

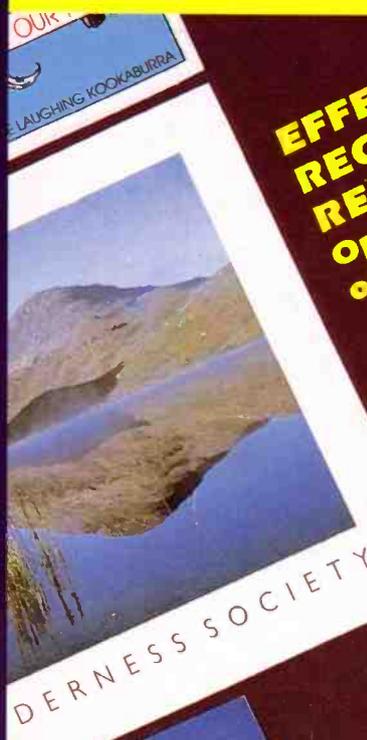
SHORT WAVE
MAGAZINE

shortwave magazine

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FREE INSIDE

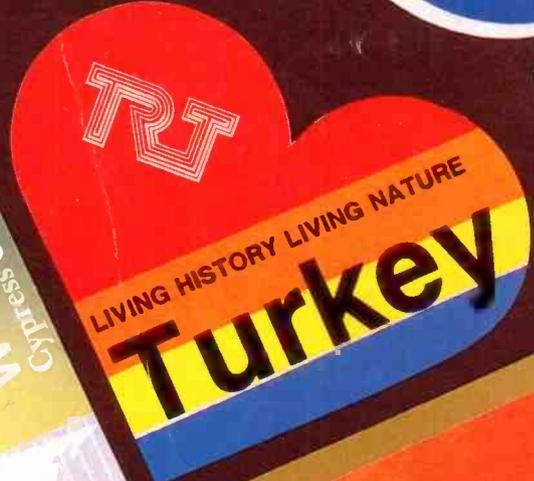
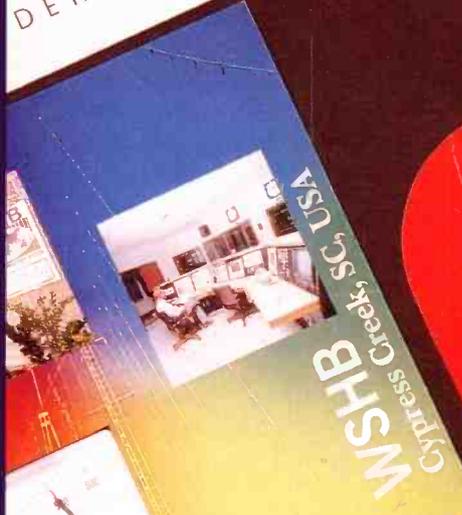
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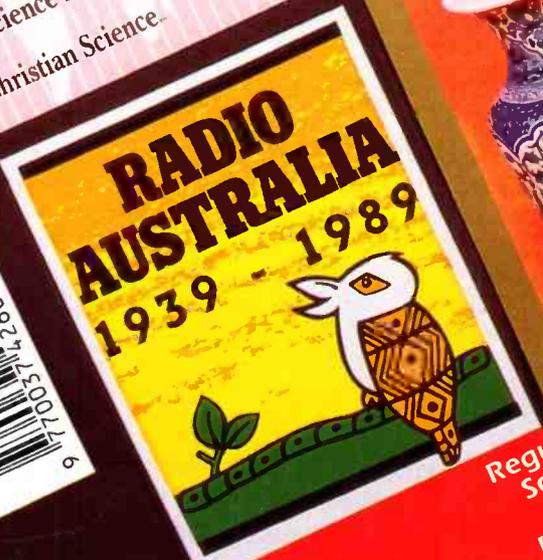
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Cover: If you would like to collect broadcast station QSL cards and stickers, like the impressive set on the front cover, then pay heed to the hints and tips from Tony King in his article on page 16.



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...GOOD LISTENING

editorial

SWM SERVICES

Subscriptions

Subscriptions are available at £21 per annum to UK addresses £23 in Europe and £25 overseas. Subscription copies are despatched by Accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both Short Wave Magazine and Practical Wireless are available at £34 (UK) £37 (Europe) and £39 (rest of world).

Components for SWM Projects

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

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

Back Numbers and Binders

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

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

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

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

Novice Licences

Last month, the first Novice Licences were presented to seven young people at a ceremony in London. Talking to some of the younger ones, I was particularly impressed with their attitudes. I strongly believe that to ensure a healthy hobby in the future, you need to attract youngsters at a very early age - this is why I introduced the Junior Listener page in SWM - so I was pleased to see that the group included Novices as young as 12 year old Simon Khan 2E1AAB and Vicky Foster 2E1AAD. Better still, some even younger ones, like Simon's nine year old brother Daniel, are in the pipeline. Hugh McNeill, the 13 year old from Preston will treasure his call sign - 2E0AAA - the first Class A Novice call sign issued in the UK. I would think that they were queuing up to work him! Proudly wearing her Guide uniform, full of badges, was another 12 year old, Natasha Weir 2E1AAE from Oxford. Here was a young lady full of confidence, who appeared the following day on Blue Peter, apparently

radiating the same confidence. She told me that she became interested in radio a couple of years ago during Thinking Day On The Air. From my own experiences with Brown Owl's Brownies during this annual event, I can well believe her. How long before we see some Brownies with a Novice callsign?

Help!

Once again the Editorial team of this magazine - all two of us - are snowed under with

correspondence. Running a successful monthly magazine requires a lot of hard work - work which only seems to multiply the more successful the magazine becomes. Now, as a result of half of the team expecting an addition to her family shortly, we are even more stretched. The magazine still needs your letters, but, please, be patient if you do not get a quick reply. Please also bear in mind that we cannot advise you on the choice of equipment, particularly over the telephone.



letters

In the May SWM we published a letter from H G Stacey asking for advice in setting up his s.w.l. station. Here are a selection of the replies we had sent for publication.

Dear Sir

I am also a newcomer to s.w.ling, more so than Mr Stacey. I am a broadcast band listener for most of the time, but I do enjoy some of the interesting things that I hear on the amateur bands. My own receiver is a little Realistic DX-440 portable receiver and I use a 30m random wire antenna. Considering the fact that I live in a basement I think I do remarkably well. I would like a better receiver but until I can talk my landlord into allowing me to erect a decent antenna there seems little point in paying for something that will not be able to work to its full potential.

The point that made me put pen to paper was that on 22 April '91 at 1040UTC on 7.073MHz s.s.b. I heard a very interesting net comprising of ex/current Royal Signals. They were very friendly and did not exclude other operators from joining in. There was also a RN operator.

As a beginner I am having difficulty in collecting and logging what I hear - everyone runs through their call so quickly. However I hope this is correct and that if Mr Stacey contacts these amateurs he will be give the information he requires and have a chance to correspond with his old Army unit. G4ZAW - Barry, G0EXS - Barrie, G4RDM - Peter, G3DVL - John If I had £500 to spare for a new radio, I would go back to Nevada in Portsmouth and ask them to help me spend the money wisely. They are very, very helpful.

C Broughton
Southsea

Dear Sir

I was more than a little bemused to read the letter of Mr H G Stacey of Bromley, Kent in the May issue, as it was only yesterday I reached the goal, which he seeks.

I spent ten years in the Merchant Navy and the same again with the Post Office as a Radio Officer, working with receivers which would literally suck a signal through the 'eye of a needle'.

After a break of eleven years, working in a totally unrelated position, 'withdrawal symptoms' set in, together with the urge to get the 'earmuffs' on again.

Well, the mags are full of new equipment, for sale columns brimming over with alpha/numeric abbreviations which would confuse GCHQ themselves and what's more it's not something found on every High Street corner!

So I went to a couple of Rallies, which is OK is you're buying off the shelf and the Bank Manager is a

letters

We have received a good response to the letter from Mr Jefferson in the August *SWM* regarding hearing a MAYDAY call. Here are two of the replies.

Dear Sir

There is indeed a procedure to follow should a MAYDAY message be heard.

1: Write down the message in full, in particular the position of the station in distress, the name or other identification of the station in distress, the nature of the distress i.e. fire, sinking, etc.

2: Pass all of this information to the coastguard by dialling 999 and asking for the coastguard.

3: Follow any instructions which the coastguard may give you.

I hope that this information will be of use to others who may not be aware of the importance of receiving such a message.

Remember, you may be the only one to have heard it and you could save a life.

P. Antonelos GOIHS

Liverpool

(£5 prize donated to RNLI)

Dear Sir

If the full message is heard, and no evidence then comes from the calling station that they hear an acknowledgement - which you may not hear yourself - then HM Coastguard is the proper authority to contact.

Living in a coastal area, Mr Jefferson will know the local control centre can be reached on 999.

If it is anywhere distant (anywhere in the world), the National Rescue Co-ordination Centre at Falmouth may be telephoned (on 0326 318102). Incidentally, radio amateurs are given no guidance on the handling of emergency traffic.

Phil Jenkinson G6NSN

Shrewsbury

Dear Sir

I wrote to your magazine for help for a frequency display for my FRG-7, which had got broken. I would like to thank your staff and every reader who has helped, even some have sent parts, with no charge. I did not realise how generous the s.w.l. really is. I do appreciate all the help, many thanks to all concerned.

J. Fletcher

Nr Rotherham

Dear Sir

The picture you showed in the July issue of the *MV Laissez Faire* brought back a lot of memories.

When I moved over from Radio 390

to take over Radio England and Britain Radio for the Americans the first message that I got was that the mast was down. Fortunately, one of the shareholders was that marvellous Texan from Wichita Falls, Tom Danaher. There was nothing to do with flying or electronics and radio that he couldn't cope with. A great innovator and technically we should not have survived without his help. I must say I found it a very pleasant experience working with cheerful and enthusiastic Americans for a change.

Ted Allbeury

Lamberhurst

Dear Sir

The article on Les Smith in the February 1991 issue of your magazine brought to mind the years Les and I collaborated in developing a home cine.

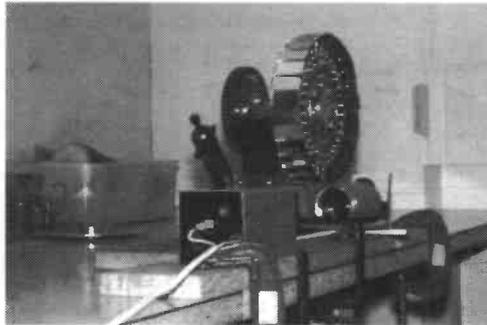
I emigrated to Rhodesia in 1968 and Les carried on alone and developed a 16 and 9.5mm sound projector and amplifier.

He entered the 16mm sound projector in a model engineering competition and was obliged to prove to the officials that it was actually home-made. Les was then invited to submit an article for the *Model Engineering Magazine* on the projector.

Les Smith was a great guy with a keen enquiring mind. His letters to me always included news of what he was working on at the time of writing, and I enclose two of his photographs.

Stan Wood

Zimbabwe



friend of the family. Spoke to Radio Hams - Short Wave Listeners?, how boring!

Before you all start wondering where the punch line is, I ended up with two publications which in my opinion are well worth reading. The first is *Passport to World Band Radio*. This book gives not only a good insight into what's available, but broadcast schedules around the world. The second is the *The Buyers Guide to Amateur Radio* written by Angus MacKenzie from the RSGB.

This one really administered the 'coup de grace'. Old and new, technical reports, opinions, it's all there. What's more, it's at your local library. So it boils down to whether its general broadcasting, with a touch of s.s.b. to break the

monotony, in which case the Lowe HF-125 or 225 are well up to the mark, or utility listening. I settled for a second-hand Icom R71E and spent all night up with it. It's all there!

J A Gray, Blackpool

Dear Sir

I myself am a newcomer to the fascinating world of short wave listening and faced the same dilemma earlier this year of wondering how much to spend on a receiver in relation to its performance and facilities offered. I read what reviews I could lay my hands on and finally decided upon either the Sargean ATS-803A or the Philips D2935. Both were reported to offer high performance for their price and were both highly

recommended in the 1990 issue of *Passport to World Band Radio*. I could not find any shop selling the Sargean model, so I ended up buying the Philips D2935 at just under £100 and find it really excellent value for its price. It meets all of Mr Stacey's listed requirements, gives good audio quality and can be used direct from the mains, without the need of an adaptor. I also use a 25m length of wire as an antenna to boost weak signals and this works very well. Unfortunately, I believe that Philips have now discontinued this model but it is still available in some of the shops on Tottenham Court Road in London.

Derek Mellor
Cheltenham

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

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

Letters must be original and not have been submitted to other magazines. The views expressed in letters published in this magazine are not necessarily those of Short Wave Magazine.

grassroots

RAE Courses

Mansfield: West Nottinghamshire College, Derby Road, Mansfield. Monday evenings 7 to 9pm. Course tutor is Alan Lake G4DVV. For more information contact the college or (0602) 382509.

Stockport: Reddish Vale Evening Centre, Reddish Vale Road, Stockport. The RAE course is available as 25 Monday night sessions leading up to the May 1992 exam, with the option of sitting the exam in December 1991 for those needing to re-sit a component or for students with a good knowledge of electrical theory. The lessons run from 7-9pm. A Morse course of 25 lessons for all levels of ability up to about 17 w.p.m. is also available. Several tutors will be available to assist. The lessons will run on Thursday evenings from 7-9pm. Tel: 061-477 3544.

Doncaster: Doncaster College will again be running the City & Guilds course leading to the RAE from September. The classes will be on a Tuesday evening from 1800-2000. Anyone interested should contact Mike Parkin G6OSD at the School of Electrical & Electronic Engineering, Tel: (0302) 322122 ext 287 or 282. There will also be a basic practical electronics course on a Wednesday evening 1800-2000, the tutor being Trevor Jones, who can be contacted on the same extension.

Swinton: The RAE class will be held at Wardley Adult Education Centre, Swinton and will commence about the middle of September. Further details may be obtained from William Stevenson. Tel: (0836) 668287.

Fife: The Glenrothes & DARC is planning to run a RAE course. It will be from 7 to 9pm on Monday evenings, beginning late September. A second course in Morse code will be run during the same period on Tuesday evenings from 7 to 9pm. Both courses will be held at Balwearie High School in Kirkcaldy. Ken Horne GM3YBQ. Tel: (0592) 265789 evenings.

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. Oct 15 - My Favourite Key. Paul Truitt G4WQO. 071-938 2561.

Barnsley & DARC: Mondays, 7.15pm. Darton Hotel, Station Road, Darton, Barnsley. Oct 7 - Shack Night. Ernie G4LUE. (0226) 716339.

Bedford & District ARC: Tuesdays, 7.30pm. Allen's Club, Hurst Grove, Bedford. Oct 8 - Social, 15th - AGM, 22nd & 29th - Social. Gienn G0GB1. (0234) 266443.

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. Oct 15 - Valves by G6ODE. Geoffrey Milne. 081-462 2689.

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

Cheshunt & DARC: Wednesdays 8pm. Church Room, Church Lane, Wormley, Nr Cheshunt. Sept 25 - Natter Night, Oct 2 - Filters by G8MVH from AKD, 9th & 23rd - Natter Night, 16th - Darts Match. Roger Frisby. (0992) 464795.

Conwy Valley RC: 1st Thursdays, 7.15pm. The Studio, Penrhos Road, Colwyn Bay, Cwyd. Oct 3 - Talk by Richard Wilmot of Technical Software. Merfyn Jones GW4NLL. 72b Princes Drive, Colwyn Bay, Cwyd. (0492) 530725.

Coventry ARS: Fridays, 8pm. Baden Powell House, 121 St Nicholas St, Radford, Coventry. Sept 27 - Night on the Air. Neil Coventry 523629.

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. Oct 2 - Junk Sale. Richard Buckby. Ambergate 852475.

Dorking & District RS: 2nd & 4th Tuesdays, 7.45pm. Friends Meeting House, South Street, Dorking. Oct 8 - Informal at Falkland Arms, 22nd - Satellites. John Greenwell G3AEZ. (0306) 77236.

Edgware & DRS: Watling Community Centre, 145 Orange Hill Road, Burnt Oak. Oct 10 - His Masters Voice with Sean Davies. Hank Kay G0FAB. 081-205 1023.

Fareham & DARC: Wednesdays, 7.30pm. Porchester Community Centre, Westlands Grove, Porchester, Fareham, Hants. Sept 25 - Junk Sale, Oct 9 - The GDO by G3XPH, 23rd - The World Above 1GHz by G8V0I. Rod Smith G0ERS. (0705) 373572.

Hastings E&RC: 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. Fridays, 8.30pm. Ashdown Farm Community, Downey Close, Hastings. Oct 16 - Junk Sale. Reg Kemp. 7 Forewood Rise, Crowhurst.

Horndean & DARC: 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. Oct 3 - AGM. S.W. Swain. (0705) 472846).

Keighley ARS: Thursdays, 8pm. The Cricket Club, Ingrow, Nr Keighley. Sept 26 - Quiz vs Northern Heights, Oct 3, 10 & 24 - Natter Night, 17th - Night on the Air. Kathy Bradford. (0274) 496222.

Mansfield ARS: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. Oct 3 - A Talk by John Allen G3DOT. Mary G0NZA. (0623) 755288.

Midland ARS: 3rd Tuesdays, 7.30pm. Headquarters Unit 22, 60 Regent Place, Birmingham B1 3NJ. Oct 15 - AGM. John Crane G0LAI. 021-742 8712 (evenings).

Mid-Warwickshire ARS: 2nd & 4th Tuesdays, 8pm. St John Ambulance HQ, 61 Emscote Road, Warwick. Oct 8 - Technical Topics, 22nd - DX from the Arctic with G0KPH. Mike Newell. Kenilworth 513073.

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumping, The Livestock Market, Harford, Norfolk. Sept 25 - Informal Evening, Oct 2 - Oscillators by G3WRJ, 9th - Castle Mall Archeological Excavation by Brian Ayres, 16th - Hear it Like it Was by G4UUB, 23rd - Informal. Jack Simpson G3NJQ. (0603) 747992.

North Bristol ARC: 3rd Fridays. S.H.E. 7, Braemar Crescent, Northville, Bristol. Sept 27 - Amateur Radio in the Antarctic, Oct 4 - Electronic Warfare by Peter Chadwick, 25th - Bring & Buy. J. Chris G0L0J. (0454) 616267.

North Ferrisby United ARS: Sundays, 8pm. North Ferrisby United Football Club Social Room, Church Road, North Ferrisby. Sept 27 - Characteristics by G3NJP, Oct 4 - Topic of the Day by G4KHT, 11th - RSGB Video with G3YCC, 18th - Night on the Air, 25th - Basic Test Gear by G3TEU. FW Lee G3YCC. (0482) 650410.

Preston ARS: Alternate Thursdays. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood. Oct 3 - The Golden Road to Samarkand by Mr Yearsley, 17th - A Pageant of Lancaster Priory by Ms Tomlinson. Eric Eastwood G1WCQ. (0772) 686708.

Salisbury R&ES: Tuesdays. Grosvenor House, Churchfield Road, Salisbury. Oct 1 - World Travels & Exotic DX by G3WZ, 22nd - Test Equipment. Bert Newman G2FHX. QTHR.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitchurch. Sept 25 - Visit to Poland with Amateur Radio by G1HFJ, Oct 2 - Computer & Audio Bring & Buy Evening, 9th - ATV Activity Evening, 16th - Home-brew 1st Evening for Terry Dunsford Trophy, 23rd - Beginners Guide to Weather Satellites by G8VPG. Len Baker. Whitchurch 832222.

Southdown ARS. 1st Mondays, 7.30pm. Chasely Home for Disabled Ex-Servicemen, Southcliff, Bolsover Road, Eastbourne. Wednesdays & Fridays, 7.30pm. Hailsham Leisure Centre, Vicarage Road, Hailsham.

Southgate ARC: 2nd & 4th Thursdays. Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. Sept 26 - Arrangements for the Mayor's Charity Walk, Oct 10 - Special Junk Auction, 24th - Vintage Radio Evening. Brian Shelton G0MEE. 081-360 2453.

Stirling ARS: Thursdays, 7.30pm. Near Throsk by Stirling. Brian Mulleady G0MKWL, QTHR or (0324) 36235.

