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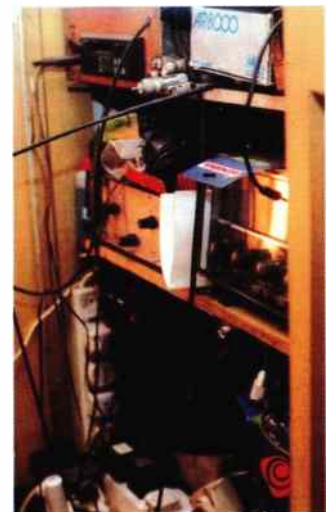
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SWM Author Info To provide you with a ready reference here are the contact details of all our regular authors.

Amateur Bands
Clive Hardy G4SLU,
c/o SWM Editorial Offices
E-mail: clive@pwpublishing.ltd.uk

Attention 123!
Enigma, 17-21 Chapel Street,
Bradford, West Yorkshire BD1 5DT.
E-mail: enigma@pwpublishing.ltd.uk

**Bandscan
Bandscan America**
Gerry Dexter,
c/o SWM Editorial Offices.
E-mail: gdexter@pwpublishing.ltd.uk

Bandscan Australia
Greg Baker, PO Box 3307, Manuka,
ACT2603, Australia. E-mail:
greg.baker@pwpublishing.ltd.uk

Bandscan Europe
Martin Peters, c/o SWM Editorial
Offices. E-mail:
martin.peters@pwpublishing.ltd.uk

Decode
Mike Richards G4WNC,
49 Cloughs Road,
Ringwood,
Hampshire BH24 1UU. E-mail:
decode@pwpublishing.ltd.uk

DXTV
Keith Harner and Garry Smith,
17 Collingham Gardens,
Derby DE2 4FS
E-mail: dxtv@pwpublishing.ltd.uk

Info In Orbit
Lawrence Harris,
55 Richville Road,
Shirley,

Southampton S016 4GH.
E-mail:
info.orbit@pwpublishing.ltd.uk

**LM&S and
Maritime Beacons**
Brian Oddy G3FEX,
Three Corners,
Merryfield Way, Storrington,
West Sussex RH20 4NS.

Off The Record
Andy Cadier,
28 Romney Avenue,
Folkstone, Kent CT20 3QJ
E-mail:
off.the.record@pwpublishing.ltd.uk

Propagation
Jacques d'Avignon VE3VIA
E-mail:
jacques@pwpublishing.ltd.uk

Satellite TV News
Roger Bunney,
35 Grayling Mead,
Fishlake,
Romsey,
Hampshire
SO51 7RU.
E-mail:
roger.bunney@pwpublishing.ltd.uk

Scanning
Dave Roberts,
c/o SWM Editorial Offices.
E-mail:
scanning@pwpublishing.ltd.uk

ShackWare
Jerry Glenwright,
56 Denbigh Road, Norwich, NR2 3HH.
E-mail: shackware@pwpublishing.ltd.uk

Sky High
Peter Bond,
c/o SWM Editorial Offices.
E-mail: skyhigh@pwpublishing.ltd.uk

SSB Utilities
Graham Tanner,
64 Attlee Road, Hayes,
Middlesex UB4 9JE.
E-mail: ssb.utilis@pwpublishing.ltd.uk

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

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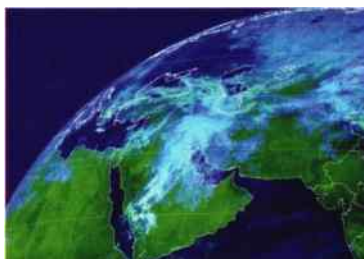
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COMING UP NEXT MONTH IN JUNE 2002 SWM

- * **SSB Utilities Special** by Graham Tanner.
- * **JW** looks back at something a little different - classic Zenith portables.
- * **The low-down on pirate activity** with Dave Roberts.
- * **DAB - Explained.**
- * **The Other Man's Shack.**

*contents subject to change

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EDITOR:
Kevin Nice, G7TZC, BRS95787

NEWS AND PRODUCTION EDITOR:
Zoë Shortland

ART:
Steve Hunt & Bob Kemp

EDITORIAL ADDRESS:
Arrowsmith Court, Station Approach,
Broadstone, Dorset BH18 8PW
Telephone: (01202) 659910
Facsimile: (01202) 659950

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

pwpublishing.ltd.uk
Simply add the name of the person you wish to contact. For example:
kevin.nice@pwpublishing.ltd.uk

Web site:
www.pwpublishing.ltd.uk/swm

ALL ORDERS FOR BOOKS, BACK ISSUES & SUBSCRIPTIONS

(01202) 659930
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FINANCE/ACCOUNTS
Alan Burgess, Finance/Office Manager
Telephone: (01202) 659940
Facsimile: (01202) 659950

ADVERTISEMENT DEPARTMENT
(Broadstone)
ADVERTISING SALES:
Chris Steadman MBIM

ADVERTISEMENT TYPESETTING & PRODUCTION:
Peter Eldrett
Telephone: (01202) 659920
Facsimile: (01202) 659950

ADVERTISEMENT MANAGER:
Roger Hall G4TNT
PO Box 948, London SW6 2DS
Telephone: 020-7731 6222
Facsimile: 020-7384 1031
Mobile: (07885) 851385

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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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Technical Help

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

ED'S comments

Spring is without doubt here and with the change to BST the lighter evenings extended the usable outdoors working time. I'm finding this very useful for a couple of antenna projects I'm currently busy with. Over the past few days I've been very fortunate to have a clear sky once the sun has finally set. Fortunate because the three evenings prior to typing this piece there have been some good ISS and docked shuttle passes which have been visible to me. Those of you subscribed to the SWM-Readers list will have noted the posting by SWM author John Locker and others. John has a web-cam attached to his telescope and has captured some of the passes. If you want to view John's pictures then point your browser at www.satcom.freeseve.co.uk

I've had a radio tuned to 259.7MHz for some days now but as yet, I've failed to hear any ISS traffic. I guess nothing's been said as the space craft has passed over my location. The orbit has brought it as close a 600km from my antenna so it is quite possible to hear signals.

Minimal

This month brings the 'Other Mans Shack' of Eric Bray. Eric and I have been in discussion for some time now regarding featuring his set-up. As I note in the feature on page 40, Eric was reluctant to share what he seems to consider, a somewhat minimalist shack. All along, I've been keen to persuade him otherwise. It really doesn't matter what you've got, it's how you use it that counts. This really is true of this hobby as with many others. An enthusiastic approach is the most essential item in any shack. Being kitted out like Baldock doesn't guarantee results or even more importantly enjoyment. Don't forget, this is a hobby, we do it for pleasure - surely?

Warning

We've had lots of correspondence recently and as a consequence 'QSL' is bigger this month, if the numbers of letters keeps up I'll have to consider increasing the space given to your letters permanently. There are, as always, some very interesting points raised. Not least of which by Nick Sparkes with his report on the appalling possibilities the future holds for the h.f. and lower bands. It seems to me that common sense needs to prevail here. The future of broadcasting both national



and international, if we are to take heed of Nick's warnings, is to rely solely on a network of closely spaced transmitters providing a high signal density at v.h.f./u.h.f., satellites and cable based services. Over the next two issues of SWM we'll have a look at two digital radio broadcast systems. Next month we take a look at DAB, especially interesting as it is now possible to buy a PC interface to receive DAB broadcasts for under £40.

Alternative

A recent announcement by BT may provide an alternative to the death of long distance propagated signals by supplying an alternative to the likes of interference generating PLT. In my opinion it makes for a much more practical option to have non-fixed services. BT unveiled

plans to roll out wireless local area networks (LANs) across the country providing business users with high speed Internet links.

The company wants to provide the wireless LAN stations at more than 4000 UK locations, including airports, train stations, motorway service stations and cafes, by June 2005.

Phase one will see 400 wireless LAN hotspots across the UK by June next year which will enable high speed Internet access to a company's computer network without the need for wires or cables.

Costa Coffee and motorway services group Welcome Break are both understood to be close to signing deals with BT.

The announcement is in expectation of a move by the Radiocommunications Agency to allow the commercial use of wireless LAN spectrum.

BT will initially target businesses wanting a wireless LAN in their office and on the move. A similar package for the residential market will follow later in the year.

The speed of the network will be 2Mb/s, which is five times faster than the proposed third-generation mobile 'phone services. City analysts said that BT had stolen a march on mobile 'phone operators which are also interested in rolling out wireless LANs but are yet to announce their intentions. It is also seen as good for BT as the company could release a lucrative communication package which would be difficult for mobile operators to match. BT is also expected to re-enter the business mobile 'phone market through a tie-up with mmO2, the unit it spun off last year, offering E-mail and voice services.

I mentioned a few months back that I consider this seems the logical way forward. As with most systems of this scale, commercial pressures are the ones that forge the way. I sincerely hope that whatever the outcome that we are able to use the h.f. spectrum for cheap reliable long distance communication.

WV 73 Kevin

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.

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Dear Sir

I look forward every month to getting *SWM* and enjoy reading most of the articles, however, I do agree with David Pannell's letter in the March *SWM* as there does seem to be a growing number of pages and more emphasis on computers and things that do not seem like radio. I would hope topics like these will not slowly squeeze out the real concern, i.e. the stuff that comes through the airwaves - this is the reason I buy *SWM*.

Everyone seems to have an air of s.w. decline about them and surely printing so much about computers and the joy of listening via the Internet can only encourage people to retire their radio to the wardrobe. I don't know about everyone else, but anytime I turn my radio onto s.w. there are countless stations to listen to on the bands, and so what if the BBC and other 'super stations' cut back on s.w. output, I don't exactly spend time up poles and on roofs and tuning around at all hours to pick up BBC World Service and the likes anyway.

I do enjoy logging new far-away stations more than actually listening to programming from any particular one and hey, I still use a pencil and paper for logs, but we cannot prevent the digital future and the convenience of it all is apparent and if someone prefers to sit in their living room and listen to Brother Stair through the Internet in digital stereo connected

to their Dolby surround sound hooked up to their hi-fi, well so be it.

But for some of us, here is a for instance. Take a dedicated all weather fisherman who loves nothing better than to cart rods and gear across the countryside and then sit for three hours in the rain and on a muddy bank waiting for a catch, he is not going to be persuaded that it would be better for him to pop down to the local shop just because it has started to sell a conveniently gutted, cleaned and ready packaged fish for him to buy, so do you see what I mean?

Fishing aside though, I would be glad to see 'LM&S' extended to allow for details of the logger's radios and antennas and results of experiments with different types - surely this is what s.w.ling is all about? A chart of the s.w. stations set out like that already used for the tropical, l.w. and m.w. station listings would be dead handy for reference as well.

The 'Other Man's Shack' is good. I would like to see photos of antenna systems as well as listening posts. Ever since I was young and operating on UK27/81 CB radio I would gaze up in wonderment, not to the heavens, but to the chimneys and gables of the houses to behold the vast arrays of smokey aluminium poles and shiny 5/8 waves that whipped in the breeze and stood silhouetted in the evening sun adorning the sky. Sad. You don't see as many antennas

now besides the dish type.

I see from the last couple of editions plenty of letters you received are about the John Wilson's offerings. I don't read it a lot though, not because I object to anything, it's just that I find it hard to understand and if I was young and beginning to gather an interest in long distance radio and happened to open *SWM* to John's page, those diagrams would scare me. I am sure he is good at his job, but I am left wondering do the majority of readers actually have £1000+ receivers like the ones tested and reviewed so often? I use a Roberts R827, Sony AN1 and a Icom IC-R2 connected to a discone in the loft, which I use occasionally - not quite esoteric, but they all work well from my location.

One of Mr Pannell's ideas was to open a Q&A column, which would be good as I have a question and that is, what are maritime beacons and what should I listen for if I wanted to receive them? Things like this may seem and appear common knowledge, but it is not always the case for some of us.

Anyway, I shall carry on buying *SWM*, but I have a confession to make before I go. I did not fill in my survey, sorry, I am kicking myself now because I have just found it.

Patrick Wylie
N. Ireland

Dear Sir

Is Radio Dead?

This question covers a broad spectrum of topics. Radio has evolved and is still evolving, so I think that it is a long way from death, but as one branch diminishes, then another takes its place. The hobby of both listening to and transmitting on the amateur bands is one case in particular.

In earlier times, the amateur signals were easily heard on the ordinary broadcast receivers of the day, but not anymore, with most modes either unintelligible or simply unheard. After WWII a considerable amount of military surplus hit the market place. A large number of good general coverage receivers were released, often as new (at a price! they only look cheap compared to today's wages), but a source of modifiable 'units' at a much lower price was also available, making amateur construction affordable to all with an interest.

The magazines of the day were full of 'how to modify' articles. The 'ready made' market hardly existed at this point. At this time, also with demobed 'surplus' WT operators wishing to take up the hobby, the RAE was the stumbling block, not Morse. Now the reverse is the case (up to the introduction of the Foundation licence).

Modern times bring modern highly sophisticated, miniature and multiband transceivers, the price making amateur construction less competitive and the home-constructed project has little resale value in spite of the cost of the new components used. We are all becoming more operators than

constructors (QRP and Microwave excluded). We mainly construct only peripheral devices for our h.f./v.h.f. equipment. Some don't even possess basic tools and have difficulty with a mains plug, coaxial connectors are something best left to an 'expert' and we all know the definition of one of those!

The hobby faces still more competition from other electronic activities, computers having a foot in both camps, for the BC listener some stations move exclusively to Internet and satellite. The amateur also has gateways to enable transworld communication using only a hand-held, plus all the logging and decoding software can make the computer an essential part.

In the UK, radio (other than UK broadcast), seems to appeal less to the young than the more mature (us old codgers, even we listen to Saga FM!). The clubs seem to have an average age around that of retirement, few youngsters seem to stay long with the hobby, but then the few youngsters who stay certainly lack the apathy of a large number who describe themselves as amateurs, owning all the most expensive gear, but nonetheless remain mostly non-operational, apart from their exclusive nets.

Yes, class distinction is certainly alive and well within the hobby, the Morse being a prime example. If the rest of us can keep on talking to each other, ignoring 'class' callsign series, etc., whilst the listeners carry on listening, and sometimes let us know that they can hear us, then radio can go on for at least a bit longer!

I suppose I could ramble on further, but to finish, I guess as long as some are prepared to

put more into the hobby than they take out, then its safe, but let the passive, I am bored entertain me brigade take over, then the amateur side will surely die.

On a different subject, I find some of John Wilson's comments cruelly to the point and to pour any form of criticism onto anyone's pride and joy is a good way of upsetting people, but then I wasn't at the front of the queue when tact was being handed out either. The truth often hurts and John doesn't confuse fact with opinion.

The need to service professional equipment beyond the very basic requires equally expensive test equipment and as I was taught, 'Wise men nor fools, can't work without tools', unfortunately, the fool often tries without even the most basic of documentation or test equipment and that dreaded screwdriver tightens everything that can be tightened. Bearing in mind that alignment is seldom a cause of failure.

The high cost of professional servicing and routine calibration leads me to wonder if a considerable number of items appearing as surplus are well into the area when MTBF has run the best part of its course and also appear in the BER category. This may not be such a problem to the ex-professional who has managed to retain some reasonable test equipment and a source of parts, after all, the hourly rate becomes merely a labour of love...or obsession leading to baldness and near insanity.

A. Malcolm G8DEC
Worcs

continued on page 31

Communiqué

News and Products

Future Plans

The **Stoke on Trent Amateur Radio Society** meet every Monday and Thursday evening from 1930 onwards at the 45 Club, Lancaster Road, Newcastle, Staffs. The Society offers occasional intermediate RAE courses and c.w. practice and are active on h.f., v.h.f. and u.h.f., especially 4m and ATV. Future plans include talks, film nights and rally trips. A warm welcome is extended to any former members who wish to rejoin! Please contact **Albert G4DHO** on **(01782) 638801** initially with any membership and club enquiries.

World DX Club

International short wave broadcast stations started their summer schedules on March 31st. The World DX Club publishes a 12 page pamphlet listing the times and frequencies of English broadcasts, in country order, which is constantly updated, so that the information is always as accurate as possible when you order. The guide covers over 100 broadcasters and is available for 50p or two IRCs from **Arthur Ward, 17 Motspur Drive, Northampton NN2 6LY**. The club also has a website: <http://www.worldxclub.org.uk> with the latest members logbook and a selection of articles from the club's monthly magazine *Contact*.

Support Your Local Mill

National Mills Weekend is an annual event organised by the Mills Section of the SPAB (Society for the Protection of Ancient Buildings), the national society for protecting our historic windmills and watermills. Since the Mills Section began persuading millers and mill-owners to open their doors over a decade ago, a growing number of mills have become available to visitors. This year it is anticipated that over 350 mills will be open to the public, from the north of Scotland to the south coast, from Wales and Cornwall in the west to East Anglia.

It is not only the countryside that mills are still to be found. In the past, many were built to serve towns and urban areas and a number survive, including some that will open for the first time this year. New Hall Mill, Sutton Coldfield (West Midlands) and the Town Mill, Lyme Regis (Dorset) are two recently restored working watermills that will be welcoming visitors over National Mills Weekend.

This year, on the **11 & 12th May 2002** the **Denby Dale ARS** are co-ordinating the radio side of the National Mills Event alongside the society for the protection of ancient buildings. An invitation goes out to all clubs and individuals to join them by putting on a special event station at a wind/watermill near your home.

There is an award for hearing or working ten mills stations, all that is required is a copy of your log to **Sue GOWFE** with a donation of £3 payable to Denby Dale ARS. The money will go to the SPAB to help with the restoration of mills. Visit www.qsl.net/g4cdd where you can obtain more information, along with a list of stations taking part and other developing information.

History Of Defence Electronics

The *SWM* Newsdesk has recently had a letter from Anne Stobbs, Publicity Officer, Friends of CHiDE at Bournemouth University, who wonders if any *SWM* readers would be interested in CHiDE (Centre for the History of Defence Electronics) which was formed in 1995 at Bournemouth University for the purpose of collecting and preserving personal records of historical interest on defence electronics, embracing such subjects as radar, sonar, communications, countermeasures, etc., from World War II to the present day.

There is an association of 'The Friends of CHiDE', which meets periodically for an autumn symposium, a lecture every spring and for summer, visits to places of interest, such as the Air Defence Radar Museum near Norwich; HMS *Collingwood* in Portsmouth, Bletchley Park, Kensington, etc. The next event is the Spring Lecture at Bournemouth University on 2nd May, which will be on Over The Horizon radar.

If you are interested and would like to find out more, contact **Anne Stobbs, Publicity Officer, Bournemouth University, Studland House, 12 Christchurch Road, Bournemouth, Dorset BH1 3NA**.



Harrow's Events

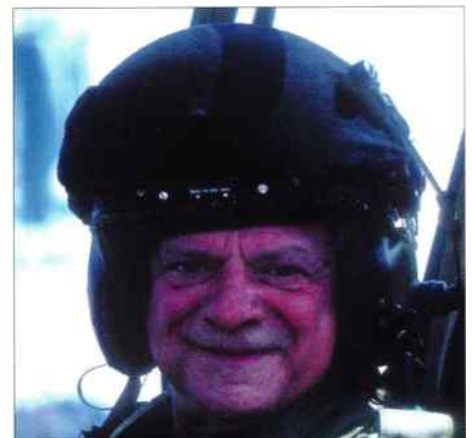
The **Radio Society of Harrow** meet every Friday from 2000 at The Harrow Arts Centre, Uxbridge Road, Hatch End, Middlesex. Just a few up and coming events include: April 26: Chris G4AUF - Recent Developments in the Mobile 'Phone Industry, April 27: International Marconi Day, May 3: Informal, May 5: GB2DHH Operating Day, May 6: May Day At The Manor - this takes place at

Harrow Heritage Centre - the club are hoping to have the GB4FUN bus again and will put on a station and display of amateur radio activities, May 10: Club Dinner - join the club for a leisurely meal at the Vine Taverna, South Ruislip, May 12: Dunstable Downs Radio Club Boot Sale, May 17: Committee meeting, May 18-20: Visit to F6KRR. Further details from **Jim Ballard** on **(01895) 476933** (home) or **0207-278 6421** daytime, E-mail: g0aot@thersgb.net

2002 Air Events

Ian Doyle has submitted the following list of Air Events that may be of interest to *SWM* readers. Many of you will now be aware that the ever popular Mildenhall Air Fete and Middle Wallop Airshow have cancelled. However, there are still a number of limited opportunities to catch the Mil Air action - please note, it is always important to check with the organisers, especially given current world events.

Date	Event	Contact
June 2-3	Southend Seafont Airshow Queens Jubilee Flypast London (TBA)	(01702) 215166
June 9	Cosford Airshow, Salop	(0870) 6062014
June 29-30	RAF Waddington Airshow, Lincs	(01522) 726100
July 13	RNAS Yeovilton, Somerset Airshow	(01935) 456752
July 17	RNAS Culdrose Air Day, Cornwall	(01326) 574121
July 21	RIAT, RAF Fairford, Glos	(01285) 713300
August 31- September 1	Southport Seafont Airshow	(01704) 500893
September 14	Leuchars Battle of Britain At Home Day	(01334) 839000



Celebrity aviation enthusiast David 'Del Boy' Jason posing for the camera at last year's RIAT. (Ian Doyle).

Analogue Radio

In the public service arena there is some uncertainty on what integrated communication infrastructures will look like over the next decade. Whatever the debate, it is important that police, fire and ambulance services find a credible solution to allow them to meet the increased pressures placed on them by political bodies and the growing role played by 'consumers'. Ian Lockyer, Marketing Executive of **Icom (UK) Ltd.** went to see John Stewart, Communication Officer for Sussex Ambulance Service Trust (SAST) to see what role analogue technology is



making in this critically important area.

John Stewart has a central role that involves the design, procurement, training and maintenance of an integrated communication system. With the importance placed on response targets, patient welfare and the security of its ambulance staff, communications has never been as important and as critical to the success of the service.

The county's communication infrastructure is essentially split into two areas. An outer arc, covers Chichester through mid Sussex to Hastings. There is an inner arc, which covers Littlehampton to Eastbourne (essentially the area covering the South Downs). There are eight transmitters in the outer arc and six transmitters on the inner. The trust uses quasi-synchronous transmissions on these channels, which allows a high degree of coverage and allows BT to change the routing without the effect of delay. Previously, if BT changed the line, you had a poor quality signal and a wait for an engineer to turn up and tune the system back in.

Sussex Ambulance Fleet comprises over 80 Accident & Emergency vehicles, 90 Patient Transport Service (PTS), 10 response cars (Vauxhall Vectra), 7 Toyota Land Cruiser 4x4s and 11 motorcycles. The varied response vehicles allow a flexible approach to incidents. The Trust also uses a Police helicopter that is always crewed by a Sussex Ambulance Paramedic, along with a Police Officer and pilot. This new helicopter is jointly

funded by the Police and Ambulance Services.

The role played by radio has grown in importance, giving many general applications for Ambulance staff. Radios allow crews to talk to each other and to control, allowing them to give reports very quickly. Hand-held radio especially, to allow crews to

communicate away from vehicles. Radio gives the immediate facility to call for back up, thus giving each member of staff peace of mind and providing a more effective service for patients. In fact, the SAST was one of the first organisations to purchase the IC-F3GT, Icom's flagship hand-held v.h.f. transceiver in the UK.

Around 50 Icom hand-held transceivers have already been put into the SAST radio scheme, allowing personnel to be away from the vehicle. John Stewart further added, "We have put two new repeater base stations into our area which now gives us an impressive 90% hand-held coverage across the country".

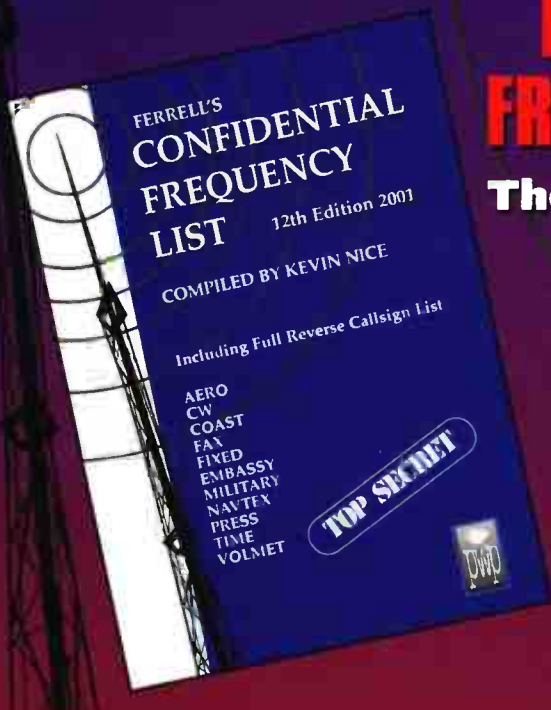
SAST is currently in the process of

planning for a new emergency control vehicle for use at major incidents. It will have a dedicated radio/comms area and a dedicated command area. John Stewart said, "we are looking to fit a wide range of radios, including the IC-F1610 data radios, MRP-2000 mobile repeater as well as Icom airband and marine radios.

Icom (UK) Ltd. can be reached at **Sea Street, Herne Bay, Kent CT6 8LD, Tel: (01227) 741741, FAX: (01227) 741742**, or visit www.icomuk.co.uk



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Communiqué

News and Products

Special Event

As briefly mentioned in last month's *SWM*, the **Scarborough Special Events Group** will be sending this QSL of the steam locomotive *Green Arrow* to all who make contact with, or send s.w.l. reports to GB5SF active during the weekend of 18-19th May. More details from **Roy Clayton G4SSH**, Chairman, on **(01723) 862924**.

GB5SF



Scarborough Flyer - No 27

Scarborough Special Events Group

Summits On The Air

Now that the sun is out (sometimes!), operating portable is more enticing. If you enjoy hill walking, then **Summits On The Air (SOTA)** may well be of interest. SOTA is an award scheme that aims to give radio amateurs some new goals to achieve. The SOTA team has defined a list of hilltops that 'count' for the award.



Each hilltop has a number of points associated with it (usually related to its height). Awards can be won by collecting points. They are available for both summit 'activators' and 'chasers' (those who contact activators from the warmth of their shacks). All bands and modes can be used, or even a simple 2m handy is sufficient to allow you to start participating. The award started in March, and already over 40 hilltops have been activated! Full details and sets of rules can be downloaded from the SOTA website at <http://www.sota.org.uk>



Each hilltop has a number of points associated with it (usually related to its height). Awards can be won by collecting points. They are available for both summit 'activators' and 'chasers' (those



RALLIES

April 28: The Aldridge & Barr Beacon Amateur Radio Club will be holding their 3rd Surplus Radio & Electrical Sale at the Aldridge Community Centre, Anchor Meadow, Middlemore Lane, Aldridge. Doors open 1030 till 1430 and admission is just 50p. **Charles** on **(01922) 636162**.

April 28: The Andover Radio Amateur Club will again hold a Spring Boot Sale at the Village Hall in Wildhern. Details from **Terry G8ALR** on **(01980) 629346** or **Jim G4NWJ** on **(01980) 610594**.

May 6: The 9th West Wales Amateur Radio & Computer Rally will be held at Penparcau School, Aberystwyth. Doors open 1000 till 1530. Admission is £1. There will be good parking facilities, with easy access for disabled visitors and traders for all stalls. Demonstrations of h.f., v.h.f., on the air. Amateur Radio and computer traders, Bring & Buy, clubs and Special Interest Groups. Talk-on S22. Further information from **Ray GW7AGG** on **(01686) 628778** or E-mail: mwmg01@aber.ac.uk

May 6: The Dartmoor Radio Rally is to be held at Pannier Market, Tavistock, Devon, in the same new location as last year, giving plenty of space for traders to display their wares and for visitors to see them and talk to old friends. There is also access for disabled visitors. Plenty of public car parking within five minutes walking distance. There will be trade stands, a Bring & Buy and refreshments. Doors open at 1030 (1015 for disabled visitors). Talk-in on S22. Beautiful views over Dartmoor, ideal for picnics, so why not bring the family? **Ron G7LLG** on **(01822) 852586**.

May 12: The Dunstable Downs Radio Club will be holding its 19th Annual National Radio Car Boot Sale at Stockwood Country Park, Luton, Bedfordshire. Site opens from 0900 till 1500 - leave M1 at junction J10' and follow signs for 'The Mossman Collection'. There will be a talk-in on S22. More information and booking form access from www.ddrcbootsale.freereserve.co.uk or write to: **DDRC, PO Box 4053, Dunstable, Beds LU5 5ZJ** enclosing an s.a.e. FAX enquiries to **(01525) 383898** or E-mail: ddrc@magstripe.demon.co.uk

May 19: The Midland Amateur Radio Society are holding their Drayton Manor Radio & Computer Rally at Drayton Manor Park, Fazeley, Tamworth, Staffs. The main traders will be in three marquees, there will also be a large outside flea market, a Bring & Buy, local clubs and societies and special interest stands. Doors open from 1000 onwards. More information from **Peter G6DRN** on **0121-443 1189** (evenings please).

