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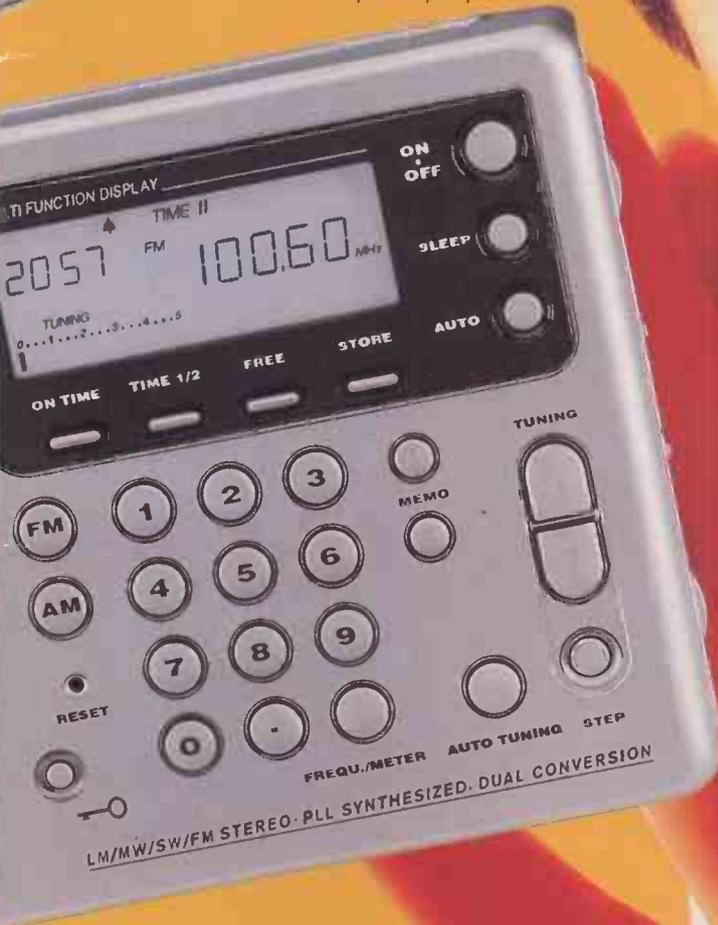
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# OCTOBER 1999 Issue

# short wave magazine

## Broadcast

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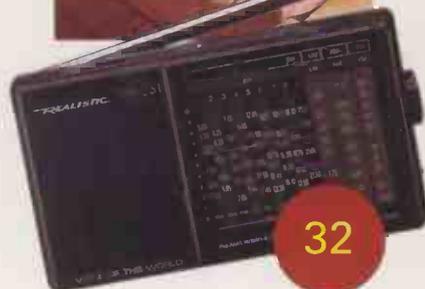
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## Broadcast Special Features

- 23 **A LONG CLOSED PIRATE RADIO STATION**  
The story of Britain's offshore pirate radio stations has been told in 'Off The Record' many times before, but the story of Scotland's landbased pirates has never been told anywhere until now. Daniel Burke explains all.
- 27 **BULGARIAN DAWN**  
Back in 1990/91 Michael Osborn travelled to Bulgaria and spent several weeks living in the capital Sofia. He also worked for the English service of Bulgarian Radio and witnessed a country and radio station slowly emerging from the dark decades of Communism.
- 30 **WAS A COMPLAINT EVER 'LODGED' AGAINST MARCONI?**  
Ged Lynch travels back in time to find out just who transmitted that first radio signal - a fascinating story.
- 32 **SO LONG - WAVE GOODBYE?**  
Is long wave sadly neglected these days? Firoz Mohamed seems to think so. He explains about his desperate search for a small, cheap radio with long wave facility.
- 40 **SOUTH AFRICAN SUNDAY AFTERNOONS**  
From 1985-1990, the popular *Mailbag* programme from Radio RSA in Johannesburg won a faithful following among British short wave listeners. Michael Osborn recalls the show's special appeal and how it shaped his love for radio.



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

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# magazine

## Other Features

### 36 PASSIVE RF PARTS YOU CAN USE - PART 1

Joe Carr K4IPV explains the design and construction of combiners and splitters. Essential for anyone wanting to connect two or more antennas to a receiver or share an antenna between several receivers.

### 42 TOTAL ECLIPSE - AS SEEN BY WXSATs

Invited by Radio Devon to broadcast live commentary for the eclipse from the Hoe, Lawrence Harris did exactly that, after all, he had been waiting 40 years to see this eclipse!



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### COVER SUBJECT

Simulation of the recent total eclipse, visible from the UK, view from space.

Don't Forget – you can join the *SWM* Readers'

E-mail list by sending a message to

[swm\\_readers-on@pwpublishing.ltd.uk](mailto:swm_readers-on@pwpublishing.ltd.uk)

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## SWM Services

### Subscriptions

Subscriptions are available at £33 per annum to UK addresses, £40 in Europe and £44 (Airsaver), £50 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £55 (UK), £68 (Europe) and £74 (rest of world), £85 (airmail).

### Components For SWM Projects

In general all components used in constructing SWM projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article. The printed circuit boards for SWM projects are available from the SWM PCB Service, **Badger Boards, 12 Hazelhurst Road, Castle Bromwich, Birmingham B36 0BH, Tel: 0121-681 4168.** A small catalogue containing components, projects and p.c.b.s is available, free, to anyone sending Roy or Sue Martin an s.s.a.e.

### Photocopies & Back Issues

We have a selection of back issues, covering the past three years of SWM. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for SWM are £2.99 each and photocopies are £2 per article.

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

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

### Placing An Order

Orders for back numbers, binders and items from our Book Store should be sent to: PW Publishing Ltd., FREEPOST, Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling. Credit card orders (Access, Mastercard, Eurocard, AMEX or Visa) are also welcome by telephone to Broadstone (01202) 659930. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Broadstone (01202) 659950. The E-mail address is [bookstore@pwpublishing.ltd.uk](mailto:bookstore@pwpublishing.ltd.uk)

### 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

**H**ello and welcome to our **Broadcast Special** issue of SWM. Increasingly

these days there is a move away from the use of short waves for plain old broadcasting. The migration is to satellite and computer based (Internet) distribution of programme material.

Even though the penetration of these alternative delivery systems is relatively high in the 'first world' countries, mind you the vast majority of the population does not own the necessary hardware to enjoy these feeds, there still is no cheap alternative to short wave usage for international broadcasting. It still surely is the case that many readers became

interested in our hobby by tuning around and listening to weak and distorted signals emitted from far off lands and maybe not so far off lands, on an old or cheap radio. This chance meeting with radio then spawned a curiosity and that's it - hooked. Certainly this was the way it happened for me. I also had a fascination with pirate radio. Although I missed the activities of the sixties, I was a keen RNI fan in the early seventies, listening to both the medium wave and Sunday morning 6MHz broadcasts. The recent Radio North Sea RSL was indeed of great interest to me and we've had an aerial picture supplied by the **London Aerial Photo Library** of the 'Mebo 3' which is in fact *Lightship 18* dressed in RNI regalia. Unfortunately this picture was too late for inclusion in 'Off The Record' this month but look out for more information in Andy's January column.

## Eclipse

Those of you who were, like me, frustrated from viewing the totality by the cloud cover should enjoy Lawrence's offering this month with some impressive pictures courtesy of earth observation satellites. This month's cover is sporting a computer simulation of the event. Check out page 42 to see more. I'm certainly glad that I didn't make the trip to Devon that I mentioned last month just to observe cloud. Though I must say that the eerie darkness has inspired me to seriously contemplate a trip to Madagascar to see the next total eclipse.



From a radio point of view it certainly seems that propagation was affected much as expected. See LM&S for more on this.

## Editorial Correspondence

There have been a few instances recently where I've had potential contributors E-mailing me dissatisfied that I've not responded instantly to their communications. This is a scenario that recurs from time to time. Everyone please be aware that I deal with all

correspondence in a strict sequence. I take each item in turn. I don't want to appear pompous but shouting and sending multiple copies will not increase your priority (in extreme cases the opposite will happen!).

There are also those of you that seem to expect a reply to or acknowledgement of every throw-away comment sent to me. Well I'm sorry but we just don't have the time to respond. I have said before that I do read all correspondence that I receive and I do reply where I believe it is necessary. Just to put my situation into perspective, I receive on average some 200 items per day! I could easily spend all day, every day composing replies. This would clearly leave me no time available to perform my other Editorial duties which is clearly not on.

So, to those of you who have experienced the frustration of not having what you may consider to be an appropriate response time, I really hope you can see why.

Please be assured that with Royal Mail, the delivery success rate is very high indeed. Articles submitted by this method or by E-mail are **always** acknowledged upon receipt. If you send me an E-mail, then unless you get a bounce message, you can be sure it reached me. FAXes; well they employ a mostly one to one direct connection, with a communication protocol that allows notification of success. So please don't despair about submissions not having arrived - please be patient. Unfortunately, as a small publisher, we do not enjoy huge resources for dealing with incoming items of correspondence.

I felt a great sympathy for DJ John Peel, who on a recent TV special celebrating his 60th Birthday, made the point that he didn't have enough hours in a day to just deal with all the material that is sent to him. Sadly, I know that feeling too well, but we are better able than he is to deal with your offerings, so please understand, thanks.

*Kevin Nice*

Vy 73

**Dear Sir**

Having read your August QSL regarding dodgy dealers and purchasing from Rallies with interest, could I put the other side of the coin? Due to a mishap on my part, a fault developed in my Icom IC-Q7E transceiver/scanner bought at the Longleat Rally. I returned it to the dealer, one of your trade advertisers, The Shortwave Shop in Christchurch, Dorset, for repair. Despite being slightly out of guarantee, it was promptly fixed and returned free of charge! It was refreshing to find someone who cares about customer aftersales, and I would not hesitate to recommend them.

By the way, congratulations on the frequency chart in the July issue, it was clear, easy to read and invaluable for any radio listener. Best regards.

**R. Hope G6YEV**  
**Andover**

**Dear Sir**

I thought the pull out frequency poster in July *SWM* was probably the best 'freebie' I've ever encountered in a magazine, so well done, and may we see more such inserts that really help the listener in the most direct way. This wall chart taught me some new things about the radio spectrum, though it omitted to define the Milair band 230-390MHz.

**Richard Gosnell G4MUF**  
**Wiltshire**

*Regrettably there were some other omissions too...now what prize can we give for the observant amongst you? - Ed.*

**Dear Sir**

I just had to put pen to paper to write to you concerning the Roberts R861 portable receiver. I have always had the larger receivers, i.e. R-2000, FRG-100, FRG-7, etc., but now disabled and retired, I thought I would try the smaller sets.

My thoughts went to Roberts, a good name. We have had Roberts radios in our family for 30 years and I decided to buy a Roberts R861 with all mods and memories and all short wave bands. In our family they were always reliable, but I was told if you are interested in amateur bands, forget it.

Well, I went ahead and purchased the R861 and I was amazed and delighted. I could receive Shanwick, VOLMET and reception on 80, 40 and 20m was as good as my FRG-7, etc., or better.

Roberts supply a neat, boxed set with mains adapter, manual, case and a fishing reel type cased long wire. I really applaud Roberts, their short wave is excellent also. This radio has everything.

**F. Steele**  
**Works**

*I've always been of the opinion that a (relatively) cheap portable set is the best way to enter the hobby. It's a first for me to hear of listeners' arriving from the 'other direction' - horses for courses, eh? - Ed.*

**Dear Sir**

Being a reader of *Practical Wireless* from time to time, I was very interested in your advertisement for the *Short Wave Magazine* in the August 1999 issue, on page 49, with free frequency wall chart, plus Andrew Howlett's checks on the Icom IC-R7000 scanner. This advert was a total loss to me of £2.99 as it said out now, and going to the trouble of getting a friend to get one for me from town as I can't get out. It seems the advert was for July and not August.

So, as the bottom line says, 'Miss It Miss Out', yes, that's me. How many other people were conned? Thanks for nothing.

**K.J. Young**  
**Nottingham**

*Well, you've got me confused here. Anyone buying the August issue of PW during the first two weeks of the on sale period are able to buy the July issue of SWM as that is still on sale. If you missed it, sorry. All is not lost though, back issues are on sale from the SWM Book Store for £2.99 inc. P&P (UK). - Ed.*

**Dear Sir**

Eight years ago I purchased two Icom receivers, IC-R71E and IC-R7000. Imagine my concern after reading John Wilson's article in September's *SWM* reviewing the IC-R71E and warning of possible back up battery failure. So much so that I contacted a local Icom agent who referred me to Icom UK.

After speaking to their service department, I was relieved to a certain extent by the engineer who assured me the battery in question would possibly outlive me! This begs the question, who is the expert?

Is there anyone out there who can clarify this as there must be other owners just as worried after reading this particular article.

**Peter Hall, Rotherham**

*John's words serve as a warning. The actual shelf/operating life of batteries isn't always as per the spec. I remember vividly having to sort through stock of hundreds of defective lithium batteries in a warehouse as in a certain discharge state they are prone to explode! This specific example was with units only one year old, specified life was 10 years. - Ed.*

**Dear Sir****Kempro KR500 Rotor Unit.**

One of these units forms part of my HRPT dish actuators which I installed in September 1997 and in April this year, 20 months later, I experienced fluctuations in the position indication. I thought that the potentiometer was faulty, and with help from Dave Crawley, I was able to contact Yaesu, who now act for Kempro, and get a replacement potentiometer.

I have just managed to get my unit down from the mast and inspect its condition. To my surprise, I found the two ball races well rusted, in fact, there were at least six balls in each ball race too badly corroded to reuse. Yaesu supply replacement balls at 15p each plus P&P. There may be another supplier who is cheaper, but I haven't researched this.

There is no provision to stop rain getting into this unit through the boom shaft bearings. What I have designed is a rain guard, made from 1.5mm thick brass and fitted to the case where the boom shaft extends. I enclose a sketch of the rain guard, they are each fitted by two 3mm round headed screws 8mm long.

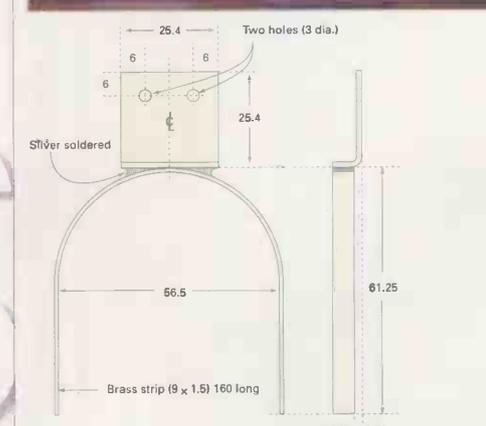
The cases have to be drilled and taped 3mm in the position indicated to avoid interference with the inner ball race. Because it fits tightly to the rim of the ball race cage, which extends outside the casing, the rain guard device needs to be carefully built and fitted. The rain guard depth is critical in order to allow the dish clamps to clear its sides when rotating.

Before fitting and whilst assembling the rain guard, it will be necessary to file off the two, one each end, vertical position identification 'pips' from the casing. Once fitted I suggest that a fillet of mastic be placed around the outside of the rain guard creating a seal with the case.

The photograph shows the two rain guards fitted to the casing. Because the inside of the casing was very corroded with aluminium oxide, I cleaned it thoroughly, then sprayed the inside with several coats of white cellulose. Since I am unsure how successful the rainguard will be, I hope this will at least stop, or greatly reduce, any further corrosion. I also enlarged the drain hole in the bottom of the casing.

I spoke to Yaesu UK about my problem, but they were unaware of any company modifications issued to avoid water entering the unit via the boom shaft and ball race. I hope this idea might be helpful to others who may experience this problem.

**John Din**  
**Bristol**

**Dear Sir**

Having been the proud owner of the Kenwood R-5000 for many years I was interested to read in the July issue with regards to the

'Try Second-Hand' article which proved very interesting.

I must confess I bought my R-5000 second-hand, complete with v.h.f. converter and extra s.s.b. filter five years ago. I still find the receiver holds a lot of respect in the trade, wonderful audio and despite its age, still up there with the much newer receivers on the market. It not only looks and feels like the real thing, it is without doubt a wonderful set.

Although I have been tempted by much newer receivers, it always comes back to one thing, there's still very little out there that outperforms the R-5000. The added v.h.f. converter is a joy to use also.

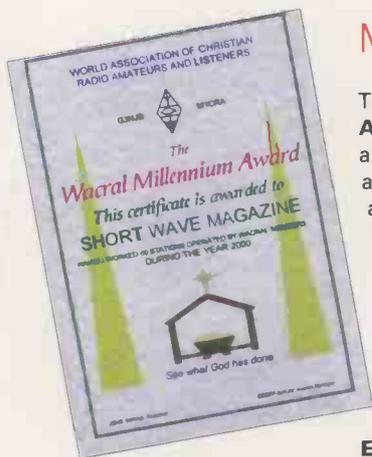
Perhaps it would be nice if you could re-visit the R-5000 as a second-hand review in a forthcoming issue of *SWM*. Thanks again for keeping alive the classics which so often are unfairly forgotten.

**M.J. Wynn**  
**Isle of White**

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

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

TOP QSL



## Millennium Award

The **World Association of Christian Radio Amateurs and Listeners (WACRAL)** have announced a special 'Millennium Award'. Attractive and personalised certificates will be available to all amateurs and short wave listeners who work or hear 60 s.s.b. or c.w. stations operated by WACRAL members on any h.f. bands or 20 stations on v.h.f./u.h.f. during the year 2000.

The WACRAL Club calls **G3NJB** and **M1CRA** may be logged only once and your applications, accompanied by QSLs, may be submitted until the end of 2001 to the Awards Manager **G4YJW, WACRAL, 47 Northiam Road, Eastbourne, East Sussex BN20 8LP**, who will be pleased to let you have more details of this and the many other WACRAL Awards, together with full details of WACRAL nets world-wide, upon receipt of your s.a.e.

## Harrow Society

Members of the **Radio Society of Harrow** meet at 2000 every Friday at the **Harrow Arts Centre, Uxbridge Road, Hatch End, Middlesex**. For information on events and talks planned so far, contact **Jim Ballard G0AOT** on **(01895) 476933** (home) or **0171-278 6421**, daytime.

## New From UKHO

The United Kingdom Hydrographic Office has issued a new 1999/00 edition of *Admiralty List of Radio Signals (ALRS) Volume 1: Coast Radio Stations* (NP281(1) and NP281(2)). Published back in August, Volume 1 has been completely updated and covers Europe, Africa and Asia (excluding the Philippines and Indonesia) and Part 2 covers the Philippines, Indonesia, Australasia, the Americas, Greenland and Iceland.

As well as comprehensive details of over 1500 stations world-wide, both parts feature essential information including: medical advice by radio,

arrangement for quarantine, pollution and locust reports, ship reporting systems, procedures for reporting piracy, armed robbery and alien smuggling and extracts from the regulations governing radio usage in both territorial and international waters.

The new addition *ALRS Volume 1* is user friendly and contains up-to-date information regarding the development of non-geostationary mobile satellite communications systems, operated by commercial mobile satellite communication companies such as Iridium, Globalstar and ICO.

*ALRS Volume 1* also includes a reverse frequency list, which enables the user to

## Special Event Station

To celebrate its centenary in 1995, the National Trust asked amateur radio clubs in various parts of the country to put on Special Event Stations. The **Bury St. Edmunds ARS** have made this an annual event in conjunction with Ickworth House, which is situated just south west of the town.

The weekend chosen for their fifth Special Event Station was back on 7/8th August. Weather watchers reading this may recall that it was a weekend of torrential thundery rain, but in spite of this, the Bury St. Edmunds ARS



**Roger G0KME with SSTV and computer set-up.**

were extremely lucky that the weather cleared up on the Friday and Sunday evenings when they were erecting and taking down their antennas!

The station was again managed by **Derek**

**Derek G4DHU operating with Alan M1DDZ taking the log.**



easily identify a radio frequency with a coast radio station. In addition, new diagrams of Africa have been introduced to reflect the numerous v.h.f. stations and details of KOSREP - the new ship reporting system for Korea are also included.

*ALRS Volume 1* is easily updated from Section VI of *Weekly Admiralty Notices to Mariners* and is revised annually. Each part is priced at £25 UK RRP and is available from appointed Admiralty Chart Agents. Further information from **The United Kingdom Hydrographic Office, Public Relations Department, Admiralty Way, Taunton, Somerset TA1 2DN**.

## Haydon's HamFest

**Haydon Communications** recently attended, for the second time, the largest HamFest in Europe, held in Germany, on the edge of Lake Constance. Haydon report that attendance figures were up this year by around 10% and their estimated figure for total attendance over the three day show exceeded thirty thousand people from all walks of life, with quite a number of

## New Transceiver

**Nevada** are pleased to announce the launch of a new PMR 446 transceiver, the Alinco DJ-SR1. Small enough to fit into a top pocket, the Alinco DJ-SR1 is packed with features including: selectable CTCSS, switchable high/low power, superb RX/TX audio quality, scan facilities and a companion-channel finder facility. There is also a full range of compatible accessories from the existing Alinco range.

The DJ-SR1 will retail for **£99.95** (batteries and drop in charger not included). More information about this little transceiver from Nevada at **139 London Road, North End, Portsmouth, Hants PO2 9AE, Tel: (01705) 662145, FAX: (01705) 690626**.



**G4DHU** and **David G0XEG** liaising with the National Trust for which he is a Volunteer Room Warden. A working party of members assembled to help with setting up a G5RV between the second floor of the Rotunda and a large Cedar on the north lawn - this was about 13m above ground. The club's Yaesu FT-102 was the main h.f. station, which was opened on the Saturday morning by **George G3LPT** 'on the key', which has now become an established tradition for special event stations.

The station was located in the west wing lecture theatre, which has a number of glass fronted display cabinets. These were put to good use by **Chris G0JRM** to house his collection of 'wireless way back'. Apart from a fine collection of early receivers and equipment, Chris also has a working demonstration of a Cossor Melody Maker driving a horn loudspeaker of the period, and the reproduction of items such as the abdication speech, Chamberlain's announcement of the outbreak of WWII and Churchill's Victory speech, etc. brought forth many nostalgic comments from the older visitors to the station.



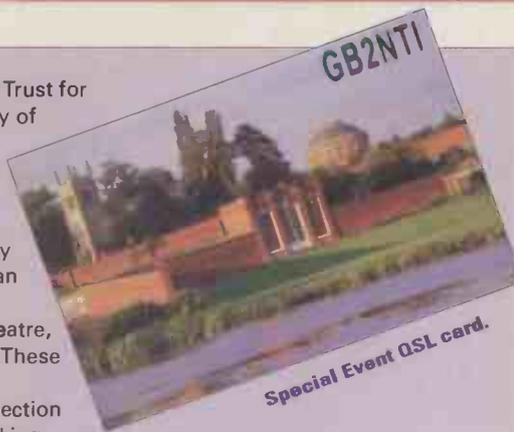
**Chris G0JRM with his back to camera.**

A new display this year was staged by **Roger G0KME**, who has a collection of computers, ranging from the Sinclair ZX80 through to a desktop 486. Roger also set up a Slow Scan TV station using the 486 PC with his TS-440. These visual aspects of the station always attract interest from the visitors, whereas operation of the h.f. station mainly appeals to other amateurs and s.w.l.s.

The Bury St. Edmunds ARS worked some 150 stations over the two days, across the UK and north west Europe on 7MHz, with the SSTV station working on 14 and 3.5MHz at times. Conditions were far from ideal due to the high static levels caused by the thundery weather, but members of the Society were pleased with the performance of the antenna and report that they received far better reports to their signals than they were able to give in many cases. An attractive QSL card supplied by the National Trust has been sent out via the Bureau to all contacts.

Everyone who went along enjoyed the weekend, whether operating or just helping to load and unload equipment. Special thanks go to **Emma Kirk** and **Maria Moffatt** from the National Trust for their help and assistance over the three days and to the dedicated few members who helped, especially those who carried tables down from the third floor of the Rotunda.

Anyone who would like further information about the Society and its activities, contact **David Riches G0XEG, 92 Barons Road, Bury St. Edmunds, Suffolk IP33 2LY.**



**Special Event QSL card.**

**G0JRM's 'wireless way back' display.**



Italian and French visitors present.

Haydon also report that this year was better for business than 1998, and that there was a lot of interest shown in 6m, probably due to the closure of the old German TV band and hence release of 6m use to amateur radio operators last December.

The Flea Market excelled itself this year with thousands of private stands selling anything from

an old Russian 1kW linear amplifier to dentistry tools. The Flea Market has become part and parcel of many UK and European rallies.

As in previous years, there were many exciting new products on show including the new Micro-Pocket sized VR-500 pocket scanner from Yaesu, soon to hit the UK market by storm. So, if you didn't get the chance to visit Friedrichshafen this year, make a date in the diary for next year - often many local clubs run coach trips at very reduced prices.

## Silver Jubilee

**Icom (UK) Ltd.** celebrated its 25th anniversary with a large party in the grounds of Eastwell Manor, near Ashford, back on the 17 July. Over 3000 guests attended in celebration of the company's achievement. Among the guests were

**Continued on page 10...**

Send your news to Zoë Shortland at the Editorial Offices

# rallies

## Attention Please!

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

**\*September 24/25:** The Leicester Amateur Radio Show will be held at the Castle Donington International Exhibition Centre at Donington Park, Castle Donington, Leicestershire. The hall itself is purpose built and features a floor area approximately one third larger than the two Granby Halls combined and the car parking is unlimited and free. More details from **Geoff Dover G4AFJ** on (01455) 823344, FAX: (01455) 828273.

**October 3:** The Great Lumley Amateur Radio & Electronics Society are holding their rally at the Great Lumley Community Centre, Front Street, Great Lumley, near Chester Street. Doors open 1100 (1030 for disabled visitors). There is free parking and easy access, with good, inexpensive food and drink. There will be radio, electronics, computer, satellite and component stalls, plus a Bring & Buy in two sections - junk and good buys. Admission is just £1, free of charge for under 14s if accompanied by an adult. Talk-in. More information on 0191-384 2803 or (01228) 401201 or from the Rally Organiser, **Nancy Bone, 49 South Street, Durham City DH1 4QP.**

**October 17:** The Blackwood Radio, Computer & Electronics Rally is to be held at the Newport Centre, South Wales, one mile from junction 27 on the M4. Opens at 1030/1100 and the entrance fee is £1. There will be a Bring & Buy, Talk-in, Trade stands, special interest groups, a licensed bar, catering, disabled facilities and family attractions. Located in the centre of Newport and immediately adjoining a free open air car parking (Sundays) and the bus station, quarter of a mile from the railway station, one mile from junctions 25A, 26 and 28 of the M4 and 15 minutes from the Second Severn Crossing providing easy access. Further information can be obtained from **Stuart Instone GW0NPL** on (01495) 243824/(07970) 777756 or E-mail: fireham@aol.com

**October 17:** The Portland ARC's annual radio rally will be taking place at the Royal Manor School in Weston Rd on Portland from 1000-1500. Admission will be £1 (including lucky programmes). There will be traders, live demonstrations of WX satellite images, craft stalls, refreshments, Talk-in, etc. For further information contact **Mrs Chris Haddon, 1 Victoria Place, Easton, Portland, Dorset DT5 2AA.** E-mail: mal@mailheddon.freeserve.co.uk

*Continued on page 11...*



# UNPARALLELED SHORT WAVE

## The 'mature' AR7030, four years of production and still e

As reported in the June 1999 Short Wave Magazine, a new production run of the AR7030 has been completed and is shipping. The AR7030 has retained the same design but has 'evolved' in certain areas. The latest production features **alternative click encoders** which provide a smoother and more consistent quality feel and a **new-style liquid crystal display** with higher contrast and a wider viewing angle.



Now in its 4th year of production, the AR7030 has established itself as the popular performance trendsetting short wave receiver representing the new 'benchmark' in excellence. There have been many new entries by competitors since the launch of the AR7030, some feature DSP but none can match the **sheer performance excellence** of the AR7030. Don't take our word for it, have a look at the many technical reviews and compare the technical results. Go on, compare it to others!

Internationally and independently recognised as being in 'a class of its own'. The balance between high performance and value for money is excellent.

Awarded receiver of the year 1996/97 by WRTH and consistently awarded 5 stars by WRTH and Passport to World Band Radio in every edition with Passport nominating it as the Editor's choice.

**AR7030 £799 AR7030 PLUS £949**

The **AR8200** has been the first hand portable wide band all mode production unit to arrive on the market place with the new airband channel step of 8.33kHz correctly implemented. Add to this memory bank re-sizing, extensive step adjust capabilities to trace unusual band plans, an editable (via PC) meaningful auto mode bandplan, **free internet download** PC Windows software, optional SLOT CARDS and you have just the tip of the iceberg. The facilities offered by the AR8200 are stunning... take the 'step-adjust' feature for example. If you have a frequency of say 151.010MHz and wish to step in 15kHz increments, most receivers would simply assume 151.000 MHz then step 151.015, 151.030 etc. However, the AR8200 may be programmed to step in the desired manner of 151.010, 151.025, 151.040, 151.055MHz etc. Other real life examples would be the 27.60125MHz CB frequency incremented in 10 kHz steps, no problem... also the 900MHz band which implements 25 kHz steps but a 12.5kHz offset. Add to this the foresight of 8.33kHz airband steps and you have a very flexible unit!

**AR8200 £399**

**Shown here with optional slot cards**

**TIP OF THE MONTH: Program search of the new 8.33kHz airband step using the AR5000**

The new airband channel step comes into effect later in 1999 / 2000 for most of Europe and is to be further extend after that time.

There is much confusion over the issue of 8.33 kHz, in reality it is not 8.33 but eight-and-one-third. As a third cannot be expressed in a decimal fashion, a small compound frequency error will occur every third increment. Ideally the end digits should read '00' '33' '66' '00' but will be display as '00' '33' '66' '99'. In reality, the AR5000 may be programmed in 8.333 kHz steps to further minimise the compound error, the error is then very small indeed, especially when considering the sub band is only expected to occupy 132.000 - 134.500 MHz (one Hz every third tuning increment!).

**Work around:**  
If you do not wish to live with a small compound error, it is possible to program three program search banks as a GROUP (refer to section 12-4 P49 onward of the English language operating manual). It is assumed in this addendum that you understand how to program basic functions.

1. Program three program search banks with the limits 132.000 - 134.500 MHz in AUTO mode (AM 25kHz steps). Link all three search banks to form a single group... so all three are searched together. The operating manual does not specifically deal with step-adjust during program search, so ignore it at this time. Let's assume you have used banks 1, 2 & 3.
2. Bank 1 is left 'as is'.
3. Start searching bank 2. Press [STEP] then press [PASS] to engage step-adjust (the "\*" legend will be displayed).  
Press [UP] to access the sub-menu to allow the step-adjust value to be entered. Key in [8] [.] [3] [3]

Press and hold the [ENT] key for more than one second for the data to be accepted (do not simply press ENT momentarily). As there is no step-adjust entry point during the data input of program search, this LONG HOLD of the [ENT] key must be used to enter step-adjust while searching in the above fashion. Press [ENT] to complete the programming.

The AR5000 will continue to search but will add 8.33 kHz to every 25 kHz increment.

4. Repeat the process outlined in (3) for the third search bank, in this example (bank 3) use a step adjust value of 16.66 kHz.

The AR5000 will continue to search but will add 16.66 kHz to every 25 kHz increment.

**Outcome:**  
By searching all three search banks as a group, the exact frequencies will be searched for the new airband allocation without a compound error creeping in. As the AR5000 has 20 search banks (twice), using three banks in this way is not great loss.

# BEST PERFORMANCE



Every bit the high performer, new production now shipping...



When making critical measurements, the frequency coherence is very important whether a single or multiple unit is employed. Just like optical telescopes, the output from several receivers may be ADDED together to provide greater performance, however their frequencies must be absolutely coherent. This involves the use of a single reference for all oscillators employed throughout the receiver. Several receivers may then be connected to a single external frequency standard safe in the knowledge that their outputs will be coherent.

The AR5000C now provides this commercially required capability. The "C" version may be provided to order in either the standard AR5000 format or with two of the +3 additions of AFC and NB.

If you are a commercial operator with this application in mind, please request the separate specification leaflet for the AR5000C. **£P.O.A.**

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

The enhanced AR5000+3 has been awarded 4-stars by **Passport to World Band Radio'99**.