Club Secretaries:

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

Stourbridge & DARS: 1st & 3rd Mondays. Robin Wood's Community Centre, Scotts Road, Stourbridge. Oct 7 - On Air & Discussion Evening, 21st - American Adventure by G3CAQ. Dennis Body G0HTJ. QTHR.

Stratford upon Avon & DARS: 7.30pm. The Home Guard Club, Main Road, Tiddington, Stratford-upon-Avon. Oct 14 - Demo of Jandek kits, 28th - Oscilloscopes for beginners by G3MXH.

Three Counties RC: Alternate Wednesdays, 7.30pm. The Railway Hotel, Liphook, Hants. Sept 25 - Royal Corps of Signals TA, Oct 9 - Communications on the Battlefield, Ptarmigan, 23rd - The Development of British Windmills by Stanley Knight. Dave G4VKC.

Todmorden & DARS: 1st & 3rd Mondays, 8pm. The Queen Hotel, Todmorden. Oct 7 - Junk Sale, 21st - International Evening. Mrs E Tyler. (0422) 882038.

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. Oct 18 - Solomon Islands DXpedition. Walt G3HTX. (0803) 526762.

Trowbridge & DARC: 8pm. TA Club, Trowbridge. Oct 2 - Cellular Radio Networks by G0BBL, 16th - Open Social Evenings. Ian Carter G0GRI. (0380) 830383 evenings.

West Kent ARS: 3rd Fridays, 8pm. The School Annex, Albion Road, Tunbridge Wells, Kent. Oct 4 - Informal Meeting, 18th - Fox Hunt. John Taylor G3OHV. (0892) 664960.

West of Scotland ARS: Fridays, 8pm. Scout Shop, 21 Elmbank Street, Glasgow. Sept 27 - Microprocessors and their uses by G0MHYY, Oct 4 - Rescue Video, 11th - Homebrew h.f. Transceiver with G0MKAZ, 15th - Visit to Rescue Co-ordination Centre RAF Pitreavie, 25th - CW NFD 1982 with G0M3EDZ. Jack Hood G0M4COX. (0698) 350926.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. Sept 27 - Surplus Equipment Sale, Oct 11 - Radio in Modern Aircraft by G0IPD, 25th - AGM. Chris Frost. 081-397 0427.

Wirral ARS: 1st & 3rd Wednesdays, 7.45pm. Ivy Farm, Arrows Park Road, Birkenhead, Wirral. Oct 2 - AGM, 16th - Open Forum & Problems Night.

Yeovil ARC: Thursdays, 7.30pm. The British Red Cross Society, 72 Grove Avenue, Yeovil. David Bailey G0NMM. QTHR.

York ARS: Fridays, 7.30pm. York City Social Club, Bootham Crescent, York. Oct 11 - Annual Dinner. R. Cass G3WVO. 4 Heworth Village, York.

junior listener



Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

Time

One of the letters from this month's postbag asks - "What is UTC and why do we use this instead of GMT?" This is actually a very good question as I'm sure many people don't know the answer. Let's start with an explanation of the terms. UTC stands for Co-ordinated Universal Time and is the current internationally agreed standard for time. GMT, as you're probably aware, stands for Greenwich Mean Time.

If we take a step back into history, we find that time was measured by observing the earth's movement in relation to the sun. The ultimate state of this form of solar time measurement was based around the Greenwich Observatory. By referring the measurement to one

location, Greenwich became the world standard for solar time. However, one of the problems with basing time on the earth's movement is that the earth is gradually slowing down. The rotation is also effected by many other influences such as tides. With the ever increasing demands of the scientific community, it became necessary to find a more stable reference.

The answer to the stability problem came with the development of the atomic clock. This is based on the resonant frequency of the caesium-133 atom and is currently the most accurate reference known to man. To ensure uniform time standards across the scientific world, a new standard called International Atomic Time was introduced. This was generated

by combining the output of a number of caesium clocks at the International Time Bureau in Paris. The advent of the atomic time meant that some agreement had to be reached on the relationship between atomic time used by scientists and solar time used in everyday life.

The result was the introduction of UTC in 1972. This provides the vital link between solar and atomic time. The unit used for UTC is the atomic second. This is kept within an exact number of seconds of atomic time and within 0.9 seconds of solar time. Because of the irregular rotation of the earth, a correction to UTC is made either in June or December by the addition of a leap second. I hope this answers the question, but if you have any more, please drop me a line.

Help-Line

One common question from listeners concerns a.t.u.s and whether or not they are needed. Well, the main object of an a.t.u. is to provide matching between the antenna and the receiver. By giving this matching, you ensure that all the signal captured by the antenna is passed to the receiver. So you can see that, at least from a theoretical point of view, the a.t.u. is very important. In practice, the benefits of an a.t.u. are rather difficult to quantify. Many listeners report little noticeable difference when switching the a.t.u. in circuit. One reason for this is that the antenna may already be a good match to the receiver, so there is little the a.t.u. can do to make it better. The situation is actually complicated by a wide range of variables that make it very difficult to predict whether an a.t.u. will be useful or not. The best advice I can give is to try before you buy. If you know someone in the local radio club, see if you can borrow one for a few days. I think it may be a

good idea to give this subject in-depth coverage in a later column.

Another common question concerns the selection of an antenna for v.h.f. reception. Here, the choice is primarily determined by the frequency range that you want to cover. If, like many, you want to cover a band that is more than about 15MHz wide, the most popular choice is a discone. There are a number of excellent examples on the market that give extremely wide coverage and are ideal for use with scanning receivers. If you are interested in a narrow band, such as the 144MHz amateur band, then you would be better off with an antenna designed specifically for that band. This could range from a simple vertical antenna through to a multi-element dipole. Again this is a subject that I will cover in more detail later on. If you've designed and built your own v.h.f. antenna why not write with the details.

Making Connections - BNC

Regulars will remember that a few months ago, I featured simple instructions on how to connect up a couple of the more popular plugs. By popular demand, I covering the BNC plug this month. This is an excellent plug for high quality r.f. connections and is usable right up to u.h.f.

Before starting the termination you need to check that you have the right plug for

the cable you intend to use. Checking this is just a matter of ensuring that the cable is a reasonably close fit in the clamp nut. The majority of BNC plugs are designed for use with 6.3mm diameter cables. However, you can get versions that accept smaller cables. Once you're sure you have the right type, you can start assembly by stripping off 8mm of the outer insulation. The next stage is to slide the clamp nut and rubber pressure sleeve on to the cable. The outer braid of

the cable can now be combed out ready for the ferrule to be pushed on between the inner insulator and outer screen. This is often a tight fit, but it's important to make sure it's pushed right in. One way to ease this operation is to gently warm the cable first.

Next you need to strip 5mm from the inner insulator and lightly tin the end of the conductor. You can now fit the rear insulator and male contact. Probably the most difficult part of the whole operation is

soldering the male contact to the inner conductor. This requires a steady hand and a small tipped soldering iron. It's important to use the minimum amount of heat and solder to avoid damaging the cable and plug insulation. Final assembly is simply a case of fitting the cable assembly along with the front insulator into the body and tightening the clamp nut. Although the BNC plug is one of the more difficult to connect, the end result is a very good electrical and mechanical connection that'll last a long time.



First Novice Licences Presented

The first seven Novice Licences were presented by the DTI Corporate Affairs Minister John Redwood, at a special ceremony held in London last month. Among those receiving their licences was 12 year old Girl Guide, Natasha Weir from Oxford who becomes 2E1AAD and 13 year old Hugh McNeill from Preston who has the honour of being the first Class A Novice with the callsign 2E0AAA.

If you would like details on how to obtain a novice licence and what's involved, write to: **Radio Society Of Great Britain, Lamda House, Cranborne Road, Potters Bar, Herts EN6 3JE.** Or you can telephone on **(0707) 59015.**

The Salisbury Award

To claim this award, 10 points are required. The club station G3FKF is worth three points and club members are worth two points each. Any other amateur within the area of Ordnance Survey Map 184 (Salisbury and the Plain) are worth one point.

All contacts after 1 August 1983 are valid and must be fixed stations within the area, simplex contacts only.

Any band and any mode is allowable within the licence regulations. The applicant may be portable or mobile whilst making contact with the fixed stations mentioned previously.

Log extracts and a £1 fee (or 5 IRCs) should be sent to: G2FIX, QTHR or G4POF. Extracts should show the date, band, mode and time. QSLs are not required.

Television DX News

News has been received detailing the collapse, during 'renovation' of the 650m (2120foot) high radio/TV tower at Lodz, some 115km (72 miles) West of Warsaw, Poland, causing £17million damage, the tower was made of 85 metal segments and weighed 420 tonnes. Lodz is listed as operating in Ch.R7.

The Polish Ministry of Communications is now deregulating the various broadcasting bands for both radio and TV. The v.h.f. 88-108MHz band is to be used for future broadcasting and eventually the 67-73MHz band will be closed. Both commercial radio/TV will be allowed and the existing Chs.R1-5 allocations will be opened up for commercial TV networks.

The OIRT, the organising body of Eastern European broadcasters is to be dissolved during 1993 and absorbed into the EBU thus creating a single European organisation. Czechoslovakia is also moving towards freedom in broadcasting with several commercial interests seeking licences for private TV stations. Prague may eventually have 6 TV channels and the 3rd network 'OK3' may well be sold off to private commercial interests.

The new Italian PAY-TV channel 'Telepiu' has now opened with 3 channels on air over terrestrial channels, TELE+1 provides a scrambled movie and entertainment service; TELE+2 is biased towards a general sports service and TELE+3 is transmitting a daily movie repeated 5 times during that day-the channel will eventually carry cultural and educational programming.

The Swedish Parliament has approved the establishment of a 3rd, purely commercial, TV terrestrial network channel.

The Danish 'Kanal 2' (TV2) network, based in Copenhagen has been given the 'nod' by the government to organise a 3rd channel following the successful development of 'Kanal Danmark' in the capital. TV2 have experienced financial problems during recent months and are hoping for debt relief from the government to prop up the service, if none is forthcoming then TV2 could collapse. Financial problems surround the French Antenne 2 and FR3 networks and talk is of merging production and administrative facilities into a single organisation whilst maintaining the 2 channels in a 'revamped' form, A2 giving a general entertainment format with FR3 offering purely news, regional content and minority programming.

Roger Bunney

Peelable Soldering Mask

Ungar's new SM 1573-12 peelable ammonia-free Spot Mask is made from 100% latex rubber, which offers total protection. It will not run, withstands both soldering and cleaning environments and can also be used in conjunction with a conformal coating mask.

It peels off completely after use and can be used to hold down components, mask holes, cover ground planes and any other surfaces.

A 10ml coating dries in two to three hours at ambient temperature, or in one hour at 82°C. It has a shelf life of one year and comes in two sizes: an 8oz dispenser or a one gallon jar. Prices for Spot Mask are 8oz bottle - £3.98, 1 gallon jar - £47.17.



**Ungar,
Eldon Industries (UK) Ltd.,
Clifton Road,
Shefford, Beds SG17 5AB.
Tel: (0462) 814914.**

Power Supplies



The MkIV p.s.u. has two d.c. sockets at the rear, one for using with scanners and the other may be used with accessories such as the JIM pre-amps, etc. It also has a bracket with a BNC socket fitted to the rear of the support.

The BH-A3 Universal Base stand is for scanning receivers and hand-held transceivers both amateur or p.m.r.

The CH-AR is a universal holder for car use which keeps your scanner/transceiver in a safe position when driving.

Solid State Electronics (UK), 6 The Orchard, Bassett Green Village, Southampton SO2 3NA. Tel: (0703) 769598.

Prize Winners

January: Issac Limbada, Mauritius; Eileen Mainwaring, Llandeilo; Rev Turner, Malver; F.J. Barns, Spain; Mrs Anwara, Bangladesh; R.P. Neave, Manningtree; A. Campbell, Renfrewshire; Janet Waller, Inverness; C. Gaveau, New Caedonia.

February: G.N.S. Daly, Melbourne; E. Timonen, Finland; S.A. Mamuda Furtua, Nigeria; Kevin Roche, Alton.

March: David Sutherland, West Lothian; D. Mills, Stockport; G.N. Da Silva, Portugal; D. Parker, St Helens; D. Cole, Farnham; Nick Plumidakis, Greece.

April: William Playle, Billericay; J.W. Gernert, Spalding; H.R.J. Dowson, Nelson; Tony Espin, Louth.

Information Wanted

David Norris is looking for information on Harold S. Bride, former wireless operator aboard RMS *Titanic* for an article he is writing.

Since locating the record of his death, and the

subsequent death of his wife Lucy, David has been able to find little regarding surviving family members. It is his understanding that Bride's daughter, Lucy, married a William Desmond Wilson. The

marriage took place near Glasgow, but the couple may have moved to Northern Ireland.

David O. Norris, 4463 Sunnymead Avenue, Burton, MI 48519, USA.

rallies

***September 28/29:** The RSGB HF Convention will be held at the Penguin Hotel, Daventry, Northants. Featuring two lecture streams in parallel sessions throughout Sunday, which should offer something interesting for everyone. There will be the usual bookstalls, club stands, c.v. pile up competition, raffle and refreshments. Reduced rate for overnight accommodation. For more details, contact **Bob Whelan G3PJT, 36 Green End, Comberton, Cambridge CB3 7DY. Tel: (0223) 263137.**

September 29: The Harlow & District ARS will be holding their 33rd Amateur Radio and Electronics Rally at the Harlow Sportscentre. The Main Hall will provide a large and varied selection of traders, both old and new to the event. The studio upstairs will also have some traders along with the Bring & Buy, there will also be the usual special interest groups. Adjacent to the centre there's parking for 1000 cars. On-site reserved disabled parking is available, with full facilities inside for the disabled. Catering and licensed lounge bar. Talk-in on S22 and SU22 by G6UT. Entry is £1, with children under 14 and OAPs half price. **Liz G0MDL. Tel: (0277) 364742 evenings and weekends only.**

***October 6:** Great Lumley Amateur Radio & Electronics Society will be holding their rally in the Community Centre, Great Lumley, nr. Chester-le-Street, Co. Durham. Doors open 11am, 10.30am for the disabled. Trade stands, Bring & Buy (£200 value limit), refreshments available. Talk-in on S22 by G6GLR. Admission 50p, children under 14 (accompanied by an adult) free. **Barry Overton G1JDP. Tel: 091-388 5936.**

October 6: Blackwood Amateur radio rally will be held at Oakdale Community College, Blackwood, Gwent NP2 0DT. **Brian Matthews GW0JWF, 25 Manor Park, Newbridge, Gwent NP1 4RS. Tel: (0495) 243858.**

October 13: The Armagh & Dungannon District ARC will be held in Gosford House Hotel, Markethill, Co. Armagh. Doors open at 12pm. Usual trade stands plus other events. For further information please contact **Mr T. Hall G10MSJ, 1 Hamiltonsbawn Road, Armagh City BT60 1DL. Tel: (0861) 523454.**

October 13: South Devon RC have their seventh annual Ham radio & computer exhibition and rally at Hill Head Camp, Hill Head, Brixham, Devon. Doors open 10am. Trade stands, AR supplies, kits, computer sales, raffle, refreshments, unlimited free parking and overnight camping. Car boot sale, bigger and better this year. Outside attractions. Talk-in on S22 + SU22 by G7FDC and G4SSB. Special event station GB4CPU. Details from **G6ZRM. Tel: (0803) 522216 or (0836) 577220.**

***October 25 & 26:** The Leicester Amateur Radio Show will again be held at the Granby Halls, Leicester.

***November 2/3:** The 5th North Wales Radio & Electronics Show will be held at the Aberconwy Conference Centre, Llandudno. The rally opens at 10am with the entrance fee at £1, OAPs 50p and children under 14 free of charge. **Siggy Fergusson GW0DYH. Tel: (0492) 532459 (day). Tony Wilkinson GW4PVU. Tel: (0492) 49121 (evenings).**

November 10: Barnsley & District ARC will be holding their first Radio Rally at Willowgarth Senior High School, Brierley Road, Grimethorpe, Barnsley, South Yorkshire. Details and trade enquiries from **Ernie G4LUE, 8 Hild Avenue, Cudworth, Barnsley, South Yorkshire S72 8RN. Tel: (0226) 716339 (6-8pm).**

***November 17:** Bridgend rally. Further details from **Charles Sedgbeer, 50 Minffrwd Road, Pencoed, Mid Glamorgan, South Wales CF35 6SD.**

November 24: The West Manchester Radio Club's 'Winter Rally'. All details as August Rally. Admission £1. **Dave G1100 on (0204) 24104 evenings only.**

***December 15:** The Centre of England Amateur Radio Rally will be held at the British Motorcycle Museum, Bickenhill, near the NEC Birmingham (junction 6 M42). Doors open 10.30am, admission £1, OAPs 50p, children free. Over 60 trade stands in three large exhibition halls, Bring & Buy, talk-in on S22, bar and restaurant available, ample free parking, concessionary rates to visit museum. **Frank Martin G4UMF. Tel: (0952) 598173.**

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

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

The NRD-535 General Coverage Receiver

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

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

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

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

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

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

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



Available for demonstration at Matlock and the regional centres.
NRD-535 HF Receiver £1,115 inc VAT
CMF-78 ECSS option £202 inc VAT
CMH-530 RTTY option £104 inc VAT

HF-225 General Coverage Receiver

Whatever you want to hear, the HF-225 will give you a gateway to the world. Technically, the HF-225 distinguishes itself by having a low phase noise synthesiser which gives a performance not far off that of "professional" receivers. The receiver tunes in 8Hz steps and gives a smooth "VFO" feel when tuning.

The HF-225 has a range of low-cost options; plug-in remote keypad for direct frequency entry, active whip aerial, rechargeable battery pack and an attractive carrying case. The D-225 detector option gives true synchronous AM detection for dragging programme quality out of a signal affected by selective fading distortion. It also gives narrow band FM.

The HF-225 offers 30 memory channels. Using them has been made particularly versatile because the operator can review the

memory contents whilst listening on another frequency.

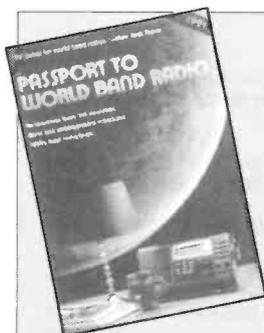
The HF-225 comes complete with filters fitted for every mode - 2.2kHz, 4kHz, 7kHz and 10kHz. There is also a 200Hz audio filter for CW and if the D-225 detector is fitted, a 12kHz filter for FM.

Following its launch, the HF-225 was voted "Receiver of the Year" by World TV and Handbook.

Send for details or, better still, pop in to one of our regional centres and tune around for a while.



HF-225 30kHz-30MHz £429.00 inc VAT
K-225 Keypad Controller £40.36 inc VAT
D-225 Synchronous AM/FM Detector £40.36 inc VAT



THE LISTENERS' BOOK OF THE YEAR

Never has a title been so well chosen as the 'Passport to World Band Radio'. It seems to contain everything you need to know about listening to the amazingly diverse world of radio broadcasting. Let's just run through what it contains:-

There are almost two hundred pages listing all the short wave broadcasters; not simply in order of frequency but also by language, country of origin AND the times of the broadcasts. That information on its own makes the book worthwhile, but in addition you have detailed reviews and comment from an acknowledged and respected authority covering no less than forty radio receivers, ranging from the sublime to the cor-blimey. To add to all this, you get over a hundred pages of general news, views and information.

The 'Passport' is an absolutely indispensable companion to the short wave listener and priced very reasonably for the information it carries. Get one soon before they are out of print.

Price: £12.95 inc VAT (plus £1.55 post & packing)

LOWE ELECTRONICS LIMITED

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

When it comes to SONY Look to Lowe



ICF-SW1E

ICF-SW7600

ICF-2001D

AIR-7

ICF-SW1E

Amazing is the only word to describe this ultra-compact radio. Measuring less than 5" x 3" x 1", yet packed with features and performance of a full-size portable, it covers long wave, medium wave and ALL of the short wave spectrum from 150kHz to 30MHz. It even covers FM stereo using the supplied earphones. You get keypad frequency entry, manual tuning and scan tuning for easy operation; whilst clear LCD digital readout (5kHz on SW) ensures accurate tuning. To keep your favourite stations, ten memories are provided and other features include dial lamp, Local/DX attenuator, keyboard lock, tone control and record output jack. To complete this total package there is even a built-in digital clock and alarm. A host of accessories including aerial, carrying case, manuals and others.

