnessed the Italian broadcasts, in addition to Slovenia E3 and Croatia E4.

Reduction

By the 20th there was a noticeable reduction in F2 activity, but by the 25th conditions were back to normal with unidentified Arabic signals on E2 from around 0900.

Peter Barber comments that the number of R1 openings diminished as the month progressed. On E2 a Mullah figure with lines of text was observed on several days. A logo resembling a figure '1' featured in the top-right of the screen.

Mystery Station

Lt. Col Rana Roy (India) advises that the mystery station TV5, a French-language programme in monochrome on R1, has been visible virtually daily between 1200 and 1330 then 1930 and 2230UTC. TV3 Thailand is often in colour on E2. An unidentified Russian station on R1 has been logged most days throughout November.

Meteor-Shower DX

The *Leonids* Meteor-Shower event on the 18th proved spectacular with an almost non-stop barrage of pings throughout Band I. At times it was difficult to distinguish it from F2 and Sporadic-E activity prevalent at the time.

Reception on the f.m. band focused mainly on Scandinavia and Central Europe, although a few Italian stations were heard during the day.

Band III was also affected with multiple signals at times on E5 and to a lesser degree E10. From 1030 **Tim Bucknall** (Congleton) encountered several bursts of the Swedish PM5534 on E7 from possibly the Halmstad outlet. A subtitled programme co-channelling with the PM5534 on E7 has been tentatively logged as Finland. A news programme on R9 also flashed up, but the Czech Republic has been discounted as the schedules do not match.

Although the *Leonids* were excellent, the *Geminids* shower in mid-December (around 13th/14th) can be more productive. The same is true of the *Quadrantids*, peaking in early January (around 3rd and 4th), so listen to the f.m. band or look in Band III for some really unusual catches.

Tropospheric Reception

On November 2nd, Stephen Michie logged several German transmitters, the best catch being MDR on E34 (Brocken); ARD-1 transmitters on E5, E6, E9 and E10 were also present. Closer to home, Dutch regional stations RTV Oost E22 and TV Flevoland E25 made an appearance. The opening waned by the 3rd with only German ARD E6 and E10 and French Canal Plus L5 from Lille.

Service Information

Lithuania: All broadcasts will switch from SECAM to PAL during spring 2002, but the existing channel allocations and 6.5MHz sound spacing will remain.

Spain: The life of the Madrid E2 outlet was extended following protests from viewers but, according to revised listings, the Band I transmitters should have closed towards the end of 2001.

Afghanistan: TV is back on-air after a period of five years.

United Kingdom: A local TV station is testing in Bristol on Ch66 from Ilchester Crescent to the south-east of the city.

BBC-2 has introduced a set of new Identification Symbols with a white '2' on a pale yellow background. The station identification consists of the BBC blocks with 'TWO' in white lettering below in a magenta square. The square is also displayed during trailers just to the lower-right of centre, thus obscuring part of the picture. We would be interested to hear readers' comments about the new BBC-2 Idents!

Fig. 4: One of the new BBC-2 Identification Symbols introduced on November 19th, 2001.

Keep On Writing!

Please send your DXTV, slow-scan TV and f.m. reception reports, news, off-screen photographs and information to arrive by the first of the month to: **Garry Smith, 17 Collingham Gardens, Derby DE22 4FS.** We can also use off-air pictures stored as JPG files on PC disks and good-quality video recordings.

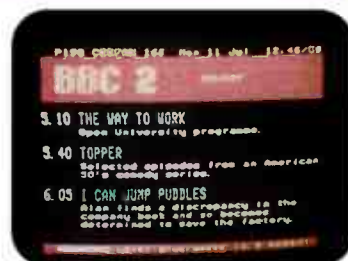


Fig. 1: Ceefax transmitted on BBC-1 as a sample text page.



Fig. 2: Modified PM5544 received via F2 in 1989. This has never been positively identified.

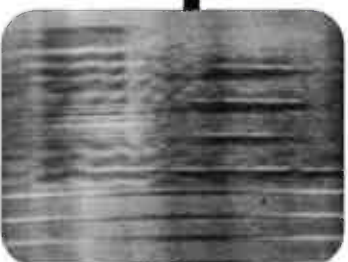


Fig.3: The caption which followed the PM5544. The symbol looks like Iraq although no Band I transmitters have ever been listed.



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.

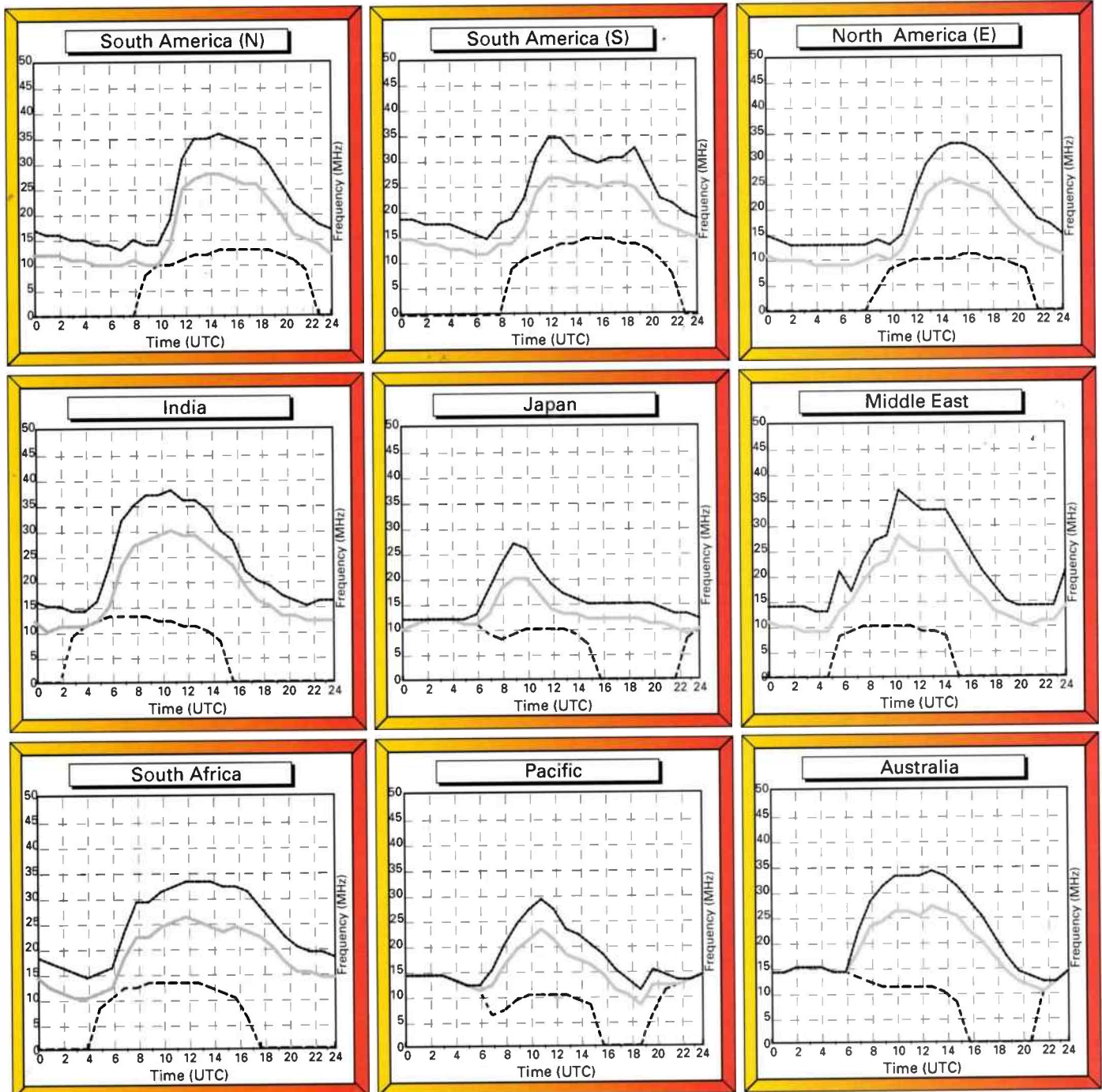
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