May 26: The Spalding & District Amateur Radio Society Annual Rally takes place at the Springfields Exhibition Centre, Spalding. There will be club and trade stands, refreshments, free car parking, car boot area, tombola and raffle. Overnight camping is available by prior arrangement. **Ray M0CTM** on **(01775) 711953** or **John G4NBR** **(07946) 302815**. Alternatively, visit www.sdars.org.uk

May 26: The Stirling & District Amateur Radio Society are holding a mini radio rally at Menstrie Scout Hall, near Stirling. Doors open 1030. There will be traders, a Bring & Buy and lots more. Check out www.qsl.net/gm6nx, E-mail: bcoan@tiscali.co.uk or telephone **Brendan GM0BWR** on **(01259) 761299**.

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

LM&S



Sometimes messages addressed to me are sent via the Internet to the SWM office in Broadstone. The SWM staff have to print them out and then post them to me because I have no access to the Internet. If the originator has not included his/her full postal address and a reply is required it has to be posted to the SWM office and then sent via the Internet.

The extra work for the SWM staff and resulting delays could be avoided if queries and contributions are sent by post direct to me at the above address.

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 February.

Favourable conditions for the reception of the broadcasts from Ríkisutvarpid (RUV) in Reykjavik, Iceland, were observed during the early hours of the 16th by **Simon Hockenhuil** in E.Bristol. At 0120UTC he picked up the sky waves from their 300kW outlet at Gufuskalar, W.Iceland, on **189kHz** and logged the transmission as SINPO 24442. He then tuned to **207kHz** and heard their 100kW outlet at Eidar, E.Iceland, which rated 23342 at 0123.

Over in Co.Down **Eddie McKeown** (Newry) noticed a marked improvement in the transmission from Clarkestown, Eire, on **252kHz**. He says "Where previously the Atlantic signal was side-splattering ridiculously - here it went as far as 234 - there is relatively little splatter now, allowing reception of the previously submerged 261 and a vastly improved Kalundborg on 243". During his checks he logged Team Talk on 252 as 55555 at 1305; R.Ropa via Burg on 261 as 32332 at 2024; RUV via Eidar on 207 as 22222 at 2022 & via Gufuskalar on 189 as 34233 at 0114. Kalundborg, Denmark on 243 was 42232 at 0616.

The new all talk sports programme broadcast by Team Talk on **252kHz** was found to be 'off air' during the morning and early afternoon of the 19th by **Adam Birchenall** (Coalville, Leics). Instead, he was surprised by good reception from co-channel Tipaza, Algeria!

The reception of an unknown transmission under

Roumoules on **216kHz** was reported by **Ernie Strong** (Ramsey, Cambs) in 'LM&S', SWM February '02. The 'Luxembourg Effect' was suggested as a likely cause by two contributors to this column last month, but Ernie is wondering if the planned co-channel station in Norway was testing. There have been no other reports to indicate that it is operational - any information about it would be welcome here.

Medium Wave Reports

A search for broadcasts from m.w. stations in E.Canada and E.USA was made before midnight on February 1 by **Adam Birchenall** in Coalville. At 2332 he heard CJYQ in St.John's, Newfoundland, on **930kHz**, playing mainly Country and Western music. At 2342 he tuned to **1510kHz** and heard a disc jockey named Chris Wallace announce the station ident as '1510 the zone and sporting news radio' - unusual, because all stations in the USA have a callsign allocated to them, which should be included in the ident to avoid confusion! The transmission rated SINPO 33333.

The many m.w. stations in the Middle East, N.Africa, Europe and Scandinavia attracted the attention of some listeners in the UK - see chart. Higher than usual signal ratings were noted by **George**

Millmore (Wootton, IoW) while compiling his extensive log. The sky waves from Duba, Saudi Arabia (2000kW) on **1521kHz** rated SIO 333. During daylight he logged the BBC R-4 transmission from Crystal Palace on 720, which replaced Lots Road, as SIO 333. In Ramsey, Cambs, it averaged 43453, but after dark co-channel interference reduced the rating to 42422.

While listening to the broadcasts from Virgin on **1197kHz** at around 1500 **Harry Richards** (Barton-upon-Humber) noticed that quite a few of their outlets on 1197 were audible. He says "not exactly a delay on them, but they were all separate". Some time ago he reported that Virgin via Moorside Edge on 1215 could be heard about one second before their co-channel outlet in Hull. Such effects must render reception unacceptable for listeners who live on the fringe of the service areas of these transmitters. Differences in the routing of the 'music lines' to the transmitters is the most likely cause of this problem, which could be corrected.

The ground waves from some quite distant local radio stations were received during daylight - see chart. In Northampton, **Fred Wilmshurst** heard forty-nine stations including ILR Classic Gold, Exeter on 666, noted as 23242; ILR Classic Gold GEM, Derby on 945 as 35444; BBC R.Derby on 1116 as 45444.

Short Wave Reports

In the **25MHz (11m)** band 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) continued throughout February. There were no reports about them from distant places this time, however it seems likely that they reached the intended target areas well except during periods of intense solar activity. There were a number of reports from listeners in the UK, but reception here is unreliable because it is dependent upon back scatter and other propagation modes.

The SINPO ratings quoted in the latest UK reports for DW were 35534 at 0810 by **Vic Prier** in Colyton; 45445 at 0915 by **Bernard Curtis** in Stalbridge; 34333 at 1120 by **Thomas Williams** in Truro; 45544 at 1203 in Newry; 45522 at 1210 in E.Bristol; 25343 at 1229 by **Fred Pallant** in Storrington; 35444 at 1325 in Northampton.

Those for RFI were 32422 at 0900 in Colyton, with a strong echo on the 24th; 45443 at 0910 in Stalbridge; 35343 at 1035 in Northampton; 25433 at 1127 in Storrington; 34333 at 1040 in Truro; 24222 at 1135 by **Peter Pollard** in Rugby; 35232 at 1202 in Newry; 35522 at 1205 in E.Bristol.

Listeners in the UK have reported good reception over long distances in the **21MHz (13m)** band. R.Australia's broadcast to Pacific areas via Shepparton on **21.725** (Eng 0200-0900) was rated 44433 at 0830 by **Stan Evans** in Herstmonceux. It is followed by a broadcast to Asia via Shepparton on **21.820** (Eng 0900-1400), rated 33333 at 1055 by **David Hall** in Morpeth.

Also mentioned in the reports were R.France Int via Issoudun? **21.580** (Fr to Africa 0700-1700), rated 44422 at 0822 by **Rhoderick Illman** in Oxted; R.Pakistan **21.465** (Eng, Ur to Eur 0800-1100) 44444 at 0840 in Colyton; DW via Wertachtal? **21.560** (Eng to Africa 0900-0945) 44444 at 0900 by **Sheila Hughes** in Morden; R.Japan via Yamata, Japan **21.755** (Jap to Oceania, Australasia 0800-1000) 44433 at 1000 in Newry; R.Prague, Czech Rep **21.745** (Eng to E.Africa, M.East 1130-1200) 45444 at 1143 in E.Bristol; HCJB Quito, Ecuador **21.455** (Eng [u.s.b.]) 24422 at 1203 in Rugby; BBC via Ascension Is **21.470** (Eng to S.Africa 1300-1900) 35343 at 1410 in Northampton; Channel Africa via Meyerton, S.Africa **21.725** (Eng to W.Africa 1300-1455, Sat/Sun) 44333 at 1455 in Truro; BBC via Cyprus **21.660** (Eng to S.Africa 1400-1700) 23322 at 1646 by **Michael Wasley**, while in Settle, N.Yorks; WYFR Family R. via Okeechobee, USA **21.525** (Fr, Eng

Long Wave Chart

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

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

Listeners:-

- (A) Adam Birchenall, Coalville, Leics.
- (B) Simon Hockenhuil, E.Bristol.
- (C) Sheila Hughes, Morden.
- (D) Eddie McKeown, Newry.
- (E) George Millmore, Wootton, IoW.
- (F) Fred Pallant, Storrington.
- (G) Ernie Strong, Ramsey, Cambs.
- (H) Michael Wasley, while in Settle, N.Yorks.
- (I) Thomas Williams, Truro.
- (J) Fred Wilmshurst, Northampton.

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★ Conn: N-type

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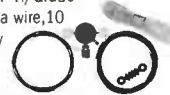
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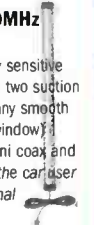
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Freq. Range 25-2000MHz Length 720mm
Desk Top Antenna for indoor use with triple vertical loaded coils. The tri-pod legs are helically wound so as to give it its own unique ground plane. Complete with 5mts of low loss coax and BNC plug.
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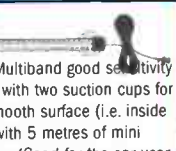
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Freq. Range 0.05-30MHz Length 770mm
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M.East 0600-1400) 24432 at 1238 in Oxted; UAER, Dubai **13.675** (Eng to Eur 1330-1350) 44444 at 1330 in Woodhall Spa; R.Austria Int via Moosbrunn **13.730** (Eng to Eur. M.East 1430?1500?) 44444 at 1430 in Truro; Vatican R, Italy **13.765** (Eng to Africa 1550-1610) 43333 at 1550 in Morden; UAER, Dubai **13.675** (Eng to Eur 1600-1640) 45544 at 1602 in Northampton; R.Denmark via Kvitsoy, Norway **13.800** (Da to Eur, M.East, Africa 1630-1655) 45455 at 1637 in Settle; R.Norway Int **13.800** (Norw to Eur, M.East, Africa 1700-1730) 45444 at 1710 in E.Bristol; R.Canada Int via Rampisham, UK **13.650** (Russ 1700-1729) 55555 at 1715 in Stalbridge; AIR via Bangalore **13.605** (Eng to Africa 1745-1945) 45434 at 1830 in Colyton; DW via Julich? **13.780** (Eng to Africa 1900-1945) 33433 at 1904 in Rugby; VOA via Botswana **13.710** (Eng to Africa 2000-2200) 34554 at 2000 in Larnaca, Cyprus; R.Canada Int via Sackville **13.650** (Fr, Eng to Eur, Africa 2000-2159) 44444 at 2100 in Appleby; R.Australia via Darwin **13.620** (Eng to SE.Asia 2200-0000) 44343 at 2221 in Newry.

Some of the broadcasts in the **11MHz (25m)** band travel very long distances to reach the UK. Among those noted were KNLS Anchor Point, Alaska **11.765** (Eng to Asia? 0800-0900), rated 34433 at 0800 in Dudley; R.New Zealand Int **11.675** (Eng to Pacific areas 0706-1005) 34333 at 0851 in Oxted; R.Australia via Shepparton **11.650** (Eng to New Guinea, Solomon Is N.America 1100-1700) 33433 at 1126 in Morpeth; AWR via Agat, Guam **11.980** (Eng to Far East 1330-1400) 43333 at 1330 in Morden; R.Australia via Shepparton **11.660** (Eng to Asia 1430-1700) 33233 at 1500 in Rugby; R.New Zealand Int **11.725** (Eng to NE.Pacific, Fiji, Samoa, Cook Is 1650-1750) 22222 at 1650 in Truro.

Also mentioned in the reports were R.Prague, Czech Rep **11.600** (Eng to NW.Eur 0800-0827), rated 55544 at 0820 in Herstmonceux; R.Netherlands via Tashkent **12.070** (Eng to Asia, Far East, Pacific 1430-1625) 34243 at 1430 in Newry; China R. Int, Beijing **11.675** (Eng to Asia 1400-1500) 35433 at 1455 in E.Bristol; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.U.S.A 1300-1730) 45544 at 1636 in Northampton; Israel R, Jerusalem **11.605** (Eng to Eur, N.America 1700-1730) 34333 at 1715 in Woodhall Spa; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) 45434 at 1825 in Colyton; All India R. (AIR) via Bangalore **11.620** (Ind, Hin, Eng to Eur 1745-2230) 34222 at 1940 in Settle; DW via Wertachtal? **11.615** (Port to Africa 2000-2050) 35444 at 2000 in Storrington; R.Damascus, Syria **12.085** (Ger, Fr, Eng to Eur 1900-2105) 32222 at 2005 in Appleby; RAI Int, Rome **11.880** (Eng to E.Africa 2025-2045, Port to E.Africa 2050-2110) 54445 at 2035 in Stalbridge; VOIRI Iran **11.740** (Eng to SE.Asia, Pacific 2130-2230) 35443 at 2216 in Manchester.

In the **9MHz (31m)** band R.Australia's broadcasts via Shepparton have been received by listeners in the UK on the following frequencies: **9.710** (Eng to New Guinea, Pacific areas 0800-0900), rated 24343 at 0845 in Oxted; **9.475** (Eng to Asia 1100-1400, 1530-1900) 43433 at 1625 in E.Bristol; **9.500** (Eng to Asia, Eur 1900-2130) 22222 at 2125 in Truro.

Also mentioned in the reports were HCJB Quito, Ecuador **9.780** (Eng to Eur 0700-0900), rated 44444 at 0700 in Dudley; Swiss R.Int via Julich, Germany **9.885** (Fr, Ger, It, Eng to Nr.East, Africa 0600-0800) 45344 at 0733 in Newry; R.Netherlands via Wertachtal **9.860** (Eng to Eur 1130-1325) 55544 at 1145 in Herstmonceux; R.Polonia (Polish R, Warsaw) **9.525** (Eng to Eur 1300-1359) 34333 at 1325 in Woodhall Spa; V of Korea, Pyongyang **9.325** (Ger to Eur 1800-2000) 42333 at 1915 in Colyton; R.Thailand, Udon Thani **9.535** (Eng, Ger, Fr, Thai to Eur 1900-2115) 34554 at 1905 in Manchester, 43544 at 1940 in Larnaca, Cyprus & 33443 at 2030 in Storrington; Voice of Armenia, Yerevan **9.960** (Eng to Eur 2040-2100) 44333 at 2040 in Newry; AWR via Moosbrunn, Austria **9.660** (Eng 2100-2200) 44444 at 2130 in Appleby; R.Cairo, Egypt **9.990** (Fr, Eng to Eur 2000-2245) 33333 at 2152 in Rugby; R.Taipei Int via WYFR Okeechobee, USA **9.355** (Eng to Eur 2200-2300) 44444 at 2200 in Morden; WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs) 33333 at 2210 in Stalbridge; R.Canada Int via Sackville **9.770** (Eng, Fr to W.Eur, Africa 2200-2259) 44444 at 2246 in Settle; R.Romania Int, Bucharest **9.570** (Eng to Eur

2300-0000) SIO 444 at 2314 by **Francis Hearne** in N.Bristol; WEWN Birmingham, USA **9.975** (Eng to N.America 2200-0000) 35343 at 2327 in Northampton; HCJB Quito, Ecuador **9.745** (Eng to N.America 0100-0400) 33333 at 0245 in Morpeth; China R.Int via Sackville, Canada **9.790** (Eng to N.America) 32332 at 0355 by **Bill Griffith** in W.London.

Some of the broadcasts in the **7MHz (41m)** band are intended for listeners in Europe. Those mentioned in the reports came from R.Prague, Cz.Rep. **7.345** (Ger 1100-1130), rated 44444 at 1127 in Oxted; R.Denmark via Kvitsoy, Norway **7.490** (Dan 1630-1655) 24323 at 1654 in Settle; R.Norway Int. **7.490** (Norw 1700-1730, also to N.Africa) 55333 at 1712 in E.Bristol; R.Slovakia Int. **7.345** (Various 1630-1830) 44444 at 1733 in Newry; R.Polonia (Polish R), Warsaw **7.285** (Eng 1800-1855) 32333 at 1850 in Rugby; AIR via Bangalore **7.410** (Eng, Hind 1745-2230) 42333 at 1925 in Colyton; Voice of Turkey, Ankara **7.125** (Eng 1930-2030) 35443 at 1939 in Manchester; R.Budapest, Hungary **7.135** (Eng 2000-2030) 44444 at 2000 in Appleby; Voice of the Mediterranean, Malta via Russia **7.440** (Eng 2000-2100) 44333 at 2025 in Truro; R.Polonia (Polish R), Warsaw **7.290** (Eng 2030-2130) 43333 at 2100 in Morden; Voice of Russia **7.300** (Eng 2100-2200) SIO 444 at 2126 in N.Bristol; R.Bulgaria, Sofia **7.500** (Eng 2200-2300) 45544 at 2225 in Northampton; China R.Int via Russia **7.170** (Eng 2200-2330) 43333 at 2240 in Herstmonceux; R.Minsk, Belarus **7.210** (Eng) 54554 at 0310 in W.London.

While beaming to other areas World Harvest Radio (WHRI) via Maine, USA **7.580** (Eng to N.America) was 55545 at 2335 in Stalbridge; R.For Peace Int. (RFPI), Costa Rica **7.445** (Eng to N.America? 0200-1000) 44444 at 0340 in Morpeth; Voice of Nigeria, Ikorodu **7.255** (Eng to W.Africa 0500-0700) 33333 at 0505 in Newry.

Many broadcasts to Europe are carried by the **6MHz (49m)** band. Some originate from R.Japan via Skelton, UK **5.975** (Eng 0500-0600), rated 43444 at 0500 in Appleby; R.Vlaanderen Int via Julich, Germany **5.985** (Eng 0800-0830) 55544 at 0825 in Herstmonceux; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 34433 at 0900 in Colyton; Deutsch Welle (DW) via Julich **6.140** (Eng Service) 55445 at 0920 in Stalbridge; Sudwestrundfunk, Germany **6.030** (Ger) 33333 at 0925 in Oxted; R.Netherlands via Julich, Germany **6.045** (Eng 1130-1325) 45544 at 1130 in Northampton; Deutschland R, Berlin **6.005** (Ger 24hrs) 23323 at 1652 in Settle; R.Slovakia **6.055** (Various 1630-1830) 44444 at 1736 in Newry; R.Sweden, Stockholm **6.065** (Eng 2030-2100) SIO 444 at 2034 in N.Bristol; R.Prague, Cz.Rep **5.930** (Eng 2100-2130) 43444 at 2100 in Dudley; China R.Int via ? **5.965** (Eng 2100-2155) 43333 at 2100 in Morden; R.Finland via Pori **6.120** (Fin 1715-2300) 33333 at 2150 in Truro; R.Austria Int, via Moosbrunn **6.155** (Eng) SIO 333 at 2232 in N.Bristol.

Some intended for other areas may also be received here. They include R.Ext.Espana **6.055** (Eng to N.America 0000-0200), rated 54434 at 0002 in E.Bristol; R.Havana, Cuba **6.000** (Eng to N.America 0100-0500) 33232 at 0100 in Newry & 34433 at 0220 in Morpeth; R.Christian Voice, Lusaka, Zambia **6.065** (Eng to S.Africa 0300-0600) 31332 at 0400 in W.London; WEWN Birmingham, USA **5.825** (Eng to N.America 0000-1300) 33233 at 0913 in Rugby.

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

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



■ Gerry L. Dexter, c/o SWM EDITORIAL OFFICES, ARROWSMITH COURT, STATION APPROACH, BROADSTONE, DORSET BH18 8PW.

■ E-MAIL: gdexter@pwpublishing.ltd.uk

Bandscan America

On the horizon for Radio America in Paraguay's capital, Asuncion, is 'permanent' short wave broadcasting. For some months now the station has been running tests on various frequencies in the 7MHz band and once they find a frequency that performs well for them, they'll be operating on a regular basis.

So far as we know, no one in North America heard the tests or was even aware they were being conducted. That lack of reception was probably also due to the extremely low power being used - sometimes as little as one watt! The power is supposed to be a lot higher once the station is on with a regular schedule. Paraguay is one of the marginally active South American short wave countries, with only Radio Nacional (9.737) heard with any kind of regularity.

Mystery Stations

Several are hearing an unidentified station on 6.715 u.s.b. around 2200 and later. It appears to be a religious broadcaster, perhaps beamed to Africa. However, the language is thought to be Korean and there aren't a lot of Korean speakers in Africa! Adding to the confusion is the fact that the signals are quite strong and steady.

Another mystery encountered recently was a strong station carrying hour after hour of Chinese instrumental music. It recycled at the top of each hour and never included any IDs or any talk at all for that matter. The broadcasts were heard as early as 1600, running through to 2200 on 13.745. It has also been heard on 11.725, 11.825, 11.855, 15.500 and 15.510, as well as on various frequencies in the 31m band. Eventually it was learned that this is a Chinese music jammer trying to 'take out' Radio Free Asia's broadcasts to China.

It may be that the long absent Radio Rumbos in Venezuela has gotten active again. It - or something in Spanish on 4.970 - has been spotted by a couple of DXers just recently. Cuba's Radio Rebelde, which has a recent history of doing a lot of hopping around, has also been noted here.

We can expect to have new short wave targets in Benin, Bolivia, Surinam, the Democratic Republic of the Congo and Burkina Faso in the coming months. Broadcasters in each of those countries have purchased one kilowatt transmitters from HCJB's World Radio Engineering Centre. One such unit has already been in operation for a couple of years now - at ELWA in Liberia (4.760).

All Change

During its relatively short run, US station WGTG in MaCaysville, Georgia, has gone through more than one identity. First the call letters were changed to WWFV and now they've been changed again - to WWRB (World Wide Radio Broadcasting). This most recent change also brought with it a physical move - to Manchester, Tennessee. The station carries a lot of commercial religious programming and operates at various times on 5.085, 6.890, 9.320, 12.172 and 15.725.

WRNO in New Orleans is now carrying the programming of WBSN-FM in that city. WBSN broadcasts religious programs and contemporary Christian music.

A new Chilean short wave station is Radio Parinacota in Putre on 6.010. It is proving to be a very tough to dig out since one has to get past Mexico's Radio Mil using the same frequency.

Their address is **Casilla 82, Arica, Chile.**

Cristal Internacional (5.010) in the Dominican Republic is seeking reception reports. You can send them to **Fernando Herman Gross, Program Manager, Cristal Internacional, Apartado Postal 894, Santo Domingo** or E-mail to: cristalinternacional@hotmail.com

Another new Dominican - it's practically living in Cristal's own tent is Radio Pueblo, which some are hearing on 5.0098.

La Voz del Napo, Ecuador (3.280) is now mostly carrying the programming of Radio Maria Ecuador and may eventually even be purchased by Radio Maria.

Also from Ecuador is Centro Radiofonico de Imbabura, now active on 3.380 and carrying religious programs from 0000 to 0200. Yet another new one is Estereo Carrizal from Calceta on 3.260.

All That's Left

One of the biggest monetary investments in short wave in several years was the multi-million dollar effort Herald Broadcasting (the Christian Science Church) put out in the hope of getting its message to a world-wide audience and, in the process, perhaps adding to the church's declining membership. It hasn't worked. Herald Broadcasting eventually sold WCSN, its original high power station in the state of Maine.

Next to go was KHLI in Saipan, Northern Marianas. All that's left is WSHB in Cypress Creek, South Carolina and now that this one, too, is to be sold. Once that is accomplished, the church's broadcasting division will re-evaluate what approach, if any, it will take with short wave. This unfortunate situation, we have to say, was a case of expecting more than any one medium could deliver, especially when the hoped for results are compared to the enormous amount of money which was spent on building and maintaining large high power stations, as well as on personnel and programming.

We should note that WINB in Red Lion, Pennsylvania, is marking 40 years on the air this year. WINB - along with WNYW and KGEI - were the only private US stations active before WRNO came on the air and started a deluge of private short wave broadcasters many years back. WINB is the only one of the three private stations still on the air. Incidentally, the Voice of America is celebrating its 60th birthday this year.



Canada's private CKFX is using just 10W on 6.080MHz.



The beautiful transmitter site at KFBS, Saipan in the Northern Marianas, operated by the Far Eastern Broadcasting Company

New Stations

Some new or reactivated stations in Peru include Radio Bethel, Arequipa, 5.950 with religious programming; CPN Radio, Arequipa, on 6.141; Radio Estacion 2, Huancabamba on 6.560; and Radiodifusora Comercial (also identifying as La Voz del Vecino) in Nueva Cajamarca on 6.324. Peru remains one of the most active short wave countries - it certainly wins the prize for the Americas.

The US government's Radio Free Afghanistan service (operated by Radio Free Europe/Radio Liberty) now broadcasts in Pashto from 1300 to 1330 and in Dari from 1330 to 1400 on 11.920, 15.525 and 17.775. Also from 1700 to 1730 in Pashto and 1730 - 1800 in Dari on 6.1709, 9.785 and 11.920.

The Bolivian, Radio Mosoj Chaski (3310) has increased its broadcast hours. It now operates from 0800 to 1200 and 2200 to 0200.

Adventist World Radio plans to add five more short wave transmitters at KSDA in Guam. The upgrade will also include a new automation system.

Allen Weiner, operator of WBCQ in Monticello, Maine, still plans to have a transmitter on board a ship and hopes to have it active sometime this summer. It will probably end up transmitting from near some island in the Caribbean.

That's all for this time. We'll be back in three months with another look at the short wave listening scene in North America.

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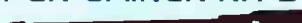
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Simply the Best?

An encounter with one of the giants of the h.f. receiver world. John Wilson gets teary eyed over a Collins classic, the R-390A. It doesn't cloud his judgement or his measurements though.



Anything from the Collins Radio company carries a certain air of mystique, but the R-390A has to be the bearer of the greatest reputation in all the Collins receiver lines. This is the receiver which is reputed to be the finest example of radio engineering of its era, and that stretches from the early 1950s to the late 1980s. Many enthusiasts still rate a good R-390A as the best short wave receiver it is possible to have as a DX listening tool, and I've been waiting to get my hands on one for some time. Patience has its reward, and I was delighted when an enthusiast in the USA who was shipping a fully restored R-390A to a friend in the UK asked me if I would like to review it for *Short Wave Magazine* before final delivery to its new owner. How

could I refuse? There is a huge following for the R-390A in the USA, fuelled by the fact that over 50,000 units were made and large quantities are (or were) available on the surplus market. Such is the reputation of the R-390A that several skilled radio engineers have built successful businesses from total restoration of these receivers, and when I say 'total' I mean **total**. The rebuilt R-390s look as close to new as it is possible to imagine, and each sub-assembly has been carefully brought back to full performance specification, every gearbox has received careful attention, every suspect component has been replaced, and lengthy final alignment carried out, usually resulting in performance well in excess of the original Collins specification. Unlike some UK enthusiasts, the American

hobbyist accepts that keeping one of these classic receivers in top working order is likely to cost serious money, and is prepared to spend dollars in order to get the best possible quality. How refreshing!

Background

Researching the background to the R-390A is made easy by the numerous web sites devoted to this classic receiver, although recent experience serves as a caution not to take what appears on a web page as being necessarily the whole story, rather the opinion(s) of the compiler(s). The receiver was designed by Collins as a lower cost version of the earlier R-390, and the suffix 'A' is important in distinguishing between the two designs. Although designed and first manufactured by the Collins

Radio company, other manufacturers were given contracts to build the R-390A under licence, and according to details given by one contributor, Collins actually manufactured just over 6000 units from a total of more than 50,000. The most prolific manufacturer seems to have been the Electronic Assistance Corporation (EAC) with a contract total of over 15,000 units, and the receiver in my hands was indeed made by EAC under contract number FR 36 039-N-6-00189(E), with a serial number of 3830. This places the date of manufacture as 1967, which compares to the first contract placed with Collins back in 1954. The final contracts appear to have been placed with Fowler Industries as late as 1980-84 which means that the R-390A had an astonishingly long production life of some thirty years. That fact is the ultimate comment on the excellence of the original Collins design, and a tribute to the engineering vision which drove the company. Racal and Marconi (and Railtrack?) had that same vision until the 'bean counters' took over and destroyed the engineering ethos in favour of 'profit centres' and 'modern management'. The results are there for all to see.