List price: £172 **Lowe price: £149**

ICF-SW7600

This new SONY portable is a microprocessor controlled general coverage receiver with many advanced features packed into its 7.5" x 4.75" x 1.25" case. Direct access tuning from a clear keypad, manual tuning with UP/DOWN keys, 150kHz to 30MHz coverage plus FM broadcast (FM in stereo through supplied earphones), AM/FM/SSB modes, ten memory channels, auto scanning, tilt stand, keypad lock, 24 hour digital clock with timer and full facilities for tape recording.

The SW7600 is a go-anywhere, do-anything portable for the keen listener and come with a full range of accessories.

List price: £172 **Lowe price: £149**

ICF-2001D

Top of the SONY range and a firm favourite. I use one myself at home. The 2001D is a full-feature portable receiver giving you coverage from 150kHz to 30MHz with USB/LSB/AM modes, 116Mhz to 136MHz for the airband enthusiast and full coverage of the VHF FM broadcast band. Dual PLL frequency synthesis ensures accuracy and stability and the readout on short wave is to 100Hz. Features include keypad frequency access on all bands plus manual tuning control, built-in ferrite bar for LW & MW plus whip for SW and VHF, 12/24 hour clock and timer, wide/narrow IF filters, SONY synchronous AM detector with selectable sidebands, 32 channel memory with direct keypad access and memory scanning. Every possible feature is provided. The 2001D comes complete with many useful accessories.

List price: £345 **Lowe price: £279**

AIR-7

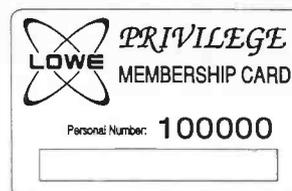
An unusual airband portable and truly showing the SONY individual approach to design. The AIR-7 is easy to use and the audio quality is excellent; not only on airband but on broadcasts as well since it covers the 108-136MHz airband, the FM broadcast band, the VHF high band from 144-174MHz and, believe it or not, the LW/MW and low SW bands from 150-2194kHz. Ten memory channels, memory scan, keypad lock and priority channel. A truly comprehensive package. Complete with accessories.

List price: £287 **Lowe price: £229**

Try before you buy at one of our local centres and see for yourself the features we have been unable to cover fully here.

FREE

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



FOR DETAILS, TELEPHONE 0629 580800

Barry (S Wales): 0446 721304 *Bournemouth: 0202 577760 Bristol: 0272 771770 Cambridge: 0223 311230
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*Closed all day Monday

DXing in Ecuador

Part 3

Last month we left the intrepid DXers soaking in the hot springs at Papallacta. Dick Ganderton continues the story of this exciting trip with some details of the antennas and transmitters used by HCJB to broadcast to the world from high up in the Andes.

HCJB's ten studios are located in the main compound in Quito. These studios can be used for either live broadcasts or recording programme material for transmission at a later date. During our stay in Quito, we took part in one live transmission, beamed to North America, the recording of Ken Macharg's weekly programme *Saludos Amigos* and a series of taped discussions by John Beck for inclusion in future editions of his regular programme *Ham Radio Today*.

Programmes are relayed to the transmitters at Pifo by an interesting route. There is no line-of-sight path between the

HCJB compound in Quito and the transmitters and antennas at Pifo, so a microwave link would seem to be out of the question. However, HCJB's engineers are an ingenious bunch and so the microwave signals carrying the ten separate studio to transmitter signals are bounced off of a passive reflector situated 5km away and 1000m above Quito on top of Pichincha, a volcano that is still threatening to erupt. A microwave dish mounted on the Pifo transmitter building, 24km away in the next valley, receives the signals, which are then fed to the appropriate transmitters. The antennas

used for the v.h.f. f.m. and medium wave local broadcasts are also located on top of Pichincha.

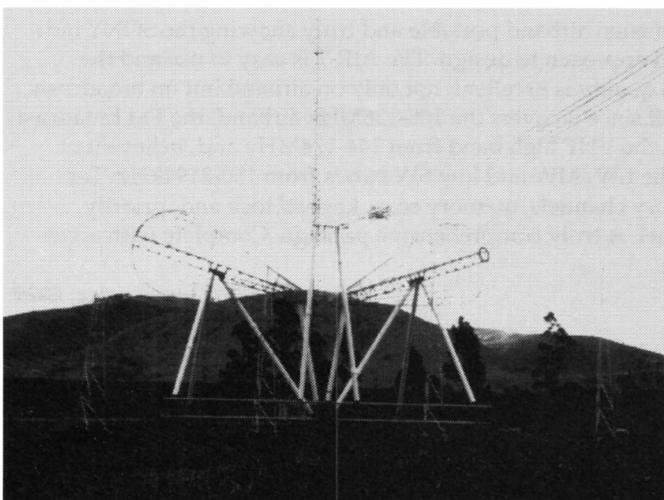
The switching of programme material to the appropriate transmitter is done in Quito by computer. The computer software handling the timing, source, target area and appropriate transmitter.

Impressive

Pifo is certainly impressive! I found the sheer amount of metal hung up in the sky mind-blowing. According to the notes I have, there are 32 short wave antennas at Pifo, ranging from simple verticals, through quads - invented here, to the huge curtain arrays. The impression of the large site is one of lace curtains draped across huge windows and miles of open-wire feeders criss-crossing the ground to reach each antenna. Pifo also houses HCJB's unique steerable h.f. antenna. Looking

for all the world like a pair of giant egg-whisks mounted on a railway truck, this impressive array is moved around on its track by a heavy rope powered by motors controlled remotely from the transmitter building. A part hemispherical, part parabolic, wire curtain is suspended above and behind the egg-whisks to act as a reflector. We had a demonstration of the antenna being steered as it was not transmitting when we were there. The huge curtain arrays were specially designed by HCJB's engineers to give exactly the right radiation pattern, both horizontally and vertically to maximise the coverage. Each curtain has a separate antenna either side of it connected to different transmitters and firing at opposite parts of the world.

The transmitter building houses 12 short wave transmitters ranging in output power from 10 to 500kW. The oldest is 30 years old while the newest is only 4 months.



The steerable h.f. antenna at the Pifo antenna farm.

Outside the transmitter building at Pifo. The microwave dish for the studio to transmitter link is on the top of the roof.



Feature



Members of HCJB's English Service astride the equator. L to R. Val Steele, Andrew Steele (HCJB UK), John Beck and Rich MacVicar.

HCJB now designs and builds its own transmitters and we were shown one of their 500kW models. Apart from their 'own brand', they also have transmitters made by Harris, RCA and Siemens. The new s.s.b. service, transmitted world wide continuously on two frequencies is carried by two of the three Siemens s.s.b. transmitters donated by the Swiss government.

Computer Control

The antennas are connected to the right transmitter via a complex computer controlled antenna switching system in the roof of the transmitter building. The higher powered transmitters are switched with HCJB designed and built airblast switches all interlocked to prevent accidental wrong connections while the transmitter is powered up.

As mentioned last month, power to run the transmitters is provided by HCJB's private 6MW hydro-electric plant

30km away over the Continental Divide at Papallacta. The power is transmitted to Pifo along a 3-phase 46kV line, and any surplus power is sold off to Quito. Pifo also has the ability to run from the public supply if needed and they also have standby diesel generators for emergency use. A fully equipped workshop enables the engineers to make new pieces of equipment or to repair defective gear.

Down to the Jungle

Shell is the centre of HCJB's activities in the south eastern corner of Ecuador. Alberto took our bus along the dirt road from Baños to Shell for a three-day excursion during which we stayed at HCJB's guest house in Shell. We were given a tour of the MAS (Missionary Air Services) hanger on the airfield at Shell. MAS fly the missionaries, doctors and nurses into the



The party takes a photocall by Umberto's bus. L to R. Dennis Boshier, Rich and Lisa MacVicar, Geoffrey Rees, John Downing, Reg and Wendy Carlisle, Peg and Dick Ganderton, Ken Roberts, Mike Beardsley (HCJB UK). In front are Mike Burden and Chris Mould.

remote villages in the Amazon jungle. Single-engined, light aircraft are mainly used and some of the modifications made by MAS were very interesting. The emergency brake was particularly intriguing - pull the lever in the cabin and a metal strut drops down from the tail-wheel, pointing forwards. When this digs in the aircraft comes to a rapid halt - very reassuring when landing on the very short strips alongside the river! Other mods included a second fuel system in case of fuel problems and a cargo pod under the fuselage. After a tour of the new hospital at Shell we spent the evening talking to some of the nurses

and missionaries who operate out of Shell, looking after the Indians who live in the tropical rain forests of Amazonia.

Success

Our two weeks spent as guests of John Beck and his team at HCJB were very rewarding. The Andes were as breathtaking as I had imagined and the people charming. In fourteen days we packed in an amazing amount, only part of which I have recalled in these articles. The rest of the party were great company and all helped the trip to be such a great success. ■

RADIO LINE

THE UP-TO-DATE NEWS & INFORMATION SERVICE FOR THE LISTENING ENTHUSIAST

0898 654676
UPDATED EVERY SATURDAY

For the listening enthusiast **Radio Line** - prepared by the staff of **Short Wave Magazine** - provides up-to-date information on all aspects of the listening hobby. By calling **0898-654676** you'll hear the latest news on scanning, broadcast bands, airband topics, propagation, rallies, utility listening, satellites, TV DXing, it's all there.

What's the latest on the bands? Call Radio Line to find out. Up-dated every Saturday - it's the number for every listening enthusiast to tune into!

If you have information for Radio Line, call Dick Ganderton or Elaine Richards on **0202-678558**. (answering machine after working hours).

Calls charged at 36p per minute off-peak, 48p per minute at all other times.

Information prepared by the staff of PW Publishing, Enefco House, The Quay, Poole, Dorset BH15 1PP.

Hello New Technology, Goodbye Short Wave?

In the coming decades, new technology could put an end to much international broadcasting on the high frequency bands, but it might also expose those programmes to broad new audiences, says Bill Black.

Will DXers have anything at all to listen to on the short wave frequencies ten or twenty years from now? Or will international broadcasters abandon the h.f. bands in favour of more reliable, better-sounding digital communications sent direct to listeners via satellites, or perhaps programmes sent on tape to local broadcasters?

Those questions were among the ones raised at a conference of international broadcasters, held in mid-September last year in Washington, DC. The meeting was organised by the VoA and C-SPAN, a news service delivered on US cable TV systems. But while the broadcasting authorities at the conference seemed to agree on many of the questions, the answers to them were much less unanimous. "Is there a

future for short wave radio broadcasting?" asked Kim Elliott, VoA's Audience Research Officer. "I'm rather pessimistic. I'd bet it will be well on its way to extinction within ten years."

Others were less willing to write off h.f. transmission so quickly. "Short wave is a long way from its demise," affirmed George Jacobs, an engineer, author and consultant to a number of organisations that have established s.w. broadcasting facilities in recent years. "The future of short wave is bright. Don't count it out."

New Relay Methods

Whatever the pace of change in international broadcasting, the means of delivering international programming has already undergone

dramatic shifts, several conference speakers pointed out.

For the VoA, one of these changes is relying more on local stations - usually on medium wave and f.m. - to pick up and re-broadcast programmes delivered to them. In Latin America, for instance, many United States Information Service (USIS) posts have receiving dishes set up to pull VoA broadcasts off of relay satellites. Each week, tapes of those transmissions are passed on to more than 800 local broadcasters.

The VoA uses a similar distribution system elsewhere around the world, such as in Africa and Asia. In Nigeria alone, two dozen stations receive VoA tapes. Through its Bangkok, Thailand post, the USIS distributes VoA

programmes to some 50 local radio broadcasters.

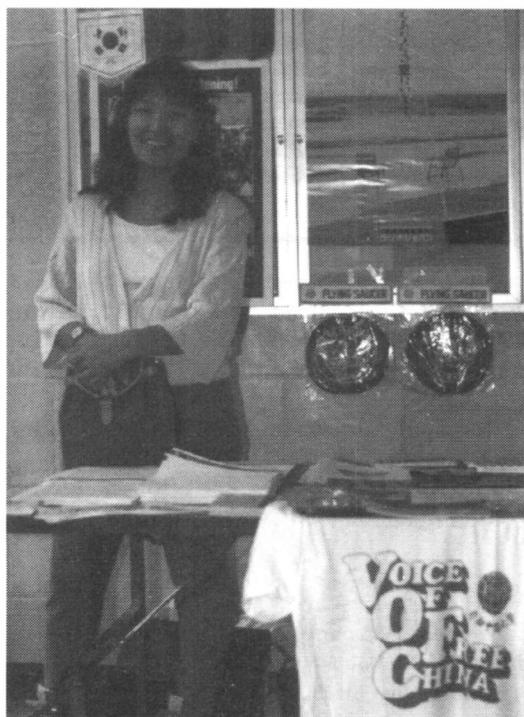
The VoA and its sister video service, Worldnet, have additional delivery mechanisms. In Western Europe, VoA Europe's separate English-language radio programming is carried on a number of f.m. stations and cable systems. Worldnet programming is picked up at more than 200 locations around the world, such as US embassies and cultural centres, for redistribution to local outlets.

Direct Satellite Radio Broadcasts

An even more radical shift in international broadcasting is likely when satellites are used to send radio signals directly to listeners. And while existing local broadcasters are fighting that innovation in the United Nations, the change-over could come much more rapidly elsewhere, more than one conference speaker affirmed.

Several direct broadcast satellites could be in place over Africa and the Middle East during this decade, according to Noah Samara. He is involved with a commercial enterprise called AfriSpace. That company is planning to put the first of its geostationary satellites into orbit by 1993.

As now envisioned, each of the AfriSpace satellites would carry six or more radio transmitters using frequencies in L band, around 1400 to 1500MHz. Broadcasting time on the satellites would be sold or rented to governmental broadcasters such as the VoA and BBC, as well as private, non-governmental companies.



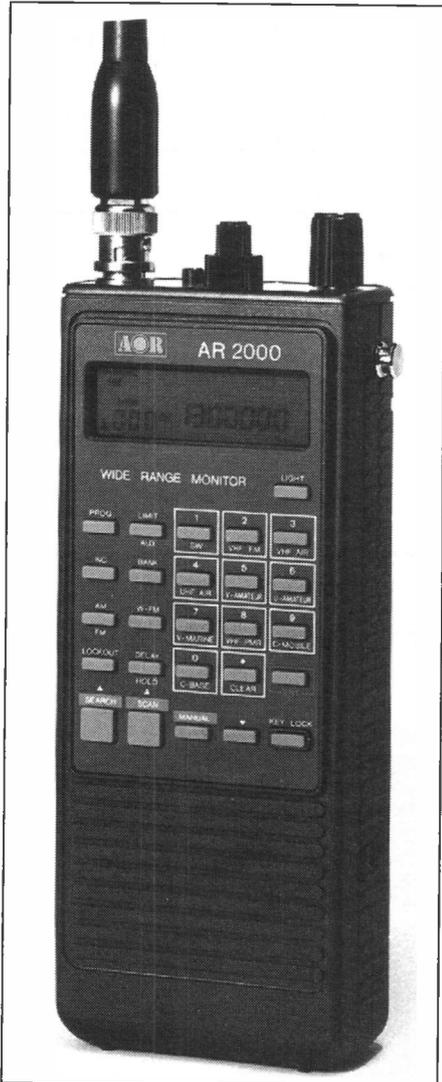
Joanna Fu, Voice of Free China reporter, looks after Radio Free China's stand at the International Broadcasters' Conference, held at the George Washington University.

Listen to AOR

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

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

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



AR2000 ultimate portable monitor receiver...

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

Search banks:

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

UK Specific:

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

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

Frequency coverage:

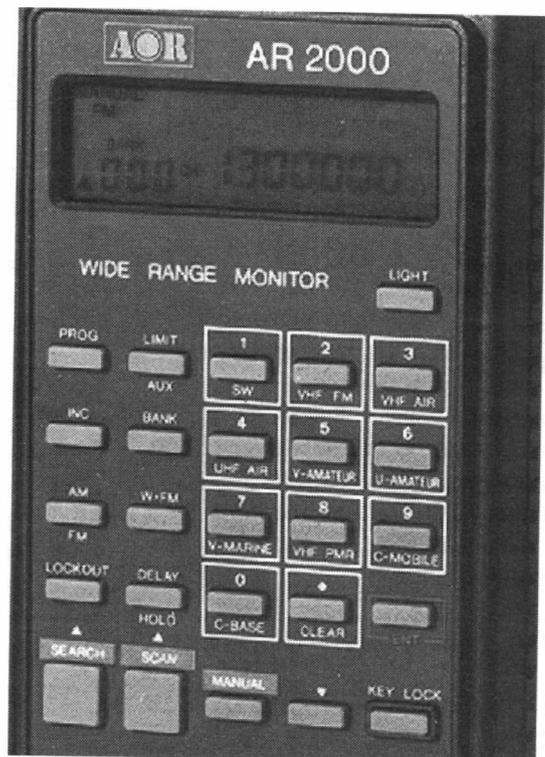
The receiver has an exceptionally wide frequency coverage from 500 kHz to 1300 MHz (1.3 GHz) with no gaps. The modes available are AM, FM (narrow) and FM (wide). Any available mode may be selected at any frequency within

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

Accessories supplied:

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

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



*Also available: AR2800, AR2500, etc.
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Mobile Aerial D505

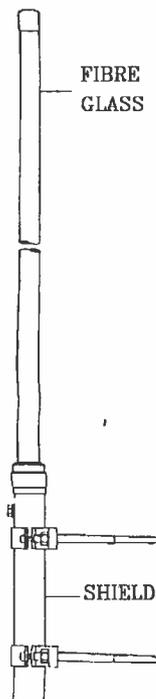
This aerial covers everything from long-wave to VHF. It is no larger than a conventional mobile aerial measuring just 29.5" long, fits any standard mobile mount and comes complete with cigar lighter lead and matching box with RF gain control.

Base Station Aerial D707

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

PL259

D707
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Digital Transmissions

The direct satellite radio broadcasts are likely to apply a digital transmission mode, similar to the technology used now for audio compact discs. The DBS signals would have the same high sound quality that CDs do.

That enhanced DBS audio might not please everyone, however. "It will disappoint the DXers," quipped Ian McFarland, then with Radio Canada International. "There'll be no more fading, no more co-channel interference. You'll be able to understand every word."

If major international broadcasters do shift their programming to satellites, it could cut down on much of the s.w. band clutter. Rather than using a host of short wave frequencies to ensure reception in a particular geographic area, broadcasters could get by with just one DBS channel and perhaps a few s.w. frequencies for listeners who hadn't yet made the switch over to the new technology.

Digital DBS could also kill one h.f. broadcasting innovation that has been long discussed, according to McFarland. "It," he said, "will make the switch to single side band redundant."

Manufacturer Interest

A transition to satellite broadcasting is even more likely given the strong interest major manufacturers have shown in producing DBS receivers. "There is no reluctance on their part," commented Neil Helm, president of Helm Communications. "They've already built bread-board models. They're ready to gear up the production lines."

Among the companies interested in producing DBS



Ian McFarland and other conference attendees listen to a panel discussion.



VoA Director Richard Carlson welcomes the conference attendees.

sets are Sony, Samsung and some European firms, Helm said.

AfriSpace will help promote the sale and distribution of DBS receivers in Africa. The company expects there will be at least 100 000 of them in place by the time its first satellite is in orbit.

That goal is achievable in spite of Africans' low average income levels, Samara believes. He pointed to the large number of television sets and v.c.r.s already in use there. The new DBS receivers would sell at a price comparable to a TV or video recorder, Samara said.

Narrow, Wide Audiences

And international broadcasters are likely to be satisfied even if they reach only a tiny fraction of an area's population with DBS transmissions. That is because the listeners would include many persons from the economic and political 'elite' that international broadcasters most want to

ones from satellites. That could be happening with programmes of Canada's national network, the CBC, in as little as five years, McFarland predicted.

So will static be the only thing left for short wave band DXers to hear in the year 2000? "It won't happen that fast," commented McFarland. "While the bigger stations will go digital, a lot of smaller ones won't be able to afford it. For a good number of years, it will be a combination (of short wave and satellites)."