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.

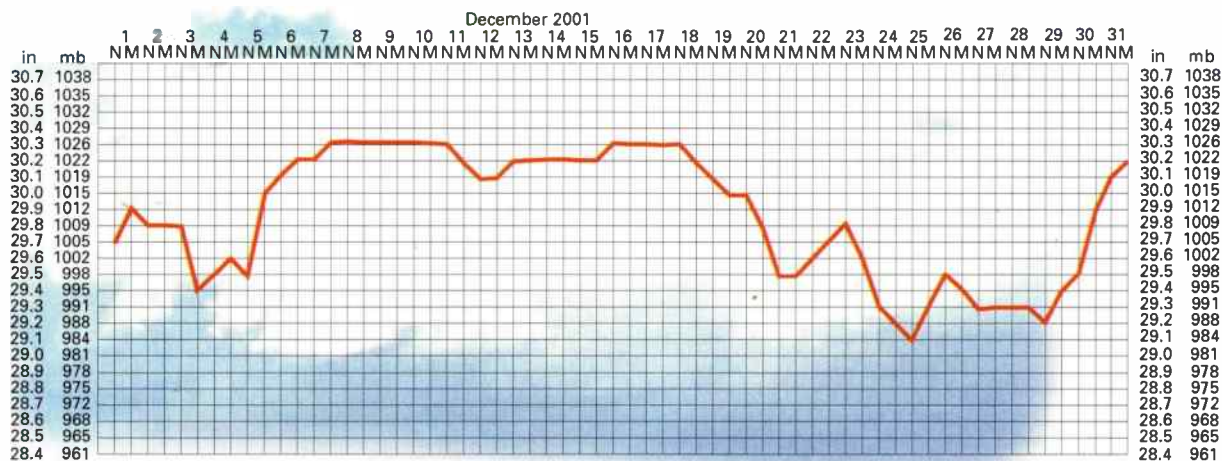
February 2002
Circuits to London



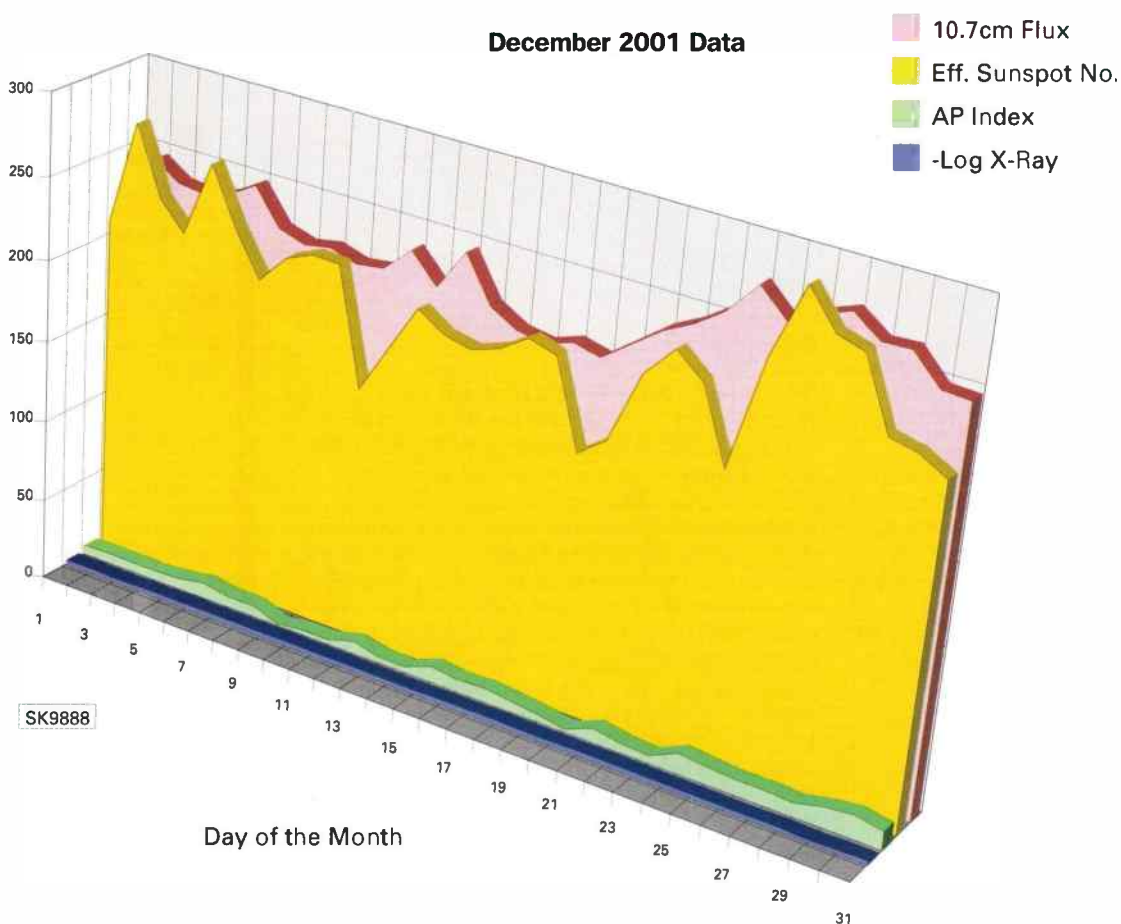
SK9887

Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, December 2001.



December 2001 Data



guide to the chart

The 10.7cm solar radio flux is used as an indicator of the general level of solar activity.

The K and AP indices are measures of geomagnetic activity.

The K index ranges from zero (very quiet) to nine (severely disturbed). K values of five or greater correspond to geomagnetic storm conditions that can relate to poor propagation conditions.