*"Front-end selectivity, image rejection, IF rejection, weak-signal sensitivity, AGC threshold and frequency stability all superior".*

*"Unlike virtually every other receiver we have tested over the past 21 years, the frequency readout is unfailingly accurate to the nearest Hertz. This should make the AR5000+3 of exceptional interest to broadcast engineers".*

Voted **best wide band receiver** by the readers of the German "**Funk**" magazine.

Chris Lorek **HRT**...

*"Throughout the wide frequency range, the receiver was adequately sensitive, especially so at the upper end, with good overall strong signal handling characteristics."*

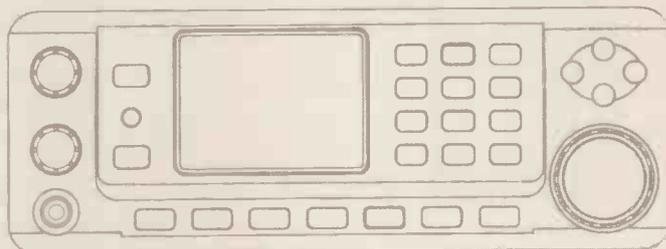
## AR5000+3

- ✓ Wide frequency coverage 10kHz - 2600MHz
- ✓ All mode reception: USB, LSB, CW, AM, Synchronous AM, NFM, WFM with automode tuning (any mode and bandwidth on any frequency is possible)
- ✓ Automatic Frequency Control
- ✓ Noise blanker
- ✓ High stability TCXO reference, 1Hz NCO tuning
- ✓ 1,000 memories, 10 memory banks, 20 search banks, 5 VFOs (all twice!), alpha tag, EEPROM chip storage
- ✓ Multiple IF bandwidth 3kHz, 6kHz, 15kHz, 30kHz, 110kHz, 220kHz with an option position for 500Hz CW. (30kHz is ideal for WEFAX).
- ✓ High sensitivity and excellent strong signal handling assisted by a preselected front end from 500kHz - 1GHz
- ✓ Extensive RS-232 control list
- ✓ SDU ready with IF output for spectrum display unit

**AR5000 £1345 AR5000+3 £1574**

Setting new standards, **SDU5500** Spectrum Display Unit  
Coupled to the AR5000 receiver, the SDU5500 provides a spectrum display of 10MHz bandwidth anywhere between 10kHz and 2600MHz.

Already pressed into commercial usage by the government, the professionalism of the unit has truly been grasped. The SDU5500 has a high resolution monochrome (white/blue) LCD with improved status read-out on the top-half of the display with a spin wheel tuner controlling the marker position, similar to a dedicated high-priced spectrum analyser. The SDU5500 supports a number of AOR and ICOM receivers, in addition, the SDU5500 may be used with other receivers which offer a 10.7MHz I.F. output with suitably wide bandwidth, please refer to the colour leaflet for details. The firmware is FLASH up-grade-able from our web site with free supporting PC software also available from the web site.



**AR8000** all mode hand portable receiver 500kHz to 1900MHz. Dot matrix display, a real trendsetter. Computer / reaction tune port and many features.

**AR8000 £299**



**ARD2** portable ACARS & NAVTEX decoder & display unit, can be operated from internal batteries or external d.c. supply. An RS-232 port expands capabilities, **free supporting software** from the AOR internet web site. **ARD2 £295**



The **AR3000A** is evolution at its very best. Wide band all mode receiver, 100kHz to 2036MHz high performance, RS-232 port as standard. Respected best seller with over 70,000 sold world-wide. The PLUS version has enhanced facilities.

**AR3000A £699**  
**AR3000A PLUS £799**



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

**AOR** Tel: 01773 880788 Fax: 01773 880780  
info@aor.co.uk www.demon.co.uk/aor E&OE

## More RAE

The **North Cheshire Club** will be running both RAE and NRAE weekly courses from Sunday 12 September 1999 starting at 7pm. Enrolment can take place on any Sunday from then until the end of November at **The Morley Social Club, Morley Green, Wilmslow, Cheshire.** Contact **Gordon Adams G3LEQ** on (01565) 652652, FAX: (01565) 634560 or E-mail: [g3leq@cwcom.net](mailto:g3leq@cwcom.net) for details.

The **Warrington Collegiate Institute** will also be running weekly RAE courses from Thursday 16 September 1999 starting at 7pm. Enrolment can take place on any weekday at the college's **Winwick Road Campus, Warrington** during September, October and November. Contact the lecturer **Gordon Adams G3LEQ**, on (01562) 652652 or the college on (01925) 494494 for more details.

## ... continued from page 7

suppliers, dealers, and, of course, the employees, upon whom the company's success has been built. Guests arrived from over 10 countries, including the vice president of Icom incorporated, who had travelled from Okaka, Japan, especially for the occasion.

Based in Herne Bay, Icom (UK) Ltd., formerly known as Thanet Electronics, has grown into a multi-million pound company, with a turnover exceeding £8.5 million. The company now employs more than 40 people and operates in a number of radio communication markets.

It was back in 1974 that **Dave Stockley**, founder and now company chairman, opened a small retail shop in Beltinge, Herne Bay. Dave had recently retired from the Fire Service due to injuries and formed Thanet Electronics with partner **Paul Nicholson**. Initially they distributed various brands including the Japanese manufactured Icom communication equipment. The pair later approached Icom Inc. and were granted the distribution rights in the UK and Republic of Ireland paving the way for future success.

After several years of steady growth, the company was joined by the present Managing Director, **Philip Hadler**. Thanet Electronics Limited then launched the highly successful IC-2E hand-held radio for the amateur radio enthusiast. This radio proved to be so reliable that it was not long before marine and commercial variants made their way into the expanding range.

Soon after this, the company received a large order from the Ministry of Defence, desperately seeking equipment for the Falklands conflict, and it was all hands on deck for the small team, who needed to modify and inspect each radio to meet the strict MoD specifications. It became apparent that the quality of Icom's radios, combined with the company's ability to tailor each product to the users needs, created a formula for success that has made Icom one of the world's leading radio manufacturers. Products now satisfy a wide range of customers all over the world and supply the commercial, marine, airband and amateur radio markets.

Over the years, Icom (UK) Ltd. has contributed a great deal to the local community. They have provided support for a wide range of organisations including a local junior football team, Herne Bay Harriers and the Herne Bay and Whitstable doctors on call service, CANDOC. Icom are also supportive of Dave Lee's Happy Holiday Charity and several



(LtoR) **Phil Hadler, Bob Stockley and Dave Stockley.**

staff members have active roles in this organisation.

In addition, Icom has provided sponsorship for a number of larger, national and international events. They have supported Operation Raleigh, provided communications equipment to the BT Global Challenge yacht race and have supported many record attempts. Icom also has a good working relationship with Richard Branson and the Virgin group, providing equipment for all of his daredevil record breaking activities.

Icom (UK) Ltd. has prepared for the 21st century by establishing a strong board of directors, comprising **Bob Stockley** as Sales & Marketing Director, **Dave Stockley** as Chairman and **Phil Hadler** as Managing Director. This is a time of significant change for Icom with the introduction of the most innovative products on the market. Together with new standards and procedures, a newly modernised office and the injection of a vibrant and confident attitude, Icom's position is consolidated in the radio communications industry today and for the future.

## World At Your Fingertips

You could have the whole world at your fingertips with the new **SatcoDX CD** - containing 8000+ entries of satellite TV and radio stations, complete with their frequencies, transmission modes and all the necessary data to tune into these stations.



What is claimed to make this CD unique is it provides the capability to search, sort and filter for nearly any feature. If you want to know how many radio stations world-wide transmit in digital mode and free-to-air, then the CD provides the result 663 and lists them all. An additional bonus with the CD are the integrated coverage (footprint) maps which give an easy indication whether a channel can be received or not at a given area.

The SatcoDX CD is issued every second month, a single order costs \$29.50 plus \$2.50 shipping and handling. A year long order (6 CDs) costs \$150. The CD can be ordered online at <https://www.spectronet.net/satcodx/order/>

## Polish Weekend

The *SWM* Newsdesk has recently heard from **David Mapeley MOBZK** of the **Milton Keynes Amateur**

**Radio Society**, who would like to report on their Polish Weekend at Bletchley Park.

'Greetings to all our special visitors upon the sixtieth anniversary of the Enigma hand over. We trust your visit will be both enjoyable and memorable from the Polish Scout Group in Britain and the Milton Keynes Amateur Radio Group' This was the message sent in code, and then plain text, from 'Station X' in Bletchley Park by **Bill GOTGU** back on Saturday 24th July 1999 and received by **Rob G4UMW** in the dinner attended by Polish and English dignitaries.

## Monitoring Times

Can't make a decision whether or not to subscribe to *Monitoring Times*? Well, here's your chance to purchase some recent back issues for **£3.50 (inc. P&P) each**. Listed below are the issues available and the main reviews.



Sept '98	AR5000+3 / Motorola TalkAbout Plus FRS Transceiver
Oct '98	AR8200 / Sangean ATS 404 Portable / Kenwood VC-H1
Dec '98	AR7000 / Radio Shack PRO-91 Trunking Portable
Feb '99	Cherokee FR-460 / PRO-2066 / Grundig G4 Executive Traveller
Mar '99	Radio Shack DX-397 / Sony ICF-B200 /
Apr '99	AVCOM SDM42A / Info-Mate 837
May '99	JRC NRD-545 / Sony ICF-SW07 ROM-tuned Portable Receiver
Jun '99	Luke DP-976 Wind Up Radio / EXP-1750 LF Transceiver Kit
Jul '99	Racing Electronics RE2000 Alpha Scanner / Kloss Model 88
Aug '99	MFJ-1026 Noise Cancellor / AOR AR16 Wide Ranger / Grundig YB300PE

**Telephone Michael or Shelagh on (01202) 659930 to place your order now.**



(L to R) Kris Jasinski M0AXH of the Polish Scout Radio Group, The Polish Ambassador Verdun Webley G0RKV and Chairman MKARS.

The message was then translated using an Enigma machine and read out to all the diners. It was noted by some of the visitors that it was good to see Morse Code being used by good amateur operators. 'Station X' was then operated by one of the Polish Scout Group (callsign 3Z0ENI) for a hour and 34 lucky people worked the station. The most surprised operator must have been **GORCE** in Redditch who on answering a test call put out in the afternoon by **GOTGU** found that he was the first operator to work into 'Station X' for over 60 years. He has been duly awarded a certificate to this fact by MKARS.

During the weekend we were visited by the Polish Ambassador and the past Polish President in exile, both who contacted station 3x in Poland. The Polish Scout Radio Group (callsign 3Z0ENI) was presented with a 123 spy set by MKARS in

return for the Enigma set which the Poles handed over in 1939. Overall the weekend was a total success with over 500 contacts made, considering it was the IOTA contest as well, in fact, we worked into every continent except Antarctica.

During the night of 23/24 July, nearly 200 stations had contacted us, **Jane 2E0ASR** on her first major event worked a 80 station pile up and this was the way it went all night. The Milton Keynes Amateur Radio Society would like to thank all those stations that worked **GB2BP** and **GB60ENI** and made our weekend a success.

## Club News

Members of the **Coventry Amateur Radio Society** meet every Friday at **Binley Church Hall, Brinklow, Road, Coventry** at 2000. Visitors are always welcome to attend.

Just a few of the upcoming events for the Society are: September 24: Home-Brew Beer & Gear, October 1st - AGM, 8th - Night On The Air, 15th - Skittles Evening, 22nd - Night On The Air. Further information from **Robin Tew G4JDO** on (01203) 673999.

## November Meeting

The November meeting of the **Bangor & DARS** will be replaced by a surplus sale and auction of equipment, formerly owned by silent key Hugh G13TLT. The event takes place at **Clandeboyne Lodge Hotel, Estate Road, Bangor, Co. Down** at 2000 on Wednesday 3rd November 1999. Contact **Roy G10WVN, QTHR** on (01247) 460716.

## rallies

If you're travelling a long distance to a rally, it could be worth phoning the contact number to check all is well, before setting off.

The Editorial Staff of *SWM* cannot be held responsible for information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers.

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

Editor

**October 24:** The Galashiels & DARS is to be held at The Volunteer Hall, St. John Street, Galashiels, Scottish Borders. Doors open at 1100 (disabled access from 1045). There will be all the usual attractions. **Jim Keddie GM7LUN** on (01896) 850245, E-mail: [jimk@gm7lun.freeserve.co.uk](mailto:jimk@gm7lun.freeserve.co.uk)

**November 6/7:** The Thirteenth North Wales Radio & Electronics Show is to be held at the North Wales Conference Centre, Llandudno. The show opens at 1000 both days and the entrance fee is £2 for adults and under 14s free, when accompanied by an adult. There will be a Clubroom and an extensive Bring & Buy. More information from **M. Mee GW7NFY**, Rally Secretary on (01745) 591704 (combined telephone and FAX number).

**November 14:** The Great Northern Hamfest is to be held at the Metrodome Leisure Complex, Queens Road, Bamsley, near to town centre, less than two miles from junction 37 M1 motor way, just five minutes walk from train and bus station. Doors open at 1000 and admission is £2. The venue is all on one level with excellent disabled facilities. There will be the usual trade stands, component and specialist interest groups and a large Bring & Buy. Morse tests on demand, from 1200 till 1500 (don't forget to bring two passport photos and the appropriate fee with you). Talk-in on 145.550MHz. **Ernie G4LUE** on (01226) 716339 or (0836) 748958 between 1800 and 2000.

**November 14:** The Midland Amateur Radio Society are holding their 11th Radio & Computer Rally at Stockland Green Leisure Centre, Slade Road, Erdington, Birmingham. Doors open at 1000. There is a large free car park, free hampers draw, trade stands, local clubs and special interest exhibits. For trader information call **Norman G8BHE** on 0121-422 9787 or for general information, call **Peter G6DRN** on 0121-443 1189.

**November 14:** The Bishop Auckland Radio Amateurs Club (BARAC) Rally will take place at Spennymoor Leisure Centre. Please note this is a venue ideally suited to both trader and disabled, as it boasts good parking and easy access to a large ground floor. There will be the usual radio, computer, electronics and Bring & Buy stalls, as well as catering and bar facilities. Morse tests are available on demand. As you can imagine, there is a lot to do within the confines of the leisure centre, for those of the family not interested in radio. Doors open 1100 (1030 for disabled access) and admission is just £1, under 14s free of charge if accompanied by an adult. Talk-in on S22. **Keith M0BLN** on (01388) 601401 or (0374) 417660.

Send your news to Zoë Shortland at the Editorial Offices



# LM&S

When the solar eclipse of 1927 took place, wireless was still in its infancy and broadcasting was confined to the long and medium wave bands. The home construction of relatively simple receivers from 'blue prints' published in magazines enabled many people to listen to them. It seems likely they were unaware that the eclipse might affect reception.

This year, on August 11, many listeners had a once in a lifetime opportunity to study the effect of a solar eclipse upon l.w./m.w. reception. Some were able to take advantage of this and after the event a number of interesting reports arrived here whilst this article was being prepared - see m.w. reports.

## 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 July.

The big, long and high antennas always recommended for l.w. DXing have never worked for **Alan Roberts** in Quebec, E.Canada. He says "Throughout two decades all they yielded was noise, plenty of it, and m.w. breakthrough. And then I chanced upon the right combination of receiver and small antenna to catch transatlantic l.w. In the ensuing nine years there have only been three European frequencies, **225, 261 & 270kHz** that constantly showed nothing, never even the weakest carrier".

Much to his surprise, Alan picked up a broadcast on **270kHz** at 0205UTC on 20 July, which he rated SINPO 23332. A man speaking in an unidentified language and songs were heard before it faded out at 0228. It probably came from Topolna, Czech Republic.

A broadcast from Radiotelevisione Italiana (RAI) via their 10kW outlet at Caltanissetta, Italy, on **189kHz** was received at 2043UTC on July 27 by **Fred Pallant** in Storrington. An announcement in Italian was followed by music. The transmission rated 13342.

reports arrived here. The first came from **Phil Townsend** in E.London. Between 1015 & 1030UTC he picked up strong signals from Lisnagarvey on **1341kHz** and Heusweiler on **1422**. Later, they were inaudible! The transmission from RTL on **1440** was monitored by **Harry Richards** (Barton-upon-Humber). At 1000UTC it was SINPO 25343 but by 1015 it was peaking 45444.

RTL was also heard by **George Well** in Erdington. Whilst searching the band at 0950UTC he observed nothing unusual, but by 1025, RTL was peaking 34534. He noticed that the transmission had a very long fade cycle - much longer than during normal nighttime reception. It faded out at 1034UTC.

**John Court** took his Philips portable and a cassette tape recorder to the top of Barr Beacon, 16km from his home in Birmingham. From 1004UTC he received Manx Radio via Foxdale on **1368** and RTL on **1440** - both rated 44444. He also heard several unidentified stations in Spain and Italy. At 1030 he picked up BBC Southern Counties Radio on **1485**, which rated 55455. By 1120 all had faded out!

## Short Wave Reports

Perhaps the level of activity in the **25MHz (11m)** band will increase when the new broadcast schedules are introduced at the end of October, meanwhile R.France International remains the only occupant. Their transmissions to E/C.Africa on **25.820** (Fr 0900-1300) have been reaching some areas of the UK.

The SINPO ratings noted in the reports were 15222 at 0919 in Storrington; 24432 at 0950 by **Rhoderick Illman** in Oxted; 45333 at 1010 by **Richard Reynolds** in Guildford; 25332 at 1015 by **Fred Wilmshurst** in Northampton; 55555 at 1105 by **Robert Hughes** in Liverpool; 45454 at 1125 [much weaker earlier] by **John Slater** in Scalloway, Shetland; 24333 at 1150 in Barton-upon-Humber; 34433 at 1215 by **Robert Connolly** in Kilkeel; 15422 at 1252 by **Simon Hockenull** in E.Bristol.

There is no shortage of broadcasters in the **21MHz (13m)** band! During the morning R.Australia via Shepparton **21.725** (Eng to Pacific areas 0200-0900) was rated 21222 at 0509 by **Robert Beason** in Nottingham; R.Austria Int, Moosbrunn **21.765** (Eng to Australia 0830-0900) 44433 at 0845 by **Stan Evans** in Herstmonceux; HCJB Quito, Ecuador **21.455** (Eng [u.s.b. + p.c.] to S.Pacific 0700-1100) 34322 at 0945 in Scalloway; BSKSA Saudi Arabia **21.495** (Ar [Holy Quran] to SE.Asia 0900-1200) 44333 at 1036 in Oxted; Swiss R.Int via Sottens? **21.770** (Eng, Ger, Fr, It to SE.Asia, Far East 1100-1330) 55545 at 1125 in E.Bristol; R.Sweden, Stockholm **21.810** (Eng to N.America 1130-1200) 44333 at 1135 by **Sheila Hughes** in Morden; R.Ukraine Int **21.520** (Eng to Australia 1100-1200) 24222 at 1140 by **Eddie McKeown** in Newry; BBC via Ascension Is **21.660** (Eng to Africa 1100-1700) 22232 at 1150 in Barton-Upon-Humber.

After mid-day VOIRI Tehran, Iran **21.510** (Eng to M.East, Asia 1100?-1230?) was rated 21232 at 1207 by **Darren Beasley** in Bridgwater; UAER, Dubai **21.605** (Ar to Eur 1055-1330) 45544 at 1300 in Northampton; HCJB Quito, Ecuador **21.455** (Eng [u.s.b. + p.c.] to N/S.America 1200-1600) SIO 222 at 1400 by **Tom Smyth** in Co.Fermanagh; BBC via Cyprus **21.470** (Eng to Africa 1400-1700) 33333 at 1420 by **David Hall** in Morpeth; DW via Kigali, Rwanda **21.560** (Ger to M.East, Africa 1400-1755) 44454 at 1440 in Liverpool; RAI Rome **21.720** (It to N.America? 1830?-1905? Sat) 45554 at 1832 by **David Edwardson** in Wallsend; WYFR via Okeechobee, USA **21.525** (Eng, Ar, Port?, Fr to Eur, Africa 1600-2045) 33333 at 2030 by **Bernard Curtis** in Stalbridge; R.Australia via Shepparton **21.740** (Eng to SW/SC.Pacific, N.America 2100-0200) 33222 at 2255 by **Thomas Williams** in Truro.

Very few broadcasters are using the **18MHz (15m)** band and the absence of co-channel interference makes for pleasurable listening! The occupants include R.Sweden, Stockholm **18.960** (Eng to N.America 1130-1200), rated 55544 at 1150 in Northampton; also Christian Science BC via WSHB Cypress Creek

## Long Wave Chart

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

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

### Listeners:-

- (A) Simon Hockenull, E.Bristol.
- (B) Sheila Hughes, Morden.
- (C) George Millmore, Wootton, IoW.
- (D) Fred Pallant, Storrington.
- (E) Harry Richards, Barton-on-Humber.
- (F) Tom Smyth, Co.Fermanagh.
- (G) Norman Thompson, Oadby.
- (H) Phil Townsend, E.London.
- (I) Fred Wilmshurst, Northampton.

## Medium Wave Reports

As expected, there were no reports of m.w. transatlantic reception at night during July. The long hours of daylight discouraged many listeners from searching the band. Those who did so at night received quite a few of the broadcasts from m.w. stations in the Middle East, Africa, Europe and Scandinavia via sky wave paths - see chart.

The possibility that the ionisation of the D layer might change during the solar eclipse on August 11 and allow the sky waves from some distant stations to reach the UK resulted in many listeners making plans to monitor this band during the event!

Under normal circumstances, the lowest D layer of the ionosphere is highly ionised during daylight and any sky waves which reach it are absorbed. Reception is therefore confined to ground wave paths. Soon after sunset the D layer disappears to expose the E layer which reflects the sky waves back to Earth, thereby making reception over longer distances possible.

Following the eclipse a number of

18.915 (Fr, Eng to E/C.Africa 1600-?) 45444 at 1800 in Scalloway.

In contrast, there is a high level of activity in the **17MHz (16m)** band. Noted before noon were R.Australia via Shepparton **17.750** (Eng to Asia 0000-0500, 0600-0800, 0830-1100), rated 43333 at 0400 in Morpeth; R.Slovakia Int **17.550** (Eng to Australia? 0700-0730?) SIO 222 at 0700 in Co.Fermanagh; R.Romania Int **17.745** (Eng to E.East? 0700-0800) 22222 at 0724 by **Tom Winzor** in Plymouth; BBC via Nakhon Sawan, Thailand **17.790** (Eng to Asia 0300-0900) 25322 at 0804 in Northampton; REE via Noblejas? **17.755** (Sp to S.America 0900-1900) 44444 at 1039 in Oxted; R.Pakistan, Islamabad **17.835** (Eng to Eur 1100-1120) 44434 at 1110 by **Tony Hall** in Freshwater Bay, IoW.

During the early afternoon R.Finland **17.670** (Eng to N.America 1230-1300) was 43333 at 1240 in Herstmonceux; R.Sweden **17.895** (Eng to E.Asia, New Zealand 1230-1300) 45444 at 1255 in Barton-upon-Humber; RCI via Sackville, Canada **17.820** (Eng to USA, Mexico, Caribbean 1200-1400) 35434 at 1310 in E.Bristol; Swiss R.Int **17.670** (Eng, Ger, Fr 1400-1600) 32222 at 1400 in Morden; R.France Int via Gabon? **17.560** (Eng to E.Africa, M.East 1400-1500) 31431 at 1419 in Bridgwater; Adventist World R. via Rimavska Sabota, Slovakia **17.525** (Eng to Eur? 1430? 1500) 35252 at 1430 by **Conway Longworth-Dames** in Brixham.

Later, the BBC via Sackville, Canada **17.840** (Eng to C/N.America 1700-1900) was 32333 at 1730 in Stalbridge; BBC via Ascension Is **17.885** (Fr to W.Africa 1800-1830) 44344 at 1815 in Liverpool; Channel Africa via Meyerton **17.870** (Eng to W.Africa 1800-1830) 35433 at 1820 in Scalloway; R.Nederlands via Bonaire, Ned Antilles **17.605** (Eng to Africa 1730-2025) 24222 at 1930 in Newry; R.New Zealand **17.675** (Eng to Pacific areas 1958-0458) 32222 at 1958 by **Gerald Guest** in Dudley; HCJB Quito, Ecuador **17.660** (Eng to Eur 1900-2200) 33333 at 2015 in Truro; VOA via Greenville, USA **17.725** (Eng to Africa 2000?-2200?) 33323 at 2020 in Nottingham; WHRI via Maine, USA **17.650** (Eng to Eur, M.East, Africa 1600-0000?) 44444 at 2228 by **Vera Brindley** in Woodhall Spa; WYFR Okeechobee, USA **17.845** (Sp to S.America 2300-0045) 34443 at 0002 in Kilkeel.

Broadcasts from many areas may also be received in the **15MHz (19m)** band. Those noted came from R.For Peace Int, Costa Rica **15.050** (Ident in Eng), rated 25542 at 0504 in Wallsend; R.Kuwait **15.110** (Eng to SE.Asia 0500-0800) 22122 at 0537 in Nottingham; V of Malaysia, Kajang **15.295** (Eng to Asia 0455-0827) 44233 at 0655 in Guildford; R.Australia via Shepparton **15.515** (Eng to SW/SC.Pacific, N.America 0200-0900) 34333 at 0810 in Herstmonceux; BBC via Ascension Is **15.190** (Eng to S.America 0900-1000, 0900-1130 Sat/Sun) 34333 at 0954 in Oxted.

During the afternoon the BBC via Skelton, UK **15.485** (Eng to Eur, Africa 0700-2000) was 55555 at 1230 in E.Bristol; WEWN via Vandiver, USA **15.745** (Eng to Eur 1200-1800) 44444 at 1305 in Morden; R.Romania Int **15.390** (Eng to Eur 1300-1356) 34434 at 1314 in Freshwater Bay; RCI via Sines, Portugal **15.325** (Eng, Fr to Eur, M.East, Africa 1330-1500) 44444 at 1335 in Newry; Israel R, Jerusalem **15.650** (Eng to Eur? 1400-1420) 54444 at 1406 in Plymouth; LJB, Libya **15.415** (Ar [Home Svce relay]) 44554 at 1500 in Liverpool; Africa No.1, Gabon **15.475** (Fr to W.Africa 1600-1900) 33443 at 1654 in Storrington; R.Japan via Moyabi, Gabon **15.355** (Eng to Africa 1700-1800) 33233 at 1700 by **Clare Pinder** in Appleby.

Later, R.Pilipinas, Tinang **15.190** (Pil to Asia 1730-1930) was 34333 at 1811 in Bridgwater & 44333 at 1840 in Scalloway; RNB Brazil **15.265** (Eng, Ger to Eur 1800-?) 33232 at 1830 by **Norman Thompson** in Oadby; WWCR Nashville, USA **15.685** (Eng to N.America, Eur 1100-2200?) 44444 at 2000 in Dudley; RCI via Sackville **15.325** (Fr, Eng to Eur, Africa 1900-2200) 55544 at 2040 in Northampton; R.Algiers Int via Bouchaoui **15.160** (Eng to Eur, M.East, N.Africa 2000-2100) 22222 at 2058 in Truro; R.Romania Int **15.180** (Eng to N.America 2100-?) SIO 444 at 2101 by **Francis Hearne** in N.Bristol; BBC via Ascension Is **15.400** (Eng to Africa 0800-1130, 1500-2300) 54434 at 2140 in Stalbridge; R.Taipei Int via WYFR **15.600** (Eng to Eur 2200-2300) 44444 at 2200 in Woodhall Spa; KTBN Salt Lake City, USA **15.590** (Eng to N.America 1600-0000) 45243 at 2245 in Brixham; RCI via Sackville **15.305** (Eng, Fr [CBC News Sat/Sun] to USA, Mexico,

Caribbean 2300-0300) SIO 544 at 2300 in Co.Fermanagh; RAE Buenos Aires, Argentina **15.345** (Sp to S.America) 44444 at 0025 in Kilkeel.

Good reception from some areas has been noted in the **13MHz (22m)** band: R.Austria Int via Moosbrunn **13.730** (Eng to Eur 0730-0800) was SIO 444 at 0738 in N.Bristol; Swiss R.Int via Sottens **13.685** (Eng, It, Ger, Fr to Australasia 0830-1030) 45544 at 0855 in Bridgwater; R.Australia via Shepparton **13.605** (Eng to Pacific 0800-1200) 22111 at 0930 in Truro; DW via Wertachtal **13.780** (Ger to S.Eur 0600-1800?) 44433 at 0932 in Oxted; Croatian R, Zargreb **13.830** (Cr, Eng to N.America 1230-2100) 45334 at 1203 in Brixham; RCI via Sackville **13.650** (Eng to USA, Caribbean 1200-1400 [1200-1600 Sun]) 25332 at 1315 in E.Bristol; AIR via Bangalore **13.710** (Eng to SE.Asia 1330-1500) 32222 at 1330 in Morden; RUV Reykjavik, Iceland **13.860** (Ic 1510-1540?) 44333 at 1525 in Scalloway; WHRI via Noblesville, USA **13.760** (Eng to E.USA, Eur 1600-2100) 54444 at 1605 in Plymouth; WWCR Nashville, USA **13.845** (Eng to Africa 1400-0100) 24232 at 1650 in Barton-upon-Humber & 44444 at 0020 in Kilkeel; DW via Sines? **13.790** (Eng to W.Africa 1900-1950) SIO 444 at 1900 in Co.Fermanagh; V of Turkey, Ankara **13.695** (Eng to Eur 1830-1918) 55544 at 1910 in Northampton; RCI via Sackville, Canada **13.650** (Fr, Eng to Eur, Africa 1900-2200) 42333 at 2030 in Nottingham; R.Damascus, Syria **13.610** (Eng to Eur 2005-2105) 55555 at 2035 in Liverpool; Vietnam, Hanoi **13.740** (Eng to Eur 2030-2100) 33323 at 2045 in Stalbridge; R.Havana Cuba **13.750** (Eng to Eur? 2100-?) 32222 at 2100 in Appleby; V of Turkey, Ankara **13.640** (Eng to Eur 2200-2300?) 54555 at 2200 in Newry.



Continued on page 15.

### Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener	Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
1251	C.G Amber, Bury StEd	I	0.76	A,D,H					
1260	Brunel CG, Bristol	I	1.60	E					
1260	SabrasSnd, Leicester	I	0.29	I					
1260	R.York	B	0.50	A					
1278	Cl.Gold 1278 W.York	I	0.43	A					
1296	Radio XL, Birmingham	I	5.00	A,D,E,I					
1305	Magiac AM, Bamsley	I	0.15	A					
1305	Premier via ?	I	0.50	D,E,I					
1323	Capital G, Southwick	I	0.50	C*,D,E					
1323	SomersetSnd, Bristol	B	0.63	A,C*,D					
1332	Premier, Battersea	I	1.00	D,E					
1332	Cl.Gold 1332, Pt'bo	I	0.60	A,D,I					
1359	Breeze, Chelmsford	I	0.28	D					
1359	Cl.Gold 1359, C'try	I	0.27	D,I					
1359	R.Solent	B	0.85	E					
1368	R.Lincolnshire	B	2.00	D,G*,I					
1368	Southern Counties R	B	0.50	D,E,H					
1368	Wiltshire Sound	B	0.10	E					
1377	Asian Sd, Rochdale	I	0.10	A,D*					
1413	R.Gloucester via ?	B	?	I					
1413	Premier via ?	I	0.50	D,E					
1413	Yks Dales R, Skipton	I	0.10	A					
1431	Breeze, Southend	I	0.35	D,H					
1431	Cl.Gold, Reading	I	0.14	D,E,I					
1449	R.Peterboro/Cambis	B	0.15	A,D,I					
1458	R.Cumbria	B	0.50	A					
1458	R.Devon & Dorset	B	2.00	A,D,E					
1458	Sunrise, London	I	50.00	D,E,I					
1458	Asian Network Langley	B	5.00	I					
1476	CountySnd, Guildford	I	0.50	C,D,E,H,I					
1485	Cl.Gold, Newbury	I	1.00	D,I					
1485	R.Merseyside	B	1.20	A,C*					
1503	R.Stoke-on-Trent	B	1.00	A,C*,D,E,F*,I					
1521	Breeze, Reigate	I	0.64	D,E,H,I					
1530	R.Essex, Southend	B	0.15	D,E,H					
1530	Cl.Gold W.Yorks	I	0.74	A,D					
1530	Cl.Gold Worcester	I	0.52	D,E,I					
1548	Capital G, London	I	97.50	A,D,E					
1557	R.Lancashire	B	0.25	A					
1557	Cl.Gold 1557, N.hant	I	0.76	D,I					
1557	Capital G, So'ton	I	0.50	D,E					
1584	London Turkish R	I	0.20	D,E					
1584	R.Notttingham	B	1.00	C*,D					
1584	R.Shropshire	B	0.50	A,D,E					
1602	R.Kent	B	0.25	C,D,E,H					

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

Listeners:-  
 (A) Robert Connolly, Kilkeel.  
 (B) Simon Hockenhill, E.Bristol.  
 (C) Sheila Hughes, Morden.  
 (D) Brian Keyte, Bookham.  
 (E) George Millmore, Wootton, IoW.  
 (F) Phil Moreau, Sandbach.  
 (G) Tom Smyth, Co.Fermanagh.  
 (H) Phil Townsend, E.London.  
 (I) Fred Wilmshurst, Northampton.  
 (J) Tom Winzor, Plymouth.