While McFarland and other international broadcasters may have a sentimental attachment to short wave, they are likely to utilise the new technology if it furthers the goal of reaching as many listeners as possible.

"Radio," he said, "is getting to be an anachronistic term to describe what we (broadcasters) are doing. It's broader than that. It's international broadcasting in its widest definition.

"I don't care how the message gets there, as long as it gets there in a way that the listener can assimilate and enjoy listening to."

influence.

In the US and other more affluent areas of the world, DBS transmissions might attract a whole new group of listeners who have never heard a programme on short wave. "Digital," noted McFarland, "will put international broadcasting on the same part of the dial as other stations."

Digital sets could pick up broadcasts from local, terrestrial stations as well as

Abbreviations

BBC	British Broadcasting Corporation
CBC	Canadian Broadcasting Corporation
CD	Compact Disc
DBS	Direct Broadcast Satellite
DXer	listener who looks for long distance stations
h.f.	high frequencies
MHz	megahertz
s.w.	short wave
TV	television
VoA	Voice of America

GREETINGS from New Zealand



Successful Reception Reporting

Short wave broadcasters want to hear from as many listeners as possible, as it enables them to monitor and develop their programming. Tony King, Listener Services Manager for Radio New Zealand, lets us into the secrets of successful reception reporting.

Many thousands of reception reports are created and sent daily by radio enthusiasts to radio stations all over the world. Unless the listener is an appointed monitor for the station, his report is unsolicited and therefore to have a fair chance of being read and QSLed it should be efficiently presented and appeal to the reader.

Typical DX mail seeks a response with a QSL card which is "confirmation that the DX listener actually heard the station" and in order for the report to be verified it must contain verifiable material and data that can be checked against the station's master log or schedule.

It is accepted that a listener may not be familiar with the languages of the stations they monitor, nor perhaps can they enjoy clear reception of many stations, but it is important that verifiable material is included in a report.

This material includes actual announcements or station slogans, tuning signals, programme and presenters names with accurate timings alongside these items. In essence, the station needs factual information that it can check, and will have some doubt with phraseology like 'You played music and had News.' 'DXers' who log off programme guides and out of the *World Radio TV Handbook* are not unknown.

While most international stations have appointed monitors who file weekly reception summaries, stations rely on the home listener, who after all are the majority audience, for 'grassroots' feedback on how their signal is being heard in the domestic setting, often on a receiver with a limited antenna.

The technical aspects of a report are important although station engineers recognise that interpretations by

individual DXers vary widely. The SIO or SINPO code is acceptable, but a more detailed analysis of the signal is preferred that covers interference on the frequency, clarity of signal, and comparisons with other stations broadcasting from the same area.

As the radio medium is person-to-person it is natural that most DXers have their own style of reporting and stations value this. They also

are aware that the task of QSLing thousands of reports is an on-going and time consuming one, often performed simply as a PR gesture by staff already heavily committed to their main station responsibilities.

The Ingredients

A DX report seeking a QSL card should contain the following detail:

Date and time of reception in UTC, although medium wave station reports should be in the day/date of the actual station in their time.

Frequency in kHz (if in doubt about the frequency due to poor dial calibration, say so).

SIO or SINPO rating (include the appropriate table in your report).

Interference on the frequency/signal clarity.

Comparison of stations from the same area.

Verifiable programme detail. There is no minimum/maximum but it is reasonable to expect at least 15 minutes of detail - it shows you were 'exposed' to the station's programmes and **listen** rather than just chase QSL cards.

Detail your receiver and antenna. This enables the station to assess how well the signal is being received in relation to your signal report, as they usually know the performance characteristics of modern receivers.

Make It Worth Reading

DXers can make the task of QSLing more pleasant for the station and possibly speed the turn-round of a QSL by considering the following embellishments to their report.

1) Print your name and address clearly at the top or bottom of the form. (There is some psychological appeal for the lower left corner of the report as it requires the reader to scan the entire page).

2) Enter the UTC date/time of reception and station frequency in kHz, well clear of programme detail.

3) Enter your programme detail in tabular form with times in a left hand column.



The RNZI team at Rangataiki, l-r, Tony King, Holger Ehling, Rhys Richards, Alma Maua, Myra Oh, Greg Tatere, Linden Clark, Moira Tuilaepa and Ian Johnstone.

4) Enclose an address label for the reply. This helps responses immensely. For example, the station may not be able to decipher your handwriting, or your address may be eight lines long or unusual. The label should be self-adhesive, and these are available from commercial stationers in sheets. Write, type, or rubber stamp your details.

A station will probably acknowledge most reports if the essentials are correct, and often if frequencies are inaccurate will still verify if the programme detail checks out.

Report promptly. Stations are only interested in the 'present'. How is the ionosphere behaving with our signal at the moment? How is the frequency performing now? Stale reports for the sake of a QSL card, after six months, are of no value to a station. It's appreciated that follow-ups are an accepted practice with smaller broadcasters, and to get them to reply needs that extra care and attention to detail. Check how good your original report was before you resend it. Perhaps you could re-log the station?

Make It Appear

Most of us like to get letters, except perhaps the manilla window variety, and if you



Broadcasting House Wellington is adjacent to the "Beehive" - the offices of the Prime Minister and New Zealand Government Ministers.

want to create a good feeling with your reader, **enthuse** them with your opening remarks at the start of your report, or in a covering letter you may be using. **Greet** them from your country, city or exotic DX location. Express your **excitement/delight/amazement** in hearing their station. Tell them what you know or don't know about their programmes. They'll read on after that opening! Don't be afraid to write on the reverse of your report form or letter.

As a tailpiece add that personal touch about yourself and your occupation; how you

enjoy or benefit from short wave listening. Write about your city or locality and highlight anything of world-wide significance about your area or country. Stations learn something about their listeners from this. Two or three lines is plenty. Remember, radio listening is a one-to-one affair, so how you are affected by a broadcast is of interest to the station.

Thank them for taking the time to read your report, and ask for a QSL. It is not a good idea to provide a shopping list of all the giveaways you believe the station may have.

If you have a flair you may

like to add some artwork to your form, particularly a map showing your location, your national flag or emblem. Other lures include postcards, photographs of yourself and your DX gear (you can buy photo stickers in various sizes), and of course mint stamps of the country you are reporting, or IRCs if appropriate.

Letter Writing

If you're using Aerogrammes you can glue on decorative items. From New Zealand we have the generous rate of a fixed fee for 200 grams up to 20mm thick, so even cassettes without a case qualify as standard air letters.

Reception reporting like personal letter writing is a very individual thing. I hope that this article goes some way to raise your QSL rate.

Here's to good QSLing!

Tony King is Listener Services Manager for Radio New Zealand International, and has been a DXer for 35 years with a particular interest in m.w and 60m Latin American DX. He processes all RNZI's DX mail and passes on his advice after QSLing over 8000 reports in the first year of RNZI's 100kW operation.

Radio New Zealand International



QSL card from RNZI 9.7MHz broadcast.

Short Wave Magazine, October 1991

With Compliments

We appreciate the exposure RNZI gets in SW Magazine. Reception seems to be quite phenomenal just now. Some DXers reporting for up to 2 hours!

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It just goes to show your reports are appreciated!

Worthington's Best

John Worthington GW3COI is well-known for his cartoons, which have been appearing in Short Wave Magazine for many years now. Here he recounts his attempts at a spot of home-brewing.

Sometime ago I built myself a five-band communications receiver. I love making that statement, but astoundingly or not it is partly true. Most amateurs tend to regard anyone who builds such a thing with quiet awe. Well, they're quiet because it makes their own lack of experience seem more marked and no-one like deflating their self-regard - there are enough unasked for times when that happens to add to them.

There's no doubt though that these chaps who can build and get going a multi-band receiver are supermen and it was a long time before I plucked up the courage to have a go myself. It's laughable really because to date my work in creating humble transmitters, grid dip meters and such minor works had been of an average efficiency of 20%. I couldn't even trace anything but very simple faults in gear and more often than not was forced to call on a friend (G3EHG) who would amble into the shack, turn the dead unit on its side and point to the defect in less time than a contest QSO.

Five-band Receiver

Nevertheless, I came across the circuit of a five-band receiver which gave me the impression that it was just possible that I could build it. For one thing, it was the type which had a crystal controlled converter ahead of the main i.f. strip and thus eliminated the bothersome band-switched variable local oscillator in the then current designs. At the time I was living in the Midlands and was able to find parts fairly readily, although it was something I didn't enjoy. All along the line I had to accept substitutes



"ACCEPT SUBSTITUTES..."

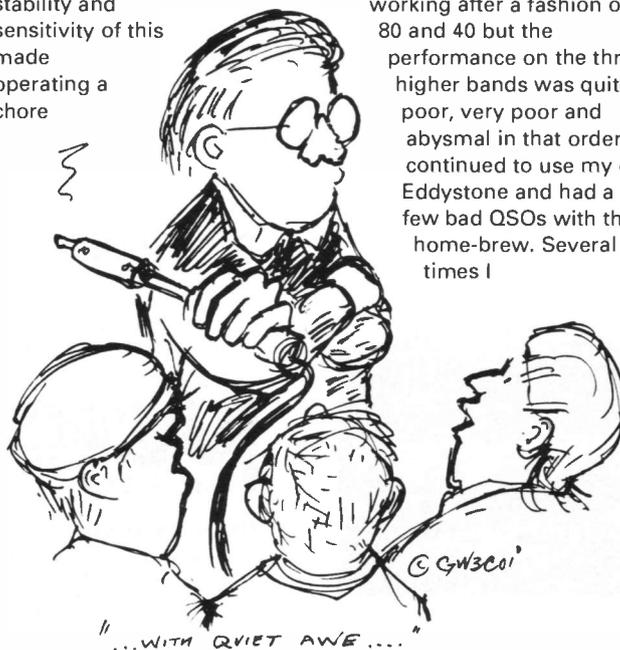
until in the end the original designer's list was thoroughly mutilated. Even the chassis were the wrong sizes being rather too small.

Now, there's a daft thing for anyone like me to do for a start - if anything I needed much more space not less. However, I started in on the metal bashing and over a period of months the monster took shape. I kept at it because at the time I was using an old Eddystone 640 (a venerable early post war job) and the stability and sensitivity of this made operating a chore

instead of a pleasure. I was fired by the thought of the pleasure to come of working with my own creation.

Bench Testing

Came the day when, after weeks of blown components, smoke, curses and rows with the XYL, I actually heard my first c.w. on what I hoped was 80 metres. Fiddling continued. I won't call it bench testing as that is too dignified a name. Eventually, I got the thing working after a fashion on 80 and 40 but the performance on the three higher bands was quite poor, very poor and abysmal in that order. I continued to use my old Eddystone and had a few bad QSOs with the home-brew. Several times I



"...WITH QUIET AWE..."

became enraged with it, pulled out the mains plug and departed hence, but I never actually flung it into a convenient dank Midland's canal (I was probably afraid of hitting a TV documentary crew). I kept it merely for the doubtful pleasure of being able to say primly in QSO, "Oh! and among other gear here I have a home-brew receiver I'm still testing..."

Twenty years on I am sadder but no wiser and recently commenced building an extremely complicated modern transceiver - this mammoth project I took on after many weeks of consideration and now after an initial burst of less than enthusiastic work I have decided that I have again let in another Trojan horse and all the money I spent on the thing would have been better thrown away on psychiatric treatment. Some folk never learn.

Mind you, in the golden age of a certain kit maker, whose name was rather like an ex-Prime Minister - I was your classic client for those designs, carefully drafted with a dunce like me in mind. Remember those super-clear instructions for inserting each resistor, each capacitor, etc., pages and pages of them, but most gloriously of all - all the right parts? I certainly derived much pleasure from building and using them many times and greatly regret their passing.

There's a lot to be said for the constructional side of ham radio. I suppose duffers at it like me probably derive nearly as much enjoyment from it as Botham does taking wickets. But maybe the important thing is to choose something to make that is almost within one's powers. Let's have another look at the QRP book! ■

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SMC are pleased to be able to offer the SONY range of Multiband Receivers. They feature all the latest technology allowing unequalled coverage of both broadcast and shortwave bands, yet remaining both compact and easy to use. All the models illustrated cover VHF broadcast, SW broadcast, and some models cover other bands as well.

The **ICFSW7600** is a sophisticated portable receiver that combines power and flexibility with one-touch convenience. Freq. range AM 150-29995kHz and FM 76-108MHz.

The **ICFSW1E** is possibly the world's smallest shortwave radio, fully featured with a multiple tuning system and PLL synthesised circuitry for digital precision. AM 0.15-30MHz & FM 76-108MHz.

The ultimate Multiband receiver, the **ICF2001D** combines sophisticated shortwave technology with the ease and versatility of both digital and analogue tuning. Freq. range AM 0.15-30MHz, FM 76-108MHz and AIR 116-136.6MHz.

The **ICFPRO80** is a hand held professional receiver with air band capability and an 8-way tuning system. Frequency coverage 150kHz-108MHz and 115.15kHz to 223MHz with FRQ 80 frequency converter.

The **Air 7** is an all purpose handheld multiband receiver with continuous waveband coverage including air band and utilising a 6-way tuning system AM 150-2194kHz, FM 76-108MHz, Air 108-136MHz and PSB 144-174MHz.

The compact **HX850E** is a basic scanner with a few memories. Ideally, suitable for a novice in the scanner market. AM/FM modes and a frequency coverage of 60-89, 118-136, 140-174 and 406-495MHz.

The **HP200E MkII** is a 1000 channel, programmable, handheld scanner. AM, FM and FM wide for commercial channels covering 500kHz - 600MHz and 805-1300MHz. Supplied complete with NiCad charger, Antennas, DC cable, shoulder strap, outclip, carry case and earpiece.

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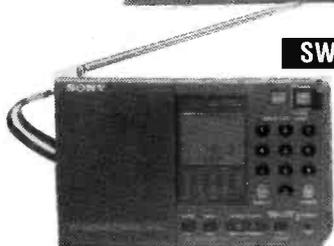
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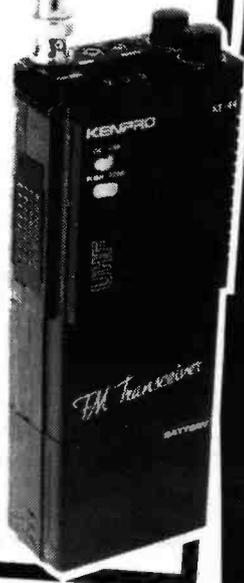
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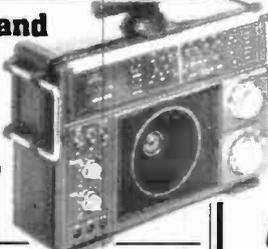
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A Simple Antenna Tuning Unit

An antenna tuning unit will allow you to match any antenna to your short wave radio. Peter Polson GM3YAN/GM-20085 describes how he built a simple a.t.u. from parts collected over the years.

The circuit of the a.t.u. is shown in Fig. 1. and is a simple pi circuit, so called because the coil and tuning capacitors are arranged in the shape of the Greek letter Π . The number of turns on the coil can be altered by the 3-position switch, S1. The antenna is connected via a Wander plug and socket while the a.t.u. is connected to the receiver by a length of TV coaxial cable, which plugs into the coaxial socket on the a.t.u.

Construction

The antenna tuning unit described was built from components which were to hand. In other words, in the Junk Box. The components

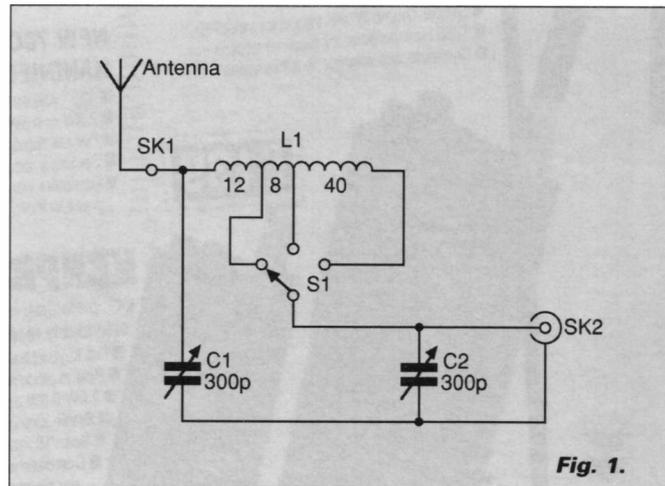


Fig. 1.

are not critical. For instance, the switch could be a rotary type or a 3-position slide switch, while the variable capacitors could be the twin-gang 200 + 305pF air-spaced ones as supplied by J. Birkett of Lincoln. In this case, only the 305pF section is used on each capacitor.

The two variable capacitors

C1 and C2 and the switch S1 are mounted on the base of a plastics sandwich box measuring about 145 x 108 x 70mm, care being taken to ensure that there is sufficient clearance for the moving vanes of the capacitors. The bottom of the box acts as the front panel of the a.t.u. Sockets SK1 and SK2 are

mounted in the centre of the side panels, 25mm from top and bottom respectively. The relative positions of the components is as in the circuit diagram, but could be varied slightly to suit your box.

The coil former is cut from a cardboard tube taken from a paper towel or kitchen roll. Two groups of holes are pierced 18 and 87mm from one end of the former as shown in Fig. 2. The two inner holes in each group are spaced close together and are just big enough to take the wire. The outer holes are about 3mm diameter to fit the 6BA bolts which hold the solder tags.

The first 20 turns are spaced apart by the diameter

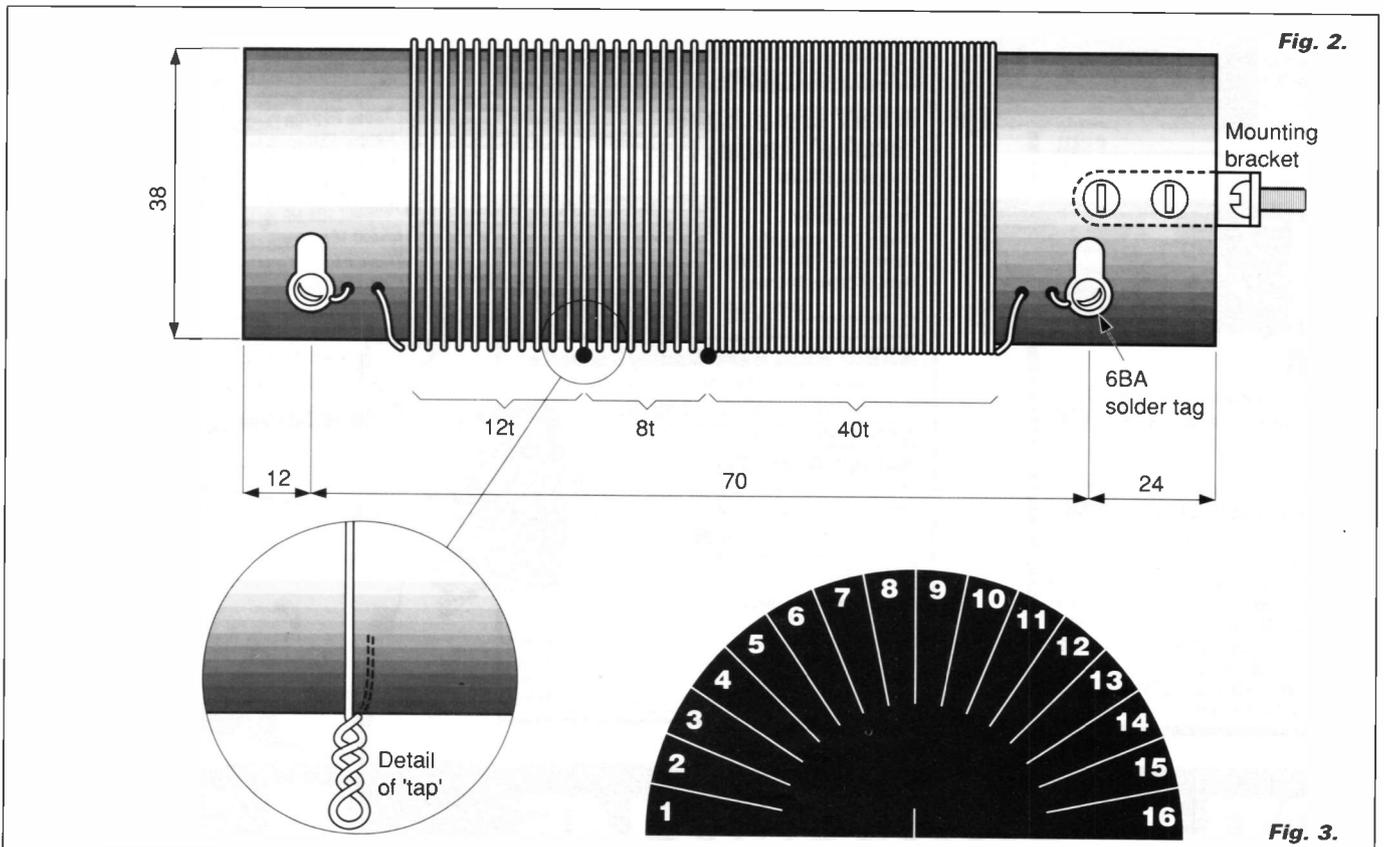


Fig. 2.