The AP index ranges from 0 to 400. An AP of 30 is the threshold for geomagnetic storm conditions.

■ PETER BOND, c/o EDITORIAL OFFICES, BROADSTONE

■ E-MAIL: skyhigh@pwpublishing.ltd.uk

Sky High

HF Activity

My comments last month regarding the current situation in Afghanistan increasing peoples interest in h.f. listening seemed to be well founded, as I have had a further correspondence on the same subject. This conflict has certainly increased the amount of traffic on the US Military GHFS channels and at times they have proved to be quite busy. As I am a bit of an insomniac, I have been doing some early morning listening, (0400 - 0700), and some of the more distant stations such as McClellan, (California) and Yokota (Japan), have been heard quite clearly.

Probably old news by now, but the station at Diego Garcia has been acting as a temporary GHFS station. Incidentally, I wish the Americans could make up their minds regarding the callsign for McClellan, it's officially listed as 'West Coast', but all the calls I have heard recently have been to McClellan!

HF Antennas

Last month I suggested a couple of second-hand base station h.f. radios that would be a good starting point at a reasonable price. Our esteemed editor has also pointed out that another good h.f. receiver that you should be able pick up second-hand for £250 - £300, would be the NRD-345, see review in May '97 *SWM*, (and a more modern receiver than those I suggested!).

As promised last month, we will now take a look at differing h.f. antennas, (as requested by Bill and Ian). In its most simplistic form, you could take a reasonable length of multistrand wire, (say 10m), plug it into the h.f. receiver and then run it outside to a tree or similar and there you are, a basic h.f. antenna.

On a recent trip to France a friend took his HF-225 for some late night listening, his antenna was a 7m length of wire, which we plugged into the radio and then ran it across the top of the curtain rail of a large window - for such a simple set-up, it produced quite respectable results! Although this is very basic, it does prove that you can still listen to h.f. even if you live in a flat.

To improve on a simple long wire you could take a 50Ω coaxial up-lead cable out of the radio to a high point on the house, say below the eaves and then attach it to a balun. The long wire is then connected to the balun and the far end sited as high as possible and attached via a ceramic isolator and some cord, to a tree, pole or another building, (allow a bit of slack in the antenna), see **Fig. 1**.

If you choose a tree, make sure you attach the cord to the trunk or a thick bough, thinner branches will whip about in the wind and are likely to snap the antenna in a good breeze. For the connecting cord I use a length of Nylon washing line which has a braided wire centre and is quite strong.

A further improvement is to earth the radio,

(assuming you have an earth connection). I have done this by taking a 1m length of copper water pipe, (15mm), and then using a hacksaw cut off one end at a 45° angle to make a form of point. The opposite end should then be drilled through the centre about

50mm from the end to take a 6mm (M6) bolt.

Using a block of wood to avoid damage to the pipe by the hammer, knock the pipe into the ground as far as you can. Then using a 25/30mm long bolt, push it through the hole and attach two washers and a nut, your earth wire can then be wound round the bolt between the two washers and then nut tightened, see **Fig. 2**. If possible, use a stainless steel nut, bolt and washer as they will be much more resilient to the weather, also a second nut can be added as a locking nut.

Baluns seem to vary price wise anywhere from £20 to £45 so in theory you should be able to get a balanced h.f. long-wire from around £30. Some people use a random length 'long wire', but if you wished to make the antenna more effective at a specific frequency, you can use the following formula to form a quarter wave h.f. antenna. 74.25 divided by the frequency in megahertz, equals the long wire length in metres. So for 8.906MHz, (MWARA NAT-A), the calculation would be 74.25 divided by 8.906 which equals 8.33 metres (27.5ft). I'll discuss active h.f. antennas next month.

ACARS

A letter from **Brian L.** and **Richard R.** in Tyne & Wear asks if I could explain the ACARS system and explain what equipment he might need, (as Richard puts it "before he spends any cash").

The original idea was to replace the time intensive system of voice situation reports from the aircraft to the Airline Flight Operations team on the ground. These reports would include such information as serial, flight number, pushback times, departure times, fuel flow figures, position reports, etc. All these reports would have to be read-back to confirm the information and that coupled with the progressive withdrawal of Flight Engineers on aircraft meant that this reporting workload was passed on to the Pilot and First Officer - consequently, the idea for ACARS was born and The Aircraft Communications Addressing and Reporting System was introduced in about 1976 by Aeronautical Radio Inc, (ARINC), in the USA.

Although the system was around for some years, it was not really until the reduction in size

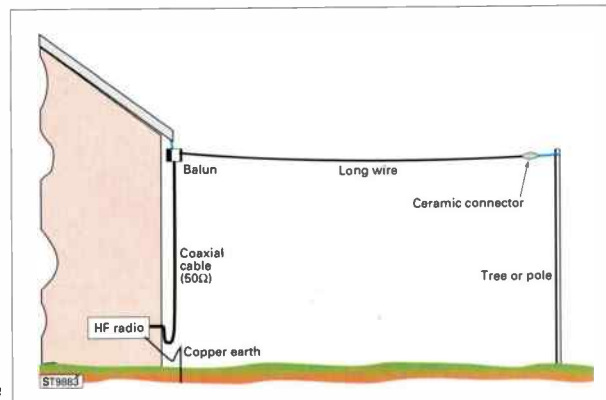


Fig. 1: Typical end-fed wire antenna.

Sky High

and cost of computer systems in the mid-late eighties that the system really came into its own and started to be fitted to a significant number of aircraft. The ACARS system, consists of a group of sensors on board an aircraft which can monitor varying parameters, the information is then fed into an on-board computer which formulates the data and then automatically transmits it to a ground station via a v.h.f. radio link.

As an example, these sensors can monitor such things as when the undercarriage retraction lever is operated and also when the undercarriage is fully retracted, thus generating a departure time element as part of the ACARS message, this is known as Event Recording. Safeguards are built into the system so that a false event cannot be transmitted. The raw data is then sent to a central processing computer where the data is translated into readable messages for the individual Airline Flight Operations Departments, this is achieved via the ARINC Electronic Switching System (ESS).

To monitor ACARS you will need a radio capable of receiving the Civil Airband 118.000 - 136.975MHz, a 3.5mm jack plug lead, plus suitable software and/or a decoder. The lead is run from the record out/headphone socket of the radio to line-in socket of your computer sound card or to a decoder. By tuning the radio, (squellch off), to the ACARS frequencies, 131.525 and 131.725 (UK), 136.9 and 136.925 (Europe), you will hear raw data bursts as information is transmitted. (You should note that the European frequencies will only be heard in the South of the UK).

The computer software then converts the raw data into readable messages. You should also be aware that after decoding, the resulting message still contains some information that needs to be translated, but perhaps most importantly for the enthusiast the Serial and Flight Number are always included.