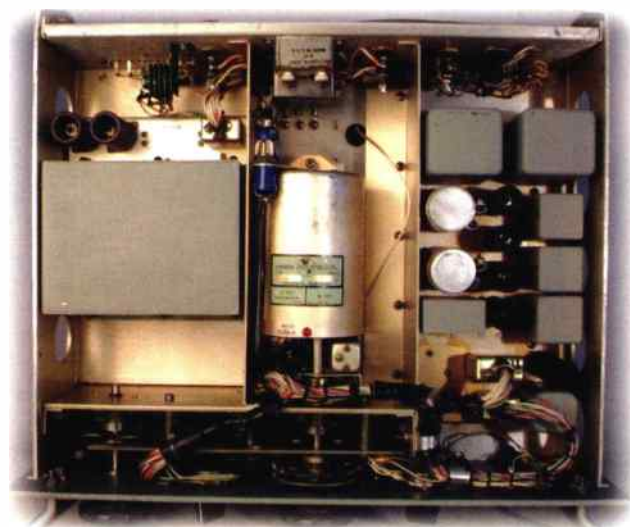
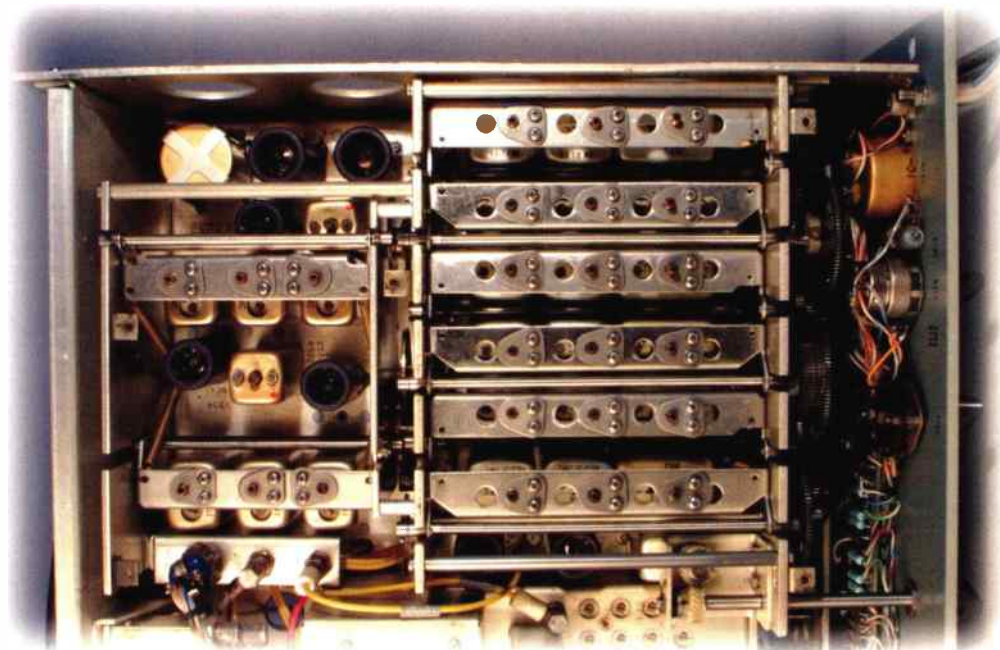
Rugged Mechanical Construction

One of the reasons for the R-390A's ability to survive is the

rugged mechanical construction, based on the use of six separate sub-assemblies bolted to a main frame which is itself mechanically strong. The whole receiver occupies a nineteen inch rack panel of 6U height (10.5 inches for we metric martyrs). Seventeen inches deep, the receiver weighs in at some 85lbs (please don't convert this to kg Kevin!) - (OK, just this once! - Ed.), making it quite a monster to heave around. Coming to my bench immediately after the Ten-Tec RX320 made the room seem a bit crowded, although I suppose that including the PC in the overall RX320 system redresses the balance. Spare

sub-assemblies for the R-390A seem to be readily available in the USA, which must make refurbishment of the assemblies fairly easy, although components are closely packed inside each assembly. The real frightener is the gearbox on the front of the r.f. sub-assembly, which contains more than 200 separate components including substantial cardioid (heart shaped) cams for driving the vertical slug racks up and down. I recall John Thorpe telling me that it was all quite simple when you thought about how these worked, but then he is well ahead of the rest of us in the brain power stakes, and I just continue to marvel and accept that someone at Collins was a minor genius, and the rest of us ought to leave the gearbox well alone unless we have the assistance of a skilled clockmaker.

The front panel layout owes more to the internal arrangements of the mechanics than to any serious attempt to fit them to the human operator, but at least there is a knob for every function and all clearly labelled as you may see from the photographs. The frequency readout is clear, the MHz digits being driven by the 'Megacycle' knob, with the kHz digits driven by the 'Kilocycle Change' knob. Don't even imagine that these knobs are



Simply the Best?

easy to turn. I didn't measure the torque necessary to tune the R-390A, but all jokes about '390A owners having one wrist thicker than the other are true. All is revealed when you take off the top cover and observe just how much mechanical load is placed on the 'Kilocycle' knob by that gearbox and all the cams and levers, although it's

are familiar enough to readers of the magazine, and it is obvious that the R-390A was designed before s.s.b. for communications was a standard feature of receivers, this being catered for by external s.s.b. and i.s.b. i.f. and detector systems. The R-390's c.w. operation is enhanced by the use of a b.f.o. tunable over a

are renowned. The two narrower bandwidths of 1kHz and 100Hz are provided by a classic single crystal filter. When the crystal filter is being used, the 2kHz mechanical filter is also in circuit which improves the skirt selectivity and minimises i.f. system noise. The use of filters in cascade like this was used in the Lowe and AOR



interesting to watch it all happen when you turn the knob. Rather akin to watching the drive linkages on a 4-6-2 steam locomotive, or the crankshaft on a single cylinder mill engine and 40 foot flywheel. The astonishing fact about the tuning is the accuracy and linearity that Collins managed to achieve over each MHz segment using mechanical means (and the superb Permeability Tuned Oscillator). All other controls

± 3 kHz range, together with a sharp audio filter centred on 800Hz and having a razor thin passband. Measurements revealed that the R-390A could hardly be bettered by any other c.w. receiver I have encountered.

Switched i.f. selectivity is achieved by using Collins mechanical filters at 455kHz, with supplied bandwidths of 16, 8, 4 and 2kHz, each filter showing the excellent shape factor for which Collins filters

receiver designs by John Thorpe, and by Kenwood in their R-5000 receiver. A good idea is always worth repeating. The a.g.c. system has three decay time constants selected by a front panel control (5s, 300ms and 15ms), and a manual r.f. gain pedestal can be added to the a.g.c. control voltage. A classic peak clipping noise limiter with variable clipping threshold is fitted, and this works to good effect on a.m. and c.w. signals, but causes audio distortion when trying to receive s.s.b. speech, but this is quite normal for this type of noise limiter.

The two meters gracing the panel measure audio level to the 600 Ω line output and relative r.f. input level. When using manual r.f. gain, the signal level meter is used to show the onset of grid current in the final i.f. amplifier and thus serves to indicate the point at which the receiver is being driven into overload. As I have indicated, the R-390A represents a typical professional communications receiver of the day, and a skilled human operator could have had no

better tool to ply his trade. By comparison, a typical Eddystone receiver of the same period, having similar control functions, would not even be in the same class for weak signal discrimination and overall competence. This is not intended to insult Eddystone, it's just the simple truth that Collins receivers were totally dominant in this field. In fact, my measurements and experience with this particular R-390A gave some truth to the belief that it is still a hard one to beat for ultimate a.m. and c.w. performance, and its following among short wave DXers is well deserved.

Circuit Architecture

In essence the R-390A is a dual conversion receiver tuning the range 8 to 32MHz with (as you might expect from Collins) crystal controlled first conversion down to a tunable i.f. of 3 to 2MHz (it tunes backwards). This tunable i.f. is then mixed with the v.f.o. (p.t.o.) covering 3.455 to 2.455MHz to give a final fixed i.f. at 455kHz where all the selectivity is provided. Well, not entirely true, because there is astonishing selectivity provided by the pre-i.f. tuning, and I will describe this effect later.

Converting the 8 to 32MHz down to the first i.f. calls for

oscillator injection of 11 to 34MHz and this on the face of it would need 23 crystals to cover the range. Collins do it with 15 by using harmonics of the lower frequency crystals - clever thinking. What about the ranges below 8MHz? From 500kHz to 8MHz the R-390A becomes a triple conversion receiver by mixing the lower frequency range with a 17MHz oscillator to produce a 17.5 to 25MHz intermediate i.f. with the main receiver then tuning 17.5 to 25MHz as a first tunable i.f. Sounds quite complicated, but the end result is that you have a receiver that employs low phase noise crystal oscillators for all conversions until the p.t.o. is mixed in, and the p.t.o. itself is a low noise optimised design as you will find when I relate the phase noise measurements for you. Even that is not the end of the story because all the tunable i.f.s are tracked with the tuning knob and provide exceptional levels of r.f. selectivity. You simply must try to see the mechanical activity inside a '390A when the tuning is rotated - it's most entertaining.

Just about every tuned circuit between the antenna and the first 455kHz i.f. stage is mechanically tracked by the two tuning controls, and when in correct alignment the R-390A has extremely good front-end

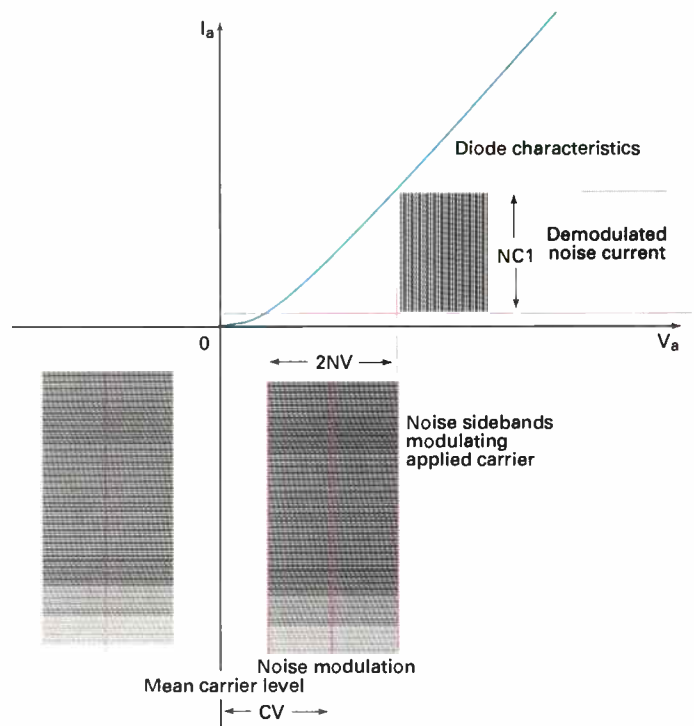
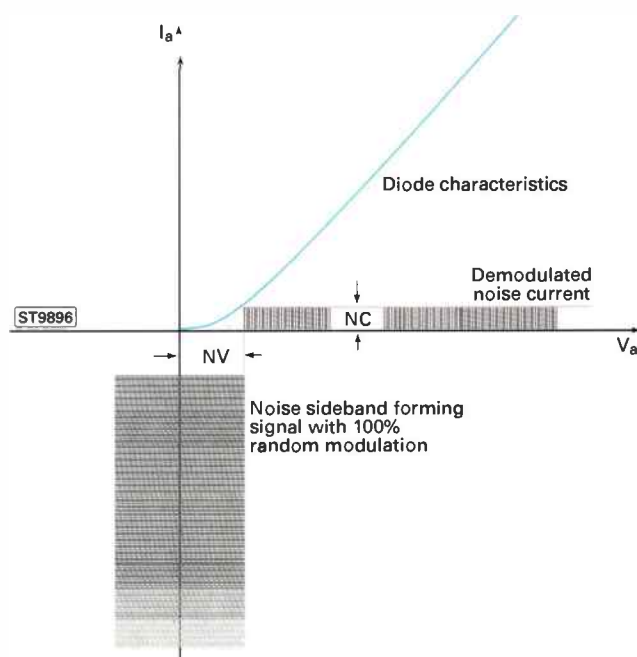
selectivity. The overall gain distribution, something often ignored by designers, has been optimised to such an extent that the receiver in use has a very low background noise level. The method seems to have been to provide just enough gain in each stage and no more, and one 'tweak' is available in the form of an internal receiver gain preset which my friend Chuck Rippel, an acknowledged USA R-390A expert adjusts to find the 'sweet spot' at which signal to noise ratio hits an optimum setting. He says that it takes a little time to get it right, but when adjusted correctly the receiver is brilliant. Let's see what the measurements in **Table 1** tell us.

Table 1:

Frequency (MHz)	Mode	Bandwidth (kHz)	Sensitivity (dBm)
14.2	c.w.	2.0	-124
14.2	a.m.	4.0	-116.5
14.2	c.w.	0.1	-136
14.2	c.w.	0.1*	-140
14.2	a.m.	8.0	-110
9.5	a.m.	4.0	-113
6.5	a.m.	4.0	-111
0.9	a.m.	4.0	-110

* plus audio filter

Sensitivity measured as input level in dBm for 12dB SINAD in c.w. mode, 12dB SINAD with 30% a.m. at 1kHz.



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Note the amazing sensitivity for the keen c.w. operator when using the 100Hz i.f. filter and the audio filter. In this configuration there was virtually **no** noise in the audio in the absence of a signal, which meant that the moment a signal was applied you could

clearly hear it. You do of course need quite keen ears and careful tuning to get the signal into the narrow slot provided by the filters. Now there are sensitivity figures quoted for the R-390A in a.m. with a 4kHz bandwidth which seem to me to be questionable. Sensitivity

of 0.2µV for example (-121dBm) for 10dB S/N ratio at 30% modulation depth are bandied about, with even better figures of 0.1µV for 10dB S/N in 4kHz bandwidth having been seen. Clearly, something is a drift, and over the last year I have been trying to get to the bottom of the discrepancy. My conclusion is that many users of the R-390A, together with those who refurbish and align them, are being led astray by the R-390A Technical Manual which contains instructions on how to carry out a routine sensitivity check to ensure that the receiver is no worse than its quoted design sensitivity of 5µV - yes, that is five, not half. To do this, the manual instructs you to use a carrier modulated at 1kHz to a depth of 30% and switch the carrier plus modulation on and off whilst looking for a 10dB ratio between on and off conditions. Anyone following these instructions in a attempt to measure the ultimate a.m. sensitivity are not in fact measuring it correctly because the 10dB ratio should actually be measured by leaving the r.f. carrier on all the time and switching only the modulation on and off. Why is this so? I can do no better than quote from a definitive book produced by Marconi Instruments many years ago which gives the simplest explanation I know of.

"Measurement on a.m. receivers. The noise generated in the early stages of an a.m. receiver is not normally sufficient to drive the diode detector to the linear part of its characteristic. This is why we usually find that when an unmodulated carrier at a level below the a.g.c. threshold is applied to the receiver, the noise output increases as compared with the noise when no signal is applied.

The explanation is as follows: when no carrier is applied, the noise voltages affect the detector as an infinite number of random sidebands of constant mean amplitude. This, in effect, a very small signal having random modulation at a mean depth of 100%. It is represented in figure 3.5(a) as a block of noise having an effective peak voltage of NV.

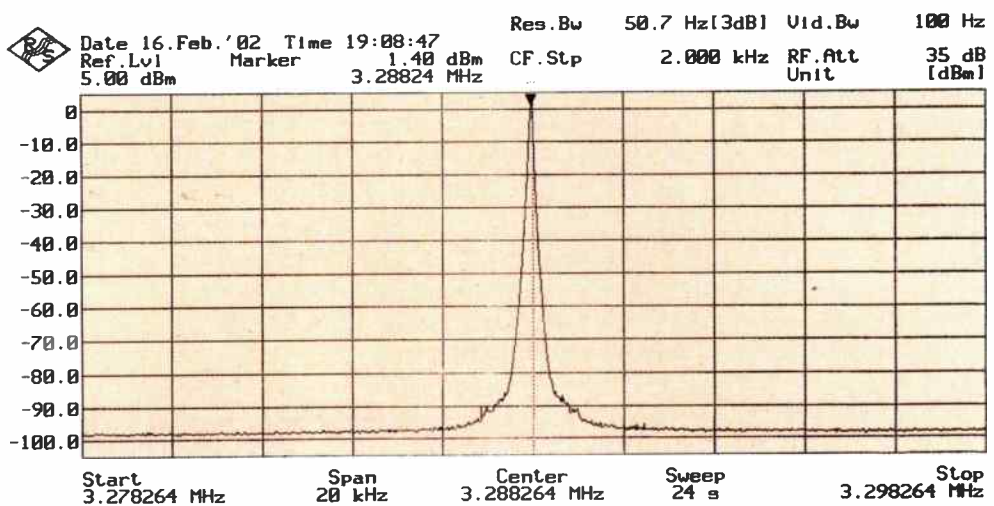


Fig. 1: The R-390A selectivity between the antennae connector and the mixer at 14MHz.

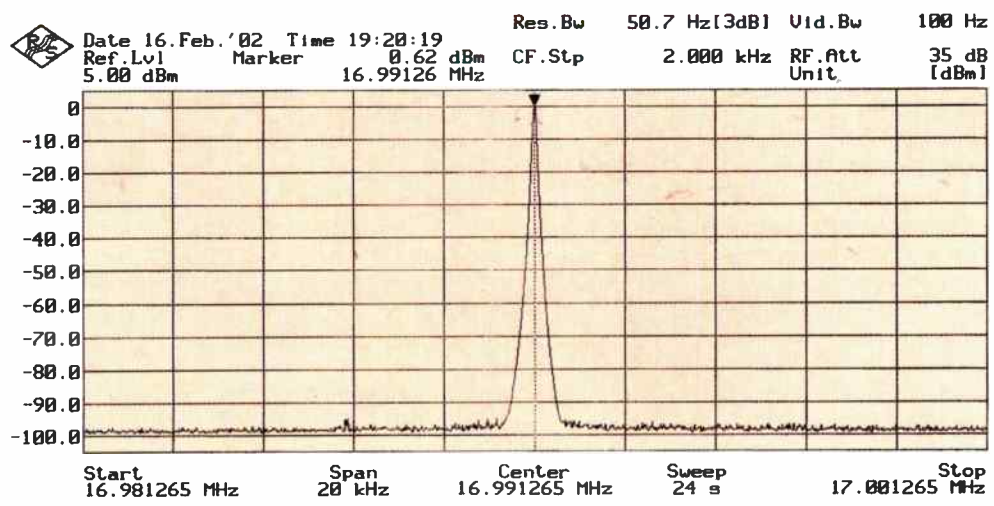


Fig. 2: Good phase noise results, the spectral purity of the conversion oscillator, a classic crystal oscillator.

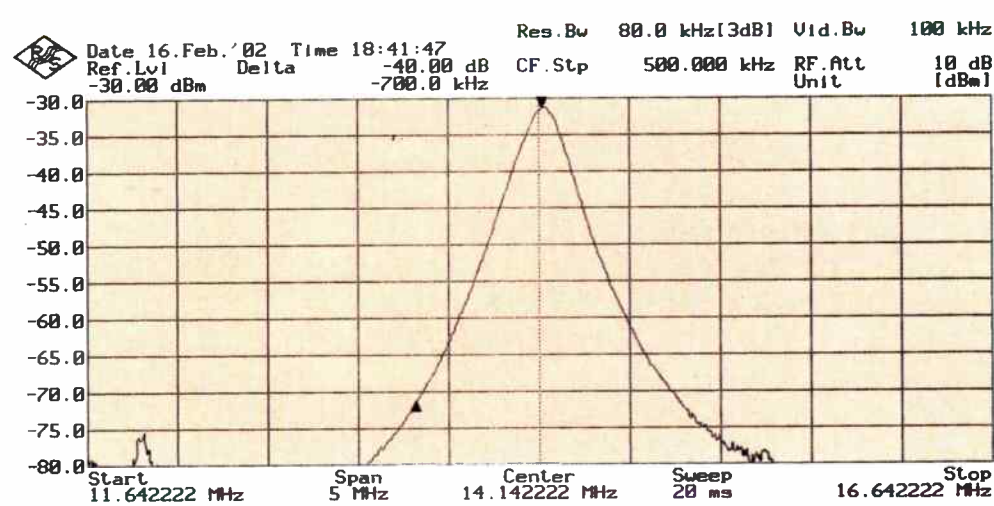


Fig. 3: The Collins v.f.o. (p.t.o.) is almost as clean as a crystal and hugely better than most synthesisers.

When this is applied to a diode detector the demodulated noise current has the effective peak-to-peak amplitude of NC , which is quite small because the noise voltage is not large enough to drive the diode to the steep part of its characteristic.

When a carrier having a peak voltage of CV is applied to the diode, as shown in figure 3.4(b), it is modulated by the noise sidebands to the depth $(NV+CV/INV)$. The diode is then presented with a noise modulated voltage of $2NV$ centred about the level CV , so that the demodulated noise current becomes $NC1$ which is very much larger than NC . Once the applied carrier becomes large enough to bring the whole of the noise modulation on to the linear part of the diode characteristic, small changes in carrier level do not affect the noise output from the receiver.

It is obvious, then, that when we measure the signal to noise ratio of an a.m. receiver we must measure the noise with the carrier applied; so an unmodulated carrier at the specified level is first fed to the receiver from the signal generator, and the level of noise output power P_n is noted. Standard modulation is then applied to the signal and the increased output power P_t is noted. This second power output is the signal plus the noise, so that $P_t = P_n + P_s$ where P_s is the signal power. The signal to noise ratio is P_s/P_n which is equal to $(P_t/P_n) - 1$. However, the usual signal to noise ratio requirements is of the order of 20dB or 100:1. For ratios of this order P_t can be regarded as P_s and the calculation simplified. This is rather more convenient when using a power meter calibrated directly in decibels. The ratio expressed in decibels is, of course, $10 \log P_s/P_n$. Thus spake Marconi!

You may have to read that a couple of times, but all it describes is the well known effect in a.m. receivers using diode detectors (such as the R-390A) that tuning to a weak unmodulated carrier results in a rise in receiver audio output, but this is not the same thing as measuring the true a.m. signal

to noise ratio, which has to be done by first applying the carrier and then measuring the ratio between modulation on/modulation off to give the true S/N ratio. Just for interest, I measured the S/N ratio using the R-390A Technical Manual method and for a 10dB increase in audio output I needed an input signal of $0.211\mu V$, but when I checked the true signal to noise ratio at $0.211\mu V$ by switching the modulation on and off, the ratio was actually 3dB. In other words I was measuring the m.d.s. (minimum discernible signal) level of the receiver, and the true signal to noise ratio at 10dB was given at $-116dBm$, which is $0.35\mu V$, much more in line with what one might expect - actually, for an a.m. receiver it is still very good indeed. Finally, remember that all this waffle relates to diode detectors and not necessarily to other type such as synchronous or homodyne systems.

Third order intercept point at 20kHz spacing measured as $-30dBm$ with an apparent dynamic range of 69dB, but this I suspect is intermodulation in a later stage than the first mixer, because when re-measured at 50kHz spacing the intercept point rose to $+2dBm$ at a dynamic range of 90dBm, probably as a result of selectivity between the first and subsequent mixers. In this respect, the R-390A is a relatively poor performer when compared to more modern offerings such as the Racal receivers from the RA1770 series onwards. However, with all that front-end selectivity the second order intercept point measured with my standard input signals at 6.5MHz and 7MHz, resolving the product at 13.5MHz was an excellent $+91dBm$ with a dynamic range of 112dB. Take a look at Fig. 1 which shows the selectivity between the antenna connector and the mixer at 14MHz. The pass band response is an amazing 40dB down at only 700kHz from the tuned frequency, and I have not seen anything like it before.

I expected good phase noise results from looking at the spectral purity of the conversion oscillator (Fig. 2), a classic crystal oscillator, but look at Fig. 3 which shows that the Collins

v.f.o. (p.t.o.) is almost as clean as a crystal and hugely better than most synthesisers. The reciprocal mixing measured out as follows:

Tone spacing (kHz)	Phase noise (dBc/Hz)
5	-126
10	-130
20	-142
50	-152
100	-152

The low noise at 50 and 100kHz surprised me when I compared them to my best reference which is the Kenwood TS-900 which flattens out at $-149dBc/Hz$ but is slightly better than the R-390A closer in, but I then realised that the exceptional r.f. front-end selectivity of the 390A was affecting the measurement, and when I checked I found that a signal 100kHz away from the frequency on which I was measuring was already attenuated by some 3dB, and allowing for this changed the results at 50kHz and 100kHz to $-149dBc$ which is precisely what the TS-900 showed. Figuring that the R-390A front-end would be less selective in absolute terms at a higher frequency, I repeated the measurements at 21.1MHz and sure enough the results were in line with the TS-900. Don't misunderstand me, I'm not saying that the results affected by the front-end selectivity are suspect, it's just that I wanted to know why the '390A appeared so good - it appeared good because it is good.

Overall

The R-390A is an impressive receiver and deserves the reputation it has earned among the a.m. DX enthusiasts. 'Tuning around' is not a strong point because of the heavy mechanical action of the tuning mechanism, but if you want to get in amongst the noise and dig out weak stations, then the '390A is still a formidable weapon in the armoury. For listening (as I do) to s.s.b. utility channels it is less satisfactory than something like an RA1792 or AR7030, because it simply wasn't designed for that purpose (rather like the RA17) but would perform well if you could find an outboard s.s.b. demodulator. No collection of classic receivers could be considered complete with a R-390A, but would I buy one in preference to something a bit younger? Probably not, because my listening is of a more general nature, but if I could afford to have one to play with, I would be more than happy. Collins really did produce the very best in h.f. equipment, and no-one can deny it.

Happy listening!

SWM

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- HOURS: TUE - FRI 9am - 5.00pm
SAT - 9am - 4.00pm



HOCKLEY OPEN DAY SUNDAY 26th MAY

MAKE A NOTE FOR YOUR DIARY UK'S BIGGEST DEALER EVENT
FREE FOOD AND DRINK AND GREAT BARGAINS. 10am - 4pm

Just look at the crowds last year! This event is a mini rally but with amazing prices! End of line-deals we don't advertise, Service Department clear out and free raffles. And when we finish, you still have time to go down to the sea front at Southend - just 15 minutes drive.

WATSON



REPLACE YOUR FACTORY-SUPPLIED ANTENNA AND HEAR THE DIFFERENCE!

• **W-801 MkII Regular Gainer**
Just 21cm long with BNC fitting, it covers 25 - 1900MHz. You'll get smoother reception with improved matching to your scanner, which means better signals. It's flexible as well, so you won't break it. £12.95 A

• **W-881 Super Gainer**
Watson have engineered this flexible antenna to give you wide gain over the range 25-1900MHz. Optimised matching brings in those weak signals and the BNC fitting matches most popular scanners. £19.95 A

• **Don't forget** --- we also have the WSM-1900 Mobile Gainer, for your car with magnetic base and 2.75m coax cable terminated with BNC plug. £22.95 A

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.

STEEPTETONE MBR-7 MULTIBAND RADIO



SPECIAL OFFER

£49.95

Plus £6.00 Carr.

- Receives MW/LW/SW1/SW2/FM/AIR-MB-FM
- Direction Finder • Telescopic Antenna • Tuning Control with Fine Tuning • Volume + Tone Controls • Signal Strength/Battery Meter • AFC Switch • PA Facility with External Mic Socket • Line-in Socket for use with CD or Cassette Player • Earphone Socket
- Cloth Carrying Strap • Facia Protection Bars
- Powered by Mains or Batteries (Not supplied)

VR-120 RECEIVER



£159

Plus £6.00 Carr.

- 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)

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.

£229

Plus £6.00 Carr.

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 £9.00 Carr.

AOR AR-8600



AOR's exciting new scanner:

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

£649

Plus £9.00 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



£259

Plus £6.00 Carr.

- NFM, WFM, NAM, WAM, USB, LSB, CW
- 521kHz - 1320MHz
- 1,000 memory channels
- High sensitivity
- Signal strength meter
- High speed scanning & searching
- MONitor 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

NOW WITH NICADS & CHARGER

BEARCAT UBC - 9000XLT BASE STATION



£269

Plus £9.00 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 ON/OFF and tape output feature!

AOR-7030 RECEIVER 0kHz - 32MHz



£749

Plus £9.00 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



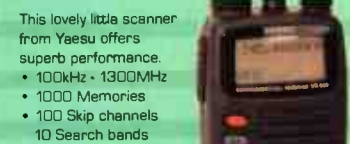
£699

Plus £9.00 Carr.

Yaesu's exciting new scanner:

- 100kHz - 2599MHz • FM AM SSB CW
- Real-time band scope
- DSP Noise and notch filter (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
- 8 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.

WDP-30 SHORT WAVE DIPOLE

NEW

8.5m long!



£49.95
Plus £6.00 Carr.

- True Dipole Performance
- Receive Only
- 1MHz - 30MHz
- 10m Long approx.
- Matching Module
- 50 Ohm Input
- SO-239 socket
- 10m Coax

This new design from Watson gives you dipole performance across the entire short-wave bands. Unlike random wires, it reduces the background noise and pulls in the signals. And its small size means it will fit most gardens. Absolutely no adjustment required.

STREET PILOT III

GARMIN GPS-V

WITH WAAS
for even greater accuracy

£499.95
Plus £6.00 Carr.

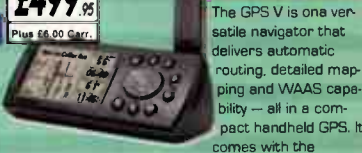
IT TALKS TO YOU

"TURN LEFT
IN 2 MILES"



£945.95
Plus £9.00 Carr.