**LOG PERIODIC MLP32**

**£79.95**  
ADD £6.00 P&P.  
Freq. Range 100-1300MHz  
Length 1420mm  
Wide Band 16 Element directional beam which gives a maximum of 11-13Db Gain Forward and 15Db Gain Front to Back Ratio. Complete with mounting hardware. *(The Ultimate Receiving Antenna - a must for the Dedicated Listener.)*

**TURNSTILE 137**

**£39.95**  
ADD £6.00 P&P.  
Freq. 137.5 MHz  
Length 1000mm  
This Antenna is designed for external use to receive weather satellite signals. Complete with mounting hardware.

**WEATHER SATELLITE ANTENNA**

*(Simple and easy to install a must for the enthusiast who has it all.)*

**TRI SCAN III**

**£34.95**  
ADD £6.00 P&P.  
Freq. Range 25-2000MHz  
Length 720mm  
Desk Top Antenna for indoor use with triple vertical loaded coils. The tri-pod legs are helically wound so as to give it its own unique ground plane. Complete with 5mts of low loss coax and BNC plug. *(Ideal for Desk Top Use.)*

**MWA-H.F. WIRE ANTENNA**

**£29.95**  
ADD £6.00 P&P.  
Freq. Range 1.1-30MHz Length 60 Metres  
Internal or external use. The long wire is known to be one of the best antennas for shortwave (HF) receiving. Comes complete with con box and dog bones, wire etc. *(A must for the short wave listener.)*

**G. SCAN II**

**£19.95**  
ADD £6.00 P&P.  
Freq. Range 25-2000 MHz.  
Length 620 mm.  
Magnetic mount Mobile Scanner Antenna. 2 vertical loaded coils for good sensitivity complete with magnetic mount and 4mts of coax, terminated with BNC plug. *(Good for when you are driving about)*

**SWP 2000**

**£29.95**  
ADD £6.00 P&P.  
FREQ. 25 - 2000 MHz. Length 515mm.  
Multiband good sensitivity for its small size. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. *(Good for the car user who doesn't want an external antenna.)*

**SWP HF30**

**£39.95**  
ADD £6.00 P&P.  
Freq. Range 0.05-30MHz  
Length 770mm  
Although small, surprisingly sensitive for the H.F. user. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. *(Good for the car user who doesn't want an external antenna.)*

**SUPER DISCONE**

**£39.95**  
ADD £6.00 P&P.  
Freq. Range 25-2000MHz  
Length 1380mm  
Internal or External use (A Tri-Plane Antenna). The angle of the ground planes are specially designed to give maximum receiving performance within the discone design. The Super Discone gives up to 3Db Gain over a standard conventional discone. Comes complete with mounting hardware and brackets. *(Ideal for the Experienced Enthusiast.)*

**DISCONE**

**£29.95**  
ADD £6.00 P&P.  
Freq. Range 70-700MHz  
Length 920mm  
Internal or External use. (Classic Antenna Design). Comes complete with mounting hardware and brackets. *(Ideal for the Beginner.)*

**HF DISCONE**

**£49.95**  
ADD £6.00 P&P.  
Freq. Range 0.05-2000MHz  
Length 1840mm  
Internal or External use (A Tri-Plane Antenna). Same as the Super Discone but with enhanced HF capabilities, comes complete with mounting hardware and brackets. *(Ideal for the Short Wave H.F. Listener.)*

**SUPER SCAN STICK**

**£29.95**  
ADD £6.00 P&P.  
Freq. Range 0-2000MHz  
Length 1000mm  
It will receive all frequencies at all levels unlike a mono band antenna. It has 4 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals. *(Ideal for the New Beginner and the Experienced Listener alike.)*

**SUPER SCAN STICK II**

**£39.95**  
ADD £6.00 P&P.  
Freq. Range 0-2000 MHz.  
Length 1500 mm.  
This is designed for external use. It will receive all frequencies. at all levels unlike a mono band antenna. It has 8 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals plus there is an extra 3db gain over the standard super scan stick. *(For the expert who wants that extra sensitivity)*

**MULTISCAN STICK**

**£39.95**  
ADD £6.00 P&P.  
Freq. Range Receive - 0-2000 MHz.  
Transmit 144 - 146 MHz gain 2.5 DBd 430 - 440 MHz gain 4.5 DBd  
Length 1000 mm.  
Although marginally compromising sensitivity the multi scan stick has within its transmitting capabilities plus gain makes it an excellent antenna for the amateur and expert alike. Comes complete with mounting hardware and brackets. *(Ideal for the amateurs ham radio - user.)*

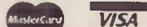
**MULTI SCAN STICK II**

**£49.95**  
ADD £6.00 P&P.  
Freq. Range Receive (0-2000MHz)  
Transmit (144-146 MHz) Gain 4.00Dbd (420-430 MHz) Gain 6.00Dbd Length 1500mm  
Same as Super Scan Stick but with extra gain, makes it an even better antenna for the amateur and expert alike. *(Ideal for the Ham Radio user)*

**MICRO MAG MTS42**

**£27.95**  
ADD £6.00 P&P.  
Freq. Range 25-2.1 ghz  
Length 225mm  
High Performance Super Magnetic Mount Antenna comes with Two Interchangeable Whips. 73mm 700-2.1 GHz 225mm 25-1300MHz  
Complete with high specification coax and BNC plug. *(The Ultimate small Magmount Antenna.)*

**ACTUAL SIZE**





Early risers in the UK may pick up R.New Zealand's broadcasts to Pacific areas in the **11MHz (25m)** band. Their 100kW transmission from the North Island on **11.905** (Eng 0459-0705) was rated 43343 at 0615 in Guildford. Also logged during the morning were RCI via Sackville **11.710** (Eng, Fr to Eur, Africa 0500-0600), rated 55555 at 0503 in Plymouth; HCJB Quito, Ecuador **11.730** (Eng to Eur 0700-0900) 44444 at 0830 in Woodhall Spa; R.Korea via Sackville, Canada **11.715** (Eng to E.USA 1030-1100) 24333 at 1034 in Freshwater Bay; BBC via Biblis **11.680** (Eng to ? 1100-1200) 45444 at 1145 in Barton-upon-Humber.

During the afternoon R.Japan via Sri Lanka **11.880** (Eng to S.Asia 1400-1500) was 43333 at 1440 in Morden; R.Australia via Shepparton **11.660** (Various to Asia 1430-1700) 44444 at 1505 in Morpeth; R.Nederlands via Tashkent **12.075** (Eng to S.Asia 1430-1625) 54454 at 1510 in Brixham; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1100-1730) 54434 at 1527 in E.Bristol; R.Pakistan, Islamabad **11.570** (Eng to M.East 1600-1630) SIO 222 at 1600 in Co.Fermanagh; VOA via ? **12.080** (Swa to Africa 1630-1730?) 24343 at 1648 in Storrington.

Later, R.Damascus, Syria **12.085** (Ger, Fr, Eng to Eur 1805-2105) was 53233 at 1835 in Liverpool; R.Nederlands via Flevo **11.655** (Eng to Africa 1730-2025) 42332 at 1836 in Newry; V of Mediterranean, Malta via Russia **12.060** (Eng to Eur 1900-2000) 44544 at 1930 in Bridgwater; R.Bulgaria, Sofia **11.720** (Eng to Eur 1900-2000) 55544 at 1942 in Northampton; R.Prague, Czech Rep **11.600** (Eng to Eur 2000-2030) 44444 at 2000 in Appleby; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100)

44343 at 2005 in Oadby; RCI via Skelton, UK **11.690** (Eng to Eur 2000-2130) 43333 at 2015 in Nottingham; RAI Int, Rome **11.880** (Eng to Eur? 2025-2045) SIO 333 at 2032 in N.Bristol; R.Australia via Shepparton **11.880** (Eng to Pacific areas, N.America 1700-2200) 32322 at 2130 in Stalbridge; R.Romania Int, Bucharest **11.830** (Eng to Eur, USA 2300-2356) 54454 at 2344 by **Martin Cowin** in Kirkby Stephen; AIR via ? **11.620** (Eng to SE.Asia 2245-0045) 33433 at 0040 in Kilkeel.

In the **9MHz (31m)** band RCI via Sackville **9.755** (Eng, Fr to USA, Caribbean 0500-0600) was SIO 444 at 0506 in N.Bristol; R.Havana, Cuba **9.820** (Eng to N.America 0100?-0700) 45444 at 0620 in Brixham; R.New Zealand Int **9.700** (Eng to Pacific areas 0706-1015) 43333 at 0710 in Herstmonceux; TWR Monte Carlo, Monaco **9.870** (Eng to Eur 0700?-0850?) 54344 at 0729 in Newry; R.Australia via Shepparton **9.710** (Eng to Pacific areas 0800-0900) 11111 at 0832 in Truro; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) 44444 at 0930 in Plymouth; R.Nederlands via Wertachtal **9.860** (Eng to Eur 1030-1225) 35444 at 1125 in Barton-upon-Humber; Polish R, Warsaw **9.525** (Eng to Eur 1200-1300) 44333 at 1225 in Morden; R.Australia via Shepparton **9.500** (Eng to Asia 1430-2130) 43333 at 1500 in Dudley; BBC via Kranji, Singapore **9.740** (Eng to S.Asia? 1100-2200) 33323 at 1715 in Stalbridge; R.Vlaanderen Int, Belgium **9.925** (Eng to Eur, M.East 1730-1800) 44444 at 1730 in Appleby.

During the evening R.Bulgaria **9.400** (Eng to Eur 1900-2000) was 55555 at 1912 in Bridgwater; Africa No.1, Gabon **9.580** (Fr to C.Africa 0500-2200) 42232 at 1940 in Liverpool; R.Nederlands via Flevo **9.895** (Eng to Africa 1830-2025) 32333 at 1950 in

### Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power (kW)	Listener
531	Berg	Germany	20	D*,E*,I*	855	Berlin	Germany	100	D*,I*
531	RNE5 via ?	Spain	?	E	855	RNE1 via ?	Spain	?	B*,D*,F*,F*,K*
531	Beromunster	Switzerland	500	B,E,F*	864	Santah	Egypt	500	D*,E*
540	Wavre	Belgium	150/508	D*,E*,J*,J,K	864	Paris	France	300	A,E,J,K
540	Sidi Benour	Morocco	600	E*,F*	864	Socuellamos(RNE1)	Spain	2	E*
549	Les Trembles	Algeria	600	E*	873	Frankfurt(AFN)	Germany	150	C,D*,E*
549	Thurnau (DLF)	Germany	200	D*,E*,J*,K*	873	Zaragoza(SER)	Spain	20	D*,E*
558	RNE5 via ?	Spain	?	D*,E*,I*	873	Enniskillen(R.U.I)	UK	?	D*,H
567	Tullamore(RTE1)	Ireland	500	C,E,H,I*,J,K	882	CDPE via ?	Spain	?	D*
576	Muhlacker(SDR)	Germany	500	D*	882	Washford(BBCWales)	UK	100	B,C,E,H,I*,J,K
576	Riga	Latvia	500	E*	891	Algiers	Algeria	900	E*
576	Barcelona(RNE5)	Spain	50	D*,E*	891	Huisberg	Netherlands	20	E*
585	Paris(FIP)	France	8	E,J	900	Brno(CRo2)	Czech Rep	25	D*,E*,I*
585	Madrid(RNE1)	Spain	200	E*,F*,K*	900	Milan	Italy	600	D*
585	Dumfries(BBCScot)	UK	2	D*	900	CDPE via ?	Spain	?	E*
594	Frankfurt(HR)	Germany	1000/400	E*,F*,K*	909	Lisnagarvey(BBC5)	N.Ireland	10	H
594	Oujda-1	Morocco	100	E*	909	B'mans Pk(BBC5)	UK	140	E*
603	Lyon	France	300	E	918	Domzale	Slovenia	600/100	B*,D*,E*,I*
603	Sevilla(RNE5)	Spain	50	E*	918	Madrid(R.Int)	Spain	20	E*
603	Newcastle(BBC)	UK	2	C,D*,H	927	Volwertem	Belgium	300	D*,E*,F*,H,I*,J,K
612	Athlone(RTE2)	Ireland	100	C,E,H,I*,J,K	936	Bremen	Germany	100	D*,E*,H,I*
621	Wavre	Belgium	80	D*,E*,J*,K	936	Venezia	Italy	20	E*
621	Barcelona(OCR)	Spain	50	D*	945	Toulouse	France	300	D*,I*
630	Vigra	Norway	100	D*,E*,I*	954	Brno (CRo2)	Czech Rep	200	D*,E*
630	Tunis-Djedeida	Tunisia	600	E*	954	Madrid(CI)	Spain	20	D*,E*
639	Praha(Liblice)	Czech	1500	D*,E*,F*,I*	963	Pori	Finland	600	D*,E*,K*
639	RNE1 via ?	Spain	?	D*	963	Tir Chonagill	Ireland	10	E*,H
648	Drifordness(BBC)	UK	500	B,C,D*,E*,I*,J,K	972	Hamburg(NDR)	Germany	300	D*,E*,K*
657	Madrid(RNE5)	Spain	20	D*,E*	981	Alger	Algeria	600/300	E*,K*
657	Wrexham(BBCWales)	UK	2	C,D*,H,K	990	Berlin	Germany	300	D*,E*,I*
666	Messkirch(Rohrd(SWF))	Germany	150	D*	990	R.Bilbao(SER)	Spain	10	D*,E*
675	Lopic(R10 Gold)	Holland	120	A,B*,D*,E*,I*,J	990	Reddross(BBC)	UK	1	D*
684	Sevilla(RNE1)	Spain	500	E*,F*,K*	990	Tywyn(BBC)	UK	?	C,H
684	Avala(Beograd-1)	Yugoslavia	2000	D*	999	Schwerin(RIAS)	Germany	20	D*
693	Droitwich(BBC)	UK	150	E*,K	999	Madrid(COPE)	Spain	50	D*,K*
693	Enniskillen(BBC)	UK	1	H	1008	Flevo(Hilv-5)	Holland	400	D*,E*,J*,K*
702	Flensburg(NDR)	Germany	5	D*	1008	Rheinsender(SWF)	Germany	600	D*,E*,H*
702	TWR via Monte Carlo	Monaco	300	E*	1017	Tallinn	Estonia	500	E*
711	Rennes 1	France	300	E,H,J,K	1035	Lisbon(Prog3)	Portugal	120	D*
720	Lots Rd.Ldn(BBC4)	UK	0.5	C,E,H,K	1044	Dresden(MDR)	Germany	20	D*,E*
729	Cork(RTE1)	Ireland	10	C,D*,I*	1044	SER via ?	Spain	?	D*,E*
729	RNE1 via ?	Spain	?	D*,E*,K*	1053	Talk R.UK via ?	UK	?	D*,E*,H,K,L
738	Paris	France	4	E	1062	Kalundborg	Denmark	250	D*,E*,F*,I*,J,K
738	Barcelona(RNE1)	Spain	500	D*,E*,E*	1071	Brest	France	20	E*
747	Flevo(Hilv2)	Holland	400	A,D*,E*,I*,J,K	1071	Bilbao(EI)	Spain	5	D*,F
756	Braunschweig(DLF)	Germany	800/200	D*,E*	1071	Talk Radio UK via ?	UK	?	D*,K
756	Bilbao(EI)	Spain	5	E*	1080	SER via ?	Spain	?	D*,E*
756	Sottens	Switzerland	500	B,D*,E*,I*	1089	Talk Radio UK via ?	UK	?	E*,H,I*,K*
774	Enniskillen(BBC)	N.Ireland	1	D*,H	1098	Nitra(Jarok)	Slovakia	1500	D*,E*,F*,K*
774	RNE1 via ?	Spain	?	D*,E*,K*	1107	AFN via ?	Germany	10	D*
783	Leipzig(MDR)	Germany	100	D*,E*	1107	Talk R.UK via ?	UK	?	E,H,K
792	Limoges	France	300	E	1125	La Louviere	Belgium	20	D*,E*,K*
792	Lingen(NDR)	Germany	5	D*,E*	1125	Llandrindod Wells	UK	1	C
792	Sevilla(SER)	Spain	20	D*	1134	CDPE via ?	Spain	2	D*,E*
792	Londonderry(BBC)	UK	1	H,I*	1134	Zadar(Croatian R)	Yugoslavia	600/1200	D*,E*,I*,K*
801	Munchen-Ismaning	Germany	300	B*,D*,E*,I*	1143	AFN via ?	Germany	1	C,D*,E*
801	RNE1 via ?	Spain	?	D*,E*	1143	CDPE via ?	Spain	2	D*,E*
810	Madrid(SER)	Spain	20	E*	1161	Ain-Salah	Algeria	5	E*
810	Westerglen(BBCScot)	UK	100	C,E*,H,I*,K*	1179	Solvesborg	Sweden	600	D*,E*,I*,K*
819	Batra	Egypt	450	E*,H*	1188	Kuurne	Belgium	5	D*,E*,J
819	Toulouse	France	30	D*	1188	Szolnok	Hungary	135	D*
828	Rotterdam	Holland	20	F,J	1197	Virgin via ?	UK	?	F,H,K
837	Nancy	France	200	H*	1215	Virgin via ?	UK	?	D*,E*,H,K
837	CDPE via ?	Spain	?	D*,E*	1233	Liege	Belgium	5	E*
846	Rome	Italy	1200	E*	1233	Virgin via ?	UK	?	K
					1251	Marcali	Hungary	500	D*
1251	Huisberg	Netherlands	10	D*,E*					
1251	Duba	UAE	600	E*					
1260	SEB via ?	Spain	?	D*					
1260	Guildford (V)	UK	0.5	J					
1269	Neumunster(DLF)	Germany	600	D*,E*,K*					
1278	Dublin/Cork(RTE2)	Ireland	10	C,D*,E*,H,K*					
1287	RFE via ?	Czech Rep.	400	E*					
1296	Valencia(COPE)	Spain	10	E*					
1296	Drifordness(BBC)	UK	500	D*					
1305	RNE5 via ?	Spain	?	D*,E*					
1314	Kvitsoy	Norway	1200	D*,E*,K*					
1323	W'brunn (V.Russia)	Germany	1000/150	A*,D*					
1332	Rome	Italy	300	D*,E*					
1341	Lisnagarvey(BBC)	N.Ireland	100	B*,C,E*,H,K*					
1341	Tarrasa(SER)	Spain	2	E*					
1350	Cesvaine/Kuldige	Latvia	50	E*					
1359	Madrid(RNE-FS)	Spain	600	E*					
1368	Foxdale(Manx R)	I.D.M.	20	D*,E*,H*					
1377	Lille	France	300	E,J,K					
1386	Bolshakovo	Russia	2500	A*,D*,E*,F*					
1395	Flake	Albania	1000	F*					
1395	TVR via Flake	Albania	500	D*					
1395	Lopic	Netherlands	120/40	E*,J,K					
1404	Brest	France	20	D*,E*,K*					
1413	Pristina	Yugoslavia	1000	D*,E*					
1422	Heusweiler(DLF)	Germany	1200/600	A*,D*,E*,K*					
1440	Marnach(RTL)	Luxembourg	1200	B*,D*,E*,H					
1440	Dammam	Saudi Arabia	1600	D*					
1449	Squinzano (RAI)	Italy	50	E*					
1449	Redmoss(BBC)	UK	2	D*,E*					
1467	Monte Carlo(TWR)	Monaco	1000/400	E*,F*,K*					
1476	Wien-Bisamberg	Austria	600	D*,K*					
1494	St.Petersburg	Russia	1200	D*					
1512	Volwertem	Belgium	300	D*,E*,F*,G*,J*,K*,L*					
1521	Kosice(Cizacel)	Slovakia	600	E*					
1521	Duba	Saudi Arabia	2000	D*,E*,F*					
1521	R.Mannresal(SER)	Spain	2	E*					
1530	Vatican R	Italy	150/450	B*,C,D*,E*,F*,H*,K*					
1539	Mainflingen(EFF)	Germany	350(700)	D*,E*,K*					
1575	Genova	Italy	50	K*					
1575	SER via ?	Spain	5	D*,E*					
1593	Holzkirchen(MOA)	Germany	150	D*,E*,F*,K*					
1602	SER via ?	Spain	?	E*					
1602	Victorial(EI)	Spain	10	D*,E*,K*					
1611	Vatican R	Italy	15	C					

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

- Listeners:-  
 (A) Simon Hockenhill, E.Bristol.  
 (B) Sheila Hughes, Morden.  
 (C) Brian Keyte, Gt.Bootham.  
 (D) Eddie McKeown, Newry.  
 (E) George Millmore, Wootton loW.  
 (F) Phil Moreau, Sandbach.  
 (G) Clare Pinder, while in Appleby.  
 (H) Tom Smyth, Co.Fermanagh  
 (I) Norman Thompson, Dabby.  
 (J) Phil Townsend, E.London.  
 (K) Fred Wilmshurst, Northampton.  
 (L) Tom Winzor, Plymouth.

## Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer	Freq (MHz)	Station	Country	UTC	DXer	Freq (MHz)	Station	Country	UTC	DXer
3.255	BBC via Meyerthon	S.Africa	2024	B,H,J,K	4.845	ORTM Nouakchott	Mauritania	2055	B,H,J,K	5.025	R.Uganda, Kampaia	Uganda	1847	G,K
3.270	Namibian BC, Windhoek	Namibia	2009	H	4.850	R.Yaounde	Cameroon	1945	F,H,J,N	5.030	AWR Latin America	Costa Rica	0055	B
3.290	Namibian BC, Windhoek	Namibia	1940	B,H,K	4.860	AIR Delhi	India	1912	H,J	5.035	R.Bangui	C.Africa	2135	J
3.306	ZBC Prog 2	Zimbabwe	1938	H	4.875	R.Roraima, Boa Vista	Brazil	2310	K	5.047	R.Togo, Lome	Togo	1944	B,F,H,J,K,N
3.320	SABC (RSC) Meyerthon	S.Africa	2110	B,H,K	4.885	R.Clube do Para	Brazil	2302	J,K	5.050	R.Tanzania	Tanzania	1948	G,H,J,K
3.335	CBS Taipei	Taiwan	2030	H	4.890	RFI Paris	via Gabon	0435	C	5.055	RFO Cayenne(Matoury)	French Guiana	0400	K
3.356	R.Botswana	Gaborone	2125	E,H,K	4.905	Anhanguera	Brazil	2300	K	5.066	Bunia	Congo	1852	G
3.365	GBC R-2	Ghana	2025	B,H,J	4.910	Tennant Creek	Australia	2132	J	5.075	Caracol Bogota	Colombia	0500	F,J
3.915	BBC via Kranji	Singapore	2100	B,E,J,L,N	4.915	GBC-1, Accra	Ghana	2018	B,D,F,H,J,K,N	5.100	R.Liberia, Accra	Liberia	2251	N
3.955	BBC via Skelton	England	2135	A,B,E,F,G,L,N	4.920	KBC Cent Sce Nairobi	Kenya	0440	C					
3.970	R.Korea via Skelton	England	2100	L,N	4.920	R.Quito, Quito	Ecuador	0430	J,K					
3.975	R.Budapest	Hungary	2130	A,B,E,F,G,H,L	4.930	R.Internacional	Honduras	0455	C					
3.985	Nexus, Milan	Italy	1846	B,E,G	4.930	Namibian BC, Windhoek	Namibia	1835	G					
3.995	DW via Julich	Germany	2022	B,E,F,G,N	4.935	KBC Gen Sce Nairobi	Kenya	1945	H					
4.755	R.Educ CP Grande	Brazil	2327	K	4.950	VOA via Sao Tome	Sao Tome	2000	B,H,I,J,K,N					
4.760	AIR Fort Blair	India	2350	B	4.950	R.Nac. de Colombia	Colombia	2355	B,K					
4.765	R.Rural, Santarem	Brazil	0005	B	4.960	VOA via Sao Tome	Sao Tome	0320	C					
4.770	FRCN Kaduna	Nigeria	2028	B,E,H,J,K,N	4.965	Christian Voice	Zambia	2000	H,J,K					
4.783	RTM Bamako	Mali	2001	B,H,J,K	4.975	R.Uganda, Kampaia	Uganda	1915	A,B,E,G,H,J,L					
4.815	R.diff TV Burkina	Duagadougou	2008	B,H,J,K	4.980	Ecoss del Torbes	Venezuela	2325	B,C,K,N					
4.820	R.Botswana, Gaborone	Botswana	2116	B,E,F,H,J,K	4.985	R.Brazil Central	Brazil	2216	B,N					
4.828	ZBC R-4	Zimbabwe	2004	H	5.009	R.TV Malagasy	Madagascar	1921	H					
4.830	R.Bangkok	Thailand	2151	J	5.010	AIR Thiru'puram	India	0055	B					
4.830	R.Tachira	Venezuela	0150	A,B,C	5.020	La V du Sahel, Niamey	Niger	2045	B,H,J					
4.835	ABC-Alice Springs	Australia	2131	J	5.025	ABC Katherine	Australia	2134	J					
4.835	R.Tezulutlan, Coban	Guatemala	0055	B	5.025	R.Paraku	Benin	2050	B,J					
4.835	RTM Bamako	Mali	2142	B,H,J,K,N	5.025	R.Rebeldé, Habana	Cuba	0405	J,K					

Nottingham; AIR via Bangalore **9.950** (Eng to Eur 2045-2230) 55544 at 2125 in Northampton; R.Sweden **9.430** (Eng to Eur, Africa, M.East 2130-2200) SIO 544 at 2143 in Kirkby Stephen; R.Jordan via Karanah **9.830** (Ar to W.Eur 1700-2200?) 33233 at 2155 in Oadby; R.Cairo, Egypt **9.990** (Various to Eur 1900-2200?) 44444 at 2156 in Freshwater Bay; RCI via Sackville **9.755** (Eng, Fr [CBC progs] to USA, Caribbean 2200-0300) SIO 333 at 2200 in Co.Fermanagh.

Later, R.Yugoslavia **9.580** (Eng to Eur, N.America? 0000-0030, not Sun) was 54544 at 0025 in E.Bristol; R.Mediterranean Int, Morocco **9.575** (Ar, Fr to N.Africa, S.Eur 0500-0100) 44444 at 0035 in Kilkeel; R.Budapest, Hungary **9.560** (Eng to N.America 0100-0130) 44434 at 0123 in Woodhall Spa; R.Nac del Paraguay **9.735** (Sp 0800-0400) 34543 at 0235 in Wallsend.

The **7MHz (41m)** band is used by some broadcasters to reach listeners in Europe. They include R.Japan via Woofferton, UK **7.230** (Jap, Eng 0500-0700), rated 54545 at 0516 in Nottingham; WYFR via Okeechobee, USA **7.355** (Eng 0600-0800, also to Africa) 54444 at 0705 in Plymouth; AWR via Forli, Italy **7.230** (Eng 0930-1000 Sun) 24433 at 0933 in Oxted; R.Slovakia Int **7.345** (Eng 1630-1657) 35343 at 1630 in E.Bristol; R.Polonia (Polish R), Warsaw **7.285** (Eng 1700-1800) 34333 at 1730 in Morden; R.Tirana, Albania **7.180** (Various 1900-1956) SIO 544 at 1900 in Co.Fermanagh; R.Thailand, Udon Thani **7.195** (Eng 1900-2000) 45544 at 1903 in Wallsend; AIR via Bangalore **7.410** (Hi, Eng 1745-2230) 44243 at 1910 in Newry; V of Greece, Athens **7.450** (Gr, Eng 1800-2050) 45544 at 1940 in Northampton; R.Ext.Espana **7.275** (Sp 1700-2230?) 54555 at 1945 in Liverpool; R.Tirana, Albania **7.160** (Eng 2130-2200) SIO 333 at 2134 in N.Bristol; V of Turkey **7.190** (Eng 2200-2245?) 53543 at 2241 in Bridgwater; WHRI via Maine, USA **7.395** (Eng 0000-0300) 45444 at 0025 in Kirkby Stephen.

Whilst beaming to other areas R.Netherlands via Madagascar **7.120** (Eng to S/E.W.Africa 1730-2025) was 55444 at 1750 in Brixham; VOA via Botswana **7.415** (Eng to Africa 1800-2230?) 43444 at 2123 in Woodhall Spa; BBC via Kranji, Singapore **7.110** (Eng to Asia 2200-0045) 34333 at 2345 in Barton-upon-Humber; WJCR Upton, USA **7.490** (Eng to E.USA 24hrs) 33443 at 0305 in Morpeth; KTBN via Salt Lake City **7.510** (Eng to N.America 0000-1600) 33323 at 0620 in Stalbridge.

There are many more broadcasts to Europe in the **6MHz (49m)** band. Those mentioned in the reports came from the BBC via Rampisham & Skelton, UK **6.195** (Eng 0300-0700, 1500-1700, 1800-2200), rated 45444 at 0620 in Liverpool; TWR Monte Carlo, Monaco **6.045** (Eng 0700-0820) 54444 at 0800 in Stalbridge; DW via Julich? **6.140** (Eng Service) 55555 at 0830 in Morden; R.Austria Int via Moosbrunn **6.155** (Various) 33434 at 1140 in Oadby; R.Netherlands via Julich **6.045** (Eng 1030-1225) 44544 at 1148 in Bridgwater; R.Prague, Czech Rep. **5.930** (Eng 1600-1627) SIO 333 at 1600 in Co.Fermanagh; R.Slovakia Int **5.920** (Eng 1630-1657) 44333 at 1645 in Scalloway; R.Sweden via Horby **6.065** (Eng 1730-1800) 54444 at 1730 in Plymouth; Vatican R, Italy **5.883** (Various [Eng 1950-2010]) 43444 at 1854 in Oxted;

R.Finland via Pori **6.135** (Eng 1900-1930) 43333 at 1905 in Herstmonceux; R.Budapest **6.025** (Eng 1900-1930) 54444 at 1915 in Kirkby Stephen; RAI Rome **5.970** (Eng 1935-1955) 55555 at 1938 in Dudley; R.Vlaanderen Int, Brussels **5.960** (Eng 1930-1956) 55555 at 1950 in Brixham; RCI via Rampisham, UK **5.995** (Fr, Eng 1900-2100) 55444 at 2028 in Northampton; R.Budapest **6.025** (Eng 2100-2130) 55333 at 2100 in Appleby; R.Yugoslavia, Belgrade **6.185** (Eng 2100-2125) 43443 at 2125 in E.Bristol; R.Sweden via Horby **6.065** (Eng 2130-2200) SIO 444 at 2131 in N.Bristol; R.Japan via Skelton, UK **6.155** (Eng 0000-0100) 44444 at 0019 in Nottingham.

Also noted were R.Diff Nationale, Chad **6.165** (Fr), rated 55434 at 2133 in Guildford; BBC via Antigua, W.Indies **5.975** (Eng to C/N.America 2100-0800) 42332 at 2350 in Barton-upon-Humber; WHRI South Bend, USA **5.745** (Eng to N.America 2200?-1000) 44444 at 0100 in Kilkeel; WEWB Birmingham, USA **5.825** (Eng to N.America 2200-0900?) 44444 at 0144 in Woodhall Spa.

