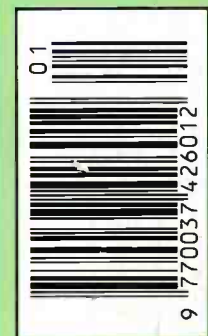


SHORT WAVE  
MAGAZINE

# shortwave magazine

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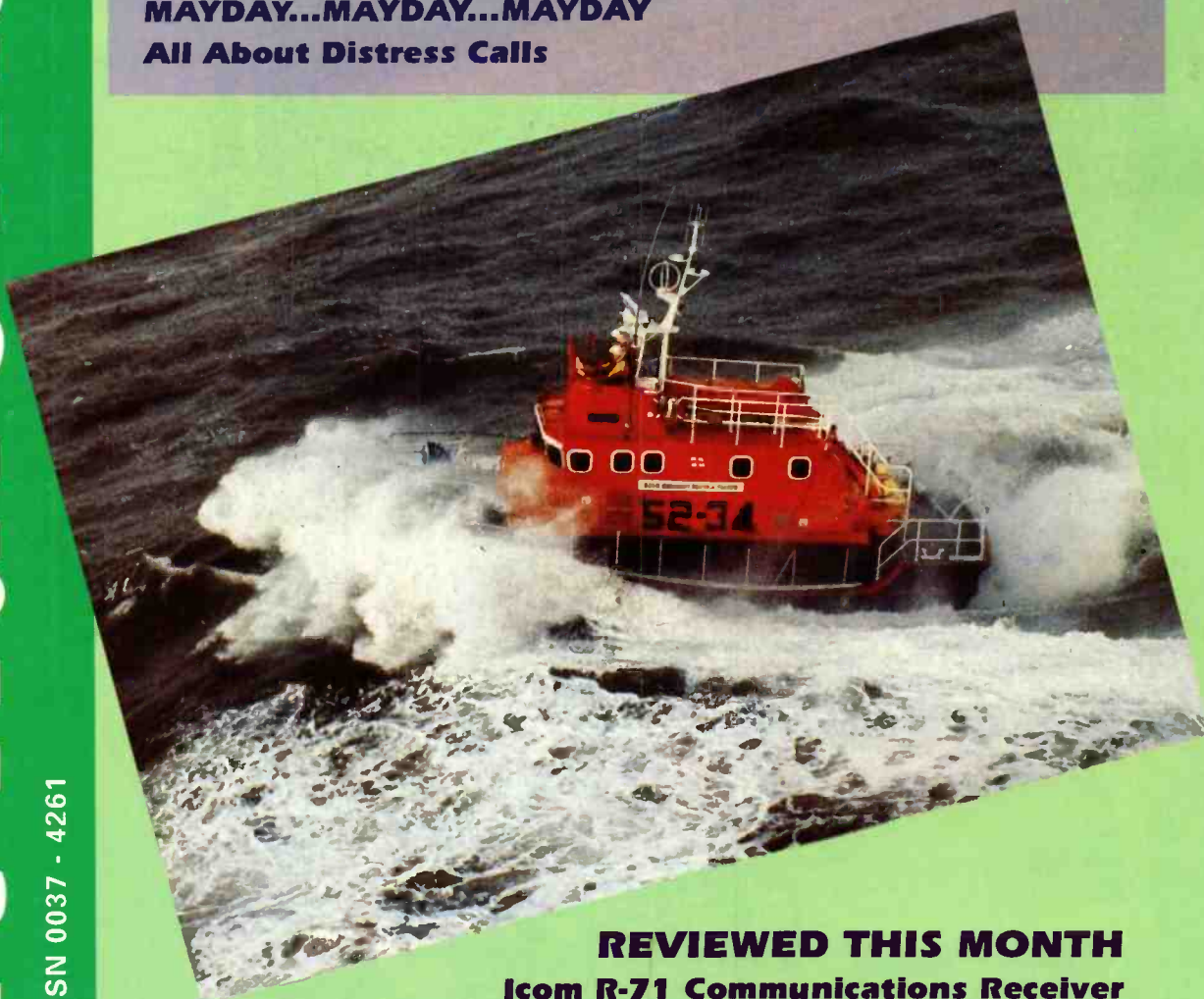


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## ...GOOD LISTENING

**Cover: RAF Nimrod aircraft patrol our shores.**

*Reproduced by permission of the Controller of Her Majesty's Stationery Office. Crown Copyright.*

**The RNLI operate a fleet of lifeboats around the British Isles. This is a Relief Fleet Arun Class boat in rough seas.**  
*Malory Maltby.*



# editorial

## SWM SERVICES

### Subscriptions

Subscriptions are available at £21 per annum to UK addresses £23 in Europe and £25 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 £34 (UK) £37 (Europe) and £39 (rest of world).

### Components for SWM Projects

In general all components used in constructing SWM projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article.

The printed circuit boards for SWM projects are available from the SWM PCB Service.

### Back Numbers and Binders

Limited stocks of most issues of SWM for the past five years are available at £1.80 each including P&P to addresses at home and overseas (by surface mail).

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

Orders for p.c.b.s, back numbers, binders and items from our Book Service should be sent to **PW Publishing Ltd., FREEPOST, Post Sales Department, Enefco House, The Quay, Poole, Dorset BH15 1PP**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in sterling.

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Poole (0202) 665524. An answering machine will accept your order out of office hours.

Elsewhere in this issue is a Stop Press note to the effect that 'SSB Utility Listening' columnist, Peter Rouse is seriously ill. This led me to thinking about the lot of our columnists in general.

To write a regular column in any magazine requires a dedication to the hobby not possessed by most readers. Privacy is invaded constantly by the fact that letters are not only encouraged, but a necessary fact of life if the column is to grow and not wither away. This means that the columnist's address needs to be published in the magazine so that the mail can get straight to the person concerned without needing the attentions of the hard-pressed editorial staff. The column can very soon take over one's life if not kept in check.

I know that many regular correspondents become friendly with the columnists, maintaining regular contact by various means. However, it can be very tempting for a reader needing some help or advice to try telephoning as a means of getting a more rapid response. It is also very easy to get carried away with enthusiasm, forget that it is now midnight, pick up the phone and wonder why the person at the other end is far

from helpful. In fact, it was this very problem that made me, along with the rest of the licensed editorial staff of *Practical Wireless*, seek 'Particulars withheld at licensee's request' status in the *Amateur Callbook*, which I still maintain. Please bear in mind the fact that our columnists have their own private lives to lead and also their own families to consider - if you must telephone then please do so at a reasonable time.

Sermon over - I am sure that we all wish Peter a speedy recovery. In the meantime arrangements have been made for his column to continue under temporary stewardship. Please continue to send your reports, etc. to Peter at his Guernsey address, they will all be forwarded on as necessary, but please, **no phone calls** under any circumstances.

### Changing Technology

If you are also a reader of our sister magazine *Practical Wireless*, you cannot have failed to notice the dramatic change in appearance with the January 92 issue. This has come about with a change of printing process allowing the paper to be

improved and colour to be used throughout. *Short Wave Magazine* has also changed printing process with this issue, although the changes are not so dramatic.

The changes have been brought about by the advances in technology, both in printing and typesetting. It is now five years since we first set off along the DTP path. Fortunately, we decided to use Macintosh computers - a decision that proved to be the right one. Now that we have achieved what we set out to do five years ago - produce the complete magazine to final film without going outside - we can take advantage of the most modern printing technology available. I hope that you will find the improvements to your liking.

### Dear Sir

Looking through the Oct 1991 edition, I notice you have an article about Radio New Zealand, Successful Reception Reporting.

I would like to know why there is no mention of either the frequencies or the time of broadcasting from this station or indeed from any station published in this article. I am pretty sure that there would be many readers of SWM who would like to know this. I myself, would be most interested to hear this station on my radio (just for a change).

**M. Allen  
Sheffield**

**Ed:** If you look at Long Medium & Short any month this will give lots of detail about Radio NZ including which frequencies are best being heard at any one time.

**Ed:** You could also try contacting Kelvin Hughes Ltd, Central Mail Order, Royal Crescent Road, Southampton, Hants SO9 1WB. Tel: (0703) 223772. I believe the book costs £53.00 including post & packing. Alternatively, you may like to try the ITU *List of Callsigns & Numerical Identities* that's £41 including post and packing.

# letters

### Dear Sir

With regards your October issue, page 43, and a Mr Garrick Hickman asking for help identifying ships from radio call letters. As an ex-marine radio officer (1943-1970) but still listening to marine frequencies, perhaps I can help.

I doubt *Lloyds List* would be of much use because it lists ships in alphabetical order by name, and although the vessel's letters are mentioned, trying to identify the vessel from the call letters would involve going through the publication from cover to cover! This publication is really of interest to ship owners, ship charterers and ship agents, giving info re the last known position, last port of call, net and gross tonnage, etc. In fact, even merchant ships had difficulty obtaining copies, and these had to be begged from co-operative head offices.

*The Admiralty List of Radio Signals* comprised several columns devoted to coast station communications, meteorological services, radio beacons, special services, etc. To my knowledge, neither the Admiralty, nor the equivalent publications by the US Navy and US Coast Guard ever included a list of vessels and call letters.

However, a mandatory requirement for vessels of all nationalities with radio stations aboard was to carry a further range of publications, *Coast Stations*, *Special Service Stations* and *List of Ship Stations*. The list of ship stations detailed vessels in alphabetical order both by name and callsign. These books were published by the ITU.

They were distributed yearly by the operating marine radio company - such as Marconi Marine. It is possible some of the nautical supply houses now sell these books. If Mr Hickman ever travels on any of the Channel or Irish Sea ferries - some at least seem to still carry radio officers, a visit to the ship's radio room may result in his ability to acquire a 'last year's edition' if it has not been 'dumped' overboard already!

**M S Lebbon  
Kirkbymoorside**





## Dear Sir

I should like to raise the question, does a s.w.l. require an a.t.u.? I think perhaps not, in many cases. By way of evidence to support my conclusions I offer the following.

An a.t.u. is intended to provide an impedance match between an antenna and, in this context, a receiver. Most s.w.l.s listen to a wide range of frequencies, often using a commercial receiver and a random length of wire between their house and a garden support, such as a tree. In this scenario, the impedance of the wire at the receiver terminal will vary with frequency due to resonance. Hence an a.t.u., costing perhaps £50 is required to match the wire to the receiver, or so the advertisers have us believe. It is not a coincidence that many receiver have a low and high antenna connection. The low impedance connection offering 50Ω and the high impedance connection an impedance between 300 and 600Ω

depending upon receiver make. The characteristic impedance of a random wire antenna is in the region of 300Ω to 600Ω, and may be forced to such an impedance by connecting it to earth via a resistor of equal value to the characteristic impedance.

The need for an expensive a.t.u. is then dispensed with as the antenna offers a constant impedance roughly equal to the receiver's input impedance. Any signal loss due is the slight mismatch is no worse than the signal loss cause by connecting an a.t.u.

I have included a diagram of my inverted V wire antenna, terminated in a 470Ω resistor to ground. This has been used with both an FRG-8800 and IC R72 with **no** improvement offered by the connection of an a.t.u.

I hope this letter may start s.w.l.s thinking about their antennas rather than just connecting a wire between QTHR and tree.

**Mathew Probert**  
**Basingstoke**

# letters

## Dear Sir

I've recently regained an interest in s.w.l.ing after a gap of 40 years. It was a casual glance at an issue of *SWM* on a bookshop shelf and seeing an article by George Dobbs on building the t.r.f. receiver. Since then I've constructed the set, also the a.t.u. (Oct 91). And then, this afternoon, on finishing both projects, switched on like Patrick Connor (*SWM* July '90) had the joy of receiving Radio Australia! Having read the few copies of *SWM* I have at the moment, it occurs to me we senior citizens need a section along with the junior section, which I enjoy reading. I would be interested to hear from anyone who has built the t.r.f. receiver to compare notes on construction and results, etc.

**E. Barrett**  
**11 Cherry Dale,**  
**Cleethorpes, South**  
**Humberside DN35 9PS.**

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

The Editor reserves the right to shorten any letters for publication but will try not to alter their sense.

Letters must be original

and not have been submitted to other

magazines. The views expressed in letters

published in this magazine are not necessarily those of *Short Wave Magazine*.

## Dear Sir

Having recently purchased a scanner from Nevada, I feel I should write and relate my experiences, as the books say many people return their scanners for they feel it's not working correctly. I did this a few times, in the end most of the problems were 'operator error'. I would like to praise all the staff at Nevada, who were so patient and helpful, and not only sorted out the scanner but also myself. So it does pay to read the booklet. Well done Nevada!

**G.F. Stewart**  
**Llanybther**

## Dear Sir

I write only to say how pleased I am with the service offered by one of your advertisers - SRP Trading.

I posted an order to them at 1630 on October 30 for a receiver. The order was delivered this morning (November 1) at 0900. Although the Post Office must take some credit, I really appreciate that SRP had taken cognisance of my request for early delivery.

I recommend them and certainly will not hesitate to deal with them again.

**John Cochrane**  
**Kilbarchan**

## Dear Sir

I would like to correct some of the misconceptions in Mr Berridge's letter, November *SWM*. I would point out that I have no connection with the BBC other than as a listener.

First, yes the medium wave band is being given to commercial stations. Not at the behest of the BBC, but of the government. The BBC fought tooth and nail to keep those frequencies. But they have to do what they are told. As to the channel width of a.m. transmitters. All broadcasting stations are maintained to a very high level of performance. If Mr Berridge has stations 15kHz wide on his receiver, I suggest he gets it checked, or buys a decent one.

Second, Atlantic 252, is a legal user of that frequency. They also most responsibly reduce transmitter power after dark, to minimise interference. Pirate stations on the short waves are illegal, enough said about them. The v.h.f. broadcast band, by the way, is not 85 to 108MHz as Mr Berridge suggests, but 87.5 to 108MHz. Audio processing is used to improve the perceived 'loudness' of f.m. transmissions, particularly in cars and on portable equipment. It has no effect on the audio bandwidth, which remains at 16kHz.

Third, I don't understand his comment over 'cross band beams from the same antenna'. Transmitting several programmes from the same site has long been an accepted practice. Again f.m. transmitters are carefully aligned and maintained. No site would be permitted to radiate a signal 4MHz wide, or have a transmitter capable of doing so. Again I think Mr Berridge must have receiver problems. Of the v.h.f. frequencies he mentions; 103MHz is in the ILR sub-band of 102-103.5MHz and has no BBC transmitters in it, 105 and 108MHz fall in an unallocated portion of the band, with no stations at all (105-18MHz).

Fourth, the BBC cannot just decide to take in advertising. Such a major change in policy would require a revision of the Royal Charter under which the BBC is set up. This could only be done by agreement with the government of the day and a lengthy parliamentary process. Yes, f.m. will be taking over some of the BBC networks, again not their choice, but one forced upon them, from above.

Finally, the closure of the Daventry s.w. facility. This has been widely publicised. This site was old, inefficient and costly to run. Transferring operations to the modern Wofferton site will save a considerable amount of money. In fact, World Service broadcasts are on the increase, not decline. Witness the new World Service TV operation and increased output to Eastern Europe. Hopefully, I have been able to correct some of the misinformation, in Mr Berridge's original letter, and that your readers are now fully and correctly informed.

**Mike Ganley**  
**Bristol**



# grassroots

## rallies

\* Short Wave Magazine & Practical Wireless in attendance \*

**January 26:** The 2nd Lancastrian Rally will be held at the University of Lancaster. Doors open 10.30am for the disabled and 11am for everyone else. Sue G10HH. Tel: (0524) 64239.

**February 16:** The Kidderminster & DARS rally will be held at the Harry Cheshire School, Habberley Road, Kidderminster, Worcs. Doors open 10am. G8JTL. Tel: (0384) 894019.

**February 23:** The Bideford Bay ARC will be holding their 5th Taw & Torridge Rally at the BAAC Halls, Bideford. Talk in on S22. John Denford G0GFK. Tel (0237) 476402.

**February 23:** The Northern Cross Radio Rally will be held at Rodilian School, Lofthouse, West Yorkshire. Doors open 11am (10.30am for the disabled). On site parking for 1000+ cars. Dealers, craft stands, Bring & Buy, Morse Tests, Bar and Refreshments. Entry 50p (programme draw prizes). Dave Gray G0FLX. Tel: (0532) 827883.

**March 7:** The TARS annual rally will be held as a new venue this year, the Temple Park Leisure Centre in South Shields. Jack G0DZG. Tel: 091-265 1718.

**April 5:** The Launceston 6th Amateur Radio Rally will be held at Launceston College. Doors open 10.30am. Maggie. Tel: (040921) 219.

**April 19:** The Centre of England Easter Sunday Radio & Electronics Rally will be held at the National Motorcycle Museum, Bickenhill, near the NEC junction 6 M42. Doors open 10.30am (10am for the disabled) and admission is £1 (concession for RAIBC members and senior citizens). Over 60 traders in three large halls, ample free parking, Bring & Buy, talk-in of S22, bar and restaurant facilities. Frank Martin G4UMF. Tel: (0952) 598173.

**April 26:** Bury Radio Society will be holding Hamfeast '92 at the Castle Leisure Centre, Bolton Street, Bury. L.H. Jones, Mosses Community Centre, Cecil Street, Bury.

**\*June 14:** The Royal Naval ARS will be holding their annual rally at HMS Mercury, near Petersfield, Hants. Gates open from 10am to 5pm. Cliff Harper G4UJR. Tel: (0703) 557469.

**September 20:** The East of England Radio Rally (Peterborough R & ES) will be held in the ICI Building, The East of England Showground, Peterborough. Mike Bowthorpe G0CVZ. Tel: (0733) 222588.

**November 28:** The Greater London Amateur Radio & Computer Show will be held at Harrow Leisure Centre, Christchurch Avenue, Harrow, Middlesex. Doors open from 10.30am to 4.30pm. CLPK. 18 Litchfield Close, Clacton-on-Sea, Essex CO15 3SZ.

**Barnsley & DARC:** Mondays, 7.15pm. Darton Hotel, Station Road, Darton, Barnsley. Jan 6 - Shack Night, 27th - Night on the Air. Ernie G4LUE. (0226) 716339.

**Bromley & DARS:** 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. Jan 21 - AGM. Geoffrey Milne. 081-462 2689.

**Chelmsford ARS:** 1st Tuesdays, 7.30pm. Marconi College, Arbour Lane, Chelmsford. Roy Martyr. Chelmsford 353221 ext 3815.

**Cheshunt & DARC:** Wednesdays, 8pm. Church Room, Church Lane, Wormley, Nr Cheshunt. Dec 25 - No Meeting! Roger Frisby. (0992) 464795.

**Derby & DARS:** Wednesdays, 7.30pm. 119 Green Lane, Derby. Dec 25 - No Meeting, Jan 1 - No Meeting, 8th - The Work of the RSGB by John Allen G3DOT, 15th - The Work of the Amateur Radio Observation Service by Geoff Griffiths, 22nd - Modular Kits for the Constructor with Jandek. Richard Buckby. Ambergate 852475.

**Edgware & DRS:** Watling Community Centre, 145 Orange Hill Road, Burnt Oak. Jan 9 - AGM, 23rd - Club Archives. Hank Kay G0FAB. (081-205 1023).

**Horndean & DARC:** 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. Jan 2 - British North Greenland Expedition 1952-1954 by G3AAT. S.W. Swain. (0705) 472846).

**Keighley ARS:** Thursdays, 8pm. The Cricket Club, Ingrow, Nr Keighley. Jan 2, 9 & 23 - Natter Night, 16th - 'ELF' talk by G3OTE. Kathy Bradford. (0274) 496222.

**Mid-Wales ARC:** Llandrindod Wells. Len Rees. (0597) 823823.

**Mid-Warwickshire ARS:** 2nd & 4th Tuesdays, 8pm. St John Ambulance HQ, 61 Emscote Road, Warwick. Dec 24 - Net on 145.350MHz at 8pm, Jan 14 - HF Night on the Air, 28th - Amiga Graphics. Mike Newell. Kenilworth 513073.

**Nelson & DARS:** Wednesdays. Llancaich Junior School, Nelson, Mid Glam. Leighton Smart. (0443) 411736 evenings.

**Norfolk ARC:** Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. Dec 25 - No Meeting. Jack Simpson G3NJQ. (0603) 747992.

**North Ferriby United ARS:** Sundays, 8pm. North Ferriby United Football Club Social Room, Church Road, North Ferriby. Dec 27 - Night on the Air. F.W. Lee. (0482) 650410.

**Poole RAS:** 2nd & last Fridays, 7.30pm. Lady Russell Coates House, rear of Jelico Theatre, Poole College of Further Education, Constitution Hill Road, Poole, Dorset. Jan 10 - Making Printed Circuit Boards by G3YWG, 17th - Annual Dinner. V. Cotton. (020) 760231.

**Preston ARS:** Alternate Thursdays. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood. Dec 26 - Xmas Recess, Jan 9 - Lancashire's Colour and Charm by Mr Shaw, 23rd - AGM. Eric Eastwood G1WCQ. (0772) 686708.

**Shefford & DARS:** Thursdays, 8pm. The Church Hall, Amptill Road, Shefford, Beds. Jan 9 - Welcome Back, 16th - AGM. Nigel G1JKF. (0908) 274473.

**South Bristol ARC:** Wednesdays. Whitchurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitchurch. Dec 25 - No Meeting, Jan 3 - Photographic Equipment Evening, 10th - Computer Programming for Amateur Radio, 17th - Bristol Rally Planning Evening, 24th - Soldering Iron Evening. Len Baker. Whitchurch 832222.

**Stevenage & District ARS:** Tuesdays, 7.30pm. Ground Floor Rear Suite, Sitec Building, Ridgemonk Park, Stevenage. Dec 31 - Practical Computer Assembly and Modification, Jan 8-144MHz d.f. Antenna by G7KPV, 15th - Practical Packet Operating, 22nd - DTMF and CTCSS by G0DVO. Peter Daly G0GTE. Tel: (0438) 724991.

### Club Secretaries:

Send all details of your club's up-and-coming events to;  
'Grassroots',  
Lorna Mower  
Short Wave Magazine,  
Enefco House,  
The Quay, Poole,  
Dorset BH15 1PP

**Stourbridge & DARS:** 1st & 3rd Mondays. Robin Wood's Community Centre, Scotts Road, Stourbridge. Jan 6 - On Air/ Discussion Evening, 20th - How Not to DX! with G3UBX. Dennis Body G0HTJ. QTHR.

**Stratford upon Avon & DARS:** 7.30pm. The Home Guard Club, Main Road, Tiddington, Stratford-upon-Avon. Dec 25 - Xmas Morning Greetings at 11am on 145.275MHz, 13th - Projects Evening, 27th - New Year Social.

**Torbay ARS:** Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. Jan 24 - Construction Cup Judging. Walt G3HTX. (0803) 526762.

**West of Scotland ARS:** Fridays, 8pm. Scout Shop, 21 Elmbank Street, Glasgow. January 17 - The Voluntary Interceptor Service by GM3EDZ, 31st - The CAA Air Traffic Control Service by GM4SUC. Jack Hood. (0698) 350926.

**Wimbledon & DARS:** 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. Dec 27 - No Meeting. Chris Frost. 081-397 0427.

**Wirral ARS:** 1st & 3rd Wednesdays, 7.45pm. Ivy Farm, Arrowe Park Road, Birkenhead, Wirral. Dec 25 0 Christmas Day Net.

**York ARS:** Fridays, 7.30pm. York City Social Club, Bootham Crescent, York. Jan 10 - AGM. K.R. Cass G3WVO. 4 Heworth Village, York.



# junior listener

As I've just received some very interesting booklets on the **World Service**, I thought I'd give you all an insight into the work they do.

The World Service started back in December 1932 and was marked by King George V's historic Christmas Day message. In those days, Britain still had an empire and the broadcasts were known as the BBC Empire Service. The advent of foreign language broadcasts came with the Italian invasion of Ethiopia in 1937. By the end of WWII in 1945, the service was broadcasting to the world in forty-five languages. During these early years there was a lot of pressure from the Foreign Office to take over control of the programme material. Thanks to the resolve of Lord Reith, the Director General of the BBC, the station managed to retain its independence.

The station name has gone through several changes from the original Empire Service to Overseas Service in 1938 then External Service in 1952 and finally the World Service in 1988.

Now you may be wondering just how these services are broadcast around the world. Well, I can tell you that they have access to nineteen transmitter sites that have a combined power output of 24615000 watts or 24.6MW - now that's what I call power!

As well as radical changes in the way they process news, there have been many technical advances over the years. One of the most important is the development of sophisticated antenna systems. There are two main advantages from these. The first is a much higher radiated power and hence stronger signals. The second is that the transmitter sites take-up much less space. A classic example of this is their old Far East station in Malasia. The original station needed a three hundred acre site to accommodate the antennas for ten short wave transmitters. However, by using four band antennas the new site in Singapore manages to fit nine transmitters in a 30 acre site. This scale of space reduction helps to reduce the operating costs so the money can be spent on expanding the services on offer.

One thing that many people don't realise is that the World Service is funded by Parliament, not the licence fee. The grant for this year being some 159.6 million.

As I mentioned earlier, the editorial control of the transmitted programmes is the responsibility of the BBC however, the Foreign Office has the final say on the languages used and broadcast times. The station also boasts a regular listenership of some hundred and

twenty million and that doesn't include China!

One of the important aspects of the World Services operation is the monitoring service based at Caversham Park. Rather than try and cover the whole world on its own, they have an agreement with the American Foreign Broadcast Information Service (FBIS). All the information received by both these organisations is pooled and openly published. In addition to a comprehensive h.f. antenna farm they now use three eleven metre steerable dishes to monitor satellite t.v. and audio channels. Where there are problems with reception, they make agreements with local governments to install mobile receivers. This was particularly well used during the Gulf War where they were able to monitor clandestine transmissions that were too weak to be received in the UK.

You've probably already gathered that the World Service certainly doesn't stand still. Probably the most recent major expansion has been the new World Service Television. This news and information channel for Asia is carried on HutchVision's STAR TV. This gives twenty-four hour coverage to 2.7 billion people in thirty-eight Asian countries.

On the radio front, the latest development is a new agreement with Cathay Pacific Airways. This project will see every one of Cathay Pacific's fleet of Boeing 747s fitted with equipment to give inflight coverage of the World Service. The choice of Cathay Pacific for this service is not surprising as they have just won the award for Best Overall Inflight Entertainment.

If you would like a copy of the booklet (£3.50 + packing) or other information on the World Service the address is: BBC, Bush House, PO Box 76, Strand, London WC2B 4PH. The phone number is 071-240 3456.

## Antenna Tuning Unit - Update

I gave this subject a brief airing back in October and promised more information later - so here we go.

Looking through the mailbag I get quite a mix of reports about the usefulness or otherwise of receive a.t.u.s. So why is there so much variation? To find out we need to examine just what the a.t.u. is designed to achieve. The main function is to match the antenna to the receiver to ensure that all the signal gets to the receiver. So why do we need to do this? It's down to some basic electrical theory that states that, for maximum transfer of

power, the source (antenna) and load (receiver) have to be the same impedance. If you look at the specification for most short wave receivers you'll find the external antenna socket has an impedance of 50Ω. So if we are to transfer all the signal from the antenna to the receiver, the antenna must also be 50Ω. However, if we look at the popular long wire antenna the impedance varies widely over its operating range. The extent of the variation depends on many things, i.e. length, height, surrounding objects, etc. This is the point where the a.t.u. can help to match an antenna with a widely varying impedance to a receiver with a fixed impedance. The a.t.u. is really a form of tuned matching transformer. This explains why the settings need to be adjusted each time the frequency is changed.

Now some will say that an a.t.u. gives no improvement, so we need to understand why this is. The simplest and most common explanation is that the receiver does not have a true 50Ω impedance. Many receivers have a relatively high antenna impedance, so using an a.t.u. to match to 50Ω will give no improvement. All is not lost though because the a.t.u. has a very



Jon Jones  
PO Box 59  
Fishponds  
Bristol BS16 4LH

important secondary role. Because it uses at least one tuned circuit, an a.t.u. provides some useful filtering of the incoming signal. This filtering helps to reduce the level of unwanted signals from other frequencies. If you live anywhere near a commercial transmitter site the benefits can be considerable.

So there we are, I hope that helps to clarify the role of the a.t.u. to the short wave listener. If you would like to have a go at building your own a.t.u., I've received reports that the kits from Howes and Maplin Electronics are well worth considering.



## NATION to NATION

When you need to know  
what's going on in the world.

WORLD SERVICE





## New VCR

Although not directly a part of the s.w.l. hobby, many readers are also interested in new VCR releases. Panasonic have just launched the NV-F55, which includes, NTSC playback and NYSC-NTSC dubbing (4.43MHz), long play, new digital programme controller, auto head cleaning, twin SCART and a variety of automatic playback functions for simple VTR operation.

It incorporates a NICAM decoder and has the Super 4-Video-Head system installed. Variable Double Super-Fine Slow Motion permits users to enjoy noise-free, ultra clear, smooth slow motion. The long play function enables users to obtain 8-hours recording and playback.

The NV-F55 is available from Panasonic dealers nationwide and should cost around £459.95.

## Meteor Showers

For those readers who fancy 'having a go' at using meteor showers to add a different dimension to their hobby, we thought we'd include the 1992 dates - kindly supplied by George Spalding of the British Astronomical Association via Roger Bunney.

| Shower Name    | Overall Duration       | Peak Activity       |
|----------------|------------------------|---------------------|
| Quadrantids    | January 1-6            | January 4 at 1000   |
| Virginids      | April 7-18             | April 12            |
| Lyrids         | April 19-25            | April 21 at 2100    |
| May Aquarids   | April 24-May 20        | May 5               |
| Delta Aquarids | July 15-August 20      | July 29, August 6   |
| Capricornids   | July 15-August 25      | July 31             |
| Perseids       | July 23 - August 20    | August 12 at 0900   |
| Orionids       | October 16-27          | October 22          |
| Taurids        | October 20-November 30 | November 3          |
| Leonids        | November 15-20         | November 17 at 1000 |
| Geminids       | December 7-16          | December 13 at 1600 |
| Ursids         | December 17-25         | December 23         |

## ISWL Award Certificates

The following ten ISWL Awards are available to all short wave listeners and licensed amateurs. These Awards are issued free to members of the League, UK non-members pay £2, overseas non-members pay £2 sterling or US\$5 or 10 IRCs.

Mixed amateur and broadcast verifications are not accepted for these awards. Special claim forms are available for the Awards marked \*. A claim form costs return postage in the UK and 1 IRC for overseas (2 IRCS for 2 or more claim forms). The completed claim form and (when required) appropriate QSL cards should be witnessed by two licensed amateurs or an official of a

radio club.

**Century Club:** For verified contact/reception of 100 countries as defined on the ISWL Country List, with stickers for each additional 25 countries up to a maximum of 350.

**Commonwealth Award\*:** For verified contact/reception of 50 different countries within the British Commonwealth of Nations. Broadcast listeners

require 30 countries only.

**Continental Award:** For verified contact/reception of 10 stations in each of the six continents, 60 QSL cards in total.

**European Award\*:** For verified contact/reception of 50 different countries within the continent of Europe. Broadcast band listeners require 35 countries only.

**Monitor Award:** For verified contact of 25 licensed ISWL members since 1 January 1987, with stickers for each additional 25 members up to a maximum of 200. Short wave listeners need confirmation from 15 licensed ISWL members, with stickers for each additional 15 members up to a maximum of 120. Licensed members may also count cards from ISWL

| Europe  | Africa | Asia | N.America | S.America | Oceania |   |
|---------|--------|------|-----------|-----------|---------|---|
| Class 1 | 35     | 40   | 35        | 12        | 10      | 8 |
| Class 2 | 30     | 30   | 27        | 10        | 7       | 6 |
| Class 3 | 25     | 22   | 18        | 7         | 5       | 3 |
| Class 4 | 17     | 15   | 10        | 4         | 3       | 1 |

Total countries verified for Class 1 = 140, Class 2 = 110, Class 3 = 80 and Class 4 = 50.

**Herbert Yeldham G6XOU, Deal Hall Farm, Burnham Marshes, Burnham-on-Crouch, Essex CM0 8NQ.**

## Radio Estonia

Radio Estonia now broadcasts in Estonian, Finnish, Swedish, Esperanto and English. In the near future, they hope to broadcast in German too.

The frequency to listen for English programmes is 5.925MHz at 2030-2100UTC on Mondays and 2030-2100UTC on Thursdays.

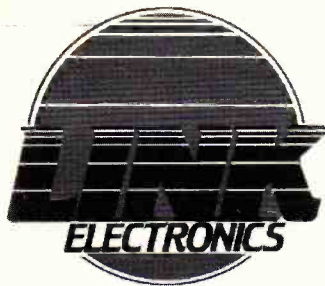
During the 'summer time' from 29 March 1992 to September 27, there is a local time difference of 2 hours from UTC.

**Estonian Broadcasting Company, 21 Lomonosov Str, 200100 Tallinn,**

## BARTG

The British Amateur Radio Teledata Group have got a new membership secretary. He is Peter Adams G6LZB. To join BARTG, which is the UK's national group for all aspects of data communications via amateur radio, send £10 for 1992 with your name, address and callsign (if you have one) to: **Peter Adams G6LZB, 464 Whippendell Road, Watford, Herts WD1 7PT.**





## Realistic Scanners

Link Electronics are pleased to announce that they now have in stock all the current range of scanners from Realistic.

The PRO-37 is the latest to be released and is a 200-channel hand-held with hyperscan giving scanning at 25 channels per second and

searching at 50 channels per second. It also features 10 blocks of 20 memories that can be switched in or out, two second scan delay, lockout function, priority channel and frequency scan and store features. It can be powered by AA cells, NiCad or an a.c. adaptor and comes complete with rubber duck antenna and can accept an external earpiece or speaker. It replaces the PRO-34 and has a catalogue price of £229.95.

The complete Realistic range now comprises:

The Patrolman PRO-41 with 10 channels at £99.95

The Patrolman PRO-35 with 100 channels at £179.95

The Patrolman PRO-37 with 200 channels at £229.95

The PRO-2025 with 16 channels at £99.95

The PRO2022 with 200 channels at £199.95

The PRO-2006 with 400 channels at £329.95

Mobile mounting brackets are available for the PRO2002 and 2006 prices at £9.95. Link Electronics can help with more details on any of these items.

The latest offering from Realistic is an antenna coupler that enables a normal car antenna to be used for both a.m./f.m. radio reception and scanner reception. This has a catalogue price of £14.95.

The new scanner for 1992 is the PRO-9200 and covers 68-88, 118-135.975 (a.m.), 136-174 and 380-512MHz. It features two-speed scan and search modes, priority and lockout function. It has 16 channels and is intended for mains operation. The catalogue price is £129.95.

**Link Electronics, 228 Lincoln Road, Peterborough PE1 2NE.**

# news

## Sweep Function Generator

Available from Electronic & Computer Workshop Ltd, the FG1617 offers a variety of pulse output options. It can produce t.t.l. and pulse ramp outputs from 0.02Hz to 2MHz in seven ranges, t.t.l. of a fixed amplitude and c.m.o.s. output with a fan-out of greater than 20, variable from 5 to 15V. Sweep output has a variable rate from 5s to 10ms and width from 10:1 to 1000:1, linear or log.

The d.c. offset is variable up to  $\pm 10V$  and symmetry can be set from 5 to 50% with inverted and non-inverted output switches. Output level can be adjusted up to 20V p-p or 10V p-p into 50 $\Omega$  and frequency may be controlled by an external source via the v.c.f. input connector.

Effectively two instruments in one, the FG1617 has all the benefits of a versatile signal generator and a frequency counter. An l.e.d. displays frequency and status, with a frequency counter range from 0.1Hz to 10MHz.

**Electronic & Computer Workshop Ltd., Unit 1, Cromwell Centre, Stepfield, Witham, Essex CM8 3TH. Tel: (0376) 517413.**



s.w.l. members for this award.

### Pacific Ocean Award\*:

For verified contact/reception of 45 different countries having the whole or some part of their coastline bordering the Pacific Ocean. Broadcast band listeners need 300 only.

**States Award:** For verified contact/reception on the 50 states of the United States of America.

**Zone Award\*:** For verified contact/reception of 25, 50 or 75 ITU Zones as defined on an ITU Zone map.

**5 Band Century Award:** For verified contact/reception of 100 different countries on each of the 3.5, 7, 14, 21 and 28MHz amateur bands, totalling 500 in all.

**Short Wave Broadcast Bands DX Award:** Available to all broadcasts bands listeners for verified reception of short wave broadcast stations in all six continents. The number of countries that must be verified in each continent when applying for a particular class is shown in the Table on the left.

## WORLD HF AERONAUTICAL-MOBILE R/T FREQUENCY ALLOCATIONS

by Tim Christian

published by Isoplethics, 157 Mundesley Road, North Walsham, Norfolk, NR28 0DD  
33 pages + 8 page appendix, 148 x 208mm. £6.99 including UK postage

Once again, this book is only available ordered direct from the publisher. I've mentioned this useful information source previously in 'Airband' and now it's time for the 1991 updated edition to appear.

Why is such a small book apparently expensive? Let me immediately say that it is good value as the information it contains is not only essential for those with an interest in the h.f. airband, but also hard to find elsewhere. This is a list of all h.f. frequencies (in descending order) giving all known users in each case. There's a centre-fold map showing the world's h.f. aeronautical networks. Modulated n.d.b.s are also covered.

Most of all, Tim has gone to great lengths to verify the information. His profession as a quality assurance engineer shows up in his painstaking approach to the compilation of accurate information in the book. The latest edition has a 1991 appendix with a few amendments to the original information, and many additions. On a sad note, one of the amendments is the withdrawal of Novair's Gatwick-based h.f. facility, now defunct along with that airline. Tim welcomes feedback on his publication.

The h.f. enthusiast (and indeed professionals involved in this field) will wonder how they ever managed without this book.

**Godfrey Manning**

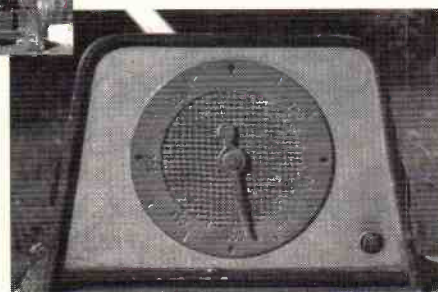


## First Aid

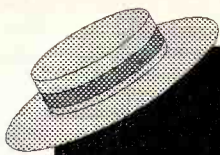
The radio in the photograph was given to me recently by a friend, who in turn had received it from an elderly aunt. I wonder if any readers have a clue as to its vintage, model number, availability of circuit diagrams, etc?

I would appreciate any further information regarding this set.

**Andrew Clarke, 444 Chelton New Road, Nasford, Stoke-on-Trent ST4 6DR.**

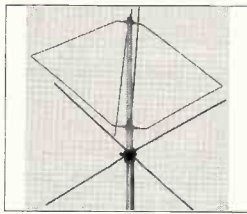






# Aerial systems for Serious Listeners

## Look to Lowe



### DX-One Electronic Antenna

£249 inc VAT

The World Radio TV Handbook said of the DX-One "... the best of its type available anywhere in the world." It has a frequency range of 50kHz - 50MHz (\*3dB) and 10kHz - 75MHz (\*6dB); it is both horizontally and vertically polarised, so low-angle (DX) signals suffer less selective fading. The output level from the antenna is adjustable in steps from +6dB to -40dB for optimum matching. The extremely high intercept point (+66dBm 2nd order, +40dBm 3rd order) and a very low noise figure (12.8 dB) ensure optimum performance. The indoor unit contains a mains power supply, a step-wise attenuator and a very effective medium wave suppression filter. It also has two receiver outputs for feeding two receivers without mutual interference.



### SP-2 Antenna Splitter

£152 inc VAT

A growing number of radio enthusiasts have two receivers, but no space for two separate antennas. The SP-2 is the answer for connecting two receivers to one antenna (be it active or passive). The SP-2 offers a very high degree of isolation between the two receivers (<30 dB). The SP-2 ensures that, within the frequency range of 50kHz - 50MHz), no unwanted mutual interference, heterodynes or signal loss will occur as a result of connecting a second receiver.

With a single receiver, the SP-2 offers a precision step-attenuator (0 - 40 dB) which helps to reduce receiver inter-modulation. Included is a very effective switchable medium wave suppression filter.

For those with space for a second antenna (e.g. one horizontal, one vertical), the SP-2 offers a simple way to switch between the two for comparison purposes.



### Magnetic Longwire Balun

£36 inc VAT

This balun has been described in the trade press as the "most revolutionary development for shortwave listeners in the last 25 years". Quite a claim! But this antenna device does solve one of the most severe problems associated with random long wires; the input cable. An MLB allows you to use highly screened co-axial cable between the antenna and receiver WITHOUT energy loss due to impedance mismatch. Computers, light-dimmers, televisions, and fluorescent lights no longer cause interference

problems. We recommend RG58/u 50ohm co-axial cable.

The MLB has been designed so that a very short length of antenna wire can be used and still be perfectly matched to the 50ohm antenna input of the receiver. Even an antenna of just 12.5 metres (41 feet) provides good results from 100kHz - 40MHz without the need for an antenna tuner. Static build-up on the antenna is allowed to leak away to earth potential - excellent for protecting receivers with FET front end circuitry. Static noise levels on long, medium, and the tropical short wave bands of 60 & 90 metres are considerably lower. The MLB is easy to mount on existing longwire or "T" antennas.



### MLB Antenna: Mark I

£56 inc VAT

A complete passive wire antenna with a built-in MLB, the MLB Antenna: Mark I has excellent performance on long, medium, and short waves. It is 12.5 metres in length and can be mounted vertically or horizontally. Frequency range 100kHz - 40MHz.

The MLB Antenna: Mark I offers all the advantages of the Magnetic Longwire Balun like: coaxial feeder, broadband performance without an antenna tuner and static decoupling. Heavy duty and completely water-proof, it comes complete with nylon support cord, heavy-duty insulator, high-quality plastic covered antenna wire, PL 259 connector and a water-tight rubber sleeve to cover co-axial/MLB connection.

### MLB Antenna: Mark II

£67 inc VAT

Similar to the Mark I, but 20 metres long. The MLB Antenna: Mark II offers improved performance at medium and long wave frequencies, although the high frequency performance above 30MHz is reduced.



### THE LISTENERS' BOOK OF THE YEAR GETS EVEN BETTER

The new 1992 issue of 'Passport to World Band Radio' is now with us and it's even better than before. The 200 pages have risen to almost 400 and every section carries the unmistakable authority of the world's best short wave companion.

Broadcasts are listed as before; not only in frequency order but also by language, country of origin AND the times of broadcasts. There are no less than 56 pages of receiver reviews, including the latest NRD-535 and Drake R-8, together with news, views and general information.

If you own a short wave radio, you MUST have the 'Passport' by its side. The price last year was £12.95; we have kept the price the same this year at £12.95 (plus £1.55 p&p). Send off today.

## LOWE ELECTRONICS LIMITED

Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone: 0629 580800 Fax: 0629 580020



# When you are ready to graduate to real listening Look to Lowe

## The NRD-535 General Coverage Receiver

Latest in the line of NRD receivers, the NRD-535 is a triumph for JRC and represents a true step forward in features, performance and facilities for the dedicated listening enthusiast.

The smooth tuning is the first thing you notice and JRC has developed a direct digital synthesiser (DDS) system which tunes in 1Hz steps. The accuracy and stability are of laboratory standard. There is of course the front panel keypad for swift frequency setting.

All mode reception covers AM, USB, LSB, CW, FM, RTTY and even FAX with IF filter bandwidths to suit the modes.

For winking out the weak stations, the NRD-535 excels. Pass band shift enables you to slide the IF filter around the signal so as to eliminate the adjacent signal and a totally new notch system gives tunable rejection with a 40dB notch depth. There is also an optional Bandwidth Control board.

For the keen broadcast DXer, There is also an optional plug-in ECSS board for locking on to an incoming AM signal and then picking off either sideband.



There are 200 memory channels, each of which stores, frequency, mode, bandwidth, attenuator and AGC settings, comprehensive frequency sweep facilities and no less than 16 different functions which can be programmed from the front panel by the user.

For the advanced user, the NRD-535 is fitted with a RS-232C interface for 28 computer controlled receiver functions. Available for demonstration at

Matlock and the regional centres.

|                           |                |
|---------------------------|----------------|
| NRD-535 HF Receiver ..... | £1,095 inc VAT |
| CMF-78 ECSS option .....  | £202 inc VAT   |
| CMH-530 RTTY option ..... | £104 inc VAT   |

## R-5000 & 'CONTROL'

An already well known and a well loved general coverage receiver with dual VFOs, the R-5000 offers the dedicated short wave listener and licenced radio amateur a performance to match today's best transceivers.