If you are looking for a software solution try using a search engine such as Alta Vista or Google on the Internet and search for +ACARS +Software, (using the plus signs). This will lead you to much more detailed explanations of ACARS than I have room for, plus also free downloadable ACARS software such as *WACARS* and *KRACARS*. There are also commercial products such as *SKY SPY* which is about £25. The success rate of data conversion does appear to be variable by all accounts, but at least with shareware, if it is not suitable to your requirements, then it has only cost you the price of the download.

Possibly one of the best systems that is available using a decoder and software is the *Lowe Air Master*, this is available for *Windows 95/98*, but not for *2000* or *XP*. In my experience, this seems to have a much more successful decoding rate than some of software only systems. The current price for the *Air Master* is £89.95 or £29.95 if upgrading from a previous version. If possible, try to see a demonstration of the product before you buy. Next month I'll see if I can expand on the information contained within the ACARS messages.

Greek Arrests

It would be remiss of me not to comment on the arrest of the 'Plane Spotters' in Greece. I think that everyone who reads this knows full well that they are not guilty of espionage, but do appear to be guilty of acting rather irresponsibly. I find it difficult to believe that they organised a trip to Greece of all places, just seven weeks after the worst terrorist attack in history and amongst greatly heightened airport security.

Photography has always been forbidden at Greek military airfields and has usually only been allowed on trips that were liaised through the correct authorities. Even then, I can recall one occasion where photographic permission was rescinded as the visit was just about to begin! I also recall an incident where we had landed at Athens and were walking to the terminal building when a member of Joe Public decided to take a picture of the Air 2000, Boeing 757 we had just flown in. A security guard grabbed the camera pulled the film out and crushed it under his boot - and that was just a British civil aircraft!

In some countries they can blow hot and cold, and on different visits the security response to your actions is not always uniform. To the average Greek security guard, the use of a radio to monitor Air/Ground transmissions or the noting of serials, callsigns and aircraft movement details is just not understood as a hobby. To his eyes he saw a group of people engaged in actions that he deemed as a breach of the law, which by its purest definition can be espionage.

According to information released by a official Greek source, the group had apparently already been challenged by the police at Tanagra Air Force Base and informed of the restrictions at Military airfields and were then warned off. They then proceeded to visit Andravida, Megara and Araxos before perhaps inevitably being detained at Kalamata. If the information released is correct then a log book full of serials, callsigns and movements, plus a camera full of pictures is rather damning evidence. Fortunately, gentle political pressure and common sense prevailed and they were bailed to a lesser charge and I am pleased to say allowed to return home. I still feel that in light of the circumstances their actions were rather foolhardy.

This just goes to prove how lucky we are in this country to enjoy the hobby of listening to the various airbands, even though by strict definition we are all breaking the law. I am certain that I don't need to remind anyone that if you are travelling abroad in the future, please use common sense, especially if you are taking a radio.

I would remind readers that all answers to correspondence will be via the 'Sky High' column, so please do not send me s.a.e.s for a personal reply - thanks.

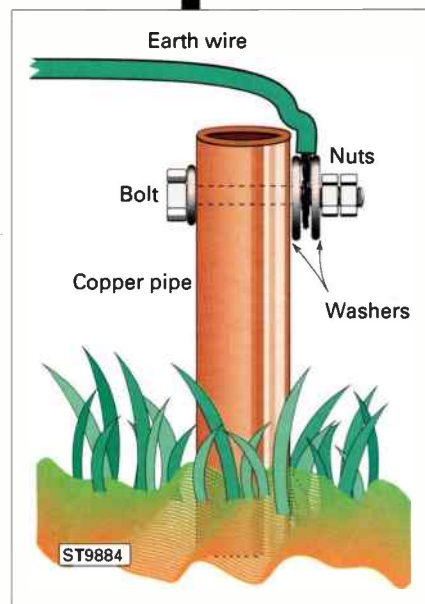


Fig. 2: Example of connection to earth spike.

Amateur Bands

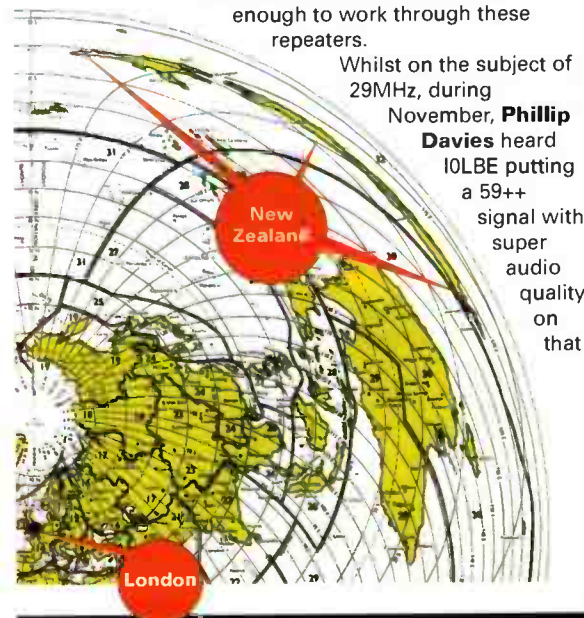
I received an enquiry recently about repeaters on 29MHz from **Ted Stanmore** who had heard one in particular and was seeking a list of others. For the unaware, the 29MHz repeaters have their outputs on frequencies between 29.600 and 29.690MHz with input frequencies 600kHz lower. They operate in f.m. mode, and some operate cross band, i.e. as well as outputs on 29MHz they also have input and/or outputs in different amateur bands. A repeater often heard strongly in the UK is W1OJ in Boston, Massachusetts, which has its output on 29.620MHz and the input on 29.020MHz. It identifies itself by Morse or by a recorded voice message.

Well, what other repeaters might be heard on 29MHz? How long is a piece of string? There are dozens of repeaters around the world, although inevitably most are in the USA. Far too many to list here! If the band is open it's possible to hear so many on one frequency it's difficult to identify one from another. Have a look at www.qsl.net/dl2gg/Repeater/repeater.html which has lots of information and a list of all the 29MHz repeaters around the world.

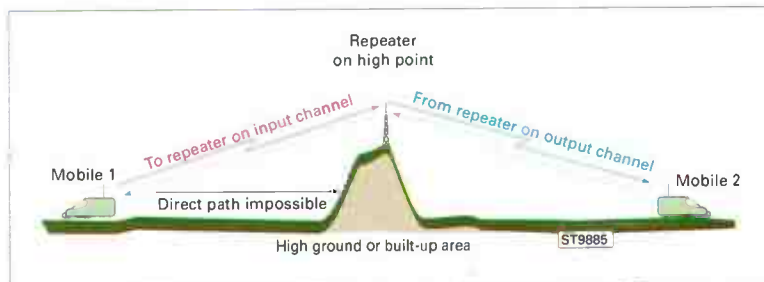
What's A Repeater?

