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short wave magazine
Vol. 55 ISSUE 1 JANUARY 1997

ON SALE DECEMBER 27
Next issue on sale JANUARY 23

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UNLIMITED SERVICE
High street retailer, Tandy, has launched a new service aimed at allowing customers to order unique and hard-to-find items from a catalogue. The initiative forms part of Tandy's pledge to offer the most diverse range of electrical products, parts and accessories throughout its network of 348 stores.

When the Tandy Unlimited catalogues are available, all shoppers have to do is to select the goods they need, fill in a form and the goods will be despatched to their homes immediately. The catalogue covers everything from batteries through to karaoke tapes, mobile phone accessories and lots more.

In addition to filling in a form, Tandy Unlimited also allows customers to order direct by post, FAX or, for credit card holders, by telephone. Postage and packing cost £1.50 per item and delivery takes only seven days.

With the Tandy Unlimited range being constantly updated, shoppers can enquire about the availability of parts not currently listed in the catalogue. By filling in details of the item for which the part is needed, customers can order the part, giving their credit card details, while at the same time specifying the maximum amount they are prepared to spend on the item.

Peter Aske, Tandy Marketing Manager, said: "We believe that the Tandy Unlimited operation will meet a need from our customers that, for purely logistical reasons, we are not able to fulfil at present. The service aims to enhance our reputation as the most diverse electrical retailer in the UK with an unmatched service, quality and range of products."

NEW YEAR COURSE
John Beaumont G3NGD has made arrangements at the North Trafford College, Stretford, to offer a Radio Amateurs' course starting in the new year, January 1997. This course is very different to the previous courses that John has taught in that it will run for a full 36 weeks and students will sit the Christmas exam in December 1997.

It is also proposed to start another Electronics Servicing for the Radio Amateur course, also starting in January 1997. The day and time will be arranged to meet demand.


Electronic Servicing for the Radio Amateur (see article published in PW May 1996, page 48)

For more details, why not contact John Beaumont G3NGD, North Trafford College, Talbot Road, Stretford, Manchester M32 0XH or telephone John on 0161-872 3731.

NEW CD ROM
The new Home Education Library CD ROM from the Public Domain and Shareware Library (PDSL) is a non-encyclopaedic education CD ROM. It does not contain 'zillions' of files of information, instead it contains 'zillions' of programmes that children, parents and teachers can run to help get them educated.

From simple 'Hangman' that helps with English vocabulary build up and spelling and alphabet learning for infants to programs to teach you Russian, from genealogy to following British Football League activity through the season, designing and making paper airplanes. There are even programmes on conservation, music making and investment strategy.

Teachers will welcome records management and classroom seating charts, lesson plan programmes, test and/or quiz generation programs, time line programmes for history and even national curriculum records generator programs. There are 1280 programs for Windows and DOS packed onto this CD ROM, which comes with its own 200 page manual of program function descriptions.

Priced at £29 inclusive of VAT, this new CD ROM is available from PDSL, Winscombe House, Beacon Road, Crowborough, East Sussex TN6 1UL, telephone on (01892) 663298. Credit, debit or switch cards by mail order.

RAISING MONEY FOR BREAKTHROUGH
Sir Ranulph Fiennes is attempting his solo walk across Antarctica, one of the world's last unconquered challenges, in order to raise money for Breakthrough, the charity funding research into breast cancer. His only contact with the outside world is by means of a small customised transceiver, originally designed as an amateur radio kit.

Radio amateurs Morag and Lawrence Howell, themselves veterans of polar expeditions, are essential members of Sir Ranulph's team, handling the communications and acting as base camp leaders in Antarctica and the UK. It is hoped that Ran's latest expedition, which has HRH The Prince of Wales as Patron and is being sponsored by Dyson Appliances, will raise £3 million for Breakthrough.

The Dyson Antarctic Solo (DAS) expedition is expected to take 100 days and will cover a distance of over 2800km miles. Ran will have to climb to over 3000m and will obviously experience extreme temperatures and high winds. Being a solo expedition, personal and safety communications are paramount.

Ran carries with him a personal satellite location beacon, which can pinpoint his position to the base station in the UK to within a mile or so. His voice communications are on h.f. (short wave) using a purpose built Honda Electronics 210 MHz s.s.b. transceiver. Power efficiency is paramount, as Ran has to pull every gram.

The antenna is a specially designed multi-frequency dipole with plugs and sockets for lengthening and shortening the array for specific channels. It will be supported on ski poles just 1m above the ice. The coaxial feeder cable, specially manufactured by Raychem, stays flexible to below -70°C.

Morag Howell, as Antarctic Base Leader, is living in a tent, with very little electrical power from a solar panel array. She keeps in touch with Ran, and Lawrence's UK base station using two transceivers, together with antennas designed by Lawrence.

Morag's main communication links out of Antarctica will be my Immarsat. As her base is only 960km from the South Pole, the Immarsat geostationary Atlantic West satellite appears above the horizon for only a few hours per day. Updates on this expedition can be found at http://www.rsgb.org, on the RSGB's Internet site.

NEW CLUB FOR FEBA
An exciting initiative to
encourage support for Christian Radio outreach is launched this month. TransMissioners is FEBA Radio’s new club. It’s aim is to inspire a new generation of supporters to join together in helping reach thousands of people in Africa, Asia and the Middle East, with the Gospel — by radio.

FEBA’s Chief Executive Michael Roemmele says: “FEBA’s work is expanding rapidly, with seven new languages due on air in the near future. If the ministry is to keep growing, it’s vital to have a new generation of people to help.”

Members of TransMissioners are invited to support a different radio programme each month by prayer and giving. A regular flow of information about each programme and about the audience and the listeners will help members be in touch. They will also be kept up-to-date with news about programmes they have previously supported, showing how God is changing lives through TransMissioners. TransMissioners is similar to a book club where members receive information by post - but here they will also be filling the airwaves with the good news.

The emphasis of TransMissioners is on partnership - Christians joining together to spread the good news about Jesus far and wide through radio.

People interested in joining TransMissioners can contact: TransMissioners, FEBA Radio, Ivy Arch Road, Worthing, West Sussex BN14 8BX or telephone on (01903) 237281 (24hrs) or E-mail reception@febaradio.org.uk

**Radio With Global Perspective**

Radio listeners in Oslo and the surrounding area could soon receive a truly global perspective on the day’s news if an application for one of the new f.m. radio licences is successful.

London based World Radio Network (WRN) has applied for permission to broadcast its successful compilation of 25 international public-service radio stations, which are currently transmitted by satellite to listeners in Europe, North America, Africa, the Middle East and Asia and the Pacific.

Programmes from WRN are also heard overnight across the whole of Canada and South Africa on that country’s national terrestrial radio stations and are carried 24 hours a day on cable systems in Europe and North America.

World Radio Network programmes come from the world’s leading public service broadcasters, including the BBC World Service, Radio Australia, America’s Public Radio International, Channel Africa and Radio TV Hong Kong.

Listeners from Bombay to Baltimore can hear the world’s news, presented by radio stations from Melbourne to Montreal, and gain a genuine insight into world affairs.

Until the advent of WRN’s satellite services, the only way to hear these programmes was via low audio quality short wave radio. Now all these programmes are available for direct to home satellite reception in high quality, and the granting of an f.m. licence in Oslo will widen the audience, as well as increasing listener choice.

The programmes by WRN play a part in global education and provide a remarkable teaching resource at not cost to educational establishments. Teachers in Europe and North America use WRNs international programmes to illustrate geography, media studies and history lessons, bringing students an up-to-date and real-time window on the world.

**Catalogues**

Recently landed on the SWM Newsdesk are two catalogues, the Software Reference Guide by the Public Domain & Shareware Library and the Catalogue Of Technical Books by Mauritrion Technical Services. The Software Reference Guide lists news of new and updated CD ROMs, 100’s of new and updated programs along with a program and CD ROM subscription service and CD discounts for members.

The Catalogue Of Technical Books has details on computer monitor circuits and servicing guides together with vintage valve wireless traders sheets on CD ROM. Contact Mauritrion Technical Services at 8 Cherry Tree Road, Chinnor, Oxfordshire OX9 4QY. (PDSL’s address is featured elsewhere in Communiqué).

**Transponder Update**

There’s excitement in the ‘States right now with satellite players staking claims with the ITU and sections of the next chunk of frequency spectrum to hit the market place - Ka-band that runs from 17.70-20.20GHz. Despite big business exploitation, there are problems with this band more-so than Ku-band (11GHz) and C-band (4GHz) - signal handling is more difficult and in particular the signal attenuation with clouds, rain and snow which whilst reducing Ku-band signals can completely wipe out Ka.

Intelsat, concerned over the annual April/October solar outages that upset satellite reception during the daytime have established an Internet hotline for advice on minimising outage problems. Dial into their home page on http://www.intelsat.int/96falsun/icologs.htm, where you may hear something to your advantage!

The Far Eastern successes of AsiaSat 1 and 2 will be complemented with the planned late ‘97 launch of AsiaSat 3 at 122°E offering 28 C-Band and 16 Ku-Band transponders intended for TV distribution. C-Band coverage extends into the Middle East, across Asia and...
Arabsat 2c also at 26° East - band reception in the UK) has 26° East (allowing Ku -Telecom bookings on Arabsat 2A at China and India. And the full high powered spot beams for down into Australasia and with Television' suggesting a late.

The project is co-funded an optimum launch position. will be towed to the Pacific for the platform in Stavanger and ship is being built in Glasgow, rocket launch. The command operational mid 1998 and is the platform in Stavanger and ship is being built in Glasgow, rocket launch. The command operational mid 1998 and is being planned sloting of the future launching Arabsat 2c also at 26° East - band reception in the UK) has 26° East (allowing Ku -Telecom bookings on Arabsat 2A at China and India. And the full high powered spot beams for down into Australasia and with Television' suggesting a late.

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search pass memory. The main channels are organised into a convenient 20 banks. The large illuminated liquid crystal display presents the usual vital information such as mode, channel location, v.f.o. frequencies, step size etc. in addition Yupiteru have provided a rudimentary spectrum display.

This new flagship receiver will be reviewed in next month’s SWM. So watch out for more on this potent handheld scanner in the February issue.

The MVT-9000 is available from Waters & Stanton Electronics, 22 Main Road, Hickley, Essex SS5 4QS Tel: (01702) 206835 and Nevada Communications, 189 London Road, North End, Portsmouth, Hants PO2 9AE. Tel: (01705) 662145.

**China Radio International** is offering the vacation of a lifetime, a free trip to China. That’s the grand prize for the knowledge contest of The Relics Cup, sponsored by Shaanxi Province, China Radio International and Air China.

To enter the contest, participants have to answer six questions. All the questions are based on a series of reports that China Radio International broadcast from September 9th to 20th. Reports and questions will be repeated again in November.

The top six winners will get a free trip to Beijing and Shaanxi. Other prizes include a variety of traditional Chinese handicrafts and silk scarves. Answers need to be sent in by the end of February 1997 to: English Service, China Radio International, Beijing, China 100866. Good luck!

To answer these questions listen to the European broadcast daily at 2000 to 2200UTC on 6.950 and 9.920MHz.

1) **Where is Shaanxi Province located in China?**
   1) In the northwest of China
   2) In the northeast of China
   3) In the southwest of China

2) **What are Shaanxi Province’s three advantages?**
   1) Science and technology, destiny of population and culture
   2) Science and technology, natural resources and culture
   3) Culture, natural resources and climate

3) **How many dynasties in Chinese history set up capitals in Shaanxi Province?**
   1) Twelve dynasties
   2) Fifteen dynasties
   3) Thirteen dynasties

4) **Which relic site is included on the United Nations Educational, Scientific and Cultural Organisation’s World Heritage List?**
   1) The Qin Terra Cotts Warriors
   2) The Famen Temple
   3) Forest of Steles Museum

5) **On the route of the Yellow River Highlights Tour, there is a splendid waterfall that is the largest along the Yellow River. The waterfall’s image is printed on China’s 50-yuan RMB currency. What’s the name of the waterfall?**
   1) The Huang Guoshu Waterfall
   2) The Hukou Falls
   3) The Renzi Waterfall.

6) Shaanxi Province has implemented the new ‘four-exchange’ policy to attract foreign investment. Please list three of the four exchanges. For example, to exchange resources for what?
   1) To exchange resources for technology; to exchange ownership for capital; to exchange resources for capital
   2) To exchange ownership for capital; to exchange existing assets for increased value; to exchange ownership for projects
   3) To exchange resources for technology; to exchange ownership for capital; to exchange market for projects

**Meteor Showers**

Thanks to the British Astronomical Association - Meteor Section we can advise the main 1997 meteor showers, peaking dates, etc.

<table>
<thead>
<tr>
<th>Name</th>
<th>Overall Period</th>
<th>Peaking</th>
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<tbody>
<tr>
<td>Quadrantids</td>
<td>Jan 1-6</td>
<td>Jan 3 @ 1000</td>
</tr>
<tr>
<td>Lyrids</td>
<td>Apr 19-25</td>
<td>April 22 @ 0800</td>
</tr>
<tr>
<td>May Aquarids</td>
<td>Apr 24-May 20</td>
<td>May 4</td>
</tr>
<tr>
<td>Cetids</td>
<td>May 7-June 9th</td>
<td>late May</td>
</tr>
<tr>
<td>Delta Aquarids</td>
<td>Jul 15-Aug 20</td>
<td>Jul 29 @ 0100</td>
</tr>
<tr>
<td>Aug 6 @ 0200</td>
<td>Perseids</td>
<td>Aug 12 @ 0700</td>
</tr>
<tr>
<td>1500</td>
<td>Jul 23-Aug 20</td>
<td>Oct 20-22(wide)</td>
</tr>
<tr>
<td>Orionids</td>
<td>Oct 16-27</td>
<td>Nov 3 (wide peak)</td>
</tr>
<tr>
<td>peak</td>
<td>Oct 20-Nov 30</td>
<td>Nov 17 @ 1600</td>
</tr>
<tr>
<td>Taurids</td>
<td>Nov 15-20</td>
<td>Dec 13 @ 2200</td>
</tr>
<tr>
<td>Leonids</td>
<td>Dec 7-16</td>
<td>Dec 23</td>
</tr>
<tr>
<td>Geminius</td>
<td>Dec 17-25</td>
<td></td>
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<tr>
<td>Ursids</td>
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Times UTC.

Note: Cetids is a poorly studied shower and the little known Perseids featured a double peak in recent years, now declining but will be active around midday. Leonids is due for a high peak possibly 1999 but could offer dramatic increased activity in ‘97. Thanks to Neil Bone, BAA for offering us this information.
January 19: The Oldham ARC Mobile Rally will be held at the Queen Elizabeth Hall, Civic Centre, West Street, Oldham, Lancs. Doors open at 11 am (10.30am for disabled visitors). This event will feature all the usual traders and a Bring & Buy stall. More stalls are on demand. Talk in on S22 via GB4ORC. 7.30am. Mobile can pass up to 2pm. Refreshments and free parking available. (01706) 846143 or 0161-652 4164.

February 2: The 12th South Essex Amateur Radio Society Rally is being held at the Paddocks, Long Road,Canvey Island, Essex. Doors open at 10am. Features include amateur radio, computer and electronic component exhibition. There will also be a Bring & Buy. RSGB Morse testing on demand. (Two passport photos required). Home made refreshments. Free car parking with space outside main doors for disabled visitors. Admission is £1. Further information from Martin MOAAK on (01268) 609798.

February 2: The Harwell Amateur Radio Society are holding their Indoor Rally and Computing Rally at the Harwell Science & Engineering Centre, 1 mile west of the A34 between 9am and 3pm. Doors open at 10am. There will be trade stands, a Bring & Buy, craft exhibitors, bar and light refreshments. Admission is £1 and children are free. Arthur GOKOK on (0235) 815399.

February 16: The 16th Northern Cross Rally is to be held at Thame Park Athletics Stadium, Weedfield - one large hall. Just out of town on the Henbury road. Easy access from M1 junction 39 & 40 - well signposted and with talk-in on 2m and 70cm. Doors open at 11am (10.30am for disabled visitors and Bring & Buy). More details from Peter GODGB on (01924) 416676 or (01924) 227125. Email: rally@www.rpmcg.com or rally://www.wmrg.com/ eduvwebs/sites/ntaylor/rally.html

February 22: The Tynside Amateur Radio Society will be holding their 11th annual rally at the Temple Park Centre, South Shields. The Temple Park Centre is located on John Reid Road, approx from A194 and with excellent access from all doors. Doors open at 11am with special entry at 10.30am for disabled persons. Admission is £1 on the door. The talk-in event will be provided on S22 from 8am. There is ample parking space for visitors and special arrangements will be made for disabled visitors. There will be a Bring & Buy and all the usual trade stands. More details from John GODGA on 0191-266 1718

February 22: The 12th Rannoch Amateur Radio Rally, sponsored by the Breconshire Receiving and Transmitting Society. This is the 4th year at the new venue, which is, The Rannoch School for Girls, Derwent Way, Rainham, Kent ME8 9PP. Talk In on s22 GB4D7RR. Doors open 10am. 2pm for disabled visitors and items for Bring & Buy. Admission is £1.50, under 14s free. There will be all usual mix of trade stands, Bring & Buy, many special interest groups will also be represented, e.g. RNAMS, RAYNET, ORG K, RAECY, BARTG, etc. There will be plenty of off road parking, a licensed bar, food and refreshments. More details from Martin MOAAK on (01364) 365980 or at any reasonable time.

Funding continues to be one of the major preoccupations in public service international radio within Europe. Budgets are forever under fire and as a result, broadcasting services are never guaranteed a long life. So it comes as no surprise to learn that Radio Vlaanderen International (RVI), Belgium's foreign broadcaster, is to close its German language service during 1997. Radio Vlaanderen International broadcasts almost around the clock in Flemish, and has services in Arabic, English, French and Spanish in addition to the threatened German language output. The station currently broadcasts in German twice a day, with the daily evening transmission at 1830 UTC carried on short wave and the powerful medium wave channel of 1512 kHz. The rationale behind the planned closure is difficult to work out. Belgium is the heart of Europe, and Germany is one of the most powerful countries in the European Union. So why does Belgium want to position ourselves for the next century?" The BBC continues to develop services in Africa. The lifetime broadcasting service to Rwanda, Burundi and Zaïre in the local languages of Kinyarwanda and Kirundi was doubled to thirty minutes every weekday from mid-November. Research by the United Nations Commission for Refugees (UNHCR) conducted in the winter of last year showed that despite being on the air for just fifteen minutes Monday to Friday, the BBC World Service was the most popular and most listened to radio station in the refugee camps in the region. The BBC's broadcasts in the two African languages are funded from a variety of outside agencies, including the UNHCR, rather than from the British government's annual grant-in-aid settlement which pays for the rest of the BBC's international radio broadcasting effort. Also in Africa, BBC World Service is now carried 24 hours a day on f.m. in the Ugandan capital, Kampala. Programmes in English and Swahili are now available on 101.3MHz f.m. via a BBC-installed transmitter, which will be maintained by Radio Uganda's local engineers. Programmes including the popular Focus on Africa and Network Africa will be transmitted, as well as the full range of current affairs, science, music and drama output from Bush House.

LICENSEND & REGULATING

Britain's Radio Authority, the body responsible for licensing and regulating the country's independent radio stations, is examining the feasibility of advertising a licence for a national independent radio station using a long wave frequency. The 225kHz channel, a UK frequency assignment previously allocated to the BBC in Scotland, but not used by the Corporation, is now available to the Radio Authority. The Authority notes that, with the use of some additional medium wave 'gap filling' transmitters, satisfactory nationwide coverage would be guaranteed. If the licence for the long wave service is advertised, it will be the first time that a long wave service is operated in the UK by anyone except the BBC.

STATION NEWS

The privatisation of Voice of America (VoA) Europe, the music and news channel operated from Munich, seems to be going ahead. Reports circulating in the United States say that a radio station group called Clear Channel Communications and the ABC Radio Network (part of

Short Wave Magazine, January 1997
the commercial ABC TV and radio service) is negotiating to establish a private company called VoA Global. The new organisation would take over VoA Europe which was due to lose US government funding at the end of December 1996.

Keen short wave listeners may have noted that Ireland is now on short wave regularly. West Coast Radio Ireland is broadcasting each week via transmitters at the Deutsche Welle's Julich site in Germany. Tune in on Thursdays to the North American transmission at 0100 to 0200UTC on 5.91MHz, or to the European transmission at 1500 on 6.015MHz or the African transmission at 1800UTC on 6.11MHz.

You can contact the station at West Coast Radio Ireland, Munneen Post Office, West Coast Radio Ireland, County Cork.

And finally, frequency news from two east European stations to conclude this quarter's look at broadcasting around the continent...

The Voice of Russia, complete with its new station identification music and an E-mail address for listeners, letters (letters@vor.ru), can be heard in Europe in English: 1700-1800UTC on 9.89, 7.44, 7.18, 6.13, 6.11 5.94 and 4.92MHz; 1800-1900UTC on 9.91, 7.44, 7.18, 6.13MHz and 1143kHz; 1900-2000UTC on 9.89, 7.44, 7.18, 6.13, 6.11, 5.94 and 4.92MHz; 2000-2100UTC on 9.89, 7.44, 7.18, 7.17, 6.11, 5.94 and 4.92MHz; 2200-2300UTC on 9.89, 7.44, 7.18, 7.17, 6.11, 5.94 and 4.92MHz; 2300-2400UTC on 9.89, 7.44, 7.18, 7.17, 6.11, 5.94 and 4.92MHz.

Radio Prague has English for Europe: 0800-0827UTC on 9.505 and 7.345MHz; 1000-1030UTC on 21.705 and 17.485MHz; 1130-1157UTC on 9.505 and 7.345MHz; 1400-1430UTC on 17.485 and 13.58MHz; 1700-1727UTC on 9.43 and 5.93MHz; 1800-1827UTC on 9.43 and 5.835MHz and 2100-2127UTC on 7.345 and 5.93MHz.

AVON

Bristol International RC: Tuesdays, 8pm. The Little Thatch Country Club, 684 Wells Road, Withichurch, Bristol. All visitors are welcome. The club has been formed so that all radio enthusiasts, whether they be Licensed Amateurs, s.w.l.s or CBers' can get together and have a good natter and do things that you can do in radio clubs. PO Box 28, Bristol BS99 1GL.

South Bristol ARC: Wednesdays, 7.30pm. Withichurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Withichurch. January 1 - New Years Greetings, 8th - CW activity evening, 15th - Photographic equipment, 22nd - The 'Matthew' project. For more information ring (01275) 834282 on a Wednesday evening.

BUCKINGHAMSHIRE

Aylesbury Vale RS: Wednesday evenings, 8pm. Hardwick Village Hall (Hardwick is situated off the A413 between Aylesbury and Buckingham). January 8 - Discussion evening, 16th - Annual dinner, 22nd - The 50MHz Experience. Gerry Somers G7VVF on (01296) 432234.

DEVON

Appledore & DARC: 3rd Mondays, 7.30pm. Appledore Football Clubroom. January 20 - Your questions answered by Bob G3QRN and Dennis G0GCL. Dave Brierley G3YGG. (01258) 476124.

EDINBURGH

Lothians RS: 2nd & 4th Wednesdays, 7.30pm. Orwell Road Lodge Hotel, Polwarth Terrace, Edinburgh. January 8 - Radio Byron, 22nd - DC -500Hz, 19th - Ham Radio get together and club station on air, January 13 - Annual dinner/social. The Society are again organising a course of instruction for the Radio Amateurs Examination of the City & Guilds of London Institute and further details can be obtained by writing to the Chairman of the Society, Mr J. Harris G8HJS, enclosing a stamped addressed envelope. The address to write to is: 57 Evesham Road, Stratford upon Avon, Warwickshire CV3 2PB.

HAMPSHIRE


Southampton RC: Mondays is up-and-running after some years of inactivity. New members welcome. Harold McNaboy on (01703) 737715.

HEREFORD & WORCESTER


Hereford ARC: 1st & 3rd Fridays, 8pm. Many talks and interesting evenings including, January 3 - Formal meeting, 17th - Video evening, DXpedition, etc. Tim G0JW, G3HFR, Tel: (01432) 279435 or Paul G3DIP on (01432) 353765.

HORTFORDSHIRE

Harpenden ARC: 1st Saturday of the month from May to September, at Aldwickbury School, Harpenden. Morse classes each Monday during term time. January 19 - 1997 G0OMY on the air tonight. Further details from Peter 2E1BDB on (01727) 860631 or John G4JOV on (01582) 765821.

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. January 16 - First Aid with the Red Cross. Don G3JNU on 0181-292 3678.

KENT


Medway AR & TS: Fridays, 7.30pm. Tunbury Hall, Carkin Close, Turville Avenue, Walderslade, Chatham, Kent. January 16 - Ken Astronomical Society - an introduction to the space and earth observatory at Riverside, 8.30pm. G3VUN, 40 Linwood Avenue, Strood, Rochester, Kent ME2 3TR. (01634) 710023.

NORFOLK

Norfolk ARS: Wednesdays, 7.30pm. Formal and informal meetings at The Norman Centre, Bridgnorth Road, Off Drayton Road between `Asda' and Three Mile Cross Roundabout, Norwich. January 8 - Night on the air. Construction QRP and Morse practice, 15th - Wireless, the inside story by Mike G4UUB, Mike G4EOL. (01603) 789792.

NORTH YORKSHIRE

Hambleton ARS: All meetings held at Allertonshire School, Northallerton, 7.30 to 9.30pm. January 9 - Ragchew, January 23 - AGM. More details from John GOVXH on (01845) 637547.

SOMERSET


YEOWIL AR: Thursdays, 7.30pm. The Red Cross Centre, 72 Grove Avenue, Yeovil. January 2 - Committee meeting and club station on air. 9th - Working stove portable through Scandinavia by GS3K, 15th - Surplus equipment sale, 23rd - Microwave communications, Pt 2 by G3TJSK. Cedric White, QTHR. (01258) 473845.
Dear Sir

I am writing to you in the hope that you will allow me to use your letters page to ask your readers for any information they have, no matter how insignificant it may seem, on the wartime German radio broadcaster, William Joyce (Lord Haw Haw). Joyce has always fascinated me, especially his family connections with my home town of Oldham.