It talks to you and is supplied with street level mapping, 32Mb storage card and card reader for quick PC programming. Examples of voice info are: "turn left 2 miles," "take 2nd left at next roundabout", "house number 17 is on your left," "turn right in 300ft." These are in stock now.



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.

IC-R75 RECEIVER 30kHz - 60MHz

BAR-888U RADIO CONTROLLED WEATHER CENTRE

GLOBAL AT-2000 ANTENNA TUNER

ICOM IC-R8500 "EDITORS CHOICE"

£599
Plus £9.00 Carr.



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 • Attenuator • 2-level Pre-Amp • Scanning.



£59.95
Plus £6.00 Carr.

Desk-top 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



£89.95
Plus £6.00 Carr.

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



£1199
Plus £9.00 Carr.

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 'speciality' modes, CW narrow, AM wide, AM narrow and FM narrow are available (Requires optional FL52A).

ICOM IC-R10E 500KHZ - 1300MHZ

CAPTURE THAT FREQUENCY! HUNTER 10MHz - 3GHz Hunts down Frequencies

OPTOELECTRONICS DS-1000 DIGITAL COUNTER

AOR-8200 SERIES 2 500KHZ - 2040MHZ

- USB, LSB, CW, AM, FM, WFM
- 1,000 Memories
- Bandscope • Noise Blanker
- Wide range of tuning steps
- alphanumeric display
- Real Time Band Scope
- Voice scan feature
- Data output port
- Programmable scanning
- Ni-cad pack, AC charger and helical antenna



£279
Plus £6.00 Carr.



£59.95
Plus £6.00 Carr.

Supplied with telescopic antenna and AC battery charger: if you are within 200 ft or so of the handheld, you should be able to read off the frequency. Note it down and enter it in your scanner. It's that simple and it's pocket sized.



£599
Plus £6.00 Carr.

- Frequency range: 10MHz - 2.6GHz
- Resolution 100Hz
- Signal strength -45dBm to -5dBm
- 1,000 memories 65,000 hits per memory
- Captures Digital & Analogue signals
- Minimum 500ns RF pulse required
- Reaction times (requires lead)
- Display: 2x16 alphanumeric LCD (with backlight)
- Signal strength displayed in dBm and bargraph
- Built-in RS-232, direct connection to PC
- Supply: Battery (5-6 hours), ext. 9V DC, 150mA



£379
Plus £6.00 Carr.

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.

PCR-1000 10kHz - 1300MHz COMPUTER CONTROLLED RECEIVER

£299
Plus £6.00 Carr.



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).

Mode:USB, LSB, CW, AM, FM, WFM.

ICOM IC-R2 500kHz - 1309MHz



£139
Plus £6.00 Carr.

This palm size handy offers great performance. Offers

- FM, WFM and AM
- Auto squelch
- 400 Memories
- 11 Tuning steps
- CTCSS decode
- Duplex monitoring feature
- PC Programmable
- Built-in attenuator
- Priority watch
- Needs 2 x AA cells (extra). Antenna included.

NEARFIELD MONITORS



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 CIV port for reaction tuning loom and ADR 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

R-861 PORTABLE SW WITH RDS



£199.95
Plus £6.00 Carr.

- 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 sat • 3 individual alarm timers
- 110/230V auto-switching AC adaptor

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 on 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.

WATSON WMM-3 MkII



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

New layout - for easier hook-up to computer and rig
New modern chip - FX614 replaces old TM3105
New modes - CD with latest programs

£69.95
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 £9.00 Carr.

MFJ-461 MORSE CODE READER

£84.95
Plus £9.00 Carr.



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.

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.

Present Times

The Red Lion Pub, Landlord Pip and Nipper the dog....
we arrive at the 'Present Time' with Bob Ellis.

That's the trouble with writing nostalgia pieces. Two things happen. Firstly, you get letters from young limbs banging on about wasting space on 'boat-anchors', my least-favourite phrase to define classic wireesses still revered by designers today. Secondly, if you write enough nostalgia, you must reach a point where you arrive at the present day. In the Editorial Offices of your soaraway *SWM*, the astute can hear muffled mutterings of, "That should shut him up, then". Not quite...

Psychological Problems

If you have followed this run of articles, you will now know that I have worked out the psychological problems caused by years next to the wireless by writing about it, then inflicting it on you, dear reader.

who has a model Nipper dog, the one that stared longingly into the horned phonograph on the HMV logo. I stare at it; it stares back at me, although I have to say there is more life in the model dog these days. If we stand side by side, Pip says he can tell us apart because in the dog's eye, there is a spark of humanity.

We are much the same vintage; we got our experience in much the same way. Knowing he has the same radio bug as me, Pip avoids eye contact with Nipper. Last time I was in The 'Lion, mine host had the poor dog wearing spectacles slightly to one side in an Eric Morecambe style. Anything to avoid eye contact with the dog. Follow you around the room, those eyes...

Eyes Glazed

In between pulling pints, Pip - not the dog - will shamble over to my end of the bar and

hiss than a reptile house". With eyes more glazed over than the dog's, we will go on forever about the red ones being the worst and the trouble you had finding the locking rings for the valve-holders. We'll remember buying boxes of valves from club junk sales only to find that about 60% of them were EF80s. When I went to the Celebration Dinner for the Derby Club, all I was known for was the boxes of valves...

The club has been around for ninety years and the room was packed. All of them watching a man trying to avoid eye contact with Nipper. Later generations feel the same about the EF86, the OC71 glass transistor and finding the extra few pence for the low-noise version of the 741. The OC71 was light sensitive, so if you scraped the paint off, you could make a radio that only worked in the dark.

Getting Nostalgic

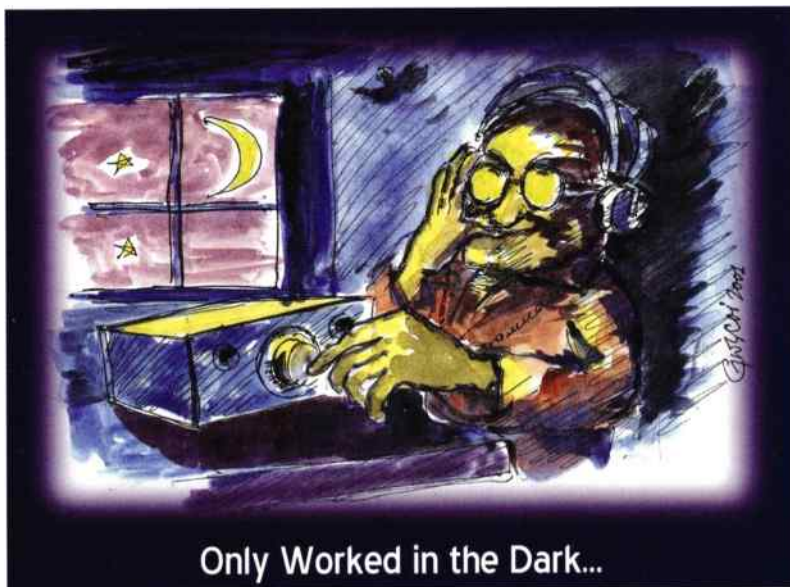
People are already getting nostalgic about the sound cards that came with first generation '386 computers. The hiss they remember is coloured with the gentle buzz of processor hash.



Over A Pair Of KT66's...

Sometimes when a GSM mobile 'phone breaks through the radio, the sound reminds me of my early days 'going digital' and why I don't bother anymore. There will come a time when today's Pentium 4 used to control a PC radio will be regarded by some with the same affection I have for an AR88. Today's tech is tomorrow's boat-anchor. Or should that be grandmother board?

My copy of *Studio Sound* - I get it for the loose-coupled resonators on Page 3 - is full of the hottest digital techniques that will be old hat in less than a year. It may seem odd coming from somebody who used to warm his hands over a pair of KT66s, but I feel so much digital audio streaming, either by PC or DAB, is a triumph of marketing over delivery. Was it the great JT, designer of the modern-day classics such as the HF-225 and HF-150, who said that Digital Radio was a streaming form of MP3 and will just about equal a well-installed f.m. radio for quality?



Only Worked in the Dark...

Up here in deepest Derbyshire, there is a pub near Carsington Water called The Red Lion. The landlord is Pip G8NOP, a rather odd surname,

in low voice suggesting under-the-counter dealings, come out with, "Did you ever use an EF50 as an audio pre-amp? Microphonic as hell and more

Is it really worth the effort? Is it true that MP stands for 'might play?'. Perhaps you can educate me on
 robert.ellis@talk21.com

Got A Good One

Thanks JT for all the work you did on the AR7030. As I write this on the wettest Sunday afternoon ever, I am hearing Air India on 10.330 half way through the morning raga. When you are listening to the station and not for faults in the radio, you know you have got a good one. It is so wet today, I think I just heard Noah testing on 2.182. That channel has been quiet for a while now. Another thing I can bore Pip with...

The Air India I refer to is not the national airline, but the national broadcaster. Listening

to Shanwick Air Traffic Control on 6.622, there is a genuine sense of relief in the operator's voice when an aircraft calls in for a Selcall check. So much has changed.

On September the 11th, the endless repetition of the planes hitting the towers reduced the most harrowing scenes I may witness in my lifetime to the level of pornography. The TV went off, the short wave was switched on. Six hours after the tragedy, BBC World Service had a studio discussion asking who the winners can be after such an act; the Voice Of America was in news free-fall. Presenters could not understand how such a thing could happen on American soil. The most balanced view came from KOL Israel. They seemed to see both sides.

When called by a VOA correspondent concerned about their cool and collected reporting, they simply replied that Israel has been a terrorised nation for over forty years. This is the power of being your own news editor via short wave.

One voice missing was The Voice Of Russia. That economy has learned what it costs to run all those h.f. transmitter sites, so the once ever-audible Radio Moscow is only heard here with armchair copy in the evenings. Armchair copy? Another boat-anchor phrase. Sorry...

Even the military comms broke RT practice enough to let you know how they really felt. Time was when New York Radio on 10.051 was a real live announcer. I'd like to think he sat in his best tuxedo in a

studio at the top of the Empire State Building ready to tell a waiting world of falling dewpoints and the reassurance of NOSIG. Today he is a voice synthesiser. Perhaps with the emotion of that day, it's just as well.

Licence To Think

One thing our hobby does is licence you to think. One day, when the laptop I am writing this on is the subject of a nostalgia piece for a computer magazine - it will happen, but I won't be writing it - the question will be asked. Where were you on September the 11th?

I was sitting by the radio looking at Nipper looking back at me. Even now, I wish I had the emotions of a model dog. The only way to deal with it.

SWM



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 TOP QSL WILL RECEIVE A £20 VOUCHER TO SPEND ON ANY SWM SERVICE.

Dear Sir

Digital Radio Mondiale

The announcement in the April *SWM* of the fourth anniversary of the Digital Radio Mondiale consortium and the success of their system prompts me to ask you to publish some articles on the technical background to DRM and to tell us the whereabouts of these transmissions. It is surely straining technical credibility to claim to be able to squeeze near f.m.-like quality reception into a standard broadcast channel (presumably 5kHz wide) and to be able to cope simultaneously with the severe vagaries of propagation and heavy QRM found on the h.f. bands.

Does any manufacturer make an adapter to enable an existing h.f. radio receiver to demodulate DRM or do we have to buy a complete new system? If the latter, then my gut feeling is that DRM will follow the same lack of popularity shown by v.h.f. digital radio because of the huge cost of reception, particularly if the same programme is available for free on the existing bands, though I accept this may change as costs come down eventually with volume production.

A further point is that if the system is as wonderful as your article suggests, is it likely that DRM in a less hi-fi form, but also using less bandwidth, could eventually replace s.s.b. on the amateur bands?

As an aside, and in case anyone was puzzled, 'mondiale' appears to be the new commercial buzzword for 'world-wide'.

**Michael O'Beirne G8MOB
 Surrey**

Michael, you'll be glad to hear that we'll be featuring an explanation of DRM in the July issue of SWM. Next month, in a similar vein, we present a feature on how DAB works too - Ed.

Dear Sir

Radio's Not Dead - It's Being Killed!

Although there are many thousands of a.m. radio listeners in Europe, both of broadcast and amateur radio signals (and by "a.m." I include s.s.b. and c.w.

modes), the threat of Power Line Transmission (also sometimes known as Power Line Communication) is likely to seriously affect the radio frequencies below about 30MHz in the next few years. This system has not gone away!

As some readers will already know, PLT is a system being developed in Europe and the USA to provide wide-band data communication using the electrical mains wiring. This may at first seem a good idea - mains wiring already goes to every room in every home and office, thus rendering additional cabling redundant.

Unfortunately mains wiring is singularly unsuitable for this use because its unbalanced nature allows these signals (using the frequencies between about 1 to 15MHz, though likely to spread significantly below and above these figures) to freely radiate some considerable distance.

At present it appears the commercial forces behind this system are unstoppable. There seems to be the misapprehension amongst its proponents that the frequencies affected are no longer important as everything is now duplicated on v.h.f./f.m., DAB, satellite, etc.

This of course is not true. A significant number of l.w., m.w. and many s.w. broadcasts are not available anywhere else. Additionally, many transmissions used by aircraft, the military and other users (often listed within the pages of this magazine), also only operate on these frequencies and will be badly affected if PLT becomes widespread.

The noise produced by this system will almost certainly cause serious interference even to the stronger l.w., m.w. and s.w. signals. The strengths of many amateur and s.w. signals are often only a few microvolts per metre and in future are likely to be well below the increased noise floor of the urban environment. What is more, most of our equipment is actually **connected** to the mains, so the receivers and transceivers will in all probability be useless regardless of the signal strengths we wish to receive. Even while receiving v.h.f. signals, this noise is likely to blast through the 10.7MHz i.f. circuits.

This is a serious business and all authorities concerned with PLT's negative effects are watching developments closely and endeavouring to take an active part in protecting the radio spectrum.

xDSL over 'phone lines on frequencies up to about 1MHz is also going to be an issue, but at least telephone lines are (nominally) balanced so radiation should be less of a problem.

I feel it is appalling engineering practice to squander this valuable spectrum if these systems in combination lay waste the l.w., m.w. and s.w. broadcast bands and everything in between. It looks as if the telecommunications companies (and possibly even the government) feels that this loss is a price worth paying in order to provide broadband Internet access to all.

However, perhaps there is light at the end of the tunnel... The millions of pieces of equipment currently in use were not designed to work with this level of interference on the mains - though this will no doubt have been considered by PLT's developers. It is possible that the level of injection to enable usable distances to be achieved will cause problems with video recorders (which have circuits operating at these frequencies), hi-fi equipment and not least hospital apparatus, thus rendering the system unusable.

As far as I know, none of the UK hobby radio magazines have given PLT really high profile exposure (although *RadCom* has occasionally covered it well in their EMC section). Presumably this lack of serious coverage is because the last thing we need is another reason for people to drift away from the radio hobby.

Although a more likely reason, in my opinion, is that the big advertisers in our magazines - fully aware of the issues - would hardly like the world to know that it's possible that most of their products will be virtually useless in the next few years. Could it be that they have already made it clear to the editorial teams that this subject is better kept quiet - or is that too cynical a view?

Nick Sparkes

Serious food for thought here! - Ed.

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WORLDSPACE

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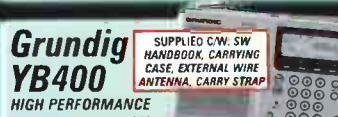
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Monitoring With The RA

Kevin Nice visited the RA's Baldock monitoring station earlier this year. Unfortunately, he was told he couldn't stay...



Colin Doleman shows me some of the d.f. system's attributes.



One of the newest addition in the ops. room, a Rhode & Schwarz 30GHz spectrum analyser featuring a superb flat panel display.



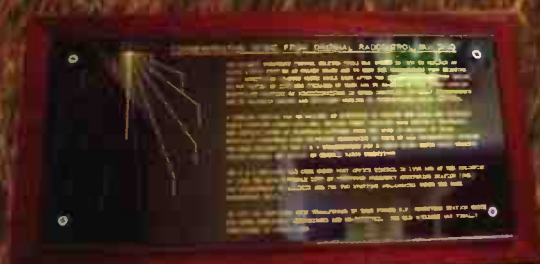
Baldock's calibrated cone measuring antenna.



HF log periodic array.



One of the steerable satellite monitoring dishes.



The commemorative plaque fixed to a stone from the original buildings from the 1938, built into the wall of present complex.

The recently refurbished and extended complex in the middle of a 300 acre site based in rural Hertfordshire is the RA's 24 hour monitoring station - Baldock.

Earlier this year *Practical Wireless* Editor Rob Mannion and myself were lucky to be guests for the day at the station, courtesy of the RA.

Baldock radio station can be seen from several kilometres away due to the two tracking satellite antennas silhouetted on the sky line as you approach the site. It is a fantastic sight to behold as you drive north east along the A505, the road turns into a dual carriageway and almost immediately an arrowed sign stating "Radio Station" indicates a right turn across the other carriageway is required. My early morning arrival saw the sun low in the sky to make for an eerie scene as I drove down the access road across the station antenna farm. Unfortunately, it also rendered my attempts to take an atmospheric picture of the impressive gateway with the large dishes and buildings behind, a total failure.

After the obligatory cup of tea and the arrival of Rob, who had travelled from the other end of the county to me, we spent a fascinating day spent touring the facilities of Baldock. Since my previous visit to the facility, some pretty major building work had taken place. The original building was now twice what I had previously seen. The whole building enjoys an air of newness. The monitoring station has been in the present location since 1938, the buildings used at that time were demolished in 1985. The previous location of the service was Colney Heath which opened in 1929.

High Frequency

Our initial point of call was the h.f. operations room. Here is the nerve centre of the 24 hour international radio circuit monitoring capability. The primary role of which is to ensure that UK licenced users



A UMS being set up.

of the radio spectrum do not suffer from interference, intentional or otherwise. The majority of the work carried out by the ops. room relate to the safety of life services. Additionally, there is major contribution made to the obligation via the ITU to the International Monitoring System. This is essentially a reciprocal arrangement with overseas administrations monitoring stations, which enables the direction finding and pinpointing of interference sources by plotting multiple headings from at least three alternative monitoring locations. These sources can then be investigated and resolved. To fulfil its obligations, Baldock is operational 24 hours-a-day 365 days a year.

The layout of the ops room has changed since my last visit thought most of the equipment remains the same. From my point of view the main item of interest was the h.f. direction finding system. My last visit, some seven years ago, saw the present computerised system being just commissioned. Now the Roke Manor Research set-up is in constant use. It consists of eight antenna elements configured in a ring in the grounds of Baldock. For each element there is a dedicated receiver head. The systems makes simultaneous measurements of incoming strength and phase at each element and as a result computes the origin heading and elevation of the signal. Simple to say, not so easy to achieve. This is no doubt an expensive but essential part of Baldock's tools. Since I spend many hours personally monitoring h.f. utility signals, I could have easily stayed in the



EMC lab and support vehicle.



Inside a mobile EMC laboratory.

ops room for the whole day - well I'd still be there if I could have got away with it!

The Focus

This valuable resource is the focal point of the Radiocommunications Agency's monitoring activities. Housed at Baldock, in addition to the fixed monitoring facilities, are some central stores and mobile EMC test labs. These vehicles are the mainstay of the likes of the recent survey on cellphone base site radiation, the results of which I mentioned in last month's 'Ed's Comments'. They are without doubt impressive, to say the least. Each vehicle is specified by the RA staff at Baldock and they are fitted out with work benches, seating, masts, secure mountings for test and measurement equipment and of course insulation plus wall and floor coverings. Newer additions to the mobile lab fleet, I'm reliably informed are rather more comfortable than previous versions, this is probably due to the improved internal catering facilities.

Each mobile EMC lab contains separate lab and storage areas, an essential when operating in harsh weather conditions. It is not a good idea to mix wet kit and UKAS approved measurement facilities. The mobile labs tend to operate together with a support vehicle and can be

called to operate anywhere within the UK.

The vehicles can operate continuously, powered by their onboard 4.5kVA diesel generators, for five days. The raw output from the generator is conditioned by a high quality uninterruptable power supply to produce a clean, continuous, sinusoidal 50Hz supply for the labs equipment. If required 12 and 24V d.c. supplies can be used to ensure an extremely quiet r.f. environment.

Each lab is capable of making measurements in the range of 9kHz to 18GHz coupled to direction finding capability by utilising Adcock arrays. To ease the operator work load, automated control software can be utilised during high activity to produce user profiles and signal strength.

Remote

Increasingly used for long term field measurements are the UMS. These Unattended Monitoring Systems cover a range of 20MHz to 3GHz and come conveniently packed in less than one cubic metre housings. Each of these systems can be left on-site and remotely interrogated and, or controlled and left to perform measurements of field strength, occupancy, CTCSS, DSC, MPT1327 trunked systems, paging and other packet data formats. Audio can be digitally recorded and then replayed from the remote unit. Interestingly, the UMS can be interrogated via a web browser interface.

The UMS allows a large number of channels to be monitored due to its amazing 2000 channels per second rate - now just how do I get hold of one of these - they noticed me trying to kidnap one from the stores.

SWM

I wish to extend my thanks to Tony Harris, Head of Monitoring and the rest of the staff at Baldock for making us most welcome during our all too brief visit to the station, though I must complain strongly that I was relieved of the items I'd collected during the tour.

£900 worth of Tattoo Tickets to be won!

The Royal International Air Tattoo 2002

Enter the SWM RIAT 2002 competition and win one of 15 pairs of adult tickets so that you too can enjoy the thrill of the weekend of 20 and 21 July. The winners will be the first fifteen correct answers drawn from all entries received before 4th July.

To enter and have a chance of attending the largest military airshow as it returns to RAF Fairford, complete the wordsearch and establish which word is missing from the grid. Fill-in the missing word on the entry form together with your contact details and post it to SWM at the address on the form. Good luck!

Take off for the aviation thrill zone

The world's best pilots are set to go vertical for eight non-stop hours of sensational flying as the Royal International Air Tattoo 2002 celebrates the Golden Jubilee of Queen Elizabeth II. After two years away, the Tattoo is making a big comeback to RAF Fairford - 450 aircraft, hot air balloons, stalls, exhibits, road shows and virtual reality rides. This is the show that tops the bill for family entertainment.

Golden Jubilee

To mark the Golden Jubilee of Queen Elizabeth II, the Royal Air Force Red Arrows will give a superstar performance, soaring into a special routine dedicated to Her Majesty. And the show will open with an all-British flypast of Hunter, Harrier,

Nimrod and Tornado aircraft, together with the 21st century Eurofighter to symbolise the five decades of her reign.

At the end of the flying, airshow visitors are invited to a Jubilee Proms Concert hosted by radio personality Ed 'Stewpot' Stewart. Trestle tables, bunting, union jacks, party hats and community singing will recreate the street party atmosphere of the Queen's coronation in 1953, with top flight entertainment from the RAF and US military bands and singers.

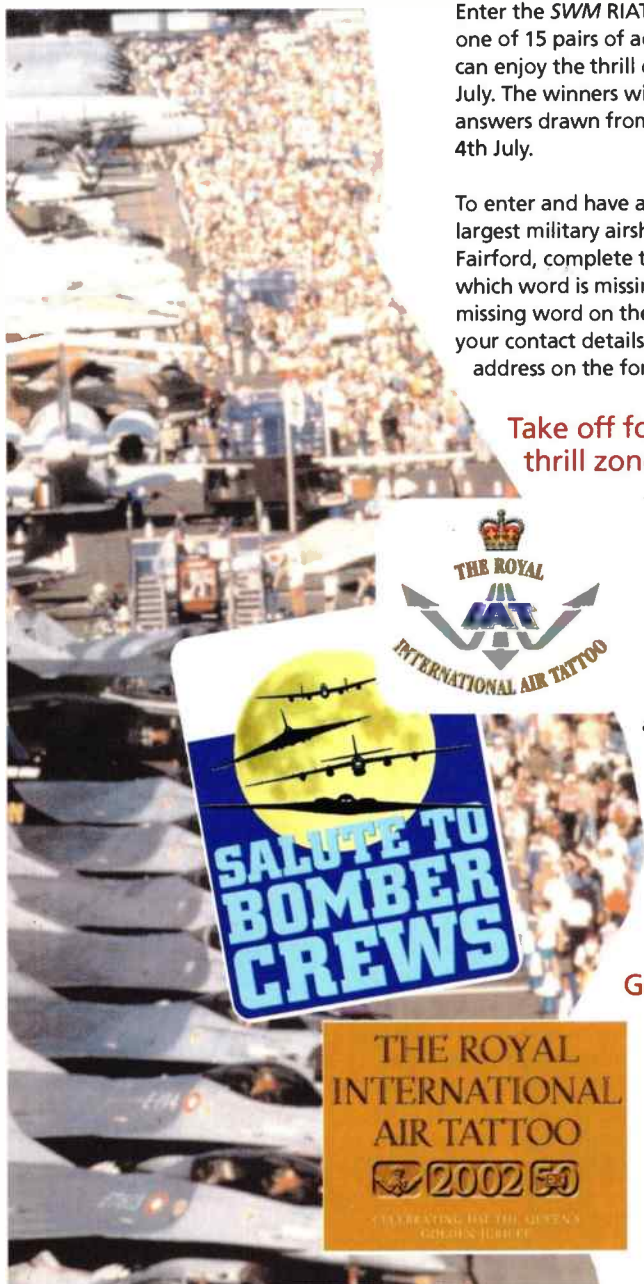
Stars of the show

Demonstrating perfect symmetry between man and machine, the RIAT flying display is a showcase for the world's Top Guns. Tattoo visitors will take a front row seat for the aviation supershow - sizzling solo jet routines, gravity-defying helicopter manoeuvres, astounding aerobatic teams, massed flypasts, airborne set-pieces and the enduring magic of the Spitfire and other vintage aeroplanes.

Salute to Bomber Crews

RIAT 2002 will pay tribute to bomber crews from all nations, past and present, both in the air and on the ground. An awesome array of aircraft will see Russian built bombers lining up alongside United States Air Force B-52s, B1-Bs and Stealth aircraft. It is also hoped that a mighty Vulcan bomber, in her heyday one of the West's most potent Cold War forces, will be restored in time to make a triumphant appearance at the Tattoo.

To remember the bomber crews who will never return, the RAF Battle of Britain Memorial Flight Lancaster, the world's only flying Blenheim and a rare B-17 Flying Fortress will perform a memorial flypast watched by wartime campaigners, visiting aircrew and tens of thousands of airshow visitors. The Flying Fortress, star of the feature film *Memphis Belle*, will represent the United States Eighth Air Force on its 60th anniversary.



Tattoo Timetable

The public gates to RAF Fairford (located near Swindon on the Wiltshire/Gloucestershire border) open at 0700 on Saturday and Sunday 20/21 July. Flying display from 1000 to 1800, followed by the Jubilee Proms Concert. Regular airshow shuttle bus service from Swindon Bus Station.

Tattoo Tickets

Adults in advance **£24.95**, on the day **£30**. Children under 16 free.

RIAT 2002 tickets are available direct from www.airtattoo.com or by telephoning **(0870) 2410303** (calls charged at national rate at all times).

Extra Options

Plan Crazy - The friends of the Royal International Air Tattoo (FRIAT) won't miss a single Tattoo moment, from the first arrival on Wednesday 17 July to the last departure on Monday 22 July. The six day package for aviation fans includes pre-show access to the airfield. **Adult subscription £110**, **children £55**.

Aviation Club - Marquee with private grandstand and garden overlooking the runway. All inclusive price **£98 per guest** (RIAT admission, lunch, morning coffee and afternoon tea).

Waitrose Jubilee Garden

Traditional deck chair enclosure, offering a selection of summer refreshments. Advance tickets **£13 per person** (does not include RIAT admission or food and drink), **£16** on the day.

The Leisure Vouchers Public Grandstand

Reserved seating, great view of the flying display. Advance tickets **£13 per person** (does not include RIAT admission), **£16** on the day.

Park & View - Count them in as aircraft arrive for the Tattoo from Wednesday 17 July to Friday 19 July and watch them take off for home on Monday 22 July. Two Park & View enclosures, advance tickets **£9 per person**.

For all RIAT information or bookings (admission tickets, FRIAT, Aviation Club, Waitrose Jubilee Garden, The Leisure Vouchers Public Grandstand or Park & View), 'phone **(0870) 2410303** (calls charged at national rate at all times) or buy direct from www.airtattoo.com Admission tickets **only** also available from branches of Waitrose, Stroud & Swindon Building Society and from selected Tourist Information Centres.