## LIST OF EQUIPMENT USED - LM&S for SAUGUST, #SEPTEMBER, \*OCTOBER'99

- \$ \* \* Darren Beasley, Bridgwater: Yaesu FRG-100 + a.t.u. + 15m wire.
- \* \* Robert Beason, Nottingham: JRC NRD-545 + 14m wire or Grundig Yacht Boy 400.
- \* \* Vera Brindley, Woodhall Spa: Roberts R876 + r.w.
- \* \* Robert Connolly, Kilkeel: JRC NRD-525 + Timewave DSP9+ filter + Datong AD-370 or Sangean ATS-803A.
- \* John Court, while at Barr Beacon, Nr Birmingham: Philips AE 3750 portable.
- \* Martin Cowin, Kirkby Stephen: Hitachi TRK-5854E + built-in whip.
- \* \* Bernard Curtis, Stalbridge: Realistic DX-400 + rod or loop.
- \* \* David Edwardson, Wallsend: Trio R-800 + 22m long trap dipole.
- \* \* Stan Evans, Herstmonceux: Kenwood R-2000 + Balun + 11m wire in loft.
- \$ Bill Griffith, W.London: JRC NRD-535 + 25m wire.
- \$ Bill Griffith, while in Portugal: Sony ICF-SW55 + 8m wire.
- \* \* Gerald Guest, Dudley: Roberts RC818 + r.w.
- \* \* David Hall, Morpeth: AOR AR7030 + Global AT-2000 + 13m wire.
- \* \* Tony Hall, Freshwater Bay, IoW: Yaesu FRG-7 + 13m wire or RFB45
- \* \* Francis Hearne, N.Bristol: Sharp WQT370 + r.w.
- \* \* Simon Hockenull, E.Bristol: Roberts R876 or ITT Colt + r.w.
- \$ Simon Hockenull, while in Exmouth: Roberts R617.
- \* \* Robert Hughes, Liverpool: AOR AR7030 + 15m indoor wire or Drake R8E + RF Systems MTA on roof.
- \* \* Sheila Hughes, Morden: Sony ICF-7600DS + loop or Panasonic DR48 + 15m invert L.
- \* \* Rhoderick Illman, Oxted: Kenwood R-5000 + r.w. or AN-1, Sony ICF-7600DS.
- \* Brian Keyte, Gt.Bookham: AOR AR7030 + loop or a.t.u. + r.w.
- \$ Brian Keyte, while near Strathgry: AOR AR7030 + top strand of roadside fence.
- \$ Brian Keyte, while near Ullapool: AOR AR7030 + top strand of roadside fence.
- \$ Ross Lockley, Galashiels: Realistic DX-300 + a.t.u. + 40m wire or Sangean ATS-803A.
- \* Conway Longworth-Dames, Brixham: Yaesu FRG-100 + r.w.
- \* \* Eddie McKeown, Newry: Tatung TMR 7602 or Sangean AT-S818.
- \* \* George Millmore, Wootton, IoW: Racal RA17L + v.l.f. converter + loop or Sangean ATS-803A + loop.
- \* Phil Moreau, Sandbach: Icom PCR1000 + 38m inverted L.
- \$ Fred Pallant, Storrington: Trio R-2000 + Howes CTUB a.t.u. + f.w.
- \$ John Parry, Larnaca, Cyprus: Realistic DX-394 + r.w.
- \* \* Clair Pinder, while in Appleby: JRC NRD-525 + a.t.u. + r.w. or Sony ICF SW55.
- \$ Peter Pallard, Rugby: Sony ICF-2001D + r.w.
- \$ Vic Prier, Colyton: Racal RA17L or RCA AR88LF or Redifon R551N + a.t.u. + r.w. or active vertical in loft.
- \* \* Philip Rambaut, Maclesfield: Int. Marine Radio R.700M + r.w.
- \* \* Richard Reynolds, Guildford: Sangean ATS-803A + 10m "T" antenna via a.t.u. or 60m loaded dipole or 11m dipole - all in loft.
- \* \* Harry Richards, Barton-upon-Humber: Grundig Satellit 700 + AD270 or r.w. or Grundig Yacht Boy 400 or Matsui MR4099.
- \* \* Alan Roberts, Quebec, Canada: Lowe HF-225 + 11m vertical dipole.
- \$ Robert Shacklock, Westwood, Notts: Realistic DX394 or Yaesu FRG-7 + a.t.u. + 30m wire in loft.
- \* \* John Slater, Scalloway, Shetland: Lowe HF-150 + a.t.u. + 20m wire.
- \* \* Tom Smyth, Co.Fermanagh: Sangean ATS-803A or Morphy Richards R181.
- \* \* Ernie Strong, Ramsey (Cams): Yaesu FRG-8800 + a.t.u. + 50m wire.
- \* \* Norman Thompson, Oadby: Icom IC-R77 or Matsui MR4099 + 20m wire in loft.
- \$ Phil Townsend, London: Lowe HF-225 + preselector + r.w. or loop.
- \* Scott Turner, Rye: Realistic DX-394 + G5RV antenna.
- \$ George Well, Erdington: Morphy Richards portable.
- \$ Ernest Wiles, NE.Bedford: Lowe HF-125 + a.t.u. + 19m wire.
- \* \* Thomas Williams, Truro: Grundig Yacht Boy 206 or Sharp 5454 + r.w.
- \* \* Fred Wilmshurst, Northampton: Icom IC-R70 + Global AT1000 + r.w. in loft.
- \* \* Tom Winzor, Plymouth: Kenwood R-2000 or Yaesu FRG-7 + Oatong active antenna.



■ Peter Shore, c/o SWM EDITORIAL OFFICES, ARROWSMITH COURT, STATION APPROACH, BROADSTONE, DORSET BH18 8PW.

# Bandscan Europe

The main European international broadcasting story over the past few weeks has been the fate of Deutsche Welle after budget cuts of DM89million in the next three years. The first cut takes effect next year, and is a swingeing DM54million (around £18million) from a total budget of DM635million (around £211million).

A number of the German broadcaster's foreign language services are likely to close or be cutback, mirroring the changes at BBC World Service earlier this year which have been reported in this column. And staff will go. There are 1300 people at the headquarters in Cologne and another 400 in Berlin - mainly working in television.

Deutsche Welle has been planning a move to Bonn, and this move may now not happen. The Cologne skyscraper where DW is based has been riddled with asbestos, and the removal has cost the organisation a fortune.

Like the BBC, Deutsche Welle is placing greater importance on reaching listeners - particularly in English and German - via local broadcasters around the world, instead of relying on short wave. The budget cuts may hasten the reduction of DW's use of short wave, which is comparatively expensive against satellite delivery to local stations.

The English-language service is already using just a single frequency for the European transmission at 2000UTC (9.725MHz). Will this survive into the winter schedule period?



## Television Licence

As the debate over the television licence fee raged here in Britain this summer after the Davies Report recommended a digital supplement to fund the BBC's development of digital programmes, it is interesting to contrast with the Netherlands. There the TV licence fee will be scrapped at the end of the year. Dutch public broadcasters will be funded from income tax instead of the traditional licence fee.

I am uncertain whether there is a television licence fee in Serbia, but even if there is no income from viewers, Serbia's friends are willing to help in the reconstruction of broadcasting. Russia is building a replacement TV tower in Belgrade to replace the one destroyed during the war by NATO bombing. The new tower will be 300m high and in the centre of Belgrade.

However, the Serbian opposition has asked Russia not to help rebuild Serbian Radio and Television. Instead, it says, aid should be diverted to rebuilding electricity systems that directly impact on the lives of people in Serbia.

## Digital Radio

In Ireland, radio is as popular as ever. The national broadcasting regulator, the IRTC, received more than 20 applications to provide radio services in Dublin. Decisions on the successful applicants are likely at

the beginning of this month.

Meanwhile, the IRTC is being less than helpful in encouraging DAB Digital Radio in Ireland. It has yet to licence the national broadcaster, RTE, for its experimental DAB service in Dublin. RTE hopes for a decision in time for an international DAB conference that it is hosting in Dublin in November.

At last month's consumer electronics fair, the Funkausstellung, held in Berlin, there were somewhat more encouraging signs on the digital radio front. Technisat, a small German manufacturer of satellite equipment, launched three DAB receivers at very low cost.

An in-car DAB receiver is available at DM795 (around £265), and a DAB hi-fi tuner is on sale at DM695 (about £235). There is also a 'high-end' DAB tuner in a special case at DM795.

This makes DAB affordable for the average consumer at last, undercutting established players by several hundred pounds. Technisat has not always backed winning horses in the consumer electronics race before, however. It invested heavily in ADR - Astra Digital Radio - that is likely to disappear from the satellite airwaves in the next few months. Let's hope that this doesn't sound the death knell for DAB.

As we go to press, DAB is likely to be given a boost in London. On September 2, the Radio Authority was due to announce which of the three competing groups had won the first London commercial DAB multiplex. Capital Radio and Emap Radio joined forces and proposed a mix of the two company's existing radio services; Chrysalis Radio (which runs the Heart and Galaxy stations) teamed up with Border Radio, offering their current brands, plus a couple of new services and Talk Radio, Virgin Radio and America's Clear Channel bid on a ticket of entirely new services.

## Close Relations

In Poland, media companies are becoming increasingly attractive to investors. One of Europe's largest media groups, Luxembourg-based CLT-UFA, has bought RTL7, to target the 40 million TV viewers in the country. Poland is the largest advertising market in Central Europe.

At the same time, the Catholic Church in Poland has won support from some of the country's largest companies to develop a nation-wide commercial TV station. The Church is already active in the radio market in Poland, having close relations with Radio Marya and Radio Plus. Waldemar Gasper, one of Radio Plus's directors, is responsible for the new TV venture.

This latest European media development makes me think that perhaps there is a sound reason for all those religious broadcasters operating on short wave around the world.

Until next time, good listening.

BROADCAST

## Operations Increased

The European international broadcasting scene is not entirely gloom and doom, however. Radio Finland is increasing its operations, adding two languages that I have not heard of before. From the end of October when the new winter schedules become operational, Radio Finland will add weekends-only programmes in Mari and Udmurt.

These are languages related to Finnish spoken in parts of the former Soviet Union, not too far from the borders with Finland. The programmes will air via short wave and on satellite; the Helsinki-based station has not said how many listeners it thinks it will reach with these new services.

## B-92 Back

Radio B-92, the opposition station in Belgrade forced off the air by the Serbian government, is back! The station went live again on 28th July, this time calling itself B2-92. It planned to have a complete operation from early August, reviving free speech on the radio in Serbia for the first time since the start of the NATO bombing campaign. For the latest situation, check out [www.freeb92.net](http://www.freeb92.net) if you have access to the Internet.

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### REALISTIC DX-394

★ Superb performance SW receiver ★ 0.2-30MHz (all mode) ★ Selectable tuning steps (down to 100Hz) ★ 240 or 12V ★ Digital S-meter ★ Attenuator ★

Key pad entry ★ 160 memories ★ Clock/timer ★ Noise blanker ★ Limit scan ★ Tape output

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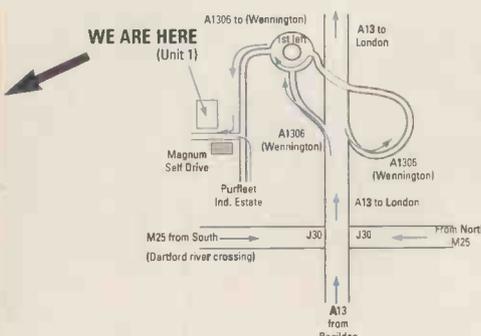
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Please note that only the special cells can be recharged with this charger.



Extra cells available @  
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Deluxe over the ear earpiece.

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Mobile holder for handhels.

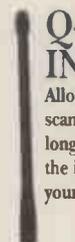
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A fully adjustable desk top stand for use with all handhels. Fitted coaxial fly (FAI) with BNC & SO239 connectors

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Allows the connection of any HF antenna to any scanner that has a BNC connector. Simply connect the long wire antenna to the push terminal on the top of the interface and attach to your scanner in place of your existing antenna.

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The latest hand-held GPS with a pre-loaded map of Europe.

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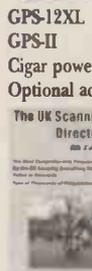
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6th Edition  
New UK Scanning Directory (6th edition). 25-1.8GHz.

**£18.50** (P&P £2.50).

### INTERFERENCE - STOP IT!

Rectangular snap-fixing ferrite cores suitable for :- Radio coax/TV/mains/telephone/PC & data cables. Plastic teeth prevent it from sliding on cable. Simply snap close onto cable and job is done! (Will fit large coax).

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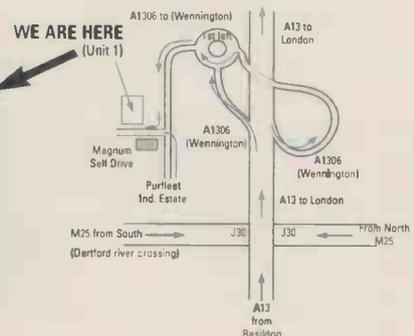
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A brilliant new compact indoor antenna that covers 0-1650MHz and is just 20" tall (collapsed). Supplied with coax and BNC plug fitted.

ONLY **£49.95** P&P £5

Comments from John Griffiths

*I have to say that I'm not a fan of indoor antennas like this as earlier desk mounted antennas tended to look like a mad scientist invention. However, I was suprised by the quality of construction of this piece of equipment and it appears to be up to the job it is designed to. Without getting technical, the Apollo 2000 claims to be able to cover 0-1650MHz. I used it between 108-400MHz approx and was suprised by what it was able to do. It produced clean copy and there was good reproduction with very little breakthrough.*



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An amazing new design concept in compact HF antennas. Thanks to its six-stage multi resonant coil system stacked vertically utilising a magnetic balun at the base you can obtain better results than ever experienced from a compact-vertical HF antenna. (SO-239 fitting- 4' high - clamps to any mast up to 2" dia). 0-30MHz.

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FREE CASE

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A high performance wideband antenna offering superb performance from 25-2000MHz. Transmit range:- 6m, 2m, 70cm, 32cm & 23cm (power handling 200W). Fitted with low loss 'N' type connector. Supplied with mounting brackets.

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Comments from John Griffiths

*Putting the DC-2000 up gave me a tremendous boost to all signals with the ancient AR-2000 coming alive! Signals were well received and I found that I wandered out of airband - my usual haunt - into all manner of areas that previously have been less than good here due to my location!*



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Superb quality wideband receiving antenna. Covers 100kHz-2GHz (all mode).

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P&P £6.00

## NEW SP-1 SPYWIRE

Ideal for any receiver. Receives all short wave bands. All mode, no ATU required. Built in balun. SO239 connection.

**£29.95** + £3 P&P



## NEW Q-TEK BALUN

Short wave magnetic long wire adaptor for any short wave receiver. Simply screw onto receiver & connect the wire via supplied screw terminal. (It's brilliant).

PL-259 ONLY **£22.95** P&P £1



## NISSEI HS-8000

Miniature wideband scanning antenna with magmount.

RRP £24.99. ONLY **£14.99** P&P £3.



## Vecronics AT100

Active SW antenna

Covers 0.3-30MHz with adjustable sensitivity. Simply connect to a

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Prof quality base antenna for AIR. (Civil & military). With SO-239 fitting (1.7m long). Gain 4.5/7dB.

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AIR-33 (As above) 1m long. Gain 3.6dB. £44.95 P&P £5



## GLOBAL AT2000

Deluxe SW ATU 0-30MHz. SO239 fittings.

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# Off The Record

In Britain there appears to be two feast days in the pirate radio calendar, one is Easter Sunday, the anniversary of the beginning of Radio Caroline in 1964, the other is 14 August. It does seem strange to commemorate the day in 1967 on which the Marine Offences Broadcasting Act became law, which was supposed to bring an end to offshore broadcasting. With so many radio stations having closed over the years, it is surprising how many enthusiasts become quite elated at the thought of some of the old pirates returning, even on a temporary licensed basis.

Following the 1990 Broadcasting Act, that replaced the economic sanctions of the 1967 legislation, with the use of 'as much force as necessary' to board and destroy shipboard broadcasting stations in international waters. It is now virtually impossible for any British offshore stations to exist.

Radio Caroline are still continuing to provide a service on satellite and also have an excellent web site where you can visit areas of the ship and hear their programming. The recreation stations like the Radio London RSL at Frinton in 1997 and the more recent Radio Northsea International are great fun, particularly when involved with a worth cause, but will never be anything like the real thing.

While independent commercial radio has drifted away from personality radio and replaced it with boring people doing on-air shifts, BBC Radio 2 has kept their personalities and seemingly daft chatter and received the Sony Station Of The Year award.

## Communications

Dave Fuller rang me from an East London pub asking if I could publish web site addresses of pirates that feature real time audio. As Internet activity is quite legal and foreign pirates difficult to verify, it could be well worth building up an address book of interesting sites, with or without audio.

I would agree that a register of all broadcast sites, including clubs and societies and their respective E-mail addresses would be a considerable but useful undertaking. Clearly this would be outside the remit of this page, but is certainly a talking point for the future.

In the meantime Dave, try [www.fused.com/www/xbones.htm](http://www.fused.com/www/xbones.htm) or [www.radio4all.org](http://www.radio4all.org) I tried doing a search for 'pirate radio' or 'offshore radio' and ended up with an incredible selection! I was particularly impressed with the Offshore Echo's web site, and was quite amazed to find a picture of myself, under a suitable alias.

A letter now from Southampton, Dave Williams says he is getting lots of pleasure from sending reception reports to the s.w. pirates, he is also seeking recordings of the RNI lightship RSL from Clacton during August. If you can help, please write to my address and I will forward your correspondence to him. With luck, I will have some photos of this event in January's column.

Radio Free London have responded on the subject of reception reports. Disc jockey Eric May says they frequently get letters from Europe saying 'I heard a male voice playing English speaking music, please confirm'. Clearly that's not much help to anyone, however they do get some interesting mail and 'phone calls indicating that they do have many appreciative listeners. Recently RFL say they have been firing up

four rigs simultaneously, something to do with their bid for world domination, or should that be radio supremacy.

Harry Richards of Barton-On-Humber sent me a press cutting, an obituary actually, about Jim Rose and the part he played in the code breaking activities of Bletchley Park. Harry remarks that we are losing all these brave boffins to whom we owe so much. Too true Harry, every conflict has its heroes and alas its casualties.

## The Case Goes On

Trevor Brook's marathon 13 year battle for an independent short wave licence for his Radiofax continues. The case currently before the European Court Of Human Rights has been delayed while the Court seek further information from the British government. Trevor says he is not allowed to pass on details of proceedings before the Court, but says the written submissions from the government involved documents at thick as a small telephone directory. "They are clearly putting a lot of money and effort into defending the case".

The recent development of Merlin Communications now doing relays for private American stations seems to finally take the biscuit. It appears now that relatively small foreign stations are able to transmit their programmes from British soil, to a European audience via a Merlin monopoly, yet British broadcasters cannot legally get access to short wave frequencies themselves. Personally, I just cannot see how the government can justify this grossly unfair discrimination against British broadcasters and businesses.

## Screaming Lord Sutch

It was sad to read about the fairly recent death of David Sutch, better known as the leader of the Official Monster Raving Loony Party. Among the tributes there was no mention of his pirate radio activity, indeed in a way he was something of a pioneer. He started broadcasting as a publicity stunt from a fishing boat called *Cornucopia*, but later moved to the ex-army forts off Herne Bay in Kent and occupied Shivering Sands Tower. It was when the MOD claimed he was trespassing, but never reclaimed their abandoned property, that almost all the other Thames estuary forts became occupied by radio pirates. His programmes included readings from *Lady Chatterly's Lover* and *Fanny Hill*, both controversial books at the time. Sutch sold the station to his manager Reg Calvert for a reported £5000 in September 1964 after five months operation.

Since then Lord Sutch has contested, and lost his deposit, in just about every single general election on behalf of his Raving Loony Party. He almost achieved some unexpected fame through his friendship with madam Cynthia Payne, she was convicted of running an up-market brothel (who says I don't know my subject!) in Streatham, London, during the early 1980s. This was one of the few places that accepted Luncheon Vouchers in exchange for sex. Following headline publicity, the LV company ran a series of tongue-in-cheek commercials for their customer services.

## And Finally

As I write this during the middle of August, and living in the south east, I am enjoying both Radio Caroline's Southend RSL and the RNI Clacton RSL, talk about nostalgia. I am due to appear on RNI for the last week on air, so standby for a full report in the next 'Off The Record'.



## Radio Gaga

Well that was the name of the song by the rock group Queen, however Radio Saga, a station for the over 35s, are hoping to be on air in around five years time. Saga, best known for their holiday and insurance businesses for the over 50s, want to break into radio broadcasting after identifying a huge gap in the market. Initial applications are to be for areas in Yorkshire and the East and West Midlands, with an ultimate intention of securing a national digital service. It is suggested that Michael Parkinson may be among the leading presenters, as he is a well respected writer in the hugely successful *Saga Magazine*.

## Swedish Report Service

Last quarter I mentioned *SRSnews*, I usually receive much of their output from Bob Marsh who is very much into things electronic and sends me prints from their Internet service. If you are on the web try <http://www.srs.pp.se/index.html> this contains lots of current pirate radio information that I am unable to include here. You can write to *SRSnews* at Ostra Porten 29, 442 54 Ytterby, Sweden. All reports are in English and they have a magazine called *Pirate Connections*, the latest copy should be available now.

# A Long Closed Pirate Radio Station

The story of Britain's offshore pirate radio stations has been told in 'Off The Record' by Andy Cadier in this magazine, but the story of one of Scotland's landbased pirates has never been told anywhere until now. Daniel Burke explains all.

**W**hen Radio Caroline closed in March 1968, I felt the loss of the station so much that I decided to try and do something about it. A trip to Amsterdam in the summer of 1968 soon led me to believe that Caroline would not be returning in the near future. Both of the radio company's ships, the *Mi Amigo* and the *Caroline* were tied together in dock in Holland.

A long drive back to Scotland was made all the longer with the thought of no radio other than Radio One to listen to, luckily though I could hear Radio Veronica loud and clear, and the more I listened, the more I longed for the days of the pirates.

## Back Home

When I arrived back home I was offered a job as a sales rep. with a motor spares factory. It was while

**Standing outside our second home (the doors can clearly be seen) is Roger Mitchell, Gerry Hogan, the late Tony Marks and Bill Kane.**



**Dave Spencer (me)**  
on air in studio one  
on 1133kHz.

with this company I began to build small medium wave transmitters, none of which would operate properly. During 1966, I had built a small studio in a garden shed at home and thought I could use this to provide some sort of programming to try to keep up an interest in what we called free radio.

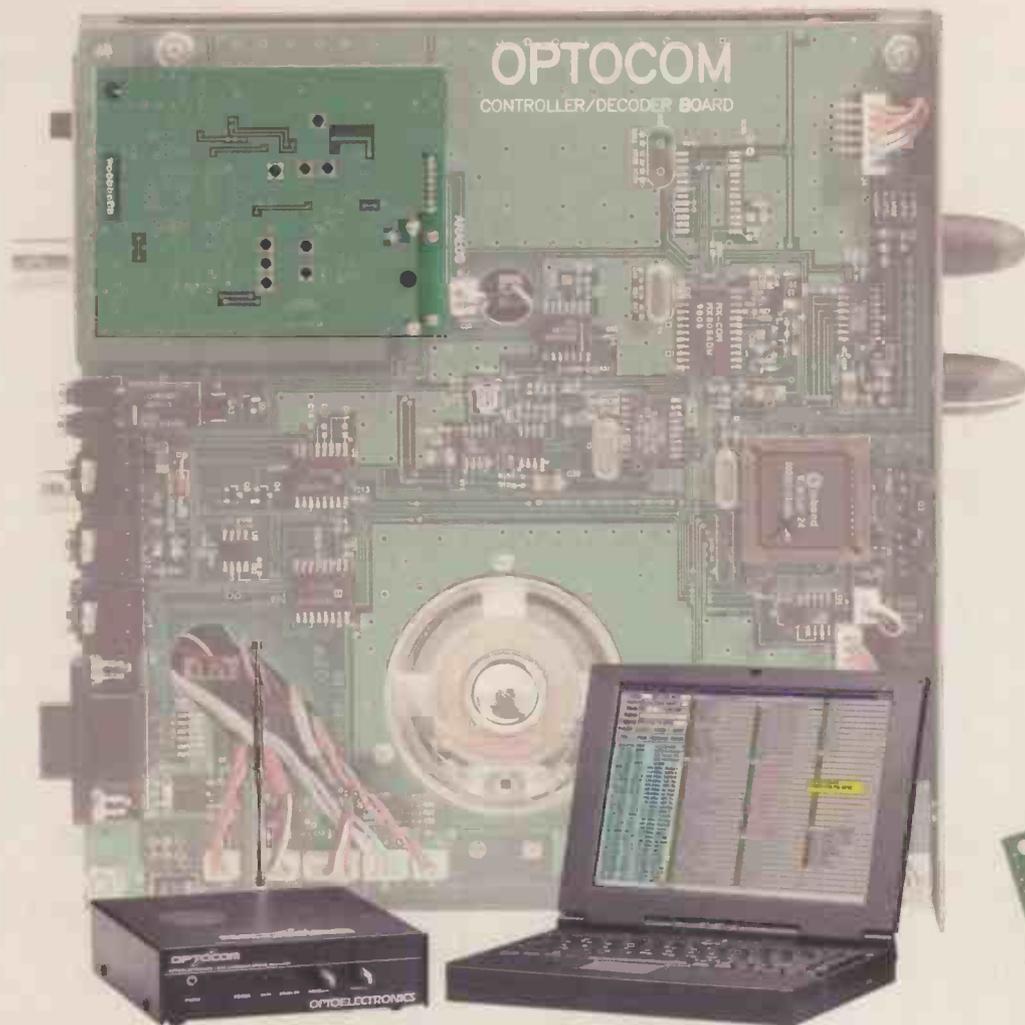
During a regular Friday visit to St. Andrews, one of my customers told me about a student rag week radio station, which was broadcasting on 190m medium wave. He also said he knew someone that was involved with it in some way and we could leave a message for him in a local bar. I persuaded him to come with me to the bar right there and then and we left my message after the barman promised to pass on my name and 'phone number.

## My Interest

A few days later I received a furtive 'phone call demanding to know what my interest in the radio station was. After assuring the caller I was not from the GPO Radio Detector Squad, he invited me to meet him.

The next day I met this rather strange young





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The 13m mast which held up one end of the station's 61m antenna.

... continued from page 24

### Name Changed

The next day we changed our name from Radio Scotland to Radio Caroline and joined in the election free radio debate. Against all the election opinion polls, the Conservative Party won the election and announced that they would introduce commercial radio into Britain as they had promised when Labour closed down the pirates in 1967. These were the happiest days for a long while for the free radio supporters.

After the election, the jamming continued and RNI decided to move its ship, the *Mebo 2*, back to Holland. When RNI dropped the name Caroline, we decided that we would keep it and did so until the real Caroline returned in 1972.

The years seemed to pass very quickly and with no problems from the Authorities, it led us into a false sense of security. During a couple of weeks off work, I was easily persuaded to begin daily programmes. It was then on the fourth day of these programmes when several GPO radio detectors arrived outside the radio station.

Luckily for us, they were spotted in time and the station went off air before they managed to find us. It was obvious that we could not recommence broadcasting from the same place, and as we had no alternative site, it looked like it was the end.

### New Studio

After a couple of weeks off air, one of our disc jockeys, Gerry Hogan, (named after Terry Wogan) said his father would allow us to build a new studio on his land, and as he also owned a saw mill, he said we

could use his materials to build it.

When we went to see old Hogan, he said he thought we were all a bunch of nutters who would probably all end up in the 'nick', this was liberally sprinkled with colourful language. He turned out to be a real character, though his main failing was the extremely bad language, which he liked to shout in the studio when we eventually got back on air. Luckily when we saw him coming, we made sure the microphone was closed and his voice was never heard on air.

The new studio was made from second-hand doors, which amused old Hogan, and he made one of his funniest observations when he said that "those \*\*\*\*\* from the GPO would not know which \*\*\*\*\* door was the real one".

By this time, commercial radio had begun, but in the early days, it sounded almost as bad as Radio One at the time, and was certainly nothing like the pirates. It seemed very little had been gained after all the years of lobbying, so we decided to keep the station on air for the time being.

### Two Different Programmes

We introduced a second medium wave transmitter and broadcast two different programmes, as we had now also built a second studio. This station played middle of the road music, while the original one played chart music, mixed with sixties hits.

A local newspaper columnist that I knew, said he would like to write an article about us and as he promised to keep the location of the station secret, I readily agreed. When the item appeared in the local paper, a flurry of letters appeared. Some were from the local Labour politicians condemning us as pirates and the reporter for giving us publicity.

I began to feel that I had possibly been wrong in allowing the paper to print the story. However, the following week the Conservative side wrote defending us and condemned the Marine Offences Act, which had closed the pirates a few years earlier.

With the cat amongst the pigeons, we made no comment about the controversy we had stirred up, but it gave us a new found strength to carry on. Time had flown by and very soon we were celebrating ten years of broadcasting, but it was also clear that we were getting nowhere.

### New Company

One day I heard on the radio news that the Independent Broadcasting Authority had announced the next wave of commercial stations. As soon as I heard them say Dundee and Perth would have one, I knew then that we should apply for it. We formed a new company called Taysound Broadcasting Limited and applied for the licence with our new backers, and, after a few months, we were successful.

The station became known on air as Radio Tay and it was here that...well, that's another story. **SWM**

# Bulgarian Dawn

Back in 1990 and 1991, Michael Osborn travelled to Bulgaria and spent several weeks living in the capital Sofia. He also worked for the English service of Bulgarian Radio, and witnessed a country and radio station slowly emerging from the dark decades of Communism. His experiences illustrate it can be a long, sometimes torturous, process.



Bulgarian Radio Headquarters (1990).

**A**utumn was slowly setting in when I first visited Bulgaria nine years ago, with warm sunshine mixing in with some decidedly wintry showers of rain. My home for this memorable visit was a high rise flat in one of the bleak Stalinist housing estates of Sofia's periphery, but was in fact a pleasant, comfortable and safe place to stay, with a fabulous view of nearby Mount Vitosha.

I arranged to visit Bulgaria at a time when this fascinating and beautiful country was barely emerging from decades of communism. It was less than a year since Bulgarian dictator Todor Zhivkov fell from grace, while the reformed communists slid back into power after the first ever elections in June 1990. But the opposition was gaining strength and the ruling party headquarters had been attacked and set alight just before I arrived.

## Serious Crisis

I found Bulgaria in serious crisis. Even in the capital city Sofia, food was in short supply and often difficult to find. Shopping was a bewildering experience for me, a fine art for Bulgarians. You had to go to the right shop at the right time. Tuesday it was fish, Thursday, say, biscuits.

There were also frequent power cuts, but I became used to sudden darkness and a silenced radio during

evenings in my flat. That is if I wasn't at one of the relaxed, impromptu parties held by my Sofian friends.

My days were spent at the headquarters of Bulgarian Radio, an imposing building which no stranger could simply wander into - especially a foreign one. I quickly recognised voices and names from Radio Sofia's English section, who were bright, hospitable and friendly.

I also stole across to the home service studios, where I was quickly snapped up for an interview, which went out on Bulgaria's main service. I became well acquainted with the studios, bristling with slightly aged Hungarian technology, and listened to the deafening clatter of old fashioned typewriters as texts were translated from Bulgarian. I quickly realised that the station was stuck in an age that should have ended when the Berlin Wall crashed down.

## English Section Office

One day in the little English section office, I met Lyudmila, who spent her time laboriously 'editing' texts by hand, which often meant removing any 'inappropriate' references.

This was all rather like the Cold War days of Radio Sofia, when the station served purely as a mouthpiece of communist ideology. This caused exasperation among other

broadcasters, who told me they wanted to press ahead with change



English Section Presenter Spaska Tchervienasha.



Recording English language programmes at Radio Sofia's 1990 studios.

English Section members Radoslav Genchev and Kristina Mihailova show off a new computer (1991).



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73 from Dave G4KQH, Technical Manager.