The type of information I require, as I have said, is memories, the effect he had on people who listened to him, his speeches, what people remember of them, maybe some of your readers met him, any information regarding this man would be much appreciated.

I would like to point out that I am not an author, I am strictly an amateur in this field. If any of your readers can help me by sending me their memories or stories told by friends or relatives and, would like a printout of the finished project, please mention it in letter and I will keep a record of names, addresses and send a copy when it is finished. I have not set a date to complete this work.

Finally, I am new to the scanning hobby, airband being my main interest. Many thanks to your excellent magazine for the wealth of information available in each issue.

D. Denton
19 Butterworth Street
Chadderton
Oldham
Lancashire OL9 0JL

Dear Sir

I have been in a few radio shops over the past 12 months and on several occasions I have noticed youths of 16 to 20 returning their scanners saying its useless and they can't hear anything and wanting their money back, usually they lose a lot, of course they are correct, the same happened to me, the set seemed dead, so I rang the shop, he gave me five or six frequencies to and sure enough, I was hooked.

Since then, I haven’t stopped listening, its just great and more so now that I’ve purchased some frequency books. I’d like this letter published please, in the hope anyone buying a scanner for Christmas will also buy a frequency directory. Better still, ask for a full demo and a few frequencies to listen to in the area.

My thanks for a super magazine.

Mr X
Bradford
(Name and Address Supplied)

Dear Sir

I have only recently started buying your magazine, which I found advertised in Passport To World Band Radio and have found it entertaining and informative. I am far from being a newcomer to the hobby of DXing, (I have been interested in listening to short wave radio stations for over twenty years), I still find the hobby both informative and very interesting and still have the same radio (a Fidelity) and use a very modest aerial.

I agree with Andrew Ikin about the number of religious stations on shoal wave from America, which are boring. When I first started DXing, there were only a few religious stations, but now with more stations set up, mostly funded by religious organisations, I don't have anything against religious stations per say, but wouldn't it be nice to see something original arising from North America?

I look forward to reading your magazines for the years to come and will continue to enjoy this excellent hobby.

D. Fisher
Formby
Liverpool

Dear Sir

I hesitate to criticise such an fine publication as SWM but, as a scanner user, I feel I must comment on the lack of coverage this side of the listening hobby is getting in your magazine. I know there are various legal restraints and I applaud the introduction of a Frequency Exchange, but I believe the one regular column you devote to scanning is not really enough to satisfy scanner users.

However, John Griffiths, the author of this column, seems to have lost his way and it's now become just a military adjunct to Godfrey Manning's Airband section. Perhaps your new dedicated Military Airband column will encourage John to focus a little more on scanning and, I hope, to be a bit more proactive in his approach. He says it's our column and he's there just to collate our letters but I would have thought that he should be actively seeking out and passing on information that is not generally available. There are always new frequencies coming into use, the massive Met. police shake up, for instance, or new scanners in the pipeline - he must of heard the whispers about the AIR 6. I can't believe that John is not the his only source of information.

I'm also not happy with the way he used his column in the October issue to chastise Granada for their use of a scanner in the popular soap Emmerdale. I enjoy soaps (yes, I know) and I believe the more people who become interested in the hobby, the more likely it is our laws will be seen to be stupid and unenforceable.

I didn't object to the national press stories about the listening banker, the 'squidgy' tapes, 'Cammillagate' and so on because they raised the profile of the hobby and increased the number of scanner users in this country. There are those who say that it was better when scanners were used only by enthusiasts, but I don't agree. Our hobby isn't much fun if we stick to the letter of the law and I believe the only way that it will become acceptable is for large numbers of people to become involved.

Introducing scanning into mainstream programmes is the ideal way to do this and I am grateful to Granada for showing millions of viewers a glimpse of our hobby. Okay, they didn't use a very realistic (no pun intended) scanner but, out of approximately 12 million viewers, how many do you think noticed - or cared. I can't see why John feels it was downright disgusting.

He does seem to have taken this very much to heart but I think he has overreacted. The characters in the programme, the Dingoes, are pig farmers who are also caricature criminals. They've been brought in as comic relief and their villainy is never taken seriously. Okay, so Zak used a scanner but why did John say..."the programme has determined that all scanner users are nothing more than ghoulish anarcho's...", or "...they have shown the hobby to be populated by members of an 'odd sect'", and..."it portrays scanner - and radio - enthusiasts in general as ghouls".

There was no implication of this in the programme, they just showed Zak and his family using a scanner. There was no mention of any other...
scanner users and I don't see how John could have used this to draw the conclusion that all radio enthusiasts have been tarred with this brush. He might just as well have said that the antics of these characters show that all pig farmers are villains.

It's all too easy to become totally engrossed in a hobby to take stuff like this too seriously. It's only a soap opera and it's only a hobby - lighten up.

Meanwhile, I'm looking forward to gleaning lots of interesting frequencies from the 'Frequency Exchange' and my contribution will be winging its way to you as soon as I can collate all the scraps of paper in the pockets of my anorak.

R. Atrium
Chelsea

Dear Sir
I am the scanning editor with Australia's only hobby radio magazine, Radio and Communications. I am also a railway enthusiast, which brings me to the reason for writing. I would like to correspond with fellow scanner/rail fans, with a view to exchanging audio tapes.

I am seeking recordings of all British railways actions including mainline, shunting yards as well as private railways. I can provide tapes of police, fire, ambulance, aircraft or whatever takes your fancy. We have no restrictive laws, such as those enacted in the UK.

Australian's are free to listen to whomever we choose, with few restrictions. If any reader of SWM is interested, please write to me at the address below.

Russell Bryant
PO Box 344
Springwood NSW 2777
Australia

Dear Sir

I am somewhat puzzled by some of the nomenclature used in 'Active Solution', page 22 of the October issue of SWM. For example, in the introductory paragraphs, the "electrostatic field of the radio wave..." is referred to. 'Electrostatic field' is defined as "the field due to a charge or assembly of charges at rest", so therefore the electrostatic field strength is constant at any one point.

For a radio wave, however, which is just one example of an electromagnetic wave, the electric field intensity is varying approximately sinusoidally at any one fixed point on the x-axis, assuming for simplicity that the wave front (assumed plane) is moving along the x-axis.

The second point concerns the use of the term "...the Electromagnetic Field". I have never come across a definition of this term and I certainly am not aware of any unit in which it can be measured. My experience is that the term Electromagnetic Field is used (more and more often), in a purely general and descriptive sense, to cover the situations where both electric and magnetic intensities exist in a particular region.

C. G. Bennett
CPhys MInstP
Stockport
Cheshire

Dear Sir
This is my third letter to SWM in about four years. Thank you for using the last two!

Originally I wrote after the review of the Yupiteru VT225 airband receiver was published in 1992 and to cut a long story short, struck up a very good friendship with another subscriber and avid aviation freak I Mike Wynn from Oxford. Well, after many years of correspondence between NZ and UK, we actually met in Fiji in June of this year (complete with VT225s I might add). Both his family and mine spent two weeks under the tropical downpours and little sunshine (it was great!).

One of the highlights was a visit to Nadi airport, including the airground centre - see photo. The whole system was installed by NZ in the 70's. It looks a little outdated but still worked very well these days. Oddly enough, Nadi has no radar so there is a lot of talk on v.h.f., (they do use GPS though).

As you can imagine, we had lots to talk about and the time soon passed. We still exchange magazines and tape cassettes, not to mention the numerous phone calls between Oxford and Wellington.

Thank you SWM for starting a friendship which is second to none.

Steve Rawdon
New Zealand

To:
Dick@pwpub.demon.co.uk

I've been buying SWM now for more than four years.

I bought my first scanner when I was sixteen and was hooked. All I can remember was that it was from the RSC and was very heavy considering that it was a handheld. The day I discovered SWM was brilliant, a magazine that dealt with what up until then I had thought of as a clandestine hobby. Some of the articles were a bit over my head because I hadn't even realised that there was life below 30MHz. So for the next couple of years I persevered with my old scanner until I decided to buy new my purchase being the new model from AOR the AR1500 with s.s.b. It was amazing, all the new things I could hear, like the marine calling channels, YOUMET and when I heard a REACH callsign for the first time, you'd have thought I'd won the lottery.

Eventually, I realised that the s.s.b. from my AOR was only a compromise and that if I wanted more from s.s.b. then I would have to part with more cash. So after a bit of thought and wading through all my back issues of SWM, I decided to buy the Sony SW55. Along with an a.t.u. and 15m of bell wire I set off discovering the world (well some of it at least).

I often think if I had never found SWM on the shelf at my local WH Smith I might have dropped the hobby all together. Everything that I've learned has come from your magazine so I thought I'd let you know how grateful I am.

Darren Bell...via the 'Net

Steve and Mike (seated) at Nadi Airport.

Short Wave Magazine, January 1997
Following on from our hugely successful Europa and the more recent HF260, we now present the HF250, Europa...

Our HF250 has proven that performance is a key factor in anyone's choice of receiver but more important than that, today's busy SWL'S need a receiver that is uncomplicated and truly easy to operate. The HF250 EUROPA offers performance through an improved front end with magnetically shielded inductors and low-noise switching diodes. Together with a tighter IF filter bank, this offers a lower-noise level, excellent sensitivity with good strong signal handling and better selectivity, making it the ideal choice for the serious Dxer and the dedicated listener too.

The HF250 Europa includes a synchronous detector with selectable sideband with a deep lock range, offering lower distortion audio for long periods of programme listening that also helps with fading. Users will also like the RC250 remote commander that allows tuning, mode changing, memory selection and programming and a number of other functions.

The bright, clear, backlit liquid crystal display shows frequency to 100Hz resolution, or contents of the 255 memory channels, which store mode filter settings as well as frequency. A bank of LED's keeps you informed as to what mode you are in and a separate moving coil meter tells you the received signal strength. All the information you need for easy operation is there at a glance.

There are two rotary controls for volume and tone plus another for tuning. In addition there are just seven other push-buttons controlling a wide range of functions but keeping the operation very, very simple. Behind this simplicity, we've concealed an impressive array of advanced features for those who need them, including filter selection, clock and timer functions, attenuator, memory store and recall.

The HF250 Europa is superb for audio broadcasts but is also ideally suited to those interested in data communications too. A fixed level output on the rear panel makes connection to external decoders very easy. We haven't forgot those who like to control their receivers from their computers either and the HF250 Europa has a built-in RS232 interface. We supply a lead from the HF250 Europa to 9-way RS232 connector for direct connection to most modern PC's. A free MS-DOS-based control program is also included to get you started but advanced users may want to look at our RCON control software for more advanced features.

If you need more details, we have a brochure describing the HF250 Europa in our shortwave information pack. For those already aware of our legendary skills in design and manufacture plus the excellent reputation we have built up with our previous award-winning products and first-class support, you can order right away!

And the price..... just £799.00 plus carriage.

Plagued by noise? Perhaps local powerline noise, or maybe TV timebases or even local industrial noise, if so, you need an ANC4! This device sits between your main antenna and receiver and collects an “interference” signal which it combines with the main signal and subtracts the interference, leaving you with a much cleaner signal

just £189.95 plus carriage.

MVT7100EX

Whether you want to monitor airband, marine or ham radio frequencies the MVT7100EX is the one for you! As well as a complete range of memory control and scanning facilities, it also has excellent receive performance. Our best selling scanner...

Lowe Price £299.00 plus carriage

AIRMASTER ACARS DECODING SOFTWARE

The launch of our Airmaster ACARS decoding software took the aviation world by storm and the new V3.00 is selling even better! To access the wealth of aviation data communications, all you need is a reasonable airband receiver tuned to 131.725MHz and at least a 386 IBM compatible PC plus AIRMASTER and you are there! Flight numbers, tail numbers and engineering information and other data is there waiting to be looked at!

AIRMASTER V3.0 £89.95 plus carriage
AIRUP (upgrade from V2 to V3) £29.95
With the launch of our HF 150 short wave receiver, we set amazing new standards for performance against price. Despite a couple of price increases over the years, the HF150 still offers this superb value for money. No one has come even close to meeting these standards, which shows why even after five years in the market, it is still the number one selling communications receiver and an ideal choice for those about to buy a new receiver but having to watch the pennies.

Frequency coverage of 30kHz to 30MHz includes all short-wave broadcast, marine aviation and amateur bands, and AM, USB and LSB modes mean that nearly all voice modes are covered. For those who like to listen to radio broadcasts rather than looking for exotic DX stations, the HF150 offers unrivalled audio quality via the selectable sidetone synchronous discriminator and a special hi-fi filter setting. We know a number of customers using the '150 as a tuner in their hi-fi systems and that leads me to another of its qualities - the look. Honestly it will not be out of place in your living room, allowing the whole family to benefit from global transmissions with a rich content of music, culture and current affairs from around the world.

The HF150 on its own will provide years of entertainment with enough performance to satisfy a huge number of listeners - there are nearly nine thousand of you out there already. We do however have a complete range of accessories to add operational convenience, like the KPAD keypad which allows direct frequency entry or selection of one of 60 memory channels. You can also add a backlight to the LCD, or carry case for some of our other products. For example, the HF-150 marine version together with our Modemaster software as an on-board weatherfax monitoring station.

The HF150 is built to offer years of reliable operation, even if you decide to move it around a lot, the HF150 is built to last. The SSB filter is selective enough to allow reception of utility stations like long-distance marine or Trans-Atlantic aviation and the ssb performance is also ideally suited to data modes like FAX, RTTY and NAVTEX. Indeed a growing number of boat owners are specifying the HF-150 marine version together with our Modemaster software as an on-board weatherfax monitoring station.

RCON - A WORLD LEADER IN RECEIVER CONTROL

RCON, our windows-based receiver control application launched a couple of months ago has quickly established itself as a market leader, with lots of users commenting on how we’ve managed to achieve so many functions but still have an application that is so easy to set up and get working! Since the initial launch, we have been busy making more receiver drives available. The first batch will be to add ICOM ICR8500, AOR AR7030, Yaesu FRG100 and Kenwood R5000. These will probably not be available at the same time but if you are interested, drop us a line and we’ll keep you informed of developments as they happen. Just to remind you, RCON currently supports the HF250, HF250E, HF150, NRD535 (plus RTTY board if you have ICI), AR8000, AR9000 and AR9000A. At just £49.95 plus carriage, RCON is superb value for money, costing less than half that of some of its competitors.
Lowe HF-250 Europa

Looking for an easy to operate high quality h.f. receiver? Mike Richards looks at the new Lowe HF-250 Europa, which could well fit the bill.

Having reviewed the basic HF-250 and being a proud owner of an HF-150, I noted with great interest the release of the HF-250 Europa. With multi-mode coverage from 30kHz through to 30MHz, the Europa is set to appeal to a very wide range of listeners. The review model was one of the first off the production line and was received hot from the Leicester Rally.

The basic design principle of the HF-250 was to achieve sufficient r.f. performance to cope with today's crowded bands and strong signals, whilst simplifying the operation as much as possible. I'm sure many readers would resonate with this basic principle. This represents a refreshing move away from the mass of receivers that boast a wide range of features that most operators never use. Anyway, on to the review.

Europa Special

You're probably wondering what's so special about the Europa and why the new name. This concept originated with the HF-225 back in 1987 when the DX club of Finland requested a number of modifications to the receiver to meet their specific needs. The cooperation between Lowe and the DX club proved very successful and the Finlandia, as it was known then, won the European DX Council's Best DX Receiver of the Year. Subsequently, Lowe decided to offer the receiver on general release and coined the name Europa. So what's the difference? Most of the work centres around improvements to the receiver's filtering. For a start, the filter bank has been changed to include higher specification filters and a new, 3.5MHz, filter has been added. To make best use of the filter changes, the control software has also been rewritten. The remaining changes are around the filter switching components, where new magnetically shielded chokes have been used along with low capacitance switching diodes and surface mount decoupling capacitors. These latter changes have been designed to minimise leakage around the filters.

First Glance

The styling of the radio is certainly unique and much closer to that used for hi-fi equipment rather than contemporary radio gear. This will doubtless be a big attraction for those listeners that don't have the luxury of a separate room for their listening. The case is made of extruded aluminium with a black anodised wear resistant finish and very solid and robust feel. One particularly novel idea was the way in which the internal speaker had been integrated. Rather than the conventional speaker grille, the HF-250's speaker is mounted inside the case with the sound ducted to emerge from the carrying handle located on the top panel! Yet another example of design innovation.

The Europa's design philosophy has certainly shown through in the front panel layout as there's no mass of buttons and knobs just seven push buttons and three rotary controls. This is a big plus point and makes the receiver far less daunting for the new listener. The simplicity has been achieved by automating as many functions as practical. A good example being the way in which the tuning rates varies depending on how fast you turn the knob. There were very few weak areas, but personally, I didn't like the markings for the secondary functions of the push-buttons. These were sign-written in red print using a small typeface making them very difficult to read. The rest of the panel lettering was easy to read and largely self-explanatory.

Ins & Outs

In order to fully realise its potential as a wide range communications receiver, its important for the HF-250 to have a good range of input and output facilities. As with most of the Lowe range, the receiver is provided with an externally mounted 12V d.c. power supply. This keeps mains voltages well away from the receiver and gives the flexibility to make use of standard external power sources such as can be found onboard a boat or car. The power requirement is 12V d.c at just 400mA so this can easily be supplied from a cigarette lighter socket.

Although the internal duxted speaker provides surprisingly good results, there's a standard 6.3mm jack on the front panel for private, higher quality, listening. This was wired so that mono or stereo headphones could be used without problem. There was also the usual 3.5mm external speaker socket on the rear panel that automatically disconnects the internal speaker. For those like me with an interest in data decoding, the HF-250 has a fixed level audio output available from a 3.5mm socket on the rear panel. This provides a healthy 350mV output from a 5kΩ source, so should prove fine for most decoding systems - it was certainly okay with HAMCOMM and JVFAX.

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Spring clips were provided for connecting a wire antenna, with a common SO-239 socket used for the whip and 50Ω unbalanced antenna options. Selection of the appropriate antenna being via a simple slider switch next to the antenna connections. If you want to use the HF-250 with a separate transmitter there was a mute connector to silence the receiver during transmission. The idea of using the HF-250 with a low power home-built QRP rig sounds great fun. Last but by no means least, is the 9-pin RS-232 connector. This provides access to the HF-250's comprehensive computer control system - more on this later.

**Tune-Up**

The frequency selection or tuning system of any h.f. receiver is one of the most important control systems so it's vital that it can cope with the demands of different listeners. This ranges from the fine tuning requirements of s.s.b. and data enthusiasts through to a much faster rate tuning for broadcast use. The main tuning knob on the HF-250E is a good size and very smooth and free spinning. Like all modern receivers, the knob is connected to a digital shaft encoder that feeds positional information to the receiver’s microprocessor. As a result, the frequency is changed in discrete steps rather than continuously. However, with fine tuning steps of just 8Hz, it feels very much like continuous tuning. I mentioned the variable tuning rate earlier and this causes the tuning steps to increase by four times when ever the shaft speed exceeds a pre-set threshold. This is an extremely useful facility but it does require a slightly different tuning technique to make the best of it. When you operate the control smoothly the receiver uses the finer tuning steps. However, any sudden movement or rapid tuning causes the fast rate to kick-in.

The default tuning steps for the HF-250 were automatically set according to the selected mode with the following relationship: s.s.b., c.w., a.m.s. the step size is 8Hz; a.m. it’s 50Hz and in f.m. you get 125Hz per increment. The preset steps were well chosen and the a.m. option resulted in a movement of about three quarters of a turn between the 9kHz broadcast band channels. To meet the need to change frequency rapidly there are UP and DOWN buttons on the front panel that incremented or decremented the tuning in 1kHz steps. This was supplemented by a FAST tune button to the right of the main tuning knob. When pressed and held this changes the tuning steps to 1kHz. All in all this gave a very flexible range of basic tuning options. The options described so far can also be supplemented by using the remote commander to directly enter the required frequency.

This was fairly straightforward and required the complete frequency in kHz to be entered. The only down side was a lack of any short-cut entry options. To supplement the main tuning options, the HF-250 includes 255 built-in memories. These are somewhat limited in only storing the frequency, but nevertheless handy for checking-out your regular favourites. Programming and recall of the memories can be done either from the front panel or from the keypad.

**Modes & Filters**

One of the delights of the HF-250 Europa is the excellent filtering that can be applied very easily to any of the modes. All you had to do was press the filter button to display the current filter, subsequent presses causing the filters to cycle through those available. As I mentioned when describing the Europa philosophy, the filters have been specially trimmed to give the best possible performance. I found the ability to quickly step through 2.2, 3.5, 4.5 and 7kHz filters a real help when trying to pluck out a difficult station. The flexibility meant that you could easily optimise the HF-250’s performance. Mode selection was equally simple using a similar principle except the current mode was always visible via the front panel i.e.d. array.

The review model was supplied complete with all the demodulation options including f.m. and synchronous a.m. The synchronous demodulator was really great for tidying-up reception from broadcast stations. Once this mode had been selected a lock indicator illuminated to show that you were on frequency. You could then select upper, lower or both sidebands for best performance. If you tune too far off frequency the detector automatically switches back to a.m. until you are in-tune with another station. The audio quality from all the modes was well up to the high standards of other Lowe receivers. The HF-250’s tone control used the same principles as the earlier HF-226 and gave a flat response at mid-position with high and low pass filter to either side.

**Computer Control**

The HF-250 is really strong in this area with a very simple but-none-the-less comprehensive computer control capability. One of the real plus points with this system is the built-in RS-232 port. This means that you can connect directly to any computer with an RS-232 port without having to buy an extra interface unit. In fact, the HF-250 comes with a basic control program for PCs so you can start straight away.

In addition to being able to do the obvious like set and read frequency information, the HF-250 has free access to all the receiver’s functions, including reading the time! This open programming approach makes the HF-250 extremely flexible and allows the smart programmer to add a host of new features. For example, it would be very easy to combine the fine frequency steps with the **Computer control software and interface lead.**

<table>
<thead>
<tr>
<th>Filter Selection (kHz)</th>
<th>Filters Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>✔</td>
</tr>
<tr>
<td>3.5</td>
<td>✔</td>
</tr>
<tr>
<td>4.5</td>
<td>✔</td>
</tr>
<tr>
<td>7.0</td>
<td>✔</td>
</tr>
</tbody>
</table>

---

Table 1

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---

Short Wave Magazine, January 1997
S-meter read-out to produce a detailed spectrum analysis - great for spotting channel occupancy. You can also use the remote control link to download batches of frequencies into the receiver's internal memories. If you really want to get into computer control it would be well worth taking a look at Lowe's RCON receiver control software. This takes all the features of the HF-250 and links it with the a comprehensive frequency database plus the ability to read commercial lists such as the Klingenfuss Super Frequency List.

Under The Hood

Let's now take a quick look at the detail of the HF-250 and why it's achieved such good performance. At the very front-end a set of six switchable band pass filters clean-up the signal before it is applied to the first mixer stage. A notable point here is that the main short wave filters have an additional 1.7MHz high pass filter preceding them to provide maximum rejection of strong medium wave signals. The 45MHz 1st i.f. output is then fed via a PIN a.g.c. attenuator and 15kHz filter to the second mixer to create the final 455kHz i.f. The filtering arrangements used in the HF-250 have been given much thought to ensure maximum performance. The first bank of filters contains switchable 2.2, 7 and 3.5kHz filters. This is followed by a 4kHz filter between the two main amplification stages and a final 10kHz filter before the detector. The various selectable filter setting are achieved using a combination of these filters, shown in Table 1. The use of distributed filtering helps strengthen the skirt response and improve the overall shape factor. The sophisticated filtering combined with well distributed gain stages give the HF-250 its excellent strong signal performance. Lowe receivers have always produced good audio quality and the HF-250 uses a full wave envelope detector for a.m. and a product detector for s.s.b. and c.w. There is also a fully automated noise blanker system that operates on the recovered audio.

The provision of a narrow 200Hz filter for c.w. is done using an 800Hz 'high-Q' peak filter. As you would expect, all the main tuning functions are microprocessor controlled and use the first mixer local oscillator to provide resolution to 1kHz and the second mixer heterodyne oscillator is used for the finer 8Hz steps.

Summary

The HF-250 is certainly one of those receivers that tends to grow on you the more you use it. The simplistic presentation is backed-up by some clever design and well thought out automation that makes to HF-250 a pleasure to use. The filtering was technically extremely good and has again been made very easy to use. It was a real delight being able to quickly switch through the available filters to find the best fit for any station. A good example was the way you could really improve the quality of h.f. FAX images by selecting the 7kHz filter. The variable rate tuning did take a little getting used to and I would have liked to see a little more resistance in the tuning knob to prevent inadvertent fast tuning. The HF-250 Europa has maintained Lowe Electronics reputation for producing receivers with fine audio and r.f. performance. Although many of the original Europa modifications were based around improving its performance as a broadcast receiver, the end result has also improved its standing as a fine utility receiver. The Europa costs £799.00 and is supplied complete with the remote commander, Synchronous a.m. demodulator and f.m. module. My thanks to Lowe Electronics Ltd., Chesterfield Road, Matlock, Derbyshire DE4 5LE, Tel: (01629) 580800, for the loan of the review model.