'CONTROL' is Lowe's very sophisticated IBM-PC (or compatible) based software designed exclusively for use with a range of suitable Kenwood transceivers and receivers. For details & demonstration, contact our centre at Matlock.

### R-5000 HF Communications Receiver

- Continuous coverage 100kHz -30MHz
- Optional VHF Converter  
108MHz - 174MHz
- USB, LSB, CW, AM, FM & FSK
- 10Hz step Dual Digital VFOs
- Superb Interference Reduction
- 100 memories storing frequency, band, mode and antenna terminal
- Dual 24-hour quartz clocks
- Keyboard frequency selection
- RS-232C interface for use with 'CONTROL'



### 'CONTROL' dedicated software

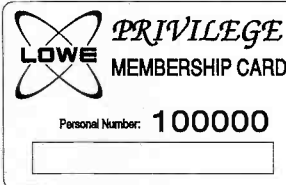
- For use with IBM PC (or compatible)
- Keyboard frequency entry
- Tuning using arrow keys
- Selectable tuning step size
- One-key mode select
- 1000 'commented' memory channels
- Manual/auto memory scanning
- Band plan display
- LOGBOOK program included
- Optional Morse ID of mode
- Interface to DATABASE
- Band plan display
- On-screen help
- Simple installation

R-5000 . . . £945.00 (inc VAT)

'CONTROL' . . . £51 (inc VAT)

# FREE

Send four first class stamps to cover the postage and we will send you, by return, your FREE copy of 'THE LISTENERS GUIDE' (2nd edition); a commonsense look at radio listening on the LF, MF and HF bands. Its unique style will, I am sure, result in a 'good read'; but underneath the humour lies a wealth of experience and expertise. You will also receive detailed leaflets on our range of receivers and a copy of our current price list.



BARRY (S Wales): 251 Holton Rd. Tel: 0446 721304 BOURNEMOUTH: 27 Gillam Rd, Northbourne Tel: 0202 577760 BRISTOL: 6 Ferry Steps Ind Estate Tel: 0272 771770 CAMBRIDGE: 162 High St, Chesterton Tel: 0223 311230 CUMBERNAULD: Cumbernauld Airport Foyer Tel: 0236 721004 LONDON (HEATHROW): 6 Cherwell Clo, Langley Tel: 0753 545255 LONDON (MIDDX): 223/225 Field End Rd, Eastcote Tel: 081-429 3256 NEWCASTLE: Newcastle Intn'l Airport Tel: 0661 860418



# Wireless in Court

Wireless was in its infancy and the great powers locked in war. There were no domestic broadcast stations and only the real enthusiast was aware of the then marvels of wireless telegraphy. Prior to 1914, the majority of British experimenters (as they were termed on their licence) were confined to monitoring the long wave telegraphy transmissions of Poldhu (MPD), Clifden (MFT) in County Galway and the time signals originating from FL, the transmitter installed in the Eiffel Tower, Paris. Also receivable was the spark transmission of Nauen, just outside Berlin, which was reputed to be the most powerful transmitter in the world at this time.

## Confiscated

All 'experimental' licences were withdrawn at the outbreak of war and equipment dismantled and confiscated by the authorities. The *Defence of the Realm Consolidation Act* was passed on 16th October 1914. The official

regulations stated that: "No person shall use or possess a wireless telegraphic apparatus or component part or parts thereof capable of being used for transmission or reception of wireless signals". The maximum penalty for this offence was £100 fine or six months imprisonment, with hard labour, without the option of a fine. As some of the following reports show, even a technical offence was severely dealt with.

A.A.Campbell Swinton (Marconi's original patron in the UK), President of the Wireless Society of London had suggested that amateurs could play a role in detecting illicit transmissions, but the offer was declined by the authorities. The Society's Secretary, R H Klein tried again in a letter to *The Times* pointing out the advantages of such a move but to no avail. The government apparently wished for a complete blackout on all things 'wireless' and seemed to want the word to disappear

as if it were a disease. During the early years of the war, violators of this syndrome were often severely dealt with.

## Pioneering Radio Control

In 1915 William Thompson, described as a labourer, was sentenced to 6 months imprisonment at Blyth Police Court for possessing wireless apparatus. Thompson's defence was that he was not communicating or even monitoring other stations. He was trying to develop the idea of steering ships at sea from a land position. This evidence was corroborated by colleagues who reported Thompson's tests were carried out with a model yacht on Ridley Park Lake. The Accused was obviously pioneering radio control and considering the very basic components available at this time his achievements were, to say the least, remarkable.

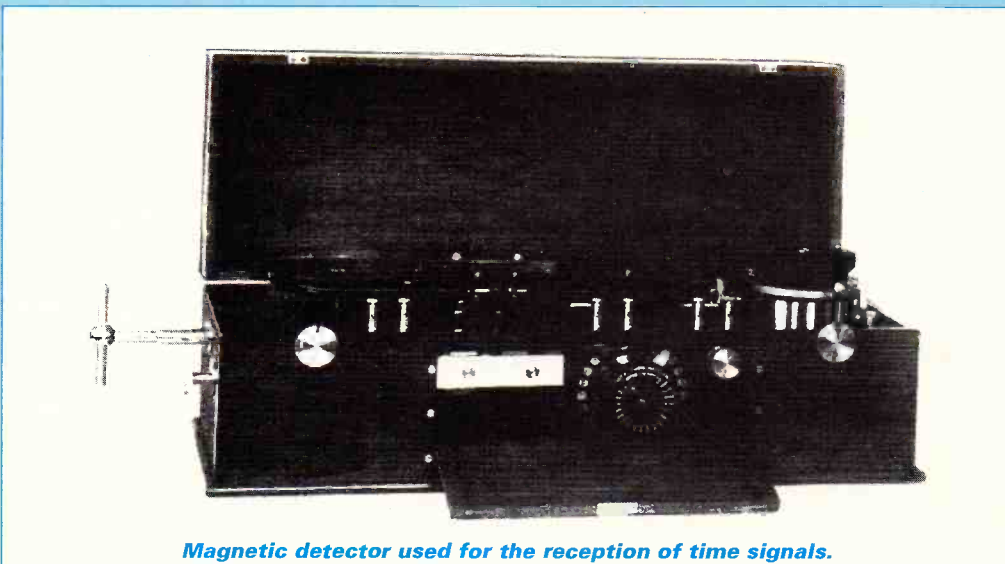
This had little effect on the Bench. They appeared to take more note of a Post

Office expert who reported the apparatus COULD (my capitals) transmit over a radius of 5 miles under favourable conditions. Under ordinary conditions the range would be 2 miles. He would of course need an aerial but items that COULD be used as an aerial had been found in Thompson's house. The Defendant's solicitor maintained that Thompson was an Englishman with no desire to be a traitor. Only a technical offence had been committed which did not call for a severe penalty. The Chairman said the Bench could not ignore "the man's extraordinary ability" and the fact that "these gifts must be of grave danger and menace to the State if used in the wrong direction".

The North East seemed to have a spate of illegal wireless prosecutions in 1915. Clifton Gosman, an apprentice fitter was charged at Newcastle Police Court with having in his possession apparatus "intended to be used as a component part of an installation for the receiving of messages by wireless telegraphy". The prosecution did not suggest there was any wireless installation on the premises or that the Defendant intended to set one up.

## Voluntarily

Gosman had apparently called voluntarily at the police station and handed over minor articles. Other items subsequently discovered in the house were covered in dust and had obviously not been touched for some time. The Bench dismissed the Defendant's plea that he



Magnetic detector used for the reception of time signals.



*Six months imprisonment with hard labour for possessing some wireless components may seem an unbelievably harsh sentence in Britain. But such was the fate of a Northumberland man in 1915, as Stan Crabtree explains.*

had not read the regulations and imposed a penalty of 20s or 13 days imprisonment. The Chairman observed that so many similar cases had been before the Court that future convictions would be treated differently.

School teacher William Walker was fined 5 guineas at Castle Eden, County Durham, for being in possession of wireless apparatus. A police sergeant visiting Walker's home was shown parts of a dismantled aerial which had been taken down shortly after the outbreak of war. Walker said he did not know the Morse code but used the equipment to receive the time signal from FL, Paris. A Post Office engineer said it would take about 2 days to reassemble the equipment to receive messages. It could not transmit at all.

### **Practically Useless**

Sanity prevailed in another Castle Eden case when another school teacher, 54 year old Robert Linghay was brought before the Court. He was charged with having wireless apparatus in his possession. The Defendant admitted having the equipment which he had been using during the previous 10 years to teach the principles of wireless to his pupils. An engineer giving evidence said the equipment was practically useless for receiving messages from any modern station. He agreed it could transmit but said the range would be extremely limited. The Chairman of the Bench said they were not satisfied that the summons had been taken out against the



*Long wave wireless receiver.*

right party. The case was dismissed but the apparatus was confiscated.

The possession of a Morse key appears to have been the downfall of Matthew Read, a mechanic in the Postal Department at Victoria, London. He was charged with having in his possession "apparatus capable of being used for tapping wireless telegraphy messages". The Chairman said he did not think Read intended to aid the enemy but nevertheless imposed a fine of £20 with 4 guineas costs.

At Gateshead Court, Frederick Askew was convicted for a similar offence. When a detective called at the house the accused produced certain parts from an overcoat pocket. He stated that a friend of his held the other items which they had purchased between them for 25s. A Post Office engineer gave evidence that it would be possible to receive messages by using the other parts of the apparatus. They were not capable of transmitting information. Askew was

fined 20s and warned that he had been liable to a £100 fine.

### **Broomsticks**

A confrontation between a Defendant and a Witness at a Ramsgate prosecution is of interest. Richard Softley was accused of possessing 1 tuner, 1 detector, 3 coils of insulated wire, 1 telephone receiver and 3 testing buzzers. The Defence claimed that the equipment had been used to train Boy Scouts under very localised conditions - the aerial being supported by broomsticks.

Warrant Telegraphist Harford gave evidence that the Navy had experienced frequent interruptions to wireless traffic. It was not possible to say where the interference came from but he alleged the Defendant's apparatus was capable of a 4 or 5 mile range. A cross examination followed:

**Defendant:** Do you consider my pole - two broomsticks - sufficient to support an aerial?

**Witness:** Yes.

**Defendant:** Could you wire that apparatus up in 4 hours? (Presumably the above list).

**Witness:** It is quite possible.

**Defendant:** How long have you been a wireless authority?

**Witness:** About 3 years.

**Defendant:** Then you have wasted your time.

The Defendant was subsequently fined £15 or 6 months imprisonment.

### **Humorous Situations**

Inevitably some humorous situations came to light. G E C Wedlake, in his book *SOS The Story of Radio Communication* relates the tale of a schoolboy who possessed a very crude crystal receiver. The equipment was duly declared and a few days later an Army officer came to inspect it. The man from the military directed that the apparatus should be placed in a drawer which



he then proceeded to seal. For over a year the officer called regularly once a month to check that the seal was intact. Eventually, someone must have realised that this ritual was an appalling waste of manpower and it was taken away to be retained in some central place of security. It was never seen again.

## Enfield Sensation

What at the time was locally referred to as the 'Enfield Sensation' was heard before Enfield Petty Sessions early in 1915.

Stanley White, age 17 was a student at the East London Wireless College and apparently a very enthusiastic one. He was arrested during the hours of darkness in suspicious circumstances, moving about on the roof of houses adjacent to Enfield Telephone Exchange. An almost complete wireless station was later discovered at his home - Stanley had been finalising the work by erecting an aerial.

The Post Office, who were prosecuting, alleged that when established the

equipment would be capable of transmitting and receiving messages to and from Germany. White emphatically denied receiving or transmitting messages but admitted he could send and receive at 18 words per minute. The GPO stated that if the accused could read the Morse code at only 12 words per minute he would be able to interpret messages.

On the facts recorded this seems a blatant violation of the Defence of the Realm Act. But possibly because he was a *bona fide* student of wireless he was fined only £7 with 3 guineas costs.

The maximum sentence was pronounced at a court martial held at Hull in December 1914. It referred to Archibald Cocks of Filey, Yorks, a licensed and respected transmitting amateur for several years who appears to have been guilty of merely retaining a small portable set, partially dismantled, in his possession. Cocks's house was raided by the military on 18th October 1914 - 2 days after the *Defence of the Realm Act* was published. Mr J B Tucker,

Hon. Sec. of the Birmingham Wireless Association publicised his case in a letter to *Wireless World* and emphasised the following points:

1. No charges of attempted communications with the enemy had been made.

2. Mr Cocks' character was not doubted.

3. A letter from the Post Master General, read out in court, stressed they had no desire to press the case.

4. The necessary aerial for communication had been dismantled earlier in the year when all other stations had been closed down.

In spite of these facts, for what was after all a purely technical offence, Cocks was sentenced to the maximum of 6 months imprisonment. Part of this was remitted due to his already spending 7 weeks in custody but 2 months had yet to be served.

A supporting letter in the Cocks case highlighted the case of a German, an unregistered alien, who was caught with a fully operational wireless station established on the Essex Coast. It was connected to the mains

and capable of sending over 100 miles. For this the convicted man was sentenced to 3 months detention without hard labour. Upon comparison, the unwarrantable severity of Cocks's sentence was astonishing.

## Stigma

What is particularly sad about this period is that honourable men of good character were to receive and carry with them to their deaths the stigma of the conviction. For a careless oversight they were branded and with the patriotic feeling at the time it is reasonable to assume that their families were also forced to endure the shame. In one case the father of a convicted youth went to great lengths to destroy the rumour that he had relatives in Germany.

Partly to blame was the then mystery of wireless. Dignitaries and officials in high places knew little of the intricacies of electromagnetic waves and appear to have been alarmed and dismayed that their socially inferiors did. ■

Printed circuit boards for *SWM* constructional projects are now available from the *SWM PCB Service*. The boards are made in 1.5mm glass-fibre and are fully tinned and drilled. All prices quoted in the table include Post and Packing and VAT for UK orders.

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JRC NRD535



DRAKE R8E

### DRAKE R8E

Now available from SMC the new DRAKE R8E communications receiver. These receivers utilise the very latest in technology to meet the demanding requirements of today's listeners. Conveniently located front panel controls allow for rapid operator programming and ease of use. The R8E receiver covers 0.15-30MHz and with the optional VHF converter will also cover 35-55MHz and 108-174MHz. The large clear LCD display gives the operator full information about the current receiver status.

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The top of the range model must be the AR3000 which covers 100kHz-2036MHz without any gaps. The mid range model is the AR2800 which is a convenient unit for mobile or base operation and covers 500kHz-600MHz and 800-1300MHz. Last but not least is the AR2000 which is an extremely flexible handheld scanner covering 500kHz-1300MHz.

Why not contact us today for more details of the AOR range.

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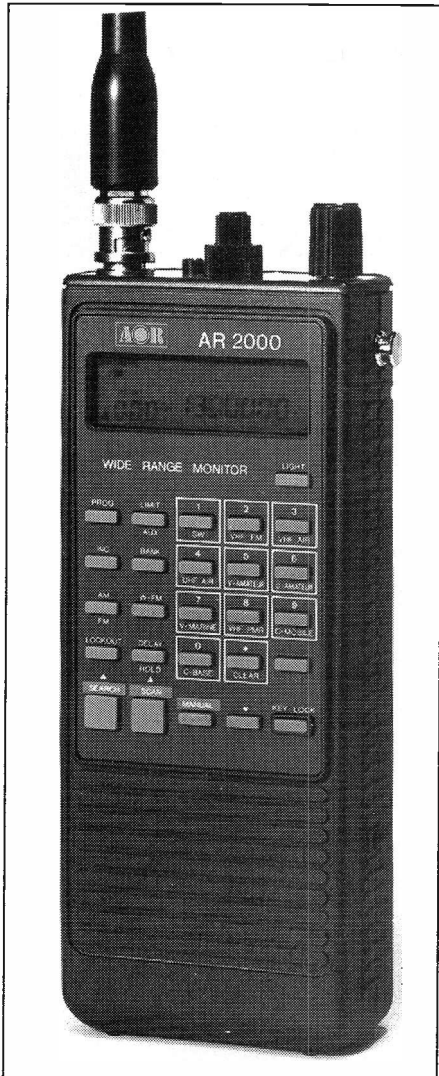


# Listen to AOR

The **AR3000** now extends your listening horizons. Frequency coverage is from 100 kHz to 2036 MHz without any gaps in the range. All mode: USB, LSB, CW, AM, FM (narrow) FM (wide). 400 memory channels are arranged in 4 banks x 100 channels. 15 band pass filters before the GaAsFet RF amplifiers ensure high sensitivity throughout the entire range with outstanding dynamic range and freedom from intermodulation effects. An **RS232** port is provided to enable remote operation by plugging directly into most personal computers.

**ACEPAC3** is an exclusively developed multi-function IBM-PC based program to further increase the versatility of the AR3000. A sweep facility provides a spectrum analysis graph. The very latest version displays frequencies in X axis and squelch opening percentage on each frequency in the programmed frequency search range. This indicates 'how active' the frequencies are in the programmed search range. In addition to the graphic display, ACEPAC3 can produce a detailed numerical list from the graphic information. One memory file has 400 channels divided into 4 banks of 100 channels. More than one memory file can be created to increase the memory storage capability. If you make just one extra memory file you can store 800 memory channels!

**DA3000** Wide band 16 element discone aerial for external mounting. Frequency range 25 MHz to 2000 MHz (2 GHz). The aerial is supplied with approx 15m of coax terminated in a BNC connector ready to plug in and use with any AOR receiver. 'V' bolts and clamps are provided, however an additional supporting pole will be required for installation.



## AR2000 ultimate portable monitor receiver...

AOR have followed on from the successful AR1000 and have made the specification of the AR2000 even better. (One major change is the replacement of the 154.825 MHz crystal with a highly-stable 12.8 MHz reference and multiplier chain). Whether out in a field running hand-portable, in the car or at home the AR2000 enables you to listen to both VHF and UHF airbands. Of course if you get tired of listening to airband, you can push a button or two and the world is yours! 'If it moves you can monitor it' - *well almost*. The choice of listening is endless, marine, Amateur band, airbands even BBC radio 2 on VHF FM. There are 1000 memory channels and 10 search banks, even a rotary tuning control is fitted to further enhance operation.

### Search banks:

|        |             |               |               |     |
|--------|-------------|---------------|---------------|-----|
| Bank 1 | Shortwave   | 2 - 30 MHz    | 5 kHz step    | AM  |
| Bank 2 | VHF FM      | 88 - 108 MHz  | 50 kHz step   | WFM |
| Bank 3 | VHF Air     | 108 - 138 MHz | 25 kHz step   | AM  |
| Bank 4 | UHF Air     | 225 - 400 MHz | 50 kHz step   | AM  |
| Bank 5 | VHF Amateur | 144 - 146 MHz | 12.5 kHz step | NFM |
| Bank 6 | UHF Amateur | 433 - 435 MHz | 25 kHz step   | NFM |
| Bank 7 | VHF Marine  | 156 - 163 MHz | 25 kHz step   | NFM |
| Bank 8 | VHF PMR     | 165 - 174 MHz | 12.5 kHz step | NFM |
| Bank 9 | C-Mobile    | 890 - 905 MHz | 12.5 kHz step | NFM |
| Bank 0 | C-Base      | 935 - 950 MHz | 12.5 kHz step | NFM |

### UK Specific:

For ease of operation in the UK, the search banks have been pre-programmed at the factory. They may be easily re-programmed by the user.

Each of the ten numeric keys is labelled with the corresponding search band, simply press one button and the receiver starts looking for interesting frequencies.

### Frequency coverage:

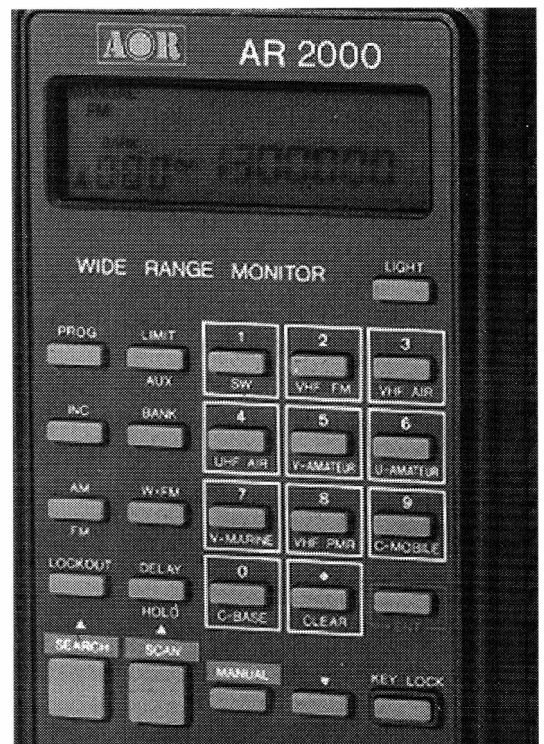
The receiver has an exceptionally wide frequency coverage from 500 kHz to 1300 MHz (1.3 GHz) with no gaps. The modes available are AM, FM (narrow) and FM (wide). Any available mode may be selected at any frequency within

the receiver's coverage. There is no frustration in mode selection encountered here, you are *not forced* to listen to a specific mode at a specific frequency or band.

### Accessories supplied:

- DA900 single wide band whip aerial for VHF and UHF
- AC charger
- 4 x AA High capacity rechargeable NiCad batteries
- 12V DC lead fitted with a cigar lighter plug for mobile operation
- Soft case with carry strap
- Belt hook
- Earphone

*Everything you need is included to just switch on and start listening - today.*



### New models on the way for 1992:

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RNLB Margaret Jean. Mersey Class Lifeboat. Photo courtesy RNLi.

## Mayday Mayday Mayday - What Do We Do?

*You are listening around the bands for some good DX when you hear a Mayday call on the International Distress frequency. What should you do about it? M.J. Sables VP8CEO gives the relevant information.*

In the August issue of *SWM* a letter was published from C. Jefferson stating his concern regarding a Mayday call on the International Distress Frequency. In his case, it was obvious that he could do nothing due to lack of information and therefore he acted correctly in this instance. However, he asked to whom he should pass on the information should he ever hear a full message.

First we should all think of the Coastguard television advertisement with the couple sitting on the cliff waving to the yachtsman as his boat slides below the waves! Ask ourselves is it any of our business? The answer

is, of course, an unequivocal **yes!** Someone somewhere is in distress and are appealing for assistance. We should stop and listen. Forget the DX you were working - he will still be alive tomorrow. The yachtsman might not!

Emergency messages are likely to be received from aircraft and vessels on the International Distress frequencies of 2.182MHz and 156.8MHz. Also Emergency Position Indicating Radio Beacons (e.p.i.r.b.) on 121.5MHz and 406MHz in conjunction with the COSPAS-SARSAT global search and rescue satellite systems. In today's organised world most emergency messages are quickly and efficiently responded to by the

appropriate agency, certainly in respect of aircraft, which are in constant contact with air traffic control centres. Additionally they carry transponders capable of sending distress information direct to the radar screens of the controllers at the press of a button. However, vessels at sea, particularly private pleasure craft, may not carry an e.p.i.r.b. and rely on a v.h.f. transceiver (156.8MHz) or ship's radio (emergency only 2.182MHz). Given that propagation is variable, it is always possible, though most unlikely, that one's receipt of an emergency call may be the only reception of the signal and, therefore, vital to those in distress.

### Emergency Calls

Just how helpful can we be? This will depend on the amount of information you can provide. First let us look at what constitutes an Emergency Call. There are two categories, Distress and Urgency.

A **Distress Call** has absolute priority and should give the following information:

**MAYDAY MAYDAY  
MAYDAY \* Name/  
Callsign \* Position \*  
Nature of Distress \*  
Type of Vessel \*  
Number of crew/  
passengers \*  
Intentions.**

An **Urgency Call** is used for situation of a lesser degree, (e.g. if a passenger requires medical attention). It





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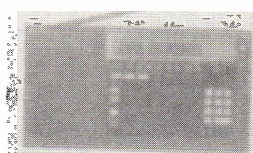
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Short Wave Magazine, January 1992

should contain the following information:  
 PANPAN PANPAN  
 PANPAN \* Name/Callsign  
 \* Position \* Nature of Urgency \* Intentions.

In both cases you should note all the facts and continue to monitor the frequency **do not attempt to transmit.**

## Organisations

The distress frequencies are monitored by a host of organisations and vessels far better placed to provide assistance, and those should respond immediately although you may not hear them, due to all the usual rules of propagation. You should, one hopes, hear the Rescue Co-ordination Centre acknowledging the distress call and/or directing the initial organisation of assistance. Alternatively you may hear the re-transmitting or relaying of the distress call by other vessels. However, **if you continue to hear the distress call and no other, transmitted from the vessel in distress,** I leave it to your own judgement as the person on the spot, whether, (if you are capable of it) you transmit an acknowledgement. If you do you must assume full responsibility from hence forth for the safety and well-being of those in distress. Remember that to them they have now told someone their problem and you are now going to organise the solution!

If you chose not to acknowledge, or you are unable to and there is no other acknowledgement of the call, you should still assume full responsibility for those in distress. Under Maritime Law it is an offence not to respond, but we are concerned with a shore-based amateur station, not another vessel at sea. Unless you are working /MM, when you will, I am sure, have made yourself acquainted with the requirements, if not

## Abbreviations

|            |  |
|------------|--|
| /MM        | maritime mobile                            |
| DTI        | Department of Trade & Industry             |
| DX         | long distance communication                |
| e.p.i.r.b. | Emergency Position Indicating Radio Beacon |
| kHz        | kilohertz                                  |
| MHz        | megahertz                                  |
| MRCC       | Maritime Rescue Co-ordination Centre       |
| MRSC       | Maritime Rescue Sub-Centre                 |
| QTH        | station location                           |
| RAF        | Royal Air Force                            |
| RNLI       | Royal National Lifeboat Institution        |
| v.h.f.     | very high frequency                        |

obtained the Marine Certificate of Competence and authority, to operate a marine radio.

## The Coastguard

So, how do you pass on the message and to whom? For incidents at sea it is the responsibility of the Coastguard and to contact them in the UK it's the old favourite 999. But this time you ask for the Coastguard. The operator will put you through to one of the Coastguard Maritime Rescue Co-ordination Centres (MRCC) or Maritime Rescue Sub-Centres (MRSC) around the coast. Each one is able to deploy, at short notice, all

the resources required to effect a rescue, be it Maritime Nimrod aircraft of the RAF for the middle of the Atlantic, or the local inshore rescue boats of the RNLI. Have available all the facts about the incident, what else you have heard, a bearing from you QTH, if you have a good directional beam and can be certain of it, it could be useful in plotting a fix. (Remember, an error of one degree becomes an error of many miles at a distance). Finally, stay by the telephone in case further information is needed, continue to monitor the frequency and ring again if the situation changes.

## Further Information

For further information I would suggest that anybody who likes to listen around these frequencies obtains a copy of the HM Coastguard leaflet on the *Yacht and Boat Safety Scheme* or *Seaside Safety*. There is also an attractive sticky-backed guide entitled *Radio Hints for Boatowners* that lists the grid locations and 'phone numbers of the MRCCs and MRSCs. After all, you may want to ring and say 'did you hear', rather than dial 999. Also, the DTI leaflet *BR90* available from the Radiocommunications Division lists the v.h.f. channel designations.

I sail whenever I can and I would much prefer you to dial 999 if I ever need rescuing. But, if all you do is 'phone the MRCC, I will be happy to have had the rescue service notified - even semaphore would be better than doing nothing!



RNLB Atlantic 21 inshore lifeboat *Blue Peter V*. Photo Colin Watson.



# RECEIVERS ARE 'IN' AT WATERS & STANTON

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This aerial covers everything from long-wave to VHF. It is no larger than a conventional mobile aerial measuring just 29.5" long, fits any standard mobile mount and comes complete with cigar lighter lead and matching box with RF gain control.

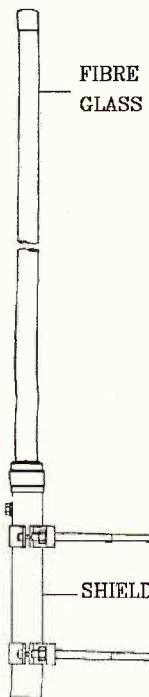
### Base Station Aerial D707

Beautifully made from fibre glass, this rugged aerial will fulfil all your needs whether it be HF, VHF, or UHF. It comes complete with all the mounting hardware for mounting externally.



PL259

**D707**  
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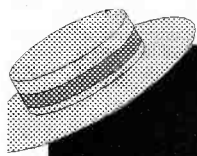
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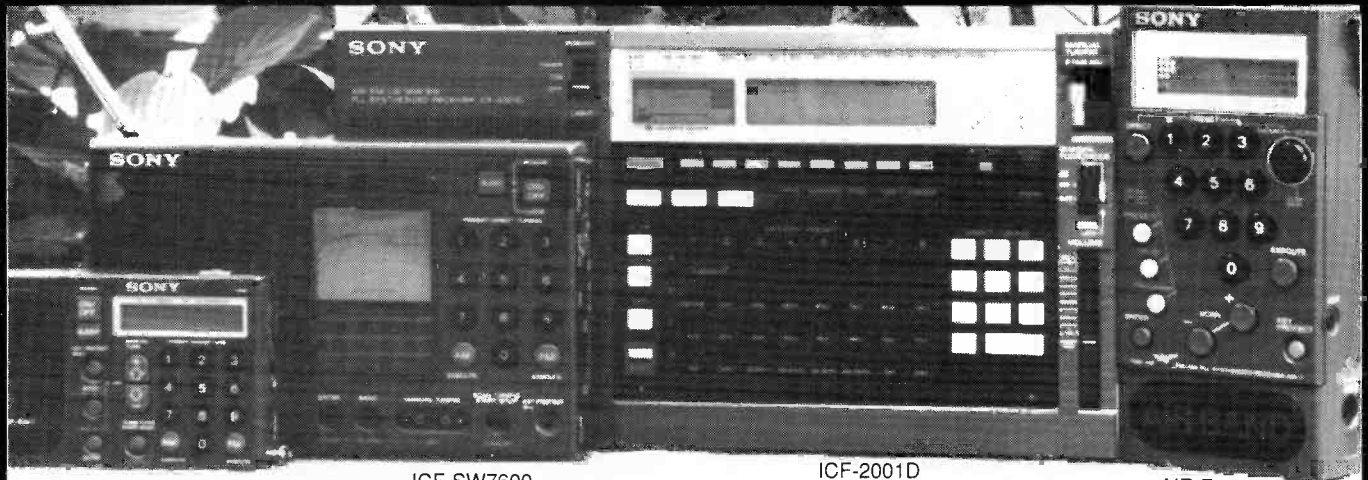
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Short Wave Magazine, January 1992

# Sail On - More Sailing Ships to Listen To

*Sailing ships make interesting listening on short waves, particularly during races, as Bill Black points out in this article.*

The US Coast Guard barque *Eagle*, described in SWM April 91, is far from the only sailing ship that can be heard on short wave. While some are large training vessels like *Eagle*, others are much smaller ones, handled by a single person.

One group of one-man yachts took part in the BOC Challenge round-the-world race. The first leg of the race, from Newport, Rhode Island to Capetown, South Africa, started in September 1990. From Capetown, the ships left on November 24 heading for Australia. The race's third leg, from Sydney to Punta del Este, Uruguay, started on 3 February 1991. The yachts left South Africa for the trip back to their Newport starting point at the end of April.

The race organisers required each of the boats to carry short wave radio equipment for the h.f.

maritime frequencies, the amateur bands, or both. The majority of the competitors opted to use the maritime frequencies rather than the amateur bands. So much so that only three boats had just amateur radio equipment.

Few of the details concerning radio frequencies and schedules were made public. However, the race organisers did announce that for much, if not all, of the race, Fort Lauderdale, Florida shore station WOM would be in daily contact with the boats. During the second leg of the race, WOM broadcast position reports and traffic lists for the vessels at 0300 and 1300UTC. That schedule changed for the third and fourth segments of the competition.

Also assisting in the race were maritime radio shore stations in South Africa and Australia, as

well as radio amateurs in those and several other countries. The competitors also had daily 'chat hours' to speak to each other.

## **Pride of Baltimore**

A larger sailing ship that European s.w.l.s might find easier to catch on h.f. is the *Pride of Baltimore*, a replica of a 19th Century schooner. Many original and reproduction sailing ships are owned by private historical groups or by a country's navy or coast guard. The *Pride of Baltimore*, on the other hand, is operated by Baltimore, Maryland, a port city on the East Coast of the United States located a short distance north of Washington, DC. The vessel frequently makes trips to other countries to promote commerce and investment in Baltimore.

The *Pride of Baltimore*

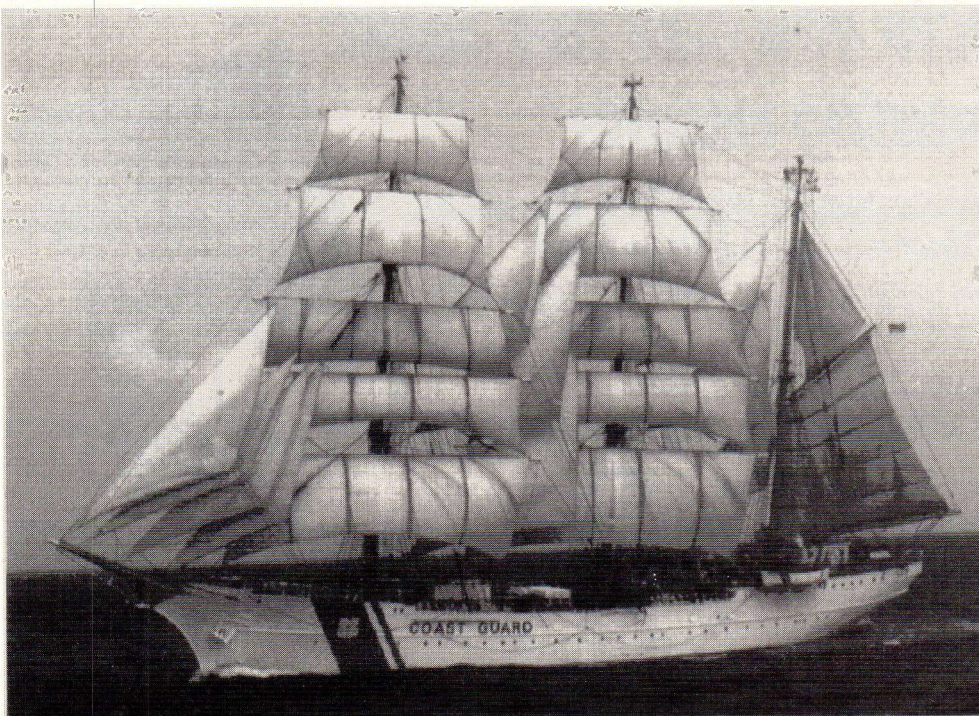
spent last winter docked in Malaga, Spain and began sailing again in March. During April, it visited London, Rotterdam and several ports in Scandinavia. Stops later in the summer included Leningrad, the Baltic Republics, Scotland, Germany and England again. The last visits for the season were to Spain and Portugal, with the trip ending in October.

The ship uses commercial marine s.s.b. equipment and transmits in the 4, 8, 12 and 16MHz bands, according to the captain. The vessel has received a number of reception reports from s.w.l.s and responds to all of them.

Several other US-based classic sailing ships voyaged to Europe during the summer of 1991. One way to find out about these voyages is to check the sailing magazines. Local newspapers will also often carry stories about forthcoming visits, which are sometimes planned as part of special community festivals.

## **Sources of information**

One of the best sources of information on historic sailing ships is the American Sail Training Association. The organisation recently published a new edition of its directory of sail training vessels, such as the *Eagle*. The book has comprehensive descriptions of US ships, including a mailing address for each of them, which you could use for sending reception reports. The guide also provides some information on non-US vessels as well, but without a contact address.



**US Coast Guard barque *Eagle*.**



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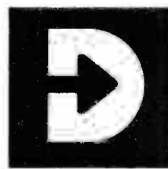
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In total, there is data on over 200 sailing ships in the guide. The cost for postpaid orders from Europe is US\$20. ASTA also puts out a quarterly newsletter with information on major forthcoming sailing events. You can receive the newsletter by becoming a member of the group; the cost of that for non-US residents is US\$35 annually. For further information on the organisation, write to PO Box 1459, Newport, RI 02840, USA.

### **Christopher Columbus**

One of the best opportunities to hear a

large number of sailing vessels at one time will be during the extensive celebrations honouring the 500th anniversary of Christopher Columbus's discovery of the New World. During 1990, the Spanish navy launched replicas of Columbus's three ships, the *Nina*, *Pinta* and *Santa Maria*. It is expected the three vessels, along with at least one modern ship of the Spanish Navy will make one or more voyages to the Americas. Those visits started as early as November 1991 and will continue into 1993.

Another major event of the Columbus 'quincentenary' will be the

voyage of a number of large sail training vessels from Europe to the New World and then back. As now planned, the flotilla will leave Genoa, Italy during April 1992. After stopping in Lisbon, Cadiz and the Canary Islands, the ships

will travel on to Puerto Rico. They expect to arrive there in early June. From there, they will go to New York City, Boston and other US ports. Sailing back to Europe they will stop in Liverpool in mid-August.

### **Opportunities**

And what if you think you still don't have enough opportunities to hear sailing vessels on the h.f. bands during the 1992 celebrations? How about **500** more? That's the number of recreational ships a London-based group, World Cruising Ltd., is trying to organise to race to the United States. Keep an eye on the sailing magazines for more news on that event. ■

# *Peter Rouse's New Book*

## *Another Bestseller from this popular author!*

**Short Wave Communications**  
**Peter Rouse GU1DKD**  
**PW Publishing Ltd**  
**ISBN: 1 874110 00X**  
**187 pages, price £8.95**

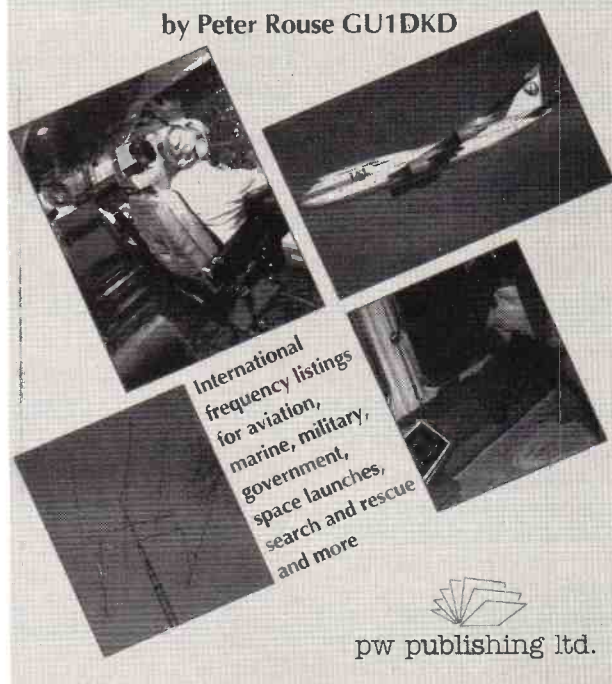
**Available from PW Book Service, post and packing free on orders placed before 31 December 1991.**

Newly published, this book, as its name suggests covers a very wide area and as such provides an ideal introduction to the hobby of radio communication. Logically laid out chapters take the reader through basic radio propagation, how to work your radio, and what the controls do. One chapter deals specifically with antennas, and another with band plans. There are many pages of useful information of where and when to listen on the bands, so you can successfully receive the service or transmissions that interest you. Using simple, understandable language throughout, the author has managed to make this book a good, basic, very readable introduction to a complex subject.

***Newcomers to the hobby will find this book to be invaluable.***

## **SHORT WAVE COMMUNICATIONS**

by Peter Rouse GU1DKD





## Navtex Part 1



*A problem for all mariners, from the pleasure sailor to the captain of a super-tanker, is how to get up-to-date navigational and weather information available. Although there were many sources of this information it was not available in a concise form. Jeff Harris G3LWM explains how Navtex solved this problem.*

In 1977, under IMO (International Maritime Organisation - part of the UN) resolution A381(x), the world was divided into 16 areas for navigation purposes. A single transmitter was allocated to provide up-to-the-minute navigation and meteorological information using conventional Morse and radio broadcasting. This system relied heavily on skilled operator interpretation and constant monitoring due to the sheer volume of information. In order to provide all mariners with up-to-date information, in an easily assimilated form automatically the Navtex system was established.

Chains of coastal stations in each of the world's Navareas transmit meteorological and navigational information by radio telex. A frequency of 518kHz was agreed for exclusive Navtex use by the WARC (World Authority on Radio Communications) in 1983. All transmissions on the International frequency of 518kHz are in plain English. The vessel's Navtex receiver is permanently tuned to the world-wide frequency and remains 'on standby' to print out all the messages automatically,

as received. The service is free to all users and no receiving licence is required.

The IMO controls and supervises the Navtex system. Thus the navigational warning authorities in each Navarea combine to present a co-ordinated service, operated to agreed international standards and using a carefully structured chain of transmitters. Weather information is supplied by the various national Meteorological Offices. The actual transmitter sites in each country are normally owned and operated by the country's

telecommunications authority, BT International having the responsibility for the UK Navtex service.

### Message Format

Before examining the technical specification of receivers and transmitters used for the Navtex system, the format and types of messages will be examined, together with the geographical area that the system will cover.

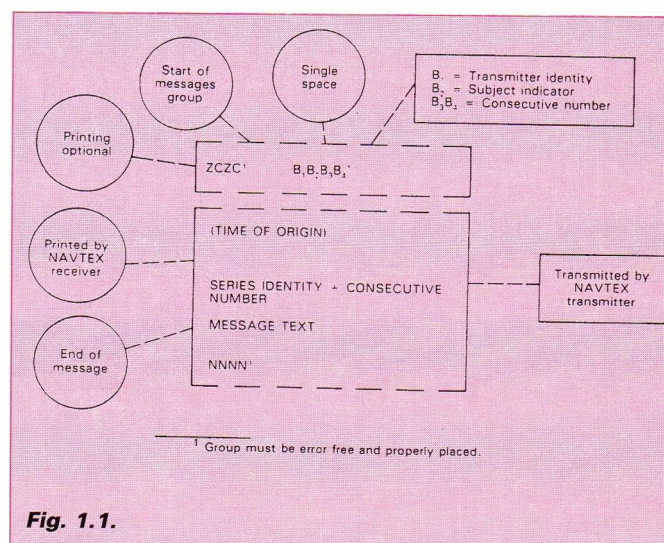
The format of the message is shown in **Fig. 1.1** and the various examples of actual printed message received on a Navtex receiver. The

receiver can be programmed to receive selected transmitted and category of messages.

Each message starts with nine characters that are called the 'header code'. The first five are always ZCZC plus a space, to indicate the start of a message. The next four characters indicate the origin, type and number of the message and are designated as characters B1, B2, B3 and B4. Character B1 is the code identification letter of the coast radio station transmitting the message.

Character B2 is the code identification letter of the type of message:

- A:** Coastal Navigational Warning
- B:** Meteorological Warning
- C:** Ice Report
- D:** Search and Rescue Alert
- E:** Meteorological Forecast
- F:** Pilot Message
- G:** Decca Message
- H:** Loran-C Message
- I:** Omega Message
- J:** Differential Omega Message
- K:** Other Electrical Navaid System Message
- L:** Navarea Warnings
- M to Y:** No Category Allocated
- Z:** QRU (No Message)



**Fig. 1.1.**



On Hand)

Characters B3 and B4 show the serial number of the message. Message numbers run from 01-99 and then start again from 01. Important emergency messages carry the number 00 and are **always** printed. **Appendix A** gives a full description of these types of messages.

The transmission format is examined by the microprocessor on the receiver before printing and any non-conforming messages are not printed. In addition the Header Code of each message is identified by the receiver to ensure that once a particular message has been printed, it is not reprinted.

Chains of transmitters are established in each of the 16 Navareas and are identified by letters A to Z. The UK is situated in Navarea 1. This

encompasses an area bounded by 71°N, 48°27'N, 35°W and the coastline of Europe, including the Baltic, **Fig. 1.2**.