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- Connector to Rx** PL type delivered as standard. Other standards can be fitted on request
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- Intercept Point** +50dBm IP 3rd order (10MHz/12V)
- DC power supply** 11.5-13 volt DC at 80mA typ. (230V/12V DC stabilised mains adaptor is supplied with the antenna)
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satisfactory, the XYL noted with satisfaction that the distance between me and Lolita had increased in more ways than one. Despite this, I felt that the whole exercise had been worthwhile because long wave seems to be sadly neglected these days.

### Little Demand

I am told that, apart from nerds, anoraks and boffins (DXers to you and me) who spend all day trying to get a particular German, French, Russian or Polish station on the 150-280kHz band of their short wave receivers, there is little demand for the l.w. facility. Sony and Philips don't include l.w. on any of their personal stereos because they believe that there are very few people like me who want it purely for listening to Radio 4 as, apparently, the nation as a whole finds that John Humphrys sounds better on f.m.

This may be true of London and the Home Counties, but here in the wilds of the Peak District, Radio 4 can only be heard satisfactorily with a rooftop antenna or with a telescopic antenna near certain windows in the house. Other f.m. stations, notably Lolita's first choice, GMR, can be heard on a personal stereo because the transmitters are nearer or the broadcasts more powerful, but Radio 4 f.m. is impossible. Hence my obsession with long wave.

It enables me to listen to Radio 4 practically anywhere in the

the glove department or the pocket, also generally lack this facility, unless you are prepared to pay heavily. A look through the latest Sony and Philips catalogues shows that, even if you are going to pay as much as £60, you can't have a really small radio with l.w.

The smallest sets with this facility are paperback sized, too large and heavy when compared with the vast and tantalising array of minuscule radios with m.w. and f.m. only. Sony's latest beauty, the travel size ICF-SW12, which you can enclose in the palm of your hand, is advertised as an f.m./m.w./l.w./9 s.w. tuner at £64.99, but alas, actually lacks the l.w. facility. It would appear that to get l.w. on a small radio, you have to pay much more because full s.w. coverage is invariably bundled in together with the other bands.

### Desperate Search

I have nothing against s.w., in fact, I have treasured my cassette sized Sony ICF-SW1E for seven years now. Like its successor, the ICF-SW100E, which retails around £200, it is expensive and too good to be carried around

everywhere, especially on UK business trips when you may not want to listen to All India Radio, but only have time for the news bulletin on Radio 4 l.w.

Both Sony and Philips having disappointed me in my desperate search for a small, cheap radio with l.w., I was toying with the idea of contacting all

those, like myself, who not so long ago protested successfully when Radio 4 l.w. was to be disbanded in favour of f.m. alone, with a view to organising a similar campaign to persuade major radio

manufacturers not to neglect l.w. Luckily, I have been spared this tremendous effort.

### Answer To My Dreams

Having some time to kill before seeing a prospective client for a freelance writing assignment in Oxford the other day, I walked into a Tandy store and didn't have to browse for long before discovering the answer to my dreams. There it was in all its glory, a Realistic DX-351, complete with nine s.w. bands, m.w., f.m. and my beloved l.w. - all for £29.99, a small price to pay for such an exquisitely tiny (80 x 144 x 29mm (hwd)) and lightweight (216g without batteries) radio.

My lust for Lolita, sorry, long wave, had been satisfied at last.

"The radio certainly appeared to be in good working order, but that was not sufficient for someone like me who has taken to heart the persistent advice to try all your favourite frequencies before parting with good money."

### Editor's Note -

Roberts Radio recently introduced a special personal radio, the Sportsman, for long wave listeners. Roberts Radio can be contacted on (01709) 571722 - KN.



house, including the bathroom, which is a tiny box, so enclosed that no f.m. signals get through satisfactorily. Even outside in the garden or when touring around in the area, *The Word at One* is much better on long wave than on f.m.

### Pay Heavily

Unfortunately, it is not only personal stereos which lack l.w. Small radios, which are ideal for

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This month Joe Carr K4IPV, takes us on a tour of what are invaluable devices for sharing r.f. sources and terminals. Be they antennas or receivers, even TVs and video recorders. Read on for a guide to combiners and splitters.

# Passive RF Parts that You Can Use

## Combiners & Splitters – Part 1

**W**orking with radio frequency circuits poses some interesting challenges. Part of the problem is that stray capacitance and inductance, which are always present, become important at these frequencies. At ultra high frequencies (u.h.f.) and above, the problem is compounded by the fact that the component physical dimensions are a significant fraction of the wavelength of signals. In this article we will look at some particularly useful passive r.f. power splitter and combiners.

### RF Power Combiners & Splitters

The principal difference between power combiners and power splitters is in the application. Otherwise, they are the same circuits. A combiner is used whenever it is necessary to linearly mix two or more signals sources into a common port. The combiner is not a mixer because it is linear, and thus does not produce additional frequency products. The splitter performs exactly the opposite function. It will direct r.f. power from a single source to two more loads.

### Resistive Combiner/Splitter

Perhaps the simplest circuit is the resistive network in Fig. 1.1. This circuit uses three resistors in a 'Y'-network to provide three ports (it can also be extended to higher numbers of ports). The value of each resistor is  $R = R_0/N$ , where  $R_0$  is the system impedance and  $N$  is the number of ports. For example, if the system impedance is  $50\Omega$ , then  $R = 16.67\Omega$ , and for  $75\Omega$  systems  $R = 25\Omega$ .

The resistors used in this circuit must be non inductive. This limits selection to carbon composition or metal film resistors. If higher power than 2W is needed, then each arm of the 'Y'-network must be made from multiple resistors in series or parallel. The values  $16.67\Omega$  and  $25\Omega$  are not standard values, except perhaps in certain lines of 1% or less tolerance precision resistors. They can, however, be approximated using standard values. For example, only a small error is created when  $15\Omega$  resistors are used in place of  $16.67\Omega$ , and  $27\Omega$  is used in place of  $25\Omega$ . Because resistors come with variation in actual value, the amount of which is indicated by their tolerance rating (5%, 10%, 20%), we can often select from a collection of

standard values to closely approximate the actual value needed.

It is also possible to approximate the values by using series or parallel combinations of standard value resistors. For example, a pair of  $51\Omega$  standard value resistors in parallel will make a good match for  $25\Omega$ . Similarly, three  $51\Omega$  resistors in parallel will closely approximate  $16.67\Omega$ .

The advantages of the resistive combiner/splitter is its broadband operation. The bandwidth can extend into the u.h.f. region with discrete resistors, and into the gigahertz region if implemented with surface mount resistors and appropriate printed circuit technology. The upper frequency limit in either case is set by the stray inductance and capacitance.

The disadvantages of this form of combiner include a relatively high insertion loss, and only about 6dB isolation between output ports. If those can be overcome, or are not important in a given application, then this form of splitter/combiner is ideally suited.

### Transformer Combiner/Splitter

A somewhat better form of combiner/splitter circuit is shown in Fig. 1.2. This circuit can be used from 500kHz to over 1GHz if the proper transformers and capacitor are provided. In this discussion let's concentrate on the high frequency short wave bands as those are the easiest form of combiner/splitter for most readers to actually build.

The power splitting function is performed by coil L2. This coil is centre tapped, with the input signal applied to the tap and the outputs taken from the ends. This transformer can be wound on either T-50-

Fig. 1.1: Resistive combiner/splitter.

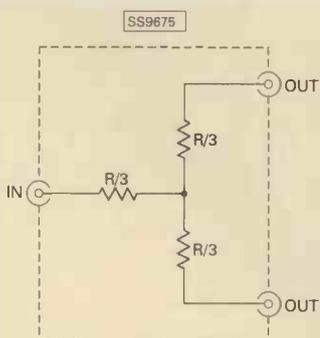
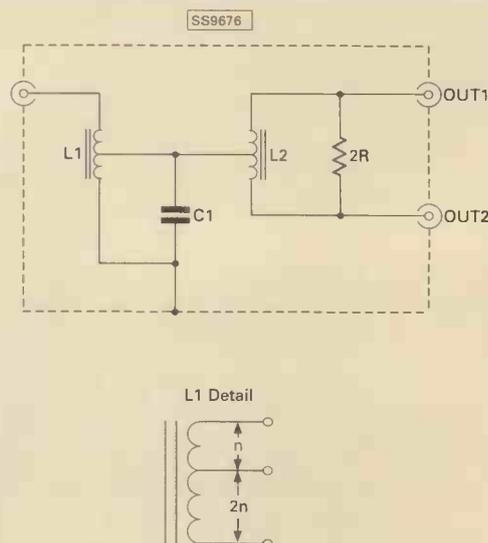


Fig. 1.2: Transformer combiner/splitter.



2 or T-50-6 toroidal cores for the h.f. bands, or a T-50-15 core for the medium wave bands. Use 18 turns of 28s.w.g. wire for the h.f. bands, and 22 turns for m.w. bands.

The resistor across the ends of L2 should be twice the system impedance. That means 100Ω for 50Ω systems, and 150Ω for 75Ω systems (both are standard values).

Some impedance transformation is needed if the system impedance is to be maintained, so L1 must be provided. This transformer is tapped, but not at the centre. The inset detail in Fig. 1.2 shows the relationship of the tap to the winding: it is located at the one-third point on the winding. If the bottom of the coil is grounded, then the tap is at the two-thirds point (2N turns), and the input is at the top (N + 2N turns). In other words, the tap is at two-thirds the overall length of the winding.

The capacitor usually has a value of 10pF, although people with either a sweep generator, or a c.w. r.f. signal generator and a lot more patience than I've got, can optimise performance by replacing it with a 15pF trimmer capacitor. Adjust the trimmer for flattest response across the entire band.

It is important to use toroid core inductors for the combiner. The most useful core types are listed above, although for other applications other cores



Fig. 1.3: Toroid winding.

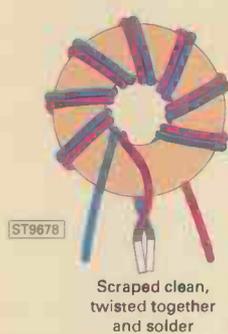


Fig. 1.4: Bifilar winding styles.

could also be used.

Figure 1.3 shows one way the cores can be wound. This is the linear winding approach, i.e. uses a single coil of wire. The turns are wound until the point where the tap occurs. At that point one of two approaches is taken. One, you could end the first half of the winding and cut the wire.

Adjacent to the tap start the second half of the winding. Scrape the insulation off the ends at the tap, and then twist the two ends together to form the tap. Alternatively, you can loop the wire (see detail inset to Fig. 1.3), and then continue the winding. The loop then becomes the tap. Scrape the insulation off the wire, and solder it. Although the tap here is a centre tap (which means L2), it also serves for L1 if you offset the tap a bit to the left or right.

An alternate method for L2 is shown in Fig. 1.4. This is superior to the other form for L2, but it is a little more difficult.

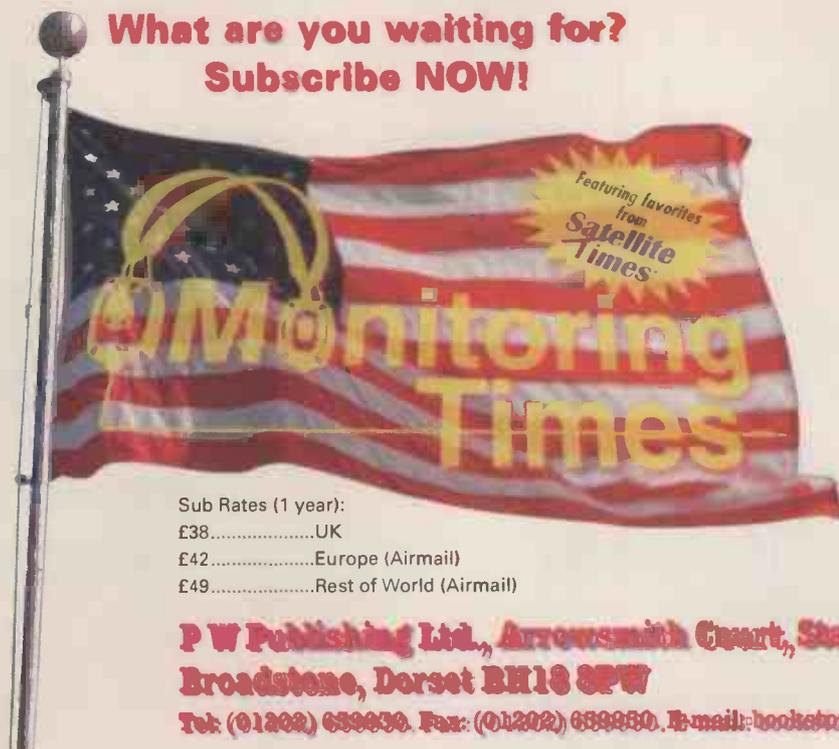
SWM

Joe Carr brings us more combiner/splitter variations in the final part.

More details of the Toroid cores referred to in this feature can be found in *SWM* August 1998. Back issues are available at £2.99 from the *SWM* Book Store, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW, Tel: (01202) 659930, FAX: (01202) 659950, E-mail: bookstore@pwpublishing.ltd.uk

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 Mast diameter 30-50mm can be fitted  
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 2.5-4dB -2000MHz  
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 Connector standards N type connector at the antenna, BNC male connector to the receiver  
 Power supply 12V DC at 160mA DC. Power supply for 230V AC is delivered comes with the antenna  
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# South African Sunday Afternoons

From 1985-1990, the popular *Mailbag* programme from Radio RSA in Johannesburg won a faithful following among British short wave listeners. Michael Osborn recalls the show's special appeal, and how it shaped his love for radio.



**A**s a young and budding short wave enthusiast back in 1985, I spent hours trawling the bands on my tiny portable radio, and quickly learned that many stations simply used the airwaves to broadcast dreary propaganda, while the scourge of jamming was rife. One quiet Sunday afternoon that October, I hit upon something that sounded very different. This was not some dull political commentary clearly boring the announcer as well, but a pair of very bright, animated ladies engaged in a lively chat which had me hooked instantly.

The appealing duo was Kathy Fitch and Shirley Veal, the show PO Box 4559 from Radio RSA, way down there in sunny South Africa. That afternoon I carefully filled out my first reception report and penned them a long letter, which started a very memorable correspondence. This was also the start of my contact with people and places around the world.



The appealing duo Kathy Fitch and Shirley Veal

## Radio RSA

Sunday afternoons after that always meant tuning to Radio RSA to hear the English born ladies in full flow. Soon after my first letter came a postcard bearing Kathy and Shirley's picture and the promise of a reply on the show. The radio was precisely tuned to 17.780MHz, and even the family gathered around for the occasion. But the gross unfairness of the Cold War meant they got blasted out by Soviet jamming that afternoon, intended for Radio Free Europe, who dominated the airwaves back then.

But I was not defeated by reception problems for my weekly dose of long distance entertainment. So many other stations made listener correspondence sound laboured and lifeless, but Kathy and Shirley were informal, very relaxed and at times truly funny. They became quite a well known

double act with a style of their own. As well as working off the cuff, they made huge efforts to conceal that the shows were pre-recorded - they certainly sounded live to me.



## Became A Regular

Like many other British listeners who had the Sunday afternoon show devoted to them, I rapidly became a regular on PO Box 4559 until its demise in 1990. The response I received to my letters was fantastic, from getting their special on-air treatment from the presenters to receiving lovely personal letters from Kathy Fitch. Their listeners were far more than mere numbers on a mailing list, and many of those names became very familiar to me the more I listened. It was almost like a happy family.

The show also awakened my ambitions to be on radio myself. Kathy and Shirley presented special live call in shows at the New Year, which offered a chance to speak to them in person, and to participate in their famous repartee for a short while. That was very enjoyable and marked a great start to many a year.

But of course, all the best things come to an end, and the *Mailbag* show was no exception. It actually ended in the shadow of a huge historical development for South Africa. On the afternoon of 11 February 1990, I tuned to Radio RSA as ever on a Sunday. The usual programme schedule had been cancelled and Kathy Fitch was presenting live from the studio. I stayed there to listen direct from South Africa to the release of Nelson Mandela. This was a very momentous day.



## Sudden Close

In April 1990, Radio RSA ended its broadcasts to Europe and the United Kingdom, and with it the programme that I had enjoyed for so long came to a sudden close. The station had decided to turn its attention to Africa as the old regime was replaced by a democratic majority government headed by President Nelson Mandela. In 1992, the station was re-named Channel Africa.

It was very good that the political situation in South Africa changed for the better and understandable that broadcasters there shifted their priorities. But Sunday afternoons were never the same again, and there has been no radio show on short wave for me that has wielded such a big impact.

Kathy and Shirley were excellent presenters who encouraged me to write and keep in touch with people and radio stations around the world. Such a friendly show was an enticing invitation to listen to short wave radio and become further involved. I am sure that many other listeners remember them too.

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# Total Eclipse - As seen B

Invited by  
Radio Devon  
to broadcast  
live  
commentary  
for the eclipse  
from the Hoe,  
Lawrence  
Harris did  
exactly that,  
after all, he  
had been  
waiting 40  
years to see  
this eclipse!

I am sure that everyone in Britain knew that at 1011UTC on 11 August 1999 there was going to be a total eclipse of the sun, visible along a line of totality that crossed south-west Cornwall and south Devon. In Plymouth, we were scheduled to enjoy one minute 42 seconds of totality - a figure that I obtained from Cambridge university's astronomy department.

For the last year or two I have been providing local media with responses to questions about the nature of eclipses. The only hindrance (apart from the weather) was some misleading information initially circulated by the local university, first claiming that there would be no totality (!) and telling everyone to go to Cornwall. The university organised a conference on astrology (not astronomy) a few days before the eclipse!

## Original Plans

Having been an astronomer since about 1961 (amateur then professional, now a mixture) my original plans were to use my 254mm telescope to photograph totality, whilst using another camera (and filter) to photograph the partial phase. I also planned to obtain weather satellite pictures from METEOSAT-7 (and anything else that was operational for the event), and was contemplating some radio astronomy measurements using a high quality receiver newly acquired for satellite monitoring.

Four weeks before the event, I received a call from Radio Devon asking me to provide live commentary for the eclipse from the Hoe! After some hours deliberation, I agreed to do this - instantly disposing of nearly 40 years' expectations of eclipse photography! I was aware of

course that hundreds, possibly thousands of keen astronomers would be photographing the eclipse along the line of totality, so it would not pass unrecorded!

The local paper (*Evening Herald*) rang me up seemingly every few hours during the last few days, and requested weather satellite pictures! The interest was the possibility of complete or partial cloud cover, and one of their reporters was

**Fig. 1: CO<sub>2</sub> image 9 August - weather front developing.**



**Fig. 3: Computer simulation of the eclipsed Earth using Starry Night Pro 3.**



**Fig. 2: NOAA-150745UTC 9 August - multi-spectral image.**

aware of my interest in live satellite monitoring.

On the Sunday before the eclipse, I was requested to E-mail a sample METEOSAT-7 WEFAX picture showing the developing front threatening to spoil the eclipse. In the event it did exactly that! The NOAA-15 image - see Fig. 2 - showed greater detail of the clouds.

## Hectic Days

The two days before 'e-day' were hectic, with reporters from both radio and press ringing for weather news and general comments. The fact that the Meteorological Office have the best forecasting facility in this country was perhaps lessened by the presumed desire to have a more local commentary.

Almost everyone familiar with WXSAT pictures will be aware that from live pictures, an amateur can only make an educated guess - forecasting the weather maybe just a few hours in

advance. This activity has been useful to me for gauging the likelihood of clear skies for astronomy.

Animating METEOSAT WEFAX pictures using the infra-red D2 format provided depressing confirmation that Plymouth (and much of the region) was likely to be clouded out. This did not stop me from showing Marion (my wife) how to take pictures during totality - just in case the clouds miraculously cleared! In the event, the camera was left alone under complete cloud cover.

On the Wednesday morning, I cycled to Plymouth Hoe and was amazed to see several thousand people already camped there at 0845! I joined the Radio Devon platform and was broadcasting within a few minutes. The atmosphere was increasingly electric, numbers swelled with released office workers, and continued to grow right up to totality. At maximum, police estimated

# y WXSATS

forty to fifty thousand people were on the promenade to see the eclipse.

## First Contact

After first contact (when the Moon's limb first reaches the sun's disc) the clouds momentarily thinned enabling me to see the partial phase for a few seconds. The sky darkened earlier than expected, perhaps due to clouds absorbing the decreasing light.

A minute before totality, darkening was extremely dramatic and the noise level from the crowd dropped. Totality hit Plymouth, and an image of the eclipsed sun was flashed onto the giant screen provided for

**Fig. 4: METEOSAT 1000UTC 11 August 1999**  
© 1999 EUMETSAT.



**Fig. 5: METEOSAT 1030UTC 11 August 1999**  
© 1999 EUMETSAT.



**Fig. 6: METEOSAT 1100UTC 11 August 1999**  
© 1999 EUMETSAT.



this occasion. A Hercules aircraft was videoing the event, broadcasting live pictures on BBC1 TV, from above the clouds over Cornwall, and transmitted the pictures to the Hoe. Wows and shrieks broke the silence.

My commentary was made with an excited pitch of voice that I didn't know I had! The corona was brilliant, prominences and the diamond ring were seen right on cue. Such detail in the corona was quite beyond my expectation. The sun is going through a currently low level of activity (despite being close to solar maximum) so I had anticipated a quiet corona - not one showing such dramatic features.

## Light Returned

After totality, light returned to the city within a minute or two, and under leaden skies, the crowd thinned as people returned to work. There was a gap in the cloud cover enabling us to view the final partial eclipse phase. After doing further media interviews I was able to return home and check out the eclipse records on my computer.

Everything had worked; a selection of METEOSAT formats, including the 'specials' announced by Eumetsat on the web site just days before the eclipse, were safely recorded. Checking out the eclipse sites revealed that a few pictures had become available, though none were very detailed.

The WXSATs had done well and Eumetsat kindly allowed me access to their high resolution images taken during quick scan mode operations during the eclipse. The pictures show the European experience.

A computer simulation of the earth in eclipse at 1038UTC is shown in Fig. 3, produced using *Starry Night Pro* version 3. The METEOSAT images (Fig. 4 to Fig. 8) show the progress of the giant cone of darkness across Europe where the Moon's shadow reaches earth.

Figure 4 (1000UTC) shows the eclipse just west of Britain. From Plymouth we could see a rapidly darkening sky to the west. After totality in Plymouth, the shadow raced across Europe and Fig. 7 shows an enhanced picture from 1130UTC produced by (NOAA's) National Environmental Satellite, Data, and Information Service (NESDIS).

Shortly after the eclipse, Timestep announced their pictures were available on their web site, from which I have selected Fig. 9.

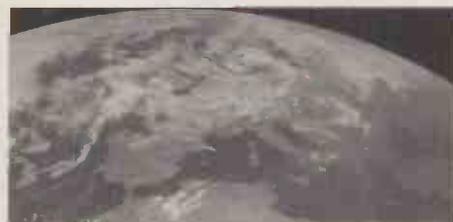
Russia's Space Monitoring Information Support laboratory (SMIS) of the Space Research Institute (IKI RAN) received some high resolution NOAA-14 images - see Fig. 10 - during the pass over eastern Europe at 1147UTC.

## Highly Impressive

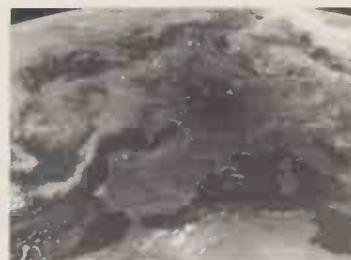
Although clouds prevented us viewing the heavenly drama directly, the pictures from the Hercules were highly impressive, and the atmospheric experience of seeing the Moon's shadow racing across Cornwall and then Devon was unforgettable. I had waited forty years to see this eclipse. I was there when it happened, and I won't forget.



**Fig. 7: METEOSAT 1130UTC 11 August 1999 processed and enhanced by NESDIS/OSEI.**



**Fig. 8: METEOSAT 1200UTC 11 August 1999 © 1999 EUMETSAT.**



**Fig. 9: METEOSAT eclipse picture from Timestep showing the wider view of Europe.**

**Fig. 10: NOAA-14 eclipse picture over Turkey at 1146UTC courtesy SMIS.**



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# Book Profiles

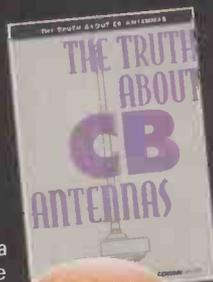
See pages 70 & 71 in this issue for our comprehensive book listing or visit [www.pwpublishing.ltd.uk/books/](http://www.pwpublishing.ltd.uk/books/) for lots more information on radio-related books.

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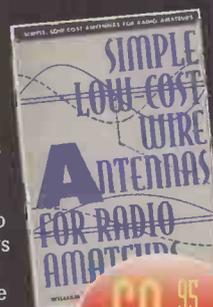
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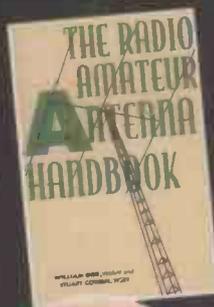
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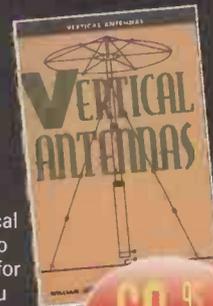
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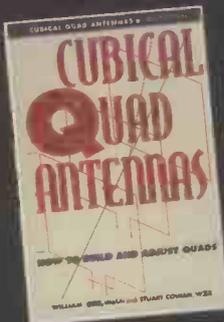
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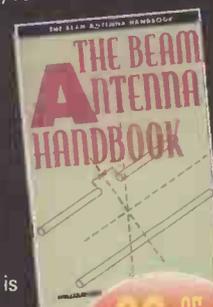
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■ FARIS RAOUF *of* EDITORIAL OFFICES, BROADSTONE

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# Scanning

At last, I'm pleased to say that I have some good news for scanner users. No, the 'powers that be' haven't decided to follow my advice and make listening, other than to cellular telephone and/or sensitive police/military signals, legal. They have, however, recently announced a licence exemption for a part of the radio spectrum from 446.0 to 446.1MHz in the PMR (Private Mobile Radio) band.

Called PMR-446, the new service is intended for use by anyone from small businesses to Joe or Josephine Bloggs who just need a super-charged walkie-talkie, and consists of eight frequencies with a nominal spacing of 12.5kHz. You'll find the specific frequencies in **Table 1**.

Transmissions on the new PMR-446 service are limited to 500mW, mind you, which isn't a lot. At a guess, I'd say that's enough for a range of about two miles with no obstructions, and a lot less in built-up areas. Still, because PMR-446 is licence exempt,

technically you'll be legally able to listen in to whatever you can hear on its frequencies without fear of prosecution.

But, although most scanners will be able to pick up the PMR-446 frequencies, having some form of DCS (Digitally Controlled Squelch) or CTCSS (Continuous Tone Coded Squelch System) decoder may come in handy when listening to transmissions on this band. This is because with only eight channels available, manufacturers of compatible equipment are building in DCS and/or CTCSS encoding/decoding facilities into their radios.

An example of a PMR-446 radio with this sort of feature is Motorola's £99.95 TalkAbout 200, which offers 38 different CTCSS tones, or 'interference eliminator' codes as the company describes them.

If you don't have a suitable DCS/CTCSS decoder, don't worry - all DCS and CTCSS involves adding a sub-audible signal, mainly below 300Hz, to the normal voice signal transmitted by the radio. By adjusting two or more PMR-446 radios to open their squelch only when they receive a transmission containing a particular CTCSS or DCS code, a group of users can therefore filter out transmissions from other users.

Add-on CTCSS/DCS-type decoders for scanners tend to be a little expensive, though. They also usually require your scanner to have a discriminator output, as the audio frequencies used by these technologies are usually filtered out of the audio signal that eventually reaches a scanner's speaker or its headphone output.

But DCS and CTCSS, as well as other signalling methods, including the audible DTMF (Dual Tone Multiple Frequency), are used in many parts of the radio spectrum, as they are very useful in today's very congested bands. Hardened scanner users therefore consider saving up for such a decoder,

as the information you can sometimes glean out of the numbers that appear on their screens can be very enlightening.

## Good News

But the licence exempt PMR-446 isn't the only good news this month, because I have some good news for trunked radio tracking enthusiasts too, in the form of the Uniden Bearcat 245XLT. Like its predecessor, the 235XLT, the 245XLT is designed to be a hand-held, self-contained tracking scanner for Motorola and Ericson EDACTS type trunked radio networks. Unlike its predecessor, however, it covers 400, 500 and 900MHz band as well as 800MHz, which means it is suitable for use with the majority of the Motorola-type trunked networks in the UK, which tend to be in the 400MHz band.

Even better news is that, according to one reader (who wishes to remain anonymous) it needn't cost more than about £230 to buy one of these beasts. The bad news is that, to my knowledge, nobody in the UK is importing them yet, so you'll have to go directly to

the US to buy one. Thanks to mail-order sales and the power of the credit card, you don't have to go in person, of course, but it is still a pain, especially if something goes wrong.

Another problem is that, according to my sources, it can be a bit of a pain to get up and running. From what I can gather, they aren't as difficult or complex to get working as, say, *Trunker*, but we aren't talking about turning it on and just tuning in to a control frequency either. Still, the anonymous reader in question, along with a couple of others, enthuse about this radio's trunk tracking abilities, and think it is almost worth its weight in gold. I hope to be able to get hold of one of these radios at some point, so with any luck I'll be able to give you some more details soon.

## Web Site Closed

Last week I mentioned the closure of a reader's scanner related Web site following a visit from the RA (that's the Radiocommunications Agency, not to be confused with the Radio Authority). Although I do have more details now, after much head-scratching I feel it would be best not to publish them here.

## Out Of Room

Well, I've run out of room yet again folks, so everything else I was going to say will have to wait until next month. Until then, remember that listening to any transmission for which you do not hold a licence (unless it is public, licence exempt service) is illegal. If you are caught doing so, you risk a fine, imprisonment, confiscation of your equipment, or a combination of all three. You've been warned!



One of the new PMR 446 transceivers to hit the market.

SCANNING

## AOR Mailing List

Are you an AOR AR8200 owner? If so, you might like to know that there's a mailing list just for you, where fellow owners can pass information between themselves, and get answers to those burning problems or queries your dealer never seems to know how to sort out. I'm told there are currently over 400 users subscribed to the group, including AOR UK! To subscribe to the list, send an E-mail to [ar8200-subscribe@onelist.com](mailto:ar8200-subscribe@onelist.com) or visit <http://www.onelist.com/subscribe.cgi/ar8200>



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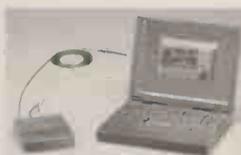


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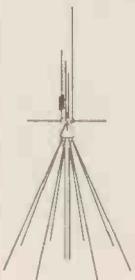


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# Amateur Bands

Not a good month. Firstly a v.h.f. box died - not a serious problem as alternatives are available. The TS-440S decided to go QRT on 21 and 24MHz. The old 520S covers 21MHz, but the TS-440S remains to be dealt with.

Then, along came a 'bug' virulent enough to take me to the local hospital 'A & E' then home for a spot of horizontal polarisation and total disinterest in anything!

## Coming Up

Thanks to 59(9) report and all your calibrated ears out there. The World Radio Team Championship takes place on July 8-9 2000 in Slovenia. At the moment there are 51 teams plus some others, notably one from Slovenia and the defending champs from 1996, N5TJ and K1TO.

Look out for 8Q7IT up to November 2; cards to DH3MIT. Preparations are going on for the ZL9CI group to tackle Kermadec ZK3 in 2002. By the time you read this, there may be a second station in Tunisia - 3V8ST to Tunisian Scouts.

You might have come across ZX0SK or ZW0SP by now; this one is from St. Peter & St. Paul Rocks. WA2VYA, K2WB, N2VW, go to Providenciales in the Turks & Caicos group, signing VP5/own call, or VP5T in the contest. Cards for VP5T to N2VW with s.a.e. and IRC; for the others to the home call. We hear that the ZLs may use ZM between October 1999 and March next year. Late '99/early next year sees H44PT, active.

In Nepal things are changing. Locals have calls in the 9N1-9N5 series, non residents 9N7. It is understood Father Moran's school may be donating all his gear to the 9N1MM Memorial Club, and that the Nepal government may give the 9N1MM call to the club with 9N1AA and K4VUD as trustees.