Specifications (abbreviated)

<table>
<thead>
<tr>
<th>Frequency Range:</th>
<th>30kHz to 30MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stability:</td>
<td>1kHz drift in 1 hour</td>
</tr>
<tr>
<td>Frequency Accuracy:</td>
<td>better than ±50Hz</td>
</tr>
<tr>
<td>Tuning Steps:</td>
<td>8Hz.c.w., s.s.b., a.m.s.</td>
</tr>
<tr>
<td></td>
<td>50Hz a.m.</td>
</tr>
<tr>
<td>Filter Bandwidths:</td>
<td>2.2, 3.5, 4.5, 7 and 12kHz</td>
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<tr>
<td>Audio Filters:</td>
<td>800Hz centre 200kHz wide</td>
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<tr>
<td>Audio Output:</td>
<td>1.5W into 8Ω, 2W into 4Ω @ 5% t.h.d.</td>
</tr>
<tr>
<td>Headphones:</td>
<td>4V from 200Ω</td>
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<tr>
<td>Record Output:</td>
<td>350-400mV from 5kΩ</td>
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<tr>
<td>Frequency Response:</td>
<td>370kHz±2.5kHz s.s.b. 2kHz filter</td>
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<tr>
<td></td>
<td>40kHz ±1.1kHz a.m. 2kHz filter</td>
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<tr>
<td></td>
<td>40kHz ±3.1kHz a.m. 4kHz filter</td>
</tr>
<tr>
<td></td>
<td>40kHz ±4.3kHz a.m. 7kHz filter</td>
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<tr>
<td>Noise Blanker:</td>
<td>Threshold 12dB above carrier, 500pS blanking</td>
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<tr>
<td>Sensitivity:</td>
<td>60kHz±2kHz a.m. better than 1μV</td>
</tr>
<tr>
<td></td>
<td>f.m. better than 1μV</td>
</tr>
<tr>
<td></td>
<td>s.s.b. better than 0.5μV</td>
</tr>
<tr>
<td></td>
<td>2-30MHz a.m. better than 0.8μV</td>
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<tr>
<td></td>
<td>f.m. better than 0.8μV</td>
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<tr>
<td></td>
<td>s.s.b. better than 0.3μV</td>
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<tr>
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<td>4.5kHz</td>
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<td>7.0kHz</td>
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<td>Intermodulation Effects:</td>
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</tr>
<tr>
<td></td>
<td>20kHz separation +16dB</td>
</tr>
<tr>
<td></td>
<td>10kHz separation +10dB</td>
</tr>
</tbody>
</table>

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Short Wave Magazine, January 1997
The half-wavelength dipole is probably the quickest to build, simplest to tune and easiest to use high frequency short wave antennas. And compared to other antennas, the dipole is cheap! These facts account for the fact that the dipole is probably the most popular antenna for short wave listeners and amateur radio operators. Even people who can afford to install high performance commercial antennas often put up a half-wavelength dipole on one band or another.

And dipoles work really well. Not only are they well behaved (e.g. the work on-the-air the way technical articles say they do), but they offer good performance. Although the beam antenna and its relatives work much better, there is a serious question in my mind over where a cost/benefit decision comes down.

**Standard Dipole**

The standard dipole antenna is shown in Fig. 1A, while its idealised pattern is shown in Fig. 1B. The dipole antenna of Fig. 1A consists of a half wavelength radiator element ('B'), split in two sections ('A') of quarter wavelength each. In free space (which is almost never even approximated by hobbyist antenna builders), the overall length of the dipole is given by:

\[ L_{\text{metres}} = \frac{143}{F_{\text{MHz}}} \]

Close to the Earth's surface, where real dipoles reside (especially in the low end of the h.f. bands), there is a considerable shortening effect due to both the proximity of the Earth and the dielectric qualities of any end insulators used. As a result, there is a 4 to 5% foreshortening of the actual length in order to achieve an electrical half wavelength. The modified equation for practical dipoles is:

\[ L_{\text{metres}} = \frac{150}{F_{\text{MHz}}} \]

Each element length ('A') is one-half the length calculated by this equation. The length calculated is actually an approximation of the real length, although in most cases a close approximation. The actual length required depends somewhat on local installation conditions. It is standard practice to cut the dipole elements ('A') a few inches longer than indicated by Eq [2], and then tune them to the actual length for the specific installation by one of several methods: a) v.s.w.r. meter, b) noise bridge, or c) an antenna impedance meter. Until recently, when several v.s.w.r. meters with built-in low-power signal generators came on the market, only hams with a license to transmit could effectively use a v.s.w.r. meter to tune an antenna.

The azimuthal pattern for the ideal dipole is shown in Fig. 1B; this view is from above. This pattern is more nearly realised in actual practice when a 1:1 BALUN transformer is used at the feedpoint of the dipole (as in Fig. 1A). The dipole is a balanced antenna, while coaxial cable is unbalanced. The BALUN makes the transformation, and prevents distortion of the pattern through re-radiation from the feedline.

The pattern of the dipole is called a 'figure-8' pattern for obvious reasons: there are two main lobes in the direction along a line perpendicular to the antenna radiator element. When transmitting, this is the direction of maximum signal strength, and when receiving it is the direction of maximum sensitivity. Orthogonal to the maxima lobes are two nulls that are in line with the antenna element.

**Long of It**

On receive, smart operators often do not aim the maxima lobes at the desired station, but use the nulls to attenuate interfering signals on the same or adjacent channels. The maxima are broad enough that a strong signal will still be heard when off-axis, so if you can attenuate the interfering signal more than you lose from the main signal, then the signal-to-noise ratio is considerably improved...and that's what counts in radio reception.

The dipole is a resonant antenna, i.e. it is cut for a single frequency. Although the pattern changes, it also works well at three times the frequency. As a Novice ham operator in the late 1950s, I used a 66 foot 40 metre dipole on both 40 metres (7MHz) and 15 metres (21MHz). One of the consequences of using a resonant antenna is that it works less well at frequencies away from the design frequency. There are two ways to overcome this problem:

1. For lower frequencies, insert a capacitance in each element; and
2. For higher frequencies insert an inductance in each element.

In this section we will take a look at a means for tuning a dipole over a relatively wide range of frequencies centred about its design frequency.

**Figure 2** shows the capacitance tuned half wavelength (more or less) dipole antenna. Length 'A' is a bit longer than for normal dipoles, and is found from:

\[ L_{\text{metres}} = \frac{154}{F_{\text{MHz}}} \]

The variable capacitor is a 500pF unit. It can be mounted in a shielded box, as in Fig. 3. The unit in Fig 3 is a Heathkit model sold several years ago, and is designed to legal-limit amateur operators.
transmitters (note the wide plate spacing). For receive-only antennas, a considerably more modest capacitor can be used. For example, Maplin (PO Box 3, Rayleigh, Essex SS6 2BR) offers a light weight 500pF Dilecon unit (order no. FF51F). It looks as if it would be relatively easy to couple that capacitor to a small, low-speed (1 to 10 r.p.m.) d.c. motor, or a stepper motor, and enclosed in a shielded aluminium box. Applying power to the motor would allow one to tune the antenna by varying the capacitance.

Unless the Maplin FF51F has changed in its design since I bought several, it is better for remote use than certain other models because it rotates through 360°, even though the capacitance range is traversed in only 180°. The reason why this is a good feature is that it eliminates the need for mechanical stops, sensors at the limits of travel and the direction reversing circuitry that 180° capacitors require.

The Short Of It

Life always has some little constraints that we must overcome, doesn’t it? The constraint that has most affected my short wave and amateur radio hobbies is the lack of a yard (or is that ‘garden’) large enough to erect full size antennas. Even in my present QTH, a vertical or something mounted on a tower is the most convenient. In past locations, and in college, I tried a large number of different ways to get on the air in cramped spaces...some successful and others were learning experiences (never ‘failures’, mind you).

One way to get dipole-like performance in a small space is to use a shortened dipole that is inductively loaded to cancel the capacitance of the short radiator element. It will act as a resonant antenna, although at some narrowing of bandwidth.

Figure 4 shows several ways that short dipoles can be inductively loaded. Figures 4A, B & C place the coil at the centre point between the two radiator elements, using different feed mechanisms.

In Fig. 4A, the inductor is in the centre of the radiator element, and the coaxial cable is attached at either end. This arrangement works well if the antenna is not too short. For shorter antennas, an arrangement such as Fig. 4B might prove better. In this version, the coil is tapped to match the impedance of the coaxial cable. A variant of this antenna is often seen in which the shield of the coax is connected to one end of the coil, while the centre conductor is connected to an impedance matching tap on the coil. Still another variant is shown in Fig. 4C. In this antenna, the coil is connected between the elements, as in the previous case, but the feedline is connected through a transformer link. This type of coupling is made real easy for receive antennas by the use of a toroidal or binocular BALUN core to make the coil.

A helically loaded dipole is shown in Fig. 4D. This antenna is made from rods of some insulating material wound with approximately half wavelength of copper wire. For receive antennas, the rods can be wooden dowels, usually 2 to 5m in length, and of appropriate diameter to survive in the installation. But for transmitter use, the rods ought to be glass fibre, and can be made from a pair of discarded spreaders intended for quad antennas. Also, for transmitting applications a pair of disc or radial capacity hats will help reduce the corona effect at the ends.

Construction details for a home-brew rotatable dipole are shown in Fig. 5. For several years I used a 15 metre version of this idea that was published in various ARRL Radio Amateur Handbooks and ARRL Antenna Books. Although the design seems to have disappeared in recent editions, it’s still quite viable. It used 10 foot aluminium tubing sections for the elements, and a 0.14uH inductor between them. The feed method was a little different from those described above: the shield of the coaxial feeder went to one element, while the centre conductor connected to one end of the coil (the other end of the coil attached to the remaining element).

The support for the antenna was a section of 50 x 50mm timber, or a section of (50 x 25mm) timber (as I actually used). For the 15 metre band version, a length of 1.22m was
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Short Wave Magazine, January 1997
sufficient for the support. Attached to the bottom end of the wooden support is a right angle plumbing pipe flange. Although one chap I know used the sort of flange that holds a shower curtain, it looked a bit weak for any serious application in my judgement. The pipe flange can then be fastened to a mast that can be rotated either by hand (as I did), or an electrical rotator motor.

The Two-Coil Loaded, Shortened Dipole

One of the more practical shortened dipole antennas is shown in Fig. 6. This antenna uses two coils, one in each element, to make up for the lost length. In a recent trip to an amateur radio distributor in my home town I noted a number of kits on sale, by several different manufacturers, that were of this design. All of the bands from 180 metres through 17 metres were represented. Presumably, antennas for the higher bands are short enough in full size for most people’s needs.

The centre feed of the antenna in Fig. 6 is not a 1:1 BALUN transformer, as used in other dipoles, but rather a simple dipole centre insulator. I’ve had bad luck with the use of BALUNs in this type of antenna, so cannot recommend it until I figure a way to overcome the problems. The connection to the receiver or transmitter is through either 50 or 75Ω coaxial cable, depending on which gives the better match (even if the match isn’t checked, the use of the wrong cable does not present a big problem).

The two sides of the antenna should be symmetrical, i.e. the coils should be at the same points on both halves, and all the dimensions on one side should be the same as the corresponding section on the other side (A = A, B = B). The siting of the coils can be a matter of some personal choice. If dimension ‘A’ is zero, then the coils will be right at the dipole centre insulator (this is the “0-percent” location), and the antenna is not materially different from some of those in Figs. 4A, B & C. The most usual situation seems to be placing the coils at the 50% point, i.e. where A = B. I’ve used this method, and found the antenna worked well and wasn’t inordinately difficult to get working. Other sites (A/A + B ratios) can also be used.

The equation for the inductive reactance required of the coils is more than a bit daunting. Although the mathematics are basically simple algebra, it’s a very large equation with lots of sub-calculations to make. The potential for an error is immense. The graphical solution, available in two or three handbooks, is too limiting, although they can be used as an approximation. Although cut and try is never completely eliminated in practical antenna construction, it can be a bit less tedious if a proper calculation is made in the first place. As a result, I wrote a computer program called LoadPole to help you find the inductive reactance and inductance required of the coils (L) in Fig. 6.

Fig. 4: Several inductively loaded dipoles: A) - C) lumped inductance loaded with different feed configurations; D) helically loaded; E) linearly loaded.

Fig. 5: Construction details of a coil loaded rotatable dipole.

Fig. 6: Two-coil loaded, shortened dipole.
Mounting the Loading Coils

The loading coils cannot simply be soldered to the antenna element wires, and then be expected to stand up to the rigours of the outdoors installation. A better approach is needed. Figure 7 shows two methods for mounting toroid core coils. An antenna end insulator (ceramic, glass, Nylon, etc.), is used to join the two halves of each element ('A' and 'B') together, and the inductor bridges the two conductors.

In Fig. 7A, a large toroidal core is used, so the coil can be slipped over the end insulator body. This arrangement makes it relatively easy to enclose the assembly inside a piece of pvc plumbing. In fact, a dandy coil assembly can be made using a short length of pvc pipe with the appropriate end caps (although don't depend solely on the glue to hold them together...use screw fasteners).

The mounting method in Fig. 7B simply bridges the coil across the insulator. It works well if a heavy gauge wire can be used to make the coil, and no strain is placed on the wire ends (let the antenna wire and insulator take all the forces).

A solenoid-wound coil can also be used, and either mounting tactic (as in Fig. 7) can be used. In Figs. 8A & B a solenoid coil is used with an end insulator. The coil in Fig. 8B uses a section of B&W 'mini-ductor' stock to make an antenna for the 75/80 metre amateur radio band. A commercial loading coil is shown in Fig. 9. It was salvaged from one of the commercial kit antennas described above.

The LoadPole Software

The calculations for the inductance of the coil in the loaded, shortened dipole are a bit dicey. One major antenna book gives both the equation and a graphical solution. However, I found that the graphical solution was easy to use, but it was basically too rigid. The reactances one obtains from the graph are for only one wire size (#36 to #40 AWG), which is a bit smallish for amateur or swl. antennas. Because the wire diameter is a factor in the equation, it cannot be ignored. Even if the chart were designed around a useful wire size, it wouldn't fit the case where you want to use a different conductor.

The LoadPole program allows you to select any of a number of swg. (UK), AWG (USA), or copper/aluminium tubing sizes to make the antenna, and then calculates the required reactance and inductance for the loading coils. Using the program runs under Windows 3.1. You use the mouse to drag the pointer of three scroll bars to select the overall length of the proposed antenna (as a percentage of the half wavelength of a full-size dipole), the position of the coil along the element (0 to 99%), and the operating frequency between 1 and 30MHz. From drop down menus you select the units of measure (feet or metres), and the wire size.

Connections...

Joe Carr K4IPV, can be reached at PO Box 1099, Falls Church, VA, 22041, USA, or via E-mail at carrjj@aol.com

If you would like a copy of the Loadpole software, then send two pound coins taped to a piece of card addressed to Short Wave Magazine, LoadPole SW, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. In return we will send you a PC formatted 3.5in floppy disk containing the installation files. Don't forget to include the return address. Please allow 21 days for delivery.
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High dynamic range short wave receiver £799
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<td>Service kit, Circuit diagrams, PC controlled alignment, test disk supplied, £85.00 (£3)</td>
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AR8000 - wide band hand-held receiver, new lower price £349

The AR8000 UK receiver is still the most full featured wide band hand held receiver on the market today. Frequency coverage is from 500 kHz - 1900 MHz without gaps with all mode reception... twin frequency display, alphanumeric text comments.

The CU8232 is a compact interface unit measuring 75mm(W) x 30mm(H) x 123mm(D) and weighs 170g (approx). The interface permits computer control via the RS232 serial port of a computer and clone of data between two AR8000 receivers or two AR2700 receivers.

An additional piece of software will usually be required in order to address the computer's serial port with the correct set of parameters. If using an IBM-PC or clone (with 80386 processor or higher) Microsoft WINDOWS "TERMINAL" may be used to address the computer's serial port and configuration of "TERMINAL" is covered in the illustrated 50 page CU8232 operating manual (and 16 page AR2700-CU8232 supplement).

PC-MANAGER (versions for DOS and Windows) is an optional utility for memory & search bank management. The software (which works in conjunction with the optional CU8232 interface) permits upload, download, editing, renumbering, saving of data, editing of auto-mode bandplan data (plus a built-in terminal driver for DOS and extra features for Windows including spectrum display and sound recording to disk).

AR8000 UK £349.00
CU8232 interface £99 (£3)
PC-MANAGER £49 (£3)
State DOS or WINDOWS
SC8000 soft case £17.95 (£1.50)
CR8000 tape control interface £44.90 (£2)
AR5000 high performance in a single wide band receiver...

The AR5000 advances the frontiers of performance providing excellent strong signal handling, high sensitivity and wide frequency coverage with microprocessor facilities to match. A great advancement in wide band front end design has been made, partly due to the introduction of automatic electronic preselection between 500kHz - 999.999999MHz with low pass, band pass and high pass filters for other bands. The preselection may be "manually tracked" when monitoring spot frequencies to help reduce any potential effects of interference caused by nearby monster transmitters. "True receive" throughout its range, not an up-converter above 1GHz.

There simply is not enough room here to list all the available microprocessor facilities, in fact the whole story of this feature-rich miracle is not revealed until you are able to study the operating manual... alternatively give us a call and "chat through" all the features!

Government departments on both sides of the Atlantic have carried out extensive trials against rival units and we are pleased to find they are placing orders for the AR5000, good sensitivity at frequency extremes, excellent range of facilities, compactness & light weight leading to great flexibility in operation.

**More from The Captain's Log...**

As this issue is devoted to chapter-and-verse on how the signal gets here, let's see what we can hear when it arrives. One you won't hear is the BBC on 15070. Try around there at dawn and dusk for Aeronautical DX but the Beeb has set up camp at 15575 daytimes. Mail me at bob@aor.co.uk if you can hear a reliable frequency for World Service around midday...

Try your strong-signal handling on 3955 after 1700 in the UK. This AOR user finds it all too reassuring that this BBC TX is strong enough to cause his 7030 to drop the PREAMP function without leaving the armchair.

Wait for night. While the sunspot count is low, try for the BBC in Hong Kong on 3915KHz. If the local QRN allows, try for Ghana on 3366. If you can hear that, Eighty should be a treat. Keen SWM readers know you can check for the MW DX chances by listening for Newfoundland on 930KHz. Those of us already feeling the benefit of the AOR 7030 front-end will hear Moscow Home Service on 171KHz, the choice of filters will keep France Inter's copious sidebands at bay.

Mail me if you can hear VOA. Apart from the skill needed to hear it on a sidetband feeder on 10454, this listener catches up on life stateside via AFN Frankfurt on 873. Winter conditions mean this is strong enough for car radio reception in the late evening. Whatever you listen to from wherever in the world it comes, keep in touch with AOR.

© Bob Ellis
Transmitting Films

The use of film has always been an important aspect of television programming. Nowadays, feature films are usually transferred onto video tape for ease of transmission. In the Fifties and Sixties, use was made of full-length feature films, especially filmed documentaries, and also filmed inserts into studio programmes.

Transmitting films on television was not a simple matter. The normal film projector as used in the cinema or in the home has an intermittent motion, that is, the film is pulled down frame by frame, and each frame remains stationary behind the projection lens for a fraction of a second. The process takes place rapidly enough for the eye and the brain to be deceived into thinking that the projection process is continuous. Unfortunately, the time during which the film remains stationary in a conventional projector is not sufficient for the television scanning process to be completed and special equipment had to be used to overcome this problem.

A type of projection mechanism was designed using an ingenious system of revolving and tilting mirrors which produced a stationary image from a moving film which allowed the film to run smoothly and continuously. A mechanism of this type (known as the Mechau film projector) was adapted by BBC engineers before the War for television purposes in such a way that the film image was projected directly into a television camera.

The introduction of the "flying-spot" technique in 1949 made it unnecessary to use a television camera, which resulted in a big improvement to the quality of film transmission and in fact made it equal to the best "live" pictures provided that the film itself was of first-class quality.

By the early Sixties, four types of film transmission equipment were used by the BBC: Twin-Lens Flying-Spot machines, Vidicon Telecina Channels, the old Mechau mechanism used in conjunction with the new flying-spot technique, and another type of equipment in which the image of the scanning raster was made to appear stationary relative to the film by an optical system which included a rotating glass polygon.

The advantage of the last two systems was that silent films could be run at any speed from zero upwards; this enabled a film insert to be introduced into a "live" studio programme without the delay which would normally occur while the machine ran up to speed.

Twin-Lens Flying-Spot System

In the twin-lens flying-spot system, the film moved continuously through the film gate which was the size of a normal film frame but the flying-spot raster had an aspect ratio of 4:1.5 instead of the normal 4:3. A double lens system focused two images of the raster, one above the other, on to the film in the gate.

As each film gate passed the first image of the raster the odd-line field was scanned and as the same film frame moved on to the second image, the raster scanned the even-line field. A mechanical shutter blacked out each raster alternately while the other image scanned the film.

This system produced pictures of the highest quality but had the disadvantage that the mechanism had to run up to synchronous speed before the picture could be transmitted. This took some eight seconds.

Vidicon Telecina Channel

The Vidicon Telecina Channel technique used a standard intermittent motion film projector in conjunction with a vidicon camera tube. The relatively long storage time of this type of tube bridged over the time intervals when the optical image was blacked out for the film pull-down period.

Facilities for reproducing sound film from magnetic track, either on the same film or on separate sprocketed film, were also available. This technique offered a higher standard of quality than an optical sound track which usually underwent several dubbings before reaching the final positive film.

Telecina machines were available to handle either 35 or 16mm film. Telecina equipment was installed in London and in each main Regional centre. The apparatus used in making films for television was also provided by the BBC Engineering Division to meet the requirements of the Television Film and News departments.
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**Telerecording Techniques**

It is important to be able to record a television programme, either for subsequent showing in this country or abroad or for the archives. The process can also be used for putting together a number of scenes performed in a studio so as to produce a continuous programme for showing later.

BBC engineers have made some notable advances in this field. In 1949 when telerecordings began to be used regularly, the basic idea was to photograph the picture on a television screen with a film camera. The intermittent motion of the film in a normal film camera presented the same kind of problem as that encountered in the transmission of films and was at first overcome in the same way by using the Mechau mechanism.

The equipment gave reasonable results but the quality of the recorded pictures was not up to BBC standard. Work went on therefore to develop an improved system resulting first in the introduction into service of the ‘suppressed-field’ system and later of the better system known as ‘stored-field’.

Since imperfections in the processing of the film could degrade the quality of the picture when it was reproduced, the developing and printing process was studied stage by stage and, with the co-operation of commercial processing laboratories, considerably improved so that more consistent telerecordings could be obtained. Mention should also be made of another system developed by BBC engineers in cooperation with an outside manufacturer. The system was known as the ‘fast pull-down’ (or ‘rapid pull-down’) system and was capable of producing recordings of very good quality.

**Suppressed-Field System**

In the system known as ‘suppressed-field’, the picture on the cathode-ray tube was recorded by a normal intermittent type film camera which ran in synchronism with the television field frequency. Since the camera required about half of each field period to complete the film pull-down and the film could not be exposed during the pull-down period, it was necessary to suppress each alternate vertical scan (field) of the picture on the cathode-ray tube. The film pull-down took place during this period of suppression. The recorded picture, therefore, had a nominal 202.5 lines instead of 405 lines. The equipment was designed to use 35mm film.

**Stored-Field System**

In the ‘stored-field’ system, all the lines were recorded. The alternate vertical scans (taking place during the pull-down period) were not suppressed. The afterglow of the cathode-ray tube was relied upon to store the lines until they were exposed at the same time as the lines which scanned during the exposure period.

It was necessary to provide circuitry which automatically increased the gain of the video amplifier during the scanning of the stored field in order to compensate for the decay during storage and to ensure that the stored and direct fields had equal intensity when they were exposed together. The equipment was designed to use 35mm film and could produce recordings of very satisfactory quality.

**Rapid Pull-Down System**

With the ‘rapid pull-down’ system of making telerecordings on film, the film pull-down time was reduced to about five milliseconds. Even this was considerably longer than the television field blanking period of 1.4ms. This problem was overcome in the following way. The camera shutter was arranged to close at the moment when field blanking and film pull-down commenced and remained closed until the film pull-down was completed. The camera therefore remained shuttered during the first few active lines of each field. These few lines were stored by the persistence of the screen of the picture tube until the shutter re-opened and exposure of the film began. Some compensation had to be introduced to ensure that these lines received the same exposure as the remaining lines which were scanned after the shutter had re-opened. This correction was achieved by placing a graded neutral-density filter in front of the picture tube with the minimum density at the top edge of the picture.

**Video Recording Techniques**

All these systems used film as the recording medium, which was expensive and had the disadvantage that a considerable time was required to develop and print it. The BBC therefore devoted a great deal of technical effort to the problem of recording television pictures on magnetic tape by electrical means, with the object of producing a television tape recorder.

This problem was immensely more complex than the recording of sound because something like 200 times as much information had to be recorded, but the problem was largely solved and the resulting equipment was known as VERA (Vision Electronic Recording Apparatus). This equipment was first demonstrated publicly in April 1958 and was subsequently used experimentally for telerecording a number of programmes.

Meanwhile, another system of magnetic recording had been developed in the USA and was by then coming into widespread use. This was the Ampex system and since the equipment was already available it was decided to adopt it within the BBC. The system, known as Videotape, was capable of giving very good picture quality and had the advantage, as in sound recording, of immediate play-back plus the fact that the tape could be used again.

Short Wave Magazine, January 1997
once a recording was no longer required.

Ampex machines were installed at the Television Centre and also in vehicles to provide mobile recording facilities. Similar equipment was also provided at Regional centres. Seventeen machines were in service or on order by August of 1961. Nine of the machines were capable of operating on both 625-lines and 525-lines as well as on 405-lines. One machine was capable of recording programmes in colour.

The Ampex machines used a frequency modulation system with a carrier frequency of 4MHz. Four recording heads were used mounted on the periphery of a rotating drum. The signal was switched from one head to another as each came opposite the magnetic tape. The drum rotated at 15000 r.p.m. and the tape was drawn past it in a helical fashion at approximately 15in per second which gave a relative head to tape speed of 1600 inches per second. There was practically no visible deterioration in first-generation copies.