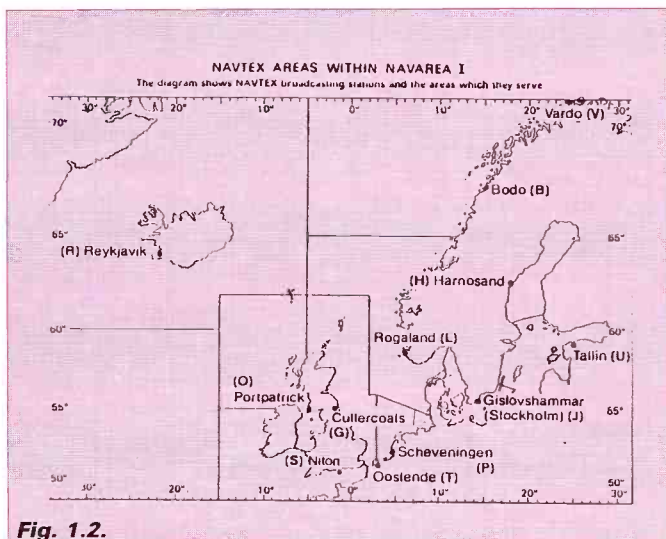
The structure of a typical national Navtex system is shown in **Fig. 1.3**. Mutual interference on this single frequency system is avoided by limiting the transmitter power and time sharing the frequency. A representative Navarea is broken down into four groups of transmitters. Each group has a potential capacity of six transmitters, each with 10 minutes allocated transmission time every four hours. The nominal range of the transmitters is 200nm although, as can be seen, transmissions from the Mediterranean area are received at good signal strength in the UK. For vessels on passage that pass through the service

area of more than one Navtex transmitter, it is useful to be able to receive other transmitters further along the intended passage. Developing weather patterns can be seen and acted upon as necessary. **Appendix B** lists the transmitters in Navarea 1, with their code, transmission times and other information. If you study the transmission times you will see how they fit into

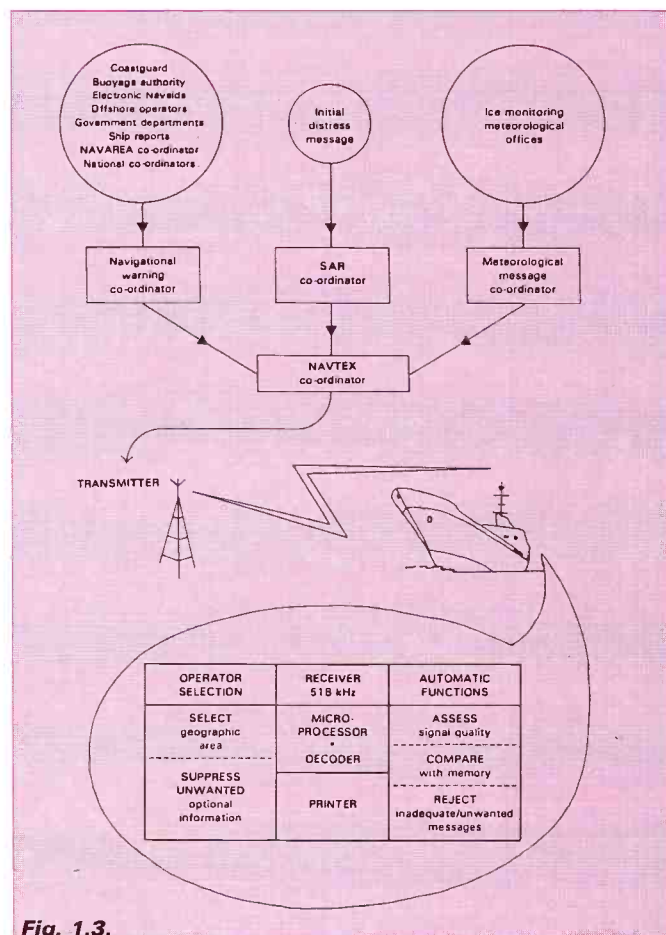
the transmission schedules.

Whilst it is possible to receive Navtex transmissions on any receiver that covers the frequency and decode the signals with suitable hardware/software plus a computer, the majority of maritime installations will use a dedicated Navtex receiver. We will look at these in part 2.

**Continued on page 27**



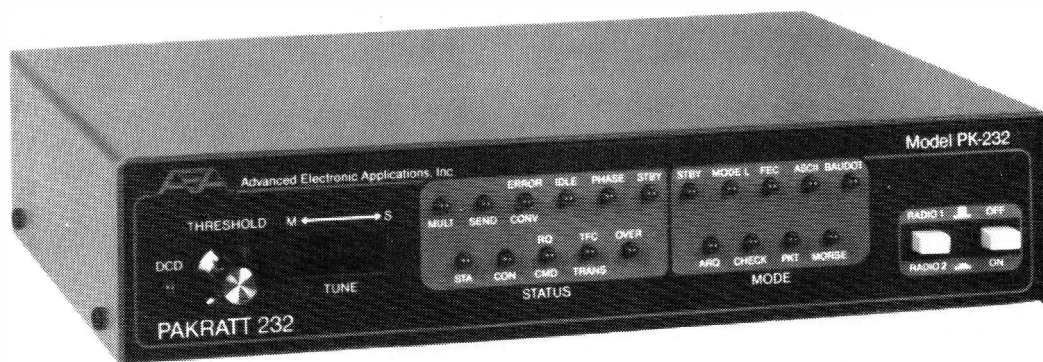
**Fig. 1.2.**



**Fig. 1.3.**



# ICS *The Shortwave Solution*



The PK-232-MBX is a must for the shortwave listener. By far the most popular multi-mode data controller ever, it can receive eight different types of data signals, including Morse Code, Baudot (RTTY), ASCII, TDM, (Time Division Multiplex), Weather Fax, Navtex, Packet and (new) Packet Lite. It also features the indispensable Signal Identification and Acquisition Mode (SIAM), which automatically identifies many types of digital signals. Comes complete with superb user friendly software for the IBM-PC. Software also available for most other kinds of personal computers.

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Telephone: 0903 731101 Facsimile: 0903 731105**



**Portishead coast station.**  
Photo courtesy British  
Telecommunications PLC.

## Appendix A

Message Types A-Z

**Message Type A:** Coastal navigation and hazard warnings including buoys out of position, light buoys unlit, new wrecks, floating debris, oil rig moves, navla exercises.

**Message Type B\*:** Gale warnings - broadcast immediately on receipt from meteorological office and repeated in next scheduled transmission.

**Message Type C:** Ice warnings - in relevant area only, currently north of 62°N.

**Message Type D\*:** Search and Rescue Alerts - Initial warning of any casualty/vessel in distress is transmitted from the nearest Navtex transmitter; subsequent information will be broadcast on the normal radio distress frequencies, v.h.f. Ch. 16, 2182kHz and 500kHz.

**Message Type E:** Shipping Forecast - the pattern of schedules meteorological information will vary from Navarea to Navarea. A synopsis and area forecast will be available in any sea area within the Navarea but not always from the nearest transmitter. In Navarea 1, all UK and Baltic transmitters plus Rogaland (Norway) issue scheduled area forecast. Other stations issue gale warnings (Message Type B) only.

**Message Type F:** Pilot warnings - messages issued under this category advise mariners of unscheduled alternations to offshore pilot stations

e.g. due to weather.

**Message Type G:** Navaid warnings - warnings of problems in the electronic navigation chains including Decca, Loran G, Omega and Transit satellite systems (Satnav).

**Message Type L:** Navarea warnings (Trial Service). The UK

transmitters at Cullercoates, Portpatrick and Land's End currently transmit Navarea warnings under Letter L. Message Type A will be restricted to Coastal Navigation Warnings. Mariners should note that Navarea Warnings will be just as vital as Coastal Warnings and the Navtex should be programmed for

Message Types A and L in UK waters.

**Message Type Z:** Letters 'QRU' (no messages) may be broadcast when applicable to confirm correct operation of receiver.

\* Messages marked \* cannot be rejected when programming a Navtex receiver.

## Appendix B

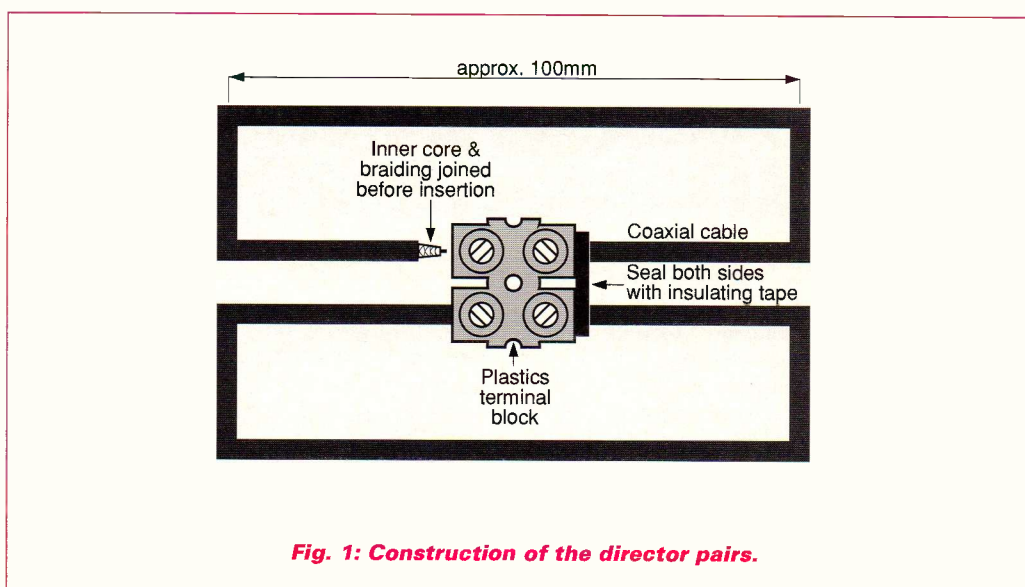
### Transmitter Schedules: Navarea One

| Transmitter                   | Code | Transmission Time (UTC)                  | Full Area Weather Forecast Times |
|-------------------------------|------|--|----------------------------------|
| Reykavik, Iceland             | R    | 0318, 0728, 1118, 1518, 1918, 2318       | Gale warnings only               |
| Scheveningen, The Netherlands | P    | 0348, 0748, 1148, 1548, 1948, 2348       | Gale warnings only               |
| Stockholm, Sweden             | J    | 0330, 0730, 1130, 1530, 1930, 2330       | 0730 & 1930                      |
| Oostende, Belgium             | T    | 0248, 0648, 1248, 1848, 2248             | 0648 & 1848                      |
| Bodo, Norway                  | B    | 0018, 0418, 0900, 1218, 1618, 2100       | 0018 & 1218                      |
| Rogaland, Norway              | L    | 0148, 0548, 0948, 1348, 1748, 2148       | 0148, 0948, 1348, 2148           |
| Vardo, Norway                 | V    | 0200, 0500, 1818, 1100, 1700, 2018, 2300 | 1100 & 2300                      |
| Tallin, USSR                  | U    | 0030, 0430, 0830, 1230, 1630, 2030       | 0830 & 2030                      |
| Haernoessand, Sweden          | H    | 0000, 0400, 0800, 1200, 1600, 2000       | 0800 & 2000                      |
| Cullercoates, UK (East)       | G    | 0048, 0448, 0848, 1648, 2048             | 0848, 2048                       |
| Portpatrick, UK (West)        | O    | 0130, 0530, 0930, 1330, 1730, 2130       | 0930 & 2130                      |
| Niton UK (South)              | S    | 0018, 0418, 0918, 1218, 1618, 2018       | 0818, 2018                       |



# Modifying a Television Antenna to Receive Extra Channels

*Ivor Nathan lives in a difficult location for DXTVing. He decided to experiment with his television antenna to see if he could improve his reception of DX signals. He explains his efforts and the success he achieved and tells how to modify your own antennas.*



**Fig. 1: Construction of the director pairs.**

Living in a dip in a very hilly area of North London, reception of long distance (DX) radio and television signals is difficult in this location. Even the good reception of f.m. stereo radio requires the optimum siting of an efficient antenna. The four 'local' television channels similarly require an efficient antenna to produce good colour pictures from the Crystal Palace transmitters.

## Challenge

However, the very nature of the problem presents a challenge to the experimenter and, with a little patience, this can become a satisfying hobby in itself. Paradoxically, the relatively low strength of local signals avoids the swamping effects that would otherwise mask the weaker, distant signals.

Having noticed that very weak signals were

receivable here on Channel 42, from the TVS Hannington transmitter, even on a loft antenna used for reception of local television stations, I decided to build a separate 6-element Yagi that could be switched in, instead of the loft antenna, for long distance work. Channel 42 is in Band V whereas the main London transmissions are in Band IV, so the dimensions of each Yagi element were cut to suit the vision frequency of 639.25MHz and the sound frequency of 645.25MHz. With the completed antenna sited in an optimum position on the outside of the house, and with extra gain provided by an antenna amplifier behind the television set, good, but snowy, monochrome pictures were received from TVS and also BBC1, BBC2 and Channel 4 South transmitters. TVS often transmits regional

variations, effectively providing an alternative channel to the London ones, so it was decided to concentrate on better reception of TVS.

## Unsatisfactory

Although watchable monochrome reception had been achieved, the reception of colour pictures, even with the antenna amplifier, was unsatisfactory so I decided to increase the gain of the home-made antenna.

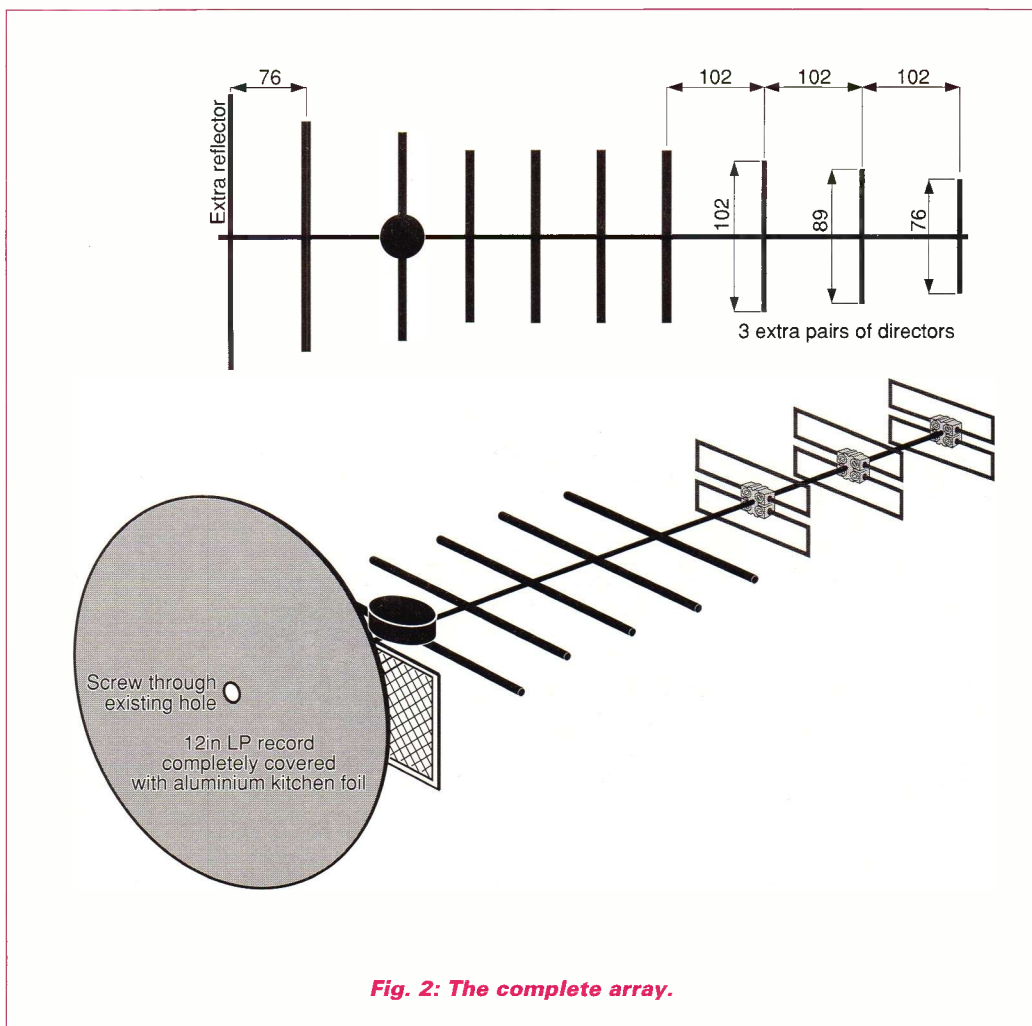
By adding three pairs of extra directors and a circular reflector, reception of TVS was improved to the extent that snowy, but watchable, colour pictures were received, accompanied by extremely strong sound signals. The directors consist of compressed 'figures-of-eight' cut from 305mm lengths of coaxial cable and mounted on plastics terminal-blocks.

The drawings, together with **Table 1**, give the exact dimensions. Note that, as shown in **Fig. 1**, the '8' is in fact two separate, compressed '0's', so these directors form two rows of half-wave elements, mounted one above the other, but electrically isolated from each other.

## Circular Reflector

The circular reflector was made of aluminium kitchen foil that was pasted completely over a discarded 12in LP record, on both sides and covering the edge. The foil was then protected from the weather by a covering of thin plastics sheeting fitted completely over all surfaces of the record and suitably glued in place. The complete array is shown in **Fig. 2**. Dimensions are given for Channel 42, but readers will need to calculate dimensions,

# Feature



**Fig. 2: The complete array.**

including element spacings, for other channels that they may find receivable in their own areas.

Each length of coaxial cable should have about 25mm of outer covering removed from each end. About 25mm of insulation should be removed from each end of the inner core, having first peeled the screen braiding back out of the way. The inner core and braiding should then be twisted together so that the whole piece forms one continuous conductor to improve signal pick-up. The ends are pushed into the terminal blocks, so that when the screws are tightened, each compressed 'O' forms a

continuous loop. Each loop should be arranged symmetrically so that the overall maximum length, from end to end, is as shown in **Fig. 2**.

For extra strength, and for weather-proofing, insulating tape should be used to tightly wrap each termination so that there is a seal between the cable covering and the terminal block at each entry point, as shown in **Fig. 1**.

The reflector was screwed to the rear end of the boom using the central hole in the record. The directors were mounted on another boom - plastics or wood will do - and both were attached to the main boom supporting the existing Yagi. Insulating

tape can be used for this, but it is best to strengthen and weather-proof all taped coverings with a layer of adhesive, such as Clear Bostik. Ensure that each director pair becomes progressively shorter towards the transmitter and that all are shorter than the last director on the unmodified Yagi.

Adding seven light and compact elements to an existing television antenna in this way increases signal strength and ensures that reception of distant stations is improved.

### Card Antennas

Similar modifications can be made to indoor antennas, where additional

elements can be of less rugged construction, for example kitchen foil can be cut to the correct size and shape and pasted onto card.

### Polarisation

All the diagrams show the antennas orientated for horizontally polarised signals. For vertically polarised signals just rotate the antenna 90° so that the elements run in a vertical direction.

**Table 1: Cable needed for each director pair.**

|                       |                     |
|-----------------------|---------------------|
| 1st pair of directors | 292mm of cable each |
| 2nd pair of directors | 279mm of cable each |
| 3rd pair of directors | 267mm of cable each |

### Abbreviations

in inch  
mm millimetres  
MHz megahertz  
DX 'long distance'

BBC British Broadcasting Corporation  
TVS Television South



# Sony ICF-C1000 FM/AM World Time Clock Radio

*If you've a need for a miniature radio the new ICF-C1000 from Sony could be just what you've been waiting for. Mike Richards takes a closer look.*

The new ICF-C1000 is a very attractive receiver that features an a.m./f.m. radio plus clock and alarm in a unit that will fit comfortably into a pocket. This combination of features makes the Sony a highly portable unit and will have wide appeal.

### Features

First impressions count for a lot and the Sony, as always, presents a very sophisticated image. The case itself is a beautiful combination of curves that fits very comfortably in the hand. The cleverly designed case also provides excellent protection as most of the controls are covered. The stylish construction gave the Sony a very high quality feel that belied its diminutive size

### Simple Tuning

A conventional tuning system is employed, with an edge control on the side panel, the operating frequency being displayed using a 27mm analogue dial. With only two bands provided, switching between m.w. and v.h.f. was done with a simple slide switch on the side panel. The only other control on the side panel was a second edge knob for the volume.

Opening the case revealed the main operating panel and speaker, supplemented by an l.c.d. clock display and time zone map in the lid. The main operating panel was unusual in that it was sculptured with gentle undulations that aligned with the three rows of switches. This further enhanced the 'Hi-Tech' styling of the ICF-C1000. Although there were eight switches on the main panel, only two were used for normal operation of the radio. Switching the radio on was done by a single press of the ON button with a second button used for OFF.

### Self-contained

The ICF-C1000 was completely self-contained, as you would expect from a truly portable unit. The antenna system employed a ferrite bar for m.w.



reception and an ingenious wire antenna for v.h.f. This wire antenna was 530mm long and retained on an internal drum. To use the antenna it was simply pulled out from the side of the case. Rewinding the wire was achieved by a very neat flush mounted knob on the base of the receiver. The power requirements were very straightforward and comprised two AA cells for the receiver and a 3V lithium battery for the clock.

Although the built-in speaker was very useful, there was a standard 3.5mm jack for connecting headphones.

### Built-in Clock

The remaining switches on the

top panel were used to control the comprehensive clock and alarm functions. The clock display was housed in the lid section of the case and comprised a 90mm x 12mm liquid crystal display. In addition to showing the time, there was a handy bar that aligned with the world time zone map printed immediately below the clock. This bar could be shifted to any time zone using a pair of buttons marked + and -. As this bar was moved the displayed time changed to reflect the selected time zone. This was great for checking foreign programme times. For this facility to work properly the main clock needed to be set to GMT. Thought had even been given to British Summer Time by the provision of a

button marked BST. When operated, this added an hour to the displayed time.

Moving on to the alarm facilities, these followed what is now standard practice with the choice of radio or buzzer. The buzzer was actually a beep and was extremely persistent and almost impossible to sleep through!

### In Use

You've probably already gathered that I was impressed with the overall appearance and design of the ICF-C1000. These are all important elements but by far the most important is how well it works! To evaluate this I simply used the receiver as it's most likely to be used - as a highly portable unit. The first point is that it really does fit quite comfortably in the pocket. This is helped by the smooth contours that leave no sharp corners.

I was initially rather worried that the short tuning scale would be difficult to use. My fears were unfounded as I had no problems at all. The audio quality from the internal speaker was perfectly acceptable and improved considerably when listening with a good quality pair of headphones. However it's important to keep the performance in perspective with the size and intended use of the ICF-C1000.

### Specification

|                     |   |
|---------------------|---|
| Frequency Range:    | v.h.f. 76-108MHz<br>m.w. 530-1710kHz                                    |
| I.F.s:              | v.h.f. 10.7MHz<br>m.w. 455kHz   |
| Antennas:           | v.h.f. wire antenna<br>m.w. Ferrite bar                                 |
| Speaker:            | 45mm internal   |
| Output:             | Earphone jack 3.5mm   |
| Power Output:       | 110mW at 10% harmonic distortion  |
| Power Requirements: | Radio 3V, two R6 (AA) batteries<br>Clock 3V, one CR2025 lithium battery |
| Battery Life:       | Radio 45 hours,<br>Clock 1 year   |
| Dimensions:         | 110 (w) x 33.6 (h) x 70mm (d)   |
| Weight:             | 240g  |

### Summary

The Sony ICF-C1000 is certainly a very different receiver and one that should appeal to many travellers. The performance and features were well up to the expected standard for this type of receiver, but the styling sets it apart from much of the competition.

The ICF-C1000 currently costs £ 49.99 from Sony outlets. My thanks to **Sony UK** for the loan of the review model.

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- FEC-S – FEC1000 Simplex
- Sports Info. 300 Baud ASCII F7BC
- Sitor – CCIR 625/476-4, Modes A/B, SBRS/CBRS FEC etc
- Autospec – Mk's I and II with all known interleaves
- ASCII – CCITT 5, variable character lengths/parity
- SWED-ARQ/ARQ-SWE – CCIR 518 variant
- ARQ-E3 – CCIR 519 variant
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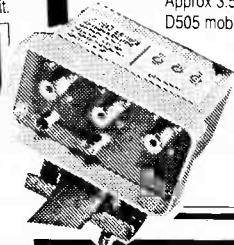
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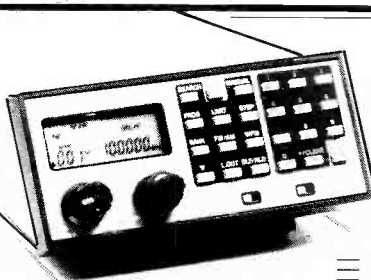
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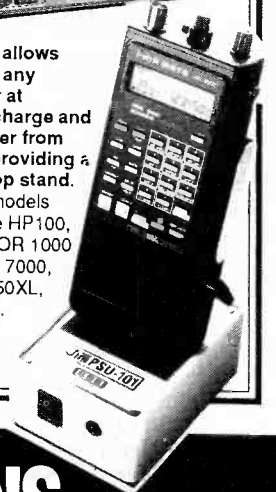
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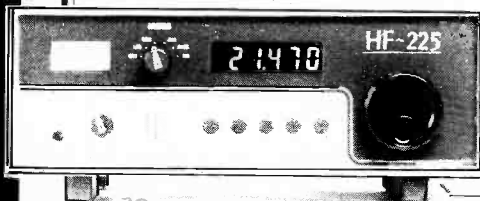


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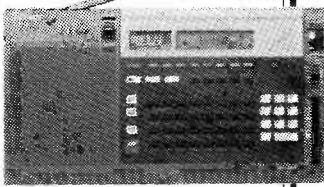
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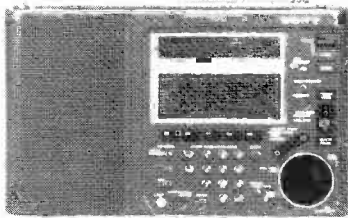
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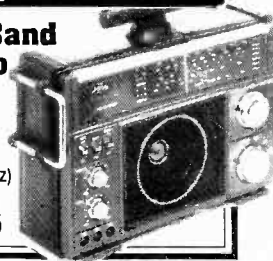


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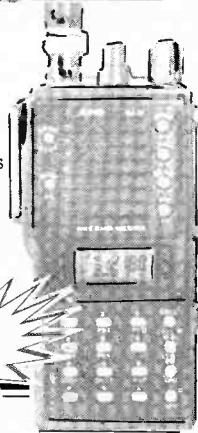
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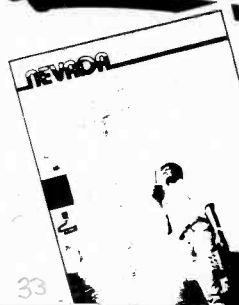
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| Kenwood TS520 HF rig - average condition - c/w spare tubes ..... | £425  |
| Sony PRO80 handheld SW and VHF receiver .....                    | £225  |
| Bearcat 200XLT - boxed comes with 900MHz .....                   | £160  |
| SX200 16 channel base scanner AM/FM switchable .....             | £125  |
| Fairmate HP100E, 1000 mems to 1300MHz .....                      | £500  |
| Icom R71E HF RX with free ERA microreader .....                  | £625  |
| Fairmate HP200E - clean as new - V.G.C. .....                    | £195  |
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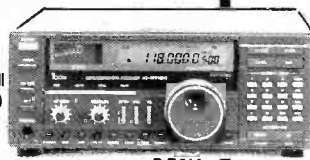
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# IC R71E Communications Receiver

*The Icom IC R71 is a compact, full-featured, general coverage communications receiver which has been around for several years. It is reviewed for us by Andreas Piróg.*

The receiver is a modern, superior-grade design, incorporating advanced electronic technology, along with a variety of sophisticated facilities. According to the manufacturer, the set uses a quadruple conversion superheterodyne receiving system with a 1st i.f. of 70.451MHz, 2nd i.f. of 9.0115MHz, 3rd i.f. of 455kHz and 4th i.f. of 9.0115MHz. The IC R71 covers the frequency range 100kHz to 30MHz, with a microprocessor-controlled, 10Hz step, digital p.l.l. synthesised v.f.o. system.

## Description

At first glance, the IC-R71 physically resembles a mobile h.f. transceiver, rather than a full-size table receiver. Its cabinet is an unusually compact, bluish-grey finish, metal case including a plastics front panel, with no less than 48 keys, switches and knobs, a signal strength indicator and a 6-digit frequency readout.

The set comes with 32 programmable memory

channels (each memory stores frequency and operating mode), direct keyboard entry system, scanning provision for automatically scanning the memories and for scanning between any two frequencies stored in memories, r.f. gain control, attenuator, pre-amplifier, all-mode squelch and tone controls, tunable notch, operator-selectable a.g.c. fast/slow/off and passband tuning as standard. Two digital v.f.o.s, dimmer and dial lock are also included in the standard trim. The internal loudspeaker is mounted on the upper side of the receiver.

On the back panel, connections for low and high impedance antenna inputs (the SO-239 socket and a clamp respectively), ground, receiver muting, external speaker jack, optional interface unit connector, scope terminal, etc., are all provided.

The optional extras include the IC-EX 257 f.m. unit, IC-EX 310 speech synthesiser, frequency readout, RC-11 infra-red remote frequency

controller, CR-64 high stability filter, two c.w. filters - the FL-32, 500Hz and FL-63, 250Hz, plus a high quality 455kHz 8-pole crystal lattice - the FL44A, 2.4kHz for s.s.b./narrow a.m. use. Rounding off, IC-HP1 headphones, CK-70 d.c. adapter for 12V operation, CT-10 computer interface/terminal unit, IC-EX 309 computer interface connector unit and IC-SP3 external matching speaker are also available.

## Review Equipment

Two samples of the IC-R71E were borrowed for testing. One of them - serial No. (22) 03001 incorporated the standard factory 6kHz (MuRata CFW 455IT) ceramic BW filter, an optional FL-44A, 2.4kHz and FL-63, 250Hz (Nikko Denshi), both crystal. Moreover, an optional IC-EX 257 f.m. unit was fitted. The other review sample - serial No. (22) 023112 included the standard factory 6kHz (MuRata) ceramic, an optional FL-44A, plus FL-32, 500Hz (Nikko Denshi) both

crystal. No other options were installed.

Both receivers were tested on two different types of antenna: a 41m inverted-L wire antenna with 50Ω coaxial down-feed and a military active antenna, the AA300 from Standard Radio and Telefon AB, Sweden.

As is my custom, the test were performed alongside the semi-professional Japan Radio NRD-515, which was used as a sort of reference-receiver when operating under a variety of extremely difficult reception condition. Furthermore, the two IC R71Es were also compared against each other to check a sample-to-sample variability in performance and quality control standards.

## On the Air

Right from the start, the IC R71E showed itself as a remarkably skilled and brave performer. Its appreciably quiet circuitry, absolute freedom from image signals, birdie-free





Table 1.

| Frequency (MHz) | Station    | Icom IC R71E |             | NRD-515   |
|-----------------|------------|--------------|-------------|-----------|
|                 |            | pre-amp on   | pre-amp off |           |
| 11.920          | REE Madrid | S9 + 10dB    | S9 + 20dB   | S9 + 30dB |
| 15.195          | RFI France | S9 + 20dB    | S9 + 30dB   | S9 + 35dB |
| 21.530          | RFE Munich | S1           | S2          | S7        |
| 21.685          | RFI France | S5           | S8          | S9 + 10d  |

synthesiser, excellent audio and straightforward operation, far exceeded my initial expectations.

Tuning can be performed via a main tuning knob, numerical keypad, memory, scanning and a dual v.f.o. system which is very useful for speedy operation. Four tuning rates are provided: 10 & 50Hz, 1kHz (TS) and 40kHz (Band).

The IC R71's large, main tuning knob has a reasonable 'feel' and is a pleasure to operate. Of the remaining knobs, however, I found none to be particularly impressive. Their small size, mediocre quality and inadequate, sharply edged incisions, made them awkward to operate. To tell the truth, after a few hours of intense knob-twiddling I felt my finger tips becoming swollen and painful. The push-buttons and keys are also annoyingly tiny, which is a drawback.

In contrast, the traditionally designed analogue signal strength indicator is exemplary. Likewise, the digital frequency readout is simple, distinct and easy-to-read - a definite plus factor. Apart from certain purely cosmetic flaws, the overall quality of construction can be rated as average for a receiver in this class and price range.

### Dependable Performance

Much of the reason for the IC R71's unusually dependable performance is that the internal, upward-aimed speaker on top of the set, produced a bright, clean and powerful sound, ensuring excellent readability of both d.s.b.

and s.s.b. signals. I must stress that this is my personal, purely subjective opinion.

Neither the external matching speaker, nor the IC-HP1 headphones from Icom were available for the tests. With other brands of outboard speaker units or headphones used, the audio quality was barely acceptable.

Sensitivity within the lower s.w. spectrum seemed to be quite on a par with that of the Japan Radio NRD-515 and thus fully adequate for serious tropical band DXing and s.w. BC monitoring applications. Nevertheless, at higher frequencies, e.g. the 25, 19, 16 and 13m bands, the IC R71E turned out to be less sensitive, which could clearly be perceived by ear and also confirmed via the S-Meter readings in **Table 1**.

### Built-in Pre-amp

The IC R71's built-in pre-amplifier provided welcome gain for DXing without significantly degrading the dynamic range or increasing the noise level. Still, it does not operate below 1.6kHz.

With regard to the dynamic range itself, it does not seem to be, dare I say, over-impressive. During daylight hours, there were no overloading problems at all. On the other hand, the night-time profusion of strong r.f. signals - in particular those from certain high-powered BC stations operating in the 49, 41 and 31m bands - made the use of the attenuator necessary. For instance, on 6.195, 6.2100 or 9.605MHz, where some intermodulation phenomena, caused by

overloading, were clearly heard.

Further, I was really amazed at the receiver's freedom from false signals (images). In fact, I didn't find any throughout the l.f./h.f. spectrum at any time.

As to the IC-R71's spurious signal rejection, the set also appears to be clean. A few weak 'birdies' were noticed in both the long and medium wave area, namely 123-4, 160, 230, 265, 301, 337kHz and 516 and 554kHz, respectively. On short wave - on 4.004-7-8-9 and 4.095-6-7kHz only, which in practice is completely negligible.

IF Selectivity in a.m.-wide is quite acceptable. The 6kHz ceramic from MuRata provided enjoyable reception of long and medium wave broadcasts. Even on short wave it is also useable, in particular at the higher frequencies, where a 5kHz international broadcasting channel spacing is standard. For example, the RFI (Radio France International) on 15.200MHz and VOA on 15.205MHz (both outlets with S9 + 10dB) were heard without excessive mutual interference. For use in the tropical bands, however, this filter is completely inadequate.

Now, the optional and pricey FL-44A, 2.4kHz crystal filter for s.s.b./narrow-a.m. (in place of the inexpensive, standard factory CFJ 455 K5, ceramic from MuRata) is undoubtedly of first-class value for both a.m. s.w. DX and reception in the s.s.b. mode.

There has been some confusion concerning the IC R71's sophisticated, all-mode passband tuning - the factory claiming

variable bandwidth tuning (v.b.t.) It must be made clear that this feature was, in practice, found as being the conventional i.f. shift. It allows the i.f. passband to be shifted back and forth from the carrier frequency, but does not allow the actual i.f. bandwidth to be continuously narrowed, which is contrary to the manufacturer's specifications.

Disappointingly, the IC-R71's tunable Noise Blanker is not quite what it is intended to be either. First, it considerably degrades the receiver's dynamic range and suffers from cross-modulation. Further, it works only marginally against ignition pulse-type noises.

Conversely, the IC-R71's Notch Filter did a very commendable job in making an interfering heterodyne whistle inaudible, when tuning to Radio Xing-Jiang PBS, Urumqi, China, on 4.735kHz in e.c.s.s. (u.s.b.). However, the notch is inoperative in d.s.b. (a.m.) mode.

The a.g.c. performs remarkably well. Two a.g.c. release times plus OFF allow for a degree of flexibility. I also found the reception in s.s.b. to be superb, compared to other sets in the same category and price range. Nevertheless, no automatic offset for l.s.b./u/s/b/ is provided. As a result, the v.f.o. must be manually retuned each time the lower or upper sideband is selected, which is a nuisance.

Frequency stability is excellent. During e.c.s.s. operation, no retuning was needed, even though the set was left on over extended periods. Apropos



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# Review

## SPECIFICATION

Modes covered as standard are: a.m. (A3E), l.s.b./u.s.b. (J3E) and c.w. (A1A), with f.m. (F3E) and f.s.k. (F1B) as optional extras.

|                            |   |             |   |
|----------------------------|---|-------------|---|
| Sensitivity (pre-amp on):  | s.s.b., c.w., RTTY  | a.m.        | f.m.  |
| 100kHz - 1.6MHz            | 1 $\mu$ V   | 3 $\mu$ V   |   |
| 1.6-30MHz                  | <0.15 $\mu$ V   | <05 $\mu$ V | <0.3 $\mu$ V for 10dB S+N/N & 12dB SINAD (f.m.) |
| IF Selectivity             | 6dB down  | 60dB down   |   |
| s.s.b., c.w., RTTY         | 2.3kHz adjustable to 500Hz min  | 4.2kHz      |   |
| c.w.-N, RTTY-N             | 500Hz   | 1.5kHz      |   |
| a.m.                       | 6kHz adjustable to 2.7kHz min   | 18kHz       |   |
| a.m.-N                     | not specified   |             |   |
| f.m. (option)              | 15kHz   | 25kHz       |   |
| Spurious rejection ratio:  | >60dB   |             |   |
| Dynamic range:             | 100dB (unspecified tone spacing)  |             |   |
| Frequency drift:           | <30Hz an hour   |             |   |
| Frequency counter:         | 6-digit fluorescent readout   |             |   |
| Power supply requirements: | 117V or 235V 10% 50-60Hz 30VA (110/200/220V needs internal modification), |             |   |
| Audio output:              | <3W   |             |   |
| Audio output impedance:    | 50 $\Omega$ unbalanced  |             |   |
| Dimensions:                | 286 x 111 x 276mm (w,h,d.)  |             |   |
| Weight:                    | 7.5kg   |             |   |

long-term operation, good ventilation around the IC-R71 cabinet's rear area would be desirable, since the units on test became quite warm. Indeed, after several hours of use, their top cabinet covers became uncomfortably hot to the touch, compared to the NRD-515, which runs relatively cool.

### Evaluation

Unlike the earlier, in my opinion high controversial IC-R70, the IC-R71 has shown itself to be an impressive and valuable piece of s.w. gear. It fares unusually well as a BC programme listening device and is equally well-suited to serious s.w./tropical band DX applications. In addition, it provides reception of s.s.b. signals comparable to commercial standards.

A wide range of options available add to the overall versatility of the IC-R71. As previously indicated, the rig is - via CK-70 adaptor - capable of 12V d.c. operation. This, in combination with the receiver's noticeable compactness and small size, also makes it attractive for a variety of mobile applications, e.g. on trips, DXpeditions, etc.

As for myself, it took quite a while to get used to operating this set. I must admit that some operator skill and routine are a must to make this otherwise straightforward and user-friendly receiver perform to its full potential. The two units performed identically in all respects. No problems concerning quality control were experienced.

### Advantages

- quiet circuitry
- very good sensitivity
- excellent selectivity in s.s.b./narrow-a.m.
- efficient i.f. shift
- absolute freedom from image signals
- excellent frequency stability
- birdie free synthesiser
- good a.g.c.
- excellent reception of s.s.b. signals
- remarkably good audio
- synthesiser tunes in 10Hz increments
- compact and handy design
- straightforward to operate

### Disadvantages

- notch inoperative in a.m. mode
- dynamic range only fair
- noise blanker poor
- pre-amplifier does not operate below 1.600MHz
- no automatic offset for l.s.b./u.s.b. is provided
- pushbuttons annoyingly tiny
- knobs tend to hurt the fingers

### Conclusion

Top of the amateur class h.f. receiver market, the IC-R71E allows for automatic/remote and computer-controlled operation and is good value for the serious s.w. BC monitor, DXer and RTTY enthusiast. In my view, the set has a favourable radio performance-to-cost ratio.







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| Deluxe Dipole Centre, 259 Socket.....  | £9.35  |     | £2.00 |
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| <b>PB 350-W</b> Balun, 1:1, 1.5:1, 2:1,<br>3:1, 4:1, 5:1, 6:1, 7.5:1, 9:1, 12:1, 16:1..... | £26.95  | £1.00 |

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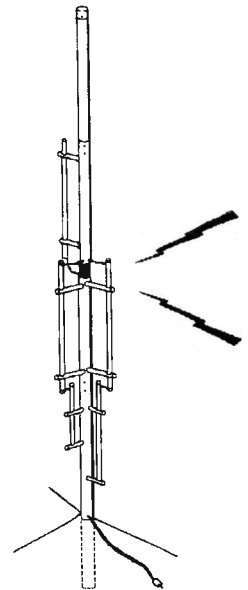
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# Educational Software for Basic Electronics - Part 11

*J.T. Beaumont G3NGD concludes this series with a program for an alphanumeric marking scheme for tutors and the two programs for producing the menus used to allow rapid access to any part of the course.*

## Alphanumeric Marking Scheme

This program is intended for the teacher. When this program is RUN, two menu options are presented on the screen.

### 1. Calculation by letters.

This option is used when teachers use letters to represent marks. For example, A, B, C, B-, C+, etc. The value given to each of these letters can be seen in the program between lines 440-560.

These values can be altered to meet a teachers specific requirements. After each mark has been entered, the RETURN key must be pressed. On pressing the letter "T" and RETURN, the total mark and the percentage score is displayed on the screen. A typical screen example is shown in S27).

### 2. Calculation by numbers.

Here, numbers are used instead of letters. When this option is selected, a prompt at line 660 requires the total mark to be entered followed by pressing the RETURN key.

When all the marks have been entered, the total mark including the percentage can be displayed by typing the number 999 and pressing the RETURN key.

```

MARKING SCHEME.
-----
Input A to D. & THEN RETURN
You can use '--' or '+'.
e.g. B- or B+      M = Absent
Input 'T' & press RETURN to TOTAL UP!
?B-
?C+
?T
Total Marks = 11
PERCENTAGE MARK = 55 %
Do you want to do some more calcs Y/N?
    
```

*S27 is shown above with S28 below.*

```

MENU OPTIONS 1
-----
Input letter to "select" program reqd.
-----
1. Additive Mixing of Colour
2. BINARY Tutor
3. 7-SEGMENT Display Tutor
4. Modulated Carrier Wave Tutor
5. Oscilloscope Tutor
6. Frequency Modulation Visual Aid
7. Logic Gates
8. Transformers
9. Capacitors
A. Addition of Harmonic Waveforms
B. Lissajous Figures
C. Resistance and Ohms Law
D. Colour Codes and Resistors
E. Resonant Tuned Circuits and Coils
G. MENU II
    
```

### The Disk Menu. (Drive 0)

When the programs have been saved on disk, the next step is to use a Menu. This lists all the programs saved on the disk, as shown in S28. This allows the user to RUN any

of the options by pressing a number or letter. In this version of the program there is no need to press the RETURN key.

The menu should be loaded from a "!BOOT" file on the disk. When this is done, the Menu can be called up at any time -

even during a running program - by 'BOOTING' the disk. To do this hold the SHIFT and BREAK keys down together, and then release the BREAK key whilst keeping the SHIFT key held down.

Program P28 is written for a 'double sided' disk. If only a 'single sided' disk drive is available, I suggest that a 'reversible' disk is use, and then all the programs will fit on one disk.

For use with single sided drives this program should be modified as follows:

CHANGE line 340, and then DELETE lines 510 and 520

340 PRINT TAB (3,23); CHR\$(130); "Turn this disk over for side two"

### The Disk Menu. (Drive 2)

This program lists the options that have been saved on side number two. This side can be selected, when using a double sided disk drive, by entering the letter 'G' at the Menu option on Drive 0 of this disk.

For single sided operation, line 270 in program 29 should be changed to:

270 PRINT TAB (3, 23); CHR\$(130); "Turn this disk over for side one"

Lines 80, 420 and 430 should be DELETED.

**The complete Educational Software for Basic Electronics suite of programs is available on a 5 1/4 in 40 or 80 track floppy disk direct from Short Wave Magazine, Enefco House, The Quay, Poole, Dorset BH15 1PP, price £8.95 post free. Please note that this software is only available, on disk, for the BBC Computer. Neither the staff of Short Wave Magazine, nor the author, can undertake to translate the programs for other computers.**



by Ron Ham  
Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

**D**o keep in mind, the propagation of radio waves in the h.f. and lower v.h.f. bands depends on the amount of solar activity and the condition of the various regions of the ionosphere. However, nearer to the earth's surface, the easy passage of radio and television signals in the upper v.h.f. and u.h.f. bands can be hampered by changing weather conditions within the troposphere. With this in mind, each month I try to include as many reports as possible about these natural disturbances and their effect on terrestrial radio traffic.