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SALUTE
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VULCAN
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F	E	Q	R	E	I	R	R	A	H	R	L
I	U	G	O	L	D	E	N	D	O	A	A
F	R	C	R	J	B	K	O	Y	J	N	O
T	O	M	O	M	Z	R	A	U	N	R	D
Y	F	F	O	N	M	L	B	I	E	R	A
N	I	B	A	I	C	I	V	D	T	E	N
O	G	J	N	I	L	E	A	R	U	T	R
O	H	A	F	E	R	R	R	Z	L	N	O
L	T	M	E	S	R	F	J	T	A	U	T
L	E	C	A	O	V	V	O	R	S	H	O
A	R	R	W	I	C	T	M	R	N	O	N
B	Y	S	N	A	C	L	U	V	D	P	E

One of the above words is **not** present in the grid, identify which one and enter it on the form below.

To enter the Short Wave Magazine RIAT 2002 ticket draw, please fill in your details on the entry form, (photocopies can be accepted with the original corner flash attached), complete the missing word and post your entry to: **SWM RIAT 2002 Draw, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW**. Entries must be received before Thursday 4 July to qualify. The draw will take place Monday 8 July and the winners will be announced in *SWM* August 2002. The Editor's decision is final.

The missing word is:

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UK Scanning Directory
In stock at last! The 8th edition of this excellent frequency guide has just arrived priced **£19.75 (Plus £5.00 P&P - it's bigger than ever!)**

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Micro PSU Ideal for scanners and shortwave receivers. This Mini switch mode 2.5 amp PSU will power many scanners and shortwave receivers. About the size of 20 cigarettes and very light. Ideal for popping in your brief case or suitcase! (State make and model of receiver when ordering) Only **£29.95**

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YAESU VR500	£199.95	£399.90
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AOR AR8200 MK II



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Add the **Super Searcher and RT8200 (£119.99)** for reaction tuning to nearby transmitters

ML&S £439

ZERO DEPOSIT!

36 * £15.96

YUPITERU MVT-7100



This scanner is very old in design and lacks a few features but offers good scanning facilities. Covering 100kHz-1300MHz AM/FM/WFM/USB/LSB. Complete with NiCads, Charger, Telescopic Antenna all for **£229.00.**

ML&S £199.95

KENWOOD THF7E

NEW!



The Scanner that transmits! Covering 100kHz - 1300MHz AM/FM/WFM plus SSB (100kHz - 470MHz) with Lithium Ion battery and Charger plus Transmit (6 Watts) on 2 metres and 70cms. An ideal scanner for radio amateurs! All this for only **£289.00**

PC Programmable Requires PG-4P at **£31.95**

ML&S £289

ZERO DEPOSIT!

24 * £14.48

YAESU VR500



100kHz-1300MHz AM/FM/WFM/LSB/USB/CW. This amazing little scanner is an ideal pocket communications receiver with keypad entry!

PC Programmable Requires ADMS-3 at **£39.95**

ML&S £199.95

BEARCAT UBC 780XLT



TRUNK TRACKER

This is our fastest selling scanner for a long time - we just cannot get them in fast enough! Covering 25-510MHz and 800-1300MHz AM/FM - plus it is the only CE approved desktop to offer the Trunk Tracker facility. Complete with DC lead, FREE PSU and Whip Antenna - a steal at only -

ML&S £329

ZERO DEPOSIT!

36 * £11.60

YAESU VR-5000



FREE PSU

This amazing desktop scanner is the only scanner to offer true dual receive. Coverage is from kilohertz to gigahertz offering all modes and has optional DSP for enhanced shortwave reception. Complete with

FREE PSU at only **£599.99**

PC Programmable

ML&S £599

ZERO DEPOSIT!

48 * £17.72

MAYCOM AR108



This little airband scanner sells itself with coverage of the civil airband

ML&S £69.95

ICOM ICR2E



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

PC Programmable Requires PC-R2 at **£39.95**

ML&S £159

ICOM ICR8500



FREE PSU!

ICOM's Flagship Communications receiver covering 100kHz-2000MHz AM/FM/WFM/SSB & CW. SW performance is as good as many short wave only receivers but the VHF/UHF performance is where this radio comes into its own. Complete with Free PSU and Control software (Not suitable for XP or Macs)

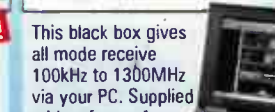
PC Controllable

ML&S £1349

ZERO DEPOSIT!

48 * £39.91

ICOM PCR 1000



This black box gives all mode receive 100kHz to 1300MHz via your PC. Supplied with software for Windows 3.1/95 and 98. Featuring DTMF decoder, CTCSS decoder, Spectrum scope and much more. We can supply you with alternative demo software that will work with XP (Registration is under £30.00). Complete with Whip antenna, PSU, UT-106 DSP module and software.

PC Controllable

ML&S £385

ZERO DEPOSIT!

24 * £19.30

GARMIN E MAP



Handheld version of the Street Pilot and comes with Data Lead, 16Mb Ram Card and UK Metro Guide on CD Rom
NEW GPS V NOW IN STOCK!

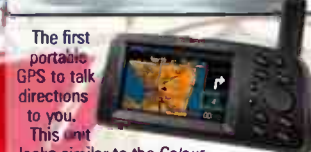
GPS V has introduced a hand held GPS which is similar to the established GPS3 range again with built in route calculator and 24Mb of RAM. Price expected to be about **£500**

ML&S £379

ZERO DEPOSIT!

24 * £19.95

GARMIN STREET PILOT 3



The first portable GPS to talk directions to you. This unit looks similar to the Colour Street Pilot but has the inbuilt ability to calculate your route for you. It will then speak directions to you in a clear female voice. The Street Pilot 3 uses a faster processor than previous versions and is much faster at relocating. Supplied with all you need to mount the unit in the car, plus 32Mb memory module, plus European City Street Map CD ROM & you get a **FREE USB Memory Programmer**

ML&S £850

GRUNDIG

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ML&S £549

ZERO DEPOSIT!

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ML&S £129.99

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48 * £28.08

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£995.00 DEPOSIT!
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ICOM IC-R10



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PC Programmable
Requires PC-R10 at £39.95
ML&S £319.99
ZERO DEPOSIT!
24 * £16.04

ICOM IC-R3E



The Scanner with TV built-in that picks up a bit more than Coronation Street! Complete with Lithium Ion battery and charger, all ready to go! Only **£399**

PC Programmable
Requires PC-R3 at £39.95
ML&S £449
ZERO DEPOSIT!
36 * £15.96

AOR 8600



With many of the features of the AR8200 Mk2 this is an exceptional desktop communications receiver. Only **£699.00** with **FREE PSU**

PC Programmable
ML&S £699
ZERO DEPOSIT!
48 * £20.68

AOR 5000



This is the finest communications receiver AOR have produced and has all the features needed for Commercial users and Scanning enthusiasts. There is also The plus version with extra enhancements. Offering good short wave reception as well as excellent VHF/UHF performance. With **FREE PSU**

PC Controllable
ML&S £1599
ZERO DEPOSIT!
48 * £47.31

SDU 5500



See what is happening on the air with this add on spectrum scope. Not only will it work with the AR5000 and AOR3000a - it will also work with Icom ICR8500, ICR9000, ICR7100 and TS-870 (A good alternative to the SM-230)

PC Controllable
ML&S £899
ZERO DEPOSIT!
48 * £26.60

YAESU FRG-100



This is still one of our best selling Short wave receivers with **FREE PSU** at only **£499.00** Options include AM filter, CW filter, FM unit and Keypad - call for a price on all four.

PC Controllable
(Requires FIF232C at £79.95)
ML&S £429
ZERO DEPOSIT!
36 * £15.60

AOR AR-7030



This strange looking radio has stunning audio and a very lively receiver. It is one of the best broadcast band receivers available and an ideal radio for Broadcast DX chasers but is equally at home on SSB and CW. Even old Lynchy uses one of these! The Plus version is an enhanced version of 7030.

ML&S £799
ZERO DEPOSIT!
36 * £10.97

JRC NRD-545



USED EXAMPLES from £999
HF DSP Top of the Range Receiver with option to expand receive up to 2000MHz (requires CHE-199)

PC Programmable
ML&S £1599
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CALL for finance

HOKA GOLD 3



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AOR 3000A



All mode, all band desktop receiver

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KENWOOD



Our best selling HF Transceiver modified for Receive only makes this an excellent DSP Receiver

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An email from one of our many HAPPY CUSTOMERS!
Comments: I wish to recognise Martin Lynch's excellent after sales care following the recent failure of my TS2000 HF PA. I was delighted and surprised (given my experiences with other vendors) at the fast and efficient service received from Chris at the shop and from Kenwood UK. Well done guys, I know where I'll be coming next time I want another radio!!
Steve MOSBF

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For many months now I've been cajoling Eric, who resides in the Warrington area, to reveal details of his diminutive shack. I had to try hard due to Eric's belief that because he didn't have a radio set-up that mimics a dealer's show room, it wouldn't be of interest to SWM readers. I disagree, I'm quite sure that Eric's shack is representative of many of those owned by readers of this magazine. I'll let Eric tell us more.

"As promised, please find enclosed three prints showing my 'radio shack' in all its terrible disarray! (and covering sketches identifying the mess!). You can see that I do not have a great deal of space and although I can work the gear in situ, I normally extract the items I require and place them on the bed, which is handy for those occasions when one

comes over all emotional at having received something significant!

You will notice that I could not get square on shots, as my



lens wouldn't focus any closer and I don't possess an extreme wide angle or fish eye. The only other way would be to get the ladders out and

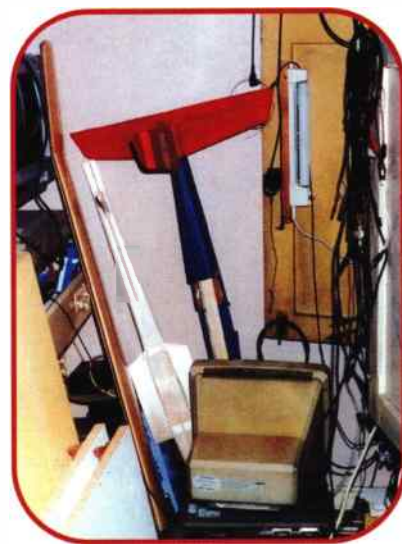
photograph the equipment through the window! Unfortunately, the two shots of the cupboard don't quite match up, but no doubt, with a bit of computerised juggling, that can be corrected. The photos were taken with flash, bounced off the ceiling to give a bit of diffusion and in-fill.

You can see in the general view that one of my other hobbies is building and flying model aircraft (vaguely radio related), both the models in view are for electric power, which saves an awful lot of running with towlines, or mess from used castor oil, which tends to drip onto the carpet for days, after a flying session - the missus doesn't like it!

Now a bit about me. Born in 1950, went to school, joined the Royal Navy in 1966, did nine years, decided enough was enough, made plastic drainpipes for a few years, then drove a fork lift truck for a few more. Now I drive a delivery van for a well known Security firm, where I have been barely gainfully employed for the last 23 years.

I have been interested in radio and aircraft for as long as I can remember. My first working receiver was a tuned circuit feeding an OC71 and picked up ITV sound. (Don't ask how, I haven't the foggiest!) and nobody believed me until my Dad had a listen and heard an ad for Playtex bra's. The radio was confiscated, as the subject matter wasn't suitable for young ears!

Later I built an H.A.C. one valve set and spent a lot of time mowing grass, to earn enough to buy the

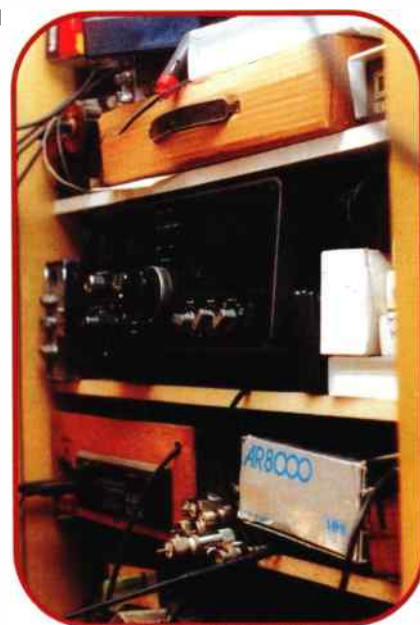


batteries to feed it. I also used to go scuba diving, but since the most unexpected pattern of tiny feet came along, nearly fifteen years ago, that has had to be scrapped, due to lack of pennies, and more recently, transport - as security staff are so well paid, it became a choice of the car, or the mortgage - but not both!

Not in view in the photos are various Howe's kit RXs and a.t.u.s and an assortment of relevant books, frequency listings, etc."

Thanks very much Eric, I reckon that it was well worth the wait. Hopefully you will have inspired lots of others to send details of their shacks too. Anyone who does feel motivated, please let me have some shots of your antennas to make the picture complete.

SWM



The Other Man's Shack

A quick trip up the M6 to Cheshire this month. Kevin Nice presents the listening post of Eric Bray.

SSB

Guaranteed sunshine and lots of aircraft to look out for...Graham Tanner reports back from his monitoring mission in Goa.

In Goa

Following the atrocities in the USA on September 11th I realised that a planned trip to the USA during the Autumn months was probably going to be a lot more difficult than normal, so I decided to alter my holiday plans. The next option was a trip to Greece on an aviation tour, but I was unable to organise the dates (and I'm sure that we all remember exactly what happened to that particular tour!). The third option was to go somewhere warm and exotic for a short break - one where I would see plenty of sunshine so that I would get a good tan, a few aeroplanes for me to look at, and the prospect of some new and different h.f. signals to listen to.

I had always thought

about visiting India, and when I considered my requirements, Goa seemed to fit the bill perfectly - almost guaranteed sunshine and high temperatures, aircraft of the Indian Navy to watch out for, and the sudden realisation that all those US bombers attacking Afghanistan were operating from Diego Garcia which is due south of Goa. A quick trip to the travel agents and everything was soon booked. A week in Goa at the start of December - a chance to avoid the hustle and bustle of the

was consulted about vaccinations. With just one week to go, I started to collect together all the things that I wanted to take with me - a portable short wave receiver, Revco 'Angler' long-wire antenna, scanner with its charger, a copy of *Airwaves 2000* listing h.f. frequencies for the Indian Ocean and a copy of the *Racal/Aerad* supplement listing v.h.f. frequencies for Goa.

This was all carefully packed into my suitcase with a small selection of tools should the need arise for

case and repacked everything into a larger suitcase.

The Flight

The flight to Goa was operated by an A.330 Airbus aircraft of Monarch Airlines. The flight from Gatwick left a little late, but we were soon flying high above central Europe, and over eastern Europe towards the Black Sea. We had not been flying for very long when they announced that the flight would be making a 'technical stop' in Bahrain. This was not

on the plans, but was a welcome diversion, given the thought of all those duty-free shops to investigate. This did mean a later than scheduled arrival in Goa, but this was only a minor inconvenience.

In the end, the crew managed to fix the problem with the aircraft and the 'technical stop' in Bahrain was not necessary, so we pressed onto Goa, arriving just five minutes later than scheduled. Goa/Dabolim is an airfield operated by the Indian Navy, with only a small civil terminal and a parking ramp only able to hold a few aircraft.

When my flight arrived, there were already two other aircraft there. The Indian



Blue skies, soft golden sands, gently swaying palm-trees. Is this paradise?

run-up to Christmas.

The Indian Embassy in London quickly processed my Visa application and my GP

emergency repairs. Then I realised that I would also need to take some clothes with me, so I unpacked the

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- ICF-SW11 12 band analogue receiver...£40
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HITACHI

- WORLDSPACE KHWS1.....£140

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- WORLDSPACE WS1000B.....£140

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- SATELLITE 800EU.....£540

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YEASU

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- VR-5000 100KHz-2599MHz.....£630
- FT817 Inc PSU & Rechargeable battery £670
- FT847.....£1400

AOR

- AR5000.....£1340
- AR5000 + 3.....£1500
- AR7030.....£670
- AR7030 PLUS.....£800
- AR5000.....£1340
- AR8200 SERIES 2.....£370
- AR8600.....£600
- SDU5500 Inc PSU.....£785

ICOM

- IC-R2 500KHz-1300MHz, AM, FM, WFM, PC.....£135
- IC-R10 100KHz-1300MHz, AM, FM, WFM, PC.....£270
- IC-PCR100 100KHz-1300MHz, AM, FM, WFM, PC.....£185
- IC-PCR1000 100KHz-1300MHz, All mode PC Rec.....£325
- IC-75 30KHz-60MHz, AMS, AM, FM, USB, LSB, RTTY, CW.....£645
- ICR-3 Full UK tv coverage, 500KHz-2450MHz.....£CALL

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- UBC9000XLT Base receiver.....£250
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World Radio History

customs service is notorious for its thoroughness and three aircraft full of visitors meant long queues. I had been forewarned of this, and hurried into the terminal to be near the front of the queue.

After customs and baggage claim ('different' is the only word to describe this process) we boarded our coaches to be transferred to the various resorts along the coast of Goa. While waiting for our coach to depart, there were several Indian Navy Sea Harriers flying around and I wished that I had packed my scanner in my hand luggage rather than my suitcase.

The Resort & Beach

The resort I stayed in was called Candolim and it is just a few kilometres north of the capital city of Panjim, and still only 24km north of Goa/Dabolim airport. The resort has a beautiful beach which is several miles long and blessed with fine golden sand. The beach was only a few hundred metres from my hotel, no permanent structures are permitted on the beach, so the small beach shacks selling drinks are simple wood and palm structures which are removed at the end of the season. This means that the only sounds on the beach is the crashing surf and the gentle 'clink' of ice in cold drinks - perfect!

HF Listening & Scanning

Within a few hours of arriving at my hotel, I had unpacked all the essential equipment - my h.f. receiver (a Sony ICF-SW7600) and long-wire antenna and *Airwaves 2000*. The antenna is a Revco 'Angler', which is a spool of white plastic-coated wire wrapped onto a plastic former. The end of the antenna wire plugs into a white plastic box (I presume that it contains some kind of

balun?), and from this runs another coated wire which terminates in a crocodile-clip, which was attached to the telescopic antenna on my receiver.

I simply unwound the wire around the hotel room, across the top of the curtain rails, the top of the wardrobe, and the top of a mirror. I did consider trying to install the antenna somewhere outside, but I could not see anywhere

generated ignition interference, but during the early hours of the morning when the roads were quiet it was much easier to listen. While I was listening to my h.f. receiver, I was using internal batteries, so as to avoid any interference via the mains supply.

My first concentrated listening session was just a few days after I arrived, and I tuned to **11.285MHz** to hear

working Male ATC while inbound to Diego Garcia, and they were advised to report their e.t.a. to Diego Tower. A quick change to **13.254MHz** found the flight talking to Diego Tower and reporting their aircraft type as a C-141B Starlifter. I stayed on this frequency for a while, as I wanted to hear more from Diego Garcia, and I was not disappointed.

Very soon afterwards, two

tanker aircraft were heard chatting on the Diego Tower frequency, 'Denver 11' and 'Denver 13' were discussing their receiver aircraft being five minutes late. Shortly after that, Diego Tower was called by 'Banderas 02' wanting a weather forecast for 2100. '02' was then called by 'Diego Foxtrot' (the Supervisor of Flying at Diego Garcia) who wanted to know the weapons status of the aircraft, and '02' replied that they

had 'no weapons, clean bomb bay'. This indicates that the flight was either a B-1B Lancer or a B-52 Stratofortress returning from a bombing mission over Afghanistan.

A short while later 'Navy TH151' was talking to Diego Garcia Tower, passing an updated e.t.a. of 2235. Naturally, the signals from all the stations were loud and clear, and in my first night's listening I had managed to hear all that I wanted to hear!

The following evening (local time) allowed some limited time for listening, and the only interesting flights that I logged on **13.254MHz** were 'Sprocket 1' requesting weather for 1400, and 'Reach P6G' outbound from Diego destined for Singapore.

On the 3rd I tuned to **5.670MHz**. I have always found this frequency to be particularly difficult from the



You just never know what you will encounter on the side of the road. What a charming scene.

suitable to attach the far end of the wire. There was an adjacent tree, but I could see no way to get the far end of the antenna wire into the tree in such a manner that I would be able to recover it at the end of the holiday.

The Sony worked very well, but suffered from a lot of interference and noise. This is not a criticism of the Sony receiver, as all receivers would suffer from the same amount of interference. I even tried some h.f. listening on my Yupiteru MVT-7100, but this suffered from the same interference, indicating that the problem was not with the receivers, but the location.

Over the course of the holiday I tried listening at different times of the day and night, and the interference always seemed to be present to one degree or another. Furthermore, trucks and buses passing the hotel also

several stations in the **SEA-1** network. The very first station that I heard was a very familiar callsign, with a very unfamiliar accent - 'Aussie 245' working Male ATC in the Maldivian Islands, but with a definitely non-Australian accent.

The flight changed to **10.019MHz** to speak with Bombay ATC in the **MID-2** network, and I was able to hear more of the aircraft routing, and to discover the strange accent. This flight was a Russian transport aircraft (possibly an Illyushin IL-76) chartered by the Royal Australian Air Force to fly troops, equipment and supplies into Diego Garcia and the Gulf region as part of the Australian commitment to 'Operation Enduring Freedom'.

A few hours later (at 0115 local time) back on **11.285MHz** 'Reach F3YA' was

UK, so I was happy to hear loud signals from the ground stations and aircraft. According to my frequency guide, this frequency is only used by Colombo (Sri Lanka) and Male, but I heard Kuala Lumpur working 'Navy TH170' which was out from Diego Garcia.

The next day I spent some time back on **11.285MHz**, where 'Navy TH159' was asked for his tail-number, to which he replied '161767' (A USN P-3C maritime patrol aircraft). A while later there was considerable activity by Diego Garcia Tower on **13.254MHz**. Military flight 'DM002' was working Male ATC on 11.285MHz and they were handed-off to Diego Tower where they reported their e.t.a. Diego asked them to pass their e.t.a. to callsign "Hasty Message" - I have no

working Chennai ATC.

The flights mentioned above are just a small sample of all those heard, but it is

beach with me on most days! Typically, on the days when I had no scanner with me there were a few aircraft flying

operating in and out of Dabolim Airport.

The Journey Home

The flight back from Goa to Gatwick leaves mid morning, which means an early start for the airport, mainly due to the number of passengers waiting for flights all at the same time. The airport terminal is quite small and only just manages to cope with the number of flights and passengers. Added to this is the additional security following events of 11th September and there are plenty of queues - access to the terminal, baggage x-ray, check-in, customs, security checks and a final set of hand baggage checks before boarding.

Once aboard the flight we were held for about 30 minutes while some Indian Navy aircraft landed following some exercises - I wasn't complaining, as I had a good view out of the window, I just wish that I had my scanner with me! We waited for a pair of Indian Navy Sea Harriers to land and then the aircraft that I never thought that I would see flying - an Indian Navy TU-142 'Bear'. I did manage to get a photograph of this aircraft through the aircraft window as it landed.

The flight back to the UK was in daylight all the way, giving excellent views of the deserts of Oman, Saudi Arabia and Syria, but it was cloudy for most of the flight across Europe. As if by magic, the clouds disappeared as we crossed the North Sea between Belgium and the Thames estuary. Our arrival at Gatwick was just a few minutes later than scheduled, but the change to a 2°C (from 32°) was quite a shock.

Would I go back to Goa? - I certainly would, and I would still be there now if it wasn't for the Editor and Zoë nagging me for my 'SSB Utilities' column each month. Would I do anything different? - probably more radio listening, and maybe try harder to understand some of the reporting points. For now, *Shukriya* everybody. **SWM**



The components of my 'radio station' while in India - h.f. receiver, scanner, frequency guides, a small toolkit and a portable red-wire antenna.



The reason for our delayed departure, taken through the aircraft window - a magnificent Indian Navy Tupolev 142 landing at Goa/Dabolim airport.

idea who this was, but I suspect that it may have been either a US Navy aircraft-carrier or a guided-missile destroyer on radar picket duty guarding the skies around Diego Garcia. 'DM002' was then heard contacting "Red Crown", which is also thought to be some kind of US Navy surface vessel operating near Diego Garcia.

On my last day of listening I was once again tuned to **11.285MHz**. Amongst the hordes of commercial flights were 'Navy TH169' (presumably another USN P-3C aircraft) and 'Reach 52F3' working Brisbane ATC, 'DM001' working male ATC approaching Diego Garcia NDB 'NKW' and 'Slip 47'

very difficult to log everything. There were plenty of commercial airline flights, but I decided to concentrate on military flights. It was quite hard

listening to all the different accents and my unfamiliarity with the numerous reporting points made logging a challenge. I only managed to log a fraction of the position reports because I did not understand the names used. Those that I did manage to make a note of were then checked in *AirNav* when I got home and I still only managed to positively identify a few out of the dozens that I heard. It was much easier with NDB reporting points as the position is given by their three phonetic letters.

Although I had my v.h.f./u.h.f. scanner with me, I did not really put it to much use - I forgot to take it to the

about, and when I did have my scanner handy, the skies were quiet. One day I did get lucky; as I was collecting everything together before heading for the beach I heard the drone of an aircraft passing overhead and this reminded me to pack my scanner.

A few hours later on the beach the aircraft returned, and was heard working Dabolim Tower on 118.1MHz. This turned out to be an Indian Navy IL-38 'May' maritime patrol aircraft using the callsign 'Navy 302'. This turned out to be a busy day on v.h.f. as there was also an Indian Navy Kamov KA-25 'Helix' helicopter ('Navy 155') and an Indian Coast Guard Alouette III ('CG 818') flying up and down the beach. Other types seen during my holiday were a flight of four Indian Coast Guard Dornier 228s in formation, three Indian navy HJT-16 Kirans also flying in formation and a single Indian Air Force Antonov An-32. These were scattered amongst the numerous tourist flights and Indian internal flights

■ GRAHAM TANNER, 64 ATTLEE ROAD, HAYES, MIDDLESEX UB4 9JE

■ E-MAIL: ssb UTILS@pwpublishing.ltd.uk

SSB Utilities

Recife

In April's "SSB Utilities" I mentioned a letter from **Tony Barrett** in Devon with an update on his new antennas, and how he heard a South African Airways flight 'Springbok 206' crossing the South Atlantic. I commented that I had not heard of 'Atlantic Centre' as reported by Tony, but I have now managed to find some more information. One of my colleagues provided me with a selection of recent Jeppesen charts, including one covering the South Atlantic region. There are markings on the chart which indicate that the airspace controlled by Recife in Brazil now goes by the name of 'Atlantico Radio'. The same chart also provides an update on the h.f. frequencies operated by Recife Radio - 5.565, 8.861, 13.357 and 17.955MHz.

One item which I completely forgot to mention last month while talking about South African Airways is that they have their own busy LDOC network, and listening to this can provide a good insight into the progress of several flights. They have a range of frequencies between 3 and 21MHz. Flights usually call in every 30 minutes or 1 hour depending upon the flight, and I have personally heard flights on **8.933MHz**.

Rather conveniently, the flights usually tell the ground station when they will call again, so you can go away and do something else until the next schedule, or you can stay tuned and hear other flights calling. For the record, South African Airways use the following h.f. frequencies - 3.013, 5.532, 8.930, 8.933, 11.354, 13.327, 13.330, 17.925 and 21.943MHz.

Next Shuttle Launch

In the March *SWM* I mentioned the launch of the Space Shuttle flight STS-109 which was due just a few days after publication. True to form, the launch was delayed, but by only one day. In the 24 hours leading up to the original planned launch date/time, I sent my usual 'pre launch warning/reminder' to all the members of the 'SWM Readers' group on the Internet, and then shortly afterwards discovered that the launch was delayed. More E-mails were sent to the group advising of the delay. Later still, once the rearranged launch time had been confirmed, I sent yet another round of E-mails advising of the new launch time. Unfortunately, those kind of circumstances cannot be accounted for when writing magazine columns with their advanced deadlines, but I hope that some of you were able to listen, maybe discover the postponement, and the subsequent launch. It was rather unfortunate that STS-109 launched just before midday UK-time on a weekday, otherwise there would have been many more monitors.

I have been checking the NASA web site for details of future launches, to see if there are any launches worth mentioning in this column. An ideal launch, as far as this column is concerned, is one due near to the start of a month or at the very end of a month, with *SWM* appearing just a few days before this, it makes an ideal subject to mention as the launch is fresh in peoples minds.

Suitable Shuttle launches over the next few months are on the 2nd May, 1st August and 6th September. These are all *ISS* missions so their launch usually brings the flight over the UK soon after launch, and also several times a day while in orbit connected to *ISS*. In amongst these, there is also a launch planned for 11th July which is not an *ISS* mission. Please remember that these are 'planned' launch dates, and as we get closer

to these dates they will either be confirmed or rescheduled for later dates. More details of these launches can be obtained from Lawrence Harris in his 'Info in Orbit' column each month in *SWM*.