Just in case anyone isn't sure what a repeater is, here's a very brief explanation. A repeater is a radio transmitter and receiver connected together so that whatever the receiver receives is instantly broadcast by the transmitter. The transmitter and receiver must be on different frequencies (the difference in frequency is generally called the 'split' and for 29MHz repeaters is - 600kHz, i.e. the input frequency is 60kHz lower than the output frequency) and the repeater is usually sited so that it's transmitter and receiver cover a wide area. That means somewhere high. Repeaters are useful because they allow people within the repeater's coverage area who are too far from each other to make direct radio contact to link up with each other through the repeater.

Until most h.f. transceivers were fitted with f.m. as standard, a popular and very economical route to using the repeaters was with CB sets converted from 27 to 29MHz operation. Some sets were particularly easy to convert as they only required the swapping a couple of crystals and a bit of re-tuning. When the band is open the 4 or 5W that can be squeezed out of the average converted ex CB set is more than enough to work through these repeaters.



Whilst on the subject of 29MHz, during November, **Phillip Davies** heard 10LBE putting a 59++ signal with super audio quality on that



band into Shropshire. No so unusual perhaps? Well it was. Not because of the strength and quality, but because the Italian was using amplitude modulation (a.m.)! Somewhat rare on the amateur bands these days!

Frozen Stiff?

As you read this sitting snugly in your centrally heated home and thinking how cold it is outside, think how cold it is at the South Pole. **Alex RA1PC**, who works for the Arctic and Antarctic Research Institute, is operating with the call **R1ANC** from the Russian Antarctic Base *Vostok*, midway between the coast and the Pole south of the west coast of Australia, until late January 2002. He will then be replaced by **Alan UA1PAC**, who will stay there and operate with the same call until January 2003.

Chris N3SIG is active (mainly on 20, 17 and 15m s.s.b.) as **KC4/N3SIG** from the McMurdo Station (WABA K-09) on Ross Island, which is in that bit of Antarctica south of New Zealand, until March 2002.

And whilst on the subject of the polar regions, we are all familiar with the type of world map that has the North Pole at the top and the South Pole at the bottom. Our mental image of where countries are in relation to our own is probably based on that type of map. But for the amateur or listener who wants to point a beam towards a particular part of the world a different map is required. The great circle map.

The example below is centred on London and shows the true directional relationship of countries to the UK. Without doubt, the biggest surprise when viewing a great circle map for the first time is to find that, viewed from the UK, New Zealand is to the north east, and very long! (Full size copies of the Great Circle map are available from the *SWM Book Store* for £2.50 inc. P&P).

Most Wanted

The country which tops the list as 'most wanted' by radio amateurs is North Korea, probably as there isn't any radio amateur activity there. After much effort a Georgian amateur Ed, who works for the World Food Program in North Korea, has obtained verbal permission to operate an amateur radio station. Ed, whose own call is 4L4FN, expects to be there until June or July, so look out for a P5 something call. It will be under a **very** big pile up! Updates on Ed's activities can be found at <http://www.amsatnet.com/p5.html>

A bit further south from the 9th to the 11th of February will be Diamond DX Club members Nando, Maurizio and Erminio operating as T88SI from Sonsorol Island in the Palau group of the West Carolina islands, south east of the Philippines.

Thanks to those who have contacted me. Comments for and about the column are most welcome. Please see the head of the column for the address. If you write, a daytime 'phone number would be very helpful.

Good listening!

■ LAWRENCE HARRIS, 55 RICHVILLE ROAD, SHIRLEY, SOUTHAMPTON SO16 4GH
 ■ E-MAIL: info.orbit@pwpublishing.ltd.uk ■ WEB SITE: http://www.itchycoc-park.freemove.co.uk

Info in Orbit



SPICE: Meteoror - 3M
 NASA Langley Research Center 1/15/1999 Image # EL-1999-00044

Fig. 1: METEOR-3M-N1 courtesy NASA Langley Research Centre.

I write while waiting the delivery of a new observatory, for which the foundations were laid in November. When this is published in January, the telescope should be installed, and I shall be watching weather satellite pictures like never before! Images from NOAA and METEOSAT WXSATs enable us to see what is actually happening, rather than the predictions of cloud cover that come from official sources.

Meanwhile, this month's picture bonanza includes images from EUMETSAT that, as far as I am aware, have not been released before. They are simulated images to represent those that can be expected from the METEOSAT Second Generation geo-stationary satellite *MSG-1*, and were provided by EUMETSAT

following my request. This edition also includes images of Britain received during the period of exceptionally clear skies seen during December.



Fig. 2: MSG-1 channel 1 simulated image.



Fig. 3: MSG-1 channel 2 simulated image.



Fig. 4: MSG-1 channel 3 simulated image.

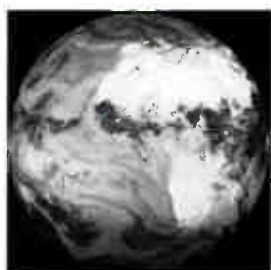


Fig. 5: MSG-1 channel 4 simulated image.

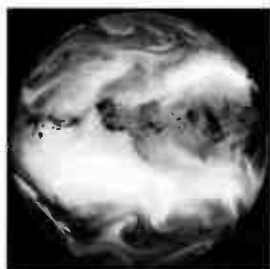


Fig. 6: MSG-1 channel 5 simulated image.

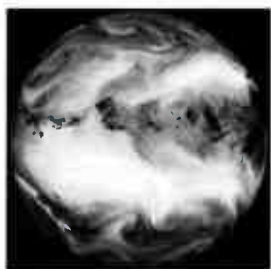


Fig. 7: MSG-1 channel 6 simulated image.

WXSATs In Trouble

The failure of *NOAA-14* has been a long-running saga. The scanner developed problems in mid-October, and since that time, NOAA engineers have worked to identify the cause of the problem and - if possible - develop a solution. It seems that this problem cannot be fixed, though the satellite's a.p.t. and h.r.p.t. transmissions have been allowed to continue.

The failure of *RESURS-01-N4* removed another provider of a.p.t.,

leaving us depleted this winter. Meanwhile, I decided to install a new mast for a.p.t. reception, and another for my h.r.p.t. dish. No sooner had I dismantled the former than a mild illness struck and I had to abandon outside work for several days. The sycamore tree that hides satellite transmissions from me in the south has lost its leaves, allowing me to detect the NOAAs from three degrees elevation instead of 30°+!

METEOR 3M-N1

Not yet in the WXSAT category, but *METEOR-3M*, carrying the SAGE III instrument, was launched from Baikonur Cosmodrome in Kazakhstan on 10 December 2001 at 1719UTC on a Ukrainian built Zenit-2 rocket. **Vitaly Ippolitov**, of the **Research and Development Centre, ScanEx**, told me that the official document signed by the Minister of Meteorological Ministry of Russia confirmed that there was no 137MHz radio-channel installed on the first in the series - *METEOR-3M-N1* - because of the installation of the MSU-E scanner. This scanner was not originally planned, but the situation with the Russian Earth remote sensing mission *RESURS-O* necessitated the installation of an MSU-E scanner on board *METEOR-3M-1*, so it was installed instead of a.p.t. *METEOR-3M-1* is in a sun-synchronous orbit dictated by the prime experiment SAGE III - Stratospheric and Gas Experiment - an investigation into ozone depletion in a joint NASA project.