## Solar

While in Glasgow, using a 2in refractor telescope and a 1.5in projection screen, **Ron Livesey** located four active areas on the sun's disc on September 3, 4, 5, 9, 11, 25 & 26 and five on days 2 & 12. Despite often cloudy skies in October, **Clive Brook** (Plymouth) observed three sunspots groups on the 14th, 15th & 19th and four groups on days 9, 12, 17 & 18. **Patrick Moore** (Selsey) kindly sent a drawing of the large group that he observed at 1000 on the 14th, Fig. 1.

**Cmdr Henry Hatfield** (Sevenoaks), using his spectrohelioscope, located 4 groups (one with about 30 spots), 10 filaments, 5 quiescent prominences and 2 active plages at 1011 on October 1 and 2; 6gp, 14f and 5qp at 1100 on the 4th; 4gp, 9f and 13 small qp on the 6th. Henry also recorded several individual bursts of solar radio noise at 136 and 1297MHz on the 1st. "Intermittent

bursting on 136MHz continued 'till sunset' at 1710," said Henry.

Early in October, **David Glenday** (Arbroath), using a 2in refractor and projection screen saw, "some very large sunspots near the centre of the solar disc which coincided with a bout of out of season Sporadic-E". I don't think there is a connection David, but reports like this are really valuable and must be recorded for posterity.

## Auroral

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received reports from observers, mainly in Scotland, of 'auroral glow' for the overnight period on September 6/7, 9/10, 10/11, 14/15, 17/18 & 25/26; 'homogeneous arc or band' on 11/12 & 26/27; 'rayed arc or band' on 5/6 & 25/26; 'ray bundles' on 10/11, 19/20, 25/26 & 26/27 and 'active forms, pulsating' on 1/2, 10/11 & 25/26.

**Doug Smillie** (Wishaw) noticed weak tone-A signals on the 50 and/or 144MHz bands on days 5, 9, 25, 26 & 27. **Tony Hopwood** (Worcester) heard the same on the 25th. **Gordon Foote** (Didcot) copied weak auroral warnings from the German beacon DK0WCY, on 10.144MHz, on October 22 & 25.

## Magnetic

The various types of magnetometers used by Ron Livesey, **Karl Lewis** (Saltash), **Dave Pettitt** (Carlisle) and **Doug Smillie**, detected storm conditions on September 5-11, 13-15 & 27-30.

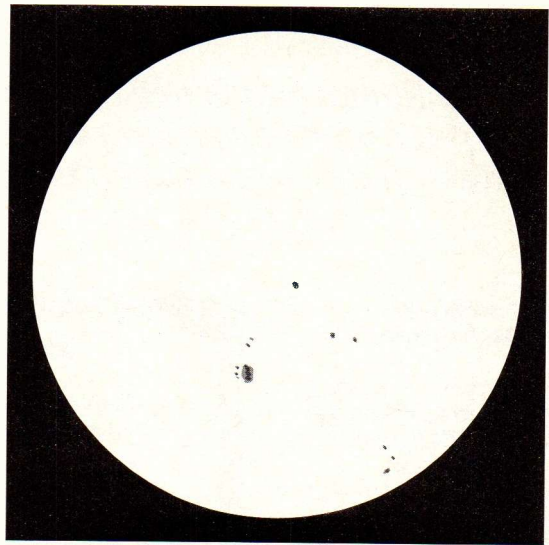


Fig. 1.

## Propagation Beacons

First, my thanks to Gordon Foote, Henry Hatfield, **Ted Owen** (Maldon), **Fred Pallant** (Storrington), **Ted Waring** (Bristol), **Ern Warwick** (Plymouth) and **Ford White** for their 28MHz beacon logs, from which I was able to compile the monthly beacon chart, Fig. 2. There is a good showing of signals from Australia and New Zealand this time. **Fred Pallant** found the band almost dead at times on October 2, 3 and 4 and a very high noise level at 0925 on the 8th (most likely solar). He also copied beacon signals from KB9NV, KE9UL and KW7Y on the 17th and N2JNT on

the 18th. After some months, **Ern Warwick** heard CT3B active again, on 14.100MHz, at 1816 on October 10 and **Ted Waring** heard WJ9Z on October 12 and 14.

## Tropospheric and Weather

A chart, showing the slightly rounded atmospheric pressure readings for the period September 26 to October 25 can be seen in my television column elsewhere in this issue. I recorded 2.69in of rain during October with the heaviest falls of 0.79 & 1.05in occurring overnight on the 11/12th & 29/30th respectively. I saw the first frost early on the 22nd.

The pressure was high around 30.4in (1029mb) and the weather conditions were right for a tropospheric disturbance to v.h.f. and u.h.f. signals on October 22 & 23. Around 1600, **Roy Patrick** (Mackworth), using an Audioline 415 receiver on a car antenna, logged Jazz FM and Kiss FM from London and Radio Cymru from Wenvoe between 93 & 103MHz.

**Michael Larsson** (Cheadle) kept watch on Band II during the month and for his efforts, he received programmes from Belgium (BRT) on the 11th, Germany on the 9th, Holland (NED2) on the 11th, Ireland (RTE1 & 3 and Century) on the 11th, 22nd & 23rd and Norway (NRK1) on the 6th & 9th.

Fig. 2.

| Beacon | September |    |    |    |    | October |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|--------|-----------|----|----|----|----|---------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
|        | 26        | 27 | 28 | 29 | 30 | 1       | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| DF0AAB |           |    |    |    |    |         |   |   |   |   |   |   |   |   |    | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| DL0IGI | X         | X  | X  | X  | X  |         |   |   | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| EA3JA  |           | X  | X  |    |    |         |   | X | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| EA6RCM |           | X  | X  |    |    |         |   | X |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| HG5GEW |           |    |    |    | X  |         |   |   |   |   |   |   |   |   |    |    | X  | X  | X  |    |    |    |    |    |    |    |    |    |    |    |
| IY4M   |           |    | X  | X  | X  |         |   |   | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| KC4DPC |           |    |    |    |    |         |   |   | X |   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| KD4EC  |           |    |    |    |    |         |   |   |   |   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| KF4MS  |           |    |    |    |    |         |   |   |   |   |   |   |   |   |    | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| KJ4X   |           |    |    |    |    |         |   |   |   | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| LA5TEN |           |    |    | X  | X  |         |   |   |   |   |   |   |   |   |    |    | X  |    |    |    |    | X  |    |    |    |    |    |    |    |    |
| NX20   |           |    |    |    |    |         |   |   |   | X |   | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| OK0EG  |           |    | X  | X  |    |         |   |   |   |   |   |   |   |   |    | X  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| OH2TEN |           |    | X  | X  |    |         |   | X | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| PY2AMI |           |    | X  |    |    |         |   | X | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| SK5TEN |           |    | X  | X  |    |         |   |   |   |   |   |   |   | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| VE2HOT |           |    |    |    |    |         |   |   |   |   |   |   | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| VE3TEN |           |    |    |    |    |         |   |   |   |   |   |   |   |   |    |    | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| VK2RSY |           |    |    | X  | X  |         |   |   |   | X |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| VK5WI  |           | X  |    |    |    |         |   |   |   |   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| VK6RWA |           |    |    |    |    |         |   |   |   |   |   |   |   |   |    | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| VK8VF  | X         |    |    | X  |    |         |   |   | X |   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| WA4DJS |           |    |    |    |    |         |   |   | X | X |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| WC8E   |           |    |    | X  |    |         |   |   |   | X |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| W3VD   |           |    |    |    | X  |         |   |   | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| W9UX0  |           |    | X  |    |    |         |   |   | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Y02X   |           |    |    |    |    |         |   |   |   |   |   |   |   |   |    | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| ZD8HF  | X         |    |    | X  |    |         |   |   | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| ZL2MHF |           |    |    |    |    |         |   |   |   | X |   |   |   |   |    | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| ZS1LA  |           |    |    |    |    | X       | X | X | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| ZS5VHF |           |    |    |    |    |         | X | X | X | X |   |   |   |   |    | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| ZS6PW  | X         | X  | X  | X  | X  | X       | X | X | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Z21ANB | X         | X  | X  | X  | X  | X       | X | X | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| 4N3ZHK |           |    |    |    |    |         |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5B4CY  | X         | X  | X  | X  | X  | X       | X | X | X | X | X | X | X | X | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |



# ssb utility listening

Peter Rouse GU1DKD, Barcroft, Rohais de Bas, St Andrews, Guernsey, C.I.

**H**ere we go. Another year and what can we expect? Well as the sunspot cycle continues to die away our listening will shift even more to the lower bands.

## How to Find the Goodies

The most common phrase I get in your letters is, "I never seem to hear the exciting stuff that some of your other readers pick up". Let us look at why some listeners do well and others have problems. First of all, if you are a newcomer then you must have patience. This is not like tuning a scanner into the local v.h.f./u.h.f. chit-chat. You will really have to work at logging stations who may only transmit for a couple of minutes before going quiet again for hours on end.

One way to guarantee some sort of success is to specialise in a certain category of transmission: the military seems to be the most popular. You will need to arm yourself with a frequency list and have a rough idea which bands are likely to be active at the time you intend listening. As we are using the military as an example, let us hone it down even further and say we will try to receive the USAF Global Command and Communication System (GCCS). We will use the USAF's own guide to which band to choose for a particular time of day or night for a given distance.

| Time       | Band (MHz) | Band (MHz) | Band (MHz) |
|------------|------------|------------|------------|
| 0000       | 3.0-4.7    | 6.7-8.9    | 6.7-11.1   |
| 0400       | 3.0-4.7    | 4.7-6.7    | 6.7-8.9    |
| 0800       | 3.0-6.7    | 6.7-11.1   | 11.1-18.0  |
| 1200       | 4.7-6.7    | 8.9-13.2   | 13.2-18.8  |
| 1600       | 4.7-6.7    | 6.7-11.1   | 11.1-18.0  |
| 2000       | 3.0-6.7    | 6.7-11.1   | 11.1-18.0  |
| Range (nm) | 200-750    | 750-1500   | 1500+      |

Notice how the lower frequencies are favoured for maximum distances during the morning and evening and the higher frequencies during the day. Using the list published in the January 1991 edition or better still the detailed one shown in *Short Wave Communications* you should now be able to match possible frequencies in use at a particular time of day and night. It is now a question of listening out on the those frequencies for any traffic. After a while you will get a feel for which frequencies are being favoured. Another trick is find an active station and spend a while tuning a few hundred kilohertz either side of it. Transmissions are usually grouped and, for instance, tuning around either side of Croughton on 11.176MHz will often produce other military stations.

This method will generally produce far more results than simply trawling through the bands from 1.5 to 30MHz looking for anything that happens to be about.

## Logs and Problems

**Peter Nicholson** of Huddersfield has been picking up aeronautical traffic from Asia and the Far East, in particular, Calcutta and Rangoon on 10.066MHz and Manila and Bali on 8.903MHz. He says the time to start listening is after 1730 hours. However, Peter also has a problem in that a local Citizens Band operator comes on the air from about midday and starts transmitting continuously and splatters all over his reception regardless of frequency. Peter uses a Sangean ATS-803A with 20m long wire and wonders if there is any way he can overcome the problem short of threatening the CBer with GBH! First, and foremost, there is one major item missing from his equipment line-up. It's an antenna tuner. Budget, synthesised portables provide remarkable performance compared with the technology that was available not so long ago, but they are nearly all prone to overload from strong signals. An a.t.u. will usually make a noticeable difference and you can either buy a ready-made one or build one from the many published designs or kits available.

**Keith Elgin** is interested in the USAF's Mystic Star network which looks after presidential and Special Air Mission (SAM) flights for VIPs. These flights involve USAF aircraft

being used to carry everyone from the President to senior military officers, diplomats and politicians. The Mystic Star network not only keeps a check on which flight is where but also arranges telephone patches

Keith has provided a list of known or known frequencies and asks if anyone else has any others. He rightly points out that it is no use quoting the channel designators for this network as they change regularly, sometimes by the day.

|        |        |        |        |
|--------|--------|--------|--------|
| 5.710  | 5.760  | 5.800  | 5.820  |
| 6.683  | 6.716  | 6.730  | 6.756  |
| 6.790  | 6.812  | 6.817  | 6.830  |
| 6.918  | 6.927  | 6.993  | 7.813  |
| 7.858  | 7.997  | 8.040  | 8.162  |
| 9.017  | 9.023  | 9.043  | 9.057  |
| 9.120  | 9.270  | 9.320  | 9.414  |
| 10.112 | 10.427 | 10.583 | 11.035 |
| 11.052 | 11.055 | 11.056 | 11.058 |
| 11.118 | 11.153 | 11.156 | 11.220 |
| 11.226 | 11.407 | 11.466 | 11.484 |
| 11.488 | 11.498 | 13.205 | 13.217 |
| 13.823 | 13.878 | 14.829 | 15.015 |
| 15.680 | 17.972 | 18.175 | 18.320 |
| 18.532 | 23.035 | 23.385 | MHz.   |

Keith has also provided a list of callsigns and the QSL address.

Airforce 1 - US President  
 Airforce 2 - US Vice President  
 SAM ##### - Special Air Mission  
 VIP/Diplomatic  
 SAM01 - Heads of State of Foreign Countries  
 SPAR 01-99 - Other Special Air Mission (Diplomatic, Attache, Military Assistance etc.)  
 VENUS - SAM Aircraft without VIP aboard

Executive 1 - US President aboard non military aircraft

Executive 2 US Vice President aboard non military aircraft

Army 1 - US Army Helicopter with President on board

Army 2 - US Army Helicopter with Vice President on board

Marine 1 - US Marine Corps Helicopter with President on board

Marine 2 - US Marine Corps Helicopter with Vice President on board

QSL Address:

US Airforce Communications Station, AFA 2045 Communications Group, AFCS Andrews AFB, MD 20331, USA.

**Paul H.**'s logs cover mostly military matters, as usual, and conversations heard with a SAM aircraft on 11.407MHz make it clear that the code word for Secretary of State James Baker is Fox Tail. He heard RAF aircraft on 6.740MHz with references to 'Alli-

gator Playground'. In recent months I have also heard these playground tags and I am convinced that they simply mean exercise ranges but, of course, the big question is which codeword applies to which. Paul also has an interesting theory on the mystery station on 9.495MHz that I mentioned last month. He has noticed that double that frequency (18.990MHz) could make it the US Navy base at Balboa (that could tie-in with 'Baker') in Panama. It is, of course, quite conceivable that a low level multiplier stage in their transmitter is not being properly suppressed and so reaching the antenna.

## Change

By way of a change **J. Liale** (Sony 2001, a.t.u. and half-size G5RV) has picked up a Russian radio telephone station transmitting in English on 13.977MHz. He has heard the station on a couple of occasions carrying out adjustments.

**John Garnett** is mostly interested in search and rescue and asks if anyone knows more about 'Coastal Control' which appears on 4.470 and 4.420MHz using duplex. I cannot help and, indeed, recall that this query was raised once before. Someone somewhere must know what the station is. John asks about my own station set up. The receivers are NRD-525 and Icom IV-R7000. Antennas range from a full-size G5RV dipole for h.f. to full-cone for v.h.f./u.h.f. The entire set-up can be patched to a pair of Philips servo controlled cassette decks which can be remotely operated.

## Looking Forward

Finally, can I say how nice it was to meet so many of you at Leicester and I hope that we will meet up again during my next visit which should be the London show at Picketts Lock early in 1992.

## Stop Press

We have just heard that Peter is, unfortunately, rather ill at the moment. Could readers, therefore, restrain from telephoning him as it does put extra strain on the rest of the family. Many thanks. We'll let you know what's happening with the column as soon as we've sorted things out, in the meantime, keep your reports going to Peter's address.



EUROPE  
Peter Shore

**S**ince we last met in the pages of *Short Wave Magazine*, the European radio scene has been moving on relentlessly. During October, the International Telecommunication Union announced that the three Baltic states of Estonia, Latvia and Lithuania would be accepted as full members of the Union within a matter of weeks. With accession to the Union, the states will gain full voting rights at all meetings and administrative Conferences (such as WARC 92 - of which more later). In addition, they will receive their own country code and frequencies of transmitters in their territories will be shown in the registers of the International Frequency Registration Board as theirs instead of URS for the Soviet Union.

Meanwhile, international radio stations are moving in quickly to secure rebroadcasting arrangements in these new players on the world stage. The Finnish section of BBC World Service is already carrying extensive news of Estonia and occasional reports in Estonian, which is similar to Finnish. Speaking of Estonia, there is a new English language DX programme on Radio Estonia. It is transmitted each Monday at 2130 on 5.295MHz.

If you would like to tune into another Baltic State, Radio Vilnius in Lithuania is a usually easy catch, try at 2230 on 9.71 & 9.675MHz and at 0000 on 17.69, 17.605, 15.18, 9.71 & 7.40MHz. The transmitters on 9.71MHz are understood to be located in Lithuania, whilst the others are dotted around the Soviet Union.

Another Nordic country, Sweden, is changing its policy in order to accommodate what it calls 'a changing world'. With Sweden having applied for membership of the European community, Radio Sweden believes that it is this development that will shape its programming for many years and the station intends to focus more closely on Europe, which it considers to be its most important target area. The station inaugurated an hour long evening programme with the introduction of its D91 schedule at the end of September. This is broadcast at 1930UTC and will eventually be carried on the Astra satellite, once an agreement for an audio sub-carrier has been signed. At present, listeners in Europe can tune in to the evening transmission on 15.27, 9.655 & 6.065MHz short wave and on medium wave on 1.179MHz. There are two other broadcasts to Europe in English, each thirty minutes long, at 2130 on 6.065 & 1.179MHz and at 2330 on 1.179MHz only.

Continuing civil war in Yugoslavia means a changing media scene. Radio Yugoslavia/Radio Studio Zagreb is broadcasting hourly news bulletins on 7.24MHz & 9.83MHz. News in English has been noted shortly after the Croatian news at 0900 and 1600UTC. A

medium wave channel of 1.557MHz appears to have a high powered Croatian based transmitter that carries English news at 2200. Radio Yugoslavia in Belgrade has English to Europe at 1930 on 15.14 & 6.10MHz and again at 2200 on 9.505 and 6.10MHz.

### Domestic Station News

If you are interested in keeping up to date with the latest domestic station news from the United Kingdom, then the British DX Club's *Radio Stations in the UK* may be just what you need. The latest edition was published recently and has been entirely updated. The book lists all British medium wave and f.m. stations in frequency order together with location and transmitter power. Each frequency is cross-referenced to show possible parallel channels. There is comprehensive contact information for each station. The booklet costs £2.00 and may be ordered from the British DX Club, 54 Birkhall Road, London SE6 1TE.

### Back Overseas

Radio Tirana has undergone a number of changes of late including the disbandment of more language services. English remains reasonably intact and is currently beamed to Europe at 1830 on 9.48 & 7.12MHz short wave, together with 1.395MHz medium wave and at 2230 on 9.725, 7.215 & 1.395MHz.

BBC World Service will break new ground soon when it starts relaying another station that does not have reciprocal arrangements. Radio Japan has apparently been dissatisfied with its relays via Gabon's Africa Number 1 and has been looking for alternative facilities. Tokyo was offered transmission facilities by the Soviet authorities, but after lengthy negotiations decided to sign an agreement with the BBC. Up to ten



РАДИО МОСКВА  
RADIO MOSCOW

MAF  
INTERNACIONAL



Fig. 1: A Radio Moscow Spanish Service QSL card.

hours each day of Radio Japan's programmes will be carried to Europe over the Skelton transmitters in Cumbria, north-west England. Watch out for a comprehensive schedule in a future edition of *SWM*.

The Italian Radio Relay Station in Milan has made some adjustments to its frequency usage: Programmes are now heard at weekends on 7.125MHz during the day-time period, with 7.30MHz used in the evenings. Programmes include United Nations output in a variety of eastern European languages as well as IRRS' own English language output.

It is sometimes difficult to keep in touch with all the changes in the Russian electronic media and there is still extensive use made of short wave transmitters which makes the hobby listener's life more interesting. Reports have come in of the 'folk music' station, Radio Ala, which has been noted:

0700-1500 on 11.695MHz  
0730-1600 on 7.40MHz  
1530-0700 on 6.155MHz  
1630-1800 on 5.04MHz  
2200-0700 on 5.04MHz

There is also a medium wave channel noted around 1500 on 1.386MHz with a weaker parallel on 684kHz scheduled 0730-1600 in parallel with the h.f. channel of 7.40MHz.

Similarly the new Radio Pamyat can be heard with sign-on in relative clarity

on 12.04MHz with a trumpet solo and orchestral piece followed by 'Govorit Radiostantsa Pamyat; radio programma..'

Finally, Radio Rezonans is on the air daily 0500-0700, 1300-1400 and 2000-2200 on 11.85MHz with medium wave 1.395MHz and 684kHz.

In Germany there is considerable doubt as to how long Deutschlandfunk will survive as an external broadcaster. A year or so ago, Deutsche Welle absorbed Radio Berlin International and its facilities. It is now thought that overseas broadcasting should be the remit of just one organisation and that DW fills that role. It has always seemed to me somewhat strange that there should be one broadcaster for Europe and another for the rest of the world - it certainly can't be all that cost effective. It is quite possible that DLF will be but a memory in twelve, if not six, months time.

Meanwhile, Deutsche Welle is still coping with the shock of taking on the old eastern transmitter sites of Koenigs Wusterhausen and Nauen. DW's facilities at Juelich and Wertachtal are modern, state-of-the-art computer driven sites, but the facilities at the RBI sites are antiquated. Whereas the West German plant can be operated with a handful of staff, the Nauen and Koenigs Wusterhausen plant require around one hundred people - all of whom are now on DW's pay-roll. The antenna construction is a marvel, unlike anything else in the west and the transmitter plant itself is geriatric. I wonder how long it will be before the stations are upgraded with modern Telefunken equipment or simply closed down.

### New Receiver

A new Grundig receiver will be reaching the European market in the early part of 1992. The Satellit 700 replaces the 500 which has been around for a few years. It looks very similar, but the new model includes RDS on f.m. and many more memories: in fact it can be upgraded using EPROMs to more than 2000 different memories of frequency and mode. It is hoped to have a review in a future issue of *SWM*, so make sure you have a regular order!



Fig. 2: Grundig's Yatch Boy 206 and 204.



Roger Bunney, 33 Cherville Street,  
Romsey, Hants SO51 8FB

**T**he good news that broke on November 18 of the Terry Waite hostage release - together with his friend Thomas Sutherland - was carried extensively over the UK media live from Damascus. Search as I did, no Ku band uplink could be found other than a sound in syncs (SIS) feed over Eutelsat I F5 at 21°E, and a part coverage feed oddly over the Visnews/Gorizont circuit 14°W on the usual Luch downlink of 11.51GHz circular. I wonder if a C Band permanent contribution circuit was used, unusual since Ku band has always been used extensively during hostage release coverage. Breaks in the Sky News coverage revealed both Visnews and WTN clocks/idents and I wondered if a C Band contributions circuit was used for press news feeds?

Reporting last month on the Tele-X Scandinavian satellite sighting at 5°E with clear transmissions at 12.475GHz, additional programme circuits have been seen at 12.61 and 12.65GHz. The .475 downlink is now carrying the Nordic Channel and is rumoured to be relocating to Tele-X from its present home on Intelsat VA F12 1°W. Another new sighting during November on the 11.500GHz horizontal transponder over Intelsat V F2 at 21°W with the SIS feed (Satellite Information Services) out of Hexham race course, initially with colour bars and ident 'SIS Link 5 Hexham', both the 11.13, 11.17GHz transponders were also fired up that day with racing coverage. The BAE Sportscast service over Eutelsat I F4 11.63GHz hor at 7°E also doubled up with Hexham coverage the same day. There has incidentally been an expansion of the Sportscast service with part clear and part scrambled programming, the BAE service now extends into the evenings with live football coverage and general sport, interspersed with rolling news captions.

## Variable Signal

Mention of Intelsat 21°W reminds me that this bird is now a variable signal over the day due to inclined orbit movement. This means that for part of the day the signals are out of the reach of satellite receiving dishes which are correctly aligned for east-west tracking along the Clarke Belt i.e. using a polar or horizon to horizon mount. Inclined orbit means that the bird actually moves 'above and below' that geostationary slot position which in turn would require a dish capable of moving in both elevation and azimuth. One reader living West of London has modified his large dish with a small 8in actuator replacing the elevation bolt, thus by operating the elevation actuator so he can track both in an inclined mode as well as standard Clarke Belt tracking. Simple but practical.

Rumours circulating in heavenly circles suggest that the SES Astra 1B has lost her automatic station keeping

electronics, the craft is now under full-time manual control from Chateau Betzdorf.

An unusual 'FCI NEW YORK SNG' test pattern appeared over the 27°W Brightstar circuit on October 29 (1130) inter-cutting with skyscraper views of an early morning New York, the pattern is in PAL - never before seen though I assume it's the output from a US based facility company. Another mystery - a sequence of Canadian (CBC) news programmes were seen via Olympus 19°W at 12.52GHz at 1830 each evening, the news in French though the destination for these signals was never established, thought perhaps destined for one of the French networks, though any uplink for Olympus would originate from Europe (we think) and the signal source certainly didn't make Europe via established Ku band feeds. Any suggestions?

## Power & Wealth

A final observation on October 27 with a live Sunday Morning Live US originated religion via Eutelsat II F1 13°E over the Visnews/Brightstar downlink at 12.52GHz during the early evening. Interesting that the programme contained a live OB inject from Caesarea in Israel. Sunday Morning Live originates in Dallas, Texas, the Israel inject must have made the trans-Atlantic hop at C Band into Dallas, incorporated into the programme make-up and re-hopped back across the Atlantic in C Band, then pan-Europe distribution via II F1 in the Telecom band. During prayers a caption was inlaid 'Send Money' with details of address, credit cards accepted, etc. Such is the power and wealth of American religion.

It's good to hear from readers with any news items - one such item has arrived from Nicholas Early (Victoria, Australia) who says that the Government there have given the go-ahead for PAY-TV by satellite (AUSSAT), allowing a single operator to provide 4 channels and a further 2 channels are available though use for regional broadcasting is to be smiled upon. The operator of the 4 channel group can bid for the other 2 if necessary. **Ian Waller** (Lincoln) is a stalwart C Band enthusiast and reports a new French channel 'Canal Horizons' downlinking over Intelsat 27°W at 3.80GHz right-hand circular polarisation, it started November 1 and encryption via Nagravision, signal levels are very high compared with the 'usual' C Band feed.

Reader **Darren Salter** (Cambridge) uses a home-assembled system based around the Cambridge Computers equipment, disposed of surplus units when the firm moved north to Scotland. This obviously relates to small dish operation (Astra), but Darren has achieved a great deal of success considering the basic equipment used. Three dishes are used, fixed, a 900mm

on Intelsat VI F4 at 27°W, a 650mm on Eutelsat II F1 13°E and a 450mm for Astra. Output from each dish is coaxial relay switched (using RS relays) - there being no observable insertion loss.

## Satellite Newsletter

*Transponder* is a twice monthly A4 format satellite news bulletin which covers the whole field of satellite broadcasting - which due to the method of publication will include news as (or before) it develops. Covering both C and Ku band reception - radio and TV - the bulletin also includes broadcaster news, developments and equipment reviews. It circulates widely in both amateur and professional circles and is highly regarded for the accuracy and promptness of the contents. A sample copy of the bulletin may be obtained from Transponder, PO Box 112, Crewe, Cheshire CW2 7DS at £1.75 UK mainland.

## Orbital Slot News

Intelsat moves have been advised - the new VI F5 has been slotted at 24°W and is now in service though only C Band (C Band is 3.7-4.2GHz), this placement released the incumbent VI F2 which has been moved to 60°E replacing VA F15 which now moves to 18°W. At 18°W was found V F6 which in turn has moved to 50°W. Meanwhile back at the ranch Intelsat VI F1 launched October 29 and is currently testing over the mid-Atlantic prior to location at 27°W during early January '92. Incidentally any satellite enthusiast curious about the new but scrambled signal on 27°W at 11.565GHz vertical - it's the SSVc (Service Sound and Vision Corporation) comprising a mix of UK originated TV programming for the UK Forces in Germany and Cyprus.

Following the extensive publicity for the BBC TV World Service in use with AsiaSat 1 (Hutchvision, Hong Kong) and GBC-TV Gibraltar, Bahrain TV have also taken the 24 hour news service. Meanwhile over the Atlantic the ITN World Service have gained customers for their satellite born service - ZBF-TV ch.7 Bermuda and Trinidad's CCN-TV ch.6 are taking the daily service.

Turner Broadcasting (of CNN fame) have purchased the Hanna-Barbera library featuring Yogi Bear, Scooby Doo



Fig. 1.



Fig. 2.



Fig. 3.

and Flintstones running into thousands of hours, the intention being to create a world-wide children's channel. It's likely that any such channel will not start before 1994. Expansion too for South African channel M-Net who are establishing a World sports channel leaning heavily on football - in the UK BSkyB may become involved with the channel (over the Astra satellite on a subscription basis).

## Orbx

PanAmSat, who operate PAS-1 at 45°W have now awarded contracts to Hughes Aircraft for additional satellites. The Orbx craft will be slotted at 39°W Atlantic (Orbx II); 72°E Indian (Orbx III); 168°E Pacific (Orbx I). Payload will consist of both C and Ku band transponders capable of cross strapping (i.e. up in C Band and down in Ku etc), the first will be operational Spring 1994. Meanwhile Unicom, a US based satellite group have filed with the FCC for slots at 70 and 170°E with the proposed 24 trdr Ku band satellites to come on-stream June and November '94 respectively to rival PanAmSat.

A new satellite earth station has been constructed in Auckland atop the TV centre which will permit dual satellite channel working, either receiving 2 signals simultaneously or 1 in and 1 outgoing.



# amateur bands round-up

Paul Essery GW3KFE  
PO Box 4, Newtown, Powys SY16 1ZZ

**W**riting from Swinton, Greater Manchester, **Gerald Bramwell** has some hard words about manners during the CQ WW SSB contest weekend, particularly those stations using the DX windows for long periods and bad-mouthing anyone who asked them to QSY. The other, more arguable point, is the one Gerald makes about power levels. One must remember that, thanks to the skip, it is often the case that you will hear someone at DX, and someone going back to him, both RS59+ signals to you, but quite unable to hear each other. On Top Band, Gerald noted the usual European signals right out to Italy, plus an Asian by way of UL7ACI and a crop of Russians. 3.5MHz was good for W1ZK, V01FG, KF8D, UC1AWK, 4X4DK, JA6XMN, A92BE, VK6LK, VP2EC, ZA1QA, GD4PTV, 4N7ZZ and the usual Europeans. Turning to 7MHz, VE1PMD, N2RM, European and Asian Russians, PZ1EL, EA8DM, TA4A, HL1TUA, 4Z4TT, LU3FA, PT7JTA, EA8YG, CN8NS, HS1BV, CX5BW, JA5AUC, CP5FW/P/8 and 4X4UL. As for 14 MHz I note ZA1QA, ZA1DX, ZA1HA, CU21ASM, TA1SA, 9H3BKK, JA2NES, LU1ALF, VP2VE, YV5NCK, PY7BI, CO5CB, VK7AK, 6Y5EE, TA3ZA, 7X2DG, ZD8Z, PY5ZBA, VP9AD, CE3BFZ, TR8JH, TI2LAK/P/HP4, G4CNY/P/VP9, YU5AU/P/6W7, ZS1RFN, VK5YM, LU7HJM, TT8SA, ZS1JU, HK1AFM, ZL4BC, VP9MM, 5N31SMK, EA8BDN, 9K2AD, EA8JC, CN8NS, 8P9Z, PJ9W, a great string of Ws and VEs including VE6VK and smaller fry. On 24MHz KE5NV, VE1YX, VE1BY, NZ1U, VE2BTX, KP2AD and ZF1HJ came in among the Europeans. Finally to 28MHz where W2A00, NW3B, N3HWJ, VE3FIG, WA2MZX, NQ4I, WE3L, VE2BJH, W8G10, K4EGE, VE3PN XE2XA, VP8CGR, P40W, PJ1B, HZ1AB, PP5AJ, TA3/DL1EFW, P4T, 4M2BC on s.s.b. plus f.m. stations VE2DC, WVN3H, WA3ZBZ, N3KGL ZL1ZF, G4XAQ, G0NOR and LA71B.

New equipment has appeared in the shack of **J. Scott** in Glasgow G44, so FAX pictures from 14MHz and satellite telemetry from 145.825; this means a discone antenna has gone up hooked to a Realistic scanner. A Kantronics multi-mode box, plus Lan-link software for general decoding, while Whats-Up is used for the telemetry, and Pic-pro for the FAX. The main receiver is still the Kenwood R2000, switch-box and G5VR or end-fed wire antennas. The telemetry print-out from Dove-OSCAR 17 was quite impressive, particularly as he was 'learning to drive the new system'.

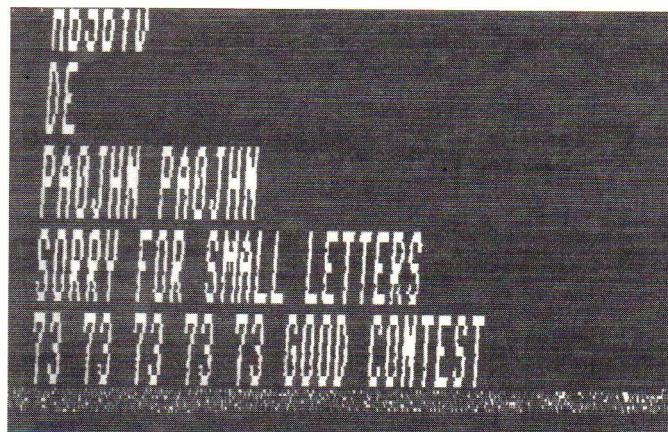
The old stand-bys are 14/21/28MHz as far as **Peter Cain** in Newcastle-on-Tyne is concerned. He listened to 28MHz for A92T, BY5RA, CX4NF, DU1EIB, D44BC, HI8OMA, HK6BDX, HZ1AB, HZ1HZ, JY5FA, J80D, KP2A, OY2VO, PJ7A, PPOF, P29PL, SU1ER, TI2LCR, VK9NS, VO2TM, VP8CGN, VP9AD, VU2BBJ, VS6WO, ZP5CGL,

Z21BL, Z21HJ, 3B8DB, 6W7S, 8P9Z, 9K2LX and 9Y4H. On 21MHz the score was AP2SQ, BY1PK, BY5RA, CM2GG, C53GB, FM6A, FY5EM, HI8CLD, HL1LVA, HS1ZEB, J37H, J82A, J80D, OA4ANR, P40W, TT8SA, TZ6VV, VP9AD, VS6VO, VU2GPD, VU2SMN, V29W, V63YL, ZF2JI, ZP0Y, Z21HS, 5Z4BI, 6W1EX, 8P6CC, 9J2SZ, 9K2LX, 9L1US, 9M8FH and 9Y4VU. That leaves 14MHz for BV2A, CE2AA, CE3AQN, CE0DFL, CX6JV, C6AFQ, DU1PX, DU9RG, HC5R, HK4CYR, JT1T, KH0AM, KL7AFQ, KL7RA, NL7VJ, OX3KM, PJ7A, PJ9W, P40T, TI2MEN, TT8SA, VO2TM, VS6WO, V29W, V31DX, V63A0, V85HG, XU0JA, Y00EB, ZF8AA, 3B8CF/3B7, 5X6CQ, 6D2X, 6W7S, 9K2HA and 9K5NH.

Northwards now, to **Don Robertson** (Wick). Don found conditions up and down, with quite a lot of visual aurora - when the sky was clear enough to see it! Taking the c.w. crop first, on 3.5MHz Z21HS, on 7MHz HJ8RMC, LU9FC, 9H8F, UI7T/UA4HV, JE1IHC, SV0MWW/8, Z21HS, 9L1US, UJ1K, U81Z, UL8BWO, UY8U, UA9LEG, XY0RR, YC2HAX, C9RAA, 4X4KK, ZA1A, ZA1QA and JW0GB; on 14MHz UA70XWWW, US8R, HC1MD/HCO, XY^RR, UA0QHV, UW0FP, 3C1EA, 4K3/UA9XLZ, 3W/4K20T, OK3CLA/5N0, 4K1ADQ, ZL1AMN, ZA1A, ZA1HA and ZA1ZXV; 21MHz produced BZ4RA, UA0CKA, RM8MD, VK3VD, ZL1MH, LU2BRG, HL2KAJ, PY7SA, PY6BG, 4K1ADQ, HL5JAC, A25GH, ZA1HA, 8A1IARU. As for 28MHz c.w. BV2DJ, BY5RA, BZ4RA, BZ4SBF, 3B8FO, HL1KXS, YC30SE, LU1AO, YN1CC, EX8V, LU2ABR, ZD8WD, LU6HDC, LU2EAN, NP2I, PZ1DY, CE8FGC, RA0FB, NJ1W/DU9, ZL2AKS, VK3YU, VK2DOJ, J28FO, J40HS, U18DX, ZA1A, ZA1HA and Z21HS. As for the sideband stuff, 14MHz s.s.b. gave ZA1HA, 21MHz ZA1ZXV, 24MHz ZA1ZXV and 4J3GM and 28MHz P29DX, UL7LL, 5B4MF, VP8CFM, FR5ZN, CU2BS, A45YT, A22AA, ZA1QA, ZA1ZXV and 9K2LX.

## Contest for SWLs

**J. J. Yerganian** from Montigny-sur-Sambre, Belgium, writes to remind us of the White Rose SWL Contest, 1400UTC January 11 to 1000UTC January 12. The 'phone listeners use 1.8, 3.5, 7, 18, 24MHz, and the c.w. gang use 3.5, 7, 10.1, 18, 24MHz. No multi-op allowed. Object is to log five stations from each country on each band. Countries outside one's own continent count 5 points, within 1 point. Total points on each band to be multiplied by the number of countries on that band. Final score the sum of the band totals for the five bands. NO CQ, QRZ? or similar calls nor /AM nor /MM to be logged or claimed. Logs to show: Date, Time UTC, Band, Station Heard, Station being worked, report at s.w.l. QTH. Points may only be claimed for stations actually heard and the callsign must



be shown in full. Entries to: SWL Contest, White Rose A.R.S. Box 73, Leeds LS1 5AR to arrive not later than February 29.

## Back to Letters

Now we turn to **P. Parmentier** from Kortrijk, also in Belgium. Pat has an enormous c.w. log covering all bands from 3.5 on down to 28MHz, so we must prune a little. Eighty shows AA6TT, US8R, UA0Y/UZ0AM for the rare Zone 23, ZA1A, RJ5R, ZA1ZSW, E050PQ and 4X4DK, while on 7MHz there were 6W6JX, 9K2LX, 9H3JR, ZA1QA, UI8QU, ZA1ZXV, JA6HW, OX3FV, ZA1A, 4K1AFM, K6NA/KL7, CO2MA, 3C1EA, VK2DXI/9M2, JT1/SP5DRH, OK3CLA/5N0, YV1AD, PJ2AM, XE3AAF and 6W1QB. Favourite band seems to have been 18MHz, with V47TV, KP2J, 4J3GM, ZP6CV, WH6LW/KL7, ZA1QA, VK6HD, 4K1AFM, KL7CYL, T20VJ, J40HS, JT1/SP5DRH, ZB2CN, ZA1A, KP4DJ, VP2M/AA5AU, VS6UW, 4U11TU, 5B4ADA, ZS9/DJ7XG/P, HI8A, 6W6JX, FK8FS, HC5AI, LU3HAN, FW/AA7AF, S79MX, 3B8CF/3B7, 5H3RA, ZA1ZSW, V51/DJ7XG, N4JQQ/C6A, KH8/W6YA, ZA1ZXV, XU0JA, W1NU/VP9, 3D2VJ, FY5FP, 8J9SPO, V85KX, VQ9QM, SU1HV, CE8IVH and KP4DJ.

**Don McLean** (Yeovil) notes that one morning the JAs were audible on all five bands 14 to 28MHz around 0900UTC. SSB signals were booked in on 3.5MHz from ZA1QA, while ZA1A was noted on 7MHz. On 14MHz Don found DU1EIB, OD5ZN, S79MX, UZ0AB, V63A0, many Vks, VK2BNF/M, VK5DRJ/M, XE2NAF, ZA1HA, ZC4KS, ZL4AN, 3B8CF, 5H3DC and 9M8FH. 18MHz trawled up HV3SJ, VK4CRR and 4J3GM, while on 21MHz we find loggings of BY5SY, BZ4RDX, IA5/I5G10W, JAs, JX9EHA, HR3/K5MK (IOTANA-160), HV3SJ, JT/SP5DRH, LX/PA3DJL, P29NMD, UAKCI, UA0FF, UL8DYL, V44NK, V63YL, V73CT, VE6JD, VE7CVM, VE7CEI, VU2GPD, YC4FF, YI0EB, ZA1A, ZA1HA, ZA1QA, ZA1ZXV, 9K2IC and 9K2LX. Higher yet on 24MHz the scalps included CO6CG, ES1QD, HB0/DL1MFQ, HC2AQ, HC8GR, HF0POL, J39CM, JT/SP5DRH, K6YRA, KK6OB, VE6XD, VE7PER, VP2M/G0AZT, VP9MN, XX9AW (who comes from Yeovil), ZA1ZSW, ZB2AZ, 4J6LQ,

5N31CEP, 5V7JG; which leaves 28MHz for CP6RP, J73VE JA1SGX, JA9LJI, JH4DIT, NP2Q, UH8EA, VE4NC, XN50A, XX9AW, ZF2NT, ZA1DX, ZA1HA, ZA1QA, ZA1ZXV, 5V7JG, 7Q7BX, 9K2LX and 9L1US.

## Piracy

The number of bogus operations seems to be increasing of late. 7X5ST/3V8 doesn't count, the VU2TU/VU7 signal earlier in the year was as rotten as a nine-bob note in that VU2TU has never owned any gear(!), while 5R8JD according to *The DX Bulletin* isn't valid for DXCC and 5R8AL's activities seem to be, as it were, on hold. VK0WWW who claimed to be on Macquarie has turned out to be a pirate. P5RR claimed to be demonstrating amateur radio to the Korean authorities but called for QSLs 'via 3W3RR' at a Moscow PO Box. The Russians, know nothing about this character - but it has been noted that P5RR has been heard before.

For the s.w.l. who wants a QSL, what advice can I give? Perhaps the best is to conserve your patience and watch the DX Columns; when a call is confirmed as OK then - and not before - think about sending a card.

Finally, please recall the need for input if the column is to be interesting. In preparing that input for mailing to me, please check it over to be sure it is legible, so that I can transcribe it accurately. As to how to lay it out, all the 'regulars' have their own different pet ways of doing things; on the one hand a Xerox of the relevant log sheets, on the other a band-by-band breakdown each band split into EU, USSR, and DX - but please do include the date of preparation at the top, so I don't mix the current and past stuff when I drop the file!

## Deadlines

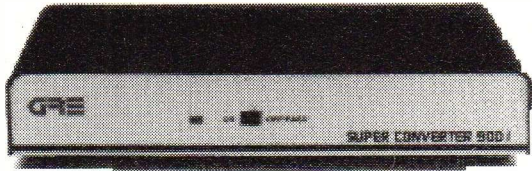
February 8, March 8, April 9, for arrival with me latest; as usual the address is at the top of the column.

Anything which arrives too late must perforce go in the following month, since my copy cannot leave here late if the publication date is to be kept.



#### Super Converter 9001™ (For Base Models)

### Super Converter 9001



GRE is proud to introduce the new **Super Converter 9001**! This product is ideal for pulling frequencies from 810 MHz to 950 MHz and converting them down to 410 MHz through 550MHz. There are no blocks from 810 MHz through 950 MHz! So if you receive 410 MHz through 550 MHz on your current scanner, the **Super Converter 9001** will be perfect for scanning the good stuff!

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- ☆ Bypass switch converts back to original frequencies
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- ☆ 50 Ohm antenna impedance
- ☆ Includes 12" BNC-to-Motorola plug adaptor cable
- ☆ Uses 9 volt battery or external AC adaptor (not included)
- ☆ Dimensions: 5<sup>3</sup>/<sub>4</sub>" W X 1<sup>1</sup>/<sub>4</sub>" H X 3<sup>1</sup>/<sub>2</sub>" D
- ☆ Weight: One pound (less battery)

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The **Super Converter II**, using surface mount technology, is designed specifically for use with handheld scanning radios. The **Super Converter II** has all the features which are enjoyed by users of our original converter (SC 8001), such as 810-912 MHz coverage, 9 Volt battery operated, quality GRE construction, and more. The **Super Converter II** has a bypass switch which allows the user to go back to original 400 MHz coverage without disconnecting the unit.