Fig. 3.

Project

of the wire, so first wind about 22 turns of 24s.w.g. enamelled wire onto the former. Cut the wire and remove from the former. This length of wire is used as a 'dummy' to space the first 20 turns of the coil during winding.

Scrape the enamel from the end of the wire on the spool, thread it through the two small holes and solder to the tag. Now thread the 'dummy' wire through the holes and make sure it is secure. Wind 12 turns of these two wires together and carefully make a 6mm loop in the main winding for a tap, as shown in Fig. 2. Keep the wire taut during winding. Continue winding another 8 turns - 20 turns in all - and make a second tap. Continue the main winding for another 40 turns this time closewound, i.e. without the 'dummy' wire. Cut the wire from the spool, leaving about 25mm free. Thread this through the two holes, scrape off the enamel and solder the end to the solder tag. Carefully remove the 'dummy' winding and scrape the enamel from the two taps. The addition of a fixing bracket completes the coil.

The coil assembly is positioned in the box to find the position of the hole for

attaching it to the box. Remove the coil assembly and drill the hole. Most of the wiring is carried out before finally fitting the coil into the box. The leads from the switch are longer than needed and are trimmed to the correct length later. Care is needed to ensure that position '1' of the switch connects to the first tap. Note that the switch

specified is a 4-pole, 3-way type and so has four separate poles (sections). Make sure that you use only one of them. Mount the coil into the box and wire up, following the circuit diagram in Fig. 1.

Semi-circular scales were made from stiff card, as suggested in Fig. 3, to enable the positions of the tuning capacitors to be logged. The

diameter of these scales will obviously need to match the knobs you are using.

The a.t.u. was built some years ago for listening on all bands from 30MHz down to Top Band (1.8MHz), when working away from home. It proved to be very effective with just a length of wire round the room as an antenna and is still in use. ■

YOU WILL NEED

Capacitors

Variable

0 - 300pF 2 C1,2 (see text)

Miscellaneous

Enamelled copper wire, 24s.w.g.; Solder tags, 6BA (2); Nuts, bolts & washers, 6BA (2); Knobs (3); Rotary switch, 4p3w (Maplin FF76H); Plastics box (see text); Wander socket, SK1 (1); Belling Lee type TV coaxial socket, SK2 (1).

Addresses

Maplin Electronics, PO Box 3, Rayleigh, Essex SS6 8LR. Tel: (0702) 552911

J. Birkett, 25 The Strait, Lincoln LN2 1JF. Tel: (0522) 520767

Abbreviations

4p3w	4-pole, 3-way (switch)
a.t.u.	antenna tuning unit
BA	British Association (screw thread)
MHz	megahertz
mm	millimetres
pF	picofarads
s.w.g.	standard wire gauge
TV	television

Coil Winding

Hint

- Winding a layer of double-sided adhesive tape over the coil former before starting to wind the coil helps to retain the windings in position.

NEW BOOKS

DIRECTORY OF MILITARY AVIATION COMMUNICATIONS (VHF/UHF) EUROPE, NORTH AFRICA, MIDDLE EAST 1991 first edition

Edited by Jeff Brickner

Published by Hunterdon Aero Publishers, PO Box 754, Flemington, New Jersey 08822, USA

149 pages, A4, Price \$19.95 plus \$8.50 for overseas airmail

Listening to military aircraft communications is one of the newest areas of radio monitoring. This directory lists military aircraft radio communications frequencies for all of Western Europe, North Africa and the Middle East.

Frequency data is presented in two complementary formats: in order by frequency and in order by location. This is so the user can find all of the frequencies in his reception area at a glance, or identify the probable nature and origin of a communication on an unfamiliar frequency.

Included in this directory are the primary air-to-ground and air-to-air communications frequencies associated with military airbases and civilian airports hosting military and military-related activities. Also included are the u.h.f. used at all major civilian aviation installation where military air traffic can be supported. Other inclusions are tactical frequencies associated with military command posts, dispatchers, meteorological advisory stations, in-flight refuellings and so on.

The frequencies covered are: 30-72MHz and 108-400MHz.

THE PIRATE RADIO DIRECTORY 1991 edition

George Zeller

Published by Tiare Publications, PO Box 493, Lake Geneva, WI 53147, USA.

75 pages, A4. Price \$8.95 plus \$3 overseas handling

Unlicensed pirate radio stations have appeared on the airwaves ever since the beginnings of broadcasting in North America. Although illegal under the radio regulations of both the United States and Canada, stations operated by radio hobbyists often produce some of the most entertaining programming that can be heard on the radio spectrum. The pursuit of these underground broadcasters can be one of the most interesting and challenging facets of short wave listening and DXing.

Unfortunately, given the erratic and sporadic transmissions of these sometimes unpredictable broadcasters, it is often difficult to locate good current information on pirate station activity. This book fills part of this information void by reviewing and profiling pirate broadcasting stations that were reported by North American listeners.

THE PIRATE RADIO DIRECTORY

by George Zeller



1991 Edition

Tiare Publications

Tuning in to the Secret Broadcasters - 1

Amongst the familiar stations are those whose purposes are sinister - the clandestine radio stations. Their ultimate aim is the bringing down of a national government. Gerry L Dexter takes a look at these shadow voices, in this two-part series.

Most of the time, the broadcasters we listen to on the short wave radio bands are pretty straightforward. We all know what such stations as Radio Sweden, Radio Moscow, Radio Australia, WYFR and the rest are all about. They are 'selling' the nations they represent, from tourist attractions to political views. The religious broadcasters are selling their view of God (and some may be seeking contributions).

But amongst all these familiar stations are others, whose purposes are quite different - even sinister. These

glowing light attracts bugs on a summer night. A handful of clandestines was active throughout the Contra-Sandinista conflict in Nicaragua. 'Argentine Annie' appeared as the Falklands War began, to be answered by British-run Radio Atlantico del Sur. The Vietnam War was thick with clandestines, most run by US psychological warfare teams or the CIA. Today, most of the action is centred around Ethiopia and the Horn of Africa, Iran, Cuba, Cambodia and the Sudan. Another 20 or so countries are receiving attention from at

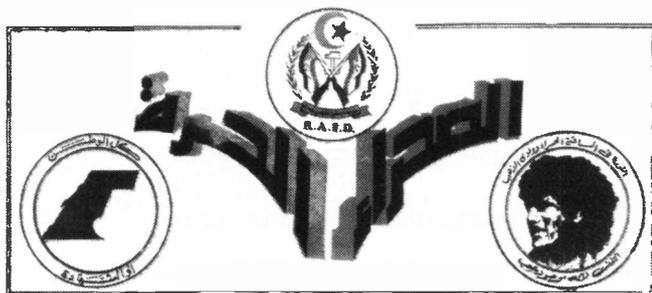
take a number of forms. The small station operated by a guerilla army from a jungle camp is certainly a classic type - and one of the rarer ones, at that. The various stations operated by the Farabundo Marti National Liberation Front in El Salvador (Radio Liberacion, Radio Guazapa, Radio Farabundo Marti and Radio Venceremos) were this type. Clandestine stations are often run by the government of one country and aimed at the government of another. This is sometimes done quite openly, as is the case with the US government's Radio Marti

African National Congress, was aired over several government radios in Africa. The Voice of Palestine and Voice of Free Sahara both air hour-long programmes via Radio Algiers. Other groups simply produce a programme and pay to have it aired over a commercial short wave station. United States religious broadcaster WHRI carries three such programmes.

But defining a clandestine is a difficult job, one that has not yet been accomplished to the satisfaction of most clandestine enthusiasts. The sense or purpose of the broadcaster, the 'feel' if you will, is as big a factor as any hard and fast definition. Thus, Radio Marti and Radio Free Afghanistan are considered clandestines by many, even though they are quite official and use US government broadcasting facilities of the Voice of America and Radio Free Europe/Radio Liberty respectively. Their purely political purposes aimed (even if not so stated) at creating change in those governments, give them the feel of a clandestine. On the other hand, a pirate station with a political viewpoint, such as the Voice of Tomorrow, a US pirate espousing a fascist line, is generally not considered a clandestine. While it is unlicensed, it is not known to be backed by a specific political group nor does it seem to have in mind the overthrow of the US government.

Politics and Puzzles

Monitoring and DXing these clandestine stations is one of the more difficult aspects of the s.w.l. hobby. Listeners who enjoy both politics and puzzles will find both are part



The Polisario Front operates a radio station and produces a monthly publication.

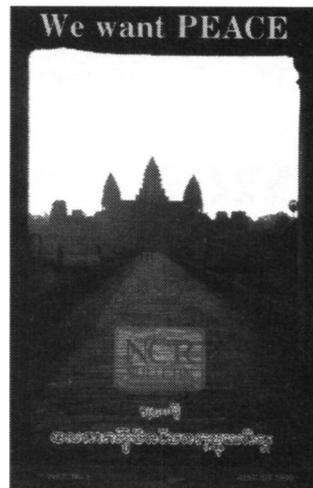
are short wave's shadow voices, the clandestine radios. These stations have as their ultimate aim the bringing down of a national government and its replacement with one favoured by the station's backers. This effort may take a down and dirty 'here's how to make a Molotov cocktail' approach, or it may be more subtle, seeking to bring its listeners around gently over a considerable period of time. Either extreme is a long way from the world of big broadcaster pop music and letterbox shows.

Guerrilla wars and other tension spots attract clandestine broadcasters like a

least one clandestine broadcaster.

There was surprisingly little clandestine broadcasting action tied to the Gulf War, at least on short wave. It wasn't until the beginning of the war, four months after Iraq invaded Kuwait, that the Voice of Free Iraq began broadcasting. Radio Baghdad, however, presented us with a bewildering array of clandestine-like programmes and services, including Holy Mecca Radio, Holy Medina Radio, Mother of Battles Radio, the Voice of Peace, the Voice of Arab Egypt, Voice of the Peninsula and Arab Gulf, Voice of Jihad and so on.

Clandestine broadcasters



Voice of the Kymer

beamed at Cuba, or secretly as with Radio Truth beamed at Zimbabwe and Voz de Verdad, an anti-Angolan station. Both were beamed from South Africa and are believed to have been operated by that government.

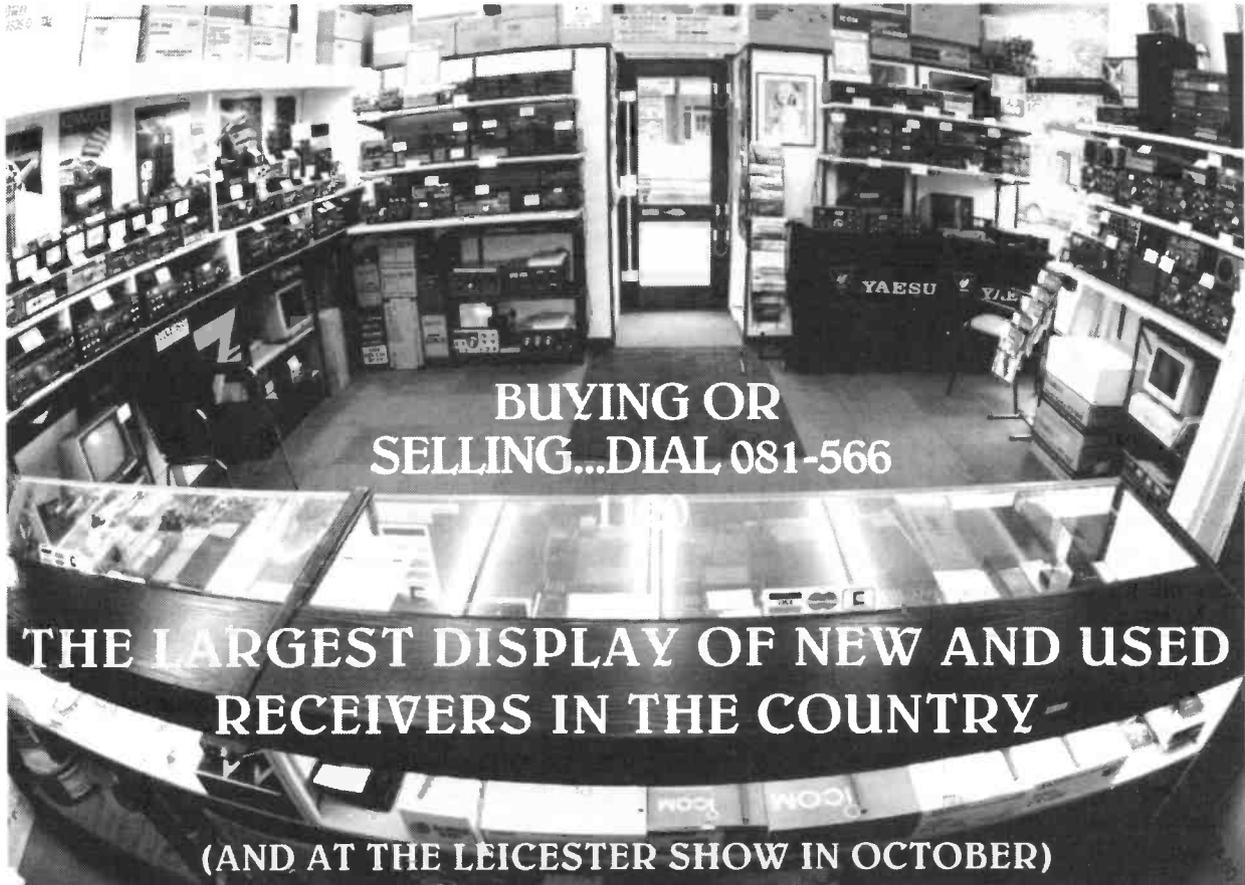
Another common type is the clandestine programme produced by an opposition group and provided with air time on the official radio of a friendly government. Radio Freedom, produced by the

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For those of you who have not visited MARTIN LYNCH (a year gone by and you haven't visited me already?) we really are easy to get to. My shop is just across the road from NORTHFIELDS UNDERGROUND on the Piccadilly Line. It's the closest store to HEATHROW by tube, 5 minutes from the M4/40/25 motorway, and about 20 minutes from the M1. If customers can visit the busiest Exchange Centre from as far as Australia, Canada, Sri Lanka and Marlow Bottom, surely you can make it to sunny Northfields. (Where is Marlow Bottom?)

Oh yes - what have we in stock? If it wasn't for the fact that this excellent magazine charges a fortune to advertise, I could probably fill it all! All the makes, all backed by the UK importers including YAESU, KENWOOD, ICOM, STANDARD, AOR, ALINCO, YUPITERU AND MANY MORE, are now available, along with masses of clean, guaranteed, used equipment.

Knowledgeable staff and back-up second to none, completes your peace of mind package. For those of you who prefer to mail order, give me a try! I have many letters thanking my staff for the help and service they have received. The repeat business and recommendations tells me we are doing it right. Give it a go!

Final word, yes of course I take part exchange and yes I do want to buy your unwanted equipment. (It amazes me how often I get asked that, it's like asking a barber if he cuts hair). Where do you think all the stock comes from? So if you have an AOR1000 and want a 2000, or own a Realistic 290900087 or what ever model number they are up to, and want the latest ICOM, give me a call TODAY. Don't wait just ring.

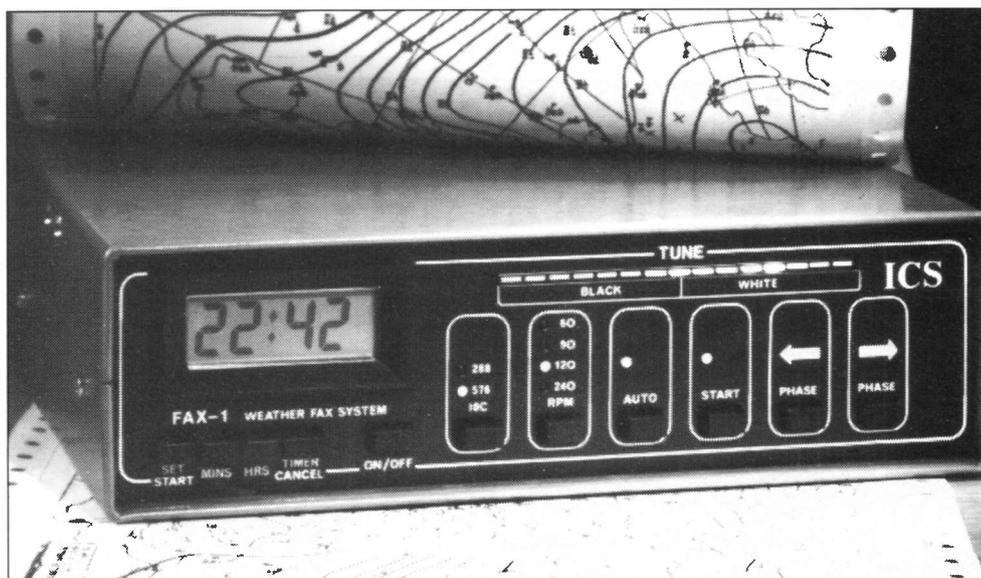
73 Martin G4HKS

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and parcel of the world of clandestine radio. Who is operating this station? What line is it taking? Where's the transmitter? Such are the questions the clandestine follower is often faced with.

Other problems include the fact that almost none of the broadcasts are in English, since English is not the majority language in the countries being targeted by these stations. In addition, many of the stations use quite low power and have operating time and frequencies that are designed to reach the target audience in prime time. Hence they are often propagationally difficult or impossible to hear at the DXer's location. The broadcast schedules are hardly cut in stone, either. A schedule listed to end at, say, 1630, may well run to 1638 one day, 1627 the next and then not appear at all on the next day! Frequency dependability is an equally chancy affair and it's a good idea for the clandestine radio follower to get into the habit of automatically adding a 'v' for 'variable' to every clandestine frequency listed, whether the 'v' is there or not. Many clandestine stations tend to drift in frequency or to hop around to avoid the jamming signals that are often aimed at them.

Even the name of the station can be a problem and add confusion. Sometimes there are variations in the way the name is translated into English. And when two or three stations are broadcasting to the same country the station names (all drawing from a common word list, i.e. 'revolution', 'free', 'people', 'voice of', etc.) can be quite similar, which adds still more confusion. The dynamic nature of clandestine broadcasting, like short wave itself, makes for frequency changes and thus more difficulty in keeping up with 'who's on first' today. All these pitfalls, however, only add flavour to the rewards.

Educated Guess

As mentioned, politics are the *raison d'etre* for clandestine broadcasting so, in order to at least make an educated guess as to who is hosting a clandestine of unknown

Vol. 1, No. 1 June 1986

FREE ANGOLA

NEWS AND INFORMATION FROM UNITA

UNITA'S FIGHT FOR FREEDOM

Evolution of the Political and Military Situation in Angola, 1980-86

UNITA, the National Union for the Total Independence of Angola, is a national liberation movement formed to combat colonial oppression in Angola. It aims for a democratic, genuinely independent Angola free from foreign interference.

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source, it pays to stay up on what is happening in the world. Reading a good daily newspaper which contains a lot of foreign news to keep informed about which country is aligned with or opposed to which others, where there's trouble brewing and so on.

Knowledgeable amateur monitors can often make very educated deductions about a clandestine's location or backing by being aware of what's going on in the world, as well as through careful monitoring. DXer Hans Johnson was monitoring the Voice of Free Iraq at his Maryland listening post when

he heard the station play Radio Cairo's news theme after its own newscast. Obviously a mistake, and a dead giveaway as to the studio location. Other monitors have noted similar gaffes by other stations over the years. Frequencies are often a good clue. Sometimes a clandestine will operate on an oddball dial position known to have formerly been used only by a particular government broadcaster - one that would make sense as a host to that clandestine.