SCC Web Site

I know that I have mentioned the Sea Cadet Corps in this column several times in the past, and I am going to mention it again this month. Every few months I surf the Internet to see if any of the Cadet Forces have set-up new web sites or made changes to existing ones. Earlier this year I was most surprised to encounter a huge update to the Sea Cadet Corps Communications Branch web-site. The site now includes a downloadable copy of the SCC Communications Training Manual in the form of an *Adobe Acrobat* (PDF) document. For short wave listeners everywhere I am happy to reveal that this document contains a chapter which lists all the SCC callsigns along with their locations. In fact, the list is in two parts - 'encode' and 'decode'. This is handy for listeners, as now you can find out where a station is location when you hear it on their Sunday morning h.f. net. I can't tell you the exact frequency used, but I can reveal that it is just below 7MHz and will be very easy to find.

Letters

Robert Paterson from Glasgow wrote to ask a question about the selcall tones used by Stockholm Aeradio. He has recently been monitoring them on **11.345MHz** and has noticed that when they send selcall tones it sounds like they send three tones, whereas the tones sent by the transatlantic OACC stations (Shanwick, Gander, New York, Santa Maria, etc.) are definitely two tones. Robert asks if I can explain this.

Well, I can say that I have heard this feature when listening to Stockholm Aeradio, but it never really bothered me (or the pilots I suspect) as the aircraft usually seemed to answer the selcall check correctly. As you are probably all aware, aeronautical selcalls are two pairs of tones and when each of the individual tones in each pair is mixed together, they give a third tone which is the one detected by the 'black box' in the aircraft.

Some people claim to be able to hear the individual tones when a selcall is transmitted, but I find this hard to believe. The only reason that I can think that Robert is hearing three tones is that maybe the tone generators in the Stockholm transmitter are being keyed at slightly different times.

The first generator is keyed for the first letter of the selcall code, and a split second later the second tone is generated - together, these form the first half of the entire code. This gives the impression of two separate tones, but they are correctly mixed together when both tones are sent at the same time. Then, when it comes time for the second half of the code to be generated, the two tone generators are keyed at the same time.



Web Watch

FAA h.f. information -
<http://www.faa.gov/ats/aat/ifim/ifim0109.htm>
 SCC - <http://www.sparkers.fsnet.co.uk>

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

Satellite TV News

February into March has been a period of punctuated activity, few dramatics, but with interesting moments. Space watchers with tracking satellite dishes would have been delighted to have seen several NASA-TV presentations courtesy of the Globecast digital package on *NSS-K* at 21.5°W (11.590GHz-Vert; SR 20145 + FEC 3/4). The February 15th STS-109 *Crew News Conference* ex the Johnson Space Centre prepared journalists and viewers for the upcoming Shuttle flight, carried on Globecasts Channel 2.

Early March and the Shuttle *Columbia* was up in space and the crew were seen (Globecast channel 1) hard at work moving a new solar panel wing from the cargo hold and replacing it on the *Hubble* telescope, retrieving the faulty wing for examination back on Earth. Pictures were nothing short of dramatic as camera techniques and quality have improved considerably over the past couple of years. An astronaut is seen almost balancing on the distant massive crane arm with the Earth slowly rotating behind!

March 1st and another Globecast channel 1 offering, this discussing the 'Mars Odyssey' project showing survey pictures of the Mars surface in squares of just a few km, infra red spectroscope analysis. A very technical update from NASA-TV. Less technical, but more emotive were the March 11 Atlantic path feeds from New York, six months after the September 11th Twin Towers attacks, several leases carried the White House speech by President Bush, the 'BT WASHINGTON' 11.529GHz-V (5632+3/4) slot early evening transmitted a live report from the NY waterfront into Spain followed by 'APTIN NEW YORK' playing out several VTR packages for European broadcasters. Interesting the 'FLIGHT 9' caption on colour bars during this payout period. Anyone know what/where 'HUD HEADQUARTERS' is, it's UTC-5 and seen on Globecast test card on March 13th?

Voting time in Zimbabwe March 9/10th, recalling cricket matches from Harare being uplinked onto *Europe*Star*, 45°E. I carried out a scan on the bird and at 11.503GHz-V (5632+3/4) 'TARIDAN SCOPUS' was found uplinking near to the border crossing at Messina - between South Africa and Zimbabwe. Most of the news feeds were destined for the UK networks and mainly simple 2-way reporting straight to camera or local 1 + 1 stand up interviews. At one point the reporter shading his eyes and reacting to a low flying aircraft that was circling, smiled and said "It's OK, it's not Zimbabwean"! Deep blue cloudless skies, scorching sun apparently, contrasting to the UK's grey, chilly early March winds.

A region of terror and sudden death is Jerusalem with ongoing friction between the Israelis and Palestinians. Whereas APTN Middle East used to uplink on two *Hot Bird* slots (13°E), in the middle of January these feeds ceased. All isn't lost as several folk advise that APTN has reappeared on Eutelsat's *W1* bird at 10°E. This signal is weaker than previously experienced on *Hot Bird*, but should lock OK using a 900mm+ dish, though I found polarity skew critical. Check out 12.629GHz-V (5632+3/4) with a service ident 'APTNGVVW 442074827430'. In recent weeks, the picture content being raw unedited footage of suicide bomber aftermaths has been very bloody. The 12.629 APTN frequency also carries both Middle East, North African and near/mid Asian footage during news distribution exchanges.

Roy Carman (Dorking) notes that the Balkans War Crimes trials continue from the Hague, Holland. 'APTIN Den Haag' have been using 12.742GHz-V (5632+3/4) with live coverage on Eutelsat's *W1*, 10°E. Mid February and dictator Milosovich was in the stand trying to justify his actions, comparing (his words) to the Moslem terrorism that ran amok through Croatia, Bosnia and Kosovo destroying over 1400 Catholic and Christian churches. He apparently argues well despite his misguided reactions

and related carnage.

Littlehampton teleport operator **Edmund Spicer** suggests that ballroom dancing anoraks will be delighted to learn that 'OCCASIONAL-1' on 11.771GHz-H, Hispasat 30°W has been carrying late night dancing competitions (French and Spanish languages) - but if your interests are more 'physical' - then the French TV5-text suggests that 30°W carries a Portuguese FTA hard porn channel 'Intimo' at 11.891GHz-V at certain times of the week, possibly weekends and after local midnight...digital parameters are not advised.

Hughes Global Services have been advertising 'Low Cost Satellite Bandwidth' over Europe/Africa/Middle East' in the industry trade press using their *Anatolia-1* craft at 50°E, with *Europe*Star-1* also offering cut price linkage in an overcapacity market. It may be worth checking the 50°E slot for budget conscious broadcasters www.hughesglobal.com

Readers often ask what digital satellite receiver can I recommend. I'm not employed 'in the trade' and cannot offer wide experience of current models - nor can I part with large sums for some of the upmarket units now on the market. I've been testing however a low budget (i.e. cheap!) FTA (free to air) receiver called the Manhattan 'DigiPlaza' alongside my vintage RSD ODM-300 receiver here and can report encouraging results!

The ODM-300 is now over three years old, but features auto search in both symbol rate (SR) and forward error correction (FEC). The DigiPlaza doesn't have auto SR, meaning that an educated guess is needed for SR inputting. Checking the 'BT Washington' feed at 11.529GHz which SRs @ 5632 and progressively introducing an SR error input maintained SR lock to 5662, failing lockup at wider error inputs. FEC however enjoys auto search and locks happily, though cannot tell you its secret in menu. It's a fast 'locker up' on memory channels and access to basic data is a single remote button push. I'll report more in an upcoming column.

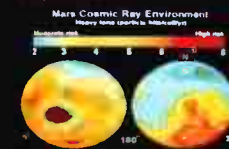
Stefan Hagendorn's (German) Internet newsletter recently mentioned an Israeli TV offering 'Channel 26' carried on the *Eutelsat W2* at 16°E - 12.628GHz-V (SR2222 + FEC 3/4). Checking this frequency indeed found instant channel lockup with a very strong signal (1.2m dish. 0.8dB noise LNB), programming of religious discussion and childrens entertainment is present mid afternoons and seems to end approx. 1900GMT, thereafter a caption '26' and other Hebrew writing. Service ident is 'RAGLEY MEVASER' on which perhaps one of our Hebrew speaking readers can advise...

Northern UK reader **Dave Dyson** has also been monitoring Eutelsat at 16°E and reports seeing display dancing soldiers in a sportsground! Further viewing confirmed these were Arabic soldiers performing for a large number of Arabic guests, lots of flag waving and several towed floats - perhaps a military carnival? The service ident 'DV3B W2 D9' told little, but an on screen caption at least helped - 'ALMUS TAKIZLAH TV - YEMEN'. Several reports have been received suggesting that the Russian NTV programming is appearing within the Globecast *NSS-K* package (see above) on channel 3. These offerings appear late afternoon on many days and can continue until 2000. But, continuous NTV programming isn't available. At times the picture cuts to the studio and rehearsals appear. In fact, this is a long duration video circuit established out of Moscow for 2-way interviews and the NTV programme is sent on the West bound circuit.

And finally and perhaps important news item from **Dave Dyson**, noting in *Flight International* March 8th that WorldSpace are not launching their third satellite *Ameristar* due to financial problems. There has also been press talk that WorldSpace have been considering charging for their service. If you're thinking of buying a WorldSpace receiver it might be advisable to check out if the future situation is known...



BBC interviewer prepares his election night, March 10th on the Zimbabwe/S. African border crossing at Messina (Europe*Star-1).



Research feedback from the 'Mars Odyssey' probe, via NASA-TV.



News conference prior to the Shuttle lift off, via NASA-TV.



BBC Test card ex Kabul (Europe*Star-1).



CNN test card ex Bagram (Europe*Star-1).



GI uses his radio remote to destroy Taliban ordnance (Europe*Star-1).



Meet the new neighbours, Palestinian conflict (Eutelsat 10°E).



Scandinavian reporter at the Winter Olympics (NSS-K).



Outside broadcast ex Pittsburg (NSS-K).



Channel 26 via Eutelsat W2 @ 16°E.

■ CLIVE HARDY G4SLU, SWM, ARROWSMITH COURT, STATION APPROACH, BROADSTONE, DORSET BH18 8PW

■ E-MAIL: clive@pwpublishing.ltd.uk.

Amateur Bands

Top Of The Pops

A recent poll by 425DXNews has shown little alteration in the top ten 'most wanted' DXCC countries from last year. The unsurprising big change is that the new DXCC country of Ducie Island (VP6D) in the Pitcairns has shot straight in at number one, displacing North Korea (P5) from the top spot.

The other countries that have been in the top ten for over a year, and probably for decades, are: Andaman & Nicobar Islands (VU4) in the Bay of Bengal - Scarborough Reef (BS7) west of the Philippines in the South China Sea - Laccadive Island (VU7) off India's west coast - South Sandwich Island (VP8SA) in the South Atlantic - Yemen (7O) - Peter 1 Island (3YP) in the Bellinghausen Sea off West Antarctica - Juan de Nova, Europa (FRJ) in the Mozambique Channel between Africa and Madagascar.

So you're an amateur and you want the thanks of tens of thousands of fellow amateurs around the world? Then just arrange your next holiday to one of those locations, take your radio, and perhaps a few amateur friends. *Et voila!* That's all there is to it! You're not convinced?

Have a look at <http://www.425dxn.org/sonorol/> which has pictures from the DXpedition to Sonorol mentioned in February's 'Amateur Bands'. Very nice.

Future DXpeditions

Turkish amateurs TA2RC, TA2MW, TA2LE and possibly others will be operating as own call/TA0 from Kefken Island, which is just east of the Bosphorus off Turkey's Black Sea coast, between May and August. Activity will generally be during the weekends and will include the IOTA Contest weekend, 27-28 July 2002. The web site is http://www.ta2ki.org/eng_dos/anae.htm

Italians Nicola I0SNY and Gianni I8KGZ will be active as JT1Y from Mongolia's capital, Ulaanbaatar, for a couple of weeks starting on 21 May. Definitely a health hazard. The low 'cloud' that can be seen drifting over the city in the picture (top right) is actually pollution.

Diego Garcia of Chagos Archipelago, in the middle of the India Ocean will be activated by George K7GB on all bands (c.w. and s.s.b.) as VQ9GB. This should have started during March, and will continue until mid May.

Also on Diego Garcia, VQ9MR was heard during February by Philip Davies in Shropshire on the 14MHz band, as well as H40T on Temotu, scene of the DXpedition covered in last month's column, on 24MHz.

As well as those stations Philip logged 5U0T in Niger on 24MHz and on 21MHz, B15A in China, CVB1F in Uruguay, ET3PMW in Ethiopia, 4J3M in Azerbaijan and XV2A in Vietnam, plus JW7QIA on Svalbard Island in the Barents Sea and PW6AI at the Abrolhos Archipelago off the coast of Brazil near Salvador.

Highest on the DXCC wanted list in his logs was PW0T on 18MHz at Trinidade and Martin Vaz Islands well into the Atlantic off Brazil's coast.

As well as the Rascal RA1792 which Philip uses for amateur band listening he uses an Icom R72 for broadcast band listening. One feature of that radio which he

particularly likes is the l.e.d. which lights when the radio is tuned spot on to the frequency of an a.m. broadcast.

O.H.M.S.

To commemorate the 50th anniversary of Queen Elizabeth's succession to the throne a special event station will operate from Windsor Castle between 0700 and 2200 between the 29 May and the 9 June. It will be run by Cray Valley Radio Society and Burnham Beeches Radio with the Radio Society of Great Britain's support (RSGB) and will use the callsign GB50. The web site for this event is www.gb50.com

Antennas - The Endless Quest

Last month I mentioned that Alan Barker in Leicestershire, with his NRD-345 and long wire, was looking for better reception into South America. Well, he's experimented by adding four metres to his original 11m long wire antenna, with the extension at angle to the rest of the wire. This new 'dog leg' antenna seems to have brought him some success, with PY5XT and PT700 in Brazil, CX5BW in Uruguay, (all on 7MHz) and PZ5RA (21MHz) in Suriname.

Other stations of interest that Alan picked up during on 28MHz during February were RW1ZW/MM (Maritime Mobile somewhere off southern Greenland), 7X2DG in Algeria, CU1CB in the Azores and VU2WAP in India.

Another person experimenting with antennas is Brian Lintern who has a Roberts R861 to which he has attached a long wire to the radio's telescopic whip with a crocodile clip. Pretty sound idea to start with, but a bit hit and miss as far as matching is concerned. Armed with Joe Carr's authoritative *Receiving Antenna Handbook* Brian hopes to put up an antenna with a coaxial feed to connect to the radio's external antenna socket. We await developments.

Band Plan

Just like the h.f. *aide memoire* featured in the December 2001 'Amateur Bands', this month I've provided one for v.h.f. and u.h.f.

Just like the h.f. version, it isn't bursting with detail, but it should provide enough information so that the bands can be found and monitored!

Don't worry if you missed the h.f. version, I'll include both of them fairly regularly in the column.

Thanks for the logs and correspondence of your listening activities. Please address your letters to **Clive Hardy G4SLU, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW** or to clive@pwpublishing.ltd.uk If you write, a daytime 'phone number is very helpful.



The Amateur Bands (v.h.f. & u.h.f.)

Band	Frequency (MHz)	
6m	50.000 - 52.000	By convention c.w. and s.s.b. are used in the lower portion of each band
4m	70.000 - 70.500	
2m	144.00 - 146.000	Mostly ATV activity in this band
70cm	430.000 - 440.000	
23cm	1240.0 - 1325.0	Satellite + ATV
13cm	2310.0 - 2450.0	

ST9892





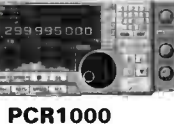






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	AR5000+3	High performance base receiver with three enhanced options factory fitted: noise blanker, synchronous AM, automatic frequency control.	£1449.00
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ALINCO	DJ-G5EY 270W WIDE BAND TRANSCEIVER	£200.00
ALINCO	DR-590 DUAL BAND MOBILE	£175.00
ALINCO	DR-605 DUAL BAND MOBILE TRANSCEIVER	£230.00
ALINCO	DX-707 100W MOBILE / HF	£399.00
ALINCO	DX-707H TRANSCEIVER	£475.00
ALPHA	87A FULLY AUTOMATIC AMP	£339.00
AMERSTON	OSK-5 2.5kw QSK SWITCH	£199.00
ADR	AR-2002 BASE SCANNER	£199.00
ADR	AR-3000A RECEIVER	£495.00
ADR	AR-5000 RECEIVER	£1,199.00
ADR	AR-7030 REMOTE CONTROL RECEIVER	£995.00
ADR	AR-8000 HANDY RECEIVER	£199.00
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DAIWA	PS-120MK11 10amp PSU	£50.00
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DIAWA	CNW-518 2KW CROSS METER ATU	£199.00
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ICOM	IC-475E AC 25W MULTIMODE 70CM BASE	£525.00
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ICOM	IC-725 HF MOBILE 100w	£400.00
ICOM	IC-728 HF MOBILE 100w	£425.00
ICOM	IC-729 TRANSCEIVER HF/50MHz	£425.00
ICOM	IC-735 HF 100W	£450.00
ICOM	IC-746 HF/50/2M 100w	£999.00
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ICOM	PS-35 PSU 20 amp	£120.00
ICOM	PS-85 POWER SUPPLY	£175.00
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ICOM	W-21E DUAL BAND HANDY	£199.00
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■ PETER BOND, c/o EDITORIAL OFFICES, BROADSTONE

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Sky High

A slightly shorter column this month due to the fact that I am involved in a massive project at work, unfortunately the day job gets in the way occasionally.

Sadly, Mildenhall Air Show has been cancelled for the second time in recent years. The reasons given were originally open to speculation, but when a couple of weeks later the subject of Iraq was on every newscast, it became fairly obvious that the real reason for cancellation was that the Americans seemed to have put a new item at the top of the anti-terrorist agenda! The Air Fete is due to return next year, but will definitely not take place in 2004 as the runway is scheduled to be resurfaced. With the demise of Mildenhall, that leaves the RIAT 2002 as the big event to look forward to this year.

The return to Fairford will hopefully provide a bumper haul of aircraft with the extra parking areas that are now available. I am certain that the show will produce all sorts of goodies with unusual items such as the Lithuanian Air Force and the Cypriot Defence Force already in the frame. The official re-opening of Fairford is due to take place on 21st May. There are several interesting aircraft due to be in attendance, these include B1, B52 and KC-135. Whilst on the subject of Fairford, it is worth mentioning that another U-2R was noted arriving on the 16th February, using the positioning callsign, 'DEUCE 04'.

ACARS Pt. 3

Thanks for your positive comments about the recent information on ACARS in 'Sky High', it seems that some of you who take an interest in this subject have felt rather neglected. As promised, the third part of the series about ACARS details the frequency and transmitter sites used in the UK and Ireland, see **Table 1**. I personally don't ever remember seeing this information published anywhere, so hopefully this will give a good guide to readers as to the best locations to hear each frequency.

The listing comes from an anonymous source, but from information gleaned from the photocopied pages, I have no reason to doubt the integrity of the data. For completeness, as in theory you should be able to hear them from the south of England, I have also included the listings for Belgium, The Netherlands and Northern France.

As can be seen for the UK sites in **Table 1**, 131.725 is by far the busiest frequency with 131.525 and 136.9 being transmitted from three sites each



and 136.925 is in use at just one location in Glasgow.

Swanwick

The new centre at Swanwick has now been up and running for a number of weeks with no serious problems. I have had several pieces of correspondence connected with the new centre, so I will attempt to answer them now.

Keith T asks if London Military is to follow the LJAO sectors to Swanwick. The answer as far as I am aware is no, the Terminal Control, (TC), side of London Control has yet to move to Swanwick with the move expected within the next five years. That will then take up most of the available capacity in the Operations room and so there will not be the room to place London Military at Swanwick. The long term future of West Drayton is currently under review so it may be that London Military actually moves to a different site completely. Watch this space.

Offsets

That leads me neatly on to 25kHz spacing and the use of offset frequencies and this hopefully will help explain some of the difficulties of introducing 8.33kHz spacing. Since my comments regarding offset frequencies last year, I have had several items of correspondence asking if I could expand on the reasons for using offsets, so here we go.

The basic principal of offset frequencies is to allow the same frequency to be broadcast from more than one transmitter site giving a greater area of radio coverage for a single frequency. The usual occurrences of this being within Area Radar, (en-route), such as London Control or London Military. It is always essential to have a guard area around each frequency so that it does not bleed into

Table 1: ACARS Transmission Locations - United Kingdom & Ireland.

Aberdeen	131.725
Barra	131.725
Belfast	131.725
Birmingham	131.725
Dublin	131.725
Glasgow 3	131.525
Glasgow 1	131.725
Glasgow 2	136.925
Jersey	131.725
London Gatwick 1/2	131.725
London Gatwick 5	136.9
London Heathrow 1/2	131.725
London Heathrow 3/4	131.525
London Heathrow 5/6	136.9
Manchester 1	131.725
Manchester 3	131.525
Manchester 5	136.9
Newcastle	131.725
Prestwick	131.725
Shannon 3	131.525
Shannon 1	131.725
Stansted	131.725
Stornoway	131.725

Belgium

Brussels	131.725
Brussels	136.9

France (North)

Brest	131.725
Paris 3	131.525
Paris 1/2	131.725
Paris 5/6	136.9

Netherlands

Amsterdam 3	131.525
Amsterdam 1/2	131.725
Amsterdam 5	136.9
Amsterdam 7	136.975

Sky High

adjacent channels, consequently, modern 25kHz frequencies are effectively cut into three segments.

Airfield frequencies such as Heathrow tower on 118.5 are centred and do not use offsets, consequently they have a natural guard area either side, (See Fig. 1). Area frequencies such as London Control on 129.1 (Lakes Sector), is broadcast from the transmitters at Preston with a plus 5kHz offset and from Clee Hill with a minus 5kHz offset, (offsets are usually ± 5 or ± 7.5 kHz). This means that the same nominal frequency can be broadcast simultaneously from the two transmitters without them interfering with each other.

The receiver bandwidth in the aircraft, (or your radio), is wide enough setting and consequently will allow reception of either transmission without differentiating between either offset. If you have the facility on your radio to alter the filtering you could tune in to a local en-route transmitter site, (if available), and switch between filters and tune up and down to see the effect of the offset frequencies.

You will see from the diagrams that the system works fine as long as frequency allocation is carefully planned. In the perfect world, each allocation will alternate between airfield and en-route frequencies, the centred airfield frequency providing automatic guarding between the two. Two airfield frequencies next to each other is also not a problem with a bigger guarded area, but you cannot allocate two en-route frequencies next to each other. If this were to happen, the lower and upper offset of each frequency would cause interference. I think this highlights the potential problems of introducing 8.33kHz spacing with the reduced bandwidth.

8.33kHz Spacing

With regards to the much talked about 8.33kHz spacing, we are long past the original UK deadline and it is now two and a half years since it was first introduced in Europe, (Oct 1999). The European implementation was not without problems and I am fairly certain that there are some within the powers that be in this country who would rather not see it introduced at all!

But 8.33kHz spacing will shortly be with us, it is to be introduced into a further 22 European States including the United Kingdom with the current date planned for the 31st October 2002. All previous exemptions to the 8.33kHz criteria will be withdrawn and all aircraft entering those states above Flight Level 245 must be 8.33kHz equipped.

In the UK, it will in theory only affect the Area Radar of London and Scottish Control above FL245, presumably airfields and low level radar will remain relatively unchanged. Whilst the military will have to re-equip a fair percentage of their aircraft to fly in Civil airspace, from current evidence, Belgian, French and Dutch Military Radar have not utilised this spacing, so as far as I can see, there is no reason to introduce 8.33kHz spacing to either London or Scottish Military.

Whilst the introduction is scheduled for the 31st October, that does not necessarily mean that UK frequencies will change on that day, it may be some time before changes are made. The plan is to change en-route sectors so that they will use either

8.33 or 25kHz frequencies, once the change is established, frequencies of a different spacing will not be mixed on a sector.

Using the principals laid out in the offset frequency examples given above, you can see that the allocation of 8.33 and 25kHz frequencies on adjacent sectors will have to be very carefully planned! As soon as some firm information on frequency changes is known, I will of course pass it on to 'Sky High' readers.

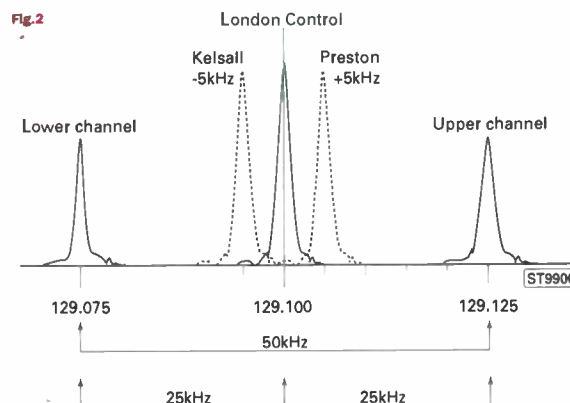
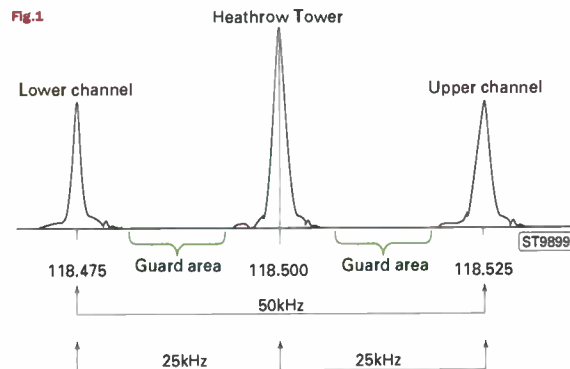
This new spacing will in theory give access to three times the number of v.h.f. frequencies, but to maintain area coverage I am assuming that the 8.33kHz spacing would still be transmitted using offset frequencies. I am no technical expert, but I would imagine that the quality of the filters would have to be very good for such a narrow bandwidth. My own guess is that adjacent channels to the active 8.33kHz en-route frequency will not be allocated at all? I have already gone into this subject in detail in the past, but a quick reminder of the frequency format would not go amiss.

On a 25kHz sector, when passing a 25kHz frequency to an aircraft the controller will call it a **frequency** and use **two** decimal places, for example 126.07 or 131.12. On a 8.33kHz sector it will be called a **channel** and will be passed to the aircraft with **three** decimal places, for example 129.005 or 131.280.

As far as your radios are concerned, as long as your radio can resolve down to 5kHz spacing, (which most radio's can), you will be able to receive the new 8.33kHz frequencies without a problem. Problems will only occur if they allocate 8.33kHz frequencies close together and you are not able to select a smaller filter size on your radio. Breakthrough may well then be experienced, but logically, I would have thought that allocating frequencies close together would be unlikely - time will tell.

Thanks To

My thanks to **Andy K, Martin S, Steve L** and **Mal** for their questions and to **Geoff T** for the informative letter. With no Mildenhall this year, our photo this month looks back at the 1986 Air Fete as Blackbird 17960 taxis out on the Thursday Arrivals day for a practice display/fly-by.



■ DAVE ROBERTS of SWM EDITORIAL OFFICES, BROADSTONE

■ E-MAIL: scanning@pwpublishing.ltd.uk

Scanning Scene

Some years ago I was minding my own business in my car, happily motoring along the A404. I was in a line of traffic and we all had to stop for someone to cross on a zebra crossing ahead. Well, most of us stopped. The girly driving the large car about a hundred metres behind mine didn't and she smacked into the rear of my Ford and in doing so made an excellent job of making total wrecks of both cars within a second.

What's this got to do with scanning? The reason I mention this minor accident in my life in connection with radio is that the car was fitted with a small mobile transceiver behind a blanking plate in the dash. The radio had been professionally fitted (so I thought) and as the wench's carriage connected with the rear end of the Ford the radio whizzed out from the dashboard, past my ear and took out the rear screen. Yes, she did a job on the radio too. If anyone had been sat in the way of that set as it took it's one and only flight they'd now be using a can opener to floss their teeth.

I know that since this expensive incident, I've always made sure that any mobile gear fitted in a vehicle is properly secured. A mate of mine has a mobile scanner in his car, but like so many vehicles these days, it has a moulded console and there is no room to fit a radio. His scanner is wired into the car's battery, but it just sits on the top of the dash with a couple of large elastic bungees wrapped around it to stop it

sliding around on the plastic. If he has to stop suddenly or gets clobbered by another vehicle, that radio's going to be flying round the inside of the car like a wasp on acid. Very dangerous. I know that drilling holes in the console of a car may damage the interior

programming the set while driving, but with a radio designed for vehicle operation, the buttons are big enough to make sure that the correct button is pressed while travelling as a passenger.

For those people that live in areas where vehicle crime is a

want to get the latest expensive toy pinched by the junkie down the street do you?