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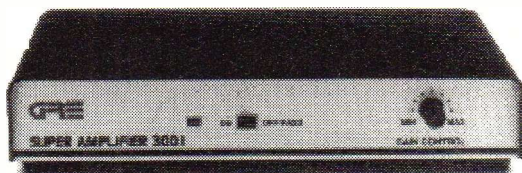


#### Specifications and Features

- ☆ 810 MHz to 912 MHz receiving frequency
- ☆ 410 MHz to 512 MHz output frequency
- ☆ Bypass switch converts back to original frequencies
- ☆ BNC Input/Output connectors
- ☆ 50 Ohm antenna impedance
- ☆ Uses 9 volt battery or external AC adaptor (not included)
- ☆ Dimensions: 5<sup>9</sup>/<sub>16</sub>" W X 2<sup>5</sup>/<sub>8</sub>" H X 1<sup>7</sup>/<sub>16</sub>" D

#### Super Amplifier 3001™ (For Base Models)

### Super Amplifier 3001



Introducing the new **Super Amplifier 3001** designed for base model scanners. The 3001 is an excellent pre-amp designed to amplify weak signals from 100 MHz to 1 GHz by as much as 20dB. The 3001 has an adjustable gain control knob, and also has an off/pass switch so you can return to normal gain quickly.

The **Super Amplifier 3001** is perfect for scanners with low gain, and when weak signals are present.

#### Specifications and Features

- ☆ 100 MHz to 1 GHz receiving frequency
- ☆ 0 to 20 decibel adjustable gain
- ☆ Bypass switch converts back to original gain
- ☆ 50 Ohm output connectors
- ☆ Includes 12" BNC-to-Motorola plug adaptor cable
- ☆ Uses 9 volt battery or external AC adaptor (not included)
- ☆ Dimensions: 5<sup>3</sup>/<sub>4</sub>" W X 1<sup>1</sup>/<sub>4</sub>" H X 3<sup>1</sup>/<sub>2</sub>" D
- ☆ Weight: One pound (less battery)

**£74.99**

#### Super Amplifier™ (For Handheld Models)

### Super Amplifier

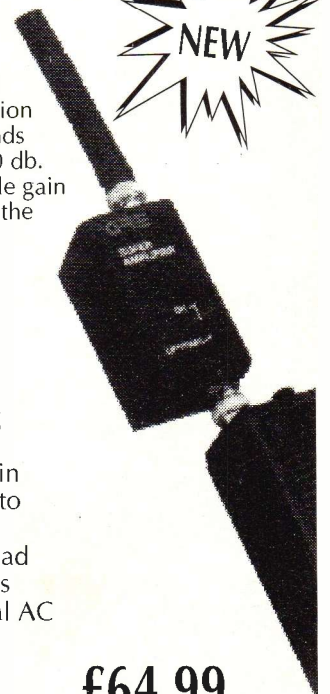


The **Super Amplifier** is a compact pre-amp designed to work with handheld scanners and amplify the reception of the reception of the VHF/UHF bands from 100MHz to 1GHz as high as 20 db. The **Super Amplifier** has an adjustable gain which is controlled from the back of the unit and allows for a constant amplification level of up to 20db through all frequencies.

#### Specifications and Features

- ☆ 100 MHz to 1 GHz receiving frequency
- ☆ 0 to 20 decibel adjustable gain
- ☆ Bypass switch converts back to original gain
- ☆ 50 Ohm output impedance load
- ☆ BNC Input/Output connectors
- ☆ Uses 9 volt battery or external AC adaptor (not included)
- ☆ Dimensions: 1<sup>9</sup>/<sub>16</sub>" W X 2<sup>5</sup>/<sub>8</sub>" H X 1<sup>7</sup>/<sub>16</sub>" D

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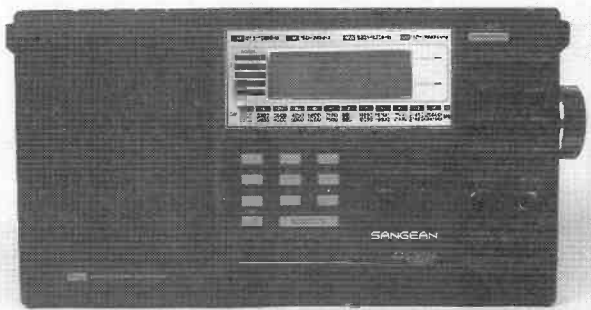
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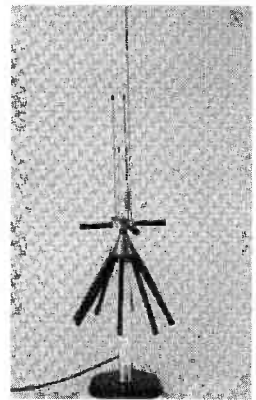
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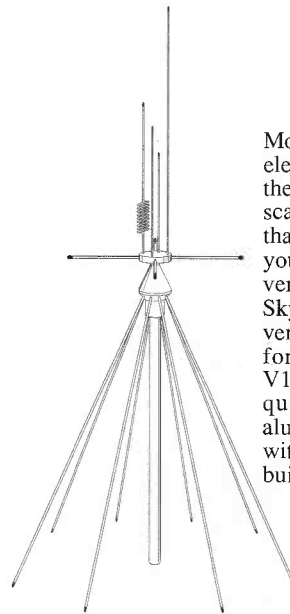
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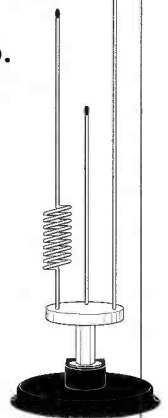


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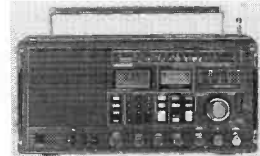
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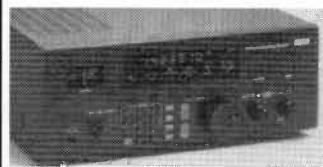
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# dxtv round-up

Ron Ham, Faraday, Greyfriars, Storrington,  
West Sussex RH20 4HE

I am always pleased to receive your letters and to help with advice if I can. Among the regular questions, especially from new readers taking their first look at the world of broadcasting, are: what is DXTV?, how can I receive such signals? and what do you mean by 'conditions'?

First, the letters DX are a shorthand for 'long-distance'. Therefore, the prime interest of a TVDXer is to receive television pictures from afar. Secondly, one requires a television converter, receiver or video recorder that is capable of tuning through the v.h.f. Bands I (40-70MHz) and III (175-230MHz) and the u.h.f. Bands IV (471-608MHz) and V (615-820MHz). Obviously a dedicated television buff will install such equipment, plus head-amplifiers and large rotatable antennas for this purpose and will most likely log some DX under normal or just above normal conditions.

If you have this in mind then it is worth getting some advice by writing to David Martin at Aerial Techniques, 11 Kent Road, Parkstone, Poole, Dorset BH122EH and Keith Hamer or Garry Smith at HS Publications, 7 Epping Close, Derby DE34HR. As well as being suppliers of DXTV equipment, David, Keith and Garry are keen DXers themselves and have their own first-hand experience to offer.

For a time, I had great success with a combined Bands I/III Yagi, Fig. 1, made by Antiference and mounted on a rotator. Some form of antenna rotation is essential for any serious study in this field as **George Garden** (Edinburgh) has frequently proved when 'winkling' out a weak station by very careful movement of the antenna. George has a high-gain, wideband Yagi

mounted on a cine-screen tripod in the back of his pick-up truck, Fig. 2, which he takes to high spots, like Cairn O' Mounth, for u.h.f. DXing. Sometimes, he only holds the picture for a short while and often has to use on screen information, programme details from the national press and published transmitter data to identify its source. This was the case when the advert for British Gas (Northern), Fig. 3, told him that the picture came from the Bilsdale transmitter of Tyne Tees. High gain u.h.f. antennas, like Fig. 2, have a narrow beam-width therefore to receive pictures, in colour, like George did from Belgium earlier this year of a news reader Fig. 4 and test-card Fig. 5 the antenna direction is a very important factor.

## The All-Rounder

Many enthusiasts have a receiver, often a small screen portable, that will tune through these bands as part of their normal short-wave station equipment and, when conditions are right, use it on whatever antennas happen to be available. For instance Yagi antennas used by amateurs in the 50, 144 and 432MHz bands will be near enough in electrical size to give reasonable results in Bands I and III and IV and V respectively. **Jon Larcombe** (Helston) suggests using a 'v.h.f. f.m. radio antenna' for a start and looking out for a used Betamax video recorder, such as the Sanyo VTC 9300, which by now should be relatively cheap on the second-hand market. From memory, the 9300 has a multi-band tuner and an output in the 35MHz region. I used one of these for some years and found it

very reliable, however, if you should find any used equipment, especially if it is elderly, do get its general condition and electrical safety checked by a competent engineer before putting it to use.

In order to sample band conditions, I preset 3 of the Sanyo's tuning buttons to Chs. E2 (48.25MHz) and R2 (59.25MHz) in Band I and E8 (196.25MHz) in Band III. Briefly, the range from Spain to Scandinavia was covered on E2, Czechoslovakia, Romania and the USSR on R2 and from Belgium to Scandinavia on E8. The *World Radio TV Handbook* shows there are stations in other countries that may easily appear on these channels when conditions are right.

## Atmospheric Disturbances

Thirdly, it is the atmospheric conditions, such as Sporadic-E, that enhances signals in Band I and tropospheric openings that increases their range in Bands III, IV & V. In addition, signals in Band I can also be reflected, in differing ways, by aurora, changes in the F2 region of the ionosphere and the decaying trails of meteor particles burning up within the earth's atmosphere. Although short-lived, Sporadic-E openings can take place at anytime during the year. The main events occur during daylight hours between May and September, peaking in June and July. This period we call the 'Sporadic-E season'. Early morning and late afternoon checks around Chs. E2/R1 can prove very rewarding.

A tropospheric opening is most likely to occur when the atmospheric pressure is high, say above 30.1in

(1019mb) and a spell of fine settled weather is on the change. A good indicator is patterning, caused by other stations sharing the channel, on your domestic u.h.f. receiver. Many radio amateurs seeing this, are soon off to their stations to look for 'DX' on their 144 and 432MHz bands. However readers, this all boils down to the fact that you do NOT switch on your set at anytime of the day or night and see foreign test-cards or programmes on the screen, you must be patient and wait for an atmospheric disturbance to occur. Then, believe me, it is real fun as no doubt you have gathered from the readers' reports that I recount each month in this column.

## Band I Sporadic-E

"October began well with some good mid-summer-strength Sporadic-E on the 1st," wrote **David Glenday** (Arbroath) after identifying pictures during the day from Austria (ORF-1) on Ch. E2A (49.75MHz), Belgium (Liege Canal 3 RTBF-1 test-card), Czechoslovakia (CST-1 with ISR-P test-card) on Ch. R1 (49.75MHz), France on Chs. L2 (49.25MHz) and L3 (54MHz), Germany (ARD-1 with ZDF programmes) on Ch. E2 (48.25MHz), Italy (RAI-Uno) on Chs. 1a (53.75MHz) and 1b (62.25MHz), Spain (TVE-1) on Chs. E2, 3 (55.25MHz) and 4 (62.25MHz) and the USSR (TSS) on Ch. R2 (59.25MHz). In addition, he saw 'Schweizer Fernsehen' text pages, the news caption 'Tagesschau', a TS logo and weak and unidentified pictures on Chs. R1 and R2. David also logged Spain again on the 3rd and Portugal (RTP-1) and Spain on the 7th while further outbreaks of Sporadic-E were in



Fig. 1: Combined Band I/III Yagi.

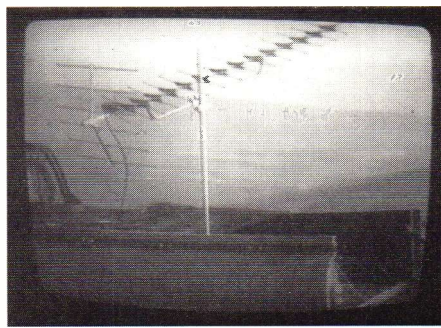


Fig. 2: George Garden's pick-up truck.



Fig. 3: British Gas advert.



Fig. 4: Belgian TV.

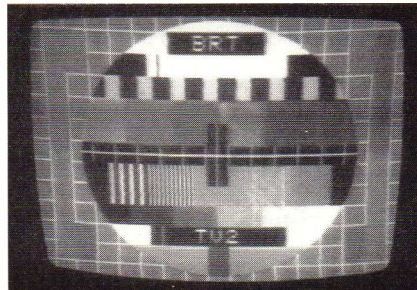


Fig. 5: Belgian test-card.



Fig. 6: Italian TV.



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# dxtv round-up



Fig. 7: RAI caption.

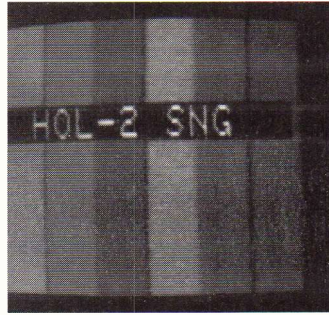


Fig. 8: Dutch test-card.

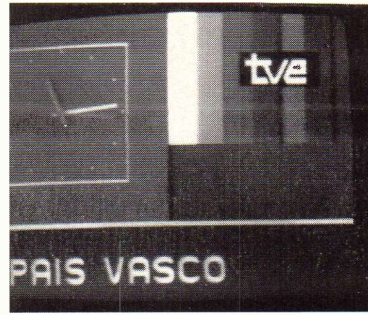


Fig. 9: Spanish test-card.

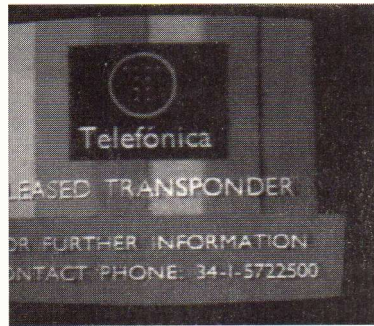


Fig. 10: Spanish test-card.



Fig. 11: RTE weather forecast.



Fig. 12: RTE programme title.



Fig. 13: German SSTV.

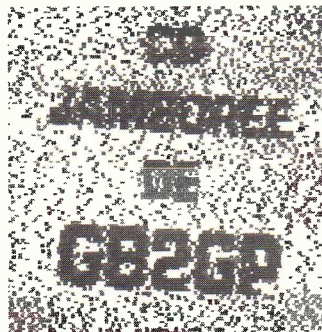


Fig. 14: UK SSTV.

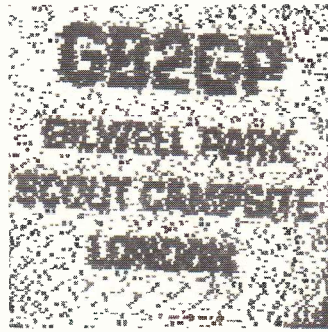


Fig. 15: UK SSTV.

progress.

During October, **Bob Brooks** (Great Sutton) logged pictures from Italy and Spain, at times, on the 11th, Denmark on the 17th, Spain on the 19th, Italy on the 24th and Spain again on the 25th, 26th and November 3rd. He also sent a photograph, Fig. 6, of the strong signals that he was receiving from Italy back in July.

## Band I F2

**Simon Hamer** (New Radnor) identified pictures from Zimbabwe, on Ch. E2, around noon on October 16, Australia on Ch. A0 (46.172MHz), Malaysia on Ch. E2, New Zealand on NZ1 (45.250MHz) and possibly Thailand at 0900 and an Iranian test-card with Dubai 'floating beyond Iran', on Ch. E2, at 1230 on the 18th.

David Glenday received typical 'F2'

type pictures on Ch. E2, from the southwest between 1430 and 1525 on the 19th. Simon logged Dubai and Iran again at 1230 on the 25th. Bob Brooks is almost sure he saw Arabic captions on the 19th and pictures from Dubai and Iran on the 23rd and 25th respectively.

F2 is the upper region of the ionosphere and when this is disturbed it is possible to receive television signals from around the globe. However, great patience is required because such signals will be smeary and distorted and you may only catch the occasional glimpse of an ident.

## Satellite TV

During early October, **Peter de Jong** (Leiden, Holland) received the RAI Roma caption, Fig. 7, via the Dutch HOL-2 SNG, Fig. 8, mobile uplink unit lo-

cated in Zagreb. The latter is, "used for general EBU news gathering from Croatia," said Peter, who also logged test-cards from Spain's TVE, Fig. 9 and Telefonica, Fig. 10. Peter's fixed elevation 600mm 'dish' antenna is adjustable between 24°E and 1°W. He added a 10dB line amplifier and an S-meter to his system and produces a video output instead of u.h.f. remodulation. I asked Peter if our weather had any effect on these super high frequency satellite signals as they passed through our troposphere and he replied, "Clouds, especially cirrus (ice!) and thunder-storms fade away up to two dB, usually resulting in noise. The effect of bad weather on the uplink is more drastic! Recently during heavy thunder-storms over Italy, the RAI signals on IIF2 almost disappeared, while there was no effect on for instance STAR & TVE at the same time." Thanks Peter, such observations are both interesting and helpful.

## Tropospheric

The slightly rounded atmospheric pressure readings for the period September 26 to October 25, Fig. 16, were taken at noon and midnight from the recording chart on the Short & Mason barograph installed at my home in Sussex. One reason for producing this monthly graph is to give you the opportunity of comparing my figures here in the south with those which prevailed in your part of the UK at the time.

During the good tropospheric conditions on October 10 and 11 and from the 22nd to 27th inclusive, David Glenday received pictures on several channels in Bands IV and V from Denmark (TV-2), England (Anglia TV), Eire (RTE1 and 2), Germany (ARD1, NDR3 and ZDF) and Holland (NED1, 2 & 3). On the 11th he received Belgium's BRT-1 on Ch. E8 in Band III. Simon Hamer logged Denmark (DR), Germany (WDR1), Norway (NRK) and Sweden (SVT1) in Band III and Denmark (TV2), Germany (NDR1 & 3, West 3, WDR1 and ZDF) in the u.h.f. bands on the 24th and Finland (YLE1 and YLE2) on Chs. E7 and E9 in Band III on the 25th. Bob Brooks received pictures from Ireland's RTE (Radio Telefis Eireann) throughout the day on the 22nd, 23rd and 24th and at midday on the 27th. Among the programme contents that he saw on RTE was a weather forecast, Fig. 11 and the title *Fair-City*, Fig. 12. **John Woodcock** (Basingstoke) received weak pictures from France in Band III on November 4 and 5

## SSTV

During the month prior to November 11, **John Scott** (Glasgow) received slow scan television pictures between 14.227 and 14.239MHz from stations in Czechoslovakia, Germany Fig. 13, Holland and 'CQ' Fig. 14 and station-information Fig. 15, captions from the Scout Jamboree station GB2GP.

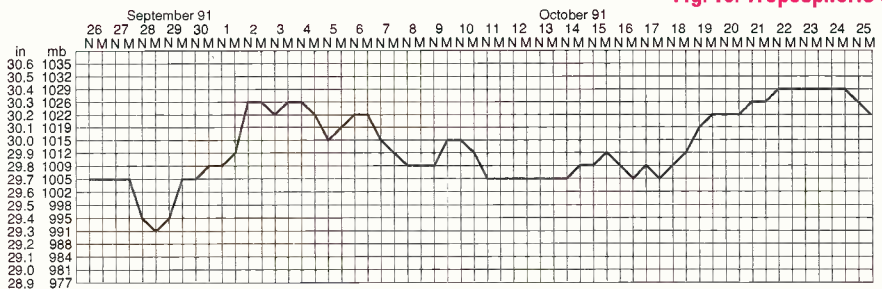


Fig. 16: Tropospheric chart.



# airband

Godfrey Manning G4GLM  
c/o The Godfrey Manning Aircraft Museum,  
63 The Drive, Edgware, Middlesex HA8 8PS



**S**traight into another Christmas photo quiz. Anyone who replies that it's a helicopter will score no points! Tell me which sort of helicopter it is, please. As a tie-breaker you should try to state **where** it is! Identical correct entries will enter a draw and the winner will receive a prize kindly chosen by the Editor. My decision is final, no correspondence will be entered in to, etc. Young lads wearing trainers and carrying *Aeromart* carrier bags will be disqualified for sneaking up and reading the manufacturer's identity plate.

## Your Experiences

On moving to Manchester, **Ian Chard** sensibly picked a home alongside the 24 approach to Ringway (it takes me back, calling Manchester Airport by that name!). In addition to v.h.f. allocations on which pilots and controllers talk to each other, u.h.f. channels in the 455-456MHz region are available for communications within the airport. Typically, the tower or ground movements controllers will direct the operations vehicles on u.h.f. as they need to be co-ordinated with the aircraft which are taxiing around. So that the vehicle drivers avoid transmitting when the controllers are talking to aircraft, the relevant v.h.f. traffic has also to be relayed on the u.h.f. channel. Controllers who are unconcerned with ground movements (such as approach radar) don't need to have any access to the u.h.f. within-airport channels. Remember that the tower controller is in charge of the runway, the interface between ground-borne and airborne traffic. The responsibility of the ground movements controller is strictly groundside, control being handed off to tower before the aircraft is allowed to taxi onto (enter) the runway.

Why is there low-level traffic at night overhead Ian's house? He is 10km (statute or nautical?) east of the approach. You don't say in which direction the traffic is flying, Ian, but a few nights spent observing in more detail will I'm sure reveal more. My charts show nothing special about this area so I'll hazard a guess that you're either under one leg of a holding pattern, which is used when traffic gets heavy

(e.g. as night freight flights start to arrive) or else, if traffic is lighter at that time of night, you're seeing a short-cut being allowed when joining the final approach.

## Information Forum

The military do have some strange allocations. No longer do we licensed amateurs need to avoid some spot frequencies in the 144MHz band, but other examples are 142.82MHz (a.m.) which is an air-to-air USAF channel to which **Matthew Green** (Halifax) draws our attention. Glad you've written in for the first time, Matthew. Enthusiasm for aviation so often starts early in life - in my case, before the age of 12. Matthew himself is 15 and will be interested to note that air-to-air refuelling areas 8, 5, 6A, 6 and 9 (going from north to south) are spread out off the North Sea coast between Yorkshire and Suffolk. Chart RAC 5-0-1 *UK Airspace Restrictions* shows these (see last month's 'Airband').

A regular problem is matching an aircraft's registration to its Selcal code. These allocations are handled as a matter of international agreement by ARINC in the USA, but enthusiasts can obtain the necessary information by purchasing *High in the Sky* (J. Davies, K. Barker & A. McKenzie) from The Aviation Hobby Shop, 4 Horton Parade, Horton Road, West Drayton, Middlesex UB7 8EA (telephone 0895 442123). I expect **Clive Bedwell** (Polegate) will now rush out for his copy.

Can anyone enlarge on Viva Air's company operations frequency? Clive

knows that Iberia use 131.95 and I'll add that Aviaco have 131.575MHz. I've lost track of how these three Spanish carriers share the workload since they changed things around, so would someone in the know please write in and sort us both out! United have moved from 131.4 to 131.975MHz according to **Paul Hilton** (Newbury).

Every specialist field develops abbreviations which are confusing - until expanded, when they become obvious! **Steve Foster** (Burton-on-Trent) will be pleased to know that o.a.t. is outside air temperature and g.a.t. is the general aviation terminal, a place on the apron reserved for light aircraft (such as at Gatwick).

Cheap, recently out-dated charts and supplements are often sold at the Finningley air show (as reported in November). When **Roger Phillips** (Kendal) went a couple of years ago, a Ministry van pulled up right by him and he was actually offered the items for sale!

## Follow-Ups & Foul-Ups

Yes, the picture captions were scrambled in November! Those of you who were eagle-eyed and wrote in included **P. Gladstone-Robins G8BSK** (Southampton), **Des Reed** (Malton) and **R. Spooner** (Middlesbrough). Your letters reached me before the corrected captions arrived on the bookstalls in the December edition, so you must be subscribers(?). I also agree with R. Spooner on the correct spelling of Teesside. My apologies.

Some of the above also told me



**Fig. 1: The Christmas competition photograph.**

**Airbus A-320 Sierras de Cazorla y Segura belongs to Iberia.**

interesting things about themselves. Take G8BSK; his Royal Naval Reserve experience spanned the last World War. He also saw the Schneider Trophy being won by a Supermarine S6 and, later, flights of the prototype Spitfire. Prior to the war, he went up in Moths at Hamble; his father was a licensed pilot.

Des was allowed inside one of the overgrown golf-ball radomes at the Fylingdales Moors site, Yorkshire, and sent a postcard to prove it. The replacement will look like a truncated pyramid which makes its shape harder for columnists to describe in words - must be a good security measure. I believe that the new radar will be some form of phased array type.

Back to October and **Michael Hockley** (Abingdon) passes on the squawk codes allotted to Birmingham and re-used (hopefully without ambiguity) at Heathrow. They're 7260-7277. Coventry has the exclusive assignment of 4313-4314. If you can spare a copy of your complete list, Michael, then it would of course be welcome both in my Museum and to aid in writing this column.

Clearing up the matter of London VOLMET (November), **Ray Loveland G2ARU** (Arundel) says the voice belongs to John West, Marketing Manager of Marconi Space & Defence Systems. Going by Ray's information on recent changes, the relays are probably as follows. Main: Davidstow Moor, Ventnor; South: Davidstow Moor, Ventnor; North: Great Dun Fell. Let me remind everyone that Scottish VOLMET is on 125.725MHz.

## Changes to Air Traffic Control

**Chris Kaley** (West Drayton) introduces two operational changes that affect air traffic control. First, British Airways domestic flights will use simplified callsigns of the form 'Speedbird 99X' where 99 stands for a pair of digits denoting the route and X represents an alphabetic character defining the particular service operating that route. This pattern is like the Shuttle callsigns (except that Shuttles only have a single digit). The arrangement is experimental. On my flight from Heathrow to Jersey in September, which would have the callsign 'Speedbird 16X' under the new scheme, BA 5932 actually called as 'Speedbird 932 Juliet', which is yet a different arrangement.

London Air Traffic Control Centre will open a new sector on February 26. During the busy period 0630-2330Z the London Upper Sector on 127.425MHz will handle flights passing over the London zone above FL300. These changes aren't just introduced on a random whim. Controllers, as well as pilots, practise their art in simulators. The simulator (which presents an artificially-generated radar-screen) 53



Alan Gardener  
PO Box 1000, Eastleigh, Hants SO5 5HB.

A friend recently asked me to examine a faulty radio microphone system that was used as part of the public address system in his local church hall. This consisted of a standard 'lapel' type microphone that was connected to a small cigarette packet sized transmitter with a short piece of dangling wire acting as the antenna. The receiver was a compact, mains-powered unit with a spring steel 'tape measure' antenna, the output from the receiver being fed into to the p.a. system. Both units were crystal controlled operating in the band 173.35-175.02MHz. As the transmitter was type approved and only had an output power of about 5mW no licence was required. In order to find out what the problem was, I took both units home for further examination. I decided that it would be a good idea to check the transmitter first by tuning my scanner to its frequency. This quickly proved that the unit was not transmitting and a further check with a test-meter narrowed the fault down to the microphone socket, which was supposed to turn the unit on when the microphone was plugged in.

Whilst fixing the socket I was surprised to hear the occasional sound of an electric guitar lifting the scanner squelch. Rotating the antenna brought the signal strength up to a respectable level and I was able to listen to someone practising a guitar solo. I guessed that this was likely to be coming from the local community centre about half a mile away - not a bad signal for a 5mW transmitter. During the next few days I managed to monitor several other signals, and on Sunday evenings I could hear at least three separate church services being conducted. Until I had listened to this band, I had not realised just how many radio microphone systems were actually in use.

A few weeks after repairing the radio microphone I happened to be waiting in my car with some time on my hands when I realised I that I was parked close to a large theatre that had a national touring production visiting it. I wondered if they were likely to be using any radio microphones. A quick tune across the relevant bands revealed that indeed they were - in fact no less than five different ones! Two were transmitting the on-stage action, whilst the other three were being swapped between performers to the accompaniment of backstage chatter. I was still able to hear the signals up to a quarter of a mile away so I would imagine that the transmitter power was about the same as the unit I had repaired.

However, this band is not just allocated to radio microphones, one other use is for radio deaf aids. These are normally used by very young, acutely deaf, children. The parent carries a small low powered radio microphone which transmits its signal

to a receiver that is worn by the child. The child can then hear via special earpieces, which allow it to be some distance away from the parent but still within hearing range. On some occasions this can create problems.

A few years ago I remember reading a story in a local paper about a deaf child who was taken to see a Christmas pantomime. All went well until one of the main characters came on stage, at which point the audience was treated to a rather unexpected commentary on the story of the show. It turned out that the radio deaf aid the child was using and the performers radio microphone were operating on the same frequency. Unfortunately, no other radio microphone was available at the time, so the child and parents had to leave the theatre so that the performance could continue. But the story doesn't end there, the cast put on a special additional show for the child and her friends complete with backstage party after the performance, so like most pantomimes this one also had a happy ending.

Not all radio microphones operate in the 174MHz band, professional models - which are slightly higher powered than the devices I have just described - have special frequency allocations. These tend to be used by radio, TV and film companies and operate in several different frequency bands including 50-58MHz, 60-64MHz, 173-210MHz & 478-590MHz. I have also been told that several major rock bands are now starting to use radio linked fold-back equipment operating somewhere in the region of 850MHz. The idea being that it allows the performers more freedom on stage, as well as dispensing with the need for individual monitor speakers that can be difficult to hear above the main p.a. system. So, if you are likely to be attending any special performances in the near future why not take your scanner along for the next best thing to having a backstage pass.

## Winter Reading

With the winter months now well and truly with us, I thought that it would be a good idea to mention some of the books that readers have been suggesting to me. Not all of them have a direct connection with scanning, but should appeal to readers of this column. One or two of them are a little bit expensive so why not get your local library to obtain you a copy first or add them to your Christmas list.

The first one is entitled *From Rattle to Radio* by John Bunker, published by K.A.F. Brewin 1988 ISBN 0 947731 28 8. This is an interesting description of the evolution of communications within the Metropolitan Police Force from 1829 onwards. It includes detailed descriptions of the Force's first experiments with telegraphy, telephones and

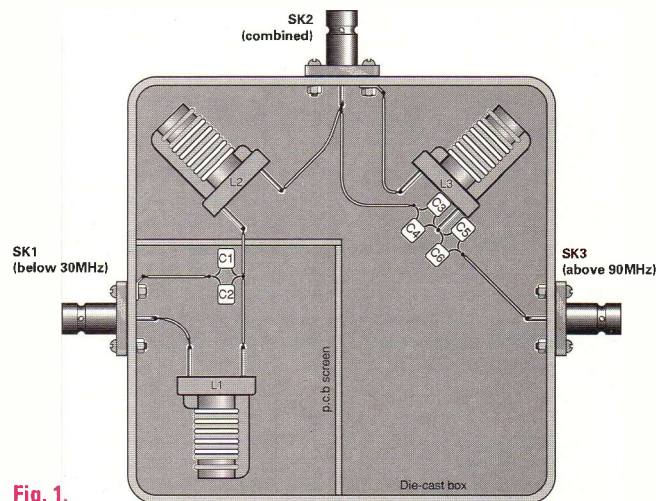


Fig. 1.

latterly radio telephony as well as including photographs of early equipment.

Another historical publication is *The Vital Link* by Philip Warner, published by Leo Cooper 1989, ISBN 0 85052 8828. This is the story of the Royal Signals from 1945 to 1985. It describes the many different aspects of the regiments work as well as outlining the development of military communications equipment and systems from the second world war onwards. It also makes a good introduction to the Royal Signals Museum at Blandford Forum, which is well worth a visit if you find yourself in the area.

Next are two books dealing with the subject of bugging and telephone tapping. *Bugging A complete survey of electronic surveillance today* by John Wingfield, published by Robert Hale 1984, ISBN 0 7090 1742 1. This is not quite what it claims to be, mainly because of the rate at which electronic eavesdropping devices have developed during the few years since the book was written. However it still contains some interesting stories, facts and photographs which should keep the more paranoid amongst us happily occupied checking out all those completely innocuous household and office accessories that we tend to surround ourselves with. And if you worry about those mysterious clicks on the phone line then try and get hold of *Stranger on the Line, the secret history of phone tapping* by Patrick Fitzgerald and Mark Leopold, published by The Bodley head 1987, ISBN 0 370 31086 1. This is an intriguing book in that it tries to give a balanced view of very emotive subject. It follows the development of official phone tapping in Britain from the earliest methods used during the pre-war years, through the industrial disputes of the 1970's, right up to 'Tinkerbell' computerised monitoring equipment and system X exchanges. It contains many interesting stories some of which have already passed into folklore, and although I did say that it 'tries' to give a balanced view you may have to take some of the political arguments with a pinch of salt.

The next book is for all of you budding James Bonds out there: *Spy-Tech* by Graham Jost, published by

Harrap of London 1985, ISBN 0 245 54335 X. This contains a lot of factual information explaining different aspects of the modern spy's increasing armoury of technological devices and gizmo's. It is well illustrated with clear line drawings showing the principles behind many commonly used devices and techniques. Although I have mentioned this book before, several readers have commented on it so I thought it worth including again.

The final book in this selection has also been mentioned before, but is a useful reference book if you are at all interested in the operation of commercial radio systems. *Mobile Radio Telephones in the UK* by Dr R.C.V. Macario, published by Glentop Press Ltd 1988, ISBN 1 85181 182 6. If you have read both of Peter Rouse's *Scanners* books and feel that you would like a bit more technical information on how transmitters and receivers work, how frequencies are allocated, the impact of digital transmission systems and how cellular telephones operate then this is the book for you.

As I said at the start of this section the titles of these books have been suggested by readers of this column. If you know of any similar publications which you feel may be of interest why not drop me a line so that I can feature them in a future column.

## Combining h.f. & v.h.f. Antennas

Pete Rafferty of Slough wonders how he can simultaneously feed signals from his h.f. and v.h.f. antennas into his AR3000 scanner, which only has one antenna socket. Well, the best way to do it Pete is to use a duplexing filter. This splits the signal into two different frequency bands, one being low-pass and the other high-pass filtered. The cross-over point of the two filters being chosen to occur at some convenient frequency such as 25 or 30MHz. This means that the unit can also be used to provide separate h.f. and v.h.f. outputs if you want to feed a short wave receiver and a scanner from the same source, a wide band active antenna for example. As far as I am aware no-one actually manufactures a com-



mercial unit, but don't let that put you off, you can make one for just a few pounds.

I originally designed the unit in order to be able to use an existing piece of cavity wall mounted coaxial cable to feed both my h.f. receiver and scanner. This was achieved by using one of the units at each end of the cable. The loss through the system is practically negligible, except at the cross-over frequency where a small amount of the signal can pass through both filter sections. In practice, this usually only presents a minor problem providing that it is designed to occur at a suitable frequency.

The circuit is very simple and the component layout is shown in Fig. 1. I built my unit inside a small die-cast metal box measuring 50 x 50 x 25mm. Earthing tags on the connectors are directly soldered to a small piece of plain printed circuit board placed in the bottom of the box, which acts as a ground plane. In fact, if you wanted to minimise construction costs you could make a case entirely from p.c.b. material. Just cut out some suitably sized pieces and solder them together to form a small box shape. Two small sections of printed circuit board are

also used to provide a screen between the coil L1 and the rest of the components. It is important that this is soldered to the ground plane in order to improve the isolation between the two filtered inputs at u.h.f. It is also important to mount all the coils at right angles to each other in order to minimise inductive coupling between them. All component leads should be kept as short as possible. Providing you adhere to these simple rules the unit should work from d.c. to over 1GHz, with very little insertion loss.

You may find that attaching a full sized h.f. antenna to your scanner results in problems associated with overloading of the r.f. and mixer stages. If this happens you can place a suitable value of 50Ω attenuator between the antenna and the duplexer h.f. input, which should cure the problem without effecting the performance above 30MHz. If you use wide band pre-amplifier and have problems with it overloading on short wave broadcast signals - then you could just build the high-pass filter section, consisting of C3, C4, C5, C6 and L3 and connect it between the antenna and the input of the pre-amp. This may also help with some early models of scanner where

short wave signals tend to leak past the r.f. filter stage and mixer straight into the i.f. circuit. Quite a versatile little circuit for you to build over the Christmas Holiday period.

Well that's all for 1991. I wonder what surprises '92' will have in store for us? Don't forget that you still have some time left to try and win the AR2000 hand-held featured in the November SWM competition. My very best wishes for Christmas and the New Year to all readers of this column and I hope that you enjoy your Festive Listening.

## Components List for Duplexer

- L1 - 0.297uH (Core set mid position) Cirkir part No. 35-10603
- L2 - 0.297uH (Core set mid position) Cirkir part No. 35-10603
- L3 - 0.114uH (Core set at base) Cirkir part No. 35-10303
- Coil trim tool (I recommend you get this!) Cirkir part No. 35-00001
- C1 - 180pF Cirkir part No. 04-18101
- C2 - 47pF Cirkir part No. 04-47001
- C3 - 68pF Cirkir part No. 04-68001
- C4 - 22pF Cirkir part No. 04-22001
- C5 - 68pF Cirkir part No. 04-68001
- C6 - 22pF Cirkir part No. 04-22001

**Table 1:**  
Low Power Devices - Commonly Used Frequencies.

| Radio Microphones            |            |
|------------------------------|------------|
| Wideband ±75kHz deviation    | 2mW e.r.p. |
| 173.800MHz                   |            |
| 174.100MHz                   |            |
| 174.500MHz                   |            |
| 174.800MHz                   |            |
| Narrow band ±15kHz deviation | 5mW e.r.p. |
| 174.600MHz                   |            |
| 174.675MHz                   |            |
| 174.770MHz                   |            |
| 174.885MHz                   |            |
| 175.020MHz                   |            |
| Radio Aids for the Deaf      |            |
| Narrow band ±15kHz deviation | 2mW e.r.p. |
| Exclusive frequencies        |            |
| 173.350MHz                   |            |
| 173.400MHz                   |            |
| 173.465MHz                   |            |
| 173.545MHz                   |            |
| 173.640MHz                   |            |
| Shared frequencies           |            |
| 173.695MHz                   |            |
| 173.775MHz                   |            |
| 173.825MHz                   |            |
| 173.950MHz                   |            |
| 174.070MHz                   |            |
| 174.120MHz                   |            |
| 174.185MHz                   |            |
| 174.270MHz                   |            |
| 174.360MHz                   |            |
| 174.415MHz                   |            |

## Airband

52 ➔ picture to the controller) is also used for trying out proposed air-space changes without disrupting the real world.

Steve Foster reports a new frequency of 134.275MHz in use by Shannon (presumably the control centre rather than the airport).

## Frequency & Operational News

One important new change in GAS/L 10/91 from the CAA Safety Promotion Section: the Oxford approach/v.d.f. has a new frequency of 125.325MHz. This column is not designed as a quick means of information promulgation, so pilots, you do read your NOTAMs, don't you?

How sad it is that airlines meet their demise with such frequency these days. At the time of writing the future of TEA (UK) is unclear. This is an interesting one as it is part of a multinational organisation, TEA (Belgium) being one of the major constituents. This doesn't seem to have offered any protection - a similar situation, perhaps, to the events that overtook Air Europe.

Also on the way out is good old familiar i.l.s. The official end is as soon as 1996, but in practice it will run in parallel with its successor, microwave landing system (m.l.s.) until 2005. A sign of the times is the headlong rush to give just about anyone who wants it a v.h.f. broadcasting licence. Previously, Band II stopped at 100MHz and

the next segment (up to 108MHz) was occupied by low powered communications such as used by the police. Now these users have been kicked out so that 100-108MHz can assuage the feeding frenzy of all those frequency-hungry broadcasters. Until 1996 their output power will remain limited, but thereafter there is a real risk of interference to nearby i.l.s. channels (the navigation band starts at 108MHz). As far as pilots are concerned, the m.l.s. is flown in exactly the same way as i.l.s. and the instruments look the same - apart from a receiver with hundreds of channels and a display which tells you the identity of the m.l.s. being received. I'll stick my neck out by lamenting that broadcasters (presumably mainly commercial) take precedence over flight safety - what will non-commercial but instrument-rated private pilots do if they can't afford a new m.l.s. fit? Or am I just being old-fashioned?

On a more optimistic note, the Lockheed Electra (the more recent four turboprop version) has just been allowed on the UK register. How recent was the development of this aircraft, then? Well, they didn't look out of place in the '50s! The delay in getting them certified over here is, you might say, for historical reasons.

In November Alastair Turnbull (Helensburgh) hoped for the Russian (Red?) Knights' frequency. Unfortunately, I couldn't find out during the 1991 display season, but **John Partridge** (Bourne, Lincs) and Steve Fos-

ter have now supplied the answer as 125.35MHz. The visitors were escorted by a single Red Arrow (that formation usually appears on 243.45MHz), a charming symbol of *glasnost*. Paul Hilton describes the team as consisting of 6 Sukhoi Su-27 Flanker fighters supported by an Ilyushin Il-76MA. Alastair also had a thrill when *Sally B* (its name and its callsign), the B-17 of

the Confederate Air Force which is often at displays, flew over his house at 2000ft.

The next three deadlines (for topical information) are January 10, February 7 and March 6. All correspondence to 'Airband', c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex, HA8 8PS.

**Selective Calling:** It would be a strain to listen out during those long, boring sectors over water or sparsely-populated continents (the north Atlantic is a typical case). Air traffic control is on h.f. here, and each aircraft's reports are few and far between with reception often being poor. Selective calling enables the crew to operate the flight with the radio in silence most of the time. Sound comes from the receiver only when that specific flight is called by the controller.

In principle, each aircraft is allocated a code which is represented by four letters (two pairs written, for example, as KL-AF). Each letter actually represents an audio tone and the aircraft's receiver is pre-set to respond to the particular tone combination assigned to it. When the controller wishes to contact the aircraft, the appropriate tone sequence must be sent. These sound like two musical chimes, one after the other, rather like the 'bing-bong' emitted by certain doorbells. Each chime actually consists of two tones at once. Two chimes, two tones per chime - this accounts for the sending of all four tones. Of course, the flight crew aren't listening to these chimes - but their Selcal receiver is.

Once the receiver has been 'woken up' by receipt of its unique combination of tones, it triggers an audible alerting bleeper in the cockpit so that the crew know to listen in as they are about to hear a message intended specifically for them.

Since each aircraft has its own Selcal code, it follows that the aircraft can be identified once its code is known. KL-AF is assigned to British Airways Boeing 757 G-BKA (22172). Unfortunately, airline fleets have outgrown the capacity of the system and it has become necessary to allocate the same Selcal to different aircraft simultaneously. The object is to choose aircraft that aren't likely to ply the same routes so confusion should be rare. KL-AF is also assigned to a USA and a Dutch-registered aeroplane.

When a flight first enters an area controlled on h.f. it will typically announce its Selcal code to the controller, who will in turn send the appropriate tones to test the aircraft's receiver. This of course gives away the aircraft's most likely identity.

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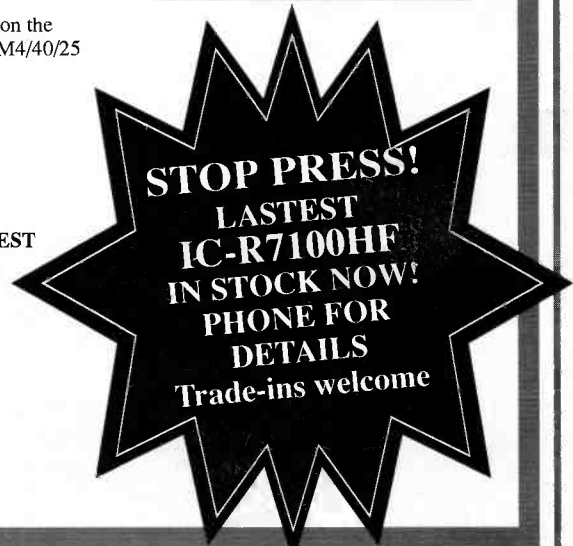
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**M**id autumn sees a rapid drop in sunlight for the northern hemisphere, visible so markedly in the images from all of the weather satellites. The evening visible images from NOAA 9 have almost no detail and even those from NOAA 11, which passes at a high elevation around 1400UTC are of considerably less contrast than some weeks ago.

Monitoring NOAA 10 and 12 during late October provided an unexpected event. These satellites both transmit their pictures on 137.50MHz and, having slightly different orbits, are occasionally both visible at the same time. Consequently, the satellite operators normally switch one of them off, or to be precise, they switch the a.p.t. signal (which uses 137.50MHz) off. This time they didn't! By October 28 the passes were starting to overlap, and a day or two later the signals were interfering. It is worth mentioning that the problem only affects the a.p.t. images; those (few?) folks using h.r.p.t. data are virtually immune because of the directional nature of such systems. A crossed dipole v.h.f. antenna can receive signals almost horizon to horizon, indeed that is its virtue! NOAA 10 was finally switched off on November 1, until the end of the pass coincidences a few days later.