METEOSAT MSG-1 - The First (simulated) Images!

Back in the 1980s I was closely involved with a part of the UK's space science research, working in satellite operations. Before a satellite is actually launched, software has to be written to process the data stream that the satellite has been designed to produce. This is not easy to accomplish because until launch is successfully achieved, you do not have any real data to work with. So the idea of 'simulated data' arose. Scientists working with the project generate simulated data for a typical satellite pass and the satellite operations team then write and check out their processing software, and hopefully debug the system prior to launch.

During autumn, the thought occurred to me that Eumetsat had probably derived some simulated image data for the new METEOSAT Second Generation (*MSG-1*) satellite, so I contacted their public relations department and asked whether such data was available for publication. To my delight, Ms Siân Daniel of the EUMETSAT User Service Helpdesk immediately replied, informing me that such data was not only available, but they would send me a copy on CDROM!

Within a few days, the data arrived, in

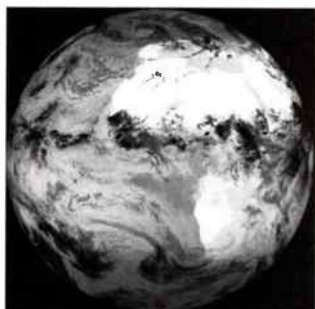


Fig. 8: MSG-1 channel 7 simulated image.

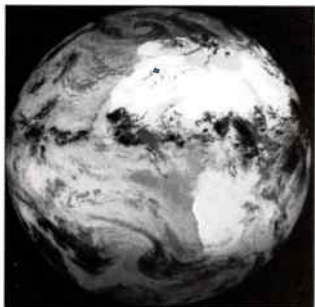


Fig. 9: MSG-1 channel 8 simulated image.



Fig. 10: MSG-1 channel 9 simulated image.

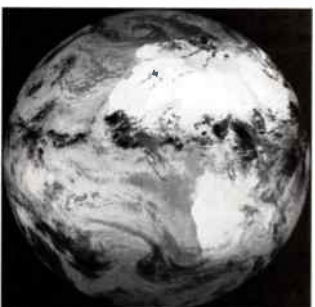


Fig. 11: MSG-1 channel 10 simulated image.

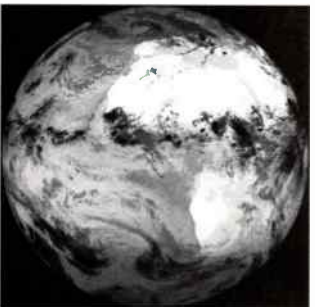


Fig. 12: MSG-1 channel 11 simulated image.

Fortran-90 format, so I spent some time reading the notes. Fortran (formula translation) is a computer language that I learnt in 1968, so I was pleased to realise that similar software continues to be used 30 years later.

Unfortunately, my home computer cannot read the files without additional software, so I contacted Eumetsat once more, and was delighted to receive a reply from Ms Zoe Hall advising me that they would look into the possibility of sending me actual processed images. A week later, I received a CDROM carrying a selection of simulated images from each channel on MSG-1. What can I say but a public thank-you to the staff on the Eumetsat Help-Desk.

MSG-1 Images

To understand the images, we have to understand the background to their generation. METEOSAT SG-1 is going to replace the current METEOSAT (M-7) geostationary WXSAT, positioned over the longitude of Greenwich, a replacement forming probably the most significant upgrade ever undertaken by Eumetsat. Only its longitude position remains the same!

METEOSAT-7 provides us with two image data streams: WEFAX and Primary Data. The latter comprise a sequence of images from three channels - visible-light, near infra-red (water vapour) and infra-red (thermal). MSG-1 increases this to 12 spectral channels.

The objective of the MSG mission remains largely the same: multi-spectral imaging of cloud systems, the Earth's surface, and radiance emitted by the atmosphere. The new systems will provide improved radiometric, spectral, spatial and time resolution, compared to the first generation METEOSAT. The main payload of the MSG satellite is the imager - the Spinning Enhanced Visible and Infra Red Imager (SEVIRI).

SEVIRI will have two scan modes and these will be controlled by ground command. The most commonly used (nominal) mode will be *full disc scan*, but there will also be the capability of a *limited scan*. The duration of full disc scan will be 12 minutes. For the limited scan, the number of scan lines is programmable, so the duration will be proportional to the number of scan lines. Retrace (the operation in which the satellite repositions itself from the end of one scan to the start of the next) and on-board calibration will take three minutes. The nominal repeat cycle therefore lasts 15 minutes for the full disc image and a shorter, programmable repeat cycle for limited scan operations.

'Resolution' is defined as the distance between centres of adjacent instantaneous fields of view at the sub-satellite point, and is fixed at 3km for the VNIR (very near infra-red) channels and 1km for the broadband visible channel (HRV). The image from the SEVIRI instrument comprises a set of 12 spectral channels located in different windows and absorption bands in the solar and terrestrial spectrum. The location of the thermal infrared channels in the

atmospheric spectrum has therefore been carefully selected.

Without the earth's atmosphere, all radiation from the universe (significantly, the sun) would arrive on earth without filtering. In our atmosphere, the gases oxygen, nitrogen, carbon dioxide and water vapour predominate. There are also small amounts of ozone and other pollutants released from cars and other sources. Each of these gases will absorb some of the radiation, and in a very characteristic manner, such that a scientist can identify the gas just by measuring the frequency of the absorbed radiation. Students can have a most interesting time measuring the radiation that comes through the atmosphere and identifying the chemicals along its route from the spectrometer graphs - yes, this was the project that I did during my degree studies!

The result of adding together the parts of the frequency spectrum that the components of the atmosphere extract, leaves a set of 'windows' through which most of the radiation can come through unscathed. These are the windows (frequency bands) chosen by weather scientists for the sensors on MSG-1 via the SEVIRI unit, for imaging earth.

I asked Eumetsat staff to describe how the data was prepared. Colin Duff explained: "This module creates simulated MSG images from MTP (METEOSAT Transition Program) image data. The simulation involves two steps: firstly adjustment of the image counts to account for differences in the spectral range and calibration, and secondly re-sampling to the horizontal resolution of MSG. The VIS0.6, VIS0.8, NIR1.6 and HRVIS channels will be re-sampled from the MTP VIS channel; the WV6.2 and WV7.3 channels will be simulated from the MTP WV channel; the IR3.9 channel will be simulated from a combination of the MTP IR and VIS channels; other MSG channels will be simulated by re-sampling of the MTP IR channel. MTP in this case is METEOSAT-7.