**Colour Television**

The BBC's work on Colour Television began in 1946 in the laboratory and experimental transmissions were continued each winter from 1955. By 1961, BBC engineers were ready, if the government so decided (which they didn't!), to start a service of colour television on 405-lines within a year, and on 625-lines at a later stage. The studios at Television Centre had been designed to be suitable for the introduction of colour at any time - it was only the usual amount of government dithering which held things up! The BBC had co-operated in the work of the Television Advisory Committee and BBC engineers carried out much of the practical work and investigations on which the Committee had based its reports. The work by the BBC included a very thorough experimental investigation of the then controversial question of Frequency Modulation versus Amplitude Modulation, which had to be resolved before V.H.F. sound broadcasting could be introduced.

A colour television camera channel was designed by BBC engineers and, later, a 16mm slide and film scanner. With this equipment, colour pictures could be produced and evaluated on a colour monitor constructed for the purpose using a sequential scanning process which provided separate red, green and blue signals. Prior to 1949, it was thought that a practical television system would require the transmission and reception of these three signals, each occupying a bandwidth equal to that of the existing monochrome system (3MHz in the British 405-line system). Such a system would have resulted in an extremely inefficient use of spectrum space, even if the space were available. There would have been an added disadvantage in that the system would not have been compatible, that is to say, it would not enable a satisfactory black-and-white picture to be received on existing monochrome receivers.

In 1953, the National Television System Committee in America (the NTSC) proposed a system in which only two signals needed to be transmitted, one describing the variations in brightness of the scene to be transmitted (the luminance signal) and the other, variations in saturation and hue (the chrominance signal). BBC engineers successfully adapted the NTSC system to the British television standards.

Eventually, the PAL colour system was developed.

**Standards Converters**

A study was conducted into the merits of television standards based on different numbers of lines; a full-scale experiment to compare the relative merits of the British 405-line system and the 625-line system used widely in Europe was carried out and involved the installation of an additional high-power transmitter at Crystal Palace which operated in Band V.

Long-term studies which extended over a period of years were carried out by the BBC to assess the possibilities and problems of television broadcasting in Band IV (470 - 582MHz) and Band V (606 - 854MHz). These included propagation measurements and a detailed survey of the coverage likely to be achieved by stations operating in these bands. In 1957, a high-power Band V transmitter was specially installed at Crystal Palace. This was used for the latter survey in which a number of other organisations co-operated, in the course of which many thousands of measurements were made. The survey was conducted in order to compare the quality of reception of 405-line television signals in Bands I and V and also to compare reception of 405-line television in Band I with reception of 625-line television in Band V.

The trials included field-strength surveys and picture quality assessment in mobile laboratories as well as in selected viewers' homes. The results of these experiments were published by the BBC in 1960 in a document entitled *Television Field Trials Of 405-Line and 625-Line Systems In The UHF and VHF Bands, 1957-1958*.

A further series of 625-line experimental transmissions was undertaken in 1962; some of these were in colour. The Band V transmitter at Crystal Palace was modified for these tests to make it suitable for colour. Additional equipment was ordered for the generation of 625-line colour pictures.

**Eurovision**

By 1961, the bringing of 'live' television programmes to the United Kingdom from most parts of Europe was an established technique, which could be used whenever programme requirements demanded it. Yet this was pioneered only nine years previously in 1952 by the BBC and the French television service, RTF. The exchange of 'live' programmes was only possible because BBC and RTF engineers had designed standards converters which were used to change the television pictures from the, then, new French 819-line standard to the British 405-line system and to the 441-line standard then still in operation in Paris.

Two years earlier in 1950, the BBC had proved that it was possible to bring television pictures across the English Channel when a complete Outside Broadcast Unit was taken to Calais to beam back pictures to London by a series of temporary radio links. This in itself was a considerable feat, but because BBC equipment was used throughout, the problem of converting from one standard to another did not arise.

Standards conversion between 405, 625 and 819 lines was achieved in 1952. With the advent of video tape recording, the much more difficult problem of converting television signals from European standards to American standards had to be tackled. Tape recordings, unlike films, could not be reproduced in another country where the television
This historic transmission was followed by signals to the UK of the May Day Parade from Moscow and programmes were shortly exchanged between the BBC and TSS (the Russian television service) in both directions.

**Satellite Television**

In the early Sixties, before the days of Telstar and other satellites, it was not possible to go to the Americas or to the Commonwealth countries for ‘live’ transmissions, but BBC engineers were certainly planning on a link-up with these distant countries either by special cables under the oceans, by radio links, or by future satellites in orbit. Experimental use of earth satellites for television transmissions was set to begin in the mid-Sixties.

Nowadays, television and radio transmissions via satellite are a common occurrence. Thanks largely to the dedicated pioneering work by engineers in the BBC Engineering Division.

**Calling All Collectors**

The authors would be very pleased to hear from anyone who may have photographs or even video recordings of archive BBC-TV graphics, including Test Cards and on-screen Identification Symbols. Also, has anyone collected BBC Test Card music? If so, please write to Keith Hamer, 7 Epping Close, Mackworth Estate, Derby DE22 4HR. Tel: (01332) 513399.

 standards were different, so programmes exported to America on tape had to be recorded using the American standards. The main difficulty was that in America each field in the television picture was scanned sixty times per second while in the UK and throughout Europe the picture was scanned fifty times per second. This difference between European and American standards still exists today!

The difference in the number of lines of which the picture was composed presented a problem which had already been solved in converting to the different European standards, but the use of this equipment to convert to American standards resulted in an intolerable flicker in the converted picture. This problem, too, was solved by BBC engineers, who designed equipment which was first used in December 1959 to record on tape, at American standards, pictures from the ‘Western Summit’ meeting in Paris, which originated using the French 819-line standard. This was quite a difficult operation because the pictures had first to be sent from Paris over the Eurovision circuit to the Post Office terminal of the cross-channel radio link at Tolstford Hill near Folkestone, then by a series of temporary BBC radio links to the research laboratories at Kingswood Warren in Surrey. Here the signals were converted to the US standard, transmitted by more BBC radio links to London Airport and recorded there on video tape. The recordings were then flown to New York ready for immediate playback. A similar large-scale operation was carried out in connection with the Royal Wedding in May 1960, and the first pictures from Moscow (fed into the Eurovision network at Helsinki by direct reception from the station located in Tallin) on April 14th, 1961.

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The authors would be very pleased to hear from anyone who may have photographs or even video recordings of archive BBC-TV graphics, including Test Cards and on-screen Identification Symbols. Also, has anyone collected BBC Test Card music? If so, please write to Keith Hamer, 7 Epping Close, Mackworth Estate, Derby DE22 4HR. Tel: (01332) 513399.

 standards were different, so programmes exported to America on tape had to be recorded using the American standards. The main difficulty was that in America each field in the television picture was scanned sixty times per second while in the UK and throughout Europe the picture was scanned fifty times per second. This difference between European and American standards still exists today!

The difference in the number of lines of which the picture was composed presented a problem which had already been solved in converting to the different European standards, but the use of this equipment to convert to American standards resulted in an intolerable flicker in the converted picture. This problem, too, was solved by BBC engineers, who designed equipment which was first used in December 1959 to record on tape, at American standards, pictures from the ‘Western Summit’ meeting in Paris, which originated using the French 819-line standard. This was quite a difficult operation because the pictures had first to be sent from Paris over the Eurovision circuit to the Post Office terminal of the cross-channel radio link at Tolstford Hill near Folkestone, then by a series of temporary BBC radio links to the research laboratories at Kingswood Warren in Surrey. Here the signals were converted to the US standard, transmitted by more BBC radio links to London Airport and recorded there on video tape. The recordings were then flown to New York ready for immediate playback. A similar large-scale operation was carried out in connection with the Royal Wedding in May 1960, and the first pictures from Moscow (fed into the Eurovision network at Helsinki by direct reception from the station located in Tallin) on April 14th, 1961.

This historic transmission was followed by signals to the UK of the May Day Parade from Moscow and programmes were shortly exchanged between the BBC and TSS (the Russian television service) in both directions.

**Satellite Television**

In the early Sixties, before the days of Telstar and other satellites, it was not possible to go to the Americas or to the Commonwealth countries for ‘live’ transmissions, but BBC engineers were certainly planning on a link-up with these distant countries either by special cables under the oceans, by radio links, or by future satellites in orbit. Experimental use of earth satellites for television transmissions was set to begin in the mid-Sixties.

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"This is Endsville," Young Golly the trainee said.

"More like deep fringe," Kilocycle Ken, the senior radio inspector said.

They were at the river mouth, a scattered settlement of weekend huts, aluminium boat, crayfish pots. A westerly wind from the Tasman Sea moaned across the black marram grass covered sandhills. A solitary fisherman cast into the booming surf. Behind the beach were high hills. This was New Zealand of the 19th century, remote, nikau palms, flax, heavy bush untouched by logging.

And an anachronism, a new large aluminium caravan.

"We won a share of first prize in the Lotto," the young complainant said proudly. A fire in a Shacklog stove wasn't a standard caravan fitting.

"It must have been difficult getting the caravan in over that gravel road," Kilocycle Ken said politely.

Fringe Reception

The TV was a new 33in Philips. The picture was extremely noisy, black shapes behind the noise, almost impossible to watch, despite stacked Yagis on a stayed pipe mast.

"Did the store which sold you the set and the antenna know where you lived and explain about fringe reception? You're too distant from the nearest transmitter. It's taken us hours to get here."

"The store said to ring the radio inspectors, they'd fix it."

Anything to make a sale, but Kilocycle Ken said, "What about the other people who live here?"

"This is the only television set," she said proudly.

Two Maori children on the caravan step looked in, gravely.

"Have you got a television licence?" Kilocycle Ken asked.

"I have, from our old place in town." She fumbled in a drawer amongst receipts, accounts and bitten pencils.

Kilocycle Ken recorded the date of expiry on the Engr. 86 complaint form. "It's expired."

"I'm not going to renew it until I get a picture," she said.

... here have a couple of fish...

Kilocycle Ken sighed and looked out at the surf caster. "My husband," she said. "We can't do anything for you," Kilocycle Ken said. She nodded, resigned.

"Here, have a couple of fish."

Current Licence

Back at the car, Kilocycle Ken said, "People are so kind." Young Golly said, "I can't remember you asking about a licence before?"

"At one time, it was automatic, but I haven't been asking, now the licensing people have been making a song and dance, saying that if somebody complains about radio or television interference, then the complainant has to have a current licence."

"Why buy a licence, the set operates just as well without it," Young Golly said.

"Not in her case. I should have explained that a TV licence can be equated to a fishing licence, you get the chance to fish, but neither fish nor television reception can be guaranteed."

"Say, that's a good one, I must remember it."

"There were arguments in the early times of low powered TV transmitters because coverage was poor, patchy. Maybe there was sound, maybe there wasn't. People argued that because their picture was bad they shouldn't have to pay a licence fee."

"So they still do."

"There was a thought, once, of abolishing licenses and finding broadcasting from general taxation. Other countries such as Australia did abolish licences, but out minister of finance apparently decided against doing that, saying that a licence was something tangible, showing where tax money was going."

They left the settlement.

Unreadable Licences

Kilocycle Ken said, "Before TV, the old radio licenses were written out by tellers at the Money Order Savings Bank position in post offices. Sometimes the carbon paper was very worn and the details on the licences were unreadable, but even if it wasn't, it was hard work checking dealer's returns against the pieces of paper, matching names with..."
licences and producing lists of wireless set owners without licences - which was work we had to do in those times. They were put into alphabetical order of surname, date of expiry and filed in varnished oak cabinets."

"Got the computer now." "That complainant would have been dropped off, probably gone, no address, but we pursued radio licences relentlessly. Dealers in wireless sets had to advise the Post & Telegraph department when a set was sold, and to whom, and we matched licence and address. If we couldn't find a licence, we visited to collect the thirty shillings. The trail of used wireless sets through auction rooms and second-hand dealers was followed, auctioneers and dealers had to keep records of sets sold. When I was first in this job, it was part of my work to do random checks on houses to see if there was a wireless licence. I spent days trudging from door to door in various small towns, putting details of the licences in a notebook, lunching on a pie and tea at the local railway refreshment rooms."

"Nothing technical in that," Young Golly said. "I would ask politely if they had a wireless set or radio receiver. If the answer was yes, where was the licence? Then there would be a hunt. Sometimes the licence was pinned to the wall above the set, sometimes beside it, sometimes it was kept in the set and because of the heat of the valves, it would be browned and brittle.

Suits & Ties

"We all wore suits and ties in those days. And I was once mistaken for a doctor. I had knocked, the door opened and before I could say a word, the woman said, "Oh doctor, please come in."

Young Golly laughed. "Sometimes I was not invited in. Construction camps housing workers for hydro electric dams were dangerous places. One radio inspector was mauled by a labourer when he asked for the man's licence."

"A woman told me she had a licence, but she didn't have a set, her husband had departed, taking the set with him."

"Then there was the old woman who said that her husband's last words on his death-bed, were, 'Don't forget to pay your radio licence'. I tried to imagine that death-bed scene, without success".

Receiver Type

"Then there was the woman who came back from holiday and found that her wireless set didn't work when she switched it on. She found that her licence had expired, so we went to the local post office to renew it and asked if the P & T would now switch on her set again."

"In the beginning, before my time, the receiver type had to be written on the licence, and in the first days, a circuit diagram of the receiver had to be supplied - that was in times when you made your own receiver, a time of headphones, no loud speakers, and valve sets operated from batteries. The licence fee was five shillings in 1923 and was thirty shillings for a long time. When television arrived in Auckland in the late 1950s there was an extra four pounds a year for a TV licence and that rose to six pounds ten shillings, or 13 dollars in 1961 as viewing hours increased. The radio and television licences were combined in 1968 to 16 dollars a year and the radio component was abolished, but then the annual fee became twenty dollars and rose through thirty five dollars, sixty six dollars and so on, ever upwards."

"Boring," Young Golly said. "I'm giving you good background information for your job as a radio inspector," Kilicycle Ken said. "There are many inventive excuses for not having a television licence. One viewer reportedly said, 'There are so many repeats of programmes I thought I could use last year's licence.' Another said, 'I only watch Australian soapos, so I don't need a New Zealand licence.' One, to get the cheaper black and white licence fee, turned down the colour on his set and claimed it was black and white. One man, with a video recorder and a TV, said he only used the recorder as a clock."

Computer System

"Then came the first computer system, back in the 1970s, which made policing the system easier, although the computer was primitive, compared to today's, where the records can be shuffled around to extract a single sheet and print out the addresses where there are licences. If it's thought necessary, then only the houses shown without licenses need to be visited."

"Are you going to force that woman to buy a licence?"

"There's no way she's ever going to get reception there, there will never be a translator installed for so few people."

"So she gets away with having a TV set and no licence."

"I might fry my fish," Kilicycle Ken said.
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World Radio TV Handbook 1997

The World Radio TV Handbook has been called the “authoritative reference for anyone seeking information on radio and television around the world” (Radio Australia). A must-have resource for radio novices and enthusiasts, it is the only complete annual to include the important winter broadcasting schedules. This feature sets this edition of the World Radio TV Handbook apart from all its competitors.

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Get the Most Out of Your Radio
Sunspots Aren't Everything!

Any short wave radio enthusiast worth his or her salt knows that sunspots are responsible for long range h.f. propagation, but this is just part of the story. Some research that I carried out in January and February shows that more attention should be paid to the Earth's magnetic field and how this can indicate bad conditions.

Disturbed Field

A disturbed geomagnetic field is an indicator of how the sun can wreak havoc on long distance signals, make a mockery of 'predictions', and lead many listeners to think that their receivers have gone kaput. Yet how many people know just how to interpret an 'A-Index' reading?

The earth's magnetic field has an effect on the free electrons and ions in the upper atmosphere. It can set the free electrons in motion which then has an effect on the behaviour of the radio waves hitting them. Thus, unusual or disturbed magnetic effects can have a marked effect on propagation. This can be witnessed by total radio blackouts and aurora. It also channels charged particles from the sun (usually towards the poles) where the increased ionisation can mean severe absorption of h.f. signals and/or the possibility of the polar region ionosphere being capable of propagating signals at v.h.f. - so called auroral propagation.

The state of the geomagnetic field can be measured using magnetometers and the results are available from many sources including WWV in Boulder, Colorado. For a radio amateur the world-wide radio amateurs' packet radio network carries a daily bulletin, courtesy of G0FAK, and GB2RS, the news service of the Radio Society of Great Britain also carries information.

The A-Index is a single number based on a linear 1-400 scale and based on magnetometer readings around the globe. An 'A' index figure of 1 to 10 is quiet, 1 to 20 is unsettled, 21 to 50 sub-storm, 51 to 80 storm and 80+ severe storm. High levels of geomagnetic disturbance are associated with aurora and poor radio conditions.

Optimum Conditions

The optimum conditions for long distance radio propagation would therefore be a high solar flux and a sunspot number with a very low A-Index. Places to obtain these figures are looked at later.

It was only in 1925 that the ionospheric 'layer' was experimentally verified and tables of heights were published. This 'layer' turned out to be a collection of layers.

The lowest is the D-layer (about 60-90km high) which absorbs frequencies of about 0.5-7MHz. The layer disappears at night so enabling the reception of distant low frequency stations. At times of high activity the absorption can reach higher frequencies. This is why, in Summer, when you would expect ionisation and therefore propagation to be at its peak, conditions on the h.f. bands appear worse due to D-layer absorption.

The next is the E-layer (100 -120km) which is responsible for absorbing low frequencies and propagating higher ones over relatively short (1600km) distances.

Steve Nichols G0KYA explains why magnetic disturbances are not to be overlooked when considering propagation conditions. Here he presents some of his findings from 1994.

Useful Definitions

Maximum Usable Frequency (MUF) - The maximum frequency that can be reflected and therefore

The 14MHz score for January plotted against the 2.8GHz solar flux. The solar flux curve has been equalised with the 14MHz score by deducting 100 from the flux value. There is little correlation except in the last week of the month, but I believe the effects were masked by geomagnetic disturbances.

Plot of 14MHz score for February against solar flux. Better correlation but the band conditions were dominated by the unsettled geomagnetic field so this is not a good comparison. Note how the solar flux was very steady in February compared with the fluctuations in January.

Short Wave Magazine, January 1997
**14MHz Beacon Details**

<table>
<thead>
<tr>
<th>Call</th>
<th>Location</th>
<th>Lat/Long</th>
<th>ERP (W)</th>
<th>Antenna</th>
<th>Sched.</th>
<th>Operational</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT3B</td>
<td>Punta Gorda</td>
<td>29°48N18°53W</td>
<td>100</td>
<td>Vert.</td>
<td>T+6 min</td>
<td>No</td>
</tr>
<tr>
<td>JA2I2Y</td>
<td>Iselin</td>
<td>34°27N14°24E</td>
<td>100</td>
<td>Gp</td>
<td>T+3</td>
<td>Yes</td>
</tr>
<tr>
<td>KH6O/B</td>
<td>Honolulu</td>
<td>21°26N156°55W</td>
<td>100</td>
<td>Gp</td>
<td>T+2</td>
<td>Yes</td>
</tr>
<tr>
<td>L1U4AA</td>
<td>Bs. Aires</td>
<td>36°59S8°W</td>
<td>100</td>
<td>Gp</td>
<td>T+8</td>
<td>Yes</td>
</tr>
<tr>
<td>OH2B</td>
<td>Espoo</td>
<td>60°15N25°3E</td>
<td>100</td>
<td>Gp</td>
<td>T+5</td>
<td>Yes</td>
</tr>
<tr>
<td>W6WX</td>
<td>Stanford</td>
<td>37°25N12°11W</td>
<td>100</td>
<td>Turnstile</td>
<td>T+1</td>
<td>Yes</td>
</tr>
<tr>
<td>ZS6DN</td>
<td>Pretoria</td>
<td>25°45S28°2E</td>
<td>100</td>
<td>Gp</td>
<td>T+7</td>
<td>Yes</td>
</tr>
<tr>
<td>4U1UN</td>
<td>New York</td>
<td>40°45N76°0W</td>
<td>100</td>
<td>Gp</td>
<td>T+0</td>
<td>Yes</td>
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<tr>
<td>4X4TU</td>
<td>Tel Aviv</td>
<td>32°41N34°55E</td>
<td>100</td>
<td>Gp</td>
<td>T+4</td>
<td>Yes</td>
</tr>
</tbody>
</table>

All the above beacons transmit on 14.100MHz
Schedule: T+6 indicates transmission at 6, 15, 26, 36, 46 and 56 minutes past the hour

**Used between two stations.**

**Lowest Usable Frequency (LUF)** - The frequency below which total absorption will occur and/or equipment limitations mean the signal will not be heard.

**Optimum Traffic Frequency** - Usually about 85% of the LUF and the one that therefore gives the best chance of a contact being viable.

Propagation is therefore a delicate balance between having sufficient solar output to propagate the signals, but not too much as to cause absorption.

Obviously, on a long distance path, this balance must be present along the whole path. Thus high frequency paths that cross the night-day terminator are unlikely to be viable as there will be no ionisation.

Also, paths that cross high ionisation areas may not be viable as absorption may kill the signal. And this is where the earth's magnetic field comes into play.

**Project**

For my project, signals were logged, morning and afternoon, from the worldwide beacon chain on 14.1MHz. These beacons transmit for one minute in each ten minute period from Madeira, Japan, Hawaii, Brazil, Finland, California (USA), South Africa, New York (USA) and Israel.

The total signal strength of each beacon was logged, along with the daily solar flux and the A-Index reading.

The **solar flux** is the strength of the 2.8GHz radio noise as measured coming from the sun. The level rises from about 67 units at sunset minimum to about 300 units at maximum. Again, the higher the number the better the chance of good radio propagation.

The sun can also lose matter into space through the solar wind. Solar flares, when filaments break off, or coronal holes, when the sun's magnetic field is not strong enough to contain the high energy particles emitted by the sun, cause particles (electrons and protons,) to flow out from the sun and get caught in the earth's magnetic field, causing it to be disturbed.

The daily beacon score, solar flux levels, A-index, and sunspot numbers were fed into a spreadsheet and graphically plotted.

And this is where the fun started. It was difficult to see much correlation between the received signals and daily solar flux, but what quickly became apparent was that a relatively high A-index reading usually meant poor conditions. Just look at the graphs shown here.

You can see that as the A-index goes up, the beacon score goes down.

In January, despite high solar flux levels at the beginning of the month, propagation conditions were not very good. Later in the month, the solar flux stayed high for a few days, but the band conditions declined rapidly. It is interesting to note that on January 27 two South African 28MHz beacons were heard, but no European beacons. The next day no 28MHz beacons were heard.

During this time, the highest recorded 14MHz scores for January were recorded (24 on 25/1 and 26/1), but then band conditions dropped down with 14MHz scores of 16, 15 and 15 on subsequent days.

It is interesting to note that the geomagnetic A index rose dramatically after the 25th and this probably explains the poor band conditions.

February was dominated by poor band conditions caused by high levels of solar activity brought about by a coronal hole and a filament that broke away. The particle emissions that impacted upon the earth's magnetic field both affected the A-index and virtually crippled long distance h.f. communications.

The morning of February 6th started off with very poor conditions being reported on the 3.5MHz amateur band. The 14MHz beacon score was very low in the morning and a scan around the band revealed few stations. By late afternoon the 14MHz band was still very bad, but 28MHz was open to Finland and Norway - even after dark.

There appeared to be little F-Layer propagation as no signals from outside of Europe were heard on either 14 or 28MHz.

By the 8th of February, reports were coming in of a coronal hole on the sun's surface which was emitting high levels of particles (ions, protons, etc.) and electromagnetic radiation.

The result was that the 14MHz virtually closed down with a zero beacon score for two consecutive days.

The band conditions were reflected in the high A-Index readings which showed how the earth's magnetic field was being disturbed by the...
Plot of the 14MHz score for February against A-Index showing once again what a dramatic effect an unsettled geomagnetic field has on propagation. Absorption and disturbed ionospheric reflection has virtually wiped out the band. But the solar flux curve was much smoother.

**KEY**

- 14MHz score
- Solar Flux

High energy particles arriving from the sun. These conditions were in evidence for almost a further week or so, witnessed by the poor 14MHz scores and the A-Index values. There is nothing new in any of this, but I feel that too much emphasis is placed on sunspots and not enough on the sun’s geomagnetic effects when it comes to band predictions. If you take your short wave listening seriously, keep an eye on the A-Index readings. Anything more than 2-5 could spell trouble. Only by taking the geomagnetic effects into account can you truly understand why band conditions seem to vary so much, even when the solar flux appears fairly static.

I hope that this brief look at propagation helps you with a better understanding of ‘what is going on out there’!
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NEW MVT-9000 "A thoroughbred amongst scanners"
From the Mists of Time it Came -

The T2FD Antenna

I made my first T2FD antenna in 1953, the year our present Queen was crowned, and I remember it (and her) with great affection. I was 15 years old and already pirating on Top Band with home made gear and a venerable old B-21 receiver, which is the one with an Austin Seven door handle to change bands (and break your wrist if you didn’t treat it with respect), but at least it was general coverage and allowed me to roam the spectrum and do my body building exercises by lifting it on and off my bench - but I digress.

When I left Lowe Electronics and retired to Devon I was fortunate enough to buy a property which has a few acres surrounded by 150 year old beech trees, most of them about 24m tall (which all sounds very nice until you come home on a windy night and find 24m of beech tree across the drive - two weeks ago). How could I resist stringing wires from these wonderful wooden structures, and what fun I have had with 180m long wires (they also have a tendency to collapse across the drive) - but the memories of my first T2FD and its performance, and the occasional articles which had appeared through the years prompted me to really investigate the facts and the myths which had grown up around this antenna system, and over the last two years I have studied, considered, calculated and tested just about every aspect of the T2FD. Having reached the point when I was happy with my findings, who should resurrect the subject but Kevin Nice of this fine magazine, and he suggested that I write down some of my findings for the benefit of its readers - so here goes.