The problems seen with METEOR 3-5 appear to have been corrected, and good images were being received until early November when I noticed a fault appear on the visible light imagery. The problem appears to be a degrading of the picture resolution. Perhaps the change back to METEOR 3-4 will be earlier than usual. METEORS 2-19 and 2-20 (from the two series) have been used alternately now for some months. Have 2-16, 2-17 and 2-18 been retired, I wonder?

## METEOSATS 3 & 4

There will remain two METEOSAT satellites transmitting imagery for the UK for the next several months. METEOSAT-4 carries continuous transmissions from its position over longitude 0° (Greenwich). It not only transmits its own frames, but acts as a relay for the GOES transmissions. In fact, these transmissions are no longer from GOES - they are now from METEOSAT-3, which is positioned at longitude 50°W over the eastern coast of America.

Some correspondents have reported difficulty in locating METEOSAT-3, so I left my system tuned in to it to monitor the signal. What is actually happening is that it does not always transmit a continuous tone during a 'quiet patch'. Like the GOES signal, it may only be on for the duration of a broadcast and may then be switched off. This means that if you haven't already found it, then you need

to know when to listen.

**Berman** of Burton-on-Trent wrote to say that he had heard the tone from number three but had not seen any pictures. METEOSAT-3 transmits a regular sequence of frames from about 42 minutes past each hour, with a few exceptions. The only other change is that there are more breaks in transmissions than with METEOSAT-4. The signal is strong so persistence will pay. Finally, **Eric Dubbins** of Bognor Regis asked about the availability of METEOSAT schedules. These can be obtained by writing to EUMETSAT at: Am Elfen grund 45, D-6100 Darmstadt-Eberstadt, GERMANY.

## Prospero

I mentioned some time ago that I unexpectedly heard familiar sounds transmitting on 137.56MHz, the frequency used by the British satellite UK6 which re-entered the atmosphere several months ago. With help from **Geoffrey Falworth** of Penwortham the signal was confirmed as coming from one of the early British satellites called X3 (also known as *Prospero*).

I have received a letter from **A Hall** of Freshwater Bay in the Isle of White, who wrote to tell me that he was an engineer at the Needles rocket test site which was involved with the *Black Arrow* launcher, until it moved to Woomera in Australia. He tells me that the Royal Aircraft Establishment at Farnborough bring the satellite back to life every two years to test out the systems, and so this explains why we could hear it. The satellite was built at Marconi Space & Defence Systems and I had the pleasure of visiting the company as part of the UK 6 satellite team back in the seventies.

## Icebergs

I had a call from our local paper asking me if the huge iceberg that broke off the Antarctic cap was visible. Reported as being 'as big as Cyprus' it may well have been seen on GOES re-transmissions of NOAA images. The images from METEOSAT-3 showed considerable cloud, so I did not spot the errant berg. Then the paper wanted to know about monitoring the stormy weather in mid-November!

## GOES Data

The GOES geostationary weather satellites are operated by NOAA and are positioned at a number of places on the Clarke belt, some 36 000km high. As well as carrying scanners to provide weather information for transmission to earth, they also carry other instruments including the Space Environment Monitor (SEM) package. These instruments collect data such as magnetic field measurements, particle

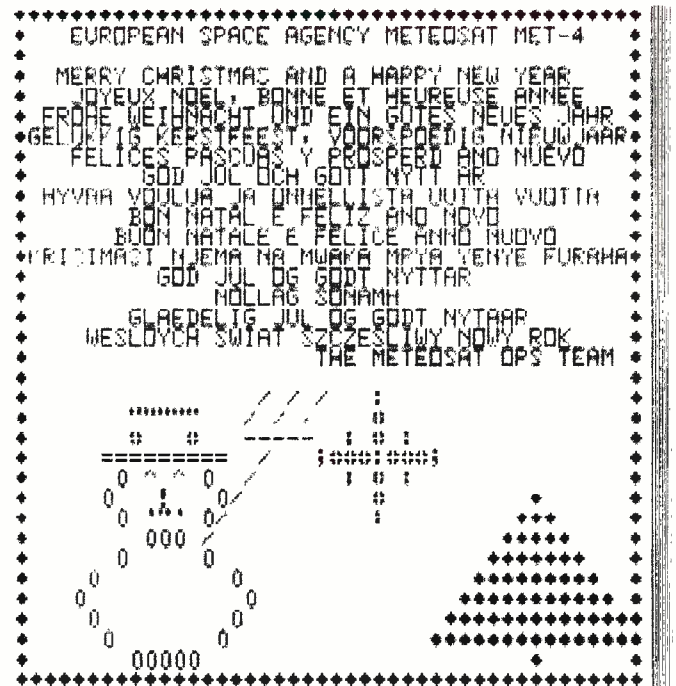


Fig. 1: METEOSAT-4 Christmas wishes by Ken Reece.

detection and soft X-ray data, again for transmission back to earth.

Some years ago I was involved in the professional monitoring of solar radiation and this information, at that time, was only available to scientists. NOAA have now made this data available to anyone who is interested in using or just seeing it. It is being released, at cost, in the form of data for one month's observations from the satellites. The files include the above data and cost \$30. To use it you would need to either buy the NOAA software (the price was not given) or be able to use the data which is in integer binary form. For those (schools?) who might wish to obtain more information the address to write to is: National Geophysical Data Centre, E/GC2 325 Broadway, Boulder, CO 80303, USA.

## Letters

Geoffrey Falworth reports that METEOR 3-5, which is currently transmitting, is possibly the last in the series. He wonders whether this means a reversion to the 2 series, or can we expect a METEOR 4 series? Time will tell. Geoff also mentions that the Indian IRS 1B satellite, launched on August 1, is apparently collecting weather imagery in a form compatible with both NOAA and METEOR data. Perhaps the transmissions are only made near India. Any reports from readers in other countries would be most welcome.

## Upgrading Computers

Several correspondents write to me about upgrading their satellite systems, and some are moving from the BBC

computer to the IBM compatible type. **Ron Harvey** of Weston-Super-Mare has recently changed over to a '286' machine with a 40Mb hard disk. This will not only cope with all the current satellite programs but should be suitable for most future developments. The immediate benefit comes with the picture quality. The newer i.c.s can provide more storage for pixel data for the monitor, so giving a better quality picture. The earlier CGA screen was not suitable for satellite images, but the more recent VGA monitors can provide excellent quality for displaying imagery.

## Grey Levels

The quality of any picture received from a satellite, whether directly or via a terrestrial broadcasting station, depends largely on the decoding system and the display monitor used. One of the earliest satellite systems was designed to run on the BBC model B computer and so the quality of its picture was reduced by the computer's limited memory. In the mid 1980s this had only 32Kb of memory. If you calculate the number of pixels making up the screen image and add the program's requirements, there was only enough memory left to store just eight different intensity levels, or colours. Even so, on a clear day one could identify land masses, and large weather features. These limitations on the BBC computer were not imposed on framestores, however.

Framestores are hardware units which take the audio signal from the receiver and process it electronically to produce the image. Framestore



construction is a major project, and I built mine in 1986 with help from the local radio club, after studying the construction of the well-known YU3UMV design. This design is still available (I believe) through the Remote Imaging Group though suppliers of the components, in kit form, seem to be few. When correctly set up, the framestore can produce images with up to 64 grey levels. Modern computer systems can normally resolve from 16 to 64 levels. However, it is important to realise that even a '64 grey level' system may not show the full 64 levels on every picture.

## METEOSAT Infra-red

METEOSAT images provide a good illustration of this problem. If you leave your system to display pictures as they are received, you may have almost 64 levels on the bright visible imagery during the summer months, but the infra-red pictures will show far fewer. This effect is even more pronounced when you see NOAA 9 pictures during afternoon passes in winter! With suitable software, or hardware in the case of the framestore, the black and white levels can be adjusted so that the whole picture content contains the maximum number of different levels of brightness. There are still one or two suppliers of framestores of differing designs, but they all work on similar principles, although their facilities may differ.

## Letters Continued

**R E Miller** of Birmingham has a problem with reception. He lives half-way up a tower block which has balconies screened with fine wire mesh to protect against pigeons. He has a computer with a VGA monitor and runs the PC Track program to follow satellites. He is building the Cirkit receiver but wonders about reception under these difficult conditions. I would think that it would be rather poor, perhaps only those satellites on the near side might be heard.

**Des Thompson** of Exmouth wants to use his Amstrad PC1512 for satellite imagery but is not sure about the suitability of its monitor. This machine is a non-standard 'compatible', which means that although Amstrad built it to run IBM software (so it is IBM compatible), the hardware is not compatible. It cannot have certain types of video adapter fitted - and there are many other non-standard features as well (e.g., the disk drive). However, in practice things are not so bad. The PC1512 has a special monochrome mode, rarely used, but referred to in its manual. This should allow one to obtain moderate resolution - higher than CGA. Knowing how good modern software is, I would suggest that the suppliers were contacted and asked about the

suitability of the PC1512's special mode before making any purchases.

**Rene Matthijssen VE6WCA** writes from Alberta in Canada expressing his interest in satellites and asking where he might obtain detailed information. I have referred him to the specialist publication *Satellite News* which is edited by Geoffrey Falworth. I can forward correspondence to Geoffrey whose office is not always occupied.

**Roger Ray** of Telford uses the Satfoot program on his BBC computer and says it is accurate if the Keplers are recent, but wonders how often these elements should be updated. Generally I recommend about once per month, after which time OKEAN may be several minutes out. The METEORS will normally remain quite good even after a month, but because they have their orbits changed occasionally, they might be out by several minutes. This happened with METEOR 3-4 during September. **P Bartlett** of Pinner has sent me a screen shot of the Atari ST tracking program Orbit, which he uses - see Fig. 2.

## High Resolution Pictures

Most people with a.p.t. decoding systems will know that the satellites, particularly NOAA and METEOSAT also transmit high resolution data (h.r.p.t.) in digital form, as well as a.p.t. I am collecting information on developments in h.r.p.t. decoding systems, for a future article in this column.

**Peter Hayes** of Ayr has written to me about his work in this field. He has designed a working METEOSAT and NOAA system using a 1.8m dish and is designing circuit boards to reduce the cost. The main commercial developer of h.r.p.t. systems in the UK, of which I am aware, is Timestep Weather Systems which I recently visited. I was shown their work on both NOAA and METEOSAT. They are retailing NOAA h.r.p.t. equipment and expect to have their METEOSAT Primary Data system available around February. As both developers rightly say - the pictures are 'spectacular'. If any other companies are working in this field please drop me a line!

## The Shuttle

**Peter Wade** of Sevenoaks wants to tune into the American Shuttle on those occasions when it goes over the UK, and asks about the availability of Kepler elements. I have a list of NASA 2-line elements for all the planned future Shuttles and if anyone wants a copy, please forward an s.a.e. for the printed list.

## PCGOES and PROSAT 2

Software Systems Consulting, an American firm, are issuing a new version of PCGOES through their distribu-

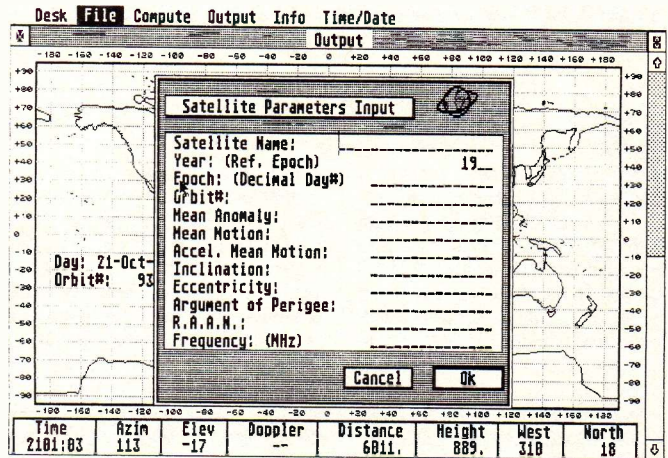


Fig. 2: Screen shot from program Orbit by P Bartlett.

tors, and Timestep Weather Systems have recently issued PROSAT 2, a new program for satellite imagery. I have received both of these program suites and hope to provide reviews for future publication.

## Kepler Elements

Print-outs of the latest elements are available from me - just send an s.a.e. All known weather satellites are included, together with their transmission frequencies if operating. This data is supplied courtesy of NASA.

## Predictions

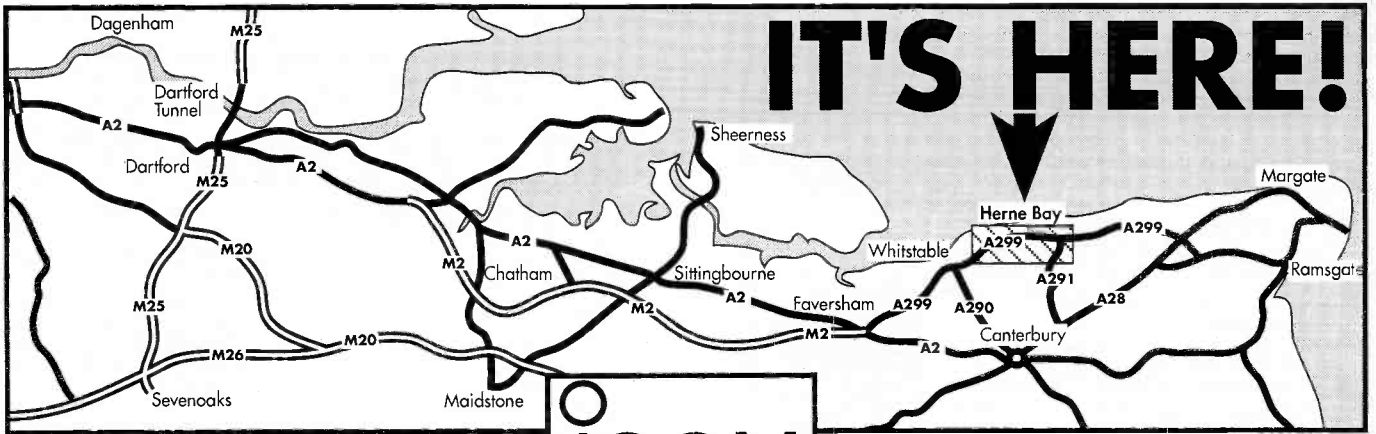
For those who have the equipment to tune into the wxsats but no predictions program, I occasionally include a summary here for a selected day. The table lists AOS (acquisition of signal) time UTC, the LOS (loss of signal), the maximum elevation and whether east or west, and finally whether travelling northbound (NB) or south. The times are for Sunday 22 December 1991.

| Satellite   | AOS  | LOS  | Maxel | Direction |
|-------------|------|------|-------|-----------|
| NOAA 10     | 0919 | 0834 | 56°W  | SB        |
| NOAA 9      | 0832 | 0847 | 44°W  | SB        |
| NOAA 12     | 0852 | 0908 | 53°W  | SB        |
| METEOR 2-19 | 0914 | 0931 | 54°W  | NB        |
| METEOR 3-4  | 0944 | 1002 | 23°E  | SB        |
| METEOR 3-4  | 1134 | 1154 | 84°E  | SB        |
| NOAA 11     | 1233 | 1246 | 19°E  | NB        |
| NOAA 11     | 1412 | 1428 | 82°E  | NB        |
| METEOR 2-20 | 1533 | 1551 | 73°W  | SB        |
| NOAA 10     | 1805 | 1821 | 59°E  | NB        |
| NOAA 9      | 1822 | 1838 | 84°W  | NB        |
| NOAA 12     | 1840 | 1855 | 65°E  | NB        |

Please remember that the METEORS are subject to change, and might be switched off. The NOAA WXSATS are fairly reliable. May I thank all of you who have written to me during the last twelve months with your contributions and helpful comments? The next twelve months will see much activity with the weather satellites as the interest in monitoring the environment increases. I will continue to try to keep readers up-to-date with all the latest developments. A very happy Christmas and good New Year to you all.



Fig. 3: METEOSAT showing Italy by Peter de Jong.



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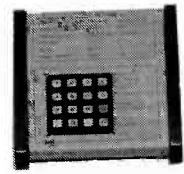
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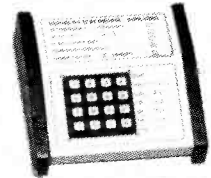
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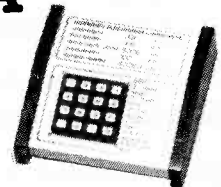
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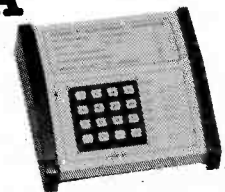


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**Mike Richards G4WNC**  
200 Christchurch Road, Ringwood, Hants BH24 3AS.

The first letter this month is from **Martin Farmer** of Newcastle-Under-Lyme. He has just joined the world of utility decoding following the purchase of an ERA Microreader. This is currently fed by an AOR3000 receiver and long wire antenna. Martin has also bought one of the Howes active antenna kits and is reporting great success with it. In an attempt to make some use of the recovered signals, he has linked the Microreader to his Amiga computer. As many readers write asking how to link computers and decoders, I'll repeat Martin's setting here. For the connections he linked the inner of the Microreaders 3.5mm jack to pin 3 on the Amiga. The ground or outer of the 3.5mm jack was connected to pin 7. Before the data can be displayed, some software is required to activate the serial port. The software used by Martin was a public domain program by D.J. James called Comm 1.34. With the speed set to 4800 baud you can have just a screen display or alternatively send the decoded text to a RAM file for later analysis and processing.

The latest addition to Martin's station is the ERA BP34 filter that further improves the performance of the Microreader.

**David Acres** of Chippenham has written giving details of his progress in the hobby over the past twenty or so years. This all started when a friend gave him an old WWII No. 19 set. Although he had a lot of fun getting it going, the performance was not really that good. The next step was to move up to one of the, then new, Japanese receivers. The model chosen was the very popular Trio 9R59DS valve receiver. Although the Trio far outstripped the 19 set, it still had a few shortcomings, particularly with the stability. The final move came about a year ago when he bought a Kenwood R-5000 and an ERA Microreader.

On the antenna front he uses a 20m long wire at a respectable height of about 10m. This is fed to the receiver via a Maplin a.t.u. kit. David reports that this kit was very easy to build and works well with his station.

One question David has concerns an antenna for his 108-174MHz converter. If you're interested in receiving the whole of this band, the most popular choice is the discone. This provides a reasonably even response over a very wide frequency range. As to which model to choose, this is all down to the quality you need. The more expensive models are usually of a much higher mechanical quality. This is particularly important if the unit is to be mounted externally (as it should be).

## ARQ-E

With the growing popularity of sophisticated decoding systems, such as the Wavecom and the Hoka Code-3, I thought it was about time I looked at

a few of the more complex transmission modes. After standard ARQ modes, such as the commercial SITOR, the next most common is probably the ARQ-E and E3 types. These two modes are single channel duplex systems using synchronous transmission. I'll start by explaining that last sentence!

Single channel duplex simply means that a single message can be sent in each direction at the same time. A simple analogy is a telephone conversation. When talking on the phone we use a single channel, but it's duplex because both parties can talk at the same time. An example of a simplex system is that used by radio amateurs where the transmission has to be manually handed over to hear both sides of the conversation. Synchronous is a term used to describe a transmission that continues at a constant rate even during pauses in the transmitted message. This is rather different to the situation with normal RTTY, where the signal remains at a steady state during pauses in the message. The great advantage of synchronous signals as opposed to asynchronous (RTTY) is that all the data sent is meaningful and there are no redundant start and stop bits to wrap up each character.

So with that sorted out I'm sure you'd like me to get on with the detail of how the transmission is constructed.

The first point to note is that the ARQ-E systems operate on two separate frequencies, one for each direction of transmission. The alphabet used is an adaptation of the standard ITA-2 RTTY alphabet. The main difference being the addition of an extra first and seventh bit. The first bit is used to create three additional control characters known as alpha, beta and RQ. The final bit is generated as a parity check to ensure that each character contains an odd number of logic 0s. As the name ARQ implies, the system supports error correction to



**Fig. 2: The FAX-2 from ICS Electronics.**

overcome interference experienced on short wave radio links. The error correction uses the parity check to check for errors in the received signal. This means that each character is checked to see that it contains an odd number of logic 0s. If an even number are detected, the RQ (repeat request) character is sent causing the transmitter to repeat the errored character.

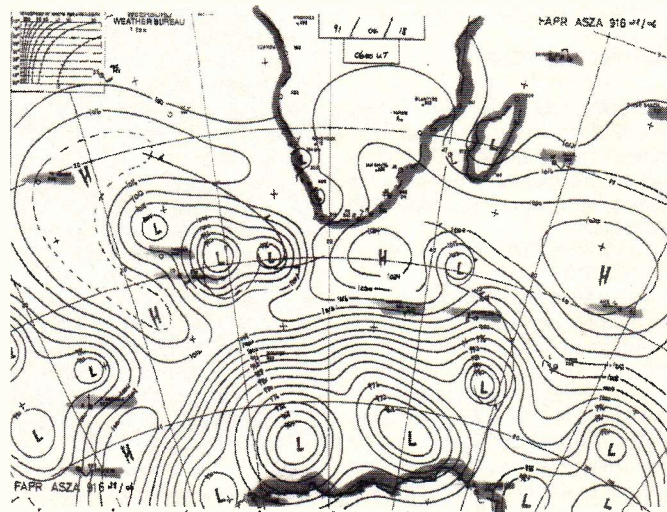
Rather than operate to single errors, the ARQ-E system sends its message in groups of either four or eight characters. This grouping is called the character repetition cycle - often abbreviated to CRC. If an error is detected the whole of the relevant four or eight character group is repeated. However, the software in the receiving decoder takes only the characters that were corrupted. The choice between four or eight character repetition cycle is determined primarily by a combination of the transmission speed and the propagation delay of the link. The higher the speed and longer the link the greater the need for an eight character repetition cycle.

One other significant feature of the ARQ-E signal is that most invert the data of the fourth or eighth character depending on the CRC. This is used to aid synchronisation and enables the software to lock very quickly should the link suffer severe interference. This feature also makes it easy for monitoring stations to lock-on quickly!

Having described the basic system, the best course of action is to tune into one and learn to recognise the sound of these transmissions. Before we start, you need to be aware that the majority of ARQ-E stations spend most of their time sending idles. A good station to start with is the French Forces station in Beirut on 14.578MHz. This station uses a 400Hz shift sending ARQ-E at 72 baud with a CRC of 4. Before you can resolve the signal, you may have to set the CRC interleaving polarity which, in this case, is erect and inverted. The reason for this setting is that three groups of characters are transmitted erect, whilst the fourth is inverted as described earlier. During its idling state you should see mainly betas with the occasional RQ. Every now and again you will see an ident, which normally contains 'de rffxl' and will probably end with 'bonne soire nnnn'.

If your decoding system has some analysis tools similar to the Hoka Code-3, you can take a closer look at the signal to see just how it operates. First try speed/shift analysis which should confirm the transmission as 72 baud 400Hz shift. The next area to examine is the CRC. On the Code-3 this can be done with the Autocorrelation Bit mode. Leaving this running for a while will show that the block repetition rate is 28 bits. Now you're probably wondering how that aligns with the CRC of 4 I mentioned earlier. It's simple, with seven bits in each character we simply multiply 7 (bits) x 4 (characters) to give a total of 28 bits. Another test you can try is bit analysis. This breaks down the signal into logic 1s and 0s. It can be quite educational to get a print of this and go through and see for yourself how the signal is constructed. A tip before you start - make up a strip of paper marked with the width of seven bits. To help you on your way, the beta idle character is transmitted as 0110110. From this, one complete four character cycle should look like this: 0110110 0110110 0110110 1001001 (Note: I've added the spaces for clarity).

This is just a start on the more complex transmission modes. If you'd like to see more please let me know.



**Fig. 1: Pretoria Meteo captured by Robert Hall.**



**French Forces Stations**

As a follow-on to the ARQ-E feature, you may be interested in some information I recently received from **Robert Hall** in South Africa. Robert runs a very comprehensive monitoring station and offers an explanation for one or two common messages transmitted by the French Military stations. These stations are the main users of ARQ-E and their multiplexed counterparts ARQ-M. Probably the most common message is 'Controle de Voie' which is sometimes shortened to 'CdeV'. This simply means Line Test and is usually sent at regular intervals during the (often prolonged) idle periods. The French military also use a range of call signs that are often difficult to track. One simple clue is that stations based in France used the prefix RFF whilst those outside France use just RF. Examples of a few of these call are shown here:

- RFQP Jibouti
  - RFFA, RFFUBA, RFFA N'djamena
  - RFVI, RFVICS, RFVITZ Le Port, Reunion
  - RFFA, RFFAA, RFFAAB, RFFAB Paris
  - RFFLUW, RFFLVA, RFFLVO Toulon
- Another complication with call signs is that the radio links are combined with land-lines to create working circuits. These circuits are then given three letter identifiers. Typical examples being FTI for Libreville/Paris, HIJ for Noumea/Papeete, HJL for Papeete/Noumea.

If you have managed to sort out some of the circuit codes and call signs for the more complex modes, please drop me a line. My thanks to Robert Hall for this useful contribution.

**ICS FAX-2**

Those of you with a keen interest in FAX reception may well be interested in the new FAX-2 from ICS Electronics. Although the name implies that it's just a successor to the famous FAX-1, it is a very different package. The FAX-2 has been designed primarily to satisfy the demands of the marine market. This has resulted in a very attractively presented self-contained package. One of the most significant changes is the addition of a built-in printer. Not only is this very convenient, but it overcomes the interference problems that can be caused by an unfortunate choice of printer. To keep the system simple to operate, all the functions are accessed via a set of six touch buttons and a liquid crystal display on the front panel.

The range of modes included has also been expanded and now includes: FAX, NAVTEX, RTTY, FEC, Marine Page and computer printer. The reception of NAVTEX and Marine Page is achieved using optional internal receivers for 518 and 441kHz. With these options fitted, FAX, NAVTEX and Marine Page can be received concurrently.

rently. This makes the FAX-2 a very powerful information system. A further enhancement comes through the ability to use the internal printer as a straight forward serial printer. This could be linked to say the ICS TOR-2 marine radio Telex system so avoiding the need for two printers. This is a great advantage in the marine environment as space is usually at a premium and standard printers are not best suited to saltwater environments!

As you can see, the FAX-2 is a truly integrated FAX/message system that will doubtless prove invaluable to many sailors. I'm sure it will also appeal to some short wave listeners. The current price is £750.00 plus VAT for the main unit with the optional receiver modules costing £175.00 each. For more information contact **ICS Electronics Ltd, Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD**.

**Weather Update**

Having started this subject a couple of issues ago I've had a constant trickle of new information coming to light. The latest is a tip from **Bill Clark** about how to handle signals that have been corrupted by interference. One of the most common manifestations of this is the loss of the figure shift. This results in the five digit groups being printed as five letter groups. The problem is easily overcome by the use of a simple conversion table supplied by Bill. I've reproduced the table here:

- P 0
- Q 1
- W 2
- E 3
- R 4
- T 5
- Y 6
- U 7
- I 8
- O 9
- V =

My thanks to Bill for this handy tip.

**Halifax Schedule**

This popular station transmits weather information to the Canadian forces over a large part of the world. The transmitters are located in Halifax, Nova Scotia and broadcast to the following schedules.

- 13.51MHz, 1000-2200UTC daily
- 10.536MHz, 24hr, daily
- 4.271MHz, 2200-1000UTC daily

There is also a 24hr seven day l.f. transmission that operates on 122.5kHz. The only exception to these times is that the l.f. transmitter is taken out of service for maintenance between 1200 and 1600UTC on the second Thursday of each month. One notable feature of the CFH transmissions is that they transmit both RTTY and c.w.

**Monitoring News**

Here's a new idea for this month that's been sparked off by **Day Watson** of Clevedon. Day sends me regular updates in the form of short comments against signals that he's logged during the month. There are one or two other contributors that also follow a similar line. As I find these comments useful, I thought I'd try printing them in the column to see what you think. I'd be very interested to hear your comments on the idea and also to see logs and points of interest from other listeners.

CF Halifax (CFH) New frequency logged - 6.4964MHz. See the Halifax schedule for more details.

Boca R, Argentina. Interesting Spanish press logged on 8.457MHz (LSA4).

CLS/Havana Fisheries Radio logged on 8.489MHz sending Spanish press.

Soviet Met has been copied on 21.865MHz using TORG11 mode. Code-3 users will need option five for this.

Unidentified signal on 11.0125MHz using 46.5 baud. The message originators were in Greenland and Germany.

ATA Tirana. New start times noted as winter approaches. 9.133 and 9.43MHz (0900UTC), 9.43MHz (1830UTC), 7.85MHz (1900UTC)

XINHUA, Beijing. 18.187MHz has now been dropped in favour of BZR66

on 16.136MHz starting at about 0600UTC. Other frequencies are 11.68 (BZP51) and 12.265MHz (BZR62) starting at 1430UTC.

PL Havana. Has anyone logged this station - it seems to have disappeared.

Mena Cairo has changed transmission speed to 75 baud and signals seem to be stronger. Does anyone have a new schedule?

PIAB Bonn. All operational times now one hour later, but I'm looking for a schedule. There's also a new frequency (16.022MHz) which is operating as a feeder for Singapore.

Petra Amman. English news has been copied on 6.83MHz at 1730UTC, but seems to be suffering interference from an ARQ station of late.

Noumea, DIPL0. Last heard on November 9th using 16.106MHz. Does anyone have any further info?

Swiss Radio International. Varying reports on this station. It seems that copy is generally marginal in the UK. However, please note a new frequency - 15.835MHz (1700-1800UTC).

TASS Moscow. They are now using the multiplexed French/Arabic F7B/ITA2 mode. The frequencies concerned are: 19.21 and 19.235MHz (0700-1700UTC) and 10.12 and 13.49MHz (1715-2300UTC). Code-3 users will need option five for this, but the tone placement needs careful adjustment.

**Frequency List**

As usual here's my frequency list for this month. The list has been derived from logs sent in by readers in the UK so represents stations that can really be heard! The format used is the standard; Frequency, mode, speed, shift, call sign, time and notes. If you'd like a copy of my more comprehensive log just send three first or second class stamps to the address at the head of the column.

- 117.4kHz, FAX, 120, 576, DCF37, -, Offenbach Meteo.
- 140.3kHz, F7B/ITA5, 200, 300, DCF60, -, SID Frankfurt
- 1.905MHz, SIT0R, 100, 200, SAG, -, Goeteborg Radio
- 3.1725MHz, RTTY, 50, 850, IMB1, -, Rome Met
- 4.24MHz, RTTY, -, -, VXM, 1600, Canada
- 4.307MHz, FAX< 120, 576, -, -, RN London
- 5.055MHz, RTTY, 50, 400, JYF6, -, Petra Amman
- 6.736MHz, RTTY, 50, 850, ETD3, -, Addis Ababa Air
- 6.972MHz, RTTY, 50, 400, YOG59, -, ROMPRESS Bucharest
- 7.801MHz, RTTY, 50, 370, 9BC22, -, IRNA Tehran
- 7.997MHz, RTTY, 50, 370, SOH299, 2129UTC, Warsaw Met
- 8.142MHz, RTTY, -, -, FDY, 1605, French Air Force
- 9.395MHz, RTTY, 50, 240, HMF84, 2210, KCNA Pyongyang
- 9.43MHz, RTTY, 50, 500, ZAA6, 0850, ATA Tirana
- 10.515MHz, RTTY, 50, 160, -, 2000, Swiss Radio International
- 14.7MHz, RTTY, 50, 400, REB24, 1644, TASS Moscow
- 14.932MHz, RTTY, 50, 850, -, 1357, APS EL Djazair
- 17.468MHz, 50, 400, HGO24, 0628, MTI Budapest
- 19.21, F7B/ITA2, 50, -, RCC79, 0646, TASS Moscow
- 20.204MHz, RTTY, 50, 400, YZJ, 1313, Tanjung, Belgrade

Finally, I'd like to thank you all for the help you've given me in writing this column over the past year and wish you all a very happy Christmas and peaceful New Year.



# long medium & short

Brian Oddy G3FEX, Three Corners, Merryfield Way, Storrington, West Sussex RH20 4NS

**W**elcome to a New Year of broadcast band listening! 1992 promises to provide a number of changes in broadcasting so, keep listening and please keep those interesting reports rolling along to me. Happy New Year!

## Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless otherwise stated, all logs compiled during the four week period ending Nov 2.

During a holiday in Hamilton, Scotland **George Millmore** checked the band at night with a Tatung TMR-7602 portable. He noted good reception of the seldom reported signals from Motala, Sweden on 189 (300kW) and Kalundborg, Denmark on 243 (300kW) rated S10434 and S10333 respectively. Atlantic 252 in Clarkestown, S.Ireland was S10555.

Sideband splatter from Atlantic 252 usually prevents **Eddie McKeown** (Co.Down) from hearing the adjacent channels, but when they were off air for maintenance, he logged Moscow on 261. The 2000kW signals was 23112 at 0315.

Whilst listening in Gibraltar, **Charles Beanland** was disappointed by the lack of signals. Although Allouis, France on 162 (2000kW) reached him at SINPO 55555, the only other signals he heard came from Azilal, Morocco 207 (800kW) at 52222 at 2338 and Tipaza, Algeria 252 (1500/750kW) 52333 at 2341. His location, at the base of the rock, perhaps acts as a screen in some directions, but clear sea paths exist to N.Africa that should enable strong ground wave signals to reach him in daylight. To try and improve reception, Charles is going to use an external antenna with his Sangean ATS 803 portable.

## Medium Wave Reports

Six transatlantic signals were logged by **Jim Willett** in Grimsby. The first came from CJYQ in St.John's, NF on 930 rated S10333 at 0035. Around 0130 he heard New York's WOR on 710 and WINS on 1010, both S10222. Later, he heard CFFX in Kingston 960 (S10222 at 0230), WOGL in Philadelphia 1210 (S10222 at 0340) and VOCCM in St.John's 590 (S10232 at 0420).

The signals from R.Globo in Rio de Janeiro, Brazil on 1220 have attracted **John Stevens** in Largs around 0030. He says, "When BBC Radio 3 on 1215 closes down, reception from Rio is perfect". He logged their signal as S10333.

After dark, sky wave signals from stations in Spain have reached the UK. Whilst checking the band between 2215 and 0000UTC, George Millmore (10W) was surprised to hear so many Spanish signals. He says, "They seem to have as many stations on the m.w.

## Tropical Bands

| Freq MHz | Station           | Country       | UTC  | DXer                        |
|----------|-------------------|---------------|------|-----------------------------|
| 2.310    | ABC Alice Springs | Australia     | 2030 | Q                           |
| 2.340    | Fuzhou            | China         | 2330 | W                           |
| 2.560    | Xinjiang          | China         | 2300 | E,Q                         |
| 3.200    | TWR               | Swaziland     | 1830 | Q                           |
| 3.215    | R.Orange          | S.Africa      | 1930 | N,W                         |
| 3.220    | CPBS 1, Beijing   | China         | 1600 | N                           |
| 3.220    | R.HCJB Quito      | Ecuador       | 0400 | W                           |
| 3.223    | AIR Simla         | India         | 1735 | S                           |
| 3.240    | TWR               | Swaziland     | 0315 | N                           |
| 3.255    | BBC via Maseru    | Lesotho       | 1725 | N,P                         |
| 3.280    | R.Beira           | Mozambique    | 1640 | N                           |
| 3.295    | Reykjavik         | Iceland       | 0610 | F,M,P                       |
| 3.315    | AIR Bhopal        | India         | 0030 | W                           |
| 3.365    | AIR New Delhi     | India         | 1615 | N                           |
| 3.365    | IBC Radio 2       | Ghana         | 2100 | C,F,J,K,L,M,N,P,Q           |
| 3.380    | R.Malawi          | Malawi        | 1640 | N                           |
| 3.395    | R.Zaracay         | Ecuador       | 0320 | D                           |
| 3.905    | AIR Delhi         | India         | 1730 | P                           |
| 3.915    | BBC Kranji        | Singapore     | 2025 | I,L,W                       |
| 3.940    | PBS Hubei Wuhan   | China         | 2150 | N                           |
| 3.955    | BBC Daventry      | England       | 1950 | F,K,L,P,Q,U,V               |
| 3.965    | RFI Paris         | France        | 2000 | F,H,K,L,P,T,U               |
| 3.970    | RFE Munich        | W.Germany     | 2040 | K,U                         |
| 3.980    | VOA Munich        | W.Germany     | 1903 | F,G,H,K,L,M,O,T,U           |
| 3.985    | R.Beijing, China  | via SRI Berne | 1903 | K,L,O,P                     |
| 3.985    | SRI Berne         | Switzerland   | 1910 | F,H,J,K,L,Q,T,U             |
| 3.995    | DW Cologne        | W.Germany     | 1903 | J,K,L,O,P,T,U               |
| 4.000    | Bofoussam         | Cameroon      | 1750 | S                           |
| 4.040    | R.Yerevan 1       | USSR          | 2135 | A                           |
| 4.055    | R.Moskva 1        | USSR          | 1945 | F,H,K,M                     |
| 4.080    | R.Ulan Bator      | Mongolia      | 1550 | N                           |
| 4.220    | PBS Xinjiang      | China         | 2300 | E,Q                         |
| 4.330    | PBS Xinjiang      | China         | 0030 | Q                           |
| 4.395    | R.Moskva 2/3      | USSR          | 1600 | N                           |
| 4.460    | R.Beijing         | China         | 2100 | M                           |
| 4.485    | R.Moskva (Ufa)    | USSR          | 1740 | S                           |
| 4.500    | Xinjiang          | China         | 2300 | E,K,N,Q                     |
| 4.545    | Alma Ata          | USSR          | 1751 | S                           |
| 4.600    | R.Baghdad         | Iraq          | 1730 | A,H,K,M,P,Q,T               |
| 4.635    | R.Dushanbe        | USSR          | 1752 | S                           |
| 4.735    | Xinjiang          | China         | 2310 | E,F,J                       |
| 4.740    | R.Afghanistan     | via USSR      | 0130 | J                           |
| 4.750    | R.Bertour         | Cameroon      | 1903 | Q,R                         |
| 4.755    | RRI Ujungpadang   | Indonesia     | 1550 | N                           |
| 4.760    | Yunnan Kunming    | China         | 2240 | P                           |
| 4.760    | R.Moscow          | USSR          | 2112 | R                           |
| 4.765    | Brazzaville       | PR Congo      | 1903 | A,E,F,H,K,L,M,O,P,Q,R,S,T,W |
| 4.770    | FRON Kaduna       | Nigeria       | 1903 | A,E,F,J,L,M,P,R,S           |
| 4.775    | RRI Jakarta       | Indonesia     | 1642 | E,N                         |
| 4.780    | RTD               | Djibouti      | 2015 | W                           |
| 4.785    | PBS Zhejiang 1    | China         | 2150 | N                           |
| 4.790    | Azad Kashmir R.   | Pakistan      | 0130 | Q                           |
| 4.790    | TWR Manzini       | Swaziland     | 1810 | A,Q,P,Q                     |
| 4.795    | R.Douala          | Cameroon      | 1915 | A,P                         |
| 4.800    | PBS Xinjiang      | China         | 2240 | N                           |
| 4.800    | AIR Hyderabad     | India         | 2325 | N,R                         |
| 4.800    | LNBS Lesotho      | Maseru        | 1823 | O,P                         |
| 4.810    | R.Yerevan 2       | USSR          | 1924 | A,F,H,K,M,O,R               |
| 4.815    | R.Beijing         | China         | 1450 | N                           |
| 4.815    | R.diff TV Burkina | Ouagadougou   | 1924 | A,O                         |
| 4.820    | La Voz Evangelica | Honduras      | 0400 | N,W                         |

| Freq MHz | Station             | Country    | UTC  | DXer                  |
|----------|---------------------|------------|------|-----------------------|
| 4.820    | R.Moskva 4          | USSR       | 1755 | F,K,M,Q,R             |
| 4.825    | R.Cancao Nova       | Brazil     | 0100 | D                     |
| 4.825    | R.Moscow            | USSR       | 2006 | A,J,K,M               |
| 4.830    | Gaborone            | Botswana   | 2233 | K                     |
| 4.830    | R.Tachira           | Venezuela  | 0014 | E,F,P,W               |
| 4.832    | R.Relej             | Costa Rica | 0500 | E,N                   |
| 4.832    | Altai               | Mongolia   | 2230 | N                     |
| 4.835    | RTM Bamako          | Mali       | 1925 | A,E,F,G,H,J,K,M,O,P,Q |
| 4.845    | ORTM Nouakchott     | Mauritania | 1907 | E,F,K,M,O,P           |
| 4.850    | R.Yaounde           | Cameroon   | 1925 | A,F,G,H,J,K,L,M,O,P,Q |
| 4.850    | AIR Kohima          | India      | 1925 | O                     |
| 4.850    | R.Tashkent 2        | USSR       | 1758 | F,K                   |
| 4.860    | AIR New Delhi       | India      | 1825 | E,H,O,P,Q             |
| 4.865    | PBS Lanzhou         | China      | 2220 | E,J,K,N,P,R           |
| 4.865    | R.Mozambique        | Mozambique | 0300 | N                     |
| 4.870    | R.Cotonou           | Benin      | 2017 | A,E,F,J,M,O,P,Q       |
| 4.875    | Super R.Roraima     | Brazil     | 0500 | E,N                   |
| 4.875    | R.Tbilisi           | USSR       | 0635 | M                     |
| 4.885    | Voice of Kenya      | Kenya      | 1810 | I,O,P,S               |
| 4.890    | RFI Paris           | via Gabon  | 0439 | F                     |
| 4.890    | ORTS Dakar          | Senegal    | 0615 | F                     |
| 4.895    | Voz del Rio Arauca  | Colombia   | 0130 | Q                     |
| 4.895    | R.Moscow (Kalinin)  | Lithuania  | 1815 | K,O                   |
| 4.900    | V. of the Strait 2  | China      | 1955 | O,P,W                 |
| 4.905    | R.Nat.N'djemena     | Chad       | 1731 | A,F,H,L,M,O,P         |
| 4.910    | R.Zambia, Lusaka    | Zambia     | 1806 | N,O                   |
| 4.915    | R.Ghana, Accra      | Ghana      | 2050 | A,F,K,L,M,O,P,Q       |
| 4.915    | Voice of Kenya      | Kenya      | 1816 | O                     |
| 4.915    | R.Cora, Lima        | Peru       | 0415 | D                     |
| 4.925    | R.Nacional, Bata    | Eq.Guinea  | 2050 | A,F,O                 |
| 4.930    | R.Moscow            | USSR       | 1817 | A,F,K,Q,R             |
| 4.935    | Voice of Kenya      | Kenya      | 1817 | E,F,H,L,M,O,P,Q       |
| 4.940    | R.Kiev 2            | Ukraine    | 1817 | A,E,F,K,M,O,P,Q,R     |
| 4.950    | R.Nac.Luanda        | Angola     | 0300 | N                     |
| 4.955    | R.Marajoara         | Brazil     | 2120 | M                     |
| 4.958    | R.Baku              | USSR       | 1920 | A,E,O,P,Q             |
| 4.960    | R.Nat.N'djemena     | Chad       | 0109 | F                     |
| 4.960    | AIR New Delhi       | India      | 2013 | B,N,R                 |
| 4.975    | R.Uganda, Kampala   | Uganda     | 2015 | A,O,Q                 |
| 4.980    | PBS Xinjiang        | China      | 2300 | E,P,Q                 |
| 4.980    | Ecos del Torbes     | Venezuela  | 0112 | E,F,P,W               |
| 4.990    | AIR via Madras      | India      | 0000 | Q                     |
| 4.990    | FRON Lagos          | Nigeria    | 1815 | A,F,I,L,O,Q           |
| 4.990    | R.Ancash, Huaraz    | Peru       | 0340 | N                     |
| 5.015    | R.Moskva 2          | USSR       | 2242 | K                     |
| 5.025    | R.Parakou           | Benin      | 1849 | A,E,F,O               |
| 5.025    | R.Uganda, Kampala   | Uganda     | 2125 | F,J,M,P               |
| 5.035    | R.Bangui            | C.Africa   | 1734 | N,O                   |
| 5.035    | R.Alma Ata          | USSR       | 2135 | A,J,L,M,Q,R           |
| 5.040    | EP de Benguela      | Angola     | 2120 | W                     |
| 5.040    | R.Tbilisi 1         | USSR       | 1736 | F,M,O,P,R             |
| 5.045    | R.Cultura do Para   | Brazil     | 2135 | M                     |
| 5.047    | R.Togo, Lome        | Togo       | 1820 | A,F,L,M,O,P           |
| 5.050    | SBC Singapore       | Singapore  | 1450 | N                     |
| 5.055    | Faro del Caribe     | Costa Rica | 0235 | D,N                   |
| 5.055    | RFQ Cayenne         | Fr.Guiana  | 0502 | F                     |
| 5.060    | PBS Xinjiang        | China      | 2340 | E,Q                   |
| 5.065    | R.Candip, Bunia     | Zaire      | 1820 | O,W                   |
| 5.085    | R.Pakistan, Karachi | Pakistan   | 0130 | Q                     |
| 5.260    | R.Alma Ata 2        | USSR       | 2230 | K,M,Q                 |
| 5.440    | PBS Xinjiang        | China      | 2300 | Q                     |

band as Russia has on the s.w. bands."