Channel 1 - visible (centre wavelength 0.63µm - micrometres)

This spectral range is similar to that on AVHRR (NOAA high resolution images). The original image is simply spectacular, and survives considerable zooming.

Channel 2 - visible (centre wavelength 0.81µm)

This spectral range is also similar to the corresponding AVHRR channel.

Channel ir1.6 - infra-red (centred on 1.64µm)

This range is similar to the NOAA AVHRR channel.

Channel ir3.9 - infra-red (centred on 3.92µm)

This range is similar to the NOAA AVHRR channel, and permits the detection of low cloud and fog.

Channel ir8.7 - new band centred on 8.70µm.

This new channel will help to discriminate between ice and water clouds.

Channel ir10.8 - infra-red centred on 10.8µm
This range is similar to the NOAA AVHRR channel.

Channel ir12 - infra-red centred on 12.0µm
This range is similar to the NOAA AVHRR channel.

Channel wv6.2 - water vapour centred on 6.25µm
This range is similar to the equivalent channel on the current METEOSATs.

Channel wv7.3 - water vapour centred on 7.30µm
This range is also similar to the water vapour channel on METEOSAT.

Channel ir9.7 - ozone absorption channel.

Channel ir13.4 - carbon dioxide absorption channel.
This is similar to the channel on the GOES WXSAT VAS sounder.

Channel HRV - broadband visible-light (0.5 to 0.9µm) or high resolution visible (HRV)
This broader range is similar to the visible-light channel currently disseminated on METEOSAT-7.

I hope that readers will agree that this first look at MSG-1 'images' provides a fascinating glimpse at the future of METEOSAT imagery. During 2002 I plan to provide more information about developments leading to the launch of MSG-1, when it is released. At the present time I have no information about the development of amateur-level hardware systems being developed by any company, but my enquiries continue.

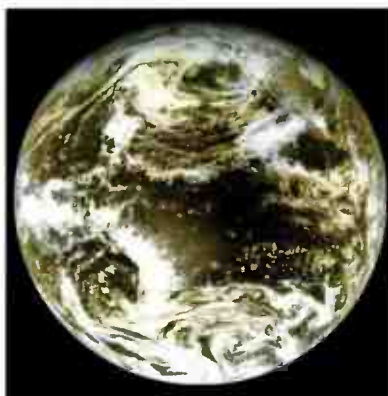


Fig. 15: Total eclipse of the sun from GOES-W on 14 December.

Solar Eclipse From GOES-W

David Taylor advised me that an image from GOES-W (west), the geo-stationary WXSAT positioned over the Pacific ocean produced an image showing the intense darkness caused by the total solar eclipse on 14 December at 2100, as it crossed the Pacific. The dark central cone of the eclipse is near centre-right of this image. GOES-W is one of two geostationary WXSATs that Americans can monitor - the other being GOES-E (east) that is barely a few degrees above the western horizon as seen from western counties in Britain.

New Software For Geostationary WXSATs

David has written a new program that applies some of the image interpretation and other techniques from his h.r.p.t. and SatSignal software to geostationary satellite images - those received from the GOES, GMS and METEOSAT satellites. The program can process images received either directly from the satellite, or downloaded from the Internet. One of the impressive features of his new program is that different combinations of METEOSAT WEFAX

images can be combined. Using various segments, a full disc can be produced, or just the C02 and C03 images, amongst other combinations. The majority of features work normally, though registration offers direct E-mail support. David runs a self-help mailing list as well. The download program is available from the site: <http://www.davidtaylor.pwp.blueyonder.co.uk/software/geosatsignal.htm>

Additional modules are required for running the program, and all are linked from the main page. The *autoget* program is also available, and this (as the name implies) will download the necessary image files from the Internet, though requires registration for its use. An extra overlay is also available from Bracknell, and this adds mean sea-level pressure isobars to the image. I plan a more detailed review in a future edition.

Cedric Roberts received the NOAA-16 image seen in Fig. 16 on 10 December during the run of clear skies. Britain and near-by Europe are seen, clearly under the influence of a large anticyclone with a central pressure of 1042mm. Cedric comments: "This gave uninterrupted sunshine for most areas of the UK, with the exception of a belt stretching from the Midlands through to the Wash which was covered by a belt of radiation fog. This was brought about by the near calm conditions and clear skies and is clearly shown on the image".

Kevin Hughes sent an a.p.t. image from NOAA-12 showing the anticyclone still over Britain on 12 December.



Fig. 16: NOAA-16 h.r.p.t. 1314UTC anticyclone over Britain on 10 December from Cedric Roberts.

Frequencies

NOAA-12 and NOAA-15 transmit a.p.t. on 137.50MHz.
NOAA-14 transmits (unsynchronised) a.p.t. on 137.62MHz.
METEOR 3-5 uses 137.30MHz in normal operations.
OKEAN-4 and SICH-1 use 137.40MHz for brief transmissions.
RESURS 01#4 ceased transmissions (formerly 137.85MHz).
METEOSAT-7 (geostationary) uses 1691 and 1694.5MHz for WEFAX.



Fig. 13: MSG-1 channel 12A simulated image.

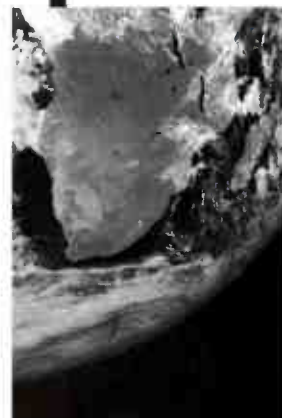


Fig. 14: MSG-1 channel 12B simulated image.



Fig. 17: NOAA-12 12 December from Kevin Hughes.

Timestep



PROsat for Windows is used by most leading weather satellite enthusiasts. They have grown up using Timestep products and now rely on the superior image quality and ease of use provided by PROsat for Windows. Features such as real time reception, auto-scheduling, temperature readout, totally automatic reception of all NOAA's and Soviet satellites and automatic animation have made PROsat the preferred package. For weather satellite systems contact :

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Interference Update

Following-on from my recent snippets on interference reduction, **Hitek Electronic Materials Ltd.** have sent me a couple of the ferrite kits for evaluation. If you've ever tried tackling an interference problem, you will understand just how frustrating it can be trying to locate the appropriate size and type of ferrite rod or ring to help suppress the numerous leads in a typical station. Clearly, someone in Hitek has recognised this problem and put these kits together as a solution.

The two samples sent to me comprised a pack of round and toroid bare ferrites and a pack of very neat clip-on ferrites. The presentation was excellent as you can see from the photos.

The kits are supplied in a plastic video box with full technical details included on a flysheet in the lid. Each ferrite is neatly held in place with moulded foam - it really is a very professional job.