The first article describing the T2FD was written by G.L. Countryman W3HH, and appeared in 1949. Countryman acknowledged that his source of information was a series of trials conducted by the US Navy and that his own trials of the antenna were at that time incomplete, but he was particularly impressed by the following attributes:

1) Omnidirectional radiation pattern
2) Useful operation over a 5 to 1 frequency range (for example 6 to 30MHz).
3) Reasonably flat impedance (s.w.r. of 1.4 to 2.6:1 with an average of 1.7:1) over the full operating range.
4) Single support for one end of the antenna, with the other end close to ground.
5) Moderate gain over a comparable conventional horizontal antenna.

Later articles by Countryman in 1951 and 1953 expanded on his original text and included some results from tests in Japan by the Kyushu Electric Communications Bureau, and I quote his text:

"Their experiments indicated that the tilted folded dipole was superior to the 'Zepp' and half wave doublet types previously employed. Wide band characteristics were observed and the T2FD resulted in a 4 to 8dB increase in the signal at their various receiving locations."

As far as I am aware, nothing else was written about the T2FD, apart from reprints of the early articles in 73 magazine, until the 1988 and 1989 issues of World Radio & TV Handbook (more on this later), and then an updated survey by Guy Atkins in the 1990 issue of F.T.S. Proceedings in which he highlights the other useful characteristic of the T2FD, namely its low noise performance. Now for those of you who might have envied my tree bordered location, I should also mention that I have a 275kV grid line within half a mile to the East, and you believe it, an older 132kV line a bit closer to the West, so I know all there is to know about noise on lower frequencies, and I'm therefore able to comment with some authority on what constitutes a low noise receiving antenna.

Acronym

T2FD is an acronym for Terminated Folded Dipole, and this accurately describes its general layout, if not its actual method of operation. Other writers have likened it to a "squashed rhombic", possibly because the T2FD operates with a resistive termination, but it's too short to be considered as a rhombic. In any event, I'm less concerned with the theory than I am with the practical results, and right from the first articles which appeared in 1949, the practical results have been impressive. As can be seen from Fig. 1, the antenna is constructed as a folded dipole with one end high and the other low. This is an ideal arrangement for the average house owner because the high end can be up at ridge height or on a chimney stack whilst the lower end can be...
After much cajoling and encouragement, John Wilson has been persuaded to tell us what he knows of an antenna much mentioned in SWM of late.

Don’t be a Lightweight
This is a large lump of wire to be hanging in the sky, so although it might be acceptable to make it from lightweight materials as a trial, you should beef it up when you want it to survive a typical English winter. Guy Atkins comments “My first attempt at a T2FD self destructed when the antenna was hoisted into the air. I underestimated the strain the wires would be under”. I agree with Guy’s comments and when I came to make my own series of T2FDs (I did make one or two) I took a lot of care in selecting the materials. I recalled having seen some absolutely splendid heavy duty stranded copper cable with a clear insulation which I knew would be strong enough to stay up, but it was sourced in Japan and difficult to obtain so I asked a British cable manufacturer to make some for me. This they did, but there was a minimum order quantity and I eventually had to buy 3000 metres of it (I was sure I could use it or dispose of it in time).

Similarly, when I came to antenna without worrying about them falling to pieces. I used the time honoured method of securing the antenna wire in the ends of the spreaders by cutting a groove across the end face of the spreader deep enough to hold the wire, then drilled a small hole through the spreader in line with the wire and threaded a short piece of tinned copper through the hole and wrapped it around the antenna wire on each side. I’ve made hundreds of metres of open wire feeder line by the same method and it’s simple and satisfactory.

Resistive Termination
Now to the interesting bit. You will have noticed that the antenna is fed half way along its lower leg, and the corresponding point along the upper leg has a resistive termination in it. In the original articles of 1949 and 1951 describing the T2FD, Countryman showed the terminating resistor to have a value of 600Ω and the antenna fed by 600Ω open wire feeder. In a follow-up article in February 1953, Countryman went into more detail about his observations.

Thus, for a lowest operating frequency of 6MHz the spacing would be 0.5m, and the total span would be 16.67m (54.7 feet). If you know the length of your garden and the height of the top support, you can always use a bit of trig. to work out the maximum length of the antenna you can fit in, or simply draw it to scale on a piece of squared paper and measure just how much wire you can accommodate. Knowing the length of the antenna you can transpose the formula for length to:

3) Lowest operating frequency in MHz = 100/length in metres.

and thus know just what the frequency coverage will be. Don’t forget that the antenna is a folded dipole and you will therefore need twice as much wire as the span of the aerial when you come to construct it. And so to construction - don’t worry, I’ll get on to the termination and matching a bit later.
From the Mists of Time it Came

Radio & TV Handbook article

"The WRTH editions give the erroneous impression that the T2FD antennas REQUIRE a 500 Ohm resistor and a 10:1 balun transformer used with 50 ohm coax cable. This is not the case..."

Guy went on to describe how he used a 390Ω termination with a 4:1 balun to convert what he guessed was a 300Ω feed point impedance to 75Ω for coaxial feed. With all these different tales around I decided that this needed detailed investigation which is why I have occupied nearly two years on the subject. As I have said, I made several T2FDs and used them with different wire spacings, terminating resistors and different feed point arrangements. I found that Count, Iman was correct in how critical the matching became at lower impedances and agreed with Atkins that WRTH was wrong in suggesting that only a 500Ω termination with a 10:1 balun to feed 50Ω coax was correct. In fact it's incorrect. The best results I found were using a 500Ω termination which gave a 450Ω feed point impedance where I used a 9:1 balun to allow the use of 50Ω coaxial cable as a feeder. But that's not the entire story because I researched many different balun arrangements and came to the conclusion that the impedance transformation and balun functions were best kept separate, so my final design used two trifilar transformers (which were made for me in Japan by one of my old friends there), incorporating a fully balanced impedance transformation and a Guanella balun arrangement. All my configurations were checked out using a swept frequency return loss analyser and the two stage 9:1 arrangement was without doubt the best I found both in bench measurement and in actual listening.

Keep It Dry

Since the impedance matching network and balun have to be out there in the pouring rain I sourced some GRP square tubing and potted the whole lot with 4mm sockets for the feeds to the wire ends of the antenna and a BNC socket for feeding the coax. I know that the average short wave antenna uses a PL-259/SO-239 plug and socket but they are not as water resistant as the BNC and don't have the same cable retaining grip as a BNC. In fact the average PL-259 plug will almost certainly allow water to get into the end of the coax cable, and it only takes six months to wreck perfectly good (and expensive) cable by shield corrosion. There's no point in erecting a low noise antenna if you end up with crackling noises being generated in corroded outer braid in the cable. You can sometimes find PL-259 plugs with the same compression cable clamps as the BNC, but be prepared to pay a premium price. I always ask Henry Westlake -Tel:(01409) 253758 - when I need good connectors, and can recommend his advice on these matters. The terminating resistor is also out in the rain and needs waterproofing. I used the same potting technique as for the impedance matcher and again used 4mm sockets for the wire connections. I prefer 4mm sockets to terminals because they form a completely waterproof bond with the potting compound and are easy to connect and disconnect. I'm not sure that conventional screwed terminals used outside tend to corrode and seize up, so that when you need to unscrew them they either refuse to turn or shear off, or worse still rotate within the potting compound and tear off the internal connecting wires still buried in the potting. The "push and pull" action of the plug and socket not only removes the seizing up problem but is also self cleaning, particularly if you can find some of the splendid 'O-Z' plugs made by Belling & Lee. The terminating resistor obviously has to be non-inductive across the operating frequency range of the antenna, and whilst it would be easy to use standard carbon film resistors for the purpose, they probably wouldn't survive the first nearby thunderstorm, so I use a specialist slab resistor which is rated at 5W and has lasted very well so far. Expense it's true, but better than pulling down the antenna after every storm to replace a burnt out terminator.

How Does It Work?

If you mean the theory behind the T2FD, don't ask me; I'm happy to find that it performs exactly as Countryman and the other users said it would, and I leave the theory to cleverer folk than me. If you mean "How does it work?" in practice, then my reply has to be "extremely well". It certainly exhibits all round coverage (with a slightly favourable gain in the direction of the lower end support), has gain over a long wire, produces less noise at my location than conventional long wires, and has that useful frequency range of 5 or 6:1. I erected my T2FD cut for a lower design frequency of 5MHz and found it worked not only right up to the top of the short wave spectrum but well below 5MHz as well. Although the gain gradually drops below 5MHz, it by no means cuts off, and the 80m amateur band stations come booming in. Guy Atkins also reported that a T2FD designed for the 60m broadcast band still performed well down in the 120m band. The T2FD is due for a revival, and if you are tempted to erect one and need some tips from me don't be afraid to ask. As you will have gathered from this article I have a surplus of top quality bits and pieces still available and would be pleased to pass them on at reasonable cost. Just contact me via Short Wave Magazine and let's see the T2FD recognised for what it is - an interesting and useful antenna for the keen short wave listener. TTFN (for those old enough to remember what it means.)

And so to other things. I'm writing this at the beginning of December 1996 and I know it won't see the printed page until the New Year, so I'll wish you all a very prosperous 1997 and send you my sincere thanks for all the letters I have received as a result of my scribblings. I simply haven't been able to reply to them all, but can assure you that I have appreciated receiving them. My particular thanks to Richard in Pittsburgh, PA, who has been a regular correspondent for many years and keeps me up-to-date with news from the American short wave scene; also to RJP of Northampton who has furnished me with a wealth of information on older equipment and fascinating articles describing the origins of many so-called "new" techniques. To those manufacturers or their representatives who have entrusted me with their latest products for comment, I hope that I have been truthful, if sometimes not complimentary in my findings. My personal award for product of the year goes to AKD for their Target 3 receiver which has successfully brought a good short wave receiver within the financial reach of many enthusiasts, and my "Oh Dear, what a pity" award to the WINRADIO for being such a well made and attractive product which, for me, completely missed the intended target.
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- 307 memory presets
- 29 page SW station name memory
- Home/world time display
- Adjustable sleep timer
- AM RF gain control
- Soft carrying pouch
- AC adaptor
- Shortwave aerial
- Earphones SIZE: 210 x 127 x 38mm (8.25 x 5.0 x 1.5in)
- WEIGHT: 850g (30oz) without batteries.

£199.00 + £5 P&P

FREE SW ANTENNA FREE PSU FREE SW FREQUENCY GUIDE
**QS-300 Base Stand**
A full adjustable desk top stand for use with all handhelds. Fitted coaxial fly lead with BNC and SO239 connectors.
£19.95 + £1 P&P

**QS-200 Mobile Mount**
Mounts on the air vent grills on a car dashboard to allow easy and safe operation of most handhelds.
£9.95 + £1 P&P

**KS-240 REALISTIC PRO-44**
Police style over the ear earpiece.
£149.99

**REALISTIC PRO-26**
50 channels continuous coverage
£299.99

**TELESCOPIC SCANNER ANTENNA**
Extends portable scanner range. Nine sections, centre loaded. For 1-1300MHz. BNC connector.
£9.99 + £1 P&P

**UNIDEN UBC-220XLT**
200 channels
£169.95 + £5 P&P

**UNIDEN UBC-3000XLT**
400 channels
£249.95 + £5 P&P

**UNIDEN UBC-9000XLT**
500 channels
£325.00 + £5 P&P

**YUPITERU MVT-7100**
Ideal for portable scanners. Swivel clip attaches to your collar or lapel for easier listening while you carry your portable on its belt-clp. With 3.5mm plug.
£9.99 + £1 P&P

**CLIP-ON MINI SPEAKER**
Idea for portable scanners. Swivel clip attaches to your collar or lapel for easier listening while you carry your portable on its belt-clp. With 3.5mm plug.
£9.99 + £1 P&P

**AER-I**
Portable short wave aerial. A retractable long wire aerial that can be used with all short wave receivers. The aerial is provided with a 3.5mm plug for receivers with a suitable socket and an adaptor to clip the aerial to the telescopic rod aerial of sets with no aerial socket.
£14.95 + £1 P&P

**AOR AR-8000**
£339.00

**FOR YOUR FREE CB RADIO CATALOGUE TELEPHONE**
0121-457 7788

**5TH EDITION SCANNING DIRECTORY**
FREE P&P
£18.50

**OPTO CUB**
£139.00 + £5 P&P

**OPTO SCOUT**
£369.99 + £5 P&P

**AOR AR-3000A**
£839.99

**B115**
Miniature wide band antenna receives 30-1300MHz. BNC fitting only 50mm long.
£19.95 FREE P&P

Nickel Metal Hydride (NiMH) Batteries. Super Syncro 1100 Rechargeable AA Cell battery 1100
MAH voltage 1.2
£3.00 each incl. P&P.

The new generation of rechargeable "NiMH" or Nickel Metal Hydride cells, free of toxic or hazardous elements such as cadmium, lead, mercury or lithium, can be used repeatedly and disposed of safely when finally thrown away. A service life of 500 to 1000 charge/discharge cycles can be expected, and the capacity related performance is normally 30 to 50% better than that of the best equivalent NiCad cells.
MANUFACTURERS & DISTRIBUTORS OF COMMUNICATIONS EQUIPMENT
SRP Radio Centre, 1686 Bristol Road South, Rednal, Birmingham B45 9TZ
Tel: 0121-460 1581/0121-457 7788 Fax: 0121-457 9009

PRO 2042 BASE SCANNER
(1000 CHANNEL WITH HYPERSCAN) JUST £359.99 INC P&P* + 2 FREE GIFTS!

- 1000 memory channels (100 channels x 10 banks)
- 10 limit search banks
- 50 channels/sec & 50 steps/sec scanning speeds
- Large orange backlit LCD display
- Rotary or keypad frequency control.

Size: 232mm W x 210mm D x 90mm H.
Modes: AM, FM and WFM.
Step sizes: 5kHz, 12.5kHz and 50kHz (WFM).

COMES WITH TELESCOPIC ANTENNA AND OWNERS MANUAL.

Until January 31st we are offering with each purchase of the PRO 2042 at a cost of £359.99 inc P&P*, both a FREE copy of the 5th Edition UK Scanning Directory (RRP £18.50) and a choice of either our Skyscan DXV1300 discone antenna (RRP £49.95) or our Skyscan Desk 1300 discone antenna (RRP £49.00) FREE.

To take advantage of this special offer or for more information, call either Rod, Richard or Mary on: 0121-460 1581 or 0121-457 7788

Demand is likely to be high, and orders will be fulfilled strictly on a first come first served basis (subject to stock availability).

*Free P&P applies to mainland UK deliveries only.

The UK Scanning Directory
5th Edition
FREE

The OK Scanning Directory
5th Edition
FREE

This sensitive "nearfield" counter is ideal for on-air frequency checking. Simply hold the counter near to the transmitter to get an accurate frequency reading.

Comes complete with nicads, AC charger and aerial. An ideal frequency counter for service engineers or surveillance personnel who need an accurate handheld counter.

Specifications subject to change without notice.
How to use the Propagation Charts.

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

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

Lastly, the upper dashed line, represents the maximum usable frequency (MUF) a 50% probability of success for the path and time.

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

Good luck and happy listening.
New WS-1000E
World’s Smallest Scanner

FM, WFM & AM
500kHz - 1300MHz

£349

FREE CREDIT

True pocket size, designed by one of the world’s largest communications manufacturers. Up to 24 hour’s continuous operation from AA cells, programable power off, 400 memories, fabulous sensitivity, excellent strong signal handling. Sendy today for full details.

Xplorer Monitor

25 - 1300MHz

Limited Offer

Kit comprises, Receiver, AC adaptor and charger, DB-32 Aerial, Carry Case, and software with PC cables.

Dials lock onto any frequency in less than a second!
Gives digital readout, decodes audio and reads tone frequencies.

GOT A COPY OF OUR NEW CATALOGUE?
Lowe Receivers

AT-2000 Receiver ATU.

NEW Icom ICR-10

50kHz - 1300MHz
SSB - FM - AM

New Scanners from Icom
IC-R10

Phone

SPECIAL OFFER

Opto 2810
10Hz - 3GHz
Half Price

Price Match

We'll match or beat our competitors' prices!

NEW AKD HF-3 Short-wave Receiver

30kHz - 30MHz LSB, USB & AM

An exciting new receiver for short-wave listening.
Switched LSB & USB with digital readout
Fly-wheel dial and quick memory function

RSGB Review Nov. 1996 says: "very sensitive indeed - audio quality was excellent - Is it worth it; very definitely yes - easier to tune than similar priced Japanese radios - At the price you can't go wrong"
H ello again, a good mixture of hobbys this months, your input into this feature is very encouraging. If you haven't seen your contributions appear yet don't be disheartened, we can only publish highlights due to the volume of logs receive. You will help us if you can provide your logs on disk or via E-mail if possible; if not, then you can save lots of editorial time by keeping exactly to the format on this page i.e. same sequence and headings. We look forward to this feature growing - it's all down to you.

If you provide logs on disk, please note that we can read PC and Mac format high density 3.5in disks. Preferred, is MS Word used. If the Mac. We can, however, accept most wordprocessing formats. If you have a hardcopy, please take a photo of it and submit a plain ASCII file.

Kevin Nice G7TZC

<table>
<thead>
<tr>
<th>MHz</th>
<th>Mode</th>
<th>Time</th>
<th>Call</th>
<th>Location</th>
<th>Monitor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.101</td>
<td>AM</td>
<td>24hrs</td>
<td>UNID</td>
<td>fc</td>
<td>Regular prefixes, broad-band.</td>
<td></td>
</tr>
<tr>
<td>0.133</td>
<td>d.c.</td>
<td>24hrs</td>
<td>UNID</td>
<td>fc</td>
<td>Playing.</td>
<td></td>
</tr>
<tr>
<td>0.518</td>
<td>NAVTEX</td>
<td>1800</td>
<td>QA0</td>
<td></td>
<td>Oil rig warning &amp; up-to-date weather.</td>
<td></td>
</tr>
<tr>
<td>4.218</td>
<td>AM</td>
<td>2215</td>
<td>QA0</td>
<td></td>
<td>WX for Black Sea area.</td>
<td></td>
</tr>
<tr>
<td>5.384</td>
<td>Bandet</td>
<td>1630</td>
<td>UNID</td>
<td>fc</td>
<td>US-INTEL FSK outlet, 6.8 MHz, 1/8 (16 Hz) FSK and u.s.b. voice transmissions, the carrier shows up on the channel long before the actual transmission starts!</td>
<td></td>
</tr>
<tr>
<td>5.439</td>
<td>RTTY</td>
<td>1427</td>
<td>MI</td>
<td></td>
<td>message.</td>
<td></td>
</tr>
<tr>
<td>11.200</td>
<td>RQ</td>
<td>1940</td>
<td>UNID</td>
<td></td>
<td>ALTS.</td>
<td></td>
</tr>
<tr>
<td>11.204</td>
<td>U.S.B</td>
<td>2030</td>
<td>MAGIC 85</td>
<td></td>
<td>niceRig mp.</td>
<td></td>
</tr>
<tr>
<td>6.725</td>
<td>U.S.B</td>
<td>24hrs</td>
<td>UNID</td>
<td>fc</td>
<td>13 PP COE. How goes it? There's no concern back at Waddington, we will send you (a bit back the detachment), will pay for it and we will investigate further when you get back home. Can compressors leave. DS signed off saying &quot;They would sit watching the point dry&quot;.</td>
<td></td>
</tr>
<tr>
<td>6.794</td>
<td>Bandet</td>
<td>1930</td>
<td>UNID</td>
<td>fc</td>
<td>Slo musical tones.</td>
<td></td>
</tr>
<tr>
<td>6.797</td>
<td>RFPN</td>
<td>1100</td>
<td>UNID</td>
<td></td>
<td>Nine EE.</td>
<td></td>
</tr>
<tr>
<td>6.805</td>
<td>Piccolo-B</td>
<td>1100</td>
<td>GTH</td>
<td></td>
<td>RAF 46 Tkm NHS w/Faxes &amp; voice msgs to NFC RAN Bocconey (OYU to MNH also logged (his freq).</td>
<td></td>
</tr>
<tr>
<td>6.918</td>
<td>BAND</td>
<td>0200</td>
<td>UNID</td>
<td>fc</td>
<td>SMO AIAP 1940 CHART FOR LDLN radio traffic Brockwell product, Atlantic, &amp; north. 0201/27 Oct 04 04:49 from HET on OPT. BRACKWELL TO ORO15 PAGE 001* PETG 0230 WERIT WERIT 2030 - EN soil freq 2030. This was a new freq this week and sessions nice short rather than Brockwell from here.</td>
<td></td>
</tr>
<tr>
<td>7.319</td>
<td>U.S.B</td>
<td>1100</td>
<td>UNID</td>
<td></td>
<td>Austrian language.</td>
<td></td>
</tr>
<tr>
<td>7.413</td>
<td>Bandet</td>
<td>1110</td>
<td>UNID</td>
<td></td>
<td>UNID.</td>
<td></td>
</tr>
<tr>
<td>7.454</td>
<td>Bandet</td>
<td>1115</td>
<td>TANKUG</td>
<td></td>
<td>UNID.</td>
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<tr>
<td>7.475</td>
<td>Bandet</td>
<td>1120</td>
<td>TDY</td>
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<td>8.437</td>
<td>c.w.</td>
<td>1800</td>
<td>CEZ</td>
<td></td>
<td>UNID.</td>
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<tr>
<td>8.623</td>
<td>c.w.</td>
<td>1100</td>
<td>PCX41</td>
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<tr>
<td>8.665</td>
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<td>UNID.</td>
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<td>9.148</td>
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<td>UNID</td>
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<td>NAVY P10683</td>
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<td>9.914</td>
<td>R.arr</td>
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<tr>
<td>10.569</td>
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<td>11.029</td>
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<td>21.224</td>
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<td>UNID</td>
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<td>13.033</td>
<td>Bandet</td>
<td>2020</td>
<td>UNID</td>
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<td>13.123</td>
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<td>UNID</td>
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<td>1557</td>
<td>RAY</td>
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<td>13.509</td>
<td>Bandet</td>
<td>1845</td>
<td>UNID</td>
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<td>13.541</td>
<td>Sat. A</td>
<td>1815</td>
<td>CTI</td>
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<td>13.588</td>
<td>Bandet</td>
<td>1530</td>
<td>MAP</td>
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<td>UNID.</td>
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<td>13.736</td>
<td>Bandet</td>
<td>1737</td>
<td>SYD</td>
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<td>14.476</td>
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<td>1730</td>
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<td>14.653</td>
<td>FEC</td>
<td>1300</td>
<td>SPW</td>
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<td>14.912</td>
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<td>14.917</td>
<td>QXG</td>
<td>0945</td>
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<td>FEC A</td>
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<td>15.945</td>
<td>Transpatel 100</td>
<td>1600</td>
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<tr>
<td>16.807</td>
<td>Silay</td>
<td>1100</td>
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<td>16.813</td>
<td>ARQ 625</td>
<td>1915</td>
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<tr>
<td>16.839</td>
<td>Sat A</td>
<td>1920</td>
<td>IFQO</td>
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<tr>
<td>17.133</td>
<td>c.w.</td>
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<td>17.427</td>
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<td>0800</td>
<td>UNID</td>
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<td>17.440</td>
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<td>18.4355</td>
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</table>

Abbreviations:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB</td>
<td>Coast Guard</td>
</tr>
<tr>
<td>DAC</td>
<td>Domestic Air Council</td>
</tr>
<tr>
<td>DE</td>
<td>English language</td>
</tr>
<tr>
<td>GB</td>
<td>Outside Broadcast</td>
</tr>
<tr>
<td>RN</td>
<td>Norwegian Navy</td>
</tr>
<tr>
<td>WX</td>
<td>Weather</td>
</tr>
<tr>
<td>USAF</td>
<td>United States Air Force</td>
</tr>
<tr>
<td>U.S.N</td>
<td>United States Navy</td>
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</table>

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Short Wave Magazine, January 1997
<table>
<thead>
<tr>
<th>MHz</th>
<th>Mode</th>
<th>Time</th>
<th>Cell</th>
<th>Location</th>
<th>Monitor</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 18.5975 | QROUILLET | 1400 | | Alligers | OW | area
| 18.761 | Nola FFC | 1245 | | Keyworth | YL1AD | area
| 19.8079 | TRIUMPLEX | 1726 | | Oslo | GY | area
| 53.200 | n.m. | 24hrs | | Swansea | WR | area
| 69.900 | n.m. | 1430 | | Swansea | WR | area
| 70.5125 | various | | | various | various | area
| 70.8800 | various | | | various | various | area
| 71.950 | various | | | Swansea | WR | area
| 71.1500 | various | | | Swansea | WR | area
| 73.3875 | n.m. | evenings | | Swansea | WR | area
| 73.3875 | n.m. | weekends | | Swansea | WR | area

---

<table>
<thead>
<tr>
<th>MHz</th>
<th>Mode</th>
<th>Time</th>
<th>Cell</th>
<th>Location</th>
<th>Monitor</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 83.350 | a.m. | 24hrs | | Swansea | WR | area
| 85.025 | n.m. | day/night | | North | COG | area
| 85.100 | 24hrs | | | North | COG | area
| 85.1825 | 24hrs | | | Swansea | WR | area
| 85.2125 | a.m. | | | Swansea | WR | area
| 85.800 | n.m. | 8-1900hrs | | Swansea | WR | area
| 86.025 | a.m. | | | weekends | ROYAL | area
| 87.0625 | n.m. | 24hrs | | BRAVO | North Valley | area
| 141.0125 | n.m. | 1430 | | OSKAR | Swansea | area
| 141.1975 | n.m. | 1430 | | CHRISTMAS | Swansea | area
| 141.9875 | n.m. | 1430 | | OSKAR | Swansea | area
| 143.875 | a.m. | 1440 | | UK? | WR | area
| 146.6600 | n.m. | | | W/Mids | WR | area
| 156.3000 | n.m. | | | Barnsleys | WR | area
| 163.1375 | n.m. | | | Harmony | WR | area
| 163.150 | n.m. | | | London | WR | area
| 163.300 | n.m. | | | London | WR | area
| 163.8875 | n.m. | | | London | WR | area
| 163.9875 | n.m. | | | London | WR | area
| 164.0275 | n.m. | | | Swansea | WR | area
| 164.0490 | n.m. | | | Swansea | WR | area
| 164.0625 | n.m. | | | Swansea | WR | area
| 164.0875 | n.m. | | | Swansea | WR | area
| 164.375 | n.m. | | | Swansea | WR | area
| 164.425 | n.m. | | | Swansea | WR | area
| 165.1215 | n.m. | | | Swansea | WR | area
| 165.2625 | n.m. | | | Swansea | WR | area
| 165.3975 | n.m. | speradic | | ROYAL | Swansea | area

---

<table>
<thead>
<tr>
<th>MHz</th>
<th>Mode</th>
<th>Time</th>
<th>Cell</th>
<th>Location</th>
<th>Monitor</th>
<th>Notes</th>
</tr>
</thead>
</table>
| 166.1500 | n.m. | various | | Lichfield | OW | area
| 166.1700 | n.m. | various | | Lichfield | OW | area
| 167.7200 | n.m. | various | | Lichfield | OW | area
| 167.7800 | n.m. | various | | Lichfield | OW | area
| 169.0870 | n.m. | various | | Lichfield | OW | area
| 169.1070 | n.m. | various | | Lichfield | OW | area
| 169.1400 | n.m. | various | | Lichfield | OW | area
| 169.1600 | n.m. | various | | Lichfield | OW | area
| 169.1800 | n.m. | various | | Lichfield | OW | area
| 169.2500 | n.m. | various | | Lichfield | OW | area
| 170.1870 | n.m. | various | | Lichfield | OW | area
| 170.1870 | n.m. | various | | Lichfield | OW | area
| 409.425 | n.m. | | | Mossewish Hill | WR | area
| 415.305 | n.m. | | | Gosport | WR | area
| 440.3275 | n.m. | | | Gosport | WR | area
| 441.285 | n.m. | | | Gosport | WR | area
| 441.650 | n.m. | | | Gosport | WR | area
| 444.450 | n.m. | | | Gosport | WR | area
| 444.450 | n.m. | | | Gosport | WR | area
| 446.050 | n.m. | | | Gosport | WR | area
| 446.050 | n.m. | | | Gosport | WR | area
| 447.150 | n.m. | | | Gosport | WR | area
| 447.250 | n.m. | | | Gosport | WR | area
| 448.700 | n.m. | | | Gosport | WR | area
| 452.300 | n.m. | | | Gosport | WR | area
| 452.350 | n.m. | | | Gosport | WR | area
| 454.075 | n.m. | | | Gosport | WR | area
| 454.100 | n.m. | | | Gosport | WR | area
| 454.200 | n.m. | | | Gosport | WR | area
| 455.050 | n.m. | | | Gosport | WR | area
| 462.735 | n.m. | | | Gosport | WR | area

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**Other Exchanges!**

A letter from RA who wishes to be kept anonymous is looking for some information. London Transport buses keep surging out of bursts of data at around 193MHz and he’s wondering what it is. The suspicion is that it may be something to do with the new fangled bus stops that show how long you have to wait for the next bus(es). If there’s anyone out there who has managed to decode this data perhaps they can write. Our reader says he could wait indoors until he actually knows a bus is coming.