**Ron Galliers** (N.London) says, "The Spanish stations are virtually taking over the band in the evening now. I am even picking up some of their 5 and 2kW transmissions quite clearly".

No doubt the sea paths help the signals from local radio stations along the east coast to reach **Ted Walden-Vincent** in Gt.Yarmouth clearly during daylight, but he has also received the ground wave signals from distant stations inland. After dark, Ted picked up sky wave signals from as far away as Belfast! In Co.Kildare, **Hugh Quinn** compiled his first log for the chart after dark. He rated the sky wave signal from IRL Moray Firth via Tarbat Ness on 1107 (1.5kW) as 22322 and R.Tay via Greenside Scalp 1161 (1.4kW) as 33433.

## Short Wave Reports

Despite daily variations in propagation resulting from solar activity, most of

## Transatlantic DX Chart

| Freq kHz | Station | Location                  | Time (UTC) | DXer |
|----------|---------|---------------------------|------------|------|
| 710      | WOR     | USA New York              | 0130       | B    |
| 1010     | WINS    | USA New York              | 0140       | B    |
| 1210     | WOGL    | USA Philadelphia          | 0340       | B    |
| 590      | VOCCM   | Canada St.John's, NF      | 0320       | B    |
| 930      | CJYQ    | Canada St.John's, NF      | 0035       | B    |
| 960      | CFFX    | Canada Kingston, ON       | 0230       | B    |
| 1220     | R.Globo | South America Rio, Brazil | 0030       | A    |

## DXers:-

(A) John Stevens, Largs.  
(B) Jim Willett, Grimsby.

## DXers:-

(A) Darren Beasley, Bridgwater.  
(B) John Coulter, Winchester.  
(C) Ron Damp, Worthing.  
(D) Antonio De Abreu-Teixeira, Evesham.  
(E) David Edwardson, Wallsend.  
(F) Ron Galliers, N.London.  
(G) Robin Harvey, Bourne.  
(H) Sheila Hughes, Morden.  
(I) Roderick Illman, Thurrait, Oman.  
(J) Zacharias Liangas, Thessaloniki, Greece.  
(K) Eddie McKeown, Co.Down.  
(L) Sid Morris, Rowley Regis.  
(M) John Nash, Brighton.  
(N) Sergei Olejnik, Kalush, Ukraine.  
(O) Fred Pallant, Storrington.  
(P) Peter Perkins, Hemel Hempstead.  
(Q) Don Phillips, Bridlington.  
(R) Hugh Quinn, Co.Kildare.  
(S) Philip Rambaut, Macclesfield.  
(T) Cliff Stapleton, Torquay.  
(U) Phil Townsend, E.London.  
(V) Ted Walden-Vincent, Gt.Yarmouth.  
(W) Jim Willett, Grimsby.

the **25MHz (11m)** broadcasts have reached their target well. Most mornings, R.Australia's signals to Asia, M.East via Darwin on 25.750 (Eng 0900-1100) have been clearly heard here. At 0910 their signal may rate SINPO 34543, as quoted by **David Edwardson** in Wallsend, but often it improves later

and may peak 44344, as noted at 1020 in Co.Down.

R.Nederlands now broadcast a church service on Sundays from 1030-1125 on 25.940 (to Asia?) and 25.970 (to M.East?). In Edinburgh, **Kenneth Buck** rated them S10455 and S10355 respectively at 1110. They were also



# long medium & short

## Medium Wave Chart

| Freq kHz | Station          | Country      | Power (kW) | Listener               |
|----------|------------------|--------------|------------|------------------------|
| 520      | Hof-Saale        | Germany      | 0.2        | C, H*                  |
| 520      | Wurzburg         | Germany      | 0.2        | E*                     |
| 531      | Ain Beida        | Algeria      | 600        | E*, F, J*              |
| 531      | Torshavn         | Faroe Is.    | 5          | I                      |
| 531      | Leipzig          | Germany      | 100        | C, H*, J*, K*, P*      |
| 531      | Oviedo           | Spain        | 10         | F*, H, J*              |
| 531      | Beromunster      | Switzerland  | 500        | E*, M*                 |
| 540      | BRT-2            | Belgium      | 150/50     | E*, H*, J*, K*, P*     |
| 540      | Solt             | Hungary      | 2000       | E*, H*, J*             |
| 540      | Sidi Benncur     | Morocco      | 600        | D*, H*, J*             |
| 549      | Les Trembles     | Algeria      | 600        | E*, F, J*              |
| 549      | DLF              | Germany      | 200        | E*, H*, J*, K*         |
| 549      | Minsk            | USSR         | 1000       | I*                     |
| 558      | Espoo            | Finland      | 100        | I*                     |
| 558      | Valencia         | Spain        | 20         | C*, H*, O*             |
| 567      | Berlin           | (Germany)    | 100        | H*                     |
| 567      | RTE-1 Tullamore  | Ireland (S)  | 500        | E*, L, J*, K, P*       |
| 567      | Volgograd        | USSR         | 250        | H*                     |
| 576      | Muhackker        | Germany      | 500        | E*, P*                 |
| 576      | Stuttgart        | Germany      | 500        | H*, J*, J*             |
| 576      | Riga             | USSR         | 500        | E*                     |
| 585      | Ort Wien         | Austria      | 600        | F*                     |
| 585      | RNE-1 Madrid     | Spain        | 200        | C*, F*, H*, J*, K*, P* |
| 585      | BBC-R-Scot       | UK           | 2          | O*                     |
| 594      | Frankfurt        | Germany      | 1MW/400    | E*, H*, J*, P*         |
| 594      | Muge             | Portugal     | 100        | F*, P*                 |
| 603      | Lyon             | France       | 300        | H*                     |
| 603      | Sevilla          | Spain        | 20         | O*                     |
| 603      | BBC-R4           | UK           | 2          | C, H*, J*              |
| 612      | RTE-2            | Ireland (S)  | 100        | E*, J*, J*, K, P*      |
| 612      | Lerida           | Spain        | 10         | J*                     |
| 621      | RTBF-1           | Belgium      | 80         | E*, H*, J*, K*, L, P*  |
| 621      | Barcelona        | Spain        | 10         | J*                     |
| 630      | Vlga             | Norway       | 100        | H*, J*, J*             |
| 630      | Timisoara        | Romania      | 400        | J*                     |
| 630      | tunis            | Tunisia      | 600        | E*                     |
| 639      | Praha            | Czech        | 1500       | E*, H*, J*             |
| 639      | La Coruna        | Spain        | 100        | E*, F*, H*, J*, P*     |
| 648      | P. d. Mallorca   | Spain        | 10         | H*                     |
| 648      | BBC              | UK           | 500        | H*, L, J*, K, P*       |
| 657      | Burg             | Germany      | 250        | H*                     |
| 657      | Napoli           | Italy        | 120        | E*, J*                 |
| 657      | RCE-2            | Spain        | 20         | F*, H*, P*             |
| 657      | BBC-R.Wales      | UK           | 2          | C, K*                  |
| 666      | Bodenseesender   | Germany      | 300/180    | E*, H*, P*             |
| 666      | Barcelona        | Spain        | 20         | H*                     |
| 666      | R.Vilnius        | USSR         | 500        | E*                     |
| 675      | Marseille        | France       | 600        | H*, J*, J*, K*         |
| 675      | Hilversum-3      | Holland      | 120        | E*, F, H*, J*, P*      |
| 684      | RNE-1            | Spain        | 250        | E*, F*, H*, J*, O*, P* |
| 684      | Beograd          | Yugoslavia   | 2000       | J*                     |
| 693      | Berlin           | Germany      | 250        | H*                     |
| 693      | BBC-R5           | UK           | 10         | K                      |
| 702      | Presov           | Czech        | 400        | E*, J*                 |
| 702      | Aachen/Flensburg | Germany      | 5          | H*                     |
| 702      | Monte Carlo      | Monaco       | 300        | I*                     |
| 702      | Zamora           | Spain        | 5          | F*                     |
| 711      | Rennes-1         | France       | 300        | H*, J*, P*             |
| 711      | Heidelberg       | Germany      | 5          | E*                     |
| 720      | BBC-R4           | Ireland (N)  | 10         | I                      |
| 720      | Norte            | Portugal     | 100        | H*                     |
| 720      | BBC-R4           | UK           | 0.5        | J*                     |
| 729      | RTE-1            | Ireland (S)  | 10         | H*                     |
| 729      | RNE-1            | Spain        | 10         | O*                     |
| 729      | Logrono          | Spain        | 20         | O*                     |
| 729      | Oviedo           | Spain        | 50         | C*, E*, H*, J*, J*, O* |
| 738      | RNE-1            | Spain        | 250        | E*, F*, H*, J*, P*     |
| 747      | Hilversum-2      | Holland      | 400        | E*, F, H*, J*, K*, P*  |
| 747      | R.Cadena         | Spain        | 10         | O*                     |
| 756      | Brunswick        | Germany      | 800/200    | E*, H*, J*, P*         |
| 765      | Sottens          | Swit         | 500        | H*, J*                 |
| 774      | BBC-R4           | Ireland (N)  | 1          | H*                     |
| 774      | RNE-1            | Spain        | 60         | O*                     |
| 774      | RNE-1            | Spain        | 60         | H*, O*                 |
| 774      | RNE-1            | Spain        | 50         | J*, O*                 |
| 783      | Djanet           | Algeria      | 5          | E*                     |
| 783      | Burg             | Germany      | 1000       | E*, H*, J*, J*         |
| 783      | R.Porto          | Portugal     | 100        | P*                     |
| 792      | Sevilla          | Spain        | 20         | E*, H*, J*, J*, O*     |
| 792      | BBC R.Ulster     | UK           | 1          | C                      |
| 801      | Munchen          | Germany      | 300        | E*, H*, J*, P*         |
| 801      | Burgos           | Spain        | 10         | H*                     |
| 810      | SER Madrid       | Spain        | 20         | E*, F*, H*, J*         |
| 810      | BBC-Scot.        | UK           | 100        | C                      |
| 810      | BBC-Scot.        | UK           | 100        | C, F*, H, J*, K, P*    |
| 819      | Bordeaux         | France       | 20         | H*                     |
| 819      | Trieste          | Italy        | 25         | E*                     |
| 819      | Rabat            | Morocco      | 25         | J*                     |
| 828      | Corca Dhuibhne   | Ireland (S)  | 1          | I                      |
| 828      | Barcelona        | Spain        | 20         | P*                     |
| 837      | Nancy            | France       | 200        | P*                     |
| 837      | R.Popular        | Spain        | 10         | E*, H*, J*, O*, P*     |
| 846      | Rome             | Italy        | 540        | C*, E*, H*, K*, P*     |
| 855      | Berlin           | Germany      | 100        | I*                     |
| 855      | Murcia           | Spain        | 125        | E*, H*, J*, J*, O*     |
| 864      | Paris            | France       | 300        | E*, H*, P*             |
| 873      | AFN              | Germany      | 150        | E*, H*, J*, M*, P*     |
| 873      | Zaragoza         | Spain        | 20         | E*, J*                 |
| 873      | R.Ulster         | UK           | 1          | H, J                   |
| 882      | BBC-Wales        | UK           | 100        | H, J, J*, P*           |
| 891      | Aigiers          | Algeria      | 600/300    | E*, F*, H*, J*, K*     |
| 891      | Hulsberg         | Holland      | 20         | H*                     |
| 900      | Milan            | Italy        | 600        | E*, H*, J*, M*         |
| 900      | Qurayyat         | Saudi Arabia | 1000       | E*                     |
| 918      | R.Intercont.     | Spain        | 20         | E*, H*, J*, O*         |
| 927      | BRT-1            | Belgium      | 300        | E*, H*, J*, K*, P*     |
| 927      | Lleida           | Spain        | 5          | J*                     |
| 936      | Bremen           | Germany      | 100        | E*, H*, J*, J*, P*     |
| 936      | Agadir           | Morocco      | 600        | P*                     |
| 945      | Toulouse         | France       | 300        | E*, H*, J*, P*         |
| 945      | Rostov-na-Onou   | USSR         | 300        | C*                     |
| 945      | Sarajevo         | Yugo         | 100        | J*                     |
| 954      | Al Arish         | Qatar        | 1500       | H*                     |
| 954      | RCE              | Spain        | 20         | E*, H*, J*, O*         |
| 963      | Pori             | Finland      | 600        | C*, E*, F, J*          |
| 963      | Paris            | France       | 8          | K*, L*, N*, P*         |
| 963      | Tir Chonail      | Ireland (S)  | 10         | C*, J*                 |
| 972      | Hamburg          | Germany      | 300        | E*, H*, J*, M*, P*     |
| 981      | Alger            | Algeria      | 600/300    | E*, F*, H*, J*, P*     |

| Freq kHz | Station          | Country     | Power     | Listener                                   |
|----------|------------------|-------------|-----------|--|
| 990      | Berlin           | Germany     | 300       | E*, H*                                     |
| 990      | SER R.Bilbao     | Spain       | 10        | E*, H*, O*, P*                             |
| 990      | BBC-Tywyn        | UK          | 1         | H*   |
| 999      | R.Popular        | Spain       | 20        | E*, F*, H*, O*, P*                         |
| 1008     | Hilversum-5      | Holland     | 400       | F*, H*, J*, J*, K*, P*                     |
| 1008     | Malaga           | Spain       | ?         | E*, H*, O*                                 |
| 1017     | Rheinsender      | Germany     | 600       | E*, H*, J*, M*, P*                         |
| 1026     | Graz-Dobl        | Austria     | 100       | B*, J*                                     |
| 1026     | SER Alicante     | Spain       | 3         | H*, O*                                     |
| 1026     | SER Reus         | Spain       | 10        | E*   |
| 1035     | Prog.3           | Portugal    | 120       | H*, J*                                     |
| 1044     | Dresden          | Germany     | 250       | B*, E*, H*, J*, M*                         |
| 1044     | Sebaa-Aioun      | Morocco     | 300       | J*   |
| 1044     | San Sebastian    | Spain       | 10        | E*   |
| 1053     | COPE Zarogcza    | Spain       | 10        | H*, O*                                     |
| 1053     | BBC-R1           | UK          | 10        | K*   |
| 1062     | Kalundborg       | Denmark     | 250       | B*, E*, H*, J*, J*, P*                     |
| 1071     | Brest            | France      | 20        | B*, H*                                     |
| 1071     | Lille            | France      | 40        | E*, H*, J*                                 |
| 1080     | Katowice         | Poland      | 1500      | E*, H*                                     |
| 1080     | SER-Granada      | Spain       | 5, J*, O* |  |
| 1080     | La Coruna        | Spain       | 3         | O*   |
| 1089     | Weimar           | Germany     | 20        | H*   |
| 1098     | Bratislava       | Czech       | 750       | B*, E*, H*                                 |
| 1098     | RNE-5            | Spain       | 10        | B*, E*, H*, J*, O*                         |
| 1107     | AFN via Munich   | Germany     | 40        | B*, E*, H*                                 |
| 1107     | RNE-5            | Spain       | 20        | B*, J*, O*                                 |
| 1107     | RNE-5            | Spain       | 10        | H*   |
| 1116     | Bari             | Italy       | 150       | B*, E*, I*                                 |
| 1116     | SER-Pontevedra   | Spain       | 2         | H*   |
| 1125     | La Louviere      | Belgium     | 20        | H*, J*                                     |
| 1125     | Stara Zagora     | Bulgaria    | 500       | H*, J*, J*                                 |
| 1125     | RNE 5            | Spain       | 10        | E*, O*                                     |
| 1125     | BBC              | UK          | 1         | C  |
| 1134     | COPE-Bilbao      | Spain       | 10        | O*   |
| 1134     | Valencia         | Spain       | 10        | B*, H*, I*                                 |
| 1134     | Zadar            | Yugoslavia  | 1200      | B*, E*, H*, K*                             |
| 1143     | AFN              | Germany     | 100       | E*, H*, K*                                 |
| 1143     | Century R.       | Ireland (S) | ?         | H*   |
| 1143     | Kaliningrad      | Lithuania   | 150       | J*, K*                                     |
| 1152     | RNE-5            | Spain       | 10        | H*   |
| 1161     | Strasbourg       | France      | 200       | E*, H*, K*, M*, P*                         |
| 1170     | Krasnodar        | USSR        | 500       | C*   |
| 1179     | Santiago         | Spain       | 10        | E*, H*, O*                                 |
| 1179     | Solvesborg       | Sweden      | 600       | A*, E*, F*, H*, J*, J*, K*, L*, M*, N*, P* |
| 1188     | Kuurne           | Belgium     | 5         | J*   |
| 1188     | Szolnok          | Hungary     | 135       | H*   |
| 1197     | VDA via Munich   | Germany     | 300       | H*, J*, K*                                 |
| 1197     | BBC-R3           | Ireland (N) | 1         | J*   |
| 1197     | BBC-R3           | UK          | 0.5       | O*   |
| 1206     | Bordeaux         | France      | 100       | E*   |
| 1206     | Wroclaw          | Poland      | 200       | E*, H*                                     |
| 1215     | Kaliningrad      | Lithuania   | 500       | H*   |
| 1215     | COPE Castellon   | Spain       | 2         | E*   |
| 1215     | BBC-R3           | UK          | 10        | H*, K                                      |
| 1224     | Vidin            | Bulgaria    | 500       | H*   |
| 1224     | Nasiriya         | Iraq        | 300       | C*   |
| 1224     | COPE             | Spain       | 20        | E*   |
| 1233     | Liege            | Belgium     | 5         | E*   |
| 1233     | Melnik           | Czech       | 400       | E*, H*, K*                                 |
| 1242     | Marseille        | France      | 150       | E*, H*                                     |
| 1251     | Huisberg         | Netherlands | 10        | E*, H*, M*                                 |
| 1260     | VDA via Rhodes   | Greece      | 500       | H*   |
| 1260     | SER              | Spain       | 10        | O*   |
| 1260     | Valencia         | Spain       | 20        | B*, E*, F*, H*, J*, O*, P*                 |
| 1269     | Neuminster       | Germany     | 600       | B*, E*, H*, J*, K*, M*, P*                 |
| 1269     | Novi Sad         | Yugoslavia  | 600/150   | J*   |
| 1278     | Strasbourg       | France      | 300       | E, P*                                      |
| 1278     | RTE-2            | Ireland (S) | 10        | B*, E, L, J*                               |
| 1287     | Litomysl/Liblice | Czech       | 300/200   | B*, C*, E*, H*, J*, P*                     |
| 1296     | San Sebastian    | Spain       | 5         | B*, J*, M*, P*                             |
| 1296     | BBC              | UK          | 500       | B*, H*, P*                                 |
| 1305     | Marche           | Belgium     | 10/5      | E*   |
| 1305     | Rzeszow          | Poland      | 100       | H*   |
| 1305     | Orense (RNE5)    | Spain       | 5         | E*, F*, H*, J*, O*                         |
| 1314     | Kvitsoy          | Norway      | 1200      | B*, E, F, H, J, J*, K*, M*, P*             |
| 1314     | Valladolid       | Spain       | 10        | E  |
| 1323     | R.Moscow         | Germany     | 150       | C, E*, M*, P*                              |
| 1332     | Rome             | Italy       | 300       | E*   |
| 1341     | BBC              | Ireland (N) | 100       | B*, J*, J*, K, M                           |
| 1341     | SER Tarrasa      | Spain       | 2         | E*   |
| 1350     | Nancy/Nice       | France      | 100       | B*, E*, H*, J*, K*, P*                     |
| 1359     | Berlin           | Germany     | 250/100   | H*   |
| 1368     | Manx Radio       | I.O.M.      | 20        | H*, H, J, M                                |
| 1377     | Lille            | France      | 300       | B*, E*, H*, J*, P*                         |
| 1386     | Kaliningrad      | Lithuania   | 500       | B*, E*, H*, J*, P*                         |
| 1395     | R.Tirana         | Albania     | 1000      | B*, E*, L, M*, P*                          |
| 1395     | Alicante         | Spain       | 20        | J*   |
| 1404     | Brest            | France      | 20        | B*, H*, J*, M*                             |
| 1413     | RCE Zaragoza     | Spain       | 20        | B*, H*, J*, M*, O*                         |
| 1422     | Heusweiler       | Germany     | 1200/600  | B*, E*, H*, J*, M*                         |
| 1431     | Dresden          | Germany     | 250       | B*, H*                                     |
| 1440     | Marnach          | Luxembourg  | 1200      | B*, E*, F*, H*, J*, J*, K*, M*, P*         |
| 1449     | Berlin           | Germany     | 5         | B*   |
| 1449     | BBC-R4           | UK          | 2         | C  |
| 1467     | TWR              | Monaco      | 1000/400  | B*, E*, F*, H*, K*, M*                     |
| 1476     | Wien-Bisamberg   | Austria     | 600       | B*, H*, J*, K*, M*, P*                     |
| 1476     | Bilbao           | Spain       | 20        | O*   |
| 1485     | SER              | Spain 2     | 0*        |  |
| 1485     | BBC-R4           | UK          | 1         | J  |
| 1494     | Clermont-Ferrand | France      | 200       | E, J*, M*                                  |
| 1494     | St.Petersburg    | USSR        | 1000      | B*, H*, J*, K*                             |
| 1503     | Stargard         | Poland      | 300       | B*, E*, F, L*                              |
| 1503     | Pamplona         | Spain       | 2         | O*   |
| 1512     | BRT              | Belgium     | 600       | B*, E*, J*, J*, K*, L*, M*, N*, P*         |
| 1521     | Cizatica         | Czech       | 7         | J*   |
| 1521     | Kostice          | Czech       | 600       | B*, H*, K*                                 |
| 1530     | Vatican Radio    | Italy       | 150/450   | B*, C*, E*, F*, G*, H*, J*, P*             |
| 1539     | Maimflingen      | Germany     | 700       | B*, E*, H*, J*, K*, M*, P*                 |
| 1539     | Valladolid       | Spain       | 5         | O*   |
| 1557     | Nice             | France      | 300       | E*, M*, P*                                 |
| 1566     | Sarnen           | Switzerland | 300       | B*, J*                                     |
| 1575     | Burg             | Germany     | 250       | B*, H*, J*, J*, K*, M*                     |
| 1575     | Genoa            | Italy       | 50        | B*, E*                                     |
| 1575     | Cordoba          | Spain       | 5         | O*   |
| 1584     | Pamplona         | Spain       | 2         | B*, O*                                     |
| 1593     | Langenberg       | Germany     | 400/800   | B*, E*, H*, J*, K*, M*, P*                 |
| 1602     | Lidzbark         | Poland      | 1         | C*   |
| 1602     | SER R.Catagena   | Spain       | 2         | B*, M*                                     |
| 1602     | R.Onteniente     | Spain       | 2         | B*, H*, O*                                 |
| 1611     | Vatican Radio    | Italy       | 5         | B*, H*                                     |

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

logged in Quebec as 35333 and 25322 by Alan Roberts. In his latest report he quoted \*R.Denmark via RNI 25.730 as 35444 at 1250, \*DW Cologne 25.740 as 15311 at 1330, R.Australia 25.750 as 25322 at 1055, \*R.Moscow 25.780 as 15311 at 1320 and \*RFI Paris 25.820 as 55555 at 1510. (\*These signals often reach the UK by back scatter and tend to be poor.)

Good reception of some of R.Australia's 21MHz (13m) signals have also been noted here. Their Darwin signals to C/SE, Asia 21.525 (Eng 0100-0800) was 15333 at 0700 by Don Phillips in Bridlington; Carnarvon to Asia 21.775 (Eng 0100-1000) SIO434 at 0750 by Cyril Kellam in Sheffield; to S.Asia, M.East 21.720 (Eng 1100-1300) SIO455 at 1230 by Simon Hamer in New Radnor.

In the morning R.Prague, Czechoslovakia 21.705 (Eng, Cz to Asia, Pacific areas 0730-0830) was 44444 at 0730 by Sheila Hughes in Morden; R.Japan via Moyabi 21.575 (Eng to Europe 0700-0800) SIO333 at 0715 by Sid Morris in Rowley Regis; DW via Julich 21.680 (Eng to Australia, N.Zealand 0900-0950) 54554 at 0936 by Darren Beasley in Bridgwater; R.Afghanistan via USSR? 21.600 (Eng to Asia 0930-1030) 32422 at 0959 by Leo Barr in Sunderland; R.Portugal via S.Gabriel 21.700 (Port to Africa 1000-1200) SIO444 at 1038 by John Coulter in Winchester; R.Pakistan, Islamabad 21.520 (Eng to Europe 1100-1120) 54344 at 1105 by Chris Shorten in Norwich; Vatican R 21.850 (Spt to S.America) SIO444 at 1129 by Philip Rambaut in Macclesfield.

Later, UAE R.Dubai 21.605 (Eng to Europe 1330-1355) was 45344 at 1340 in Co.Down; R.Finland via Pori 21.550 (Eng to USA 1330-1345) 32332 at 1340 by Rhoderick Illman in Oman; BBC via Limassol 21.470 (Eng to E.Africa 0900-1615) SIO343 at 1400 by Cliff Stapleton in Torquay; WCSN Scotts Corner 21.670 (Eng to Europe, USA 1400-1600) SIO444 at 1410 by Bill Clark in Rotherham; R.Sweden via Horby 21.500 (Sw, Fr, Sp, Eng to USA 1430-1600) 43444 at 1440 in N.London; R.Moscow 21.625 (Eng to Africa?) 55555 at 1535 by John Nash in Brighton; R.Portugal via S.Gabriel 21.515 (Eng to M.East 1600-1630) SIO544 at 1605 by Bryan Kimber in Hereford; SRI via Schwarzenburg 21.770 (Ar to M.East, Africa 1715-1830) 35333 at 1728 by Darran Taplin in Brenchley; WCSN Scotts Corner 21.640 (Eng to Africa 1800-1900) SIO222 at 1802 by Julian

- Listeners:-  
A: Chris Bazley, Rayleigh.  
B: Darren Beasley, Bridgwater.  
C: Tim Bucknall, Congleton.  
D: Bill Clark, Rotherham.  
E: Ron Galliers, N.London.  
F: Sheila Hughes, Morden.  
G: Rhoderick Illman, Thurrait, Oman.  
H: Eddie McKeown, Co.Down.  
I: George Millmore, Hamilton, Scotland.  
J: George Millmore, Wootton 10W.  
K: Sid Morris, Rowley Regis.  
L: Don Phillips, Bridlington.  
M: Hugh Quinn, Co.Kildare.  
N: Chris Shorten, Norwich.  
O: John Stevens, Largs.

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| TS450SAI with auto ATU.....              | £1298.00 | TM531E 23cm Mobile 10/1 watt Transceiver..... | £415.00  |
| TH77E Dual Band.....                     | £395.00  | TH7025E Dual Baner 25 watt Mobile.....        | £455.00  |
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| AT850 Auto Tuner.....                    | £147.73  | RS000 General Coverage Receiver.....          | £894.02  |
| PSS2 Heavy Duty PSU.....                 | £235.00  | VC20 VHF Converter 108-174MHz.....            | £170.85  |
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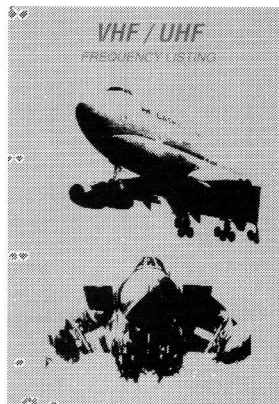
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**Wood** in Elgin; WYFR Okeechobee 21.500 (Eng, Ger, Fr to Europe 1700-2000) SIO455 at 1805 in Edinburgh; HCJB Quito 21.455 (u.s.b. + p.c. 24hrs) 34433 at 2140 by **Ron Damp** in Worthing.

Although intended for Pacific areas, the **17MHz (16m)** signals from R.NewZealand Int. have often reached here. In Hemel Hempstead, **Peter Perkins** logged the signal from Rangataiki 17.770 (Eng 2200-0630) as 33333 at 0530. R.Australia's signals were also noted. The Carnarvon signals to C.Asia 17.630 (Eng, Chin 0000-0900) was 43333 at 0100 in Oman; Darwin to Asia 17.750 (Fr, Eng 0600-1000) was 'loud and clear' at 0850 by **Chris Haigh** in Huddersfield.

Others using this band include R.Japan via Yamata 17.890 (Jap, Eng to Oceania 0600-0800) 44444 at 0740 in Norwich; KHBI Saipan, N.Mariana Islands 17.555 (Eng to NE.Asia, E.USSR

0800-0900) SIO222 at 0801 in Macclesfield; R.Yugoslavia, Belgrade 17.740 (Eng to Australia, USA 1230-1300) heard at 1230 by **Roy Patrick** in Derby; R.Romania Int, Bucharest 17.720 (Eng 1300-1400) SIO433 at 1335 in Rotherham; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) SIO333 at 1420 in Torquay; R.Pakistan, Islamabad 17.555 Eng to M.East 1600-1630) 53543 at 1615 in Bridgwater; RSA Johannesburg 17.840 (Eng to W.Africa 1555-1800) SIO544 at 1705 by **Fred Pallant** in Storrington; WWCR Nashville 17.525 (Eng to USA, Europe 1500-2000) 43333 at 1845 in N.London; KVOH Rancho Simi 17.775 (Sp, Eng to C.Am 1200-0300) SIO222 at 1945 in Edinburgh; BBC via Ascension Island 17.880 (Eng to Africa 1900-2030) 24232 at 1947 by **Jim Cash** in Swanwick; RHC Havana 17.705 (Eng to Europe, N.Africa 2000-2100) heard in Bridlington; R.Cairo, Egypt 17.800 (Eng to W.Africa 2030-?)

44444 at 2030 in Brighton; RCI via Sackville 17.875 (Eng to Europe 2100-2150) SIO444 at 2135 in Rowley Regis; HCJB Quito 17.790 (Cz, Ger, Sw, Eng, Spto Europe 1800-2230) SIO333 at 2200 by **Antonio De Abreu-Teixeira** in Evesham; WYFR via Okeechobee 17.750 (Eng to Europe, Africa 2000-2300) SIO444 at 2215 in Hereford.

For many, the **15MHz (19m)** band is the hub of activity. Good reception of R.Australia was mentioned in many reports, typical ratings were: Shepparton 15.160 (Eng to Pacific areas 2130-1100) 42542 at 0953 in Bridgwater, 15.240 (Eng to Pacific 2200-0930), 34533 at 0812 in Wallsend, 15.320 (Eng to Asia 2030-0800), 33433 at 2146 in Brenchley; Darwin 15.170 (Eng, Chin to C.Asia 0900-1400), 44344 at 1200 in Hemel Hempstead.

Programmes for listeners in Europe are beamed by R.Japan via Yamata? 15.250 (Eng 0700-0800) 53343 at 0700 in

Norwich; UAE R.Dubai 15.435 (Eng 1030-1110) 33333 at 1030 in Morden; R.Finland via Pori 15.325 (Ger, Fr, Eng 1130-1200) SIO444 at 1144 in Winchester; WWCR Nashville 15.690 (Eng, Sp 1200-0000) SIO333 at 1330 in Rotherham; WYFR via Okeechobee 15.566 (Eng 2000-?) 33333 at 2005 by **Chris Bazley** in Rayleigh; RNB Brasilia, Brazil 15.265 (Eng, Ger 1800-?) SIO343 at 2015 in Torquay; WINB Red Lion 15.185 (Eng 2000-2245, also Africa) 32323 at 2119 in N.London; SLBC, Sri Lanka 15.120 (Eng 2000-2130) 44433 at 2115 in Worthing; WRNO New Orleans 15.420 (Eng to 2000-2300, also USA), heard at 2200 in Bridlington; RAE Buenos Aires 15.345 (Sp 2300-0000, Sat/Sun) SIO444 at 2300 in Evesham.

Those for other areas were UAE R.Dubai 15.400 (Ar, Eng to USA 0230-0400) heard at 0345 by **Colin Jermy** in Ruislip; Vatican R. 15.090 (Eng to ?) SIO433 at 0645 by **Francis Hearne** in Bristol; R.Tashkent, Uzbek 15.470 (Eng, Ur, Hi to S.Asia 1200-1500) 35333 at 1200 in Derby; RSA Johannesburg 15.365 (Fr to W.Africa 1800-2000) SIO444 at 1800 in Sheffield; AIR via ? 15.080 (Eng to Africa 1800-1945) 45555 at 1806 in Oman; VoA via Greenville 15.580 (Eng to Africa 1600-2200) heard at 2000 by **Sergi Olejnik** in Ukraine and SIO544 at 2045 in Hereford; BBC via Kranji 15.340 (Eng to Australia, N.Zealand 2000-2315) 24442 at 2115 in Brighton; BBC via Ascension Is 15.400 (Eng to Africa 1900-2315) 53333 at 2150 in Gibraltar; R.Nat. de Chile, Santiago 15.140 (Sp to S.America 1700-0415) SIO111 at 2215 in Macclesfield.

Conditions in the **13MHz (22m)** band have meant some R.Australia's signals reached here. Very potent signals from

## Local Radio Chart

| Freq kHz | Station             | ILR | e.m.r.p (kW) | Listener        | Freq kHz | Station             | ILR | e.m.r.p (kW) | Listener      |
|----------|---------------------|-----|--------------|-----------------|----------|---------------------|-----|--------------|---------------|
| 558      | Spectrum R.         | I   | 7.50         | A,B,D*,G,H,L    | 1161     | R.Tay               | I   | 1.40         | E*,F,J*       |
| 585      | R.Solway            | B   | 2.00         | A,E,F           | 1161     | Viking R.(C.Gold)   | I   | 0.35         | A,K*          |
| 603      | Invicta Snd(Coast)  | I   | 0.10         | A,B,D*,G,J,L    | 1170     | Ocean Sd.(SCR)      | I   | 0.12         | G,L           |
| 603      | R.Goucester         | B   | 0.10         | A,G,H,L         | 1170     | R.Orwell            | I   | 0.28         | K*,L          |
| 630      | R.Bedfordshire      | B   | 0.20         | A,B,D,G,H,J,K,L | 1170     | Signal R.           | I   | 0.20         | A,H           |
| 630      | R.Cornwall          | B   | 2.00         | G               | 1170     | Swansea Sound       | I   | 0.58         | E*            |
| 657      | R.Clywd             | B   | 2.00         | A,E,F,G,H,K*,L  | 1170     | TFM Radio (GNR)     | I   | 0.32         | E*            |
| 666      | DevonAir R.         | I   | 0.34         | G,L             | 1242     | Invicta Snd(Coast)  | I   | 0.32         | B,D*,H,K*,L   |
| 666      | R.York              | B   | 0.80         | A,F,K           | 1242     | Isle of Wight R.    | I   | 0.50         | E*,G,H*       |
| 729      | BBC Essex           | B   | 0.20         | A,B,G,H*,K,L    | 1251     | Saxon R.            | I   | 0.76         | A,B,K*,L      |
| 738      | Hereford/Worcester  | B   | 0.037        | A,B,H,L         | 1260     | GWR (Brunel R.)     | I   | 1.60         | E*,G*,I,L     |
| 756      | R.Cumbria           | B   | 1.00         | A,F             | 1260     | Leicester (GEM-AM)  | I   | 0.29         | A,B,H,K*,L    |
| 756      | R.Shropshire        | B   | 0.63         | A,B,G,H,L       | 1260     | Marcher Sound       | I   | 0.64         | A             |
| 765      | BBC Essex           | B   | 0.50         | A,B,G,J,L       | 1278     | Pennine R.(C.Gold)  | I   | 0.43         | A,B           |
| 774      | R.Kent              | B   | 0.70         | B,G,J,L         | 1305     | R.Hallam (C.Gold)   | I   | 0.15         | A             |
| 774      | R.Leeds             | B   | 0.50         | A,K             | 1305     | Red Dragon (Touch)  | I   | 0.20         | G,L           |
| 774      | Sewern Sound (3CR)  | I   | 0.14         | A,G,H           | 1323     | R.Bristol (Som.Snd) | B   | 0.63         | A,E,L         |
| 792      | Chiltern R.         | I   | 0.27         | A,B,H,J,K*,L    | 1323     | S'thern Sound(SCR)  | I   | 0.50         | A,B,E*,G,L    |
| 792      | R.Foyle             | B   | 1.00         | A               | 1332     | Hereward R.P'boro   | I   | 0.60         | A,E*,H*,K*,L  |
| 801      | R.Devon             | B   | 2.00         | A,E,G,L         | 1332     | Wiltshire Sound     | B   | 0.30         | E*,L          |
| 819      | Hereford/Worcester  | B   | 0.037        | A,B,H,L         | 1359     | Essex R.(Breeze)    | I   | 0.28         | A,D,J,K*,L    |
| 828      | Chiltern Radio      | I   | 0.20         | B,J,K*,L        | 1359     | Mercia Snd(Xtra-AM) | I   | 0.27         | A,H           |
| 828      | R.Aire(Magic 828)   | I   | 0.12         | A               | 1359     | R.Solent            | B   | 0.85         | G             |
| 828      | R.WM                | B   | 0.20         | A,H             | 1368     | R.Lincolnshire      | B   | 2.00         | A,K           |
| 828      | 2CR                 | I   | 0.27         | G,L             | 1368     | R.Sussex            | B   | 0.50         | B,D*,G,L      |
| 837      | R.Cumbria           | B   | 1.50         | A               | 1368     | Wiltshire Sound     | B   | 0.10         | G,H*          |
| 837      | R.Furness           | B   | 1.00         | A               | 1413     | Sunrise R.          | I   | 0.125        | D*,L          |
| 837      | R.Leicester         | B   | 0.45         | A,B,G,H,K,L     | 1431     | Essex R.(Breeze)    | I   | 0.35         | B,D,J,K*,L    |
| 855      | R.Devon             | B   | 1.00         | G               | 1431     | Radio 210           | I   | 0.14         | A,D*,G*,L     |
| 855      | R.Lancashire        | B   | 1.50         | A,E,F           | 1449     | R.Peterboro/Cambs   | B   | 0.15         | A,K,L         |
| 855      | R.Norfolk           | B   | 1.50         | B,L             | 1458     | GLR                 | B   | 50.00        | D*,G*,L       |
| 873      | R.Norfolk           | B   | 0.30         | A,B,G,K,L       | 1458     | GMR                 | B   | 5.00         | A,E*          |
| 936      | GWR (Brunel R.)     | I   | 0.18         | A,B,G,H,L       | 1458     | R.Cumbria           | B   | 0.50         | E*            |
| 945      | R.Trent (GEM-AM)    | I   | 0.20         | A,B,H,K*,L      | 1458     | R.Devon             | B   | 2.00         | L             |
| 954      | DevonAir R.         | I   | 0.32         | G,L             | 1458     | R.Newcastle         | B   | 2.00         | K*            |
| 954      | R.Wyvern            | I   | 0.16         | A,H,L           | 1458     | Radio WM            | B   | 5.00         | A,H           |
| 990      | WABC (Nice & Easy)  | I   | 0.09         | A,H,L           | 1476     | C'ty Snd(1st Gold)  | I   | 0.50         | B,D*,G,L      |
| 990      | R.Aberdeen          | B   | 1.00         | E               | 1485     | R.Humberside        | B   | 1.00         | K             |
| 990      | R.Devon             | B   | 1.00         | G,L             | 1485     | R.Merseyside        | B   | 1.20         | A,E*,H        |
| 990      | Hallam R.(C.Gold)   | I   | 0.25         | K*              | 1485     | R.Oxford            | B   | 0.50         | G,H*,K*,L     |
| 999      | R.Solent            | B   | 1.00         | B,D,G,L         | 1485     | R.Sussex            | B   | 1.00         | B,D*,G,L      |
| 999      | R.Trent (GEM-AM)    | I   | 0.25         | A               | 1503     | R.Stoke-on-Trent    | B   | 1.00         | A,E*,F,H,L    |
| 999      | Red Rose R.         | I   | 0.80         | A,E,F           | 1521     | R.Mercury           | I   | 0.64         | B,D*,E*,G,L   |
| 1017     | WABC Shrewsbury     | I   | 0.70         | A,E*,H          | 1521     | R.Nottingham        | B   | 0.50         | A,E*,F,H,K*   |
| 1026     | Downtown R.         | I   | 1.70         | F,I*,K*         | 1530     | Pennine R.(C.Gold)  | I   | 0.74         | A             |
| 1026     | R.Cambridgeshire    | B   | 0.50         | A,B,K,L         | 1530     | R.Essex             | B   | 0.15         | B,L           |
| 1026     | R.Jersey            | B   | 1.00         | G,L             | 1530     | R.Wyvern            | I   | 0.52         | A,F,H         |
| 1035     | Northsound Radio    | I   | 0.78         | A*,K*           | 1548     | Capital R. (Gold)   | I   | 97.50        | D*,G*,L       |
| 1035     | R.Kent              | B   | 0.50         | A,G,J,K,L       | 1548     | R.Bristol           | I   | 5.00         | A*,E*,G       |
| 1035     | R.Sheffield         | B   | 1.00         | A               | 1548     | R.City (City Talk)  | I   | 4.40         | A             |
| 1035     | West Sound          | I   | 0.32         | E,F             | 1548     | R.Forth (Max AM)    | I   | 2.20         | F             |
| 1107     | Moray Firth R.      | I   | 1.50         | E,F,J*          | 1548     | R.Hallam (C.Gold)   | I   | 0.74         | A,E*,K*       |
| 1107     | R.Northampton       | B   | 0.50         | B,G,H*,K,L      | 1557     | Chiltern R.(Gold)   | I   | 0.76         | A,E*,F*,H*,K* |
| 1116     | R.Derby             | B   | 1.20         | H,K,L           | 1557     | Ocean Sound (SCR)   | I   | 0.50         | G,L           |
| 1116     | R.Guernsey          | B   | 0.50         | G,L             | 1557     | R.Lancashire        | B   | 0.25         | A             |
| 1152     | BMB (Xtra-AM)       | I   | 3.00         | A,H             | 1557     | Tendring R.(Mellow) | I   | ? L          |               |
| 1152     | LBC (L.Talkback R.) | I   | 23.50        | D*,G,L          | 1584     | Watwick             | I   | 0.10         | G,L           |
| 1152     | Metro R. (GNR)      | I   | 1.80         | I*,K*           | 1584     | Heathrow            | I   | 0.10         | B,L           |
| 1152     | Piccadilly R.       | I   | 1.50         | A               | 1584     | R.Nottingham        | B   | 1.00         | A,E*          |
| 1152     | R.Broadland         | I   | 0.83         | C*,E*,K*,L      | 1584     | R.Shropshire        | B   | 0.50         | A,H           |
| 1152     | R.Clyde (Clyde 2)   | I   | 3.60         | F               | 1584     | R.Tay               | I   | 0.21         | F             |
| 1161     | GWR (Brunel R.)     | I   | 0.16         | A,L             | 1602     | R.Kent              | B   | 0.25         | A,B,E*,G,L    |
| 1161     | R.Bedfordshire      | B   | 0.10         | K,L             |          |                     |     |              |               |
| 1161     | R.Sussex            | B   | 1.00         | D*,G,L          |          |                     |     |              |               |

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

## Listeners:

- A: Tim Bucknall, Congleton
- B: Ron Galliers, N. London
- C: Francis Hearne, Bristol
- D: Sheila Hughes, Morden
- E: Eddie McKeown, Co. Down
- F: George Millmore, Hamilton
- G: George Millmore, Wootton, IOW
- H: Sid Morris, Rowley Regis
- I: Hugh Quinn, Co. Kildare
- J: Phil Townsend, E. London
- K: Ted Walden-Vincent, Great Yarmouth
- L: John Wells, East Grinstead

## Long Wave Chart

| Freq kHz | Station        | Country        | Power (kW) | Listener                    |
|----------|----------------|----------------|------------|-----------------------------|
| 153      | Bechar         | Algeria        | 1000       | I*                          |
| 153      | Donebach       | Germany        | 500        | B,C,D,E*,F*,G,H*,I,L        |
| 153      | Brasov         | Romania        | 1200       | B*,C*,E*                    |
| 153      | Engels         | USSR           | 150        | C*                          |
| 162      | Allouis        | France         | 2000       | A*,B,C,D,E*,F*,G*,H*,J,K*,L |
| 171      | Kaliningrad    | Lithuania      | 1000       | B,C,E*,G,I                  |
| 171      | Moscow         | USSR           | 500        | D,H*                        |
| 177      | Oranienburg    | Germany        | 750        | B,C,D,E*,H*,L               |
| 183      | SaarLouis      | Germany        | 2000       | B,C,D,E*,F*,G,H,I,K*,L      |
| 189      | Motala         | Sweden         | 300        | B,C*,F*                     |
| 198      | BBC Droitwich  | UK             | 500        | C,D,E,G,H,J*,L              |
| 198      | BBC Westerglen | UK             | 50         | B*,C*,F*                    |
| 207      | Munich         | Germany        | 500        | B,C,D,E*,G,H*,I             |
| 207      | Azilal         | Morocco        | 800        | A*                          |
| 216      | Roumoules      | Monaco         | 1400       | B,C,D*,E*,G*,H*,I,K*,L      |
| 216      | Oslo           | Norway         | 200        | B,C*,E*                     |
| 225      | Konstantinow   | Poland         | 2000       | B,C*,D*,E*,H*,J*,L          |
| 234      | Junglinster    | Luxembourg     | 2000       | B,C,D,E*,F*,G,H,I,L         |
| 234      | St.Petersburg  | USSR           | 1000       | B*,E*                       |
| 243      | Kalundborg     | Denmark        | 300        | B,C,D,F*,H*,J,K*,L          |
| 252      | Tipaza         | Algeria        | 1500       | A*,C*,D*                    |
| 252      | Atlantic 252   | S.Ireland      | 500        | B,C,D*,E*,F*,G,H,I,K*,L     |
| 261      | Burg           | Germany        | 200        | L                           |
| 261      | Moscow         | USSR           | 2000       | B,C*,D*,E*,G,H*,J*          |
| 270      | Topolna        | Czechoslovakia | 1500       | B,C*,D*,E*,G,H*,I,K*,L      |
| 270      | Orenburg       | USSR           | 15         | B*                          |
| 279      | Minsk          | USSR           | 500        | C*,D*,E*,G,I                |

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

## Listeners:-

- A: Charles Beanland, Gibraltar.
- B: Kenneth Buck, Edinburgh.
- C: Tim Bucknall, Congleton.
- D: Sheila Hughes, Morden.
- E: Eddie McKeown, Co.Down.
- F: George Millmore, Hamilton, Scotland.
- G: George Millmore, Wootton, IOW
- H: Sid Morris, Rowley Regis.
- I: Fred Pallant, Storrington.
- J: Don Phillips, Bridlington.
- K: Cliff Stapleton, Torquay.
- L: Phil Townsend, E.London.