Many folks that have need of a scanning receiver in the vehicle have to install hand-held units as of necessity. In which case it's a good tip to ensure that the unit is



and possibly the resale value, but in terms of straightforward safety, it really makes good sense.

Mobile Use

I find that hand-held radios don't provide enough audio output to be useful when on the move and so I always end up fitting equipment designed for mobile use in the vehicle. I also find that generally mobile gear has slightly larger controls and displays than hand-held kit and therefore it's much easier to operate the on/off volume and squelch controls when on the move. I don't recommend

problem (i.e. 99.9% of the UK) the scanner can often be secreted in the glove box with an extension speaker mounted beneath the dash. This makes the necessary holes less visible too. (Use a removable mini magmount and pop it in the car when not in use.) Until recently, I had an old sixteen channel v.h.f./u.h.f. scanner marked up as a 'Saiko' make fitted as I have described, but this has just passed away, it being about eighteen years old. The basic rule being that every year of human life is equal to five 'scanner' years. Yes, it was a fairly old set, but was an ideal basic cheap unit to leave in a car. You don't

securely fastened in the vehicle just in case a collision occurs. A few devices are sold to mount portables in cars. I have tried most of them and have had no luck whatsoever with those that clip into the fascia vents. They either destroy the vents, drop out and damage the radio, or both. Some gadgets that clip into the window fitting are OK, but can damage the electric window motors by adding stress to the mechanism. Portables are a popular choice for vehicles, so if any manufacturers are reading this...please come up with something effective for us.

Replacement Scanner

Now that the ancient Saiko scanner has gone, I have started to look for a replacement. I need something basic with a maximum of around a hundred channels although as few as sixteen would do. It doesn't need to have a search function, but has to have selectable a.m. or f.m. and 12.5kHz channel spacing on all bands as well as 5kHz steps. I have Internet access (when the 'phone works) and I have come across the Ebay and Yahoo auction sites on the Internet. I'm not going to give the web site addresses here as it takes half a page, but if you do a search, you'll find them.

If you have access, go and peek at these websites. Radio gear of all types is listed. The prices mostly seem excessive, but it's nice to see what people have available for sale. Your screen will soon fill with a plethora of radio gear. However, beware, there are some very dodgy types operating on the 'net, but with

a bit of luck, I'll find a replacement for the Saiko there.

Interesting...

I've had an interesting mail from **David W.** who has recently travelled to the German, Belgium, Dutch border region. He obviously speaks German and was able to monitor the Autobahn traffic cops in the Dusseldorf and Aachen areas. David says that he found their radio procedure to be less formal than one would imagine and certainly more chatty than some of the officers on the M25 (M2SM) channel in Surrey.

He enclosed some information regarding the German intention to introduce a TETRA system. It seems that justification for the vast expense is being based on interoperability with neighbour states (Belgium and Holland), confidentiality and the availability of data transfer on the scheme. The Germans are, however, in no doubt as to the huge cost of

the system. A figure of six billion Euros is mentioned to equip all the security agencies. Now that's a lot of bratwurst!

Motor racing is about the most expensive sport on the planet. Its home in Britain is at Silverstone where a number of Formula 1 race teams involve themselves in testing.

Silverstone is a high intensity r.f. environment. Everyone there seems to carry a transceiver. Some of the racing teams encrypt their transmissions and audio inversion has certainly been used, but with the British Grand Prix due on 7th July, it may be time to consider taking your scanner should you find yourself in the area. Some teams have repeaters with output frequencies in the v.h.f. and u.h.f. spectrum and input frequencies in the 170 to 171 region.

Try 165.84735 f.m. output and 170.71875 f.m. input, 166.85625 and 171.45625 input for the Arrows Team. 458.13125 f.m. and 458.25625 f.m. with input frequencies around 468 to 146.300 for

input frequencies for the Renault Team. Renault pit crews seem to be on 463.63125. Williams have been using 164.33125 with the input on 168.41875.

Basically a search around the 164, 165 and 166MHz ranges will detect some interesting motor racing traffic. Also have a look at 455, 458 and 463MHz. A scan through these frequencies may yield results. Frequencies seem to change from year to year, but it's certainly worth lugging the radio along when in the locale of a motor racing venue.

Also, bear in mind that the Radio Communications Agency may well have staff at the British Grand Prix. This has been necessary in the past in order for them to resolve conflicts between the many users of the spectrum over who 'owns' what frequency for the duration of the event. With a lot of big money staked on the outcome of the race, some of the disputes can get fairly heated.

Until next time then...

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Propagation Forecasts

How to use the Propagation Charts

The charts contain three plots. The lower dashed line represents the lowest usable frequency (LUF), or ALF (Absorption Limiting Frequency). The chances of success below this frequency are very slim.

The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

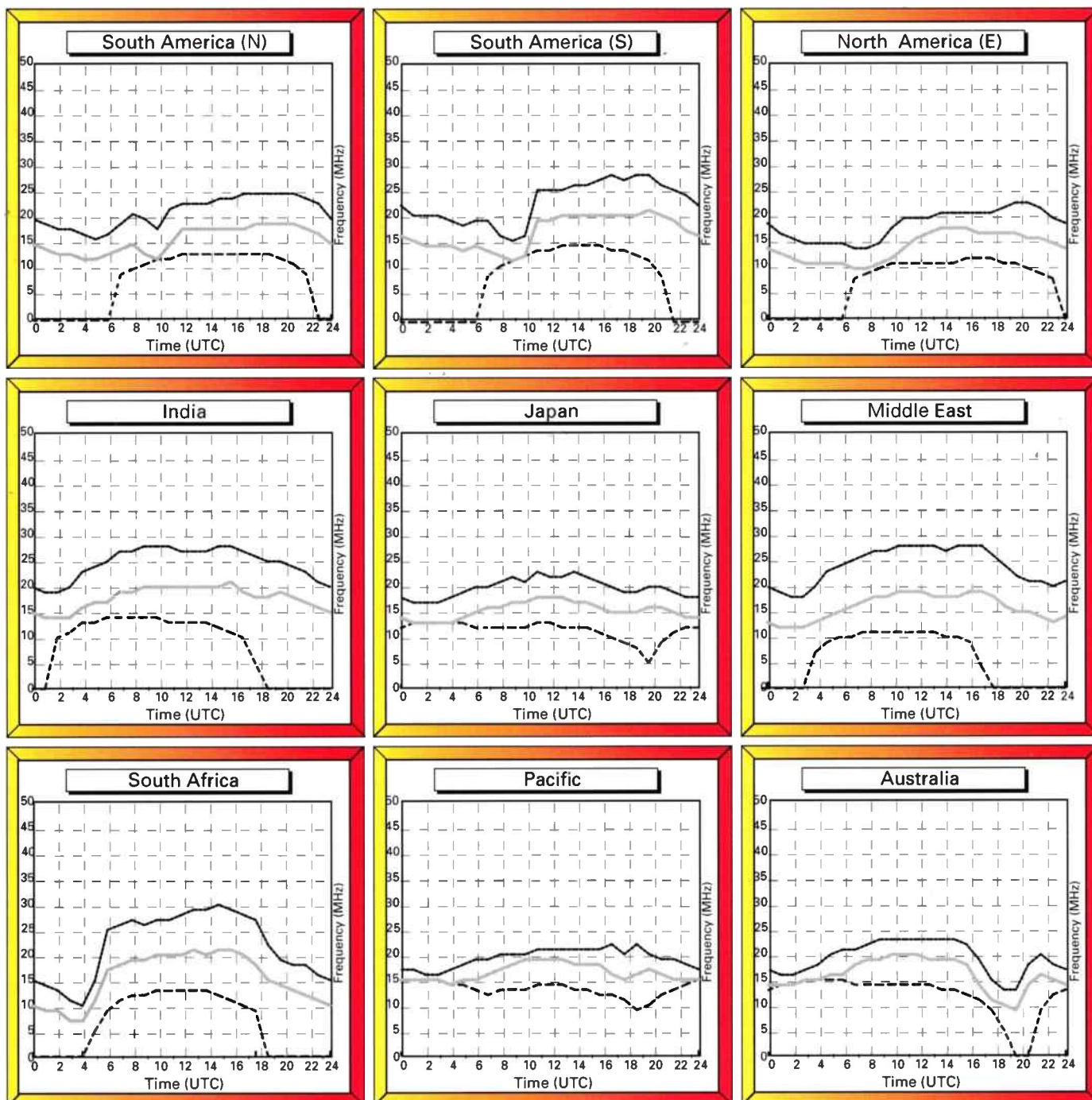
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

probability of success for the path and time.

To make use of the charts you must select the chart most closely located to the region containing the station that you wish to hear. By selecting the time chosen for listening on the horizontal axis, the best frequencies for listening can be determined by the values of the intersections of the plots against frequency.

Good luck and happy listening.

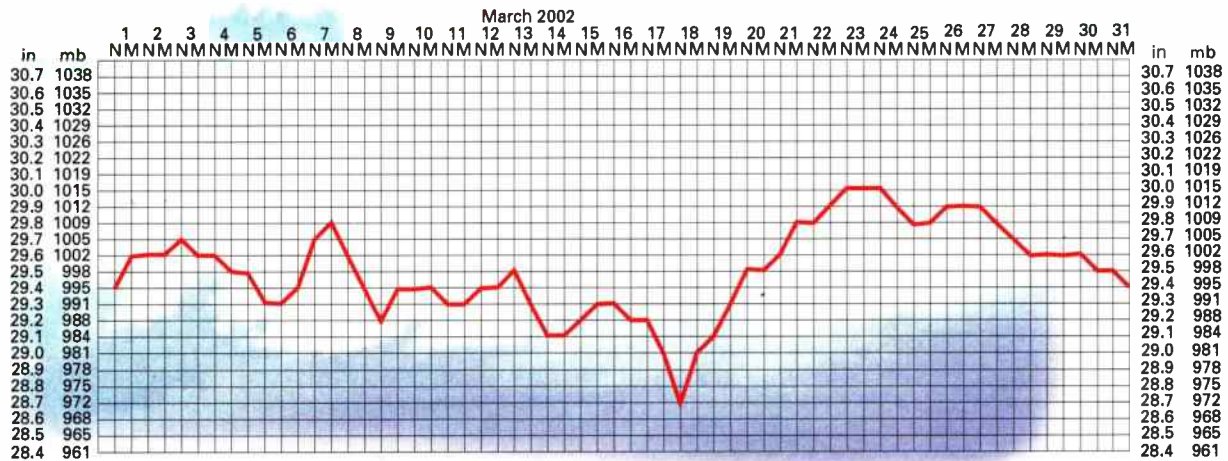
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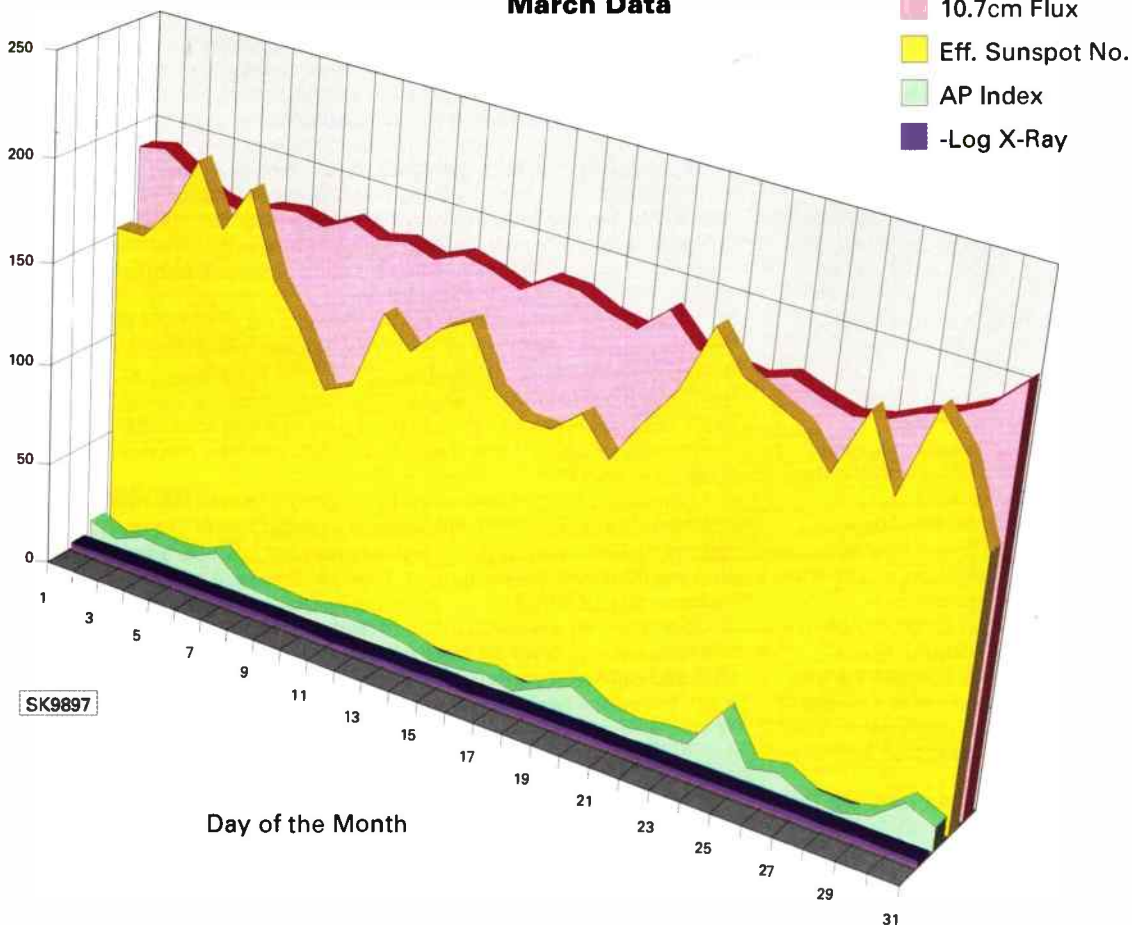
SK9898

Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, March 2002.



March 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.

■ JERRY GLENWRIGHT, 56 DENBIGH ROAD, NORWICH NR2 3HH

■ E-MAIL: shackware@pwpublishing.ltd.uk

ShackWare

Hello and welcome, once again, to 'ShackWare'. Thank you all for your kind comments about the recent 'ShackWare Special' - nice to be appreciated! There's a mountain of mail to get through so without further ado, let's press on...

Your Letters

Nick Morris, a supply teacher of Walthamstow, London, has written detailing a nice item he saved from the skip at one of the schools he visits regularly. Over to you Nick...

"A similar thing happened to me as has happened to a number of your correspondents in the past Jerry. One of the technicians at the school where I work gave me an old Apple IIe complete with two disk drives, a nine-inch Hitachi monitor and several plug-in cards, one of which I think is a video card and I'm not sure what the others are. The school has upgraded to PCs and the company which supplied the new computers refused to take away the Apples - they were going for landfill!"

The Apple is an excellent machine, Nick, and one of the first of the micros which could truly be put to useful work. They were hugely popular in the US, but less so over here due to their high price. Nick adds:

"I used to have access to one of these computers at my own school back in the very early 1980s. My class used it to learn BASIC. I have other computers now, but my main interest is in listening and especially decoding data from short wave. I don't suppose there's any radio software to support these machines, but I would like to have a go at writing some of my own, possibly a basic FAX decode program. I know the Apple has a 6502 central processor. Can you point me in the direction of a suitable reference work for this chip? Also, have you ever come across any sites on the web which describe how to write software of this type to get me started?"

Well Nick, the book I use and recommend wholeheartedly is *Programming the 6502* by Rodnay Zaks and published by Sybex. It's been available in many editions over the years, but is a staple for anyone who wants to learn the bedrock of 6502 programming (and the 6502 is a processor which is still used today in embedded applications). The book features chapters on hardware organisation, the instruction set, addressing techniques and (most importantly for you!), input/output including interfacing to other chips such as the 6520 PIO and the 6522 VIA.

A number of companion books also written by Zaks are available too. The *6502 Applications Book* builds on the work presented in the earlier volume to provide solid methods for creating large working applications for 6502-based computers such as your Apple. Others in the Zaks 6502 series include *6502 Programming Exercises* and (dare I say it!) *6502 Games*. Though now out-of-print, all the titles in the series can occasionally be found in second-hand book shops for a pound or two.

Of course, the Rodnay Zaks books are not platform-specific. While they provide an excellent grounding in programming the 6502 chip, they make no mention of any extra facilities a particular machine's architecture might provide. The Apple memory map and support chips are vastly different from the Oric Atmos for example and the Atari range is different again. So it's a good idea to track down one or more books specific to programming the Apple itself. A good place for examples of those is on-line auctioneer Ebay (www.ebay.co.uk). While I steer clear of many computer auctions on Ebay because the bids are often way beyond what the machines can sensibly be valued at, books tend to go quite cheaply and are well worth bidding on (though be aware that you might be asked to pay £2.50 for a book that you won with a pound bid!).

As for learning the secrets of programming FAX software, it's not actually as difficult as you might imagine. The secret lies in getting the timing right and the only way to do that is to work with machine code (so you're on the right track to start with!). I have examples of 6502 FAX and c.w. decode software which I'll pop in the post to you to get you started. The software is for the

Atari, but as the machines share a processor, converting isn't too difficult. Good luck and do let me see the results of your programming efforts Nick.

Staying with Apple for the moment, I've had an E-mail communication from previous 'ShackWare' visitor **Mike Evans**. Mike discovered a Mac Plus a year or two ago (if memory serves - forgive me if I have forgotten the exact details Mike) and found himself fascinated by the early Apple machines. The Mac Plus is a 16-bit computer equipped with a Motorola 68000 CPU - the same as features in the Atari ST and Commodore Amiga. The Mac line followed Apple's earlier 6502-based 8-bit computers as detailed in the previous letter. Though expensive, Macs were an immediate success, with their superlative graphic user interface, mouse-driven operation, fast SCSI hard drives and the like. Closed architecture and a relatively high price kept them off the number one spot in the UK, but among publishing circles, the Apple Mac is still the foremost machine. But I digress - back to Mike...

After a while, Mike acquired another Mac, the SE (a slightly upgraded version of the Plus) as well as an ImageWriter printer. However (and inevitably I have to say) he's struggled to keep them supported and so now they must go. Mike would like about £18-£20 for each unit plus postage which seems very reasonable to me. Contact him at bbms4ozone@compuserve.com to negotiate.

Regular readers know that from time to time I mislay an important letter (it's my great age you know!). I mentioned one last time around and I'm afraid I have another to confess to. On the 27 October 2001, **Chris Whitworth** of Purley put word processor to paper to tell me all about his Amstrad PCW8256. Over to you Chris (and apologies for the length of time, etc.).

"Though I'm no computer buff, I cast an eye over 'ShackWare' in the hope of seeing a mention of the PCW8256 in connection with a radio application. Some time ago I was given one from someone's loft. From an ad in the local paper I was able to obtain a working printer together with another screen, keyboard and a supply of 3in disks. I also have a number of books detailing the *Locoscript 2* word processing system and CP/M and I also fitted an upgrade to one of the computers to bring its memory up to 512K".

Though not often, I do make occasional mention of the PCW8256 Chris. The last one appeared in last year's 'Special' I believe. And over two issues of *SWM* during 1995, the PCW8256 featured as part of a really excellent project to interface the machine to a Lowe HF-225 receiver for remote control, frequency storage and so on. Back to Chris...

"Having said all this, I have now acquired a PC which has well and truly put the old Amstrad on the back-boiler. The problem is, having become rather attached to it, I'm loathe to consign it to the rubbish dump which is where I'm sure most people would say it belongs! Knowing that you have a bit of a soft spot for old computers, I wonder if you might know someone who has a use for this old gear?"

Offhand, no (Angela will resort to violence if I sneak any more machines into the house!), but perhaps a reader would like to acquire it? Chris makes no mention of price, but I'm sure a small sum would secure the equipment. Write to Chris care of me and I'll forward your letters.

Just space for a quick mention of **Rod Johnson** who wrote to offer a set of *Windows 3.1* disks to 'ShackWare' correspondent **Richard Spicer**. If you still have a need for these Richard, I have Rod's telephone number and will happily pass it on to you. Thanks for that Rod.

And Finally

That's it for another outing of old silicon. As the years pass I'm aware that my obsession with computers from yesteryear is not shared by everyone. Please don't feel excluded if you have a brand new PC and a burning question about it: I'll happily answer wherever I'm able. Until next time then, good listening.

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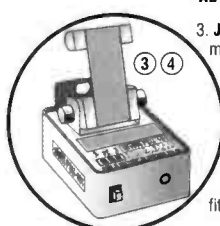
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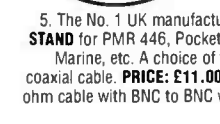


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Info in Orbit



Fig. 1: METEOR 3-5 1315 25 February 2002 from David Taylor.

Weeks of rain and cloud delayed the installation of my new observatory, but the dome was finally mounted on the walls with a little help from friends in the Southampton Astronomical Society. Still it rains, and the forecast is rain every day for the next week. Regardless, the prospect of completing my WXSAT equipment re-installation and the consequent total monitoring of impending cloud cover - particularly with the high resolution equipment - is exciting.

Although some web sites offering long-term (10 to 30 days) forecasts are making an appearance, frankly I much

prefer my live satellite transmissions from the NOAAs, METEOR and METEOSAT weather satellites (WXSATs). In a new bid to take over the house, I moved all my WXSAT equipment and computers into the dining room, necessitating disconnection for several days. This idea was actually my wife Marion's! The room is large enough to accommodate the computers, receivers and associated boxes, and she feels we can eat in the otherwise little-used front room.

Operational WXSATs

Two predictable changes happened in the February/March period. METEOR 2-21 was re-activated to replace METEOR 3-5 during the latter's passage across the terminator and a.p.t. from NOAA-12 was switched off to prevent the consequent v.h.f. clash with NOAA-15 on 137.50MHz. In a unique gesture, NOAA invited the amateur WXSAT community to recommend a preferred WXSAT frequency configuration: the opportunity to suggest switch off NOAA-12, or to change the transmitting frequency of one of the other satellites to avoid the overlap was invited.

Some highly valuable comments were made, including the point that powering NOAA-16's v.h.f. frequency off during its early life had proved fatal, resulting in it now 'only' transmitting h.r.p.t. The decision to simply switch-off NOAA-12's a.p.t. transmission (as before) was confirmed, and hopefully, by the time this May edition of SWM is published, it will be back on and all will be well.

Correspondence

David Taylor sent in an image received from METEOR 3-5 on 25 February, showing Greenland and the cold air flow from the north pole. The WXSAT was powered off shortly after, due to its orbital plane having precessed close to the morning terminator; this happens every few weeks. At the bottom left corner you can see the eastern end of Baffin Island, and a snow-covered Iceland is visible



Fig. 3: Chuck Vaughn's processed FENGYUN-1C image from 3 March 2002 at 1455.

at top right, although it is rather distorted due to the scanner/electronics linearity on this rather old satellite.

Some of my favourite archive images, still retained after nearly 15 years of WXSAT monitoring, are from the METEOR series. Their extra orbital height provides the best long-range views, whether east or west. From my former Plymouth home I had an exceptionally good western horizon, and while the antenna and cabling remained 'new', the METEOR WXSATs provided unparalleled views of the north-east coast of America - much like David's picture.

On one occasion I obtained a spectacular image of this region in which I could identify locations even further east. My northern catchment was not quite as good though, being terminated by the hill on which we lived near the bottom! David receives signals with a QFH (quadrifilar helix antenna) and the RIG RX2 receiver - signal processing was (naturally!) done with SatSignal.

Cedric Roberts received this 0738 pass from NOAA-15 on 28 February which shows up shower activity over the UK and near continent. We were

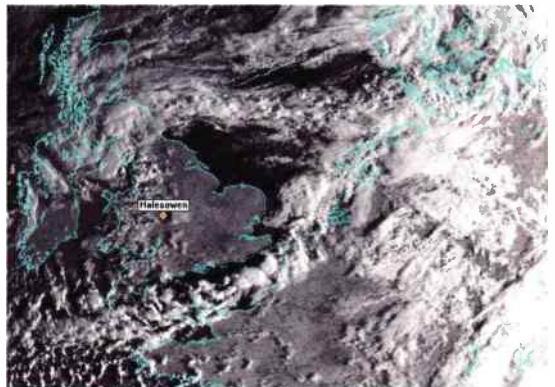


Fig. 2: NOAA-15 morning pass on 28 February 2002 from Cedric Roberts.

experiencing very unsettled conditions with a flow of brisk to strong winds across Britain, with this is feeding in a lot of shower activity, much of it wintry. The low sun angle at this early hour shows the convective clouds very well and the image is very good in this respect. It is even possible to make out the shadows of the clouds on the earth beneath.

Chuck Vaughn kindly provided a copy of one of his superb FENGYUN-1C colour images. He has set up a web site - <http://www.aa6g.org/> - that specialises in providing advice on processing FENGYUN-1C images.

Chuck uses a Timestep Weather Systems high resolution picture transmission (h.r.p.t.) system to receive both NOAA and FENGYUN WXSATs from home in America and has documented the process that he uses. Conventionally, we use visible-light and specific infra-red channels to obtain a synthetic colour image.

FENGYUN-1C provides 10 spectral channels covering various bands. Chuck comments: "The obvious choices for the colour channels are channel-1 for red (580-680nm), channel-9 for green (530-580nm) and channel-7 for blue (430-480nm).

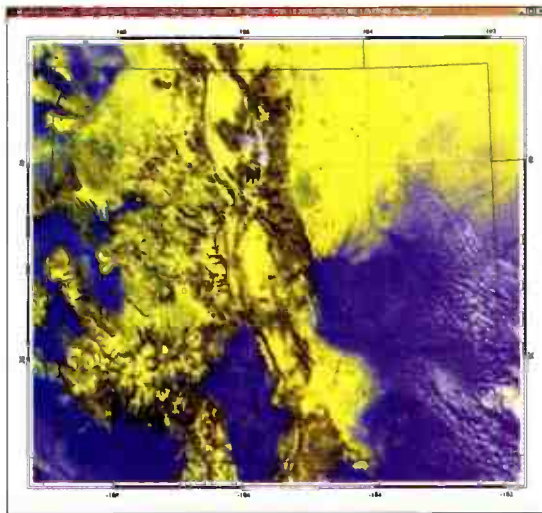


Fig. 4: NOAA-16 3 March 2002 2013 from Kelly Dean.

Channel-1 is red and channel-7 is blue by most any definition, but channel-9 is not centred on the peak wavelength for green. The definition I have (used) shows green centred at about 530nm. This would make channel-9 yellow-green. The method I'm using is to take the average of channel-8 (480-530nm) and channel-9 (530-580nm) to produce the green image. I believe this is a better choice".

Chuck describes in detail exactly how he produces his 'true colour' images and also explains how to remove noise from both h.r.p.t. and c.h.r.p.t. pictures. *FENGYUN-1C* transmits a lower signal strength than the NOAAs, and this has resulted in a higher level of noise hits on my images. As with his colour processing, Chuck uses *Photoshop* to remove bit errors that cause the noise. I don't want to give away all Chuck's 'secrets', so I will just give his web address:

http://www.aa6g.org/Weather/remove_noise.html

A third enhancement offered by Chuck is the removal of the black lines that sometimes frequent *FENGYUN-1C* images. I had noticed a few of these in my images. The method he describes can be used with h.r.p.t. data, but is primarily aimed at the c.h.r.p.t. from *FY-1C*. Chuck explains that summertime *FY1-C* images have a problem with black lines that start on the right side of the image in spots where the satellite sees a direct reflection of the sun off the Earth's surface - apparently this is overloading the sensors. NOAA satellites don't suffer from this problem. Chuck's explanation also covers the removal of occasional dropped or partially dropped lines and his examples show how significant the improvements can be.

Following Chuck's presentation of his image, **Kelly Dean** of Colorado State University's CIRA (Cooperative Institute for Research in the Atmosphere), took up the 'challenge' and collected a raw image from NOAA's Satellite Active Archive covering the corresponding *NOAA-16* pass that day. He applied some unusual image processing techniques: "It is a re-projected image over Colorado, using the first three AVHRR (high

resolution scanner) channels transmitted from this satellite. The snow appears yellow with this multi-channel channel composite, with a few clouds dotted around. Just like in the c.h.r.p.t. image, Denver as well as some Front Range communities can be seen".

Lee Carberry of Stockton-on-Tees tells me that he is new to WXSAT monitoring and recently installed a crossed dipole antenna that he has mounted in the loft and feeds a RIG RX2 receiver. Due to having some trees in his garden, the *METEOR 3-5* pass that he received on is shorter than he would have liked.

Kevin Hughes E-mailed his regular sample image, this time showing the morning *NOAA-15* pass recorded at Tamworth. We await news about your 'visitation' from the Radiocommunications Agency Kevin! For anyone not remembering this story, it started with Kevin noticing heavy interference to some of his *METEOR 3-5* passes, followed by extensive experimenting to determine the source. He requested visits from the electricity board, and was considering calling in the RA in a final effort to resolve the problem.