An anonymous reader from Staffordshire wishes to appeal through this column for a number of elusive Freqs that keep evading him. These are, any ‘Peabody Pilot’ delta frequencies, channel 17 West Midlands Ambulance Service and any uhF Ambulance frequencies. So can anyone help?

Don’t forget if a frequency issue is puzzling you, write to me.
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Short Wave Magazine, January 1997
Letters

Lots of 'em this time, so let's get stuck in.

First off the International Listeners Association, who have their HQ at 1 Junction Street, Huford, Swansea SA21 2HF. Trevor GW4QDX is the guiding light here and covers most of the interests of the short wave listener. Trevor himself has been going through a bad patch just lately, and we offer our sympathy.

Now we turn to E. Griffiths of Carmarthen who is debating about adding a dedicated receiver and antenna to look at the amateur bands as well as his present scanner. He sent a message with rather more detail, and incidentally suggested a meeting at the annual Llandudno 'do' which is almost upon us as I write. In essence, reader Griffiths notes that in his neck of the woods, the winds blow antennas down; but I have offered some suggestions which may help.

The winds that blow brought down the 3.5MHz Delta Loop used by Brian Mortimer in Whitby, so he has made a change to The Earth Return Antenna discussed by G3BDQ in his book on Wire Antennas. With the help of a handy-placed tree and adequate attention to the earthing side of the system. For others, something like. Over to all you out there!

Changing Tack

Mike appeals for us to re-start the HP Ladder of hallowed memory. The idea is to collect amateur call prefixes, one of each. A minimum of 200 required for a first entry - a reasonable weekend task. A minimum of 200 required for a first entry - a reasonable weekend task.

Happy New Year.
SSB Utility Listening

BT Challenge
By the time that you read these words, the second leg of the BT Challenge yacht race will be nearing completion. The second leg started from Rio de Janeiro in Brazil on November 20th. The yachts are racing around Cape Horn at the southern tip of South America, across the South Pacific (the Roaring Forties), to Wellington in New Zealand. This particular leg is about 7200 nautical miles and the competitors are expected to arrive in Wellington sometime between December 30th and January 4th. The yachts travelled so quickly to Rio that the organisers have added an extra way-point about three-quarters of the way to New Zealand - this is so that the yachts will not arrive too early in Wellington.

Communications on this leg will still be attempted via Portishead, but the yachts will also be in range of Sydney Radio in Australia after they pass Cape Horn. Portishead expect that there will be suitable openings on the 18MHz band around 10.00UTC or the 16MHz band around 16.00UTC, on the following frequencies:
- channel, callsign, shore/ship
  - 1602 GKT62 17.245/16.363
  - 1801 GKT19 19.755/18.780
  - 1803 GKL18 19.761/18.795
If these are not successful, then the following Sydney Radio frequencies will be used:
- Channel
  - 1200 V8S 13.093/12.236
  - 1211 V8S 13.197/13.230
  - 1602 V8S 17.245/16.363
  - 1616 V8S 17.275/16.393
  - 2200 V8S 27.702/22.008

Also, here is a reminder of the yacht names, with a complete callsign list. Some yachts tend to use their calligns rather than names during the first leg.
- MWSC2 Commercial Union Assurance, MPNX4 Concert
- MWS22 Courtaults
- International, MPN4 Global Teamwork
- MPUW3 Group 4 (Leg 1 leader), MWSC2 Heath
- MWSE2 Insured 2, MPUW3 Nuclear Electric
- MPXL4 Ocean Rover, MPXL3 Pause to Remember, MPW82 Save the Children, MWSS2

Time and Tide, MPXJ3 Toshiba Wave Warrior, MPNV4 3 Com.

Klingenfuss
By the time that you read these words, the 1997 editions of the Klingefuss guides will be available. Early December sees the publication of three new products - 1997 Shortwave Frequency Guide; - 1997 Super Frequency List on CD-ROM; and - 1997 Guide to Utility Radio Stations.

The new 1997 Shortwave Frequency Guide is the printed version of the popular Klingefuss Super Frequency List on CD-ROM, including all international broadcast schedules. The publicity announcement says that this is the very first international publication that combines both world-wide shortwave broadcast and utility radio stations in a single book.

The 1997 Super Frequency List on CD-ROM is also available, for those of you with the right equipment attached to your computers. Some people might argue that having the information electronically is a waste as it is all available in the book, but with the power of a computer you can perform some impressive searches of the information.

Finally, the 1997 Guide to Utility Radio Stations (15th edition), this book is the international standard reference book for utility listeners and short wave listeners alike, although it does contain a lot more information on the various data modes than s.s.b. signals. For detailed descriptions and some sample pages and colour screenshots please refer to http://ourworld.compuserve.com/homepages/Klingenfuss/

Letters
Mr Williams writes from North Wales asking about ways to improve his reception of North Atlantic aeronautical traffic. His letter explains that he has a GSRV antenna strung around the inside of his loft, which is fed directly into his Yupiteru MVT-7200 scanner.

Mr Williams (who didn't mention his first name!) says that when he listens to Shantwick on 4 and 6MHz he experiences a lot of background noise, and the controller often sounds like Donald Duck. When he tunes down slightly in frequency, the voice sounds the same and he can never get it just right.

Well, you have just found one of the principal problems with using a scanner for listening to h.f. s.s.b. signals. Many scanners these days seem to offer h.f. reception, but their tuning step-sizes make it difficult to resolve an s.s.b. signal into good audio. What you need is a b.f.o. - a beat frequency oscillator - but these are very rare on scanners - though the MVT-7200 does have one, with switched u.s.b. and i.s.b. modes provided. It seems to be an unwritten law that whatever step-size you choose, you can never get the sound of your chosen s.s.b. signal to be just right. A b.f.o is a control which is completely variable, and does not rely on a step-size for its operation. As ever, the best piece of equipment for listening to h.f. signals is always a proper h.f. receiver, not a scanner.

Mr Williams asks if an a.t.u. (antenna tuning unit) would make a difference to his reception and the quality of the audio. Unfortunately, in this instance, the answer is no. It would go a long way to reducing the background noise when used properly, but noise is something that you will never be completely free from. An a.t.u. would certainly not stop the Shantwick controllers from sounding like Donald Duck either - it could make them sound louder, but they would still be Donald Duck!

Christmas Listening
Well its that time of year again. I hope that you have all got your orders in for that new receiver or station accessory, and are ready for some listening over the holiday period.

For those of you who want a challenge of Christmas Day itself, you may care to listen for the transmission of the results of the CCF (Combined Cadet Force) Winter Wine competition. This will be broadcast of the CCF frequency of 5.328MHZ at 12.00UTC. The competition itself takes place at the start of December, and lasts a full 24 hours. Any would-be DXers in the vicinity of Portishead are sure to be interested, and those who are not should surely be ignored.

For those of you who wish to chase special flights on h.f., then once again QANTAS is off to the Antarctic over the holiday period. Flights will commence on the 1st of December and go through to the 19th of February 1997. As of yet I do not have any flight numbers, but here is what I do have: Flight-1, Sunday 1st Dec. 96 From Melbourne Dep. 0830 Return 2000; Flight 2, Tuesday 31st Dec. 96 From Melbourne Dep. 1700 Return 0430 (this is the New Year over the ice flight); Flight-3, Sunday 5th Jan 97 From Sydney Dep. 0740 Return 2010; Flight-4, Sunday 12th Jan 97 From Melbourne Dep 0830 Return 2000; Flight-5, Sunday 19th Jan 97 From Perth Dep 0930 Return 2130; Flight-6, Sunday 26th Jan 97 From Melbourne Dep 2030 Return 2000; Flight-7, Sunday 9th Feb 97 From Sydney Dep 7.40am Return 2010; Flight-8, Sunday 16th Feb 96 From Melbourne Dep 0830 Return 2000.

All these are all Australian time, so subtract 12 hours to get UTC. There are also flights on December 29th and February 2nd, but I don't know the flight details for these.

All that remains is for me to wish you a good Christmas, and don't eat too many mince pies!
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**SHORT WAVE MAGAZINE, JANUARY 1997**

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73 from Dave G4KQH, Technical Manager.
Firstly, What Sort?

A good premise to adopt with antennas is this: If they broadcast with it then you can use it for reception.

What I am saying goes something like this. Ships use vertically polarised antennas - so you should, if this is where your interest lies - go the same way. Same with other services whether they use either verticals or horizontals - so should you. Easy, isn't it?

No, it isn't! In an ideal world we'd be able to follow that, but in practice, we have to adopt a compromise in order to get good reception. That's where discones come in. The discone looks like a sweep's brush, know the sort? A bit of a 'jack-of-all-trades' it does an admirable job, but not as well as a dedicated, and by that I mean a tuned antenna. Remember that, and the word 'broadband'. Keep them very firmly in mind as we progress through this introduction.

So, most antenna systems are a compromise as they have a massive portion of the band to cover. Broadband means just that - they cover a broad band. Typical claims made by manufacturers of such antennas are in the region of 150kHz to 1.3GHz, which, when you think about it, is quite a staggering range. Especially when the professionals would have anything up to ten different types in that lot for each specific frequency range!

Narrowband can be found in marine and airband and are generally cut for that frequency portion with a 'tail-off' above and below the intended operating band. A good example is the Air 33 by Haydon Communications which I have used for many years and which has good marine band performance despite being a dedicated airband antenna.

Compare that with my Scanmaster Base, which was very definitely broadband and which offered a poorer performance on airband that was essentially a compromise when placed against the dedicated Air 33.

So, what am I saying? In effect, that you must choose carefully. If you are a dedicated airbander, don't waste money going for a vertical or a discone offering 150kHz to 2.0GHz coverage when you can get a vertical cut exclusively for civil and military band only. Likewise, if you generally scan through the lot of frequencies on your scanner, don't buy an Air 33 and hope it will do on short wave. It will not. Horses for courses, people, and read the small print also and very important, know what you want!

Most serious scanner owners have at least two antennas available at their QTHs. One for general use and others for their specific areas of interest.

Then we go into the technical areas and start talking about things like log periodic, multi-band verticals etc. What are they? Just know that this type is expert country and pretty specific, coverage wise. In the case of the log periodic, because it's directional, it is usually mounted with a rotator and can then cover the whole horizon around the QTH. Technical stuff - and the price of another scanner - it is the realms of fantasy for most of us on limited budgets!

Choices Choices

So, what choices do you have? Garex offer the Radac, which is a nest of dipoles and that's had good press over the years. I believe that it's well worth the outlay. Verticals vary, but look for ones which cover a good spread and are of high quality construction. I've seen verticals offered for sale which are no more than glass fibre down pipes or plastics plumbing pipes stuffed with wire and sold as antennas. I kid you not! Go for established suppliers, with well known names and offering guarantees. I will not recommend any particular make but would add that specific antennas in the areas of marine and airbands do exist and would suggest that if these are your areas of interest, then don't bother with a multi-band broadband one but go for a specific antenna. Right! After that, what improvements can you make? What can I tell you except that I don't use things like filters and pre-amps! I mount my antennas high and clear and always use good quality fittings and coaxial cable as recommended by the manufacturers. Yes, things do exist to enhance the hobby and filters get used when interference is heavy.

I would strongly suggest that more serious info. can be had from the books available from the Book Store in this magazine. There are excellent titles and fair prices and a wealth of information to hand. Again, I'm reluctant to mention any one particular book, but those by the late Peter Rouse are almost bible status - be advised!

Next month I'll look at mounting antennas, a subject, not to be taken lightly and rightly so given the potential dangers involved in access to ideal mounting sites. However, I will look at basic securing and leave the technicalities to those better qualified than me! However, the number of antennas I've seen which are not supported properly is mid boggling - why pay all that money out and then live with a grotty mount? First serious wind and, £40 or so down the drain, plus, if you're unlucky, an insurance bill for all sort of resulting damage to property, cars, etc!

I'll also touch on antennas for fiat dwellers who are largely forgotten and suffer great hassles - like I do currently, but that's another story!

Column News

Right, into the letters! Thanks to all those who write in regularly, you know who you are. I welcome letters on a wide variety of subjects and, when I can, I write personal replies. It's not always possible, of course, but I do try.

Most answers can be made through the column, so there's no excuse in not writing, or in writing along the lines of a certain gentleman who tells me that we invent the letters. Very nice, ask the nurse to pull the straps tighter after medication, will you?

Ducting

First letter from KL of Newby. K tells me that he copies Paris VOLMET on 126.0 as a strong signal but with fading. This is as a result of ducting conditions, and as K says, is usually noticeable when co-channel interference is spotted on the TV. The beauty of v.h.f. ducting is that, when high pressure fronts collapse you can, if you're lucky, get some surprising things through over the air. It's not an exact science and you can, by looking for tell-tale signs, get well into this. Next time the TV goes ghostly with interference, try the scanner out in...
the shack and plot the bands slowly, using a frequency guide to be absolutely sure. You may be quite pleased by what you pick up.

Another letter from CCH of West Glamorgan fills me in on a number of previously unknown frequencies, 166.875 being a DSS simplex. These are liable to be low powered but worthwhile having a listen to if this sort of stuff is your thing.

Other frequencies heard in the W. Glam area are as follows. As always, it may be worthwhile listening in on these nationwide for evidence of other use:

- 74.0125/74.450/74.5875/74.6125 - Mountain Rescue Team, tones at 114.8 via repeater and c/s ROMEO and 166.3375 - Mountain Rescue Team, tones.
- 74.0125/74.450/74.5875/74.6125 - Mountain Rescue Team, tones at 114.8 via repeater and c/s ROMEO and 166.3375 - Mountain Rescue Team, tones.
- 74.0125/74.450/74.5875/74.6125 - Mountain Rescue Team, tones at 114.8 via repeater and c/s ROMEO and 166.3375 - Mountain Rescue Team, tones.
- 74.0125/74.450/74.5875/74.6125 - Mountain Rescue Team, tones at 114.8 via repeater and c/s ROMEO and 166.3375 - Mountain Rescue Team, tones.
- 74.0125/74.450/74.5875/74.6125 - Mountain Rescue Team, tones at 114.8 via repeater and c/s ROMEO and 166.3375 - Mountain Rescue Team, tones.
October was a spectacular month for long-distance television reception with at least 13 days on which Sporadic-E openings occurred. As a bonus, settled weather conditions formed during the third week of the month creating an intense tropospheric opening with signals from Central Europe and Scandinavia.

Sporadic-E Reports

Peter Barber (Coventry) submitted an excellent Sporadic-E log as usual with details of a sustained opening on the 20th with activity monitored between 0953 and 1329 UTC. Initially, Italian RAI UNO signals were encountered on Channels IA and IB but by 1114 UTC Croatia on Channel E4 had been identified by its 'HRT' logo. Spanish TVE-1 and Belgian signals were received between 0953 and 1330 UTC. Initially, German and French programmes from Egem in Belgium were wiped off the screen at one point by BRTN-1 transmissions. Chris Howles (Erdington) commented that the u.h.f. band was filled with Dutch and Belgian signals.

Just below channel E22, Serbia (PTCB1 E3), the Czech Republic (NOVA TV R1), Ukraine (YT-2 R1) and Rumania (TVR-2 R2). The latter was also received on the 14th accompanied by Portuguese and Spanish transmissions.

Tropospheric Reports

Conditions on the 22nd, 23rd and 24th produced excellent-quality colour pictures from many Continental transmitters. Some of these transmissions included BBC and ITV u.h.f. broadcasts throughout many areas of the United Kingdom; even the weather forecasts were viewers of interference to pictures. Central TV broadcasts on Channel E43 from Sutton Coldfield were wiped off the screen at one point by BRTN-1 programmes from Egem in Belgium. Tuning through Band III revealed many Belgian, Dutch, German and French transmissions. Chris Howles (Erdington) commented that the u.h.f. band was filled with Dutch and Belgian signals.

John Woodcock (Basingstoke) comments that the whole of the south of England was suffering from severe co-channel interference on the BBC and ITV broadcasts during the evening of the 22nd. At 2130 UTC, John checked Band III and discovered French Canal Plus signals from the Lilie transmitter on Channel L5.

Steve Aungier (Dagenham) discovered signals from the Belgian RTBF-1 service on Channel E3 (Liege) on the 22nd. Peter Barber (Coventry) also noted this one, and RTBF-1 from Wavre on Channel E8. Dutch NED-1 programmes were also present on Channel E4 from Lille. RTBF-1 was also present the following day, accompanied by BRTN-1 (Belgium) from the Channel E10 outlet at Wavre. NED-1 on Channel E4 was again identified by the PM5644 test card at closedown at 2205 UTC. RTL broadcasts from Luxembourg on Channel E7 (Dudelange) were also identified.

On the following day, various French Canal Plus outlets were logged; these included Lille on channel L5, Cherbourg L6, Rouen L7 and Brest L10. ARD-1 programmes from the Channel E8 NDR-1 outlet at Hannover in northern Germany were also present.

Alan Taylor (Sheffield) reports several Dutch transmissions on the 22nd and 23rd, the strongest being NED-2 and NED-3 from Lopik on Channels E27 and E30 respectively. A weak Channel E34 signal had Alan baffled - it seemed to have an Arabic logo. Unfortunately, the reception was less exotic than hoped for. As the signal improved the logo turned out to be the stylised logo of the German MDR network. The transmitter is located at Brocken in central Germany.

Andrew Burfield (Braintree) saw Swiss signals from the La Dôle transmitter on channel E34 which is located in the Lake Geneva area of Switzerland. The station was identified by the white diamond-shaped logo with 'SUI' below, representing the Italian-language service. An on-screen promotion was shown with the letters SF-DRS in the corner. This was an advert for a programme to be shown on the German-language network.

Dozens of French, Belgian and German u.h.f. stations were logged during the event which lasted three days. Even the Danish TV-2 transmitter at Odense was received on Channel E22.

A mystery signal on Channel E36 is causing identification problems. The logo resembles a small semi-circle supported by two short stumps. Andrew has noticed this during many openings and thinks it could be a local TV service in Brussels.

Andrew advises that Meridian TV and LWT TV have changed their main identification graphics recently. Channel 4 have also changed theirs at a cost of around £500,000. Has anyone noticed the similarity between this and the proposed Channel 5 logo?

Pertti Salonen (Finland) noted tropospheric activity on October 18th with reception of an ORT broadcast from S. Petersberg on Channel R1. Apparently the ORT teletext service known as TELINF has several pages in English! Pertti has sent information regarding TV in Azerbaijan where a new radio and TV station has opened in Baku. It is currently radiating AzTV on Channel R1, Russian TV on R7 and ORT on R12. Channel R22 is still vacant. AzTV-2 and two Turkish channels, TRT-TV1 and GRT, are still broadcast from the old Baku TV tower.

Meteor-Scatter DX

Roger Bunney (Romsey) has submitted the meteor-shower dates for 1997 as supplied by Neil Bone, the director of the Meteor Section of the British Astronomical Association.

Meteor-scatter (or meteor-shower reception) is caused by debris from meteors burning up on entering the earth's atmosphere. An ionised trail is...
left which can reflect TV and f.m. signals back to earth over distances of several hundred miles. Sadly, signals last only a second or so, which means the DXer needs extremely fast visual reflexes to identify the signal. In the past, many countries could readily be identified if a test card was being shown but with the current trend of round-the-clock programming, identification can be difficult, despite most services displaying an on-screen logo. There are certain days during the year when activity peaks and signals are readily propagated with repeated bursts of reception. The most productive showers are the Quadrantids (peaking at 1000UTC on January 3rd), the Perseids (peaking on August 12th) and the Geminids (peaking December 13th at 2200UTC). On these dates repeated bursts of signal can produce an effect not unlike messy Sporadic-E reception when several stations are fighting for the same channel. Although Band I channels are more productive, Band III reception should not be discounted. Over the years Russia, Italy, Finland, Austria, Czechoslovakia, Poland, Iceland, Sweden, Norway and Denmark have all been identified on various Band III channels. Some years seem better than others. One theory is that peak meteor-shower activity occurs outside Europe, during the seemingly less active years. Many DXers find that reception from Scandinavian transmitters tends to be more prevalent than from those in Central Europe.

Slow-Scan TV (SSTV)

SSTV differs from conventional fast-scan TV transmissions in the sense that signals are transmitted within a bandwidth of only a few kHz, instead of several MHz. This means that to recreate a recognisable image, the data required to produce a picture has to be sent at a much slower rate thus ruling out images with normal movement. The received data is processed and formed into an image. The amateur bands are used to transmit slow-scan TV pictures.

Two SSTV enthusiasts, George Newport (Kent) and Keith Artherton (Norfolk) have sent in pictures of their reception achievements at 14.23 and 144.50MHz (see Figs 3 and 4). Keith uses a long-wire or discone antenna feeding a Lowe HF-125 receiver. A 486 DX2-66 plus an 8MHz PC with DL4SAW SSTV programme processes the signals which can be stored and pictures later created using a Hewlett Packard 550c printer.

Keep On Writing!

Please send DXTV reception reports, equipment news, off-screen photographs and general information to arrive by the 3rd of the month to:- Garry Smith, 17 Collingham Gardens, Derby DE22 4FS, England.

WIN
a £200 Roberts Radio R861

FIRST OF A SWM
TWO PART
COMPETITION.

So you read Simon Spanswick's review last month* - at least we hope you did. Now, owing to Roberts radio's generosity, you can win your very own Roberts R861 world-band portable. This delightful portable which covers 150kHz to 29.99MHz and 87.7 to 108MHz band II stereo (with headphones) including RDS makes an ideal travel companion.

To enter simply answer the question below this month. Fill in the answer to this month's question on the answer form that we will provide next month with part two of the competition, affix the corner flash from the bottom of this page, answer the second question and send off the completed entry form to the address on the form.

The lucky winner will be drawn from the Editorial hat containing the correct entries.

Question 1: How many AA cells are required to power the R861?

* If you missed the December 1996 issue of Short Wave Magazine containing the R861 review don't worry, back issues are available at £2.60 including P&P from the address on page 87. You can also obtain back issues via 'phone on (01202) 659930 by using your credit card.

Look Out for Next Month's Question

R861 Question 1
It's that time of year again! This time my Christmas Quiz requires written answers to three questions. I will judge the entries according to accuracy, completeness and clarity (and the final decision rests with me, no correspondence will be entered into).

The prize will be a book or book voucher courtesy of PW Publishing. Entries to arrive no later than the February 17 deadline and results will appear in the April issue. In the event of a tie, random selection will be invoked. If no-one answers all three questions, then any two will be accepted (and so on if all entrants only manage one question).

**Question 1:** You are given ONE prior to landing at an aerodrome. Why is this necessary, and what altimeter barometric setting applies? What will the altimeter read when touching down on the runway?

**Question 2:** You are given QFF when approaching a different aerodrome. What is it and why is it needed? What will the altimeter read when touching down on the runway?