# long medium & short

Carnarvon on 13.755 (Eng to Pacific areas 1500-2100?) were noted at 1900 by **Steve Cann** in Southampton. The Shepparton signals to Pacific areas 13.605 (Eng 1900-2130) was SIO344 at 1901 in Edinburgh; Carnarvon to Asia 13.705 (Eng, Th 2100-0000) 42333 at 2121 in Swanwick; Darwin to C.Asia 13.605 (Chin, Eng 2200-0100) 22222 at 2156 in N.London.

Band occupants now include WYFR 13.695 (Eng to Europe, Africa 0500-0800) heard at 0730 in Bridlington; WSHB 13.760 (Eng to USA, C/S.America 0800-1000) SIO444 at 0757 in Macclesfield; R.Pakistan, Islamabad 13.665 (Eng to M.East 1600-1630) 53333 at 1605 in Norwich; KHBI, N.Mariana Islands 13.625 (Eng to SE.Asia, India 1600-1800) SIO222 at 1655 in Rotherham and 44343 at 1633 in Oman; UAE R.Dubai 13.675 (Ar, Eng to Europe 0615-2100) 45554 at 1808 in Wallsend; R.Austria Int via Moosbrunn 13.730 (Ger, Eng, Fr, Sp to Africa 1800-2100) SIO444 at 1800 in Rowley Regis; RCI via Sackville 13.670 (Eng to Africa 1900-1930) 32342 at 1905 in Brighton; R.Netherlands via Flevo 13.700 (Eng to W.Africa 2030-2125) 55555 at 2030 in Morden; Voice of Israel, Jerusalem 13.750 (Heb to C.Europe 0400-2310) SIO434 at 2100 in Torquay; SRI via Sottens 13.625 (It, Port, Eng, Sp to Africa 2000-2200) 44343 at 2115 in Worthing; WCSN 13.770 (Eng to Europe, M.East, Africa 2000-0000) 34233 at 2150 in Co.Down; RCI via Sackville 13.605 (Eng to Europe 2200-2300) SIO333 at 2200 by **Alf Gray** in Birmingham; Voice of the UAE in Abu Dhabi 13.605 (Ar, Eng to N.Africa 2200-0000) 55544 at 2210 in Brenchley.

## Potent Signals

Many **11MHz (25m)** signals are intended for Europe. Those noted were BRT via Wavre 11.695 (Eng, Du 0730-0900) 44444 at 0730 in Morden; HCJB, Ecuador 11.730 (Eng 0700-0830) 43443 at 0730 in Bridlington; R.Cairo via Abis 12.050 (Ar 0700-0000, also to M.East, E.Africa) 44444 by **Zacharias Liangas** in Greece; REE via Aganda 11.790 (Eng 1900-2000) 33343 at 1942 in Rayleigh; R.Beijing, China 11.500 (Eng 2000-2200) SIO333 at 2200 in Torquay; Voice of Israel, Jerusalem 11.605 (Eng 2000-2030) 44444 at 2020 in Wallsend; R.Damascus, Syria 12.085 (Eng 2005-2105) 53333 at 2015 in Swanwick; R.Romania Int, Bucharest 11.940 (Eng 2100-2125) 55555 at 2100 in Brighton; RCI via Sackville 11.945 (Eng 2200-2300) SIO222 at 2200 in Elgin; AIR via Aligarh 11.620 (Eng 2045-2230) SIO333 at 2215 in Birmingham; R.Japan via Moyabi 11.735 (Eng 2300-0000) SIO333 at 2320 in Rotherham.

Those to other areas include TWR Bonaire, Ned.Antilles 11.930 (Eng to Caribbean 0300-0430) SIO444 at 0320 in Hereford; RHC Havana 11.950 (Eng to C.America), heard at 0530 in Ruislip; Voice of the Mediterranean, Malta

11.925 (Eng, Ar to N.Africa 1400-1600) 45444 at 1400 in Derby; KSDA AVR Agat, Guam 11.980 (Chin, Jap, Eng to C/E.Asia 0900-1700) SIO433 at 1515 in Macclesfield; KHBI Saipan 11.580 (Eng to NE.Asia, S.Asia, India, E.USSR 1600-1800) 33232 at 1633 in Oman and 33323 at 1648 in N.London; Voice of Israel, Jerusalem 11.675 (Eng to Africa? 2000-2030) SIO433 at 2000 in Sheffield; R.Australia via Carnarvon 12.000 (Eng to S.Asia 1430-2100) 43433 at 2016 in Brenchley; R.Globo, Rio de Janeiro 11.805 (Port to S.America 0900-0300) SIO333 at 2100 in Largs; Voice of Israel, Jerusalem 11.605 (Eng to USA 2230-2300) SIO433 at 2245 in Bristol; R.Sweden via Horby 11.705 (Eng to S.America 2330-0000) 45444 at 2330 by **Robin Harvey** in Bourne; R.Bandeirantes, Sao Paulo, Brazil 11.925 (Port to Brazil 0700-0500) SIO242 at 0050 in Evesham; R.Prague, Czechoslovakia 11.990 (Eng to USA 0000-0030) 54333 at 0012 in Gibraltar.

The **9MHz (31m)** broadcasts from R.New Zealand Int, Wellington attract many listeners outside the target area. Their 100kW signals to Pacific areas on 9.700 (Eng 0630-1110) was SIO322 at 0822 in Macclesfield. Potent signals have been heard here from R.Australia via Carnarvon on 9.860 (Eng to Asia 1430-2100) 44444 at 1440 in Wallsend, but severe co-channel interference occurs later.

Some programmes for European listeners stem from WMLK Bethel 9.465 (Eng 0400-0700, 1700-2000 Sun-Fri, also to M.East) rated 34443 at 0600 in Morden; HCJB, Ecuador 9.695 (Eng 0700-?) 54554 at 0755 in Bridgewater; WCSN 9.840 (Eng 0800-1000, also to Africa, USA) SIO555 at 0815 in Hereford; BBC via Skelton 9.410 (Eng 0915-2200) 44433 in Greece; Vatican R 9.645 (Ger, Pol 1500-1530) SIO333 at 1500 in Rowley Regis; R.Pyongyang, N.Korea 9.325 (Eng 1500-1600, also to M.East, Africa) SIO233 at 1512 in Gt.Yarmouth; REE Spain 9.620 (Sp 1800-2145) SIO444 at 1900 in Evesham; Voice of Vietnam, Hanoi 9.840 (Eng 1900-2000) heard at 1900 in Bridlington; VOIRI, Iran 9.022 (Ger, Fr, Eng, Sp, Ar 1800-2230) 54444 at 1915 in Brighton; RHC, Cuba 9.710 (Eng, Fr 2200-2300) 45444 at 2200 in Derby; R.Budapest, Hungary 9.835 (Eng 2200-2300) 44444 at 2202 in N.London; R.Sophia, Bulgaria 9.700 (Eng 2300-2330) SIO444 at 2306 in Rotherham.

Many are beamed to other areas but may also be heard here, including VoA via Greenville 9.565 (Ha to Africa 0500-0530) 44554 at 0500 in Swanwick; HCJB, Ecuador 9.745 (Eng to S.Pacific 0730-1100) 22432 at 0747 in Sunderland; Voice of Vietnam, Hanoi 9.840 (Eng to Africa 1600-1630) 55545 at 1610 in Norwich; R.Mediterranean Int via Nardor 9.575 (Ar, Fr to N.Africa 0800-2100) 55444 at 1758 in Gibraltar; R.Norway, Oslo 9.590 (Eng to USA 2100-2130) 54534 at 2107 in Rayleigh; FEBC, Philippines 9.830 (Chin to Asia 2200-

## Equipment Used

Leo Barr, Sunderland: Matsui MR4099 + r.w. in loft.  
Chris Bazley, Rayleigh: Panasonic RBF-40L + 20m wire  
Charles Beanland, Gibraltar: Sangean ATS 803 + a.t.u. + r.w. or Howes AA2.  
Darren Beasley, Bridgewater: Philips D2935 + loop or a.t.u. + 10m wire.  
Kenneth Buck, Edinburgh: Lowe HF225 + r.w. in loft or loop.  
Tim Bucknall, Conleton: Sony ICF 2001D + AN-1.  
Steve Cann, Southampton: Lowe HF-225 + a.t.u. + 5RV antenna.  
Jim Cash, Swanwick: Kenwood R5000 + trap dipole or Sony AN-1.  
Bill Clark, Rotherham: Sony ICF-SW7600 + built-in whip.  
John Coulter, Winchester: Yaesu FRG-7 + r.w.  
Ron Damp, Worthing: Racal RA17 + 30m inverted V dipole.  
Antonio De Abreu-Teixeira, Evesham: Sony ICF-2001D + r.w.  
David Edwardson, Wallsend: Trio R600 + inverted V trap dipole.  
Ron Galliers, London: Philips D2935 + a.t.u. + 30m wire.  
Alf Gray, Birmingham: Codar CR70 + PR30 + a.t.u. + Ex-Army whip.  
Chris Haigh, Huddersfield: Lowe HF-225 + Lowe W-225.  
Simon Hamer, New Radnor: Sony ICF-2001D + ATU + r.w. or loop.  
Robin Harvey, Bourne: Matsui MR4099 + s.w. loop.  
Francis Hearne, Bristol: Sharp GFA3 cassette radio + r.w.  
Sheila Hughes, Morden: Sony ICF7600DS + loop or Panasonic DR48 + 15m wire.  
Roderick Illman, Thumrait, Oman: Sony ICF 7600DS + whip or 23m wire  
Colin Jermey, Ruislip: Sony ICF-SW7600 + inverted V whip.  
Cyril Kellam, Sheffield: Sony ICF-7600DS + AN-1 or 25m wire.  
Bryan Kimber, Hereford: Zenith R7000 or Realistic SX190 + 20m wire.  
Zacharias Liangas, Thessaloniki, Greece: Philips D2935 or Sony ICF 7600D + 10m wire.  
Eddie McKeown, Co.Down: Tatung TMR 7602.  
George Millmore, Wootton, I.O.W.: Tatung TMR 7602 + loop or Racal RA17L + v.l.f. converter + r.w.  
Sid Morris, Rowley Regis: Kenwood R5000 or Nevada MS 1000 + 31m wire.  
John Nash, Brighton: Kenwood R5000 + Lowe Balun + r.w.  
Sergei Olejnik, Kalush, Ukraine: Ishim-003 + 70m wire.  
Fred Pallant, Storrington: Trio R2000 + r.w. in loft.  
Roy Patrick, Derby: Lowe HF 125 + 44m wire.  
Peter Perkins, Hemel Hempstead: Lowe HF-125 + 20m wire.  
Don Phillips, Bridlington: Yaesu FRG 8800 + a.t.u. + r.w.  
Hugh Quinn, Co.Kildare: Lowe HF-225 + FRT7700 + 15m wire in loft.  
Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.  
Alan Roberts, Quebec, Canada: Lowe HF225 + 11m or 31m dipole.  
Chris Shorten, Norwich: Matsui MR 4099 + 10m wire.  
Cliff Stapleton, Torquay: Trio R1000 + dipoles or r.w.  
John Stevens, Largs: Hammarlund HQ 180 or Icom R-70 + loop or r.w.  
Darran Taplin, Brenchley: Yaesu FRG7700 + FRA7700 or FRT 7700 + Zepp.  
Phil Townsend, London: LF converter + Lowe SRX-30 + loop.  
Ted Walden-Vincent, Gt.Yarmouth: Grundig Satellit 1400L + r.w.  
John Wells, E.Grinstead: RCA AR88D + Loop.  
Jim Willett, Grimsby: RCA AR77 + 4m loop or Trio R9-59DS + a.t.u. + X dipole.  
Julian Wood, Elgin: Kenwood R2000 + Yaesu FRT 7700 a.t.u. + 6m wire.

0000) 43433 at 2155 in Brenchley; Voice of the UAE, Abu Dhabi 9.600 (Eng, Ar to USA 2200-0200) SIO344 at 2201 in Edinburgh; Voice of Israel, Jerusalem 9.435 (Eng to USA 2230-2300) SIO544 at 2230 in Bristol; R.Sweden, Stockholm 9.695 (Eng to S.America 2330-0000) 44344 at 2333 in Bourne; R.Nat. de Venezuela 9.540 (Sp to S.America 0000-0100) heard at 0020 in Ukraine.

## Congested

The occupants of the congested **7MHz (41m)** band include KTBN 7.510 (Eng to USA 0100-1500) heard at 0900 in Bridlington; KNLS 7.365 (Chin to China 1100-1200) SIO111 at 1145 in Macclesfield; TWR, Monaco 7.160 (Ger to Europe 1430-1500) 44434 at 1430 in N.London; R.Polonia, Warsaw 7.285 (Eng to Europe 1430-1500) 44444 at 1430 in Morden; R.Liberty, Munich 7.295 (Uk to S.Europe, M.East 1600-2355) 44333 at 1900 in Oman; AIR via Aligarh 7.412 (Eng to Europe 1845-1945) 53444 at 1905 in Rayleigh; RCI via Daventry 7.235 (Eng, Fr to Europe 1900-2000) SIO545 at 1915 in Rowley Regis; R.Prague, Czechoslovakia 7.345 (Eng to Europe 2000-2030) 55444 in Swanwick; R.Korea, Seoul 7.550 (Kor, Ar, Eng to M.East 1700-2130) 54444 at 2030 in Brenchley; BBC via Daventry 7.325 (Eng to Europe, N.Africa 1800-2200) 44444 at 2152 in Greece; R.Tirana via Lushnje 7.215 (Eng to Europe 2230-2300) SIO222 at 2239 in Elgin; WHRI 7.315 (Eng to USA 0000-0800) 43243 at 0015 in Co.Down.

The **6MHz (49m)** signals from VoA

via Wertachtal 5.995 (Eng 0500-0700) were 53333 at 0525 in Swanwick; RCI via Daventry 6.050 (Fr, Eng to Europe 0600-0700) SIO444 at 0645 in Bristol; R.Riga, Latvia 5.935 (Eng to Europe) 43443 at 1830 in Morden; BBC via ? 5.875 (Cz to Europe 1900-2000) SIO444 at 1909 in Winchester; King of Hope, Lebanon 6.280 (Eng to M.East, SE.Europe) were heard at 1930 in Hemel Hempstead; R.Tallin, Estonia 5.925 (Eng to Europe 2130-2200) SIO333 at 2140 in Hereford; R.Sweden via Karlsborg 6.065 (Eng 2130-2200) 44444 at 2143 in Rayleigh; R.Austria Int, Vienna 6.945 (Ger, Eng, Fr, Sp to Europe 1700-2300) SIO433 at 2150 in Birmingham; R.Bremen, Germany 6.190 (Ger to Europe) heard at 2205 in Greece; CKZN 6.160 (Eng to USA, Canada 0930-0500) SIO333 at 0030 in New Radnor; R.Aparecida, Brazil 6.135 (Port to Brazil 0800-0300) SIO333 at 0130 in Evesham.

## Station Addresses

Radio Aberdeen, Broadcasting House, Beechgrove Terrace, Aberdeen AB9 2ZT.

Chiltern Radio, Chiltern Road, Dunstable, Beds LU6 1HQ

FEBC Radio International, Box 1, Valenzuela, Metro-Manila, Philippines.

Voice of Indonesia, PO Box 157, Jakarta, Indonesia.

CHUM, 2 St.Claire Avenue West, Toronto, ON M4V 1L6, Canada.

WBAL, 3800 Hooper Avenue, Baltimore, MD 21211, USA.

# OFF THE RECORD PIRATES

Andy Cadier, 28 Romney Avenue, Folkstone, Kent CT20 3QJ.

**T**his quarter the spotlight falls on the *MV Ross Revenge*, the vessel used by Radio Caroline. The ship lost its anchor during a storm on 20 November 1991 and drifted onto the Goodwin Sands. The crew were rescued in most hazardous circumstances by a helicopter from RAF Manston in Kent. An attempt to recover the ship by the Dover-based tug *Dextrous* failed at the first attempt, a second try is to be made later. The 978 ton *Ross Revenge* was acquired to replace the *Mi Amigo* that sank in a storm in March 1980. The *MV Freyr*, as she was originally called, was constructed in Germany during 1960 for a major Icelandic fishing company. In 1963, *Ross Trawlers* purchased this ship, hence its present name, later in 1969 British United Trawlers took over the *Ross* fleet. The ship saw action during the so-called Cod War, during which it was arrested by the Icelandic Navy, and made a spectacular escape from Reykjavik harbour in the middle of the night, hotly, but unsuccessfully, pursued by Icelandic gun boats.

In 1979, due to the subsequent fall in deep sea fishing the *Ross Revenge* became a North Sea wreck recovery vessel, but a year or so later ended up at a Scottish ship breakers. It was here the Caroline organisation spotted the ship in 1981, and took it to Spain for conversion to a floating radio station. Problems with finance delayed the project, but in August 1983 she took up her anchorage in the North Sea.

A set-back, which was not entirely unexpected, happened during the hurricane force winds that occurred in the winter of 1987. The 82m antenna tower fell down. This was replaced with the two smaller lattice masts shown in the picture.

On 19 August 1989, British and Dutch government radio officials boarded the radio ship, and forcefully removed most components from the three transmitters, the audio processing equipment, and the entire record collection. In an astonishing achievement, Radio Caroline was back on its 558kHz frequency in just six weeks!

In April 1990, test broadcasts for a new local station in London, Spectrum Radio, took place on 558kHz, even though this channel was clearly occupied. Co-channel interference was so bad Spectrum Radio was given another frequency of 990kHz, and both transmitters ran simultaneously.

Broadcasting from the *Ross Revenge* ceased a year ago, just prior to the introduction of new legislation, which took effect on 1 January 1991. This gave British radio officials jurisdiction over broadcasts made in international waters, although this point is still the subject of debate in the European Parliament.

## Caroline's Legend.

Following advertisements in *SWM* for a compact disc called *The Legend Lives On*, I have received numerous enquiries asking if I have heard it, and what it is like? The inlay card shows the *Ross Revenge* on the front, two previous Caroline ships are pictured inside. The disc lasts 75 minutes with good quality samples of Radio Caroline's output over the years.

It is most interesting to hear how the station's presentation and music have evolved since its inception in 1964. A clear uncomplicated narration is provided by Marc Jacobs, making this recording appealing to anyone with an interest in this aspect of British broadcasting history. A nice gesture is a dedication to Peter Chicago, Caroline's talented radio engineer.

This is an excellent souvenir of the first 26 years of pirate broadcasting from this remarkably popular radio station. You can contact Offshore Echo's at PO Box 1514, London W7 2LL. My special thanks to OEM for providing a sample disc, and background information.

## Radio Harmony 6.305MHz.

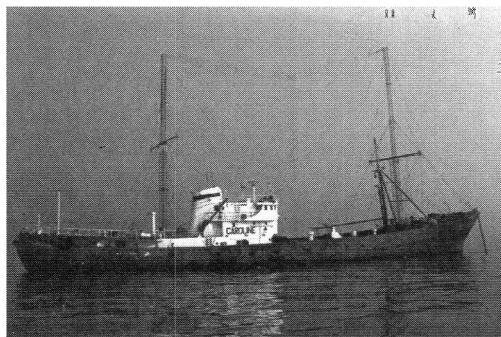
This new arrival commenced broadcasts on 6.305MHz on September 6. A Gates 2kW transmitter, Optimod audio processing, and a directional antenna make this a well reported signal. Next quarter I will be giving you a list of f.m. stations to listen out for. Until then have a Happy Christmas, and good DX in the New Year.

### Monitors

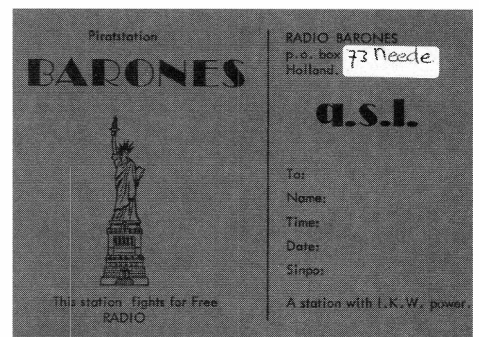
- A: David Williams, Southampton, Hampshire.
- B: John Robertson, Alnwick, Northumberland.
- C: John Sargeant, Bolton, Lancs.
- D: Ron Galliers, Islington, London.
- E: Bob Marsh, Bexleyheath, Kent.
- F: Mark Jones, Peterborough, Cambs.
- G: John Parry, Northwich, Cheshire.
- H: Free Radio Monitoring, Halesowen, W. Midlands.
- I: David Matthews, Llandrindod Wells, Powys.
- J: Martyn Preston, Kidlington, Oxon.
- K: Sid Morris, Rowley Regis, W. Midlands.

### Short Wave Reception Chart

| Freq MHz | Station                       | UTC  | Monitors            |
|----------|-------------------------------|------|---------------------|
| 1.350    | North Coast Radio             |      | G K                 |
| 1.608    | Radio Future                  |      | E                   |
| 1.618    | Merseywaves                   |      | E                   |
| 1.619    | Radio Pirana (Holland)        |      | E K                 |
| 6.200    | Radio Orang Utan              | 0955 | B E F H I J K       |
| 6.205    | Radio Fax                     | 0725 | A C F D H I K       |
| 6.210    | King Radio                    | 1225 | H                   |
| 6.210    | Radio Mutiny                  | 0833 | E I                 |
| 6.215    | Radio Anorak                  | 1051 | H I                 |
| 6.220    | Midland Music Radio           | 0713 | H I K               |
| 6.221    | Radio Nordlicht International | 0845 | E                   |
| 6.224    | Radio Gemini                  | 1024 | F J I               |
| 6.225    | Free Radio Service            | 0926 | H J                 |
| 6.230    | Britain Radio International   | 1010 | A B E F H J         |
| 6.230    | Radio Europe                  |      | C F I               |
| 6.231    | Jolly Roger Radio             | 0907 | A D E F H I J K     |
| 6.231    | Radio Peace in Action         | 0806 | H I                 |
| 6.240    | Radio Merlin (now silent?)    | 0725 | A B C D F H I K     |
| 6.255    | Radio Confusion               | 1137 | H J                 |
| 6.255    | Radio Geronimo                | 1030 | E C D F H I         |
| 6.262    | Radio For Peace In Action     | 1010 | B F H               |
| 6.262    | North Ireland Relay Service   | 0814 | H I K               |
| 6.262    | European Pirate Radio         | 1300 | D E I J             |
| 6.275    | Radio Delta                   | 0808 | H                   |
| 6.275    | Wonderful Free Radio London   | 1115 | D H I               |
| 6.275    | West & North Kent Radio       | 1000 | A B C D E F H I J K |
| 6.280    | Radio Dublin                  | 0950 | B H                 |
| 6.280    | Ozone Radio                   | 0952 | C F H K             |
| 6.280    | Radio East Coast Holland      | 0840 | H E                 |
| 6.282    | Livewire Radio                |      | C H                 |
| 6.282    | W German Pirate Organisation  | 0921 | H E                 |
| 6.284    | Radio Marabu                  |      | E                   |
| 6.285    | Radio Mirage                  | 1005 | H                   |
| 6.285    | Radio Titanic International   | 0000 | H                   |
| 6.290    | Radio Orion                   | 1000 | B C E H I J K       |
| 6.290    | Radio London                  | 1510 | E F H I             |
| 6.290    | Radio Confusion               |      | H                   |
| 6.292    | Radio Stella International    | 0910 | A D E F H I J K     |
| 6.292    | Total Control Radio           | 1602 | H                   |
| 6.296    | Weekend Music Radio/Stella    | 1258 | O E H I             |
| 6.305    | Radio Harmony (2kW)           | 1215 | A C D E F H I K     |
| 6.400    | Radio Mi Amigo                | 1113 | H I E               |
| 6.524    | Radio Pamela                  | 1539 | H I                 |
| 6.526    | Clandestine Radio Society     | 0942 | H I                 |
| 7.375    | Jolly Roger Radio             | 0937 | H                   |
| 7.384    | Radio Mirage International    | 0852 | E H I               |
| 7.440    | Radio Titanic                 | 1152 | E                   |
| 7.446    | Radio Stella International    | 0930 | D E H I J           |
| 7.450    | Radio Waves International     | 0731 | C E F H K           |
| 7.450    | Southern Music Radio          |      | E                   |
| 7.480    | Radio Benelux (BNL)           | 1001 | B C H               |
| 7.485    | Radio Brigitte                | 1035 | B H                 |
| 7.525    | Radio Waves International     | 0935 | E                   |
| 9.980    | Radio Stella International    | 0842 | E H J               |
| 11.401   | Radio Waves International     | 0732 | B F I               |
| 11.416   | Weekend Music Radio/Stella    | 1259 | H J I               |
| 11.490   | Radio East Coast              | 0005 | H                   |
| 12.255   | Radio Fax                     | 0820 | F H J               |



*MV Ross Revenge*, August '90. Andrew Berkerey/Offshore Echo's.



QSL from Dutch pirate, usually on 1611kHz.



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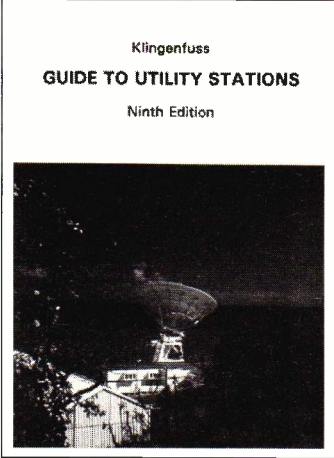
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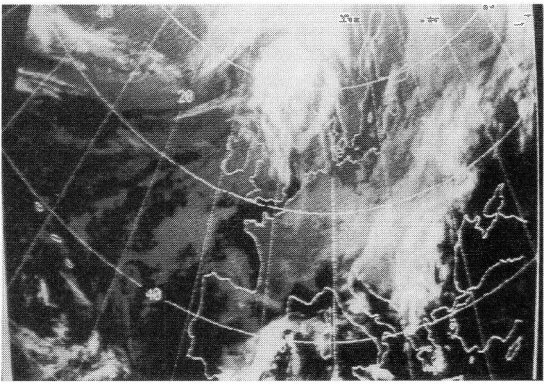
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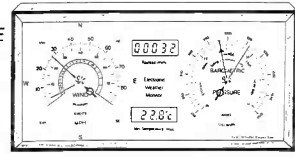
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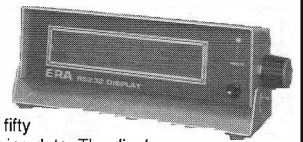
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Someone once said that this filter is too good for amateur radio use. We, along with hundreds of BP34 users would disagree. The BP34 combines ease of use with a degree of performance not found in any other filter. Exceptionally sharp cut off and guaranteed 80dB stopband attenuation make this filter a must for the more serious user. **£109.50**

### RS232 DISPLAY

Don't tie up your computer while monitoring. This new unit will display, store and print messages sent via the RS232 output from the MICROREADER or PACKET TNC. Text is stored in memory and at the same time displayed on the large 160 character backlit screen. A unique scrolling facility allows you at any time to scroll back and forth through over fifty screens of text messages while still receiving data. The display incorporates a PARALLEL PORT that allows printing of all or selected sections of text at the touch of a button. **£185.00**



### BP12 DATA FILTER

A compact low power filter specifically designed for data applications such as CW, RTTY & HF PACKET. Both audio and TTL tone data outputs are provided. Ideal for use with computers. **£44.00**



All products are guaranteed for two years and all prices include VAT and postage and packing.



# C.M.HOWES COMMUNICATIONS



## NEW HARDWARE PACKAGES

Now your home brew gear can look as good as factory equipment! With our interlinking range of kits it has always been possible to expand one of our simple receivers into a transceiver by adding the relevant transmitting kits. Now we can also offer custom made metal work to give the project a really high standard of finish.

Receiver kits start at **£15.90** for single band SSB/CW. Transmitters start at **£14.80** for single band CW. A transceiver "hardware pack" costs **£29.90**.

If you are just starting shortwave listening, studying for a Novice Licence, or an experienced operator needing a QRP rig for home or holiday use, we have a good selection of high quality, easy to build kits for you to choose from. The beauty of HOWES KITS is that you can start with a beginner's receiver and upgrade to a transceiver in easy stages. A full range of matching accessories is also available. Please send an SAE for further information. We have too many kits to even list them here!

## ANTENNAS AND PRE-AMPS

### AA2 ACTIVE ANTENNA for 150kHz to 30MHz

The HOWES AA2 is the active antenna to use for general coverage HF reception. Broad-band performance that does not tail off at the higher frequencies. The neat, compact answer for those with limited space, holiday use, mobile operation etc. Two selectable gain settings, local or coax powering (12 to 14V) IP3 +38dBm. Easy to build and much liked by customers!

AA2 Kit: **£8.50** Assembled PCB module: **£12.90**

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Tel: (0327) 60178



### AA4 ACTIVE ANTENNA FOR SCANNERS

The HOWES AA4 gives full coverage from 25 to 1300MHz in a neat compact package. The antenna is only just over 16 inches long, and is designed to be the answer to space/visibility problems for home or portable operation. A low noise microwave IC is used as the active element. This "high tech" approach gives good performance with a low parts count, making construction straightforward. Reviewed in the November '90 *Short Wave Magazine*. Excellent performance in a small space!

AA4 Kit: **£19.80** Assembled PCB modules: **£26.80**

### SPA4 BROADBAND PRE-AMP

The HOWES SPA4 is a low noise IC pre-amp covering 4 to 1300MHz for use with wideband passive antennas (discons etc). If signals tend to be rather weak in your area, then the SPA4 could be just what you need!

SPA4 Kit: **£14.90** Assembled PCB modules: **£20.90**



## ADD-ON DIGITAL READ OUT

The new HOWES DFD4 Digital Frequency Display adds "Digital Readout" to analogue type receivers and transceivers. If you own an FRG7, FT101, TS520, etc., then we had you in mind when we designed this kit. You can even add digital readout to a surplus WW2 receiver, or domestic broadcast set.

The DFD4 can accommodate any IF frequency offset, VFOs that tune normally or "backwards" - all with a resolution of 100Hz. Versatile indeed! A small buffer module for easy connection to the radio is included in the kit. Why not give me a ring to discuss its use with your rig, or send an SAE for more details?

DFD4 Kit: **£39.90** Assembled PCB modules: **£59.90**

PLEASE ADD **£1.20 P&P** to your total kit order (£3.00 for hardware).

HOWES KITS are produced by a professional RF design and manufacturing company. They contain a good quality printed circuit board with screen printed parts locations, full clear instructions and all board mounted components. Sales and technical advice are available by phone during office hours. Please send an SAE for our free catalogue or specific product data sheets. Normally all kits are in stock and delivery is within 7 days.

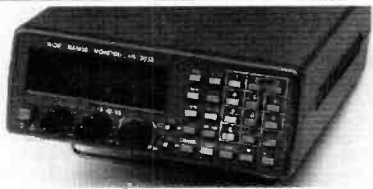
72 & 73 from Dave G4KQH, Technical Manager



0692-650077

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AOR AR2800 Base/mobile scanning receiver featuring coverage from shortwave to microwaves 500kHz-500MHz & 800MHz-1300MHz. All mode AM, FM-N, FM-W, and built-in BFO for USB, LSB, CW. 1000 memories and 10 search banks. Operates from 13.8V DC. Supplied with AC adaptor, DC lead, mobile mount and telescopic aerial. £395

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AOR AR3000, Unique top of the range wide band scanning receiver. All mode AM, FM-N, FM-W, USB, LSB, CW. Frequency coverage is 100kHz-2036MHz with no gaps. Supplied with telescopic aerial, 13.8V DC lead, and AC power supply. £765



AOR AR2000. Hand-held wide band scanning receiver. Improved specification. Continuous coverage 500kHz-1300MHz. AM, FM-N, & FM-W modes. 1000 memories and 10 search banks. Supplied with internal nicads, or can be powered by dry cells. Power and charge from a cigar lighter socket with lead supplied. AC charger and case included. £259

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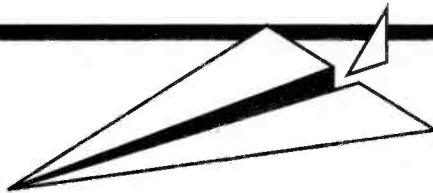


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# practical Wireless

## HAVE YOU SEEN OUR NEW FRONT COVER LOGO?

It's appropriate that, as *Practical Wireless* enters its 60th anniversary year, we're making sure that we do so in style. We're all very proud of the magazine's heritage, and there's a new logo starting with the January issue.

Along with the new logo, one of the biggest improvements will be a change to a higher quality glossy paper. There will be full colour and two colours available throughout the magazine. There will also be much higher quality photographic reproduction, with advantages to be had for everyone.

The new printing system will enable our art editor Steve Hunt to use his artistic expertise and the second colour to full effect. As a result technical articles with circuit diagrams, p.c.b. designs and appropriate overlays will be more attractively designed, providing a much easier read.

Rob Mackie, our photographer and technical artist, in conjunction with Steve, will be able to use many more of the production and presentation aids to produce an even better magazine for our readers.

So, we'll be entering the new year in style. There are some interesting projects under way, and I hope to be letting you have news of one or two of them very soon. In the meantime, everyone on the *Practical Wireless* team is looking forward to sharing the enjoyment of a wonderful hobby with the support of our new technology and most importantly, you the reader.

73 DE Rob Mannion G3XFD

- ✓ Practical Wireless 60th Anniversary Year
- ✓ Look out for our new logo starting from the January issue
- ✓ Higher quality glossy paper
- ✓ New two colour editorial style
- ✓ Higher quality photographic reproduction
- ✓ Attractively designed and more clearly defined p.c.b. overlays in two colours

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# trading post

**WANTED** Parmeko transformer model 6000/8 and Leak TL25 amplifier. Tel: (0661) 852874 evenings.

**WANTED** Philips tuner amplifier model RH831 or Grundig tuner amplifier model RC200. Both have cassette decks or Philips radio model 561AT stereo. H. McCallion, 8 Strathard Close, Coleraine, Co. Londonderry, N. Ireland BT51 3ES. Tel: (0265) 43793.

**WANTED** Bearcat 200XLT hand-held scanner also AR3000 both must be in mint condition. Mr Cox G6MDV. Tel: (0332) 675816.

**FOR SALE** Amiga FAX TX/RX program, also Amiga SSTV program in colour and b/w. All mouse operated, boxed with interface and all documents, all complete, £80. Tel: (0709) 523133 Rotherham, S. Yorks.

**FOR SALE** National Panasonic RF8000, 24-band, highly sensitive receiver, £450, including postage. National Panasonic RF9000, excellent overall performance, as new, £900. Suit enthusiast. Tel: (0695) 28945.

**FOR SALE** Marconi TF2008 signal generator, 10kHz-510MHz with matching Racal 9839 frequency counter, excellent condition, £330. Buyer collects. Tel: (0539) 726909 Kendal, Cumbria.

**FOR SALE** Regency R4020 100 channel hand-held scanner complete with a.c. adaptor rechargeable NiCads only, 4 months old, still boxed and under warranty. New scanner for sale, £120. Tel: (0246) 232619 Chesterfield, Derbyshire.

**FOR SALE** new - still boxed, R535 v.h.f./u.h.f. receiver plus p.s.u., whip antenna, £220 o.v.n.o. Tel: (0425) 620413.

**FOR SALE** Grundig Satellit 600, computer controlled tuning, 60 memories, 10W output, four wavebands, s.w. 1.6-26.1MHz without switching, s.s.b., b.f.o., very infrequent use,

**Fill in the order form on page 80 in BLOCK CAPITALS - up to a maximum of 30 words plus 12 words for your address - and send it, together with your payment of £2.35, to Trading Post, Short Wave Magazine, Enefco House, The Quay, Poole, Dorset BH15 1PP. If you do not wish to cut your copy of SWM, or do not wish to use the order form provided, you must still send the corner flash or your subscription number as proof of purchase of the magazine. Advertisements from traders, apparent traders or for equipment which it is illegal to possess, use or which cannot be licensed in the UK will not be accepted.**

v.g.c., £150. M. Tunney, 20 Providence Court, Victoria Street, Portsmouth, Hants PO1 4LG. Tel: (0705) 756895.

**FOR SALE** Philips D2999 short wave s.s.b. f.m. receiver as new, boxed, manuals, £125. Global a.t.u., brand new, boxed, manual, £35. Mike. 18 Springfield Grove, Southam, Leamington Spa, Warks CV33 0ES.

**FOR SALE** Kenwood R5000 with manuals, also ERA Microreader, all very good condition, £650 the lot no offers. Sharp. Tel: (0274) 818044 evenings only.

**WANTED** Zenith Trans-Oceanic a.m./f.m. multi-band receiver. Also wanted Ekco AD65 or AD76. Good price for good condition. James Duckworth. Tel: 081-449 3921 Barnet, Herts.

**EXCHANGE** Rechargeable sealed lead acid maintenance free batteries (see page 59 Maplin's catalogue) 10 x 12 v 24Ah, 10 x 12 v 15Ah, 5 x 12 v 6Ah, all in g.w.o. Used in standby mode for 18 months, will split. Starting s.w.l. need receiver, etc., or w.h.y? Can deliver East Anglia. Andy. Tel: (0760) 22337 Norfolk.

**FOR SALE** Yaesu FRG-8800 with FRV-8800, £500. FRA-7700, £35. FRT-7700, £35. All boxed. House move forces sale. Write to: John Davidson, 23 Oakham Close, Swindon SN5 8DZ.

**WANTED** Philips D2999 World Band receiver, not too expensive and preferably boxed with all the gen. Would also consider D2935 model. Tel: (0249) 658261 Chippenham, evenings please.

**FOR SALE** dummy load 70Ω at 100W, £30. Also six assorted transformers, all working, £15 each. G.J. Edwards, 36 Glancollen, Llangernym, Clwyd LL2 2BY.

**WANTED** mature s.w.l./constructor/collector seeks Eddystone EC10 Mk2, Heathkit Mohican GC1U, Lowe SRX-30 and AR88 with a view to a long term caring relationship. Tel: (0243) 512329 West Sussex.

**FOR SALE** Trio R2000 h.f. receiver, little used and boxed, with accessories, £325 for quick sale. Buyer collects. Tel: (0773) 746385 Derbys.

**FOR SALE** FRG-7 h.f. receiver 0-30MHz u.s.b.-l.s.b. good condition, £110 will deliver reasonable distance. Tel: (0695) 22573 Skelmersdale, evenings.

**EXCHANGE** Create 730V-1 dipole 40-10m unused. Avo test gear - valve tester, signal generator, l.c. bridge, all stored but believed OK. For astronomical telescope, home-brew considered if good. Sharp, 77 Cloche Way, Swindon SN2 6JN. Tel: (0793) 826325 evenings after 7pm.

**WANTED** Eddystone receiver, especially older models such as 750 or 640 in good or poor condition. Tel: (0226) 288718.

**FOR SALE** BBC computer, RTTY, AMTOR, FAX, SSTV, 128K SWRAM, 80T/40T disk drive, high resolution colour monitor, plenty of software, manuals, etc., £300. Details, Tel: (024027) 531 Bucks.

**FOR SALE** radio controlled analogue clock, German make, tuned to MSF 60kHz, brand new, shop price, £79.95, yours for £60. Tel: 081-319 3157.

**FOR SALE** Pacom AFR1000 mint condition, 10 months old, auto decoding of Baudot 1 & 2, SITOR A & B (FEC), c.w., ASCII, Speedtest, complete with leads and manual, £220 carriage extra. Tel: 081-570 5603.

**FOR SALE** Icom R71E, Microreader MkII, Global a.t.u., Olivetti printer, Microreader latest software, all excellent condition, £650 for lot. Greg. Tel: (0535) 274134.

**FOR SALE** decoding system, Spectrum computer, J&P Electronics Quark, RTTY, AMTOR, Morse, SSTV and FAX, 10 months maker's guarantee, £90. John. Tel: 021-477 8163 anytime.

**FOR SALE** dual standard b/w portable television, old but perfect working order and made by Sony, £50. Also wide bands v.h.f. u.h.f. pre-amp, £15. Buyer collects. Tel: (0752) 224340.

**FOR SALE** Standard C5000E, accs, £230. AR2001, £175. WA55 Sony stereo radio cassette play/rec, built-in stereo mics, £50. 6 x 4 ridge tent,

**More Trading Post on Page 80**

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## THE ICOM IC-R7100 WIDEBAND RECEIVER



### • Continuous coverage from 25 to 2000 MHz

The IC-R7100 allows you to receive signals on VHF or UHF including amateur, air, marine, citizens and utility bands plus FM and TV broadcasts.

### • All mode capability

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### • 5 basic scans

These search for signals over a wide range and skip undesired frequencies and unmodulated signals.

### • Window scan

To select and specify the frequency, memory channel, mode, and more, the IC-R7100 is equipped with a 2-window system, a technological breakthrough. Window scan can select one window and then another alternately on the function display for a programmed duty cycle.

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Combines a basic scan with the window scan function. Each basic scan appears in its window and two can be combined to operate alternately, with over 40 possible combinations; only Icom's high-speed scanning can realise dual scan operation.

### • 900 memory channels

A total of 900 memory channels store frequencies, modes and tuning steps. Memory channels are grouped in 9 memory banks for ease of handling and editing.

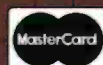
### • 20 scan edge memory channels

The IC-R7100 features an additional 20 scan edge memory channels to store 10 sets of frequencies for programmed scan.

### Additional outstanding features

- High sensitivity and reliable frequency stability
- 0.1, 1, 5, 10, 12.5, 20, 25, 100 kHz and 1 MHz tuning steps available.
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# HF-150

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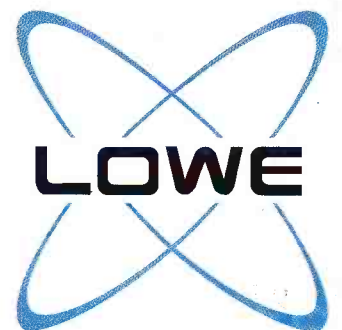
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