No cards from FT5ZH? There seems to be some unseemly wrangling going on, so 6000 cards went out, and 24000 haven't been sent. I wonder who collected all the dollars and IRCs?

If you send a card to 5A1A, the address is: **PO Box 74421, Tripoli Libya** - but registered mail only.

## Letters

We make a start with **Colin Dean** from Barnsley, who looked on 3.5MHz sideband to find CY9CWI (St. Paul), while on 7MHz we note ON4CFI/A92 (as there is no reciprocal agreement, we don't understand how this one can be legally on the air, though he does seem to be in A9), CP6XE, HB0/DL1RWB, UA0ACG, WP4U, YB1AQU, ZL2QB, 1X1AU(?), 9K2RA and on 14MHz R1MVA from Maljy-Visjotsk Is.

On 18MHz the collection included AP2JZB, BV5BG, CX3AL, CY9CWI, DS5RNM, HZ1AB, KG4AS, OD5NU, R1MVA, RK0AZN, RV0AM, TA2BK, TT8DF, UN7FZ, VQ9CV, YS1RR, ZL4DJ, 7L2OHM, 8R1WD, 9J1AM, 9K2NG and 9V1JA. At 21MHz s.s.b. we see AH8LG, A45XM, BA1DU, BA7JG, BD4ED, BV4KR, BV7KL, BY4BSN, C6AFV, some DSs, DX1E, EL4RL, ET3AA, FM5CD, FR5DX, HP1XVH, HS0/G4UAV, J39JX, KH6/W7GMH, KP2/KF2BQ, OA4DJN, OH0CV, P29KPH, P40HQ, T13JJP, VK8AN/6, VP2EY, VP5JM, V44NEF, V63AO, XE1REM, YBs, ZF1HQ, 3E1AA, 3V8BB, 5A1A, 5R8FU, 6K9JW, 6W1RB, 7J6CCU, 7Q7PA, 9J2BD, 9M2KE, 9V1PC and 9Y4WAR, which leaves just R1MVA to be noted on 28MHz.

Flying Saucers next(!). **John Berwick** in Leicester asks for any theories. The only personal contact I have was after I used a Pyrex glass insulator for the far end of a long-wire back in 1959. After putting the tools away we spotted a neighbour gazing into the sky - 'look - a flying saucer!' he said, gazing up at my nice clean bit of insulator. As his eyesight wasn't good enough to detect the wire, my pal and I left him to his dreams.

On a different tack, soldering to aluminium is certainly difficult but not impossible; the solder is 50-75% tin, the rest zinc. The iron needs to be **much** (200°F) hotter than normal, and the surface is abraded and covered with solder simultaneously so the oxide cannot reform. A special flux is available too.

On now to **Geoff Wallis** in Corsham whose letter was suffering from printer problems. Geoff had his doubts about R1MVA, but unless he found a phoney *alter ego* it was real enough with a big signal. Geoff notes that he uses a home-brew vertical antenna to an FRG-7700 which usually haunts between 14.010 and 14.019MHz and 2300 to midnight UTC. Incidentally, though largely household these days, Geoff used to be very well known on the bands as ZB2A and ZB2R.

A longer silence than usual, then a longer letter from **Harry Richards** in Barton-on-Humber notes that on July 25, he had a tune-around on 14MHz before turning in, and was surprised to hear an East Coast W knocking off the Europeans and commenting that for the previous four weeks he'd not heard much from Europe so had been turning his beam westwards instead.

On a different tack, Harry comments that my recent remarks on the 'crippling' of rope applies also to black polythene waterpipe - he had some which was crippled by kinking while the fittings were being installed - a couple of years later some hefty bursts demonstrated the point!

## Six Metres

Some time ago, **Emrys Griffiths** in Caernarfon passed on the QSL manager for ZD7VC. Emrys has now received another letter from Bruce, which recounts the melancholy tale of his 15m tower, which crashed to the ground through structural failure, but luckily left his TH6DXX little damaged.

Incidentally, ZD7VC uses a prop-pitch motor to turn his beam - one recalls the old joke that if your upper bearing froze solid with one of these beneath, then you would likely find the whole house rotating! For the moment, ZD7VC has been operating on six - 50.115 MHz - with some considerable success though not, until the date of his letter to Emrys, with any UK contacts.

As usual, sticking to c.w., **Ted Trowell** looked at 7MHz for Y17KRN (2100), 14MHz HL1DH, HS4BPQ (both 1500), SV9/G4VXE, EA6ABK (both 1900). A morning on 18MHz yielded UA0AZ, while in mid afternoon 4Z5AD, RV0AM, UA0WN were landed. At 1800 Ted found JA2ODB, EX8F, JL3TEM, UJ0/LA0CX, W6SFR and W6LAX.

On 21MHz mid afternoon gave EA8DY and EA8BWP; 24MHz showed PY2OW at the same time, then ZD7BG, FY5YE, VR2BG, EA8DY(1800) plus 5A1A (1900). As for 28MHz, Ted found LU1APG and PY2YU. Times GMT, of course.

Birmingham is where **John Collins** listens from, and this time he notes, on 7MHz, such as 3Z0ENI (cards via SP5RAX), GB3RN, TM5ON on Iota EU-10 (via ON4ON) while at 2200 GM3PPG was noted - cards to G3PPG, BBC Training Centre, Evesham. The card for GB0RAF came back in 18 days - via G0DAM. GB0SUB was also logged, as was C33BO (direct to POB1150, Andorra or via the Bureau) and VY00 caused a pile up at 0100.

GB4SW (via G0000 with s.a.e.), GX0HRS (Bureau), GB5CB, LA5RJA/MM heading for New York, GB6ENI was the Polish Scouts at Bletchley Park; GB2RF was a Radio Academy Convention at Cardiff (via GW0ANA), the DH8WR/M in Bilbao, ON4BBC, DL1BBR and at 2300 R1MVA was a mighty signal from M-V Is.

GB60ENI came from Bletchley Park with **Simon GW0NVN** operating. GB0WGG in the New Forest, was something a little different, Girl Guides from 80 countries. Finally, CY9CWI from St. Paul Is. (direct to VE3CWI or via the Bureau).

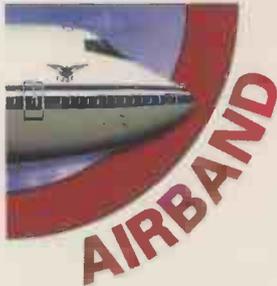
Our last letter this time comes from **Paul Goodhall** in Oxford. July is a big month work-wise, so Paul looks forward to August and a mite of relief. Looking through his list we notice what must be the first amateur activity from Gruinard Is, IOTA EU123 - this was the island infected with Anthrax in WW2 and kept out of bounds to the public for fifty years afterward.

Another one was GM4FDM/P on Hoy working VO1WET, and R1MVA working all-and-sundry. Space though, runs out, so we must leave you until next time.

## Silent Keys

Two this time, **Maurice Caplan G3NWO**, very active as VS5MC, VS6AA, VS1MK, 9V1MK, DA2YW, died on July 4. Another well known name was **Rubin Hughes WA6AHF**, who died on July 1. Of late years he was involved with the printing and distribution of the Yasme Foundation cards. Both were known to me, making it a bit harder.

Letters, as usual, to **PO Box 4, Newtown, SY16 1ZZ** to arrive by the start of the month, with all the news, views, DX heard and whatever.



■ GODFREY MANNING G4GLM, C/O THE GODFREY MANNING AIRCRAFT MUSEUM, 63 THE DRIVE, EDGWARE, MIDDLESEX HA8 8PS

# Airband

The CAA finally ruled about conditions during the eclipse. The darkest area of the UK was deemed to be night for certain purposes, that is, aircraft must display lights and conform to Instrument Flight Rules to avoid collisions (A/C 74/1999). Although I'm writing this before the event, it'll be published when it's all over!

Chris and I will have spent the week just south of Culdrose airfield. We've yet to find out if predictions of overcrowding, mid-air collisions and the English Channel made impassable by masses of yachts come true! Would you believe it, the press have just noticed it's going to be a spring tide. Well of course it is if the Moon and Sun are on the same side of the earth! What'll they tell us next, that they've just discovered it'll be a new Moon?

More of a worry is the proposed partial privatisation of National Air Traffic Services, the joint CAA/military air traffic control network. There is nothing about a privatisation that improves the industry concerned. Look at water. Is there more water or are we being coerced into installing meters?

Privatisation has only one objective, to extract profits from the existing system and that must be at the expense of something else. I want convincing evidence about safety and future improvements before I agree that it's a good idea.

## Receiver Hardware

The antenna is just as important as the receiver itself. If, like **Jim Drake** (Southampton) you live in a block of flats, it's quite a problem. I can't think of any magic that can make an indoor antenna perform as well as an outdoor one, Jim. In fact, your experience illustrates my point. A commercially-available indoor antenna was less sensitive than a home-made simple outdoor wire dipole! If any reader can suggest a better home-brew antenna that would help in Jim's case, please write in.

## In The Air

Page 5 of the August issue carried a letter from **T.D. Evans** (E. Yorkshire). You should have written to me, first! I can tell you that UPTON is a reporting point on B1 on the 113° radial from Pole Hill at 30nm distance. Aerad chart UK(L)2 depicts it and, T.D.E., if you send me a pre-paid self-addressed reply envelope (31p, A4) I'll post you a surplus copy.

As for the rest of you, these charts are easy to purchase by mail order. I list suppliers on the *Airband Factsheet* which is free from the Broadstone Editorial Offices if you supply a pre-paid self-addressed envelope to hold two A4 sheets. Don't send to me - I haven't a photocopier!

I find the new issue *Aerad* charts harder to read than the old ones and I know some pilots have been complaining. Of course, with so many new routes, it's inevitable that the charts would appear cluttered and I

know that the publisher is experimenting with improvements. One vote in favour: **Derek Denton** (Oldham), who took up my recent free charts offer, finds the new style clearer.

Thanks to all who wrote in appreciatively after receiving my free charts offer. **Ken Holliday** (Norwich) would like to thank the donor who kindly provided many of the charts. He knows who he is!

Talking of airways, B1 would originally have been called 'Blue One.' Old habits die

hard and I thought the reference to 'Upper Green One' on page 39 of the August *SWM* (article about control at Fairford) to be quaint. Unfortunately, there are now so many airways that they've run out of colours, so it's Bravo One or Upper Golf One from henceforth. Shame.

Thanks to **Ian Brothwell G4EAN** (Nottingham and who, I believe, is active on amateur radio teleprinter and data modes) for an informative letter. In fact you sent it twice, Ian, forgetting the lead time of up to six weeks before it appears in print! Sorry, as stated below, no direct replies are possible or my Museum work would grind to a halt.

Ian reports a DHC-6 Twin Otter, OH-KOG of the Geological Survey of Finland, was chartered by the British Geological Survey. Based at Nottingham, its flights will seek out pollution by measuring ground conductivity (presumably at radio frequency) and identify rock types (presumably by magnetometer) and soil types by gamma spectrometry (which I hope means emitted gamma rays!).

Ian's other local field, East Midlands, is planning a runway extension. Hopefully, the freight business (an East Midlands speciality) will extend to include larger long-range aircraft but inevitably there is vociferous local environmental objection. I feel there has to be a balance, we want the trappings of modern society which are often brought to us through trade yet we shouldn't overwhelm the local area in the process.

## On The Air

How does a v.o.r. beacon work? Ian's local one is at Trent. The central antenna sends out a reference signal frequency modulated at 30Hz. Around the periphery are antennas that form a circular pattern signal. This signal is amplitude modulated at 30Hz, but the apparent phase, compared to the f.m. signal, varies from 0 through to 360° depending on the bearing on the beacon at which it is being received. Ian also found part of the GZO beacon on Gozo (115.7MHz) but, as only a small antenna was seen, perhaps this was the d.m.e. rather than v.p.r.?

What facility might be on 145kHz? It seems to send regular, diffuse-sounding bursts about 36 times a minute. Could it be a radio-navigation aid? It's the wrong frequency for Decca and I also don't think that LORAN operates on that frequency. I know of no n.d.b. there, the only reason for strange sounds coming from one would be differential GPS. If you know, tell me so that I can enlighten **J. Fagg** (Dover).

Did your GPS receiver malfunction towards the end of August? A/C 85/1999 from the CAA warns that trials of deliberate jamming took place in Wales, centred on a point between Llanwrtyd Wells and Danger Area D203. Watch out, they're doing it again between October 11 - 15 but this time centred between Stonehenge and D124. Let me know if you experienced any jamming effects!

## Information Sources

As well as traditional sources, such as buying charts and supplements, some readers are searching the Internet for aeronautical information. If any Internet addresses are discovered that are worthwhile then I will of course print them here. However, I've had little success when trying the Internet myself, hence my personal opinion (such as in the July 'Airband') as noted by **John Coucher** (Ealing).

I think John found lists of aircraft deployments during the Kosovo military action. If President Milosovic had seen them, he'd have been frightened into capitulating! Perhaps that was the idea, in which case, do we know if the information was verified or exaggerated?

## Abbreviations

A/C	Aeronautical Information Circular
AIP	Aeronautical Information Publication
a.t.i.s.	automatic terminal information service
CAA	Civil Aviation Authority
DHC	De Havilland Canada
d.m.a.	distance measuring equipment
f.m.	frequency modulation
GPS	Global Positioning System
Hz	hertz
kHz	kilohertz
MHz	megahertz
n.d.b.	non-directional beacon
nm	nautical miles
v.o.r.	very high frequency omnidirectional radio range

## Airband Factsheet

- \* Available from the *SWM* website - visit [www.pwpublishing.ltd.uk/swm](http://www.pwpublishing.ltd.uk/swm)
- \* Available from the *SWM* Editorial Offices - send stamped, self addressed envelope to **AIRBAND FACTSHEET, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.**

Some recent addresses I've mentioned came with warnings as to accuracy. I'm not sure if the circulated list of frequencies for the Fairford Tattoo was correct, but it didn't tally with official supplements, for example, 132.9 and 134.55 are not listed, 119.15 is Fairford Tower rather than ground, and 376.625 is of course Brize Radar as they handle area control, there being no actual Fairford Approach as such. Can anyone who attended the Tattoo give a final verdict as to whether these 'odd' frequencies were actually verified? I wasn't able to go myself.

Codesharing causes confusion but is becoming more widespread. One example, pointed out by **Len Woolley** (Bude), is between KLM and Northwest. Len also notes <http://www.qantas.com.au/cgi-bin/ftin?dom> where you'll find Qantas timetables, but only amended every four months! Your travel agent's monthly *ABC World Airways Guide* is more up-to-date so ask them to save you last month's copy rather than bother with the Internet!

Another way of sharing information is through a local enthusiasts' group. **Derek Denton** wants to know if such a group exists near him in Oldham so, if you're involved in this way, please write in. Perhaps there's a local Air-Britain branch? My local 'phone book suggests ringing (01778) 590677, the number of their national Secretary.

Ian Brothwell mentions local flying clubs as information sources. Some even permit non-flying social or associate membership, worth enquiring. As a supporter of Museums, I pass on Ian's recommendations of visiting those at Newark and Malta.



**Desoutter 1.**  
*Christine Mlynek.*



**Bristol M1C.**  
*Christine Mlynek.*

## Frequency & Operational News

A/C 74/1999 quotes two frequencies that I think are new: St. Mawgan a.t.i.s. 132.9 and a new London Radar frequency 135.15MHz.

The UNICOM channel, 130.425MHz, has been withdrawn (A/C 66/1999). This was used mainly by helicopters in land rescues to transmit blind their intentions when approaching the scene of the emergency. This way, other pilots could listen out and avoid collisions. However, pilots planning a flight (as well as enthusiasts) might hear news of emergency restricted airspace on the free telephone recording (0500) 354802.

Visual flight into Bristol (Filton) now requires pilots to report at M5 Bridge over the Avon, Old Severn Bridge or Thornbury (replacing Severn Bridge and Michael Wood Services) according to A/C 64/1999.

As usual, **Martin Sutton** (CAA) kindly keeps us up-to-date with significant A/P amendments which report the closure of W911D between Newcastle and Dean Cross.

Next month I'll find space to answer **Andrew Green** and **Brian Allum**. All other letters received up to August 4 have been answered. The next three deadlines (for topical information) are October 11, November 8 and December 6. Replies always appear in this column and it is regretted that no direct correspondence is possible.



## Next Month in

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## WINNERS!

\* The waiting is over - **Neill Taylor G4HLX** presents the winners of this year's *Practical Wireless* 144MHz QRP Contest!

\* **Phil Davies M0AYB** writes about his attempts at 'QRP In The Lakes' in which he relates the tale of how he took part in both the 1997 and 1998 PW 144MHz QRP Contests.

## REVIEWED!

\* **Rob Mannion G3XFD** reviews the ADI AR-147 144MHz f.m. with airband receive.

**Tex Swann G1TEX** analyses the MFJ-269 Antenna Analyser which includes u.h.f.

## \* MORE ON MICROWAVES

**David Butler G4ASR** brings you the second part of his three-part series which he says will "get you going on Microwaves".

## ANTENNAS!

\* As well as *Antennas-in-Action* being in the November PW, we also have an article on 'Dissecting The Dipole' for you, courtesy of **Tony Harwood G4HHZ**.

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# Decode

## Admiralty List of Radio Signals

Now here's a wonderful publication that may well be new to many of you. If you like, this is the radio professionals' *Yellow Pages*. This multi-volume publication is a complete reference of all the maritime related radio transmissions across the globe.

Compilation of this mammoth publication falls to the Hydrographic Office based down in Taunton. Being aimed at the professional market, the ALRS is not cheap at £25 per volume or part volume, but the information is of a very high quality. For those yet to see a copy, here's a run-down on the eight-volume set.

**Volume 1** - This has just been completely revised and deals with the world's coastal radio stations. This has become so large that this volume is produced in two parts. Part 1 deals with stations based in Europe, Africa and Asia. The second part covers the Philippines, Indonesia, Australasia, the Americas, Greenland and Iceland. In addition to covering some 1500 coast stations, each part includes lots of procedural information on how to deal with various different nationalities. There's also information on the development of non-geostationary satellite systems such as those operated by Iridium, Globalstar & ICO. There's also a reverse frequency list so you can identify a frequency with a coast station.

**Volume 2** - This volume provides vital information on the range of Radio Navigation aids that are available to mariners around the World.

**Volume 3** - Another volume that's just been completely updated. This one deals with Radio Weather Services and Navigational Warnings. One of the important changes is a new section bringing together all the Radio-Facsimile Weather Broadcasting stations. As well as listing all the stations, there's a reverse cross-reference frequency/station listing. The book is excellent quality with full colour diagrams and illustrations and is fully updated to take account of the implementation of GMDSS.

**Volume 4** - This is a vital reference for those with a particular interest in the Meteorological Observation stations. All the stations are listed here so it's easy to cross check ID numbers with the observing station.

**Volume 5** - This covers the Global Maritime Distress and Safety System (GMDSS) and has also been completely updated to take account of the GMDSS implementation on February 1st this year. Not only does this volume cover the latest regulations, but it also includes all the known plans for future developments. There are also diagrams showing how the systems operate.

**Volume 6** - This one is really for those with an interest in v.h.f. maritime monitoring and includes

details of Port operations and Pilot services.

**Volume 7** - More of a speciality volume covering vessel traffic systems and reporting points.

**Volume 8** - This is a new addition to the range and covers the rapidly expanding area of satellite navigation systems.

As you can see, the range of information

available is extremely comprehensive, as you would expect from the Hydrographic Office. If you want to get your hands on a copy or two, the best place to go is an Admiralty Appointed Chart Agent. The best place to find one of these is just about anywhere where there's boats. You will generally find that one of the yacht chandlers keeps copies of at least the most popular volumes and they're usually only too willing to order any other volumes.

If you're still having problems, you can contact the Hydrographic Office via their Web page at [www.ukho.gov.uk](http://www.ukho.gov.uk) or by 'phone on (01823) 337900.

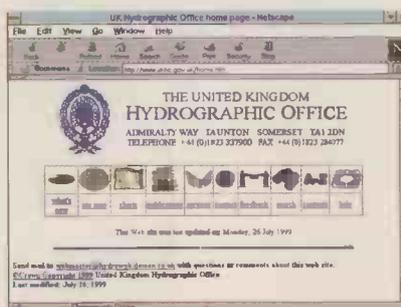
## PSK31

I've had a few enquiries from a reader about a relatively new system that's appeared on the amateur bands in recent months. Whilst I don't usually pay too much attention to this area, the new mode has a number of interesting points which are relevant to many commercial systems.

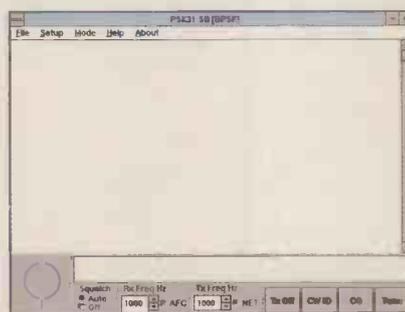
So why is it called PSK31? - this is the easiest bit. The PSK stands for Phase Shift Keying - I'll try to explain that later. The 31 refers to the baud rate of the signal which is just 31 baud (31.25 to be precise)! Now this may surprise you - why would anyone want to develop a new data system that's slower than most of those already available? The answer lies in the fact that the mode was designed specifically to work with hand typed communication links, rather than computer based high-speed links.

For many amateur utility enthusiasts this is their main form of communications and there's really no need to have a 300 or 1200 baud data link when it just sits there waiting for the next character most of the time! By specifically producing a slow speed system, the designer's are able to make use of the latest technology to make the mode extremely reliable and using a very narrow segment of the overcrowded frequency spectrum.

The first break with tradition comes with the use of Phase Shift Keying. Although this is by no means a new modulation system, it is new in this context. So what is



Hydrographic Office Site.



Screen Shot of Peter Martinez PSK31 Program.

Phase Shift Keying? Perhaps the simplest way to imagine it is to start by recalling how simple RTTY works.

You will recall from previous tutorials, that RTTY works by using two closely spaced frequencies that are used to represent the 1s and 0s of the RTTY signal. In a Phase Shift Keyed system, the polarity of the radio frequency signal is reversed in synchronisation with the 1s and 0s of the data signal.

Another way to think of it is to imagine that the feeder from the transmitter to the antenna is reversed to achieve the phase shift. Obviously this is not really very practical, so the keying is actually carried out in the very early stages of the transmitter. There are design problems with this system, as this type of modulation tends to cause very severe 'key clicks'. However, this can be overcome with some careful filtering of the modulation waveforms.

Incidentally, the full name for this mode is BPSK, which is an acronym for Binary Phase Shift Keying. Whilst this system is fine for a simple 31 baud system, the variability of h.f. propagation means that some form of error correction/protection is necessary. In order to accommodate this error correction, we need a link that can run rather faster than the original 31 baud.

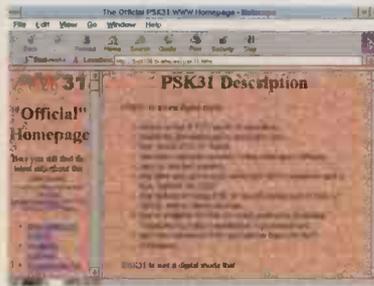
The solution is to change the modulation from simple Phase Shift Keying to QPSK or Quad Phase Shift Keying. Whereas the PSK system used phase shifts of 180°, the QPSK system adds extra shifts at 90 and 270° so allowing transmission at twice the speed. With the basic transmission system sorted, next comes the error protection. This is another area where PSK31 takes advantage of modern technology. Most of the older systems that are found on the h.f. bands use what's known as block codes to help identify characters and provide some error correction.

A good example of this is to be found in good old RTTY where the basic five-unit code is wrapped-up with start and stop bits to help the receiver locate each character. An alternative system is to use what's known as convolution codes. This is a rather ingenious system that changes the basic binary data signal into a quaternary so that it can take-on one of the four states available with QPSK as opposed to its original two states.

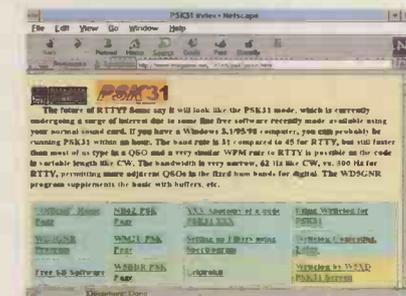
This conversion process is rather too complex to describe in detail here. At the receiving end, the QPSK decoder is known as a Viterbi decoder, after its inventor. This ingenious device comprises a group of encoders that all make guesses at the transmitted data sequence. These outputs are then compared with the received data stream until a type of consensus is achieved on the correct values of the data stream.

Once of the quirks of this type of decoder is a processing delay caused by the guessing process. In the PSK31 system, this amounts to 20 bits or 640mS. This is a very small delay that goes virtually unnoticed in the amateur application of PSK31.

There is yet another surprise in store with this system and that is in the way the letters and numbers of the message are converted into a binary code. In most



PSK31 Main Web Site.



Another useful PSK31 Web Site.

of the systems we know, the conversion process uses one of the well-established International Telegraph Alphabets or CCIRR recommendations. With all of these, each character of the message is converted to a constant length character.

Using RTTY as the example again, we have a basic five unit code plus start and stop bits to wrap-up each character. The rather more interesting approach used in PSK31 makes use of a variable length coding system known as Varicode.

This has many similarities with good old-fashioned Morse code as the code length varies depending on how often the character is encountered in standard text. Thinking back to Morse, you may recall that the letter 'E' is a single dot and the letter 'T' a single dash, whilst the less common characters use combinations of dots and dashes. The

Varicode system uses a similar approach and has been based on extensive research of modern text passages to determine the occurrence frequency of various characters.

The result is a very comprehensive code where a space is represented by a single 1 whilst 'Escape' requires a combination of ten 1s and 0s. To make sure the decoder can quickly find the start and end of characters, the code operates within a few simple rules.

Firstly, rather like the letter space in Morse code, two consecutive 0s separates all characters and no character can have more than one consecutive 0 bit. As a result, all characters begin and end with a 1 and are separated by two 0s. It's really dead easy and works a treat in practice.

Just to finish-off, you may like to take a look at this system in operation. This has been made really easy thanks to some excellent software development by prominent radio amateurs such as **Peter Martinez**. One of the best starting points is to visit the following site: <http://bipt106.bi.ehu.es/psk31.html> Here you will find lots of information including links to Peter Martinez's excellent PSK31SBW (version 1.07) program that allows full PSK31 transmit and receive using an ordinary Windows PC and sound card.

## Readers' Special Offers

If you'd like a copy of *Hamcomm/JVFX*, etc. I've arranged a very special offer with the Public Domain and Shareware Library (PDSL). They have put together a library set of all five disks for just £12.00, all inclusive. Using PDSL also makes ordering simpler as they accept all the usual credit cards so you can order by 'phone - you don't even have to write a letter.

Please direct all orders and enquiries about this disk set to **PDSL Winscombe House, Beacon Road, Crowborough, Sussex TN6 1UL, Tel: (01892) 663298** and request library volume: H008739abcde. IBM PC Software (1.44Mb disks):

Disk A - *JVFX 7.1, HAMCOMM 3.1* and *WXFAX 3.2*.

Disk B - DSP Starter plus Texas device selection software.

Disk C - *NuMorse 1.3*.

Disk D - *UltraPak 4.0*.

Disk E - *Mscan 1.3* and *2.0*.



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# Info in Orbit



**Fig. 1: OKEAN-4 (1-7) part of south-bound pass at 1920UTC 3 August.**

This month's column has a definite 'high resolution pictures' theme, and the reason is simple. With an increasing number of WXSAT (weather satellite) users sending me h.r.p.t. (high resolution picture telemetry) images, the time has probably arrived for increased coverage of this topic.

For beginners to WXSAT monitoring, I am including a basic description of the different forms of image involved. For those continuing their a.p.t. and WEFAX operations, don't worry, I am still there with you!

My own station comprises a standard low resolution NOAA a.p.t. (automatic picture telemetry) receiving system, a WEFAX unit (low resolution images from METEOSAT) and PDUS system (high resolution - Primary Data- images from METEOSAT).

## Current WXSATs

Just maybe soon I will hear a transmission from OKEAN-O, the new oceanographic satellite launched on 17 July. By early August I had logged three transmissions - from OKEAN-4 - see Fig. 1. This particular low elevation pass was the longest I have heard in many months, tracking south over Europe.

Meanwhile, METEOR 3-5 took a few weeks rest during a 'terminator passage' in July and August. RESURS-01-4 continues transmissions even during the late evening passes, producing blank images while in darkness. The NOAA WXSATs have continued nominal a.p.t. operations.

## HRPT - The Ultimate System

Before describing a typical h.r.p.t. system, it is essential to put things into perspective. Let me start by acknowledging the unique role played by America's NOAA - National Oceanographic and Atmospheric Administration - the organisation that takes responsibility for providing America - and the whole world - with the best, probably most efficient weather monitoring satellite constellation ever conceived. The National Environmental Satellite, Data and Information Service (NESDIS) is the NOAA department that operate the satellites.

The most recent NOAA WXSATs include NOAA-12, NOAA-14 and NOAA-15, and my sources ('Info' readers) advise me that NOAA-10 is still providing some imagery. The first three of these satellites provide a continuous stream of easily-decoded imagery - called a.p.t. - transmitted on either 137.50 or 137.62MHz (f.m./a.m.) that can be received on a suitably designed, fixed antenna.

It is natural that users all over the world should have set up home stations to receive this data. For a few hundred pounds, one can purchase a complete system to operate with a standard computer. This allows reception of a minimum of about six passes each day from each operational satellite. Other WXSATs transmitting a.p.t. are referred to in the 'current WXSATs' section.

Each NOAA satellite carries a telescope and radiation-detection imager - called the Advanced Very High Resolution Radiometer (AVHRR). This scanning radiometer uses six detectors, see Fig. 2, that collect different bands (wavelength spreads) of radiation. It produces a scan line of the earth below, as received in each of these spectral bands.

Bands are carefully chosen such that one or more responds to certain features: for example the band centred around 0.6 microns (micro-metres) resolves good land detail in summer. The band near 0.8 microns produces good detail in winter, and that near 11 microns (in the infra-red,) shows temperature

differentials that reveal rivers and cloud structure.

Such is the power of the imager that ground resolution below the satellite is 1.1km. At the limits of each line scan, resolution is reduced. To avoid image (panoramic) distortion, the lines are corrected before transmission.

Transmission frequencies? Here, we must be careful because there are two completely different types of transmission on different frequencies. The high resolution picture telemetry (having 1.1km resolution) is transmitted in the 1.7GHz (1700MHz) band; lower resolution automatic picture telemetry is transmitted in the 137MHz band. It is not possible to transmit high resolution images in the 137MHz band because there is too much data per second to be modulated at such a low carrier frequency.

High resolution data requires hardware and software an order of magnitude more complex to receive and decode. Despite this, costs are still within reach of the keen amateur (assuming in normal employment!).

## Hardware For HRPT

We can use a fixed dish for receiving high resolution data from METEOSAT-7, because the satellite is geostationary. Television broadcast satellites in the ASTRA series transmit video in the 12GHz band, but can be received on a fixed dish because they, too, are geostationary.

The NOAA polar orbiters transmit two image data streams - 137 and 1700MHz; reception of the latter (h.r.p.t.) requires a dish. Consequently, the dish must track the satellite. A number of people familiar with manual tracking confirm that this 'art' is easily accomplished, so the use of a computer for unaided tracking is optional.

Let me amaze you! Back in the early 1980s, prior to the launch of the IRAS satellite, Project staff were not sure exactly where the satellite would rise during the first pass over Chilton (Rutherford Appleton Lab in Oxfordshire), so we had to practise manually driving the huge dish, using a common joystick, to acquire other satellites. A number of staff in other departments, unaware of our trials, expressed concern over the sight of this huge dish apparently shaking uncontrollably at the sky! In fact, everything was perfectly safe. Ah, those were the days!