**Question 3:** A v.h.f. VOLMET broadcast is actually relayed on the same nominal frequency from two transmitters. If you had a really accurate receiver, what actual frequency would each of the two relays be on when compared to the nominal frequency quoted in the Supplement?

**Flight Ops Dept.**

Unfortunately, I couldn’t do anything with the disc from Ken Robinson (Potters Bar) as I don’t have a suitable computer. Ken’s aeronautical radio experience goes back to 1950s Fleet Air Arm days, working on Ashbomb 1GHz radar fitted to the Fairey Firefly. I once had a craft of the same name - a sailing dinghy built by Fairey Marine, the construction technique owing something to the company’s aviation background. Ken asks about air traffic control. Radar controllers do alternate with breaks to prevent lapses of concentration, but would usually work for more than 15 minutes at a time. Taking over from each other requires enough time to study the screen and become familiar with the current traffic pattern.

Not all navigation is by radar heading. A controller might tell a pilot to tune in a navigation beacon and then head towards it. Although watching on radar, the controller doesn’t tell the pilot the compass heading to steer. Instead, the pilot guides the aircraft by reference to the beacon as indicated on the cockpit’s flight instruments.

Example: “Own navigation to Koksy.” This means flying towards the KOK (114.5MHz) v.o.r. beacon on the Belgian coast, half-way between Ostend and Calais. It includes a TACAN, so the aircraft’s d.m.e. will tell the pilot how far away the beacon is. The v.o.r. part of the beacon, on the other hand, gives directional information. Interestingly, close by is the Koksjide military aerodrome (in Flemish, ’ij’ is pronounced like, ’y’). In common with all radio listeners, Ken, I do hope you plug in an earpiece when out in public so as to avoid disturbing others. I’m sure that all readers understand exactly why this is necessary.

Have we a new airline? Who owns the callsign “Sovereign” and operates out of Leeds/Bradford? Please tell me for the benefit of Lee Collins (Leeds).

Carl Hender (Ipswich) is familiar with the Bulldogs of the University Air Squadron at Cambridge. With the callsign UAS, they often fly out to Wattisham and back. Carl believes Wattisham to have 125.8 as an alternative to 124.95MHz, but so far I’ve had no official notification of this.

Likewise, I can’t find the allocation of 249.6MHz, Carl. If one controller is working both the civil v.h.f. and military u.h.f. allocations for a sector (by ‘band-boxing’) then calls on one frequency will be relayed on the other. This does NOT mean that civil traffic will start overflowing onto u.h.f. once all v.h.f. channels are occupied. Hardly any civil aircraft are suitably equipped. The solution will be to interleave two extra channels, 8.33kHz apart, between each existing (25kHz) v.h.f. frequency. As this is such a strong possibility, anyone buying new equipment must ensure that the interleaved channels will be accessible. The airlines have been told this - but complained of the cost.

**You Are Insured?**

Going back to November, I pleaded with every reader who also drives to make sure that they are insured when visiting aerodromes - even for public displays. I’ve found out the following. Axa: will NOT provide cover (but I didn’t ask if the policy arranged through Saga is different as they are not yet old enough to qualify); General Accident: really strict, NO cover of any sort; Prudential: should be covered if you have permission to drive there; finally, Royal: acceptable if you drive on routes designated by the airport authority. This is a guide, you MUST check the actual conditions that apply in your own particular case.

You might share my feeling that insurance is boring, but it’s also essential. So, end of subject unless anyone has something really important to add.

**Follow-Ups and Foul-Ups**

Martin Sykala (Irchester) wrote in to the ‘Letters’ page in November (page 11). I do hope you read my column, Martin. Anyway, TEMPO means TEMPorarY or, more precisely, a short-term change in a weather forecast. The time, in hours UTC (or z, same thing) follows. So TEMPO 2300 means a change expected between 2300 tonight and 0800 the next morning, if the weather will be clear, apart from a cold front with thunderstorms passing through in the night, then this would indicate the time of the variation in weather pattern, ie. when the storms were expected to disrupt the forecast good conditions.

In October, RAF Coltishall’s rescue helicopters were mentioned but Carl finds that Rescue 125-127 have moved to Wattisham (Army).

Sorry I wasn’t precise when describing OMIMI under Frequency and Operational News - Reporting Points in November. It’s NOT on a supersonic route. However, Abeam OMIMI is on a nearby supersonic route and you’ll find it on my supersonic chart that’s part of Airband Factsheet.

**Information Sources**

And how do you get that, you ask? Send a reply-paid, self-addressed envelope to hold two A4 sheets to the Broadstone Editorial Offices (not to me!) and request Airband Factsheet. No charge. The document also lists the sources of other basic information such as En Route Supplements, both civil and RAF.

I’ve been sent Over the Pond Factsheet. No charge. The 68-page paperback contains the...
The people who work in aviation have their own language, and the abbreviations and acronyms are key to understanding what's going on. Here are some examples:

- **AFIS** (Aerodrome Flight Information Service)
- **ATC** (Air Traffic Control)
- **AIP** (Aeronautical Information Publication)
- **CAA** (Civil Aviation Authority)
- **GASIL** (General Aviation Safety Information Leaflet)
- **UTC** (Universal Co-ordinated Time)
- **UHF** (Ultra High Frequency)
- **VHF** (Very High Frequency)
- **WIDEBAND**
- **NOMAD**
- **CAN** (Controller-Aided Navigation)
- **VFC** (VHF Communication)
- **IFC** (Inter-Frame Communication)
- **VFC** (Very High Frequency Communication)
- **CID** (Communication and Information Distribution)
- **NOMAD** (Networked Operations Management and Administration)
- **VHF** (Very High Frequency)
- **UHF** (Ultra High Frequency)
- **WIDEBAND** (Wideband)
- **NOMAD** (Networked Operations Management and Administration)
- **VFC** (Very High Frequency Communication)
- **IFC** (Inter-Frame Communication)
- **VFC** (Very High Frequency Communication)
- **WIDEBAND**

These abbreviations and acronyms are used to describe various aspects of aviation, from air traffic control to radio equipment and signals. Understanding them can help you navigate the complex world of aviation communication.
Information

Now that I am starting to receive regular post from readers, I am forming a good picture of the information you want to read about. I am grateful to all those who have written in, please keep the information coming, especially through the quieter winter months. Several people have sent in very detailed logs of aircraft movements and frequencies. Space limitations mean that I cannot do the reports justice by including extensive information, so it would be a great help if you could highlight what you feel may be the most interesting items. It may be different to the information I would choose to include. Please note that I regret that I cannot answer letters personally, when possible all replies will be made through the contents of this column.

Spirit Update

Steve writes in with an update on the visit of the B-2A. In addition to 312.45 (ACC Primary), the aircraft also used the Mildenhall ACC operations backup frequency 249.75 for a ‘phone patch to Whiteman Air Force Base. This is a facility that is rarely used on h.f. operations and frequencies noted during the September exercises. Thanks again to Keith plus two other correspondents for their comprehensive logs.

The airfield at West Freugh was a prime target with airfield attacks from several units including, 1 Squadron Harriers calling Zenith Formation, 54 Squadron Jaguars from Coltishall calling Blackcat Formation plus Attack 31 Flight which were 48 Fighter Squadron F-15Es from Lakenheath. Other formation callsigns in use were: Scimitar 3-4, 111 Squadron Tornado F.3s, Scorpion 1-2 which I think is 5 Squadron Tornados, Jackal Formation which is Tornado F.3s from 111 Squadron at Lossiemouth. The old 1/3 FTS callsign Baccardi, was noted in use as Air to Air by the Tankers, (this is a new frequency according to my records). Several readers have commented that they were surprised that the B-2A used several London Control v.h.f. frequencies, rather than exclusively using London Military!

Autumn Exercises 2

As promised, a second look at some of the aircraft movements and frequencies noted during the September exercises. Thanks again to Keith plus two other correspondents for their comprehensive logs.

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Airband Propagation

High atmospheric pressure during the latter part of October brought some exceptional listening conditions on the airbands. Three readers have written to me with reports of transmissions received over distances that would not normally be possible. Richard in Swindon reports that the Paris Volmet on 125.15 could be heard clearly at his Wiltshire home on the evening of the 22 October. On the same day, Dave in Maidstone heard the Brize Norton ATIS on 254.475 and the following morning Jim in Ebford in Devon (near Exmouth), heard a USAF C-141B call AMC operations at Mildenhall on 312.45 and was amazed when the ground controller could be clearly heard replying to the aircraft. My guess is that must be all of 400km away - it's a shaming conditions are not like that all the time!

Frequency Focus

A correspondent in Northern Ireland asks for frequency information regarding Bessbrook military airways. He is relatively new to the airband and as a consequence has a limited knowledge of the frequency 245.25, has been used in the past by Hawks returning to Valley, so I presume with all the recent changes the training squadrons this callsign has passed to 4 FTS? If anyone has collated a recent list of FTS callsigns since the changes, let me know and I will include it in a future column.

In addition to the frequencies listed last month, the following were noted during the exercise period. London Military: 249.675. Scottish Military: 134.3, 134.475. NATO Low level: 300.8. Tactical: 232.725, 251.78, 282.2, 309.625, 310.55 & 383.55. Also a USAF Boom, (Air refuelling) frequency, 249.775. My only note of this frequency was in use as Chivenor operations in 1992?

TACAN Routes

A letter from Dave in Kings Lynn. He is relatively new to the airband and as a consequence has a limited knowledge of the frequency 245.25, has been used in the past by Hawks returning to Valley, so I presume with all the recent changes the training squadrons this callsign has passed to 4 FTS? If anyone has collated a recent list of FTS callsigns since the changes, let me know and I will include it in a future column.

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U nique again a major human tragedy is played out over our TV screens and for those satellite enthusiasts equipped for scanning across the Clarke Belt so the news of this is seen daily via the news feeds carried into Europe either in C-Band or at Ku-band via EBU (European) distribution leases on Eutelsat 7 East. The names are familiar - Rwanda, Zaire, Goma - their faces display the all too familiar despair. No homes, no food, no hope and where can we go? You'll probably read these lines at (a well fed) Christmas time but just pause and spare a thought for those less fortunate a few thousand miles South of us. There's no Bethlehem star this year over Central Africa...

Reception Results

Comparing reception results with perhaps a year ago clearly shows an alarming trend - there's fewer pictures about with more and more satellite users both programmes and corporate/news/satellite broadcasters going digital. The signals are still there, just look at the 'S' meter as you tune through a digital carrier - a wallowing large deflection but no signal at all on the screen, just noise!

I'm hopeful that within the year enthusiasts 'freely and flexibly' digital receivers will start appearing. In New Zealand a Scientific Atlanta D223 was modified by their regional office and is now able to receive previously locked out MPEG pictures, more recently Christian Mass has successfully resolved various news feeds and programming using a Strong (Panasonic) model 520.

It is possible to change parameters without using a PC and with practice such adjustment is simple. The low take-up on Germany's DF1 Kirch digital package has left many thousands of unwanted 'D-BOX' decoders on the shelf, a few have found their way into enthusiasts' hands and they will work as a flexible digital receiver. With new component technology for digital decoders being released almost weekly it's a wise man that will delay a purchase until the 2nd generation of DVB equipment is available - unless a 1st generation model falls off the back of a lorry!

Fortunately, there are still traditional analogue signals around...after a long delay I noticed the return of APNA TV, this time on Orion 1 Atlantic at 37°W, early November with promotional captions and then opening with programming. Technical quality at time leaves much to be desired, check out 12.87GHz vertical polarity for a very strong signal. They are identifying as 'APNA TV/ICS INTERNATIONAL'.

Wonderful to see on November 2nd a very strong and solid PM5354 test card with 'JRTV AMMANN' logo on Eutelsat II F2 @ 10°F (11.17GHz horizontal), this teatime treat wasn't repeated on later days it was merely a news feed rather than regular programming.

Whilst on the topic of Arabic sourced programming, the 'JCS' caption with following programmes now seen on Eutelsat II F3 @ 16°F 10.06GHz horizontal is from Doha City in Qatar, the source being 'Al-Jazeera Satellite'. It's carried in parallel via ArabSat 2A - JCS is may depart 16°F for a 13°F Hot Bird slot late '97.

Bob French (Warsk) is awaiting the erection of his 3m CKU-band dish at which point his 2.4m dish will be retired! Bob comments that the new ArabSat 2A bird at 26°F provides excellent signal strengths in C-Band whereas signals in Ku are very weak requiring threshold extension for strong locking. C-Band (4GHz) provides Syria, Dubai, Saudi, Yemen, Sudan, Lebanon and Kuwait amongst other European Arabic uplinkers. Exotic signals such as Ethiopian TV and TV Africa are also well received by Bob from Intelsat 703 @ 57°W, Turksat 2B meanwhile has suffered a complete 'shuffle round' of onboard programmers, the bird itself is packed full of Turkish TV channels all of which can be received strongly over much of the UK.

Several readers have reported news feeds coming out of the Zaire/Rwanda region of Central Africa following the unrest between government and rebel troops. Eutelsat II F4 @ 7°F often carry 'EBU KIGALI SNG GO00895' on colour bars, this interrupted with news reports detailing border skirmishes, refugee marches and the general ethnic confusion of a bloody and brutal civil war. The situation is constantly changing with news from both local and international intervention and is likely to continue a troublesome hot spot in the coming years.

Uplinks out of Africa are in digital C-Band which are then distributed across Europe in SIS analogue PAL. Check out 10.987GHz vertical polarity for this regular pan-European distribution feed.

As ever the 'Garden Isle' is well represented by its resident Roy Carmen. Roy too looks forward to the day of a flexible digital receiver though fears that the first UK offerings will be closely allied to the Rupert Murdoch empire. As an aside, the recent Sky offer of a full dish/decoder/remote at around £99 is remarkable and you get a lot of technology for your cash. (It is possible to locate a receiver package for £99 without being tied to a Sky subscription!) Roy is now considering modifying his existing dish for inclined orbit satellite tracking which - if fitted - needs careful calculation to take into account the high winds that often flow across the Island.

Sandown lies at the Eastern end of the Arreton Valley and as such allows an improved (clearer) SE through SW tracking arc for satellite reception. Roy can 'see' from East of Turksat 42°E to West of PAS-1 45 West and has sent a very full log of his last months sightings. Hispasat @ 30 West carries many European news and sports feeds in SECAM, PAL and 16:9 PAL PLUS. There's an increasing number of corporate/multi media corporate feeds being carried over the Atlantic during the daytime to correspond with the European working day. This usually means the originating programme source is awake early for rehearsal, I recently noticed an IBM feed via Intelsat K (21°W) ex San Francisco that was reaething at 0600hrs their time, Orion-1 Atlantic in Ku-band is another active source for weekday conferences in analogue PAL though for every feed seen in the clear there must be others lurking in the digital shash!

Again our old friend II F4 @ 7°E was seen to be carrying a 'Test from Helsinki' caption featuring a dish at 11.06GHz in SIS (sound in syncs.) during late October mornings - we never found out what they were testing. Finally if you're missing Israel's AMOS-1 Ku-band downlink from 4°W, one guess where it's gone - yes - down digital alley with a 4 channel package! Another analogue transponder still fires up from time to time. AMOS managers are negotiating with possible Arabic transponder customers, so all is not lost!

Satellite TV News

Welcome back APNA-TV on Orion-1 Atlantic at 37°W.

Another Orion-1 circuit, a VTR clock prior to the Nazim flight.

The human tragedy of Zaire - fed via Eutelsat II F4 @ 7°E using a sound in syncs. decoder to stabilise video and recover audio.

Intelsat K at 21°W with an upcoming corporate feed.

TVE Espana sends a news offering into BBC White City over 7°E.
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The response to November’s ‘Space Special’ was phenomenal; many requests for images and the GOES-8 disks were received. Suggestions for future ‘Specials’ have been passed on to the Editorial team.

Current WXSATS

How quickly the images from METEOR 3-5 and NOAA 12 and 14 lose their contrast as the sun’s illumination decreases during northern autumn. The October and November north-bound METEOR 3-5 WXSAT (on 137.85MHz) headed into the dark polar regions and switched off earlier by the week. The NOAA WXSA Ts (on 137.50 and 137.62MHz) responded to the darker landscape by switching even earlier from visible to the second infra-red channel (one infra-red channel is always transmitted).

METEOSAT-5

EUMETSAT announced that the fuel reserve onboard METEOSAT-5 is almost used up so no further adjustment manoeuvres are to be performed (to reduce the slowly increasing inclination of the spacecraft’s orbit). EUMETSAT points out that reception systems using large antennas will be the first to see an impact. For the benefit of future mission planning, they ask all users with larger than 3m diameter receive antennas to send a short note giving their antenna diameter and location. METEOSAT-5 de-contamination operations took place between 21 and 25 October. During this process, the infra-red system (which normally runs at a very low temperature to enhance its sensitivity) is allowed to warm-up; this causes an outgassing of the contaminants which have previously accumulated on the cold surfaces.

The layout of the solar panels, radiometer and communications unit within the current generation of METEOSATs is illustrated by Fig. 2. METEOSAT-6 is the stand-by satellite, positioned at 10°W. New software has been developed to compensate for the anomaly seen at times in images taken with the equipment still works well and is operated by the geography class. During the next couple of years, schools will be connected to the Internet and, in theory, be able to retrieve images whenever they are wanted. I personally see no comparison between the learning value of a direct reception facility (at a Licence, decoder and display program - when compared with image retrieval from the Internet by computer. The hardware has so much more to offer the learning process.

Letters & Pictures

Almost all correspondents to ‘Info’ (correctly) send their letters to me at the address given at the top of this column. Unfortunately, a few have sent mail via the Editorial Offices to Short Wave Magazine in Broadstone, which causes delays due to sorting and forwarding. Please use the Plymouth address at the head of this column.

A letter from Mr Fry of Kent (no other identity was supplied) captured the experience of a first-time entry into the world of satellite monitoring. Using a Scanmaster disc one, a PRO-2006 receiver and a copy of ‘Info’, he quickly logged transmissions from NOAA-12, MIR, Russian Navsats (150.000MHz), NOAA-14, METEOR 3-5 and COSMOS 2142. He also heard (as many of us did) the American John Bba on MIR.

Being keen to confirm his monitoring, he rang up NASA (in Florida) who confirmed that John was onboard MIR - see also ‘MIR frequency changes’.

His letter illustrates how one can monitor a large number of satellites with a scanning receiver and discone - see also Table 1. The addition of a wide-band pre-ampl mounted at the discone, can enhance overall sensitivity of the receiver. This improves the detection of signals, but it is not suitable for decoding the data due to the discone characteristics and the limited i.f. bandwidth of the receiver combination.

Roger Ray sent a number of WXSAT images on disk, including METEOSAT, NOAA and MIR images, from which I have selected his METEOR picture of the Canary Islands. This was imaged by METEOR 3-5 on 1 May and is one of the clearest of that region that I have seen.

Roger recently visited his daughter’s school and saw their WXSAT receiving system which monitors METEOSAT. Although some years old, Roger reports that the equipment still works well and is operated by the geography class.

Internet Site Update

Readers having either a direct Internet account at home or work are welcome to drop me an E-mail with discoveries of appropriate Internet - amongst other sources. On a smaller scale, I have obtained some display programs issued as ‘Freetware’ which occupy a few hundred kilobytes of disk space. If anyone wishes to have copies, simply send me a PC disk, return stamped envelope and 50p towards collection costs, and I will provide each program currently available. One program includes a conversion option to change BMP and TIF files to GIF or JPEG, permitting a significant reduction in file size with minimum or no reduction in image quality.

 Lawrence Harris, 5 Burnham Park Road, Peverell, Plymouth, Devon PL3 3Q8 E-mail: lawrencho@indirect.co.uk

Fig. 2. METEOSAT-6 is the stand-by satellite, positioned at 10°W.
Table 1

Satellites transmitting in the 136-138MHz band

<table>
<thead>
<tr>
<th>Catalogue</th>
<th>Sat ID</th>
<th>ID Satellite</th>
<th>Frequency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>965</td>
<td>1984-03D</td>
<td>TRANSIT 1B-5</td>
<td>136.650</td>
<td>modulated f.m. signal.</td>
</tr>
<tr>
<td>1430</td>
<td>1985-05A</td>
<td>TIROS 10</td>
<td>136.325</td>
<td>Frequency has increased slightly.</td>
</tr>
<tr>
<td>241</td>
<td>1986-07B</td>
<td>ERS 15</td>
<td>136.400</td>
<td>Some tone shift</td>
</tr>
<tr>
<td>242</td>
<td>1986-07C</td>
<td>ERS 7</td>
<td>136.800</td>
<td>typical SECOR signal - see 69-7B.</td>
</tr>
<tr>
<td>2768</td>
<td>1997-040D</td>
<td>ERS 20</td>
<td>136.250</td>
<td>ghostly woo-woo</td>
</tr>
<tr>
<td>3600</td>
<td>1999-032A</td>
<td>ISS 1</td>
<td>136.410</td>
<td>c.w. only.</td>
</tr>
<tr>
<td>3891</td>
<td>1999-037B</td>
<td>ERS 13</td>
<td>136.800</td>
<td>typical SECOR type signal.</td>
</tr>
<tr>
<td>4254</td>
<td>1999-08-B</td>
<td>TIMATION 2</td>
<td>137.290</td>
<td>multimode signal.</td>
</tr>
<tr>
<td>4237</td>
<td>1999-08-SD</td>
<td>S6-9</td>
<td>137.410</td>
<td>.</td>
</tr>
<tr>
<td>4382</td>
<td>1970-025A</td>
<td>NIMBUS 4</td>
<td>137.500</td>
<td>modulated f.m. signal.</td>
</tr>
<tr>
<td>5480</td>
<td>1971-090A</td>
<td>SHINSEI</td>
<td>136.695</td>
<td>.</td>
</tr>
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<td>5580</td>
<td>1971-093A</td>
<td>PROSPERO</td>
<td>137.560</td>
<td>.</td>
</tr>
<tr>
<td>5680</td>
<td>1971-110C</td>
<td>DOD</td>
<td>137.080</td>
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</tr>
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<td>METEOR 3-5</td>
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<td>ORBCOMM FMI</td>
<td>137.710</td>
<td>.</td>
</tr>
</tbody>
</table>

Winorb29 screen display.

Kepler elements - MIR and Shuttle

1 For a print-out of the latest WXSAT elements, MIR, and the Shuttle (close to launch or in orbit), send a stamped addressed envelope and secure 20p coin or separate, extra stamp. Transmission frequencies are given for operating satellites. This data originates from NASA. I send Kepler elements by return-of-post.

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Short Wave Magazine, January 1997

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The file also removes the transmit shift and speed set at 50 baud. With the introduction of HAMCOMM in RTTY mode with a 400Hz shift and 75 baud RTTY with a 400Hz shift. The configuration file listed in Fig. 1 starts-up HAMCOMM in RTTY mode with a centre frequency of 1356Hz, 400Hz shift and speed set at 50 baud. The file also transmits the receive buffer and keeps 150 lines of received text available for scrolling on the screen. You can either start HAMCOMM in the normal way and then load the configuration file from the File menu or you can turn it into the default config file. To do this first find the file hccfg in the HAMCOMM directory. Now rename this to old.cfg. Next rename your new file (swl.cfg) to hccfg. HAMCOMM will now automatically load this when you start it. I would strongly recommend keeping a copy of the old config file as it is well documented and is very useful if you want to have a go at creating your own specialised config file. If you've already built your own file that you think is better than mine - why not send me a copy?

**RTTY Weather Data**

One of the most popular and abundant information sources on the v.h.f. bands is weather reports. These range from a few plain language reports through to comprehensive FAX charts covering land sea and air conditions for just about the whole of the globe. Whilst the RTTY system has its obvious attractions, there is another data source that can provide very much more detailed weather information. This source has become generally known as SYNOP but in fact covers several different data types. Before I go on to cover this is some detail, why bother at all? Well, other than a general fascination with the complex function of weather forecasting, a good knowledge of weather conditions can help you with your listening. This is particularly true if you have an interest in the v.h.f. bands.

Whenever weather conditions occur that create a layer of warm air above cold air an effect called ducting occurs. This is where radio signals are refracted as they pass through the air and tend to duct over fairly long distances. This can extend v.h.f. propagation to thousands of miles as opposed to the more normal tens or hundreds. Now we have a reason for looking, let's see what's available and how it can be resolved.

The best source for detailed weather reports is the coded RTTY weather transmissions that abound on the various bands. These can be recognised by their repeated transmission of seemingly endless strings of five figure groups. To the uninitiated these could easily be thought to be spy stations or some other form of indecipherable transmission. In practice the signals can be very easily deciphered using software that's readily available on the amateur market. Before I go into the decoding, let's take a look at the source of the information. The RTTY signals that you can receive are actually part of the World Meteorological Organisation's Global Telecommunication System.

The complexity of weather forecasting has itself demanded a breakdown of international barriers and the WMO is an excellent example of international co-operation on a global scale. The RTTY transmissions I'm referring to here are actually transmitted by stations that are classified as regional Telecommunications Hubs. These stations take information from the WMO and broadcast it in a number of different formats ranging from the FAX to the RTTY system I'm describing here.

Let's now take a closer look at RTTY based weather information and see just how simple it is to resolve. The basic data format used for these transmissions is very simple indeed and is usually 50 or 75 baud RTTY with a 400Hz shift. This means the data can be received with the simplest of decoding set-ups. If you've not come across this type of data before, why not take a look right now? Set-up your decoder for 75 baud RTTY with a 400Hz shift and tune your receiver to 4.4898MHz using upper side band. You will also have to turn off the unshift-on-space facility if you have it. If you don't do this your decoder will keep turning the five digit groups into letters! If all is well, you should now see streams of five figure groups appearing on your decoder's screen.

Let's now take a look at how the seemingly meaningless numbers can be converted into detailed weather information. Like most things there's an easy way and a hard way - we'll start with the hard way!