The range of sizes in the kits had been very well chosen and there was a size available for every lead on my computer installation. Probably the best part is the price - the set of 12 clip-ons were just £12.99 whilst the 15 cylinders and toroids were £10.99 and that included post and packing. At these prices, this is one of those must haves for the radio toolkit.

If you want to order or find out more, pay a visit to their web site at www.hitek-ltd.co.uk E-mail at sales@hitek-ltd.co.uk or 'phone their sales dept on (01724) 851678. My thanks to Hitek for supplying the review samples.

Skysweeper v2.6

Those people at Skysweeper have been at it again - talk about constant development! It seems hardly a month passes and another mode or two is added to this ever-growing decoding system. The latest incarnation to come my way is v2.6, which features the addition of ACARS and MIL-ALE - a significant upgrade considering it's for free, if you have version 2.0 or later.

As the program expands, so does the size of the download and version 2.6 runs to about 6Mb if you take the whole pack in one lump. If you have a slow connection, or just don't want to be on-line for a long time, you can get the program in four 1.44Mb chunks if you prefer. Once downloaded, installation is simple and you don't even need a new activation code if your old version was 2.3 or later. Here's a summary of the changes for this latest version.

New features:

- * ACARS decoder
- * MIL-ALE decoder
- * All text decoders and chat box have a log file to save received text
- * Easier volume and recording control settings

Improvements:

- * HF-FAX reception improvement

Although the new modes are very welcome, the addition of a log file for all received text is a significant improvement. This is a feature that most enthusiasts take for granted and it had been sadly missed in *Skysweeper*. The changes to the volume and recording level controls comprise the addition of two new buttons on the toolbar. Although this might seem a

very minor change, it is very useful in practice.

If the volume needs adjusting, a single click on the appropriate button and you can adjust or mute any of the available channels. Similarly the record button gives you the option to switch between different inputs and to very quickly adjust the recording levels. This is an area that new users often ignore to their peril.

Whilst soundcard decoding is extremely convenient, you do need to make sure that the audio levels are within the working range of the card. If you overload the card, you will pick up lots of errors. Similarly, if the audio level is too low, you will also encounter problems. So you can see that having easy access to the level adjustments is pretty essential.

To get your copy, you need to pay a visit to Pervisell's web site, as they are the UK agents for *Skysweeper*. They can be found at: www.pervisell.com/ham/skysweeper

Upgrade Or Downgrade?

A word of warning if you're thinking about changing to *Windows XP* or *NT* you may find some of your radio software doesn't work! This is not a particularly new problem, but the simple fact is the NT platform does not have vxd support for programmers to communicate with the comports. This shouldn't effect Soundcard based systems, but programs like *RadioRaft* or *SkySpy* and others that use the COM ports could well run into problems.

So what can you do about it? Well you can't really solve the problems in *XP*, but you can run an older *Windows* version on the same machine. By far the best way to achieve this is to use a program like *Partition Magic* to create a separate bootable partition on your hard disk. You can then load an earlier *Windows* version into that partition.

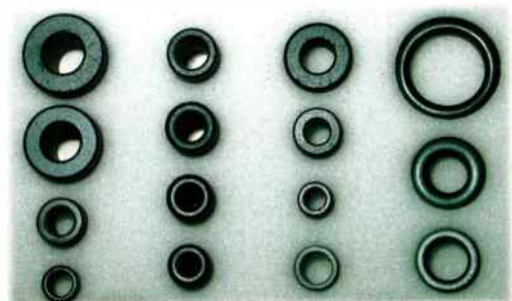
By far the most stable platform to go for is *Windows 98SE*. When you have this set up *Partition Magic* handles the switching between the two systems. If you've discovered a better answer to the problem, then please drop me a line so I can pass it on. My thanks to **Phil Perkins** of **Pervisell** for the update.

Klingenfuss News

Yes its that time of year again when the annual update of the *Klingenfuss Guide to Utility Stations* is released. The 2002, 20th edition, follows the same format as its predecessors, but interestingly features 800 less frequencies than the 2001 edition. This may be hard evidence of the gradual decline in the use of h.f. bands for utility signals. It also shows that this handbook



Hitek ferrite kit.



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Latest releases from Klingenfuss.

is to help you identify stations you've logged rather than find stations in the first place.

In addition to the frequency list, the guide provides lots of useful supporting information including FAX schedules, Q codes and station listings by countries to name a few. The Utility Guide is supported by the new 2002 Super Frequency List. This excellent CD-ROM provides access to databases of utility and broadcast stations.

The list is well organised and the search facility is extremely fast. Now this list is good for finding stations to monitor. For example, if you want to check out Hamburg Met. you just have to type Hamburg into the search and you can see all the active frequencies. In addition to the databases, the CD-ROM contains a host of useful text files and lots of screenshots of decoded signals.

The new *Shortwave Frequency Guide* is ideal for those listeners that just want a fairly basic frequency guide that covers both utility and broadcast stations. The layout is very simple and easy to use and provides an excellent up-to-date reference.

For availability and prices see the *Short Wave Magazine Book*

continues to be the leading up-to-date frequency reference.

The core of the guide is the frequency list, which provides a host of useful data on each of the stations. One word of warning if you're new to this type of guide, don't expect to be able to hear all the stations listed. The purpose of the guide

Service. My thanks to Joerg Klingenfuss for supplying the review copies.

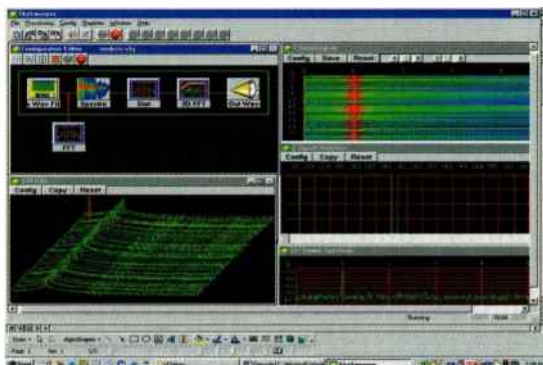
Don't Despair!

After noting the decline in frequencies in the *Guide to Utility Stations* you may be worrying that our hobby is dying away. However, you need to note that there have been a host of recent innovations that have revitalised commercial use of h.f.

One of the most important has been the development of Automatic Link Establishment (ALE). This computer based system overcomes the traditional requirement for experienced operators to make the best of an h.f. radio network. ALE will automatically

monitor a series of links over a number of bands and keep accurate track of which frequencies/stations are providing the most reliable links at any point in time.

Another important development is the adoption of PACTOR II as an international standard for h.f. data comms. This system is now very well established and is ideally suited to temporary links such as



The latest SkySweeper in full scale analysis mode.

those required so often by aid agencies.

There are also a number of p.s.k.-based h.f. data systems being developed that provide uncannily reliable data links, even when the signal appears to be buried in the noise. Although there might be fewer frequencies in the Klingenfuss guide, this hides the fact that there are lots of new stations and modes to be found.

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