Commercial systems are available that automate this process of tracking while receiving live data. Coverage depends entirely

AVHRR/3 Channel Characteristics			
Channel Number	Resolution at Nadir	Wavelength (um)	Typical Use
1	1.09 km	0.58 - 0.68	Daytime cloud and surface mapping
2	1.09 km	0.725 - 1.00	Land-water boundaries
3A	1.09 km	1.58 - 1.64	Snow and ice detection
3B	1.09 km	3.55 - 3.93	Night cloud mapping, sea surface temperature
4	1.09 km	10.30 - 11.30	Night cloud mapping, sea surface temperature
5	1.09 km	11.50 - 12.50	Sea surface temperature

**Fig. 2: AVHRR bands, courtesy NOAA.**



**Fig. 3: Iceland NOAA-12, 31 March, channel 2 from Roger Ray.**



**Fig. 4: Denmark and Sweden NOAA-12 18 May 1990 HRPT Chan 2 from Roger Ray.**

on the free sky available for tracking line-of-site. The antenna may comprise a 1m (or smaller) dish controlled in azimuth and elevation by a positioner, computer driven to track the satellite across the sky.

The dish has a low-noise pre-amp fitted to the feed, with suitable cable taking the signal to the remote computer for processing. Correspondents to the journal of the Remote Imaging Group have reported success using short Yagis.

## Software

Unlike word processors (of which many will run satisfactorily on most platforms), you must use the software that comes with your system, unless you have built your own h.r.p.t. unit. NOAA publications provide a full description of the data stream format, so a skilled software developer can write a program to decode the telemetry. The sensors provide 10-bit data, and this can resolve 1024 intensity-levels.

## Pictures - A High-Res Bonanza

I am indebted to **Roger Ray** of Telford, who, in early July, sent me disks containing dozens of images, several of which I decided to use this month to illustrate the capabilities of h.r.p.t. Other contributions came from **Peter Schoen**.

**Figure 3** shows the island of Iceland as seen by the channel 2 sensors on *NOAA-12* in late March. This image shows the ice around Iceland's coastline, none of which have I seen on any a.p.t. image.

My atlas does not bear comparison with **Fig. 4**, an image of Denmark and region. Under clear skies, every lake, land feature and river can be seen to the limit of resolution.

**Figure 5** shows an almost 3-dimensional view of Mount Etna on the

island of Sicily that it seems almost touchable! Images at a.p.t. resolution frequently show clouds, or even smoke above the volcano, but here we can see the slopes. The numerous mountain ranges across Italy can be seen by virtue of their snow covered tops.

I must admit to being more familiar with the names of lunar mountain ranges than those of earth, so I was interested to see where the Apennines actually are! The series of 'dots' just off the north coast of Sicily turned out to be the Lipari Islands in the Tyrrhenian Sea, and not noise specks!

The WXSAT view of seasonal ice forming in the Gulf of



**Fig. 5: Italy NOAA-10 18 February from Roger Ray.**



Bothnia and then melting during summer, takes on a whole new meaning when you see high resolution images of the area. Huge ice flows usually form in the northern Gulf region first, and quickly spread into the southern region. This February image - see **Fig. 6** - shows virtually the whole northern region to be frozen over, and reveals individual cracks!

Channel 5 is centred around 12 microns, making it responsive

to sea surface temperature differentials. **Figure 7** shows the south-east coastline of Greenland in late March, clearly revealing icebergs, sheet ice and the ocean. **Figure 8** is the channel 2 image slightly further west of **Fig. 7**.

Corresponding pictures from a.p.t. transmissions usually show certain characteristic coastline features - see the dark feature near lower left - and the actual detail of these can be recognised in these



**Fig. 6: Ice in Bothnia, NOAA-14 19 February from Roger Ray.**

**Fig. 7: Greenland 29 March, NOAA-15 infra-red from Roger Ray.**



**Fig. 8: Greenland 27 March, NOAA-14 channel 2 from Roger Ray.**

## Web Watch - HRPT information:

<http://140.90.207.25:8080/EBB/ml/nic121.html>  
<http://140.90.207.25:8080/EBB/ml/genlsatl.html>  
<http://140.90.207.25:8080/EBB/ml/nic000.html>



**Fig. 9: Islands of Sardinia and Corsica NOAA-15, channel 2, 20 June from Peter Schoen.**



**Fig. 10: East coast Spain and Balearic Islands, 19 June, channel 3 from Peter Schoen.**

*Continued on page 61.*



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**Fig. 11: Spain, colour composite from Dartcom Ltd.**



**Fig. 12: Cyprus colour composite from Timestep Weather Satellite Systems.**

high resolution images.

**Peter Schoen** of Helmbrechts in Germany sent a series of h.r.p.t. images, from which I have selected **Fig. 9** and **Fig. 10**. Both are from hard copy originals that I hope will reproduce properly.

**Figure 11** is a NOAA-14 image colour composite using Bands 1, 2 and 4 applied to red, green and blue - showing Portugal, Spain and Gibraltar. This image has a map overlay of 5° grids, coast outlines and political boundaries, and was provided by Dartcom, based at Yelverton near Plymouth.

On a.p.t. images the island of Cyprus is represented by a dozen pixels. **Figure 12**, provided by Timestep of Newmarket, shows the somewhat more detailed version provided by h.r.p.t. systems, revealing the complete geography of the island, together with the north-eastern Mediterranean Sea. The phenomenal resolution of this image shows individual clouds, lakes and land features.

**Figure 13** and **14** show Britain in July. **Figure 13** shows hot, sunny weather over most of the country. From my collection of a.p.t. images, I found **Fig. 14**, which allows (an unfair) comparison between the two formats. Considering the ease and economy of a.p.t., there is an extremely good case for its widespread use - but h.r.p.t. is good, isn't it!

## Manufacturers Of HRPT

For information on specific systems, please contact suppliers directly.

The largest supplier of h.r.p.t. systems (according to NOAA)



**Fig. 13: Britain from NOAA-14 on 12 July from Roger Ray.**



**Fig. 14: Britain from NOAA-12 0611UTC a.p.t. on 27 July.**

is Timestep Weather Satellite Systems of Newmarket, Tel: (01440) 820040.

The German company **Orbit Electronic** also produce systems, Tel: (49)2371-95900.

## Shuttle Launch Schedule

STS-99 *Endeavour* is scheduled for launch on 16 September 1999 at 1447UTC into a 57° inclination orbit.

STS-103 *Discovery* is scheduled for launch on 14 October 1999 at 1042UTC into a 28.45° orbit for the third Hubble Space Telescope servicing mission.

**Peter Wade** of Ide Hill in Sevenoaks sent me several photographs taken during his visit to Kennedy Space Flight Centre, including **Fig. 15**, a rocket (or mock-up) that I confess to not recognising. Somewhere amongst my collection of space material I have a selection of pictures of rockets, but this one eludes me.

A comprehensive listing of all Shuttle flights and payloads, together with associated information is available from me, at the address at the head of the column, as the *Shuttle Pack*. Please

include £1.50 and stamped s.a.e. for the A4 booklet.



**Fig. 15: Rocket on display at KSFC from Peter Wade.**

## Kepler Elements - WXSATs, MIR & Shuttle

1) If you want a computer disk file containing recent elements for the WXSATs, AMSATs and others of general interest, together with a large file holding elements for thousands of satellites please enclose 50p with a PC-formatted disk and stamped envelope. A print-out is included that identifies NASA catalogue numbers for the WXSATs. The disk file is ideal for automatic updating of tracking software.

2) I also send monthly Kepler print-outs to many people. To join the list please send a 'subscription' of £1 (secured, plus four self-addressed, stamped envelopes) for four editions. Transmission frequencies are given for the operating satellites. This data originates from NASA.

## Frequencies

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

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

METEOR 3-5 uses 137.30MHz.

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

RESURS 01#4 may transmit a.p.t. on 137.85MHz.

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

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

MIR (Russian space station) uses 143.625MHz for voice.

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

# DX Television

The volume of Sporadic-E reception during July provided non-stop visual entertainment on many days, this being reflected by the bumper postbag this month. As for the logs, it would probably be easier to say what wasn't received! Central Europe has been well represented this season in addition to plenty of openings to the Ukraine, Belarus and the Baltic states. An opening to the Middle East lasted for over two hours during the late afternoon on July 12th. Towards the end of the month an intense tropospheric opening drenched the UK with Scandinavian TV and f.m. signals.

## Exotics

On July 4th at 0950, **Peter Barber** (Coventry) briefly resolved Jordan (JTV-1) on Channel E3. His reception was verified by an excellent drawing of the broken-ellipse logo which was superimposed in the top-left of the picture.

On the 12th, **Ian Milton** (Ryton) and **Peter Barclay** (Sunderland) became aware of a broadcast bearing the same logo at 1655. **Peter Chalkley** (Luton) encountered the signal between 1730 and 1755 but initially logged it as Slovenia (SLO-1 are sometimes using an oval logo in the top-right of the picture).

At 1830, an Arabic gent was heard on Channel E2 and by 1904 protests in Teheran were being televised. This

was followed by two Middle East female announcers with a logo perched in the top-right closely resembling the Egyptian one featured last month.



**Fig. 1: George Garden's mobile DXTV rig.**

## Elusive Stations

Tunisia and Morocco, both on Channel E4, have been missing from the logs this season. So have the Portuguese RTP-1 Channel E4 and RTP-2 Channel

E2 outlets but hopefully this has been through lack of vigilance and not the closure of the Valenca do Duro relay!

RTP-1 from Muro on Channel E2 has been elusive this year until **Richard Reynolds** (Guildford) spotted it briefly during one hectic opening. Slovakia (Bratislava R2) has also played hard-to-get. Richard noted this on the 7th at 0814. Its logo is a number '1' within a square box located in the top-left of the screen.

Moldova hasn't been so forthcoming this year, but **Stephen Michie** resolved the news

programme called 'Messenger' at 1722 on the 12th. The reception of the Swiss La Dôle outlet on Channel E4 (TSR-1) was claimed by **Peter Barclay** (Sunderland) on the 4th at 1245. This is our only report of this station so far. The station transmits in French and has on more than one occasion fooled DXers into thinking it could be a Lebanese exotic!

Talking of Swiss transmitters, Peter's log for the 4th includes an entry for the German-language service SF-1 on Channel E4. The highest power relay on this frequency is Habkern with 4W e.r.p. The transmitter is located in the mountains to the north of Interlaken.

The Hungarian MTV-1 outlet on Channel R1 at Nagykanizsa is still in use, according to the number of reports we have received. The RAI UNO Channel

IC transmitter at Torino is still on-air. **Ian Milton** (Ryton) saw it on the 4th while **Peter Barclay** identified it on the 14th.

## July DXTV Log

Our thanks to the following DXers who have sent in reports to the compilation log:- **Peter Barber**, **Peter Barclay**, **Ian Milton**, **Stephen Michie**, **Simon Hockenhull**, **Richard Reynolds**, **Vincent Richardson** (Dolgarrog, Gwynedd) and **Tom Crane** (Hawkwell, Essex).

Italy (RAI UNO IA and IB, Video E2 and TVA IA): received most days. Spain (TVE-1) E2, E3 and E4: received most days.

## Mystery Carrier

**Tim Bucknall's** possible Australasian catch on June 7th has prompted extra vigilance around 46.25MHz. At 0737 on July 9th, **Peter Chalkley** heard a weak carrier fading in and out of the noise on 46.25MHz. However, the only Australian station operating close to this frequency is the 1kW Tamworth relay on 46.256MHz. It is interesting to note that Norwegian Channel E2 signals were in at the time, following a similar pattern to Tim's reception. Are any of our Australian readers aware of F2 openings into Europe on these dates?

Day	Log
1	Slovenia (SLO-1) E3; Croatia (HRT) E4; Germany (ARD) E2.
2	Norway (NRK-1) E3; Denmark (DR-1) E3.
4	Italy (RAI UNO) IC; Portugal (RTP-1) E3; Ukraine (YT-1) R2; Ukraine (YT-2) R1 and R2; Estonia (ETV) R2; Slovenia E3; Hungary (RTL KLUB) R2; Rumania (TVR-2) R2; Corsica (Canal Plus) L2; France (Canal Plus) L3; Germany E2 and E3; Albania (RT-SH) IC; Switzerland (DRS SF-1) E2; Switzerland (TSR-1) E4; Russia (ORT) R3; Russia (RTR) R2; Belarus (BT-1) R2; Czech Republic (NOVA) R2; Lithuania (LRT) R2; Slovakia (STV-1) R2; Jordan (JTV-1) E3.
5	Corsica L2; Hungary (RTL KLUB) R2; Ukraine (YT-1) R2; Ukraine (YT-2) R1 and R2; Rumania (TVR-2) R2.
6	Ukraine (YT-2) R2; Hungary (MTV-1) R1; Hungary (RTL KLUB) R2; Lithuania R2; Belarus R1 and R2; Croatia E4; Slovenia (SLO-1) E3; Germany E2; Albania IC; Portugal (RTP-1) E3; Austria (ORF-1) E2a.
7	Sweden (SVT-1) E2 and E3; Norway E3.
8	Ukraine (YT-1) R2 and R3; Belarus R2.
9	Ukraine (YT-2) R1; Hungary (MTV-1) R1; Hungary (RTL KLUB) R2; Russia (NTV) R1; Norway E2 and E3; Finland (YLE-1) E3; Slovakia R2; Lithuania R2; Belarus R1 and R2; Estonia R2; Croatia E4; Slovenia E3; Germany E2; Portugal (RTP-1) E3; France L3; Switzerland E2; Austria (ORF-1) E2a.
10	Sweden E2, E3 and E4; Norway E3; Denmark E3 and E4; Russia (RTR) R3; Russia (ORT) R1; Czech Republic (NOVA) R1 and R2; Estonia R2; Finland E3 and E4; Latvia (TV-1) R3; Belarus R1, R2 and R3; Switzerland E2; Hungary (MTV-1) R1; Hungary (RTL KLUB) R2; Lithuania R2; Ukraine (YT-1) R2 and R3; Germany E2 and E4; Austria E2a; Croatia E4; Unidentified carrier on 48.25MHz.
11	Italy (RAI UNO) IC.
12	Corsica L2; Slovenia E3; Moldova (TVM) R2; Ukraine (YT-2) R2; Estonia R2; Sweden E2, E3 and E4; Hungary (RTL KLUB) R2; Rumania (TVR-1) R2; Germany E2; Jordan (JTV-1) E3; Unidentified Arabic signals E2.
13	Slovenia E3; Croatia E4; Czech Republic (NOVA) R2; Hungary (RTL KLUB) R2; Rumania (TVR-2) R2; Portugal E3; Ukraine (YT-2) R2; Austria E2a.
14	Croatia E4; Slovenia E3; Czech Republic (NOVA) R2; Hungary (MTV-1) R1; Hungary (RTL KLUB) R2; Austria E2a; Russia (RTR) R2; Switzerland (DRS SF-1) E4 (low-power relay?).
15	Rumania (TVR-2) R2.
16	Switzerland E2; Germany E2.
17	Switzerland E2; France L3; Germany E2; Portugal E3; Croatia E4; Hungary (RTL KLUB) R2; Czech Republic (NOVA) R2; Iceland (RUV) E4; Ukraine (YT-1) R2.
18	Sweden E2, E3 and E4; Norway E2 and E3; Ukraine (YT-2) R2; Hungary (RTL KLUB) R2; Switzerland E3; Rumania (TVR-1) R2; Germany E2 and E3; Corsica L2; France L3.
19	Slovenia E3; Croatia E4; Serbia (RTS-1) E3; Hungary (MTV-1) R1; Hungary (RTL KLUB) R2; Czech Republic (NOVA) R1; Austria E2a.
20	Norway E2 and E3; Sweden E2, E3 and E4; Portugal E3; Germany E2; Hungary (RTL KLUB) R2; Estonia R2; Slovenia E3; Ukraine (YT-2) R2.
21	Denmark E3.
23	Norway E3; Ukraine (YT-2) R2; Portugal E3; Belarus R2; Hungary (RTL KLUB) R2.
25	Slovenia E3.
26	Norway E3; Portugal E3; Sweden E2.
27	Norway E2 and E3; Portugal E3.
28	Rumania (TVR-2) R2.



**Fig. 2: Start of the commercials on ZDF (Germany) featuring the comical Mainzelmännchen.**

## Serbia Back On-Air

Peter Barclay reports a definite sighting of Serbia (RTS-1) on Channel E3 with a news bulletin between 1051 and 1108 on the 19th. This means the transmitter is back on-air with its old channel reinstated. Ian Milton mentions a weak PM5544 test card on E4 which had the identification 'RTS'. Although RTS is not listed on this channel, it was received in Derby some years ago.



**Fig. 3: Antics with a lawn-mower with one of the ZDF Mainzelmännchen.**

## FM Reception

High m.u.f.s have meant lots of activity on the f.m. band. On the 4th, **Simon Hockenull** logged Croatia (HRT HRI) on 88.9 and 91.3MHz plus Bayern-1 (Germany) on 88.7MHz during the same opening. Various Italian stations were identified between 1740 and 1830 on the 9th.

Sporadic-E reception has blocked out several local UK stations recently. On the 4th, BBC Radio Bristol was swamped by an Italian station according to Stephen Michie (Bristol). On the 17th, Richard Reynolds (Guildford) discovered a Spanish station had replaced his local Radio 2 on 88.1MHz.

**George Garden** (Edinburgh) took to the hills and logged a plethora of European signals, including a mystery one called 'Sky Radio' on 100.7MHz.

During an intense tropospheric lift towards the end of the month, Tim Bucknall (Congleton) received many Norwegian stations 'loud and clear' whilst travelling along the North Wales coast.

Finally, just to whet your appetite (and to make you try harder!), earlier this season Israeli and Lebanese f.m. stations were heard in the Netherlands.

## Keep On Writing!

Please send reception reports, news items, off-screen photographs, etc., by the 1st of the month to:- **Garry Smith, 17 Collingham Gardens, Derby DE22 4FS**. Pictures may be submitted on a PC disk if preferred.



**Fig. 4: The RTL Klub PM5534 test card.**



**Fig. 5: The RTL Klub clock caption from Hungary.**



**Fig. 6: This month's forage amongst the archives in the 'Down Memory Lane' spot: the logo used during the Seventies by Channel Television.**

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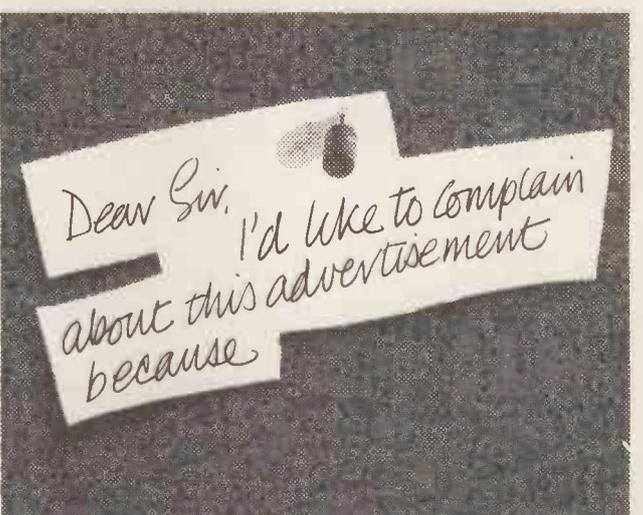
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# Propagation Forecasts

## 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.

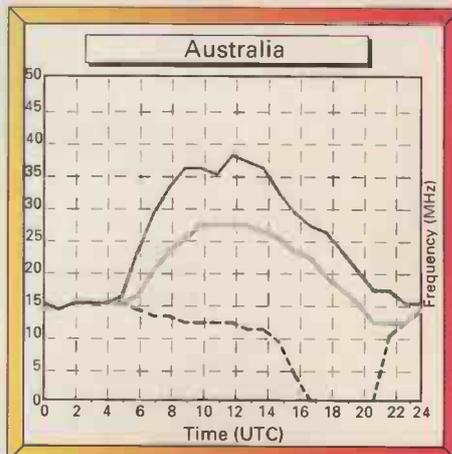
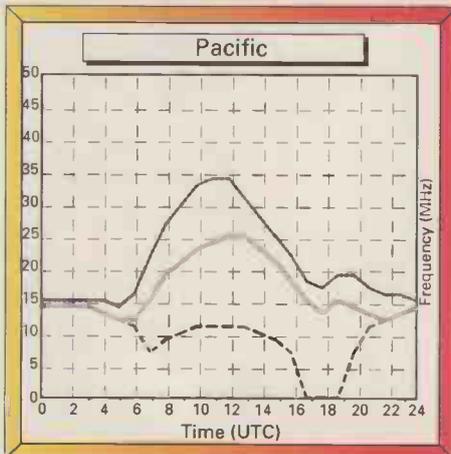
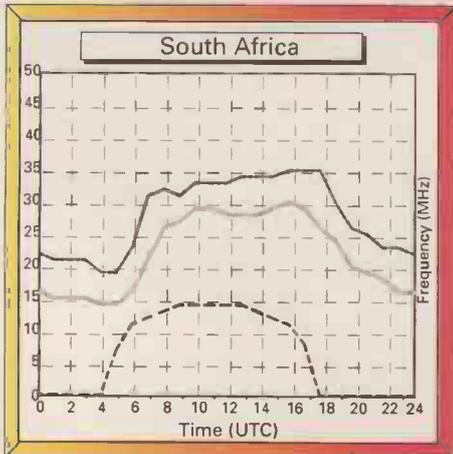
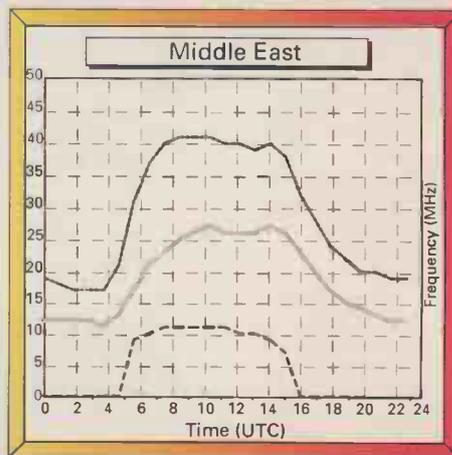
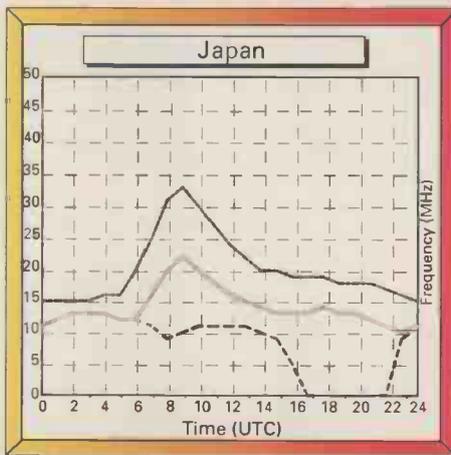
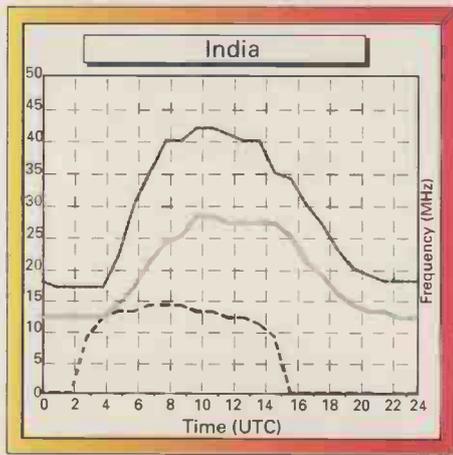
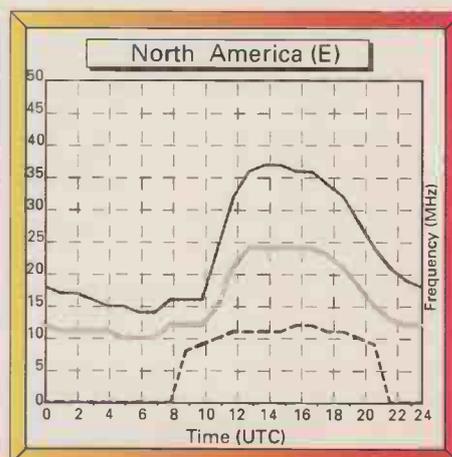
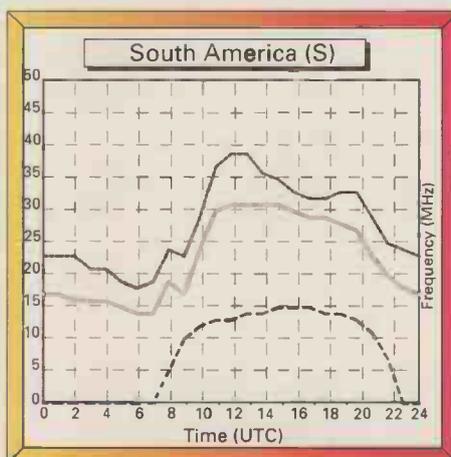
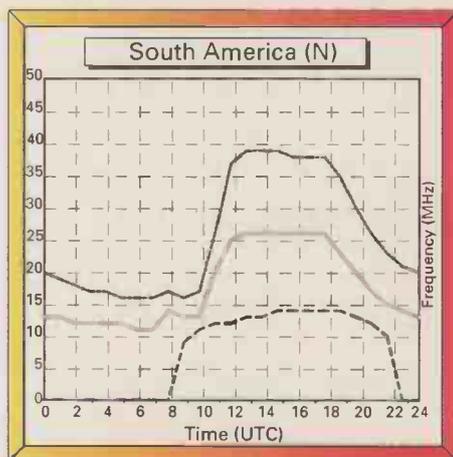
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

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.

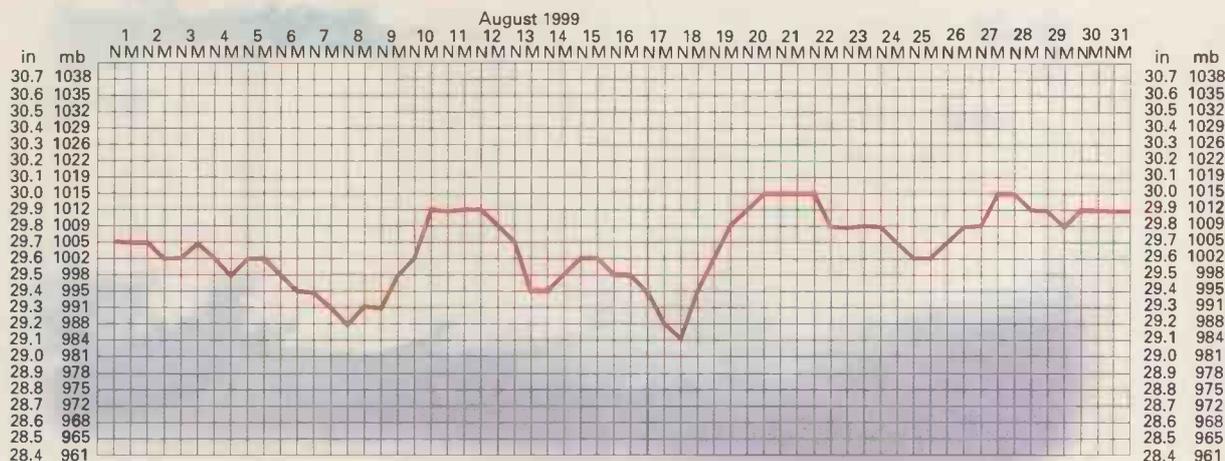
Good luck and happy listening.

October 1999  
Circuits to London

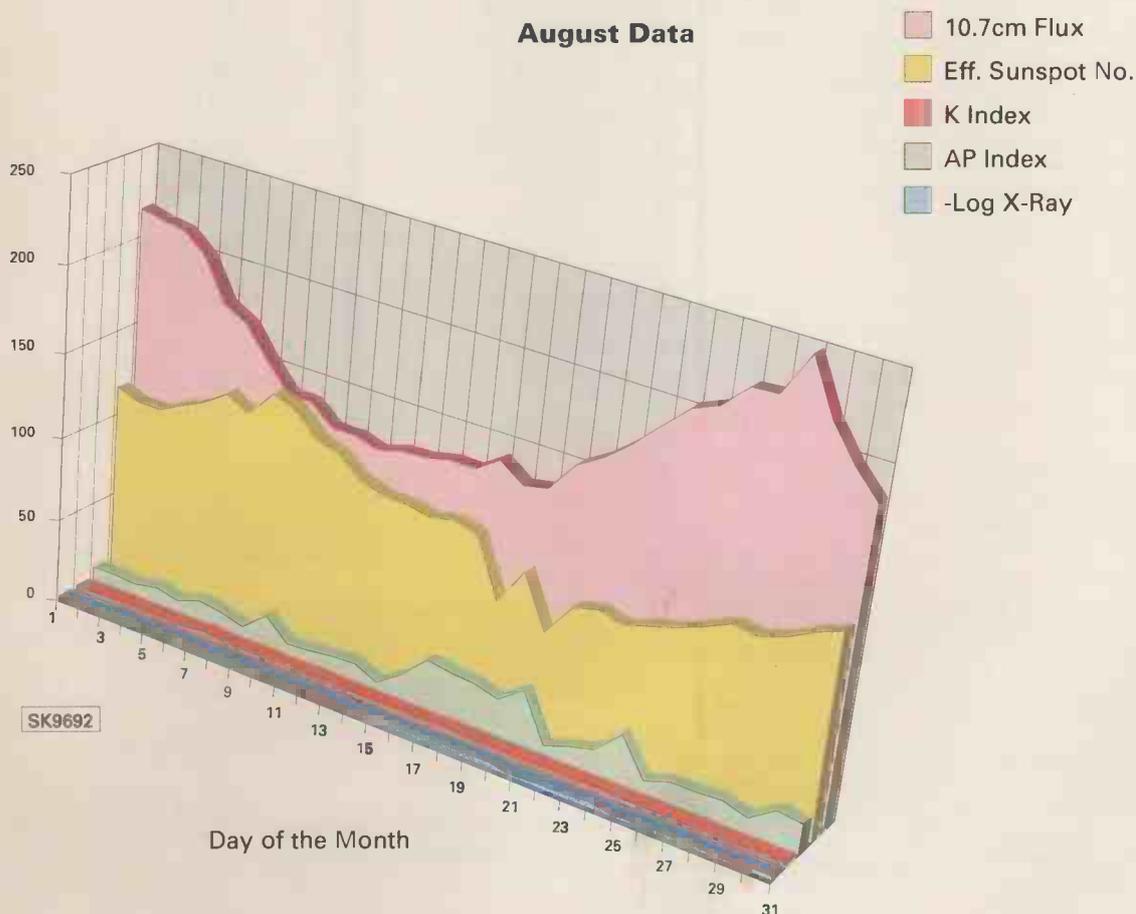


# Propagation Extra

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



## August 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.

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# SSB Utilities

## Kosovo

Ian Richardson E-mailed me to say that he saw the June edition of *SWM* which included my article on the Kosovo Crisis. He says that he read it several times - good, it served its purpose. However, he wants to know if I have any more information that I could publish about that series of events. Ian says that he presumes that due to the amount of mail you received, you may be in possession of further information that may be of interest. If only that was true, Ian!

That whole article was put together over the course of a single weekend. I was asked to write about the Kosovo Crisis on a Friday morning, so I had the luxury of the rest of the day to consider what subject areas needed to be covered. I had to submit the text to the Editorial office first thing on the Monday morning, so I had a very busy weekend.

I wish I could say that I had been flooded with letters containing information suitable for use in such an article, but that is not true. Once I had listed the areas that I wanted to cover, I spent several hours searching for information in books and newspapers, and then several more hours searching on the Internet. Almost all the information in that article came from publicly available sources, so all that I had to do was to massage it into the finished article, and then find the photographs.

Since the article appeared, I have not received any additional information about the Kosovo Crisis (well, none that is relevant to this hobby), so I have not even considered a follow-up article. There have been plenty of articles covering specific events but these do not really have much connection with short wave listening. It would be really nice to be able to present a large list of updated frequencies and callsigns for the Kosovo crisis, but there is very little to add to what was in the original article.

At this point I should mention that I am running very low on readers' questions, so if you have a burning question which could be answered in this column, now is the time to start writing.

## New RX

Chris Cotton from London writes to say that he is beginning to regain a healthy interest in h.f. communications after several years away from the hobby. Chris says that he used to use a Yaesu FRG-8800 receiver and a PK-232 decoder, but he lost interest several years ago and sold his equipment. I would expect that with that particular set-up Chris would have been busy decoding Packet and RTTY signals. I used to use a PK-232 many years ago for Packet when I was a licensed amateur, so I am quite well versed with their capabilities.