Another giveaway, albeit after the fact, is when two governments sign an

agreement ending an antagonistic relationship and a clandestine station that had been targeting one of those countries promptly disappears. The Voice of the Mozambique National Resistance left the air soon after Mozambique and South Africa signed a co-operation agreement. Not hard, then, to figure that South Africa had been the home of this station.

The traditional DXer will, by now, be asking whether clandestine stations can be QSLed. The answer is 'yes'! A rather surprising number of clandestine stations do QSL reception reports. There are a number of stations, however, for which no address is known, despite considerable research. A few others that do have addresses have not replied or have done so irregularly. One of the game's greatest satisfactions comes from searching out an address through which a report can be sent and having it pay off with a QSL! The odds on such projects are usually very long, though, and few DXers seem to want to undertake such work. Paths that lead to QSLs can sometimes be found in news stories that mention a city in which the opposition group has an office. Checks of phone books for major cities sometimes turns up possibilities, as do checks through various directories of international organisations. A good sized public library can be the source of a lot of information that will prove useful in clandestine radio monitoring!

For the clandestine station DXer, the ultimate tools would include the fanciest equipment, acres of antennas, access to language translators and unlimited information resources. The professionals at BBC Monitoring enjoy all these advantages, but the rest of us have to get by on a great deal less. Even so, through careful listening, knowing what you are going after and when and where to listen, keeping a file of the most up to date information you can obtain, plus old fashioned persistence can bring considerable success to a clandestine broadcast DXer.

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QSL

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More in Part 2.

Abraham Lincoln's Birthday

Each year, on Abraham Lincoln's birthday, Mr Phillips sent an SOS from his replica of an old-fashioned ship's Radio Office. This short story by J. Edward Brown explains why.

Kilocycle Ken stopped the Radio Inspector's interference detector vehicle, all hung over with antennas. "The kilocycle cops move in again on a suspected source of interference," young Golly, the Trainee Radio Inspector, intoned. "But how did we get to this house? We haven't tracked the interference by direction-finding? We haven't even heard the alleged interference."

Kilocycle Ken sighed. He didn't really like young Golly, but he was lumbered with him, had to train him.

"I see by the complaint sheet that this radio and television interference occurs only on the night of April 15 each year. It suddenly came to me," Kilocycle Ken said. "Do you know what anniversary it is on April 15?"

"Abraham Lincoln's birthday."

"How did you know that?"

"I know all sort of things. Abraham Lincoln was a great man. He's a hero of mine."

"You, with a hero! I though your only interest was girls. But it's got nothing to do with

Abraham Lincoln, as you'll find out in due course."

Kilocycle Ken was a very senior radio inspector who had personally taken charge of this case. He was dressed, as usual, in his blue pin-striped suit, the complete public servant with neat shirt and tie, except for incongruous brown safety shoes. They were issue, so they were free.

Young Golly was his normal walking-disaster self, he wore a green leisure shirt never designed for the red tie and brown safety boots. One of his spectacle lens was cracked and he needed a haircut.

Loud Morse Code

It was chilly, so they both wore their storm-trooper gear - long, black, old-fashioned, P & T telephone-overseer, oilskin coats with flaps on the shoulders. Ideal for getting in the cows.

Young Golly was still at it, querelously, "Once a year on this same date, loud Morse code - hardly warrants a complaint."

"There are lots of complaints, but I've got to the bottom of this one."

"But Morse, I still don't get it. Interference to television and radio comes from motors on drills and cake mixers, from vacuum cleaners and welders. And why a night investigation. I want to get home sometime." Golly peered through the night at the old bungalow, corrugated-iron, bullnose curved front verandah, broken gingerbread, eerie in the moonlight. "That's a big antenna"

"The sort of antenna my father erected in the back garden when he bought a brand new Cromwell wireless so that he could listen to Uncle Scrim on Sundays from 1ZB."

"Never heard of that disc jockey."

"Before your time, back before the war."

"Which war?"

"World War II."

"People don't need big antennas for transistor radios."

"It is not a transistor radio antenna, or a valve wireless antenna for that matter."

There was an old-fashioned ship's gangway of wood and canvas up to the front door of the house. Kilocycle Ken blew into the whistle of the ship's speaking tube.

The front door, with a ship's brass porthole in it, opened. An old man in an old-fashioned, blue, Barathean marine officer's uniform with two bands of gold braid on the sleeves, and a white cap with a Marconi cap badge looked at them. The man inside the uniform had obviously shrunk, the sleeves were too long, the jacket hung too low.

Come Aboard

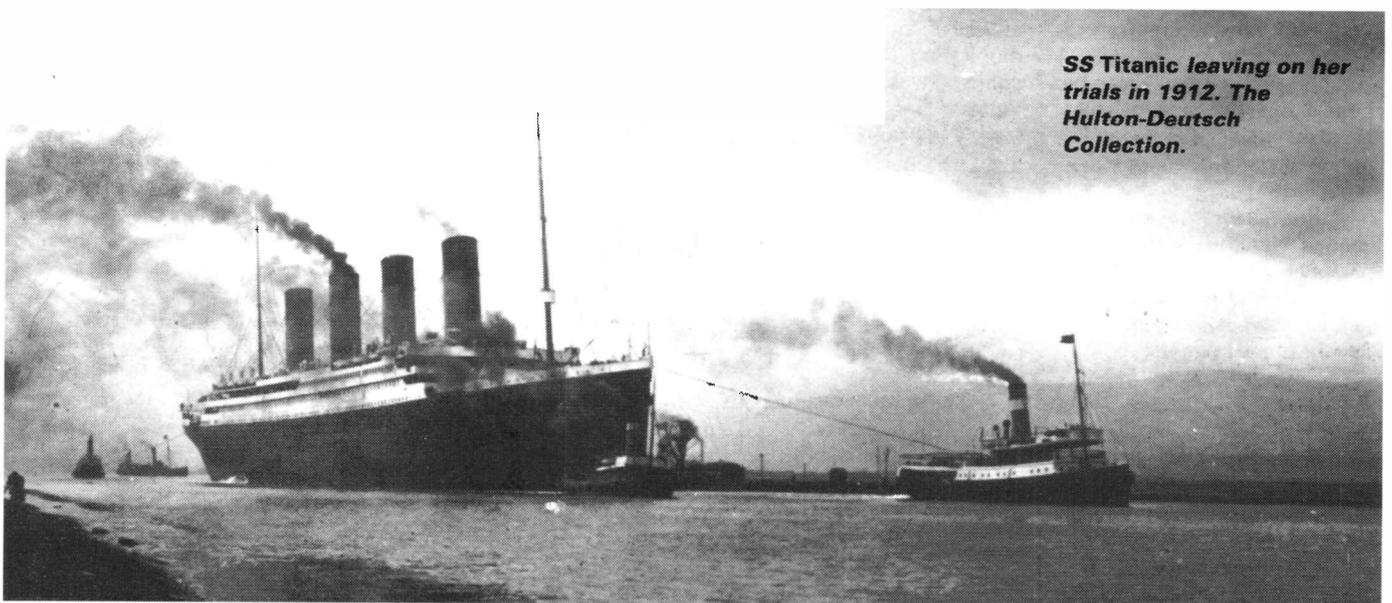
Kilocycle Ken said politely that they were radio inspectors and the old man suddenly smiled. "Come aboard, you've no doubt come to survey the installation on behalf of the Board of Trade."

"Something like that,"

Kilocycle Ken said agreeably.

Young Golly looked suspiciously at his mentor.

"Phillips is the name. Mind the deck, some planks are broken."



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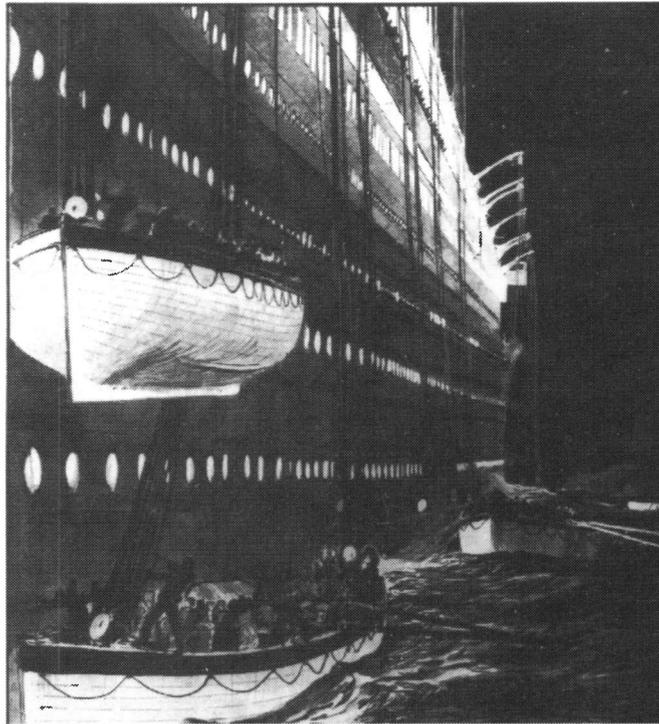
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The GREATEST WRECK in HISTORY
 THE LOSS OF THE WHITE STAR TITANIC



The lowering of the lifeboats from the sinking Titanic. From the Graphic Supplement 27 April 1912. The Hulton-Deutsch Collection.

There were pictures on the hall walls of old ships with tall funnels and many portholes. He took them through a door marked RADIO OFFICE.

The room was fitted out like a ship's radio cabin of yesteryear, an ancient varnished wood and shellacked wire spark transmitter, an ancient Morse key, large old-fashioned volt and amp meters, big knife switches, highly polished copper and brass antenna connection tubing; under the operating table was a large black dynamo-like machine.

"A complete ship's radio room," Kilocycle Ken said understandingly.

Coffee Time

"It's taken me years to get together all these pieces. The quarter-kilowatt quenched spark gap transmitter is off of the old SS *Waimarino*, battery meters off of the government steamer *Matai*. The crystal receiver is from the *Cyrena* wrecked at Wanganui in the 1920s, the Morse key I have had for decades, sent thousands of words on it; a chair from the steamer *Port Bowen* wrecked at Castelcliff in 1939, screwed to the deck."

The old man was wearing a high-neck pink flannel singlet under his blue uniform jacket. He hadn't shaved for several days and his white-whiskered dewlap quivered as he gestured. Kilocycle Ken sniffed. "Even smells like an old wireless room. Battery acid, old socks, old paint and cooked cabbage, coal steam."

The old man asked then if they'd like a cup of coffee. He looked at his watch, "There is still time."

"Thank you, Mr Phillips."

He skipped away and young Golly said, "That old guy is nuts."

"Maybe no more than you, or I, or anybody else."

"We are going to have a prosecution here. Look at this old wireless equipment, all unlicensed, can't be licensed, contravenes the Post Office Act 1959, section 164."

"I have taught you well," Kilocycle Ken said, sadly.

"Get him to use it and we'll do him, not only for possession, but use, and after he's been fined the maximum they can cart him off to the looney bin."

There was coconut matting on the floor, like an old time ship. The walls were painted a dirty sickening yellow, an ancient metal reading lamp was poised over the scarred wooden operating table. On the bulkhead was the standard notice on all British ships about the secrecy of correspondence, meaning that all telegrams were confidential.

Kilocycle Ken said reminiscently, "I was too young to be around in the days of spark transmitters and coherers and crystal set receivers aboard ships, but they must have been great days, when wireless really was wireless."

Mr Phillips was back. "They were the best days," he cried.

"When spark was king, there was no radiotelephone, Morse was the only way to communicate,"

An ancient automatic alarm was screwed to the wall, with three old silvered valves sticking out of the apparatus, on the table a glass-topped box of relays and pawls and arms. "This, of course, meant that Marconi didn't have to supply three wireless operators, this stood watch while the operator got his eight hours sleep. Needed after the *Titanic* disaster."

There was salt encrusted porthole glass. "How do you get that effect in suburbia?" Young Golly asked.

"Use ordinary table salt in a bucket of water."

"Barmy," Young Golly said loudly.

Almost Time

"It is almost time," said Mr Phillips. He took off his cap with its white cover, sat down on the old wooden chair, clapped over his ears an old pair of headphones of black bakelite and greasy leather, a frayed fabric cord.

"Would you have enjoyed sinking on the *Titanic*?"

Kilocycle Ken asked casually.

"Oh no, but I would have enjoyed sending SOS. Never did in all my years at sea. Never was in a sinking, stranding." The old man was starting the generator. Slowly, he pulled the black handle of the starter across the brass studs. Slowly the motor came up to speed, the old wooden floor vibrated as the big machine produced high direct current from the lead acid batteries. There were blue sparks on the open commutator where the carbon brushes were pressing against it.

"Let's hear the *Titanic* in operation again, just a short burst," Kilocycle Ken said.

"That's the idea," said the old man. "It's tuned up on 600 metres."

"What!" Young Golly said. "The *Titanic*! Somebody will hear. There'll be interference. This suburban bungalow is not sinking."

"This is the *Titanic*," the old man said loudly.

"It is April 15, the anniversary of the *Titanic*'s collision with an iceberg," Kilocycle Ken said.

Young Golly said shrilly, "You'll upset radio reception for miles around."

"It's very late, and it is only one night of the year."

"Only the master of the vessel can order the SOS sent." The old man caressed the black ebony knob of the old brass Morse key lovingly.

Kilocycle Ken gave the order to send SOS.

"You can't give that command," Young Golly said, and was drowned by the crashing roar of the quenched spark gap, the smell of ozone as the old man held the key down. The old sparkey was keying carefully in slow Morse. All distress calls were sent slow so all operators at sea could decode it. He sent the *Titanic*'s call letters MGY.

Then the message, HAVE STRUCK AN ICEBERG. WE ARE BADLY DAMAGED. TITANIC LAT 41.46N LONG 50.14W.

"Beautiful," Kilocycle Ken said. "Sniff that ozone. Look at those blue sparks leaping and oscillating the antenna."

"The *Titanic's* chief wireless operator was called Phillips," Young Golly said suddenly.

"That's right, George Phillips."

Young Golly said shrilly, "It's unprofessional, unethical. You are the guardian of the airwaves, the protector, the kilocycle cop, and you are breaking the law by allowing him to cause interference."

Kilocycle Ken ignored him. "The *Titanic* was the first ship in the world to call SOS, meaning distress, on the wireless. Historic it was. And the wireless operators were heroes."

Young Golly asked sarcastically, "Do we listen for replies?"

"We might hear Cape Race up near New York replying."

The old man said, "No reply."

"Difficult if they did reply. You'd be in trouble! The both

of you! A spark transmitter in this day and age is illegal.

Even I know that. No wonder there have been complaints."

"This is an enactment, a memorial to the gallantry of wireless operators. Phillips lost his life."

"Barmy!"

The old man said sadly, "Wireless operators have always led lonely lives in their isolated radio cabins, only called upon in dire emergency. Overlooked most of the time."

An Honour

"To be Chief Wireless Operator on the *Titanic* was an honour," Kilocycle Ken said. "The crowning accomplishment, the biggest and best ship, unsinkable."

"So they said."

"Phillips' memorial is the music of the Morse code, his last message transmitted to the world again, a eulogy that no parson could emote, the music of the wireless ether impinging on radio antennas."

"And television antennas in suburbia," young Golly interrupted.

"It is a memorial to

Marconi also, the inventor of wireless, without his equipment and his operators, all the passengers and crew of the *Titanic* would have drowned."

"Barmy."

Kilocycle Ken said, "All alone, you send out the same message every year?"

The old man replied, "It is my humble anonymous tribute."

"Hardly unheard," young Golly quipped.

"This is my prayer for Mr George Phillips and all wireless operators who died at their Morse keys in steel cabins on lonely oceans. It is how I would have like to have died. I'd still like to be buried at sea, in a canvas shroud, with firebars at my feet."

"Any swimming pools around here? interrupted young Golly.

Morse In Heaven

Both men frowned at him.

"There'll be lots of Morse in heaven," young Golly said.

"One hopes so," replied the old man.

"Barmy."

"Goodnight to you," Kilocycle Ken said.

Young Golly asked if he was going to do something.

"No, let the old boy have his fun, won't last much longer."

"You have a duty to close him down."

"It's sometimes best to have only one eye, like Lord Nelson. The trouble with the young is that they see everything in black and white, but when you get older you realise there are many shades of grey, and maybe there is no black or white."

"Maybe that's because you are unable to think objectively," young Golly said rudely.

"I can still smell that ozone."

"You should be suspended for dereliction of duty."

"It is the duty of the living to pray for the dead."

"I'm not religious."

"Ask yourself, young Golly, would Abraham Lincoln have closed him down for offending against the Radio Regulations?"

Young Golly hesitated, then he said reluctantly, "I don't know."

Kilocycle Ken whistled SOS, tunelessly.

First Aid

I have recently become involved in s.w.l.ing (much to the disgust of my wife and probably also my bank manager due to cost of equipment!).

My major problem is where to listen and when. I must admit that the broadcast bands don't particularly interest me because I'm not sure where to listen for anything 'radio' connected as opposed to biblical or musical, however I am still open to any persuasion!

My main reason for writing is to beg on bended knee for any of your readers who could supply me with interesting frequencies, for example: aviation, military, etc. Also could anyone supply me with details of wire receiving antennas for limited space (to the extreme).

If anybody could oblige, I would be eternally grateful and appreciate their help, all modes needed. **T.J. Taylor. 30 Faygate Road, Eastbourne, East Sussex BN22 9RR.**

I recently attended a local car boot sale and purchases a rather old 144MHz transceiver, although no longer working. After many enquiries I found out it was a Yaesu FT-202R circa 1978 but cannot find anyone with information or better still a circuit diagram.

H T Williams. St Marys, Eversley Road, Bowers Gifford, Essex SS13 2DG.

I have an RAF R1475 receiver unit type 88 which is missing it's system switch bar and the four (MHz) metal flags, one for each range fitted near the bottom of the scale with its accompanying mechanism. I wonder please if anyone can supply the above items along with an assembly drawing of the MHz mechanism.

Andrew Humphriss. Tel: (0926) 400876.

I have a FRV-7700 converter which needs fixing and no-one I've talked to can seem to help. Also any literature on the converter being connected to the FRG-7700 receiver, lastly what is the FF5 filter is it internal or external fitting to the receiver. Has anyone got one?

Nigel Alford. 56 Marlowe Road, Larkfield, Kent ME20 6TW.

I have a AOR2001 which I am upgrading to the AOR 2002 (apart from the second band). I would appreciate any help with the compatability problem. It is running but I lose squelch and the display dims when the key lock is off.

R D Walker. 24 Colin Street, Alfreton, Derbyshire DE5 7HT.

I own a AOR 2002 scanner and a Amiga A500 (1Mb) with two 3.5 disk drives and I would like to know of any dedicated programs (similar to 'scan' or 'acepac3' for the 3000 and a PC) to link the two together. I know of scanmaster but I really want a Amiga/AR2002 specific program. Any ideas?

Paul Morrey. 29 Highton Street, Milton, Stoke-on-Trent, Staffordshire ST2 7BA.

I have a Realistic DX260 which receives 49, 41, 31, 25, 19 and 16m bands and it's portable. I have seen an article in either *SWM* or *PW* about a digital counter which could be added to a radio that hasn't a digital read-out on the tuning of radio stations. The item also gave a telephone number which you could contact the company that could give you information. Is there such an item on the market. It said it could be added to portable short wave radios so you were able to tune into the radio stations accurately, especially if you radio hasn't a digital read-out.

G M Banks. 29 Avon Avenue, Avon Castle Estate, Ringwood, Hants BH24 2BQ.

I have been given an a.t.u., the Mizuho Sky Coupler KX2, but unfortunately with no instruction leaflet. It has two tuners and a band selector, each section works but I am not sure of how it is meant to be used when the coupler switch is on.

H H Jones. 90 Britannia Avenue, Townsal, Dartmouth, Devon TQ6 9UT.

I am still looking for someone to undertake some work on my Sony ICF2001D. I have work sheets that detail the job, but cannot find anyone, dealer or customer who will attempt the work for me. Any suggestions?