Fig. 6: NOAA-15 0731 9 March from Kevin Hughes.

Remote Imaging Group

This is the only 'hobbyist' organisation in Britain that provides members with help on the setting up and operation of WXSAT equipment, so it seemed about time that I wrote a feature about it. When I first took up an interest in weather satellites in the mid-1980s, I approached the local radio amateur's club to find advice. I was told that the Remote Imaging Group - RIG - had recently formed to provide help and advice on this very topic, so I contacted the secretary and became a member. I was delighted and impressed with the group's willingness to help.

RIG caters for everyone interested in satellite imaging and the latest figures indicate that membership comprises some 2,500 members in 45 countries. Although RIG was perhaps originally set up to help amateurs, professionals also joined, including people who had been involved in meteorology for decades. Members receive a quarterly colour journal averaging approximately 100 pages, and often containing articles of both an informative and constructional nature, the latest news on a wide variety of remote imaging topics, images and related pictures. Noting that the committee are all volunteers, the group's magazine is extremely impressive.

Apart from the magazine (which is enough justification itself for joining RIG), over the years successive committees have made available a selection of both hardware and software products. Recommended programs are available at nominal (low) cost by contacting the current distributor and the list includes a wide selection. The 'RIG Shop Corner' offers hardware ranging from antennas to self-build h.r.p.t. kits - or at least the latter is expected to be available before spring. In my view, the pride of the fleet is the RX2, the a.p.t. WXSAT receiver, the forerunner of which I reviewed in



Fig. 5: METEOR 3-5 5 March 2002 from Lee Carberry.

SWM some years ago. Contact RIG at <http://www.rig.org.uk/> or E-mail: membership@rig.org.uk

The RIG mailing list (rig-l) is an Internet subscription list catering for everyone interested in WXSATs - not just members of RIG. As such, it is not an 'official' voice of RIG, but carries interesting (rarely controversial) discussions on all aspects of WXSAT monitoring. For some time it has lacked a weekly update on the current status of the WXSATs, so it was good to see **Douglas Deans** volunteer to take over the task. Douglas has a busy time ahead. As well as ensuring the timely summary of the WXSAT status for the list, he has also taken over the Shareware Corner section of the RIG magazine - the committee post responsible for looking at software for the Journal, and despatching disks.

I asked Douglas about his interest in WXSAT monitoring; he explained: "I have been interested in meteorology and weather satellites for a long time. I have been receiving both polar and geostationary for about ten years. For polar I am using a Proscan receiver from a QFH antenna, roof mounted and a 'spare' turnstile in the loft (in use for about eight years before purchasing the QFH). The signal is fed into a Timestep external interface 15.0, and the software is *Prosat for Windows 'i'*. My computer is a 1.2GHz AMD, with 512MB RAM and a 19in monitor. I have a dedicated geostationary receiver fed from a 900mm dish, with LNA, and that is also fed into the external interface. I prefer to have a dedicated receiver for geostationary use as that leaves the polar scanning receiver to scan and not to miss the surprises that still occasionally come along on the 137MHz band!

"Overnight I take recordings using a MiniDisk, playback into *WxSat* and process using *SatSignal*. I also make a lot of use of all David Taylor's programmes.

GeoSatSignal has done wonders for the further processing of WEFAX images. I have quite a number of hobbies, including being a radio ham, but weather satellites take most of my time. There is so much information now available on the Internet so I regularly keep a close eye on lots of sites. Ambitions? HRPT and PDUS (but first the lottery!)".

Internet Site Update

INSAT - the Indian satellites that carries a very high resolution radiometer - continues to provide regular weather images of India and nearby countries. A few years ago I obtained a print of an INSAT weather image from the **Indian Meteorological Department** and asked when they were expecting to publish daily images on the web. At that time they had no schedule, but

their web site now carries regular images from both bands.

The meteorological payloads on this series of satellites comprise a Very High Resolution Radiometer (VHRR), a Data Relay Transponder (DRT); *INSAT-2E* also carries a Charged Coupled Device Camera (CCD). The INSAT series of satellites have two channels for imaging:



Fig. 8: INSAT satellite courtesy Indian Meteorological Department.

Visible (0.55 – 0.75µm)
Infra-red (10.5 – 12.5µm)

Spatial resolutions for visible and infra-red are 2.75 and 11km respectively for *INSAT-1* and 2 and 8km for *INSAT-2*. The CCD camera has three

additional channels in visible, near i.r. and short-wave i.r., having spatial resolutions of 1km. Visit <http://www.imd.ernet.in/section/satmet/dynamic/welcome.htm>

Routine Image

Figure 10 shows a routine image from GMS on 17 March. These are transmitted in sections as WEFAX images on *METEOSAT-7* channel 2 and as Primary Data images in high resolution in PDUS format. WEFAX images require a 1.69GHz Yagi/dish and down-converter or alternatively a low-noise pre-amp, followed by a suitable receiver.

According to the current launch schedule, the *METEOSAT* Second Generation (*MSG-1*) WXSAT should replace *METEOSAT-7* later this year. WEFAX is scheduled to terminate at the end of 2003.

E-mail Change

Most correspondents use the *Short Wave Magazine* address to E-mail me, and this will always work because the Editor

has my current address and uses an automatic re-address system. Due to a large increase in spam (unsolicited E-mail), I reluctantly decided to close the Freeserve mailbox that I have been using for years.

Frequencies

NOAA-12 and *NOAA-15* transmit a.p.t. on 137.50MHz.

NOAA-14 transmits a.p.t. on 137.62MHz.

NOAAs transmit beacon data on 137.77 or 136.77MHz.

METEOR 3-5 uses 137.30MHz.

METEOR 2-21 uses 137.40MHz when activated during *METEOR 3-5*'s off period.

OKEAN-O, *OKEAN-4* and *SICH-1* may use 137.40MHz for brief transmissions.

METEOSAT-7 (geostationary) uses 1691 and 1694.5MHz for WEFAX.

GOES-8 (western horizon) uses 1691MHz for WEFAX.



Fig. 7: Douglas Deans.



Fig. 9: INSAT - colour composite image 17 March 0900 courtesy Indian Meteorological Department.



Fig. 10: GMS-5 image 17 March 0502.

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DX Television

During February, F2 reception improved with reports of Australian vision carriers on at least five occasions. Syria and Iran made regular appearances, the former showing a remarkable degree of clarity approaching that of a medium-quality Sporadic-E picture. In Europe, Thailand was identified and at least three networks, TV3, TV7 and TV9 are known to use Channel E2. A new E2 transmitter is already on test with, hopefully, a fourth service!

Reception Reports

On the 25th, a Western-style programme comprising of a singer and Asian women was present on E2 at 0830UTC. A logo was visible in the lower-right of the screen. Between 0900 and 0905, weak Australian video appeared on Channel A0. By 0930, R1 was active with the usual jumble of co-channel signals.

On the 26th, **Simon Hockenhuil** (Bristol) identified Iran (IRIB-1 and IRIB-2), Syria (SYR-2) and Dubai (EDTV), all on E2 between 0900 and 1128. During the same opening **Peter Barber** (Coventry) heard an unidentified Arabic E2 sound carrier on 53.75MHz. Syrian programmes were present all morning until 1209.

Stephen Michie (Bristol) reports Ceefax-style text pages on numerous dates throughout the month and these are thought to have originated in Dubai. IRIB-1, the Iranian 1st network, shows a diamond-shaped logo in the top-left of the screen but another station, so far unidentified, displays a logo resembling the Euro symbol.

Peter Barber remarks that pictures seem clearer at the start of an F2 opening, possibly due to the rising m.u.f. This is also noticeable with Sporadic-E propagation. **Stephen Michie** has noticed that Syria regularly seems to suffer less multi-path distortion than other countries received via F2, even when the m.u.f. is relatively high. **Stephen** suggests that the clarity could be due to the shorter skip-distance involved. Egyptian E2 signals received during the last F2 peak also suffered less visual distortion. **Simon Hockenhuil** wonders whether the Syrian signals are beamed westwards using directional antennas, thus promoting a more directional signal.

Although F2 communications from the USA and Canada have been prominent between 40 and 46MHz on many afternoons, the m.u.f. failed to reach the lowest USA TV channel A2 at 55.25MHz. According to **Roger Bunney** (Romsey), reception from the south was more promising when noise-level E2 signals materialised on the 16th around 1500UTC.

Test Card Puzzle Solved

Last July there were several reports of a Spanish regional 'Canal 9' PM5534 test card on E4. A switching error was considered at the time, but the test card was seen on subsequent occasions and always during adverts. **Peter Barclay** (Sunderland) has solved the mystery - it was, in fact, part of a car advert!

It Is Syria!

News pictures, sandwiched between two white horizontal lines, have now been identified as Syria, rather than Iran as previously thought.

Nigerian Mystery

Nigerian broadcaster NTA have been experiencing co-channel interference from the Madrid E2 transmitter. This seems strange as Nigeria supposedly do not use E2 although when the Madrid E2 transmitter temporarily

went off-air, Nigerian programmes were seen. The only high-power E2 transmitter in service was operated by ENTV from the Enugu site, but this went off-air in the 1960s, during civil war, and was never reinstated.

Sync-Bar Identification

The field sync-bar is a useful way of identifying signals as the data (or lack of it) is immediately apparent. To inspect it you will need to reduce the height of the picture, or adjust the vertical hold (vertical frequency) of the receiver. This may be difficult on a modern TV receiver, as there may be no control as such!

The formation of dots and dashes within the bar differs considerably between stations and it can be a reasonably reliable way of identifying DX reception if all the other traditional methods fail.

Beware, stations can frequently change the presentation of this information, or it may alter at certain times of the day. Some stations do not carry information within the bar, so it appears empty, i.e. solid black.

Syrian broadcasts on E2 have an empty sync-bar when relaying SRT-1 programmes. The sync-bar of Dubai is also empty so don't jump to conclusions that it is EDTV you are receiving. Iran (IRIB-2 on 48.2594MHz) has its sync-bar partially filled with text data.

Service Information

This month's Service Information includes material supplied by **Stephen Michie** (UK) and **Lionel Michelland** (France).

Germany: N3, the third network in northern Germany, now identifies as NDR. The logo style is reminiscent of the graphics used during the Sixties.

Slovenia: SLO-1 can sometimes show '4x4' in a broken oval, similar to Jordan, but in the top-right of the screen.

The 'Oglasli' main news programme is preceded by a statue of a flute-player. This has been, it seems, a feature of TV in the region from day one of their TV broadcasts!

Russia: The ORT network has a new logo consisting of 'OPT-1' (Cyrillic alphabet) in coloured lettering. The RTR network also has a revised logo.

United Kingdom: Two new digital services were unceremoniously launched on February 11th. These were CBBC and CBeebies. Both channels are aimed at children. A third new BBC digital channel was launched on March 2nd. This is called BBC-4 and is merely a re-branded version of BBC Knowledge.

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.

Don't forget to visit our new-look website covering DXTV and Archive TV.



Fig. 1: RTV Ljubljana identification caption introduced in the Sixties and photographed by Keith Hamer on May 19th 1974.

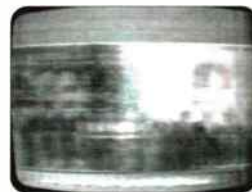


Fig. 2: News programme received by Garry Smith on Channel E2 from Syria via recent F2-layer propagation.



Fig. 3: The new-style NDR logo based on the original 1960s design (seen here at the end of a programme called 'extra-3').



Fig. 4: The Identification Symbol used by BBC-4 which was launched at 1900 on March 2nd, 2002.

FM Reports

Patrick Wylie (Ballyclare, Northern Ireland) lists some of the many independent licensed locals in Éire which can be received on a regular basis. These include:-

Mid & NW Radio:

Sligo on 102.5MHz

Northern Sound:

Shannonside on 94.8MHz &

Monaghan on 96.3MHz.

Highland Radio:

North Donegal on 103.3MHz.

Inishowen Community Radio:

Donegal on 105.0 & 107.6MHz.

Shannonside 104:

104.1MHz from South Leitrim.

FM104:

104.4MHz from Dublin.

Kiss FM:

Dublin? 105.8MHz with hardcore dance music.

Unidentified station:

106.4MHz in Gaelic

98FM:

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Decode

HF ACARS

In a recent 'Decode' I asked for help finding a decoder for the h.f. variant of ACARS. You really took this one to heart and I've had a really good response, all of which point to the same program. That is *PC-HFDL* from Charles Brain - it can be downloaded from this site: www.pwpublishing.ltd.uk/swm/download

Regular readers may well be familiar with Charles, as he has written some excellent software for modes that few others attempt. Probably his main claim to fame with 'Decode' listeners has been the development of the software that decodes ALE data on the h.f. bands.

His latest effort to deliver a PC based system for h.f. ACARS is very much appreciated. Before I go on to take a look at the decoder, let's take a closer look at HFDL. HFDL is an acronym for High Frequency Data Link which is a data system designed by ARINC to support long range data communications for aircraft.

The system is covered by ARINC specification 635-3, hence you will often hear it referred to as ARINC 635-3 or HFDL - from our point of view they are the same thing. So with ACARS and modern satellite communications, why would a new h.f. system be needed? The reasons are based around reliability of communications. Whilst satellite based systems are good, the coverage often gets difficult as you get closer to the North and South poles. There is also the problem that reliance on SATCOM puts all your communications eggs in one basket, so to speak.

HFDL has been developed to provide an alternative communications system that is more reliable and easier to use than conventional s.s.b. voice communications. Studies have shown that the combination of SATCOM and HFDL with multiple ground stations provides a very reliable data communications system. A look at the ARINC web site will show you that their data network for aircraft covers all the options, with v.h.f. ACARS for local communications, SATCOM for mainstream long distance and HFDL used to fill the gaps and provide the necessary diversity to ensure reliable communications.

One of the reasons why HFDL is favourable to manually controlled s.s.b. voice transmissions is the automated selection of the appropriate ground station. When an aircraft in a remote

location needs to make contact with the ground, the HFDL control system searches all the available frequencies to see which ground station offers the best signal. It then checks to see how busy the stations are. The next step is to find a time-slot (more on this later) when it can send its signal. With all this sorted, communications can begin.

You can probably see that there are some vague similarities between HFDL and the ALE system in the way that selection of the best frequency is done automatically. This is probably one of the most significant factors that make the system so reliable. We all know how difficult it is to find the best frequency to monitor a particular station. You can imagine how much more difficult that is when you're also trying to fly an aircraft!

The h.f. radio equipment used in the aircraft operate at similar powers to modern amateur radio transceivers with a typical output of 400W p.e.p. into a 50Ω load. The frequency range is 2-30MHz tunable in 1kHz increments (much coarser than amateur radio). A typical example of an h.f. aircraft radio is the Rockwell-Collins HFS-900D - can find a full spec at:

<http://www.rockwellcollins.com/ecat/at/HFS-900D.html>

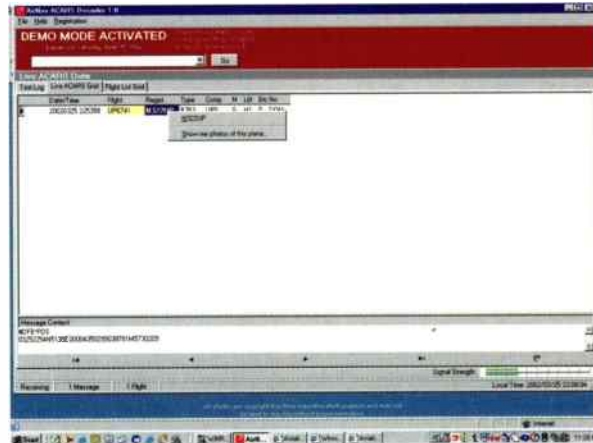
Another useful link is the ARINC Globalink newsletter that contains all the latest developments in equipment and ground stations. Visit <http://www.arinc.com/news/newsletters/index.html>

Deeper Look

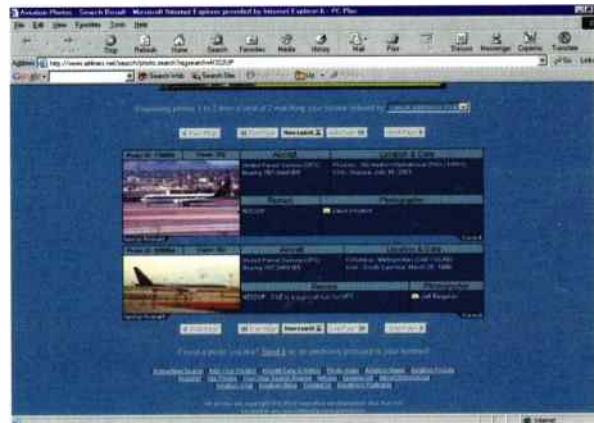
Now let's have a slightly deeper look at the system so you can better understand some of the controls that are built into *PC-HFDL*. To enable the aircraft's onboard HFDL gear to find and assess the signal quality, each of the ground stations is required to send a periodic signal. This signal is, rather unfortunately, called a squitter and is sent every 32 seconds. The ground stations are each allocated their own time slots for squitters to make sure they don't collide - sounds

very messy!

Anyway, the timing of the squitters needs to be such that the aircraft's receiver can switch between the available stations and



The photo selection option in *AirNav*.



Sample photos found via *AirNav* ACARS.



Airline database in the *AirNav* ACARS decoder.

quickly determine which one is offering the best signal. As well as providing a signal quality reference, the squitter also carries system status information, a timing signal and protocol control.

Once the aircraft has decided which station to use, a log-on is initiated and the transmissions can begin. To help make sure that transmissions from different aircraft don't collide, a time-sharing system is used, known as Time Division Multiplex.

The transmission system used is adaptive M-PSK, which is a phase shift keyed system with the ability to adapt its data rate according to the quality of the link. In the HFDL system, the data rates can vary between 300 bits per second up to 1800bps.

Receiving HFDL is very simple with Charles Brain's *PC-HFDL* software. The whole zipped program including the manual is around 250KB, so the download shouldn't be a problem. There's no fancy installation routine, just extract the program file and manual from the zip package into the destination directory and you're in business. The final installation requires just under 700KB of disk space.

Before you get too excited, you will need to have a reasonably fast PC with a modern soundcard. Charles tested the program on a 500MHz PIII based machine, but it worked fine on my Windows 98SE 450MHz PIII PC. It will probably work on some slower machines, but the decoding routines are processor hungry, so don't be surprised if you have problems on a slower machine.

Once loaded and running, operation is really very simple as there's no set-up to worry about. With the program running, tune your receiver to one of the HFDL frequencies (see list) and check you can at least hear a ground station squitter every 32 seconds. Now check all the boxes in the *PC-HFDL* display and you should start seeing some decode in the main screen.

If you don't, you may not have your sound card input set properly. To check this, press the usual START Settings Control Panel to get to the Control Panel then choose the Multimedia icon and then the AUDIO tab. Click on the Recording button and make sure you have ticked the correct input and that the level slider is somewhere around mid-point. This should get you in business with messages starting to appear in the display. You can then start un-checking boxes to tidy-up the display to show just the bits you want to see - this will probably be HFNPDU.

If you want an alternative to Charles' *PC-HFDL*, then keep an eye on the Pervisell's web site www.pervisell.com Inside information tells me the next version of *SkySweeper* is due to have HFDL included as one of the new modes.

ACARS Update

Whilst we're on the aeronautical theme, v.h.f. data fans really ought to try *AirNav Systems* new ACARS Decoder. This excellent package is available as a 30 day trial so you really can give it a good test before parting with your cash. Here's the site: <http://www.airnavsystems.com/ANAD/index.htm>

The decoder is very well laid-out and is really easy to use. Once downloaded and installed, you just need a lead from your radio to your soundcard and you're ready to go. At the bottom right-hand corner of the display is a signal strength indicator that gives you some assurance that a signal is

actually getting through. If it's not, then you just have to choose the recording option from the soundcard settings in the file menu, and you can put things right.

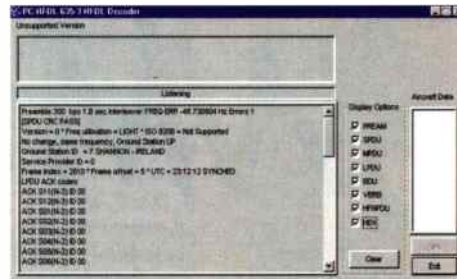
Back with the main display, there are three tabs representing the three forms of data display. The Text Log provides a conventional text based display of the received data using a similar format to many other ACARS programs. However, the other tabs are more interesting. Live ACARS Data shows each message as it arrives in a tabulated form which is useful for quickly gauging the level of activity from various flights. The third tab provides a very useful summary of all the flights you have captured, i.e. each flight only have a single entry. This mode is particularly useful when you've been monitoring during a busy period. One of the points I really liked was the facility to quickly look at a photograph of the aircraft in the log.

If you right-click on any aircraft callsign you get the option to look at a photo. This links to a neat web search using www.airlines.net to find photos of any aircraft by callsign. Although this is quite easy to do, I thought it really brought the logging to life. The *AirNav ACARS* decoder can be set to log everything to a text file so that the data can be processed by one of the specialised aircraft plotting programs.

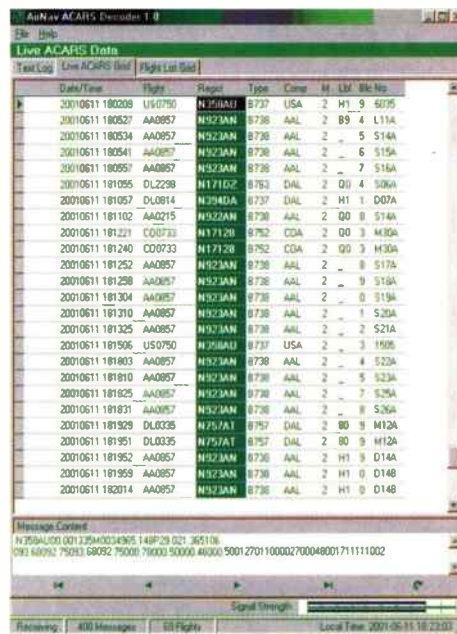
On-Line Shopping

It is inevitable in our specialised hobby that a large proportion of the hardware and software we use needs to be purchased outside the UK. Whilst this is a simple enough thing to do these days, I've had several readers contact me asking if there's a UK dealer for the product they want. One of the reasons behind this is that people are reluctant to use credit cards over the web. I can understand this, but think there is a very elegant solution - Web-Card. Not sure how many banks are offering this, but Cahoot certainly does. This is a wonderfully simple system to use, providing you have the appropriate on-line bank.

Every time you want to make an on-line purchase, you use Web-Card to generate a unique credit card number that is authorised only for that single transaction to the amount you specify. To use Web-Card I've downloaded the software from my bank (free) and it sits neatly as an icon in the system tray. To use it I just double-click, log-in, set the payment amount and on the screen appears an exact replica of my credit card, but with a one-off number. You then enter this on-line as if you were using a conventional card. It is a wonderfully neat solution to the problem and I use it all the time now for web purchases.



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PUBLISHED on the fourth Thursday of each month by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Printed in England by Werners Midlands PLC, Lincolnshire. Distributed by Seymour, 86 Newman Street, London W1P 3LD. Tel: 0171-396 8000, Fax: 0171-396 8002. Web: <http://www.seymour.co.uk>. Sole Agents for Australia and New Zealand - Gordon and Gotch (Asia) Ltd.; South Africa - Central News Agency Ltd. Subscriptions INLAND £36, EUROPE £43, REST OF WORLD (Airmail) £48, REST OF WORLD (Airmail) £54 payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. SHORT WAVE MAGAZINE is sold subject to the following conditions, namely that it shall not without the written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

AR200 SERIES-2 NEVER BEFORE HAS ONE HAND PORTABLE OFFERED SO MUCH



On release of the AR8200, it was apparent that a new bench mark had been set encompassing features and performance. Evolution led to the AR8200 Series-2 providing exactly what customers have been yearning for... excellent full coverage all mode receive, computer control, reaction tune, tape record facilities, optional cards (CTCSS, external memory, on-chip recording, analogue voice inversion and tone eliminator). Add to this free PC control software, discriminator output with optional OS8200 AUX connecting lead, data clone and you will begin to see what a COMPLETE package is provided.

Coverage

A Temperature Compensated Crystal Oscillator (TCXO) forms the heart of the AR8200-2, resulting in **high stability** with **minimal internal spuri**. RF preselection in the mid-VHF bands ensures **best sensitivity** and **strong signal handling** with a wide coverage of 530kHz to 2040MHz (all mode receive without gaps).

Flexible tuning steps including 8.33kHz

Tuning step sizes are programmable in all modes down to 50Hz with comprehensive step adjust and correctly implemented 8.33kHz for the new VHF airband spacing. An automatic bandplan also ensures the correct tuning step & mode which includes split frequency offsets, however all parameters may be overridden and the bandplan freely edited via computer control.

Bright display & keypad

Keypad & LCD illumination is nice and bright with sharp display of LCD characters and adjustable contrast, the beep is also configurable.

Flexible power

A set of 4 x 1000mAh AA rechargeable high capacity NiCads are provided, a d.c. lead with cigar plug is also provided along with a.c. charger which doubles up as a power supply. The receiver may also be powered from standard dry batteries such as alkaline.

Computer control

Nearly all functions can be controlled via computer (optional 8200PC interface required), free PC control software is available from the AOR web site.

Complete package

The AR8200-2 is supplied with a comprehensively illustrated operating manual, telescopic whip aerial, MW bar aerial, high capacity NiCads, car lead, charger, belt hook & strap.



In the April 2002 issue of the Japanese 'Magazine for Listeners, RADIO LIFE', an interesting table of sensitivity (12dB SINAD) was presented and is duplicated here with credit to the origin. An independent head-to-head test was conducted using units purchased from dealers, the magazine notes that there may be fluctuations between specific units. The second line from the top relates to the AOR AR8200 Series-2 receiver (earlier AOR AR8000 is on the top line):

- Key:** ★ excellent
● good
▲ fair
- not possible

対応機種はDJ-X20000、V... 150の3機種。「オプションカードを付けて」という条件が付きますが、AR8200MARK IIも候補にあて

受信感度を比べると、AR8200 MARK IIはちょっと高価です。それならば、空線信号キャンセラーの切れが最もよいアルインコ機を選

も一緒ですので、値段の手許は、-X20を編集部では推します。(以上4ジャンルの文/編集部)



ジャンル別受信感度でベストバイしてみたゾ!

EIAJ測定法 (FM=12dB SINAD) でエントリー機種の感度をもつてみた結果がコレだ。このデータを参考に買うべき受信機を決めてほしい。

	FMラジオ (82MHz)	航空 (124MHz)	消防・救急 (150MHz)	マスコミ (165MHz)	航空 (301MHz)	鉄道 (350MHz)	コトレス (360MHz)	道路公団 (383MHz)	高熱 (399MHz)	タクシー (451MHz)	マスコミ (465MHz)	ワイヤレス (800MHz)
AR8000	★	●	●	●	●	●	●	●	●	●	●	●
AR8200MARK I	●	●	●	●	●	●	●	●	●	●	●	●
IC-R2	●	●	●	●	●	●	●	●	●	●	●	●
IC-R3	★	●	●	●	●	●	●	●	●	●	●	●
MVT-3400	●	●	●	●	●	●	●	●	●	●	●	●
MVT-7300	●	●	●	●	●	●	●	●	●	●	●	●
MVT-9000MK II	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲	▲
VR-150	●	●	●	●	●	●	●	●	●	●	●	●
VR-500	●	●	●	●	●	●	●	●	●	●	●	●
DJ-X2	●	●	●	●	●	●	●	●	●	●	●	●
DJ-X3	●	●	●	●	●	●	●	●	●	●	●	●
DJ-X20	●	●	●	●	●	●	●	●	●	●	●	●
DJ-X2000	★	●	●	●	●	●	●	●	●	●	●	●
DJ-S40	●	●	●	●	●	●	●	●	●	●	●	●
DJ-193J	●	●	●	●	●	●	●	●	●	●	●	●
DJ-593J	●	●	●	●	●	●	●	●	●	●	●	●
TH-F7	●	●	●	●	●	●	●	●	●	●	●	●
RT-2001	●	●	●	●	●	●	●	●	●	●	●	●
HSC-350	●	●	●	●	●	●	●	●	●	●	●	●

★=最高 / ●=良好 / ▲=まあまあ / -=受信不可
 ※ここで言う「感度」と本文中で登場した耳で聞いた「感度」では評価が異なります。
 ※実験に使用した受信機・無線機は、編集部が販売店にて購入した1台です。そのため、個体差が生じる可能性もあります。

Extensive product information available from the AOR UK web site. Promotions and special prices for SSL credit card orders.

www.aoruk.com

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