Other than your data decoder, all you need to convert the data is a reference book and some patience. However, before we can start making some sense of the data we need to be able to break it into sections and work out where the various elements of the message start and finish. This is quite easy to do thanks to the use of a simple standard pattern, these are zzzz and zzcz. Whilst zzcz is used to indicate the very
Met. Office Weather Site.

start of the message, NNNN is used to show the end. Here’s a typical extract from a message to illustrate how these codes are used. ZCZC 987 SNXK73 BGRR 031200 AAAX 03114 80516 34522 67354 65743 43528 84635 76635 76843 67352 87652 58452 74523 72538

As you can see the ZCZC/NNNN sequence very clearly separates out the message. Using this message as an example lets now look at the data in the second line. The first two letters are used to indicate the type of data about to be sent, in this case it shows that the data is synoptic data for the main hour. The next two letters show the country of origin - UK in this case. The two numbers at the end are mainly used to separate out any bulletins that come from the same station. The next four letter group is the location indicator for the station supplying the data. Here the letters BGRR refer to Bracknell. The final five digit group of this line shows the day of the month and the time in hours and minutes, e.g. 3rd 1200hrs. These first two lines are primarily header information that sets-up the rest of the data. The third line reports the type of data report (AAAX = SYNOP); the date and hour of the actual observation plus a digit signifying the type of wind speed measurement used at that station. In this case the number 4 indicates an anemometer - with a read-out in knots. Phew!

Now that’s done we can get down to the individual weather reports. The very next line starts with the international index number of the station taking the readings, in the example I have used Blackpool Airport. By now you should have picked-up the basic idea of how to take-apart the groups of numbers and turn them into usable data. You will also be wondering where to find the reference information to decode the numbers.

There are several sources, the most readily available of which is the Klingenuiss Radio Data Code Manual that’s available from the SWM Book Store. Another high quality reference is the Adirondack List of Radio Signals (ALS). This extensive publication comprises many volumes, but those of particular interest are: Volume 3 parts 1 and 2 plus Volume 4. Although very comprehensive, the down-side is that these three books will cost you a total of around £35 before post and packing. There are a number of sources for this, but I’ve used Kelvin Hughes successfully in the past.

Now you can relax as what I’ve just described was the hard way to decode these RTTY weather reports. For an easy solution you need look no further than Hamcomm as this program has its own built-in SYNOP decoder that can be found under the TEXT menu. All you have to do is turn weather decoding on and wait for the decoded text to appear before your very eyes! Yes, it really is that simple - but first a few tips.

Hamcomm does need to see the very start of the message to decode the data accurately and weak signals can cause havoc. You really do need a good steady signal if you are to receive a consistent set of weather reports. Another book well worth considering if you have a general interest in these transmissions is FAX and RTTY Weather Reports by Philip Mitchell. The SWM Book Store carry this title, of course. If you have access to the Internet here are a couple of sites that provide some interesting background. The World Meteorological Organisation can be found at www.wmo.ch/ and the UK Met Office are at www.metoe.govt.uk/home.html

DSP Hardware

Those of you with a particular interest in the construction of DSP projects may well be interested to hear of Kane Computing based in Northwich, Cheshire. They offer a wide range of DSP products including the range of TMS320 development and evaluation boards from Texas Instruments. They have comprehensive contact points including a Web site at www.azure.com/kanecmp uting. E-mail to sales@kanecomputing.com or plain old ‘phone on (01606) 351006.

FGR-100 Receiver Control

Do you have an FGR-100 receiver and want to control it with your PC? If so, why not take a look at Thor Andersen’s program that can be found on the Demon Internet site? In its compressed form it’s called frgcont.zip and can be found in directory madosha/radio of any of the SimTel mirror sites.

The spur for mentioning the program came from a request from Thor. He is busy finishing a new version of the program and is looking for beta testers. If you’ve not come across the term before, a beta tester is just someone who agrees to test, what is thought to be the final release of the software, and provide detailed reports back to the developer. The main purpose of the Beta test is to ensure the software will work successfully on a wide range of systems. If you’d like to participate you can contact Thor via E-Mail at thora@online.no

More T2FD!!

A note from Pat O’Shea pointed out the Nordic Shortwave Centre are currently running a feature on the T2FD antenna I mentioned in the other month. Their feature has been put together by Guy Atkins and contains some very good constructional details. Look out for constructional details on this excellent antenna in a feature by John Wilson, in this issue of SWM, page 48- KN.) You can go straight to the article on the Internet at: www.sds.org/swl/antenn/2tfd.htm. If you know of any other hot sites please E-mail me and let me know.

Readers Special Offers

The bad news for this month is that I’ve had to temporarily withdraw my offer to supply Factpacks and frequency lists. Quite simply, the demand has outstripped my ability to supply and I’m incurring heavy delays with the inevitable complaints. So my apologies to all who have waited patiently, but enough is enough.

Once I’ve caught-up with the backlog, I will hopefully be able to re-introduce an improved service for some of the items. Looking on the bright side, I do still have the special offer with the Public Domain and Shareware Library (PDSL). They have put together a library set of all five disks for just £12.00, all inclusive. Using PDSL also makes ordering simpler as they accept all the usual credit cards so you can order by phone so you don’t even have to write a letter.

So in future please direct all requests for this disk set to PDSL Winscombe House, Beacon Road, Crowborough, Sussex TN6 1UL. Tel: (01892) 663299 and request library volume:H008739abcde. IBM PC Software (1.44Mb disks): Disk A - JYFAX 7.0, HAMCOMM 3.1 and WXFAX 3.0. Disk B - DSP starter plus Texas device selection software. Disk C - NuMorse 1.3 Disk D - UltraFak 4.0 Disk E - Ms Covenant 1.3 and 2.0.

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Short Wave Magazine, January 1997
W

ith the festive season upon us, or perhaps as you read this its just passed, we can expect the usual increase in pirate radio activity. The shorter daylight hours mean many stations are using broader frequencies. The 3.9MHz (76 metre) band is becoming quite crowded most weekends. Live Wire Radio using a 1kW transmitter has received reports from Massachusetts and New Jersey in the USA, possibly the first European pirate to make the trip to the States on 76 metres. Other English language stations are set to use the extended m.w. frequencies of 1611-1650kHz, which up to now has been used almost exclusively by Dutch pirates.

Tape Exchange

I frequently receive letters asking if I collect or exchange tape recordings of offshore or pirate radio stations. The answer is no, but I do appreciate that many readers of this page are collectors of this kind of material, I do publish readers names but their home address and private 'phone numbers are treated with utmost confidentiality.

A possible solution could be for persons wishing to swap tapes to place a small advertisement in SWM's 'Trading Post' under the heading Exchange. There is a small fee, which could be a very worthwhile investment should you manage to obtain the valued item you are seeking. In response to your letter, I have started to include lists of stations which had been removed from the 1960s, much of which is taken from my personal experiences.

Pirate Topics

Steve Gilbert from Birmingham asks if I can provide a list of addresses of other Free Radio information magazines. I am happy to do this as I cannot possibly cover everything and anything about pirate radio in this quarterly page. Please, when writing, do include a stamped addressed envelope, you would be surprised at the quantity of mail this page generates.

A photograph of Radio Caroline's ship, the Ross Revenge, is featured on the latest cover of Family Matters the newsletter of the Conservative Family Campaign, together with an article by Adrian Hogg. He points out the discrimination that has kept Radio Caroline and other religious broadcasters from obtaining licences to operate in Britain. I wonder if the politicians will take note.

Adrian also informs me that with the forthcoming changeover of BBC short wave transmitter sites, their services may in the future become accessible other British broadcasters, providing their contractual obligations to the BBC were met. At present, only foreign stations are relayed by the BBC on short wave.

The Irish government are reported to be taking a second look at their broadcasting legislation, loopholes in the present law has allowed pirates to continue unabated. There is also speculation on whether Ireland may build its own s.w. broadcasting facilities.

In recent months they have purchased air time on British and German facilities for the transmission of sporting events and a St. Patrick's Day special. American, Alan Weiner is in the news again. He was behind Radio New York International which broadcast from a ship called the MV Sarah from 23 July 1987 until it was raided by FCC officials five days later on the 28th July.

Another similar project involved a ship called the Fury. This had been equipped with machinery from the Sarah. The FFG claimed they had detected test broadcasts while the ship was near Charleston harbour. They used a rented barge and a crane to seize the broadcasting equipment on 19 January 1994. This latest venture features an old tug renamed Electra, a medium wave and two short wave transmitters and a seemingly unnecessary blaze of publicity.

Radio Essex

This was certainly one of the smallest of all the offshore stations of the 60s, it had a staff of about 12 and broadcast 24 hours a day. Everyone on this station did more than one job, the teamwork involved would probably have impressed the military that had been the forts original occupier. The tower had originally been an offshore gun emplacement and radar installation, but had been abandoned by the War Department during the middle 60s. Transmissions commenced from Radio Essex on 27 October 1965 on 222m, 134kHz, with a middle of the road format of the day and pop music at night.

The supplies came during favourable weather conditions aboard a small fishing boat called Keestral! All supplies and even individuals were unceremoniously hauled aboard at the end of a badly frayed rope. The original ladders had been removed by Radio Essex personnel to reduce the possibility of uninvited guests getting aboard the platform.

The forts original diesel generators had been fully restored by senior DJ/Fort Captain Richard Palmer, the diesel for which arrived in dozens of five gallon containers. These had to be hauled aboard and painstakingly poured into a former aircraft fuel tank situated on the main deck, where a plastic tube took the diesel to the generator room below.

The staff canteen and recreational area had originally been the officers mess and a store room became the stations studio. This contained two Garrard 401 turntables with Decca pick-ups, one Collaro turntable, a Vortexton tape recorder and a Radio microphone.

The mixer was built by station engineers which fed a 50W RSC audio amplifier which was linked to the transmitter in the room next door. The transmitter was probably capable of 500W, however, due to the end fed long wire antenna and the rising and falling of the tide, which had the effect of moving the ground plane, the e.r.p. was probably only 200W.

Staff worked about three weeks on and one week off, the station was run by Rod Bates and his family from their home in Southend-on-Sea. Towards the end of 1956, Radio Essex relaunched as Britain's 'Better Music Station' in effort to attract advertising from Kent as well as Essex. This was Britain's first local radio station and unbelievably, was the first British station to go 24 hours a day.

It was very popular with night shift workers and had a clear frequency after midnight when other channels stations closed down. The fort also had its own ghost or poltergeist. At one point, the entire structure was searched as the DJs were convinced an unknown person was aboard, nobody was found!

On 30 November 1966 BMS was charged with contravening Section One the Wireless Telegraphy Act of 1949, making unlicensed broadcasts. The station was found guilty and fined £100, but continued broadcasting. It finally closed at Christmas, when similar court action was being taken against the other fort based stations.

The legacy of Radio Essex still exists in a minor way, all BBC local stations identify themselves as BBC Radio whatever, except one...BBC Essex, where the word Radio is still excluded.

It seems inconceivable that pirate radio stations could openly operate from the sea forts, some for a period of almost two years, yet neither the armed forces, Home Office, the police nor H.M. Coastguard knew, even roughly, where British territorial waters commenced. The Post Office's prosecution involved measuring the territorial limit from any coastal sandbank that became visible at low tide.

Radio Lighthouse

Both pirate radio and vintage radio enthusiasts may be interested in the National Vintage Wireless and Television Museum, at the high lighthouse at Harwich in Essex. Exhibits trace the history of broadcasting from the early days of the crystal set to the present day. One floor is entirely dedicated to the history of Offshore Radio, several stations of which were supplied from Harwich docks during the 60s. The museum is not open every day during the winter, so do ring Tony on (01205) 322696 for details.

Licence Evasion

Under the British Government's new Crime Bill persons failing to pay for their TV licences will no longer face imprisonment. Previously persons not paying licence fees were fined, if the fine were unpaid a short jail sentence was ultimately the only alternative available to the court. In future, Community Service, yet a curfew involving electronic tagging will be imposed on those that fail to pay, what is in effect their subscription to the BBC.

Short Wave Pirates

<table>
<thead>
<tr>
<th>Station</th>
<th>Monitors</th>
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<tbody>
<tr>
<td>ABC Dublin</td>
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<tr>
<td>Skyplex USA</td>
<td>A, B, C</td>
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<td>Armed Forces I</td>
<td>A, B, C</td>
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<td>Benlakx</td>
<td>A, B, C</td>
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<td>Knocka International</td>
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<td>Laser Hot Hits</td>
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<td>Marka</td>
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<td>Monty</td>
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<td>New World (West)</td>
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<tr>
<td>Noiva (new station)</td>
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<td>Orion</td>
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<td>Or;set</td>
<td>A, B, C</td>
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<tr>
<td>Packman</td>
<td>A, B, C</td>
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<tr>
<td>Parmales (see OSL card)</td>
<td>A, B, C</td>
</tr>
<tr>
<td>Pandora</td>
<td>A, B, C</td>
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<tr>
<td>Perfect</td>
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<tr>
<td>Reflections Europe</td>
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<tr>
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<tr>
<td>Rose Pimler Amsterdam</td>
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<tr>
<td>Sunbeam Music</td>
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<td>Sunbatten Sounds</td>
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<td>Transatlantic</td>
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<tr>
<td>United Christian</td>
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<td>United States Music</td>
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<td>Zodiak</td>
<td>A, B, C</td>
</tr>
<tr>
<td>Zodiac</td>
<td>A, B, C</td>
</tr>
</tbody>
</table>

(A) Free Radio Monitoring, East Midlands
(B) Bob Maath, Ballykelly, Kent.
(C) Glynn Harding, Crewe, Cheshire.
(D) Andrew Cooper, North Walsham, Norfolk.
(E) John Cheverton, Follenboys, Kent.
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ACTIVE ANTENNAS – THE NEW ARA RANGE

ARA 40

<table>
<thead>
<tr>
<th>Technical performance</th>
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<tr>
<td>Frequency range</td>
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<tr>
<td>Output impedance</td>
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<tr>
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<tr>
<td>Power supply</td>
<td>DC power supply</td>
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<tr>
<td>Mast diameter</td>
<td>Dimensions</td>
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<tr>
<td>Dimensions</td>
<td>Ideal for portable radio</td>
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ARA 60

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<td>Gain</td>
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<td>Mast diameter</td>
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<td>Dimensions</td>
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ARA 2000

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ARA 60

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<tr>
<td>Mast diameter</td>
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<tr>
<td>Dimensions</td>
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</table>
Long, Medium and Short Waves

The next sunspot cycle is now underway then propagation in the higher frequency short wave bands should soon begin to improve. As we progress through 1997, the data in LM&S will reflect the improvements because it is based on reports of actual reception. They are always welcome here - please send them to me at the end of each month. Happy New Year!

Long Wave Reports

Note: I.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (E=CT)

Unless otherwise stated, all logs were compiled during October. Listeners who monitor 189kHz after dark for the weak sky waves from the Radio telewaves Italia (RAI) 10kW outlet at Calais and San Remo may be interested in the technique used by Tony Stickells in Thornton Heath. Firstly, he tunes his receiver to the RAI 840kW medium wave outlet in Rome on 846kHz, which carries the same programme (RAI R-2) as Calais and San Remo. This is then entered into the receiver memory. Next, he tunes to 189kHz and enters it into the memory. When music is being played on 846kHz he switches between the two frequencies. If the transmission from Calais is present it is easy to recognise. On October 2 he logged it as SINPO 332/2 at 0958UTC. On the 30th Fred Pallant (Storrington) logged it at 13323 at 2130.

Medium Wave Reports

During several nights in October the propagation conditions enabled the broadcasts from quite a few m.w. stations in E Canada, U.S.A and S America to reach the U.K. - see chart. Some were heard after midnight. On the 4th David Sayles (Doncaster) logged CJYQ on 930kHz as SIQ343 at 2243UTC. On the 5th, WLPZ on 1440 was SIQ343 at 2302 and QWEG on 1560 was SIQ243 at 2330. At 0734 on the 12th, VQCM on 590 rated SIQ023 and was still audible at 0800UTC.

Favourable conditions were noted after 0100 on November 3rd and 6th, also on the 4th by Robert Connolly in Kilkeel. The early hours of the 6th proved to be the best for Tony Stickells when nine stations were positively identified and another seven were heard. On the 21st he logged CJYQ at 2167, which is the earliest he has ever heard a State-side m.w. station, but the conditions deteriorated at 2230 and did not improve until 0200.

The broadcasts from CJYQ were heard at 2200 on the 17th & 18th by John Slater in Scalloway, Shetland. A search for some early DX was also made by David Edwardson in WallSEND but no positive stations were heard until the 18th, when VQCM on 590 was 24542 at 2227. He also heard around 0500 on the 10th and heard six stations but he was unable to identify them. Up in Troop, Paul Crankshaw compiled an interesting log during the first two and a half weeks of October but he found the conditions exceptionally poor from the 18th until the end of the month. Before dawn on the 12th he logged transmissions in Venezuela, notably R.2000 in Cumana on 1500 (22222 at 0605) and R.Vibracion in Carupano on 1470 (33333 at 0610); also RCN in Bogota, Colombia on 770 (22222 at 0640). On the 14th R.Nova Eldorado AM, Sao Paulo, Brazil on 700 was heard at 0630 preceding 22222.

The broadcasts from some m.w. stations in the Middle East and N.Africa also reached the UK after dark - see chart. Those from the R.TV 2000kW outlet in Ajlan, Jordan on 801 were received for the first time by George Millmore (Woccon, Iow) at 2030 on October 22 and again two days later. In the late afternoon Paul Bowery (Burnham-on-Crouch) has logged many European stations before dusk in these charts.

Up in Galashiels Ross Lockley has been hearing test transmissions from the new I.LR station in South Wales on 1116 during the daytime. He says “The on-air identification at the moment is Valleys Radio and the launch date is given as 5th November. I first heard it on 23rd October with a positive ident.” For up to two hours after dawn he has been receiving some of the south coast local radio stations including BBC Southern Counties Radio on 1368 & 1465, BBC Devon 1485 and R.Columbia on 1359.

In the reverse direction Brian Keyte (Bookham) logged BBC R.Solway on 565 during its 16-minute 'slot' from 0752-0800. He also heard BBC R.Tay on 1584 during the morning and also the late afternoon. Down in Somerset, Nicola Humphries (Wellington) has received IRL South Coast Radio via their new 0.75kW outlet at Bexhill on 949kHz. Reception was noted as 'Good' at 0853.

Short Wave Reports

It seems unlikely that international broadcasters will use the 25MHz (11m) band in 1997.

Propagation in the 21MHz (13m) band varies daily but it is being used by some broadcasters to reach listeners in children’s target areas. During favourable conditions R.Australia’s transmission to Asia via Darwin on 21.725 (Eng 0630-1100) may reach the UK. It was rated 45434 at 0840 by Tony Hall in Freshwater Bay, Iow; 44343 at 0942 by Eddie McKeown in Newry; 34443 at 1015 by Roderick Illman in Oxed.

Broadcasts in this band also reach Europe from R.Pakistan via Literature 21.705 (Eng to S.Africa, W.Africa 1000-1030) 34433 at 1010 by Sheila Hughes-McGonigal in Szczecin; West Sussex RH2O.

Before mid-day RAI via 17.780 (Tt [Home service relay to UK. It was rated 45434 at 1046 by Stan Evans in Herstmonceux; HCB Quito, Ecuador 21.455 (Eng [u.s.b. p.c.]] 32121 at 1103 by Norman Thompson in Oxted; DW via Julian 21.560 (Ger to Asia 1000-1355) 34333 at 1243 by John Eaton in Woking; RFI via Isoudun 21.820 (Fr to E. Africa 0800-1300) 55444 at 1316 in Scalloway, U.KAER, Dubai 21.605 (Eng to Eur 1030-1055) 54433 at 1046 by Stan Evans in Herstmonceux; HCB Quito, Ecuador 21.455 (Eng [u.s.b. p.c.]] 32121 at 1103 by Norman Thompson in Oxted; DW via Julian 21.560 (Ger to Asia 1000-1355) 34333 at 1243 by John Eaton in Woking; RFI via Isoudun 21.820 (Fr to E. Africa 0800-1300) 55444 at 1316 in Scalloway, U.KAER, Dubai 21.605 (Eng to Eur 1030-1055) 54433 at 1035 by Michael Griffin in Ross-on-Wye, RAI Rome 21.535 (Tt [Home service relay to Lat Amer] Sun only 1300-1700) 25542 at 1432 in WallSEND; BBC via Ascension Is 21.780 (Eng to Asia, Pacific areas 1000-1100) 22111 at 1006 in Troop; BBC via Cyprus 17.705 (Eng to Eur 0900-1200) 45434 at 1035 in Freshwater Bay, R.Pakistan, Islamabad 17.850 (Eng to Eur 1100-1120) 45444 at 1103 in Ross-on-Wye.

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

<table>
<thead>
<tr>
<th>Station</th>
<th>Frequency</th>
<th>Ears.m.p.</th>
<th>Listener</th>
</tr>
</thead>
<tbody>
<tr>
<td>Te A M, Tumby Bay</td>
<td>1011</td>
<td>1.45</td>
<td>BJ</td>
</tr>
<tr>
<td>Amber, Shepshed</td>
<td>1757</td>
<td>0.78</td>
<td>BJ</td>
</tr>
<tr>
<td>WRN, Stockport</td>
<td>1710</td>
<td>0.39</td>
<td>BJ</td>
</tr>
<tr>
<td>GWR, Spalding</td>
<td>1120</td>
<td>0.15</td>
<td>BJ</td>
</tr>
<tr>
<td>Galway Radio</td>
<td>1110</td>
<td>0.12</td>
<td>BJ</td>
</tr>
<tr>
<td>Sovereign, London</td>
<td>933</td>
<td>0.06</td>
<td>BJ</td>
</tr>
<tr>
<td>Coast Radio, Wootton</td>
<td>903</td>
<td>0.04</td>
<td>BJ</td>
</tr>
<tr>
<td>Town Hall, Hornsey</td>
<td>963</td>
<td>0.03</td>
<td>BJ</td>
</tr>
<tr>
<td>Radio WM, Belfast</td>
<td>903</td>
<td>0.02</td>
<td>BJ</td>
</tr>
<tr>
<td>Xtra-AM, Birmingham</td>
<td>600</td>
<td>0.02</td>
<td>BJ</td>
</tr>
<tr>
<td>LBC 1152</td>
<td>700</td>
<td>0.01</td>
<td>BJ</td>
</tr>
<tr>
<td>Radio 557, Guernsey</td>
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<td>BJ</td>
</tr>
<tr>
<td>548, Derby</td>
<td>900</td>
<td>0.01</td>
<td>BJ</td>
</tr>
<tr>
<td>Wyvern AM, Worcester</td>
<td>850</td>
<td>0.01</td>
<td>BJ</td>
</tr>
</tbody>
</table>

Note: Entries marked * were logged during darkness. All other entries were logged during daylight.

Broadcasts in the 7MHz (22m) band during the morning include SRI via Sottens? 13.685 (Eng, Fr, Ger, It, Sp to Eur 1000-1200) 43333 at 1000 in Stockport; RCI via Sackville? 9.805 (Eng to Eur, N America 1030-1100) 33342 at 1015 in Stalbridge; RC) via Skelton, UK 9.410 (Eng to Eur, N/C Africa 0300-2300) was rated 22222 at 1445 in Stalbridge; R.Australia has 9.765 (Eng to Eur, Mon-Fri) 32222 at 1430 in Plymouth; WVHA via Roedford 7.285 (Ger to Eur 24hrs) 43343 at 1400 in Oxted.

Later, R.Kuwait via Kabd 11.990 (Eng to Eur 2014-2100) 33333 at 2050 in Stockport; RCI via Sackville? 9.805 (Eng to Eur, N America 1030-1100) 33342 at 1015 in Stalbridge; RC) via Skelton, UK 9.410 (Eng to Eur, N/C Africa 0300-2300) was rated 22222 at 1445 in Stalbridge; R.Australia has 9.765 (Eng to Eur, Mon-Fri) 32222 at 1430 in Plymouth; WVHA via Roedford 7.285 (Ger to Eur 24hrs) 43343 at 1400 in Oxted; VOFC Taiwan via WVOF USA 9.895 (Eng to Eur 2014-2100) 33342 at 2050 in Stockport; RCI via Sackville? 9.805 (Eng to Eur, N America 1030-1100) 33333 at 1300 in Macclesfield.

Noted after mid-day were UAER, Dubai 13.675 (Eng to Eur 1330-1350), rated 22222 at 1305 in Stockport; WVHA via Roedford 7.285 (Ger to Eur 24hrs) 43343 at 1300 in Macclesfield.

Setter reception from some stations includes the 11MHz (25m) band. During the daytime SRI via 12.075 (Eng, Fr, Ger, Port to Australasia 0830-1100) 22422 at 0902 in Newry; FBCB Bocaiuva, Philippines 11.85 (Eng to Asia 0950-1100) 22422 at 0905 in Malay; NCW via Sveaborg, Sweden via Hobroy? 11.66 (Eng to America 1230-1300) 33333 at 1230 in Truro; R.CI via Sackville 11.855 (Eng to USA, Caribbean 1300-1400) 43333 at 1300 by Gerald Guest in Dudley;
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Sony IC-SW7600, good condition with reel antenna, manual and Sony short wave book. £150. Tel: (01284) 750255 daytime or (01284) 767309 after 6pm.


Timewave digital audio filter d.s.p. 594-boxed as new, purchased 10/4/96, £200. Tel: Apr (01292) 827211.

Exchange

Pentium 75 CD ROM, Windows 95 sound card, graphics board, Okipage 4W laser jet printer, 14in colour monitor, mouse, keyboard and speakers, HD and floppy disk drive, power supply for speakers, only three months old, will exchange for good quality 30MHz receiver. Terry, Wiltshire. Tel: (01249) 657335.

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Signal RS50 scanner, mint condition, Clive, Bedford. Tel: (01224) 218368.

Someone willing to build part of satellite receiver circuit, PCB supplied and most components, willing to pay. Mark, 16 Lambert Street, Hull, Humberside.

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