Basil Grayson. Nelba Grayshott, Pengwern Estate, Efailnewydd, Pwllheli, Gwynedd LL53 5TW.

50 Countries on the 144MHz Band

Part 4

Meteor scatter is an exciting mode of propagation, pioneered by radio amateurs. P.E.W. Alley GW3KJW explains how it works.

In contrast to the means of propagation previously discussed, meteor scatter propagation is an exact science. Schedules can be made with a good chance of making the contact, the dates and times of the regular meteor showers can be accurately predicted. A meteor is a particle of rock or metal (a mixture of nickel and iron), usually the size of a grain of sand, the rare big ones may be the size of a pea, whilst a very few may be larger. One big one, thousands of years ago, hit the Arizona Desert near to what is now the city of Flagstaff. Its impact made a crater 1km in diameter, whilst another one, breaking up above Siberia in 1908 caused the destruction of hundreds of square kilometres of forest, and threw up a dust storm which travelled around the earth.

Fortunately for us, the overwhelming majority are grain-sized and more frequent than at first realised. On average, in excess of 400 tonnes of material falls daily on the earth.

These meteors from outer space travel at a speed of approximately 50km per second and, as the earth passes its path, the meteors hurtle down until they reach a part of our atmosphere where there are sufficient molecules of gases, nitrogen and oxygen, to act as a barrier. The energy released by the collision causes an ionisation of the molecules, often leaving a visible trace of the meteors, the so called shooting stars. A meteor can cause an ionisation streak 1km wide and 25km long at a height of 50km above the earth, a reflective layer for v.h.f. radio

waves (Fig. 4.1).

It is against these short duration bursts of ionisation (they only survive a few seconds) that contacts between stations a long distance apart are attempted and very often completed.

Streams of Meteors

Although there are random meteors entering the earth's atmosphere daily from all directions, there are known streams of meteors orbiting the sun following the orbits of comets. If the orbit of the earth crosses and coincides with the orbit and passing of a meteor stream, a meteor shower will bombard the earth, with all the meteors seeming to originate from one direction in the sky. The meteor showers are named for that part of the sky from where the meteors seemingly radiate. It follows that the Orionids meteor shower is named after the

constellation of Orion and so on. Each meteor shower lasts for an unknown number of days, with a peak day perhaps varying slightly from year to year. The visible count per hour of meteors can be estimated, but this figure is dependent on which part of the comet trail the earth is passing through. Over countless million years a lot of this material has already fallen to earth, but all the time new material is hurtling through space and may be captured and put into solar orbit by the gravitational influence of the sun, see Table 4.1.

The signal strength of these reflected signals varies greatly and reports are given on the duration of the burst and relative strength, a report of 2 and 6 is an average report. It is obvious that the chances of completing a two-way contact via meteor scatter is not easy, so most attempts are pre-arranged. Monitoring

the v.h.f. net frequency around 14.345MHz will reveal amateurs arranging meteor scatter schedules for the v.h.f. bands. A frequency is chosen, usually well away from the normally busy frequencies, and a time is selected. One hour is allocated to make contact, with one station transmitting every odd minute and the other on the even minute. Although a full hour seems an excessive time, many contacts are not completed, even though a complete contact can be made within minutes especially when the meteor bursts are of long duration. It is surprising how much information can be passed in 4 seconds.

High Speed Morse

Contacts are made both on sideband and Morse, of the two, Morse is infinitely more reliable and less taxing on the larynx, with the added benefit

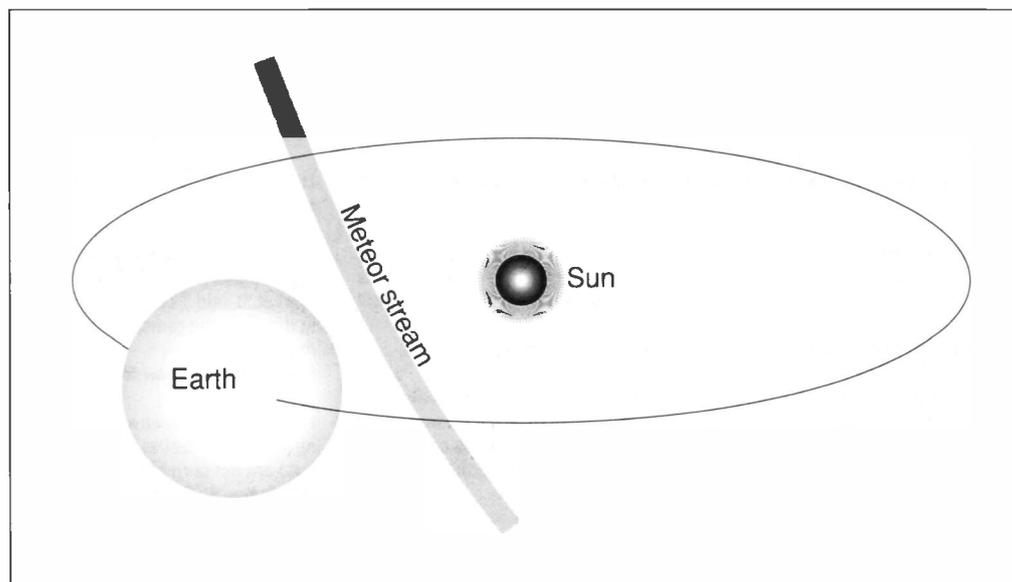


Fig. 4.1: The orbit of the earth passes through the orbit of a meteor stream, giving rise to a meteor shower.

Feature

that it is now generally electronically generated by some form of integrated circuit, either a dedicated memory keyer or via a computer. Accurate Morse sent at approximately 1000 letters per minute is transmitted, and the incoming signals are received and fed into the computer for automatic display, or into a simple tape recorder with slight modifications to slow down the tape and control the pitch when re-playing. By this means a Morse signal at 250w.p.m. can be slowed down for mere humans to read at whatever speed suits them. Additionally the tape forms a permanent record if required for demonstration purposes, a most useful item to have when trying to convince sceptics that this form of propagation has the same properties as a well known proprietary brand of

Table 4.1 Major meteor showers

Date	Name	Radio rate per hour
3 - 5 Jan	Quadrantids	45
19 - 23 Apr	Lyrids	12
1 - 6 May	Aquarids	12
26 - 31 Jul	Aquarids	22
27 Jul - 14 Aug	Perseids	50
18 - 23 Oct	Orionids	30
26 Oct - 16 Nov	Taurids	16
10 - 14 Dec	Geminids	70

larger. It will reach those places other modes will not.

This form of propagation, pioneered by amateurs, is now being used by the military as a means whereby the security of the message can best be protected - they think!

Rewarded

Now how can you discern a meteor scatter signal? The principle of tuning the receiver is not valid in this mode. As

the meteor 'pings' the reflected signals, they are of such short duration it is better to leave your receiver on one frequency, 144.300MHz is favourite, and just wait. Occasionally you will be rewarded with hearing a part or the whole of a call sign coming up out of ambient noise, then fading way rapidly. This is the characteristic sound of meteor reflected signals - audible at good strengths for very short periods of time. You

could also monitor the frequency of a distant known transmission normally inaudible, a distant beacon, and wait for its signal to suddenly appear, then fade away quickly.

The best time to listen for such signals is when known showers are passing through the earth's orbit. The details of these showers can readily be obtained from various astronomical and radio amateur publications. The showers come from various segments of sky and ideally you should beam towards the shower at the peak time of the maximum number of meteors expected when your part of the world is leading into the shower and they are at their closest. Don't forget, if it's a clear moonless night, it is well worth taking a look at the heavens and viewing the sometimes striking displays of shooting stars. ■

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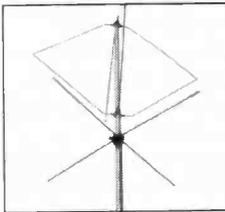
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For those with space for a second antenna (e.g. one horizontal, one vertical), the SP-2 offers a simple way to switch between the two for comparison purposes.



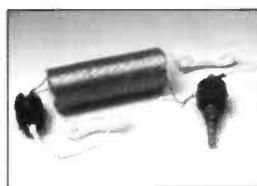
Magnetic Longwire Balun

£36 inc VAT

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

recommend RG58/u 50ohm co-axial cable.

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



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

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

MLB Antenna: Mark II

£67 inc VAT

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

New Products to follow:

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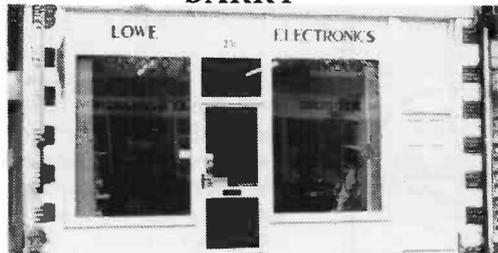
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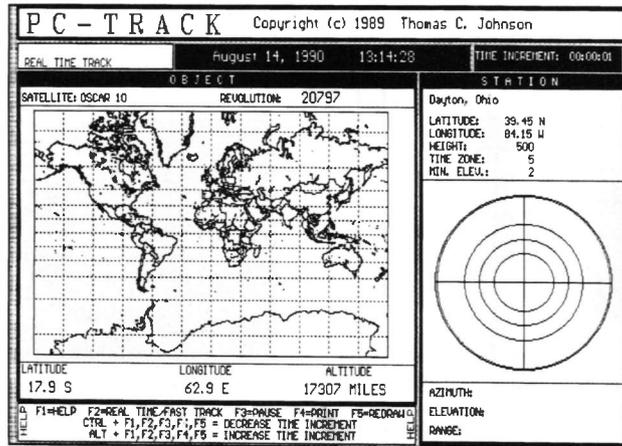
PC Track Review

To successfully receive data from any satellite requires you to know exactly where it is at any given time. Martin Saul G8XGT looks at a piece of PC software that will track the satellites for you.

A major problem with attempting to receive from, or transmit to, satellites is actually knowing where they are at a given time on a given date. Simply pointing the antenna at the sky is unlikely to result in a successful contact! Therefore a means of obtaining co-ordinates relatively easily is required. If you have an IBM compatible PC with an EGA/VGA graphics adaptor you will find PC-Track to be an easy-to-use satellite tracking package designed to make locating an earth orbiting satellite in space as simple as possible. The program provides the data necessary for accurate antenna alignment, thus enabling signals to be transmitted at, or received from, the chosen satellite. In addition, it has a very impressive real time graphics screen plot of the orbit superimposed on a world map.

Two Data Bases

PC-Track enables the user to maintain two data bases. One is for the objects to be tracked, and the other for the observation points. PC-Track can handle up to 100 objects and 100 observation points. A built-in editing function means that these can be easily entered and updated. PC-Track can track the selected satellite in real time, or make predictions of satellite position both forward and backward in time. Tracking can be paused at any time for display analysis. A speed function enables the display to be plotted at high speed if required, the ground track of the satellite can then be rapidly visualised on screen. PC-Track can send the computed data in tabular



format to an Epson FX80 compatible printer at any stage in the plotting procedure. There is an option of printing all points computed, or only those within range of the selected observation point. The print out has a header containing the object tracked, observation point name and data, and column headers at the top of each page to provide a good quality reference document.

PC-Track only functions on the standard EGA screen so you will need to use one of the many screen dump or screen capture programs available to print or save the full screen displays. A configuration option enables you to configure the colours of the text screen to your liking and to set up the printer control commands to be used by your printer for printouts. It also enables you to define the disk and subdirectory where PC-Track will find the data files it needs. The program has an excellent on-line help system built in, which is context sensitive. It provides specific help for whatever item of information you are entering or program feature you are accessing. Once in the help system, you may browse through the remainder of the help screens to get information on any other topic you wish.

The program will run on any IBM PC/XT/AT or

compatible computer system with at least 512K of RAM and an EGA or VGA display capable of 640x350 16 colour resolution. A floppy disk system will work, but a hard disk set up will be considerably more convenient to use. Most Epson compatible printers will work, but for screen dumps you will need a printer with graphics capability and a suitable screen dump or capture program. This should be available from most shareware libraries.

Easy to Install

The program is very easy to install, it will either run directly from a floppy disk or can be copied to a subdirectory on the hard disk and run from there. If you are running the program from a floppy disk it is essential to make a copy of the program first, it is very easy to accidentally overwrite or delete files. The program is run by typing PCT at the DOS prompt. After the introductory screen has been displayed, you will be presented with a short menu. The options here allow the program to be set up for use. The set up option is the database manager and allows the satellite and observation point file to be amended. Some satellite data is provided, and more can be added as new satellites are launched. An address for

NASA in the USA is given where up-to-date information can be obtained on Amateur Radio and Weather satellites. The track option is where the satellite of interest is selected along with an earth observation point, this is the data used for the screen plot and data output. The earth observation point is shown as a highlighted spot on the screen. The configure option allows the screen colours and printer to be customised. From the track option the program will go into the plot/display mode, various features can be altered from this screen, mostly these are those concerned with altering the timebase and screen update frequency. At any stage, pressing the F1 key will take you to a comprehensive help system. This is really the key to the ease of operation of this program and to a certain extent, it makes the on disk documentation redundant. Having said that there is an excellent glossary of satellite related terms at the end of the manual, along with useful information on decoding the NASA orbital information.

PC Track is distributed as Shareware, the registered program will include an upgrade voucher for future versions. Registration of PC Track is about \$20 and has to be carried out through the author in the USA. The copy of PC Track used in this review was obtained from **The Public Domain Software Library, Winscombe House, Beacon Road, Crowborough, East Sussex TN6 1UL Tel: (0892) 663298**. They can supply you with a copy of PC Track for £4.50 for a 5.25in disk or £5.30 for 3.5in. Please note that this program will ONLY run on a PC with an EGA or VGA adaptor. ■

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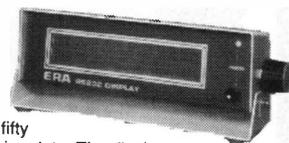
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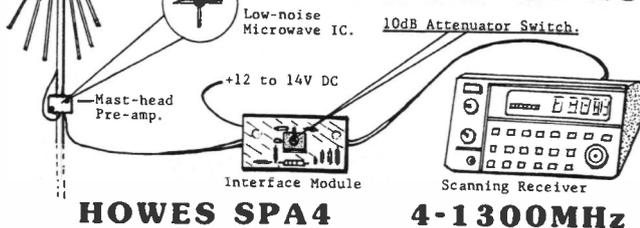
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73 from Dave G4KQH, Technical Manager

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Radiation pattern from a half-wave antenna

F.C. Judd G2BCX suggests that readers who are also computer enthusiasts might like to try at least one simple exercise at programming a computer in BASIC to plot the familiar figure-of-eight radiation pattern of a half-wave antenna (dipole).

Those of you who also read *Practical Wireless* may remember the four articles, published some time ago,⁽¹⁾ on 'Aerial Radiation Patterns Computerised' by Dr L.W. Brown and F.C. Judd. These articles dealt with the subject in detail, with many examples and you are referred to these for further information.

The example illustrated here is a direct print-out of that originally displayed on the v.d.u. in colour, the computer being an Amstrad CPC-464 operating with a DMP2000 printer.

This print-out shows three different aspects of radiation, A, B and C, from a single half-wave (dipole) antenna in 'free space' i.e. at a height where radiation is unaffected by the presence of ground. The pattern A is that produced when the antenna is horizontal as (H) and therefore represents the horizontally polarised radiation in the horizontal plane. In this case, the antenna is said to be bi-directional. When the antenna is vertical, as (V), then the radiation is vertically polarised, but in the horizontal plane its pattern is completely circular, as C. The antenna therefore becomes omni-directional.

Now pattern B, although retaining the familiar figure-of-eight shape, is at right angles to the vertically drawn antenna (V) and represents the vertical angle radiation. However, this pattern (for vertical angle radiation) remains the same whether the antenna itself is horizontal or vertical but still in a 'free-space' environment. On the

other hand, it becomes changed quite considerably when the height of the antenna is some fraction of a wavelength, or a small whole number of wavelengths (at the frequency of operation) above ground.

There is also a fourth aspect to these patterns. With 'crossed horizontal half-wave dipoles', the horizontal radiation pattern is that of the two 'figure-of-eight' patterns together i.e., at right angles to each other. Radiation becomes nearly omni-directional.

Note, that whilst the program used to produce the array of patterns as in the example print-out it is quite detailed and lengthy, those with some experience of programming may well be able to devise a similarly enhanced display based on

the simple program given below, but which will otherwise produce the conventional 'figure-of-eight' pattern on most computers, although appropriate changes may be necessary for some of the commands. It may be used as shown with an Amstrad CPC model.

The Program

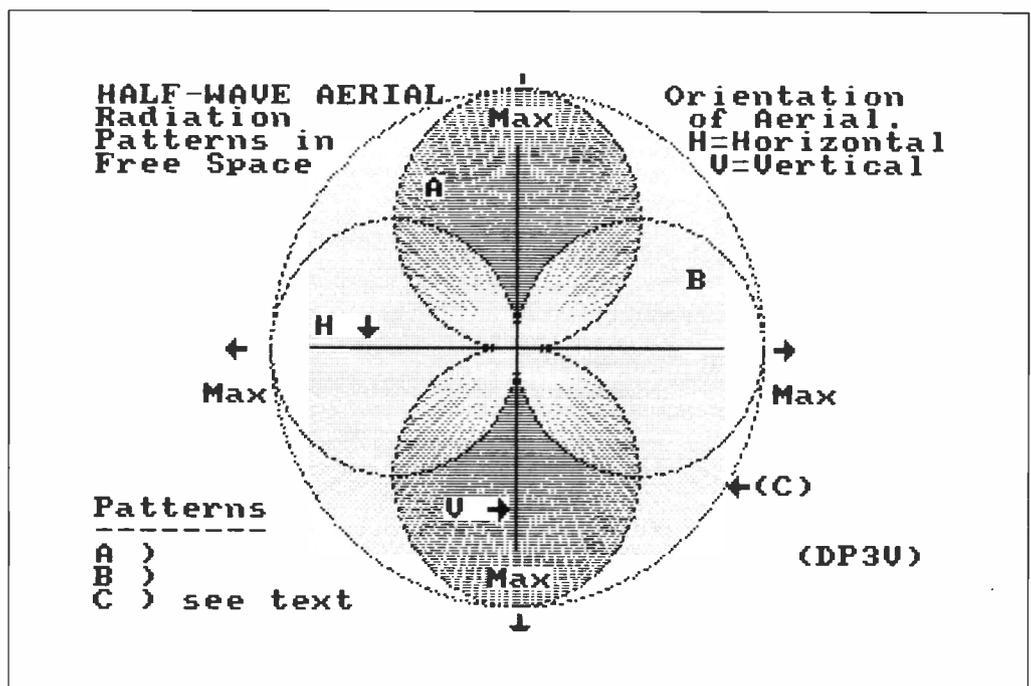
The program is given as an 'INPUT' program with 'I' as the value for the magnitude of the plot, which may be found by trial starting with, say, a value of 100. When a suitable value has been found the 'INPUT' line can be dispensed with and "I" entered as a real figure in line 70. Make sure that all the brackets are included in this line. Some computers function directly in degrees, in which

case line 40, the degree command, will not be necessary.

References: 1 *Practical Wireless* Feb, Mar, April, May '87. Photocopies are available from SWM, Enefco House, The Quay, Poole BH15 1PP price 85p per part or £3 for all four parts inc. post and packing.

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10 CLS: MODE 1
20 INPUT "Intensity (I)"; I
30 CLS
40 DEG
50 ORIGIN 320,200
60 FOR A=0 TO 360
70 R=ABS(I*SIN(A)/
(COS(PI*COS(A)/2)))
80 PLOT
R*COS(A),R*SIN(A)
90 NEXT
    
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Grundig WKC 4870 RDS Car Radio

Is short wave listening in the car practicable, or even desirable? Until recently, perhaps not. But now car drivers in the UK are offered two different receivers which meet the needs of the international radio listener on the move. Peter Shore has been testing the Grundig WKC 487 RDS car radio.

The in-car entertainment market in the UK is worth millions of pounds and some car owners spend considerable sums on equipping their vehicles with the most up-to-date technology. But, if you are a short wave listener, you are not exactly spoiled for choice when it comes to choosing a radio for international listening on the move. But now Grundig have introduced two new receivers which offer the best of two worlds: short wave coverage and Radio Data System (RDS). I have had the less expensive of the two, the WKC 4870 RDS, in my car for a couple of months and have tried it out on journeys long and short. It has worked remarkably well, although getting the hang of the various facilities and tuning methods takes some time.