Chris says that he is now thinking of returning to the hobby, and is especially interested in aeronautical communications, SITOR in the marine bands and also RTTY stations. The last two are a bit outside my expertise, although I have managed a bit of RTTY reception using a simple *Hamcomm* interface.

However, I have done a lot of listening to aeronautical stations over the past ten years. Chris says that he is thinking of buying either an NRD-345 or

Icom R75E receiver, and wants to know whether it is worth spending so much money if there is much less activity on h.f. compared to a few years ago.

Well, it is true to say that a number of stations have disappeared in the past ten years, and others have been merged into world-wide operations. A large number of RTTY circuits have also been transferred to satellites or land-line circuits.

The aeronautical stations are still going strong, and in the past five years a lot of new information has appeared. This is not really new information, but information that was not generally known or had never been published.

There are now colossal lists of frequencies for ATC stations, LDOC stations, airports and so on. An unknown station does not stay unknown for very long. I would say that there is still plenty of stations to listen to in the aeronautical bands, and I am sure that Mike Richards would say similar regarding the data modes.

Regarding the choice of receivers - why such expensive choices when equally suitable receivers are available for less? Personally, I would never consider such a huge initial outlay in a new hobby until I was certain that I was going to maintain a long-term interest.

If you just need to listen, then a simple *Hamcomm* interface and software such as *Hamcomm* or *RadioRaft* will allow you to decode more modes than a PK-232 (and for certainly less money). One benefit of a receiver such as the NRD-545 is the DSP (Digital Signal Processing) software which can have a truly amazing effect upon noise and interference.

## WWW

David Stewart E-mailed me with a very good suggestion for this column. He asks that I list a few Internet web addresses each month, ideally those connected with whatever I have written about in the column that month. I have included a few this month, just to get the ball rolling.

I am only going to list one or two web-pages in each category each month, otherwise it could easily get out of hand. A simple web-search usually reveals dozens of web-pages relating to a particular subject, so the ones that I list are just a pointer to where you should start your own search.

If you come across any web-sites which you think that other listeners might enjoy seeing, please send details to me. I will include them in future issues.



## Letters

Malcolm King from Scotland wrote to ask an odd question. He wants to know if I was the Graham Tanner who installed some radio transmitter equipment for him a few years ago? Well, I can honestly say that I am not that person. I have only been to Scotland once, for the airshow at RAF Leuchars in 1996, but I keep promising myself that I will go back there someday. I'm not sure whether its the prospect of haggis or the deep-fried Mars-bars that makes me want to go back.

## Web Watch

### General Sites:

PW Publishing - [www.pwpublishing.ltd.uk/](http://www.pwpublishing.ltd.uk/)  
World Ute Network (WUN) - [www.gem.net/~berri/wun/](http://www.gem.net/~berri/wun/)  
Kosovo frequencies - [www.cybercomm.net/~slapshot/kosovo.html](http://www.cybercomm.net/~slapshot/kosovo.html) or [www.anarc.org/cidx/SF4Kosovo.html](http://www.anarc.org/cidx/SF4Kosovo.html)

### Decoders & Decoding Software:

Pervisell - [www.pervisell.com](http://www.pervisell.com)  
*Hamcomm* - available from the Pervisell web-page above

### RadioRaft -

[ourworld.compuserve.com/homepages/F6FLT/](http://ourworld.compuserve.com/homepages/F6FLT/)  
or [perso.wanadoo.fr/radioraft/](http://perso.wanadoo.fr/radioraft/)

### Receivers:

NRD-545 - [www.lowe.co.uk/nrd545.html](http://www.lowe.co.uk/nrd545.html)  
IC-R75E - [www.icomuk.co.uk/r75.htm](http://www.icomuk.co.uk/r75.htm)

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## Computer Interfaces

**RS-2700/8000**

Housed in DB-25 this interface is compatible with both the AR7200 and AR8000. Supplied with a Flat Flexible Cable for use with both these models. Now available for just £34.99.

**RS-8200**

Housed in DB-25 the RS-8200 allows computer control of the AR8200 and supports both software and hardware squelch detect. £39.99.

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# MilAir

## Silent Skies

Since the end of the conflict in Kosovo and the return of many of the participating aircraft, the skies over the UK have been relatively quiet. Many units, such as the 48th Fighter Wing at Lakenheath, have had up to three weeks down time to give their crews a good break after varying amounts of time deployed to the Balkans. As a consequence of all this R&R, it seems that the airwaves have been quiet and the contents of my mail bag have been rather sparse.

One E-mail I did receive was from a reader who complained that I had not included the Fairford frequencies he had sent me. On investigation, it did highlight one problem, in that some readers do not buy *Short Wave Magazine* each month and in this instance, I had included the information in the previous month's issue which my correspondent did not buy! The moral is contact the *SWM* Book Store and buy an annual subscription immediately.

## RIAT Fairford

I am sure that many will agree with me that this year's show at Fairford was the best since 1991, (in terms of aircraft participation). There were a number of excellent aircraft colour schemes, some interesting new visitors and some classic oldies such as the Starfighters and the French Crusaders. In the midst of all that good weather, it was a shame that the weather on the Wednesday and Thursday was rather cloudy.

Frequencies noted in use between Wednesday and Friday were as follows, (unfortunately I couldn't stay for the show): Fairford Tower 134.55, 337.575. Ground 119.15, 259.975. Approach 132.9 plus 119.0, 127.25, 376.625 Brize Norton. Operations 130.675. Aerobatic Teams: Freccie Tricolori 307.8, French Jaguar pair 300.025 plus 387.0 which was also reported, AAC Eagles 136.975. Next month, more Fairford frequencies and photographs, plus some of the more interesting aircraft callsigns.

## Emmantina

**Andy H** from Canvey Island asks if I can help him with some frequencies and other information for the Athens area. He is off to stay at the Hotel Emmantina for a week's holiday in mid October and hopes to take his radio. Firstly, I cannot recommend that you take your radio as the Greek authorities may not be as understanding as some other countries. From a personal point of view, I have been to the Emmantina four times, on each occasion I have taken my hand-held radio and using it with discretion on the hotel rooftop only, I have not had a problem. If you do decide to take your radio, use it in the hotel only, do not go wandering around the perimeter fence with it.

For those of you who do not know of the

Emmantina Hotel and its location, let me explain. The hotel is situated in Glyfada, a medium size town on the Athenian Riviera, about 16km from the centre of Athens. It is one kilometre from the town centre and 100m from the sea.

You may well ask what this has to do with 'MilAir' and the answer is simple. On the hotel roof is a bar and swimming pool, from this vantage point, (whilst sipping a cold beer in 80° temperatures), you can photograph landing aircraft on Runway 33L at Athens International. The aircraft really are that close, with a modest zoom lens such as a 70-210mm you can cover quite a range of aircraft - a Boeing 747 would only need around an 90mm lens.

If you have lens that provides a range up to 300 or 400mm, so much the better. (A 400mm is necessary for very small aircraft). I should also point out that the rooftop location affords

spectacular views of the mountains to the North and the Mediterranean to the South. (I sound like a travel agent!).

Back in the mid eighties when I first stayed there, the USAF and USN were based at Athens and upward of thirty military movements in a day was not unusual.

Obviously there is a high proportion of civil air traffic and whilst that is not my primary interest, some of it can be quite interesting, in particular the wide array of Russian built types.

Recent reports show that there can still be as many as fifteen military movements in a day, but also as few as three or four. Whilst they may be lacking in numbers, they can most certainly make up for it in quality. There are regular visits from the Greek Air Force base just up the coast at Elefsis, overshoots at Athens by Greek C-130s, YS-11s and sometimes P-3s are quite common.

If you are very lucky, (as I was), you can also see Greek Dakota's or T-33s making an approach, (if they are still flying). Also a wide range of exotic aircraft can transit through Athens and air-arms from North Africa the Middle East and the Far East are not uncommon. My last trip three years ago produced such gems as a Pakistan AF C-130 and a Moroccan CN-235.

The frequencies for Athens International are as follows: Tower 118.1, 122.1, 122.4, 336.4. Radar 121.4, Departures 118.3, Approach 119.1, 129.55, 299.5, Ground 121.7, ATIS 123.4, Athens Elefsis: Tower 120.15, Approach and Radar are provided by Athens International. The NATO Common frequencies are also used a lot by Greek airfields. Don't forget that a fair percentage of the RT will be in the Greek language, but most non Greek airlines and Air Forces will use English.



Photographs this month: Greek Air Force C-47 Dakota taken from the roof of the Emmantina, (sorry - I couldn't resist it), plus Dutch F-16A in a spectacular NATO anniversary colour scheme, arriving at RIAT 99.



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# Satellite TV News

July into August has been an eventful period for satellite zapping enthusiasts, though as with breaking news, it's the bad news that really hits the headlines. A few days after sending my last copy to press, news flashes came that the light aircraft flown by John Kennedy jr and accompanied by his wife and her sister was missing over the sea *en route* to Martha's Field.

Reuters carried extensive footage on July 17 via their Atlantic digital lease on *NSS-K* @ 21.5°W (11.566GHz-V, SR 5632; FEC 3/4). A press call that evening from the Pentagon updated news hacks gathered, another press call on July 18 @ 2100 - this time called by the US Coastguard - covered the search for the wreckage and occupants, but it wasn't until July 21 that the bodies were found.

Reuters carried the live coverage of Boston's WDDH-TV (NBC ch.47) of the bodies being brought to shore and driven away as seen from the WDDH-TV helicopter, fortunately the funeral (at sea) after cremation the following day had but discrete coverage.

Reuters often carry live local TV channel output as fillers on their *NSS-K* lease. Take for example the mass shooting at the LA Jewish Community School on August 10, the local NBC ch.4 station's output featured for much of the evening, live air pictures of SWAT teams surrounding buildings seeking the potential killer - all played out to the TV audience.

King Hassan II, the longest serving Arabic leader and king of Morocco died July 24 and the European media followed the funeral events the following day. *Eutelsat II-F3* @ 36°E carried analogue pictures via the Belgacom lease (11.170GHz-H), inserts precede with the 'E13-RABAT' ident on colour bars.

Numerous live/VTR reports were transmitted into Europe including ZDF, TVE and various French networks, France having much historical association with Morocco. *Eutelsat II-F4* @ 10°E was also active with carrying several analogue funeral reports.

There have been many sightings of analogue signals currently on the predominately digital 7°E *Eutelsat W3* bird. A Turkish channel 'STV' (Samanolu TV) has appeared at 11.682GHz-H on a test caption late July though early August the 'TEST YAYINA' caption had been dropped.

August 11 and the sun's eclipse was 100% in Cornwall (perhaps more due to cloud cover!) resulting in considerable media coverage both as news feeds/reports and full outside broadcast programmes. GMTV of course appeared with their 'UKI-149' unit 11.634GHz-H, *NSS-K* at Falmouth on the 10th from the 'MV May Queen' (the Falmouth-St. Mawes ferry) but upstaged somewhat the next morning with a CNN offering into their early morning TV show from the grounds of the Goonhilly Earth Station on the Lizard.

CNN used the SISLink UKI-253 truck linking via 36°E digital (11.684GHz-H, SR 5632; FEC 3/4) with a purposeful eclipse interview at 0800. Interesting to note that in a wide shot a small domestic sized dish with the SISLink truck was visible, this I assume to take a return downlink feed from Astra for cueing use.

Scotland has figured prominently in the sat-zappers diary this period. The *Edinburgh Music and Dance Festival* via *Telecom 2c* @ 3°E (12.604GHz-V) August 6 included a discussion of Scottish culture live from a busy street inserting into the evening magazine

programme via the 'BBC-UKI-234' analogue truck.

Meanwhile just up the band, also on 3°E, at 12.644GHz-V, another analogue offering with several VTR inserts running 525-lines NTSC, then into PAL colour bars. No positive identification and then the carrier cut, did anyone see this signal?

Over the sea to Skye' as runs the 'Skye Boat Song' (it's not BSKYB!) - July 22 and the BBC indeed travelled over the sea but to the Isle of Cumbria, apparently the island is on the market and the locals are very concerned as to a possible new owner from down South having little interest in their pastoral life style and fearing for change.

The BBC Scotland interviewer explored their problem for the evening magazine programme from the beach of their idealic island. The live insert, again via *Telecom 2c* on the UKI-234, favoured 12.604GHz-V analogue frequency.

Same truck, same 2c frequency, but a long hike up to Oban August 12 for an in-depth discussion on the problems of coastguard closures. The output for their evening show was recorded and played out ex Oban around 1800. It's a long trek back to their base and they were back on the road heading South and home nearly 30 minutes prior to their programme start!

*Telecom 2B/D* 5°W became very active at the end of July following the flash-flood and drowning tragedy of many tourists in the Saxet Ravine, Wilderswil. Several bodies floating in the Brienz Lake, Interlaken alerted the authorities who mounted a search operation, though unfortunately in vain, and nearly 30 tourists were lost. Extensive news footage was carried via the Swisscom SNG unit 'SUI-008' @ 12.596GHz-V for RTL with other capacity at 11.597GHz-V, both in analogue.

Dorking reader **Roy Carman** checking out the *NSS-K* bird @ 21.5°W early July came across a Reuters ex Moscow digital feed -11.567GHz-H (SR 5632; FEC 3/4) showing President Yeltsin at the airport affectionately welcoming President Assad of Syria. The affectionate embraces heralded the arrival of the Syrian delegation into the USSR with an equivalent \$US 2 billion to buy aircraft, arms, missiles, etc.

Sports enthusiast **Dean Rogers** (London) writes again with suggestions for sporting feeds worth checking out. He's seen *Intelsat 801* @ 31.5°W with Sky sports news 10.995GHz-V (SR 5632; FEC 3/4) and on several Saturday evenings, also on *801* several regional French football matches @ 10.987GHz, 11.005; 11.022GHz - all vertical plus the usual digital 5632+3/4 jingle. He's also found that Setanta Sports ex Dublin is available Sundays afternoons - as previously reported - on the very strong *Telecom 2c* @ 3°E and good news, his letter advises the Videocrypt scrambling has ceased, the clear analogue sports programme is at 12.606GHz-V.

Further to the West and golf ex 'Carnousti '99' was active via the *PAS-3R/6* slot @ 43°W running 12.699GHz-H analogue for Stateside consumption.



**The NASA web site for Shuttle launches, the July 20 Shuttle was postponed - unfortunate as this was the 30th anniversary of the first lunar walk (via *NSS-K* digital).**

**On Sirius @ 5°E is an unusual digital package which includes 'The Global Draw', the satellite shown zaps various numbers and creates a lottery type draw selection (11.453GHz, SR 17500; FEC 3/4).**



**The funeral of King Hassan II of Morocco produced numerous news feeds out of Rabat, this the uplink test pattern via *Eutelsat 2-F3* @ 36° analogue.**



**DX via *PAS3R/6* @ 43°W, a transmission out of Guadalajara, Mexico.**



Meanwhile the BBC were sending their analogue OB feed from Carnoustie via the familiar 2c @ 3°E - 12.604GHz-V, this July 15 early evening.

At the same time, the *Tour de France* cycle race was climaxing and the ESPN dedicated 2c feed, complete with American commentators were flush with enthusiasm in clear analogue @ 12.625GHz-H. For those seeking comfort from regional OB feeds, I strongly suggest tuning over the Ku-band output of *Kopernikus 2* @ 29.5°E since most evenings will produce an analogue feed of some sort, perhaps NDR, SWF or HR, etc.

As an example, NDR were running a steam boat extravaganza outside broadcast early evening of August 8 which ran for nearly an hour including rehearsals. This on 11.591GHz-V with audio @ 6.60MHz. Oddly, they cut carrier with just colour bars and no NDR identification.

Digital sat-zappers may well have seen service idents appearing as '9MHz,PAL,2 Audio' with 'Encoder Name not applicable' flash on received pictures rather than the usual examples 'SISLink 34, UKI-123' or 'BT Washington'. **Adam Simmonds** at SISLink, London, has helpfully advised the reason for the former ident. This type of caption appears when no service ident name is inputted to the NDS DSNG Codec system by the satellite truck engineer.

Apparently, if the engineer doesn't type in a specific ident then the NDS encoder will default to '9MHz, PAL, 2 Audio'. During the rapid push into Kosovo SNG trucks moved rapidly from site to site and the truck engineer wouldn't have the time to insert new service idents for perhaps a very short uplink report - hence the manufacturer's default ident would often appear.

Good to hear from **Edmund Spicer** (Littlehampton) again, he's been studying French at University but is now home for the holidays and using a budget, though effective, system based around a 600mm white flaking painted dish tied onto a brick built barbecue stand feeding into a Cambridge analogue receiver - the coaxial cable and rope cost more than the receiver/dish set up!

Edmund noted the 13°E *Hot Bird* 'Lario Earth Station' analogue test pattern (10.992GHz-V) and has seen several outside broadcasts, political speeches and news feeds via this downlink. He's also interested in TVDX and has received the TV-12 RSL-TV station ch.E54 from the Isle of Wight.

Regular contributor **Cyril Willis** (Kings Lynn) has unfortunately been in hospital recently for a serious operation, though he has now returned home for recovery, we all wish him a speedy return to his former active self. He is able to sat-zap however which maintains an activity and interest, cruising across the 13°E *Hot Bird* slot recently (early August) he found programming on several mornings from Kazakhstan-TV at 10.852GHz in clear analogue.

## Orbital News

Before the new copy of *Short Wave Magazine* hits your doormat we will have 'been through' another *Leonids* meteor shower. Though very active in 1998, the anticipated mega peak didn't happen and as I tap out these lines mid August, the major satellite owners are well aware of potential damage should the mid November *Leonids* prove dramatic. In their press release, Intelsat are maintaining an "active dialogue with owners, operators, satellite manufacturers and the academic community to determine the most appropriate actions to take for the 1999 *Leonids* event".

Intelsat have announced the planned allocations and launch windows for their new series IX spacecraft. Each series IX will carry 44 C-Band and 12 Ku-band transponders and are reckoned to have a working lifetime of at least 13 years. The total investment for the 5 series IX satellites + launch costs exceeds US\$1 billion.

901	slots at 60°E - Indian Ocean	Autumn 2000
902	slots at 62°E - Indian Ocean	Winter 2000
903	slots at 24.5°W - Atlantic Ocean	Spring 2001
904	slots at 34.5°W - Atlantic Ocean	Summer/Autumn 2001
905	slots at 27.5°W - Atlantic though possibly an Indian Ocean slot if an earlier launch fails.	

CANAL+ will launch their own news service on '1-Television' November 14, the Canal+ 15th birthday. Canal+ are in talks with Reuters and CNN over co-operative agreements for news sourcing. The '1-Television' service will transmit on the same

Canal Satellite digital bouquet as arch rival's TFI 'La Chaîne d'Information' (LCI). BBC World Service (radio) hope to transmit into the Americas within a digital platform from 2001 via the XM Satellite group.

Eutelsat have joined in a partnership with France Telecom to take over the FT's *Telecom 2* satellite @ 8°W which is reckoned to have a working life remaining at five years. By 2004 a newly launched Eutelsat craft will be slotted at (about) 8°W to supplement their Atlantic Gate activity just along the belt at 12.5°W.

Interesting to note that the *Orion-2* satellite *Ariane* launches late 1999 will move into a 12°W slot increasing commercial rivalry with the adjacent Eutelsat Atlantic Gate 12.5°W slot. *Orion-2* will cover the Americas, Africa, Europe and into the Middle East.

Mid Summer and the Iridium LEO (low earth orbiting) satellite fleet offering international 'phone connection to anywhere on the Earth's surface has run into financial problems due to a lack of subscribers. Jobs have been lost and the banks are pressing for action or money. As of May, Iridium had only 11000 rather than hoped 50000 subscribers. One move has been to drop the handset price from \$3000 to \$1000 and pagers from \$700 to \$350 though the \$/minute call costs have not been reduced.

Added to the downbeat news is that a new Globalstar LEO service opens late '99 and is distancing it's own operational methods from that of Iridium. You can get your Iridium handset in the UK from the Carphone Warehouse retailing around £2500 to order or over the counter at Harrods. (Hardly compares to the Asda mobile offers recently of £39.95 for 'Pay as you go'!).



**A live press call July 17 reference the missing John Kennedy jr from the Pentagon, note the ident flag screen bottom (NSS-K 21.5°W digital).**



**The recovery of bodies from the discovered crashed aircraft piloted by John Kennedy Jr, WHDH-Boston carried live footage of the recovery mission.**



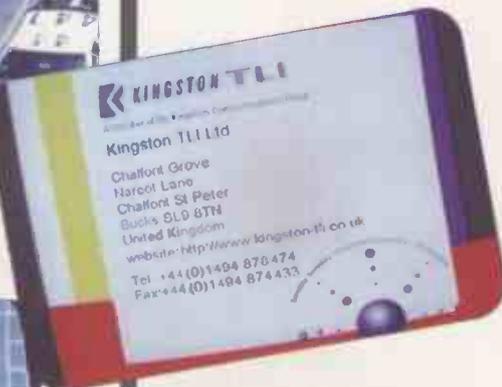
**August 11 and CNN featured an eclipse news item from Goonhilly in Cornwall via the SISLink truck UKI-253 on 2-F3, 36°E digital.**



**The shootings at the Jewish Community Center School, LA and live helicopter coverage as the SWAT team go into action, digital via the Reuters 21.5°W lease.**



**A sparkle PM5544 test card via Eutelsat WZ @ 16°E.**



**A UK teleport station identification seen on Sirius 5°E within the 11.453GHz digital package.**

# Attention-123!

## The Buzzer Stops Buzzing Again!

Station S28 (official callsign UZB-76), the "Buzzer", which operates 24 hours per day on 4.625MHz (see last April's column) has sent further live messages. Breaking from its usual buzz, it was noted sending code-words and numbers in Russian during the evening of 22 June.

Another 24 hour station which occasionally breaks for a message is S30, the "Pip" on 3.757MHz 1400-0530 and 5.448MHz 0530-1400. A short message of number groups in Russian was noted during the evening of 21 July. It just goes to prove that these seemingly unchanging stations are worth monitoring, but traffic is very rare.

## V8 - The Eastern Music Station (Family XII)

Before we discuss V8, it's worth mentioning that its sister station E9 ran an English language transmission each Monday - off-air at present. Both share two frequencies - 6.645 and 11.292MHz. V8 now transmits just once monthly, on 6.645, at 1800 (Summer) and 1900 (Winter), on the first (occasionally second) Saturday of the month.

Most things about this station are unreliable so it is worth checking at both times given. The operators seem to have endless problems, and seldom does a message run smoothly from start to finish. The carrier is often strong, but modulation (a.m.) low.

An unknown piece of Arabic-style music is played and the

## Oddities For Data Monitors

We are also interested in learning more about several other signals. Perhaps you can help - or know somebody who is able to? These include:-

- 1) An f.s.k. signal, which transmits on 5.3055 and 6.801 in parallel every hour on the hour for exactly 20 minutes. What is its purpose and location?
- 2) An f.s.k. signal on 4.710, 6.702 and 9.000MHz in parallel which operates 24 hours per day. (When not sending traffic, the carrier idles on space frequency). We can confirm that the 4.710 outlet is transmitted from "RAF" Barford St John, Oxfordshire, a US controlled site, carrying USAF and CIA traffic - originating at their London embassy. What is it sending, and to whom?
- 3) A mystery signal? We are not sure, but it's certainly been around some years. It displays a peculiar characteristic. Again 24 hours/day, it consists of 7.5s bursts of multi-channel f.s.k. sent on at least three frequencies in turn (others probably exist to complete a full one minute pattern of eight 7.5s blocks). This pattern, per clock minute is:

### Duration (s) Frequency (MHz)

15-22.5	6.351
22.5-30	5.437
37.5-45	6.351//1.609
45-52.5	5.437
52.5-60	3.295

Other parallels may exist  
What is its purpose, and where is it transmitted from?

- 4) A further oddity sends short fast data bursts on the hour for five minutes on 5.805MHz. Any ideas?

recorded number of groups are delivered as whole numbers, rather than the usual single digits, e.g. "Three hundred & twenty seven", as opposed to "three two seven". The music is usually repeated at the end of the broadcasts, which can last up to 40 minutes. (Extensive research has uncovered a Westernised version of this piece - produced in the 1960s by a Danish musician who called it "Sahara").

We have also noted audio from a broadcast station being sent at the end. This may suggest that a broadcast site or feeder are in use. It is even possible that clandestine transmitters are used. This station may also transmit on the first Friday of the month at 0820/0920 on 11.292MHz - but no recent reports. Algeria is a very likely candidate.

## CQ Echo Charlie!

How many of you remember this call from the 1960s and 70s? This was the usual call made by 45m band 'pirates' when seeking contacts - in those days nearly all were in a.m. using cheap home-brew of war surplus equipment, and often many nets could be heard across the band. A letter from a reader who wishes to remain anonymous perhaps throws some light on the fanatical obsession of the authorities with tracking down these operators.

"During the 1960s and early 70s I was on the committee of BARTG (British Amateur Radio Teleprinter Group) and attended regular meetings at the RSGB HQ in London, where I met Eric X (G3\*\*\*) (details given) who told me that the 6.6MHz operators were constantly monitored (by GCHQ) as it was at the time being used as an underground radio network. One of the ringleaders was Rudi Deutschke (the well known German activist) who was subsequently deported. Various explanations were given in the press at the time, but the real reason lay behind his involvement. It was inferred, but not confirmed, that a Numbers Station was involved".

This was almost certainly G1 (see this column December 1998 - "Yodelling for the Cause") which operated during the Radio Northsea International period every weekend on 6.665/6.425MHz. We would be very interested to hear from anyone with further information on these matters, anonymously or otherwise. More tape recordings from this period are also welcome. We can also provide much detailed information for serious researchers.

## Morse Lives!

We have received information from a British Naval officer confirming our suspicions that Morse is still being taught to Naval radio operators, in spite of official proclamations to the contrary. Morse is still regularly monitored at the main RN receiving station at Forest Moor, much of this being used by the Russian Navy.

Certainly in the area of Numbers Stations, Morse reigns supreme, being the ideal medium for the sending of clandestine traffic, both to and from agents in the field. Such agents who need to send messages by radio will normally use Morse in the form of "burst" transmissions - a whole message being compressed into a few seconds.

Even so, under certain circumstances, live hand-keyed messages still need to be sent, and operators are likely to be trained in Morse for very many years to come. Naturally, GCHQ (and probably even DTI at Baldock) need to maintain their quota of Morse monitors - GCHQ have admitted that electronic Morse readers are quite unsuited to reliably reproducing Morse (whether hand or auto) under typical h.f. conditions.

## Echoes From The Past

Numbers Stations have come and gone over the years, and no doubt ENIGMA has missed many of these - more importantly, so has historical research in general. That such an area should, for so long, go entirely unrecorded in the annals of radio history is inexcusable.

We are always seeking information on extinct operations, and urge readers to ask around - local radio amateurs and clubs, work colleagues, retired DWS/GCHQ/GPO personnel, etc. for interesting recollections. As voice stations were far more prevalent than today, and more conspicuous, we'd like to fill in the many gaps concerning a few of these in particular:-

- 1) G9, The Saxophone piece - a regular of the 1960s to 80s. I have no recordings of this station, but would instantly recognise the slow 'laid-back' sound of that saxophone (with accompaniment). Could any jazz enthusiasts suggest possible ways of identifying this piece from the 50s/60s?
- 2) G21, The Music & Morse station - Morse letter played over popular music introduction. Short lived?
- 3) G20, "Spruch" - short lived? Used various musical introductions from 'pop' to classical.
- 4) S3, Czech words - single common words repeated, 1970s rare.
- 5) G1, Tyrolean Music Station - cryptic phrases, 5-figure groups and Franz Lang yodelling. Early 70s.
- 6) V19, "WTR21" - Spanish language, US origin?
- 7) E24, "Allo! Allo!" as used by the master spy Abel.
- 8) G18, 8 Note Rising & Falling - German equivalent of M10.
- 9) S1, "Aida Grand March" - very frequent 1970s and 80s.
- 10) S10 with piano piece interval signature - recordings wanted of this very frequently heard format of the 70s and 80s.
- 11) S20, "Aifada" - short lived?
- 12) V10, Spanish "Stop Schlosst" - short lived?
- 13) V17, Romanian version of the USSR's Family lb?

Any recollections of Cold War activity would be very much appreciated, including those of still active stations or recently-deceased, such as OLX and Swedish Rhapsody, not to mention the plethora of Morse stations. **Free cassette recordings** of rare Numbers Station material (previously unavailable) will be sent to all who provide us with new archive material (in any form) - so please get digging!

It is unbelievable that, so far, for example, the writer of this piece, is the **only** person known to ENIGMA who ever made recordings of G1 for posterity (don't ask me why I never recorded G9!). Surely some of you out there have old tape recordings or logs hidden away in some dusty corner!

Lastly, many thanks to **Ross** (Belfast) and **Anon** for identifying "DPH" as the Morecambe Bay gas field NDB. **Mike** (Kent) sent us a log identifying. It was E6, an English language member of the Russian Family Ia - usually heard with a very strong broadcast-quality a.m. signal.



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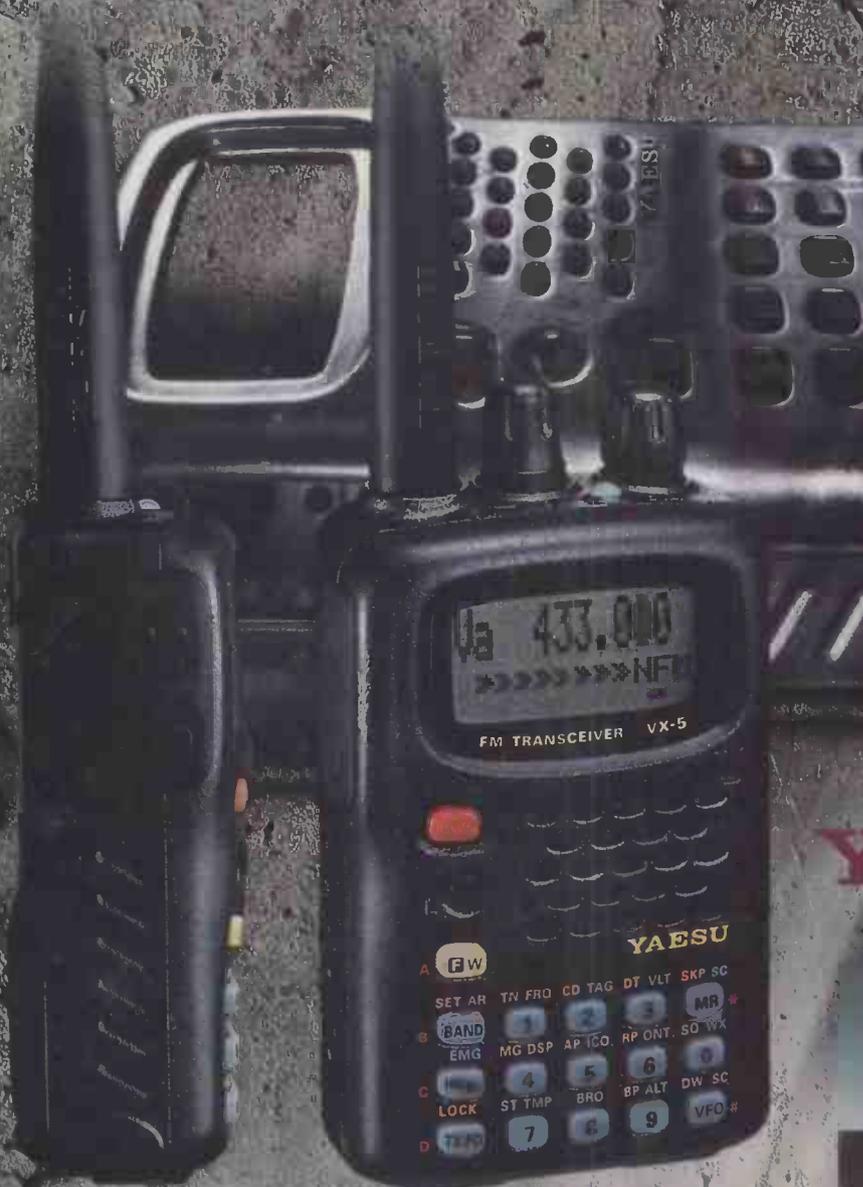
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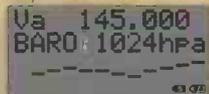
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