Having said that, the set is very well equipped and it performs well. Let me start with the most important points for consideration when buying a car radio. First, will it fit? The Grundig is designed to fit the standard DIN aperture in the dashboard of most modern cars. A multitude of

cables and sockets are provided that allow connection to almost every possible electrical system and it took me only a few minutes to complete the connection and get the set operational. It is possible to connect four loudspeakers, two in the front and two in the rear, as well as a power amplifier through a line output. A CD player can be connected through a 3.5mm stereo jack plug. There is also a connection for a device known as an SCV, or variable speed control, which we will look at later. A standard antenna connection is provided and if a suitable antenna is mounted on the car it can be raised and lowered automatically through the on/off switch.

The radio is attractively designed, with reasonably large control knobs and buttons, all of which light up when the set is switched on. There is a large liquid crystal display that provides frequency information and a summary of which features are selected or are in use at any time.

Security

Security features are becoming increasingly important parts of car radio design and the Grundig benefits from two means of protection. It is necessary to key in a four digit personal security code before the receiver will work. This is straightforward: once the set has been switched on, the digital display briefly shows SAFE and then switches to '....' allowing the four figure personal number to be entered by means of the six numbered push buttons on the front of the set. For example, if the code is 9753 for the first figure press button 1 nine times, then press button 2 seven times and so on. Once the correct code has been entered it is necessary to press the FM button for three seconds and after a further three seconds the radio comes on. Up to eight attempts are allowed, with an increasing waiting time between individual attempts to deter attempts to enter random numbers. After attempt number eight, the delay is 24 hours.

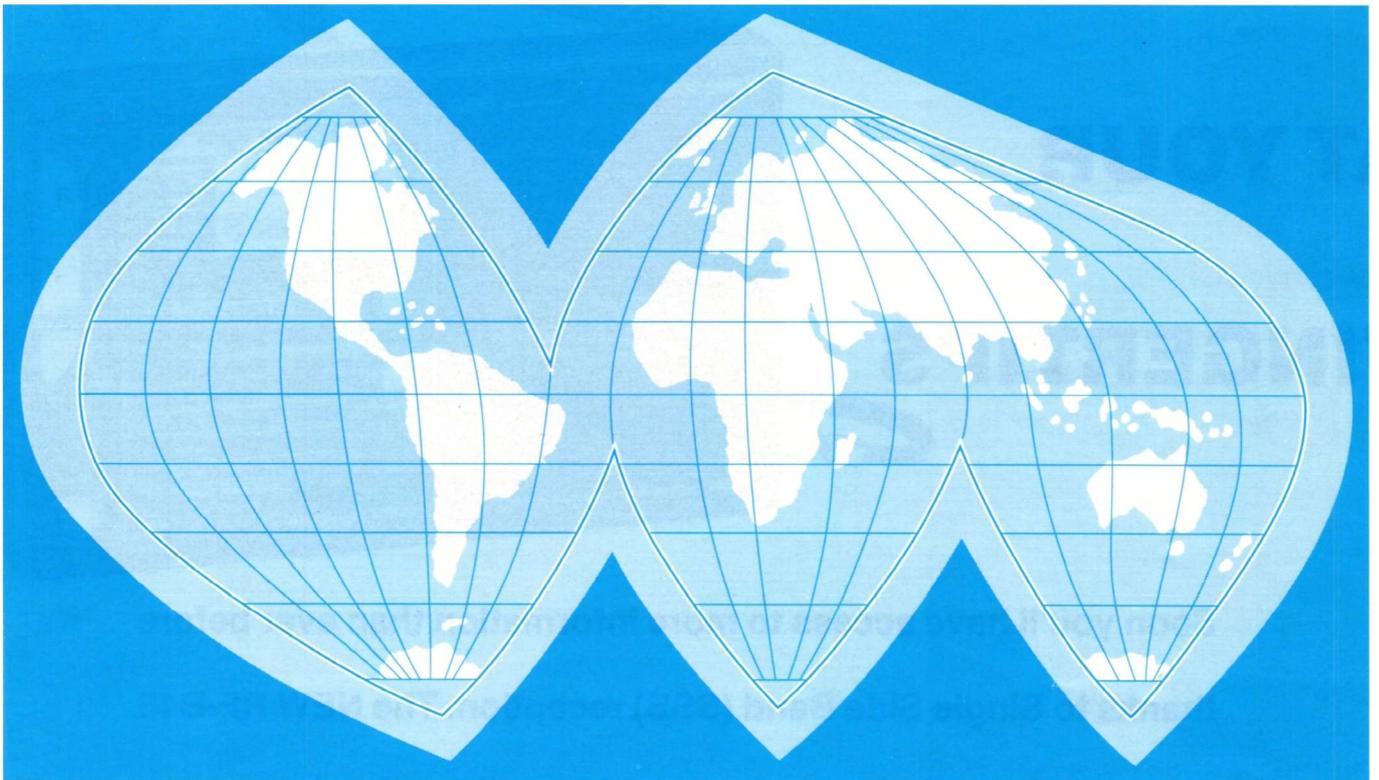
In addition to the personal code, the radio has been designed to allow the removal of the control panel of the set, rendering the unit worthless to a potential thief. A special case is provided for the control panel which slips conveniently into a pocket or handbag.

Radio Data System (RDS)

Frequency coverage of the Grundig is good. Frequencies in the 87.5 to 108MHz v.h.f. f.m. band are covered, whilst long and medium wave coverage is 150 to 283 and 528 to 1605kHz respectively. Four short wave bands are covered: 49 metres (5.95 to 6.20MHz), 41 metres (7.10 to 7.30MHz), 31 metres (9.40 to 9.90MHz) and 25 metres (11.65 to 12.10MHz). The frequency ranges cover some out-of-band channels, including all the BBC World Service European frequencies except 7.325MHz. The f.m. RDS capabilities provided on this receiver are comprehensive and work in a number of useful ways. The name of the station to which the set is tuned is displayed, obviating

International Radio *magazine*

*October 1991
Telecom '91 Edition*



European DX Council



Panasonic
RF~B45

PUT
THE WORLD
AT YOUR
FINGERTIPS



Soon you'll have access to more information than ever before thanks to Single Side Band (SSB) reception. The NEW RF-B45 opens a wider window on the world to radio enthusiasts.

Features include Phase-Locked-Loop quartz synthesised tuner, Up-Conversion Double Superheterodyne system and 6-way Multi-Tuning System with 18 preset memory. Superb sensitivity and selectivity plus the accessibility of SSB will keep you in touch with current events in every corner of the globe.

Panasonic
Audio

EDITORIAL

Radio broadcasting started more than sixty years ago. Since then it has been possible to tune in to the voices and sounds of countries many thousands of kilometres away. All this is possible because of transmissions on the short wave - or high frequency - bands, which recognise no man-made borders.

As a result and as we have seen in recent months, during times of crisis, millions tune in to the major international broadcasters in order to keep abreast of news in their own countries, let alone the rest of the world.

But when a crisis comes to an end, the international radio broadcasts don't fade away. They continue unabated, day and night, three hundred and sixty five days a year, in dozens of languages from every continent.

Listening to international radio is becoming easier every year as the major consumer electronics manufacturers introduce new and often extremely compact short wave radio receivers. The latest sets offer push-button tuning and a multitude of memories which remove the problem of having to remember lots of different frequencies.

The easier it is to listen, the more people tune in: government ministers, journalists, business executives and holiday makers are just part of the large audience that regularly listens to international radio stations.

But as more people start to listen, more stations vie for their ear leading to overcrowding on the short wave bands. And the overcrowding is severe with up to six times the numbers of stations on the air for the available frequencies at some times of the day. In February 1992 a World Administrative Radio Conference will convene in Spain to discuss frequency reallocation and broadcasters hope that more of the short wave radio spectrum will be made available for international broadcasting.

There is an unequalled thrill to tuning across the short wave bands and receiving a particularly far-off signal for the first time. In the European DX Council International Radio Pavilion at Telecom 91 - and in this magazine - we offer you an insight into the world of international radio.

The European DX Council hopes that you will be encouraged to join millions of other people in our global village in listening to short wave radio stations - offering you a connection to the world.

Les débuts de la radiodiffusion datent de plus de soixante ans. Depuis, il est possible de capter les voix et les bruits de pays qui se trouvent à plusieurs milliers de kilomètres. Et ceci est possible grâce aux transmissions en ondes courtes - ou haute fréquence - qui ne respectent aucune frontière humaine. La conséquence, comme nous avons pu le constater au cours de ces derniers mois, c'est qu'en période de crise des milliers de personnes se mettent à l'écoute des principales stations internationales afin de se tenir au courant des événements tant dans leur propre pays que dans le monde entier.

Mais la fin d'une crise ne signale pas la fin des transmissions de radio internationales. Elles continuent, jour et nuit, trois cent soixante-cinq jours par an, dans de multiples langues, émanant de tous les continents du monde.

L'écoute de la radio internationale devient plus facile d'année en année parce que les fabricants de biens électroniques introduisent de nouveaux récepteurs radio ondes courtes qui sont souvent très compacts. Les postes les plus récents bénéficient d'un dispositif de sélection de station par touches ainsi que de multiples mémoires qui permettent à l'utilisateur de résoudre le problème de la mémorisation des différentes fréquences. Plus la manipulation est facile, plus l'écoute se répand: les dirigeants politiques, les journalistes, les hommes d'affaires et les vacanciers ne représentent qu'une petite partie du public des radio internationales.

Mais à mesure que ce public s'accroît, les stations sont de plus en plus nombreuses à le solliciter, et il en est résulté une certaine saturation sur ondes courtes. A certaines périodes de la journée cette saturation atteint un seuil critique car il peut y avoir six fois plus de transmissions que de fréquences disponibles. Au mois de février 1992 une Conférence Mondiale sur l'Administration de la Radio aura lieu en Espagne afin de discuter de la réallocation des fréquences, et les stations espèrent que la radiodiffusion internationale pourra alors bénéficier d'une plus grande gamme de fréquences sur ondes courtes.

Rien ne peut égaler le plaisir de passer en revue les ondes courtes et de capter pour la première fois un signal particulièrement éloigné. Au Stand de la Radio Internationale du European DX Council à Telecom '91 - et dans ce magazine - nous ouvrons pour vous le monde de la radio internationale et l'European DX Council espère vous encourager, ainsi que des milliers d'autres auditeurs de notre village mondial, à vous mettre à l'écoute de la radio en ondes courtes - qui vous reliera ainsi au monde entier.

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Public Affairs Co-ordinator: Timothy Keeler

International Radio *magazine* was founded by David Monson for the promotion of international radio listening in conjunction with his International Radio Days project.



Voices Waiting to be Heard

The International Telecommunication Union, host of Telecom 91 at Palexpo in Geneva, wants to provide the means of speeding the flow of information around the world, both within and across frontiers. International radio has always taken a leading role in this process and, thanks to constantly improving technology, has made spectacular progress in recent years. It's a progress which has been charted by the European DX Council and its members through publications and conferences as well as in the commercial press (for more information about the Council see page 7). In this article we'll be taking a closer look at how international broadcasters are using every possible technological means to reach their worldwide audience.

Short wave radio signals, which can travel for thousands of kilometres, are still the commonest form of international transmission. Short wave is now so popular that there has been an explosion of voices in the air. Eight or more stations are now trying to share each short wave frequency.

The International Frequency Registration Board, part of the International

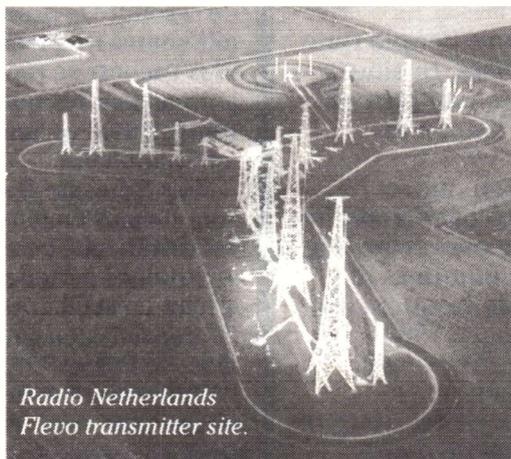
Telecommunication Union, endeavours to get frequencies shared out fairly but it is increasingly difficult to organise the crowded airwaves so that each country can exercise its right to be heard. It's so bad at present that if you tune into a frequency where, for example, you expect to hear one station, you might find it swamped by a completely different broadcaster with a stronger signal. Indeed, a World Administrative Radio Conference scheduled for 1993 to discuss a Planning System for short wave frequency allocation has been postponed to 1995 at the earliest: the prototype computer system just can't cope with the enormous volume of transmissions.

However, for the listener, what a feast to enjoy! Because of competition, broadcast engineers have had to make their transmissions louder and clearer - using optimum frequencies and power and adjusting the sound quality to best advantage. For example some classical music was all but unlistenable just a few years ago. As a result of technical developments the same music today comes across the world much more clearly. Often overseas relay stations are used to boost the signals around the world. At the same time, radio manufacturers have brought out a stream of innovative radios. Weight and size have been reduced whilst performance has been improved. Digital technology has produced radios which can memorise strings of frequencies

so that you can jump from one frequency to another - or one station to another - at the touch of a single key. International radio receivers the size of a packet of cigarettes can travel in your pocket or in your luggage, anywhere in the world. Be sure you don't leave home without one!

Today's international radio receiver usually includes medium wave and sometimes long wave as well, giving you access to local transmissions. And the international broadcasters are out in force on these bands too, because medium and long wave can be heard across hundreds and sometimes thousands of kilometres. Radio Sweden, the Voice of America, the Voice of Thailand to name but three all make use of medium wave transmitters to reach neighbouring countries.

You will probably also find FM on your receiver which more and more countries are using for local high-quality transmissions, often in stereo. But you could be in for some surprises because international broadcasters are popping up here as well!



*Radio Netherlands
Flevo transmitter site.*

This is because the old-style system of "relay" stations has taken a great leap forward. The old way, still in wide-spread use (and still expanding) is for broadcasters to get their signals picked up at relay stations and re-transmitted at high power. Broadcasters have their own relay stations overseas or share facilities with other countries in reciprocal arrangements.

Relay stations used to receive their signals on short wave "feeder" signals. Today they come by satellite. But the final link to the listener is still mostly by old technology short wave. The clever thing now is that the high quality signal is being extended all the way to the listener, by what is called "rebroadcasting". Broadcasters are providing feeder services on satellite to local radio or cable stations and so the listener gets international transmissions in perfect local quality. The major broadcasters are rapidly developing this type of relay and acquiring millions of new listeners. We have seen this particularly in eastern Europe where countries including Poland, Czechoslovakia and Hungary now transmit programmes from several international stations to the domestic audience.

For some listeners this may seem almost a disappointment. For them, the very complexities of short wave are the source of pleasure. They relish the expertise involved in knowing which frequency to use for which station at which season of the year, at which time of day. And the excitement of picking up a faint distant station is like an astronomer discovering a new star.



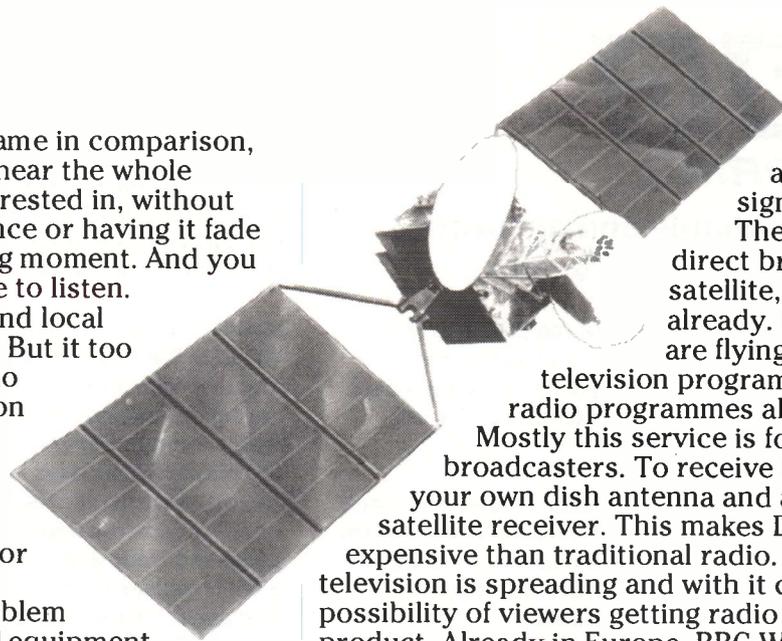
Rebroadcasting does seem tame in comparison, but you will probably get to hear the whole programme that you are interested in, without having it ruined by interference or having it fade away at just the most exciting moment. And you no longer need that expertise to listen.

Rebroadcasting on cable and local radio is a great step forward. But it too has its limitations. There is no control available to the station originating the programme. The rebroadcaster can switch away at will or record, edit and retransmit material without the originator being aware. At the moment nobody knows how big a problem this is, but very sophisticated equipment would be needed to stop this kind of piracy and no one can force a rebroadcaster to take programming that does not appeal.

So perhaps we can dramatically improve the quality of short wave instead? The International Telecommunication Union has held many international conferences to try to arrange fair shares for all in the frequency market. So far, to no avail. Then there is a scheme to magically double the number of frequencies by getting everyone to transmit and receive using "single side band". In conventional short wave transmissions, as well as medium and long wave, the speech and other audio content of the programme are transmitted on two identical sidebands either side of the "carrier" signal - that's the frequency you actually tune to. Single side band or ssb makes use of only one of the two side bands and so broadcasts take up less frequency space. This could help to relieve some of the overcrowding on short wave at present. But to make this happen, broadcasters must make expensive investments and, perhaps more importantly, listeners must buy a new type of radio which will be costly and more complicated to operate. Recent research in India, where millions own a short wave receiver, has shown that there is no knowledge of single side band and that the public would be reluctant to buy an expensive new s.s.b. radio should one become available.

Another idea is that by building a computer into a receiver, you can produce an "intelligent" radio which can automatically select the best frequency at any moment for the station you want to listen to. This type of system, known as Radio Data System (RDS), is already in use in parts of the world in domestic broadcasting on FM. But special equipment is needed at the transmitter and you need a special radio to get the benefits provided by RDS. This too is going to be difficult to achieve throughout the world.

What is needed is a quantum leap out of the old technology into something which delivers high quality transmission direct to the listeners. Two



approaches are showing signs of success. The first, DBS, or direct broadcasting by satellite, is with us already. DBS satellites are flying, carrying television programmes, with radio programmes alongside them. Mostly this service is for professional broadcasters. To receive DBS you need your own dish antenna and a special satellite receiver. This makes DBS far more expensive than traditional radio. But DBS television is spreading and with it comes the possibility of viewers getting radio as a by-product. Already in Europe, BBC World Service, Deutsche Welle, Radio Exterior de Espana and VoA Europe are available on satellite and soon they will be joined by Radio Sweden, Swiss Radio International and Radio Netherlands. A further scheme is to have dedicated international broadcasting satellites beaming digital international radio programmes to satellite radio receivers on the ground. Two projects are under way at the present to try to implement this.

Then there is DAB, or digital audio broadcasting. In this projected system, digital stereo radio signals are transmitted both terrestrially - in other words by transmitters on the ground - and also by satellite direct to radios. Satellites will pass over the earth in highly elliptical orbits which will avoid the masking effect of tall buildings and mountains. Just a few satellites could provide top-quality digital signals all round the world. And you could stay in tune with your selected station wherever you happened to be - even in a car crossing a continent. Terrestrial experiments of DAB have shown signs of success and next year's World Administrative Radio Conference will allocate a frequency range for new DAB services. If all goes according to plan, DAB could be in place by the mid to late 1990s.

Getting in tune with the world by means of radio is already simpler and the sound quality is improving. At the radio stations, computer networks and portable satellite dishes are speeding up the input of news. Digital sound is being used in studios. Transmission and reception of international broadcasts have been made better, especially by the use of satellites. In ten years, the improvements could be so great that you may be able to receive perfect digital signals anywhere in the world.

The ITU's dream of an interconnected world where everyone in every country is able to easily exchange information and share cultures is, in the field of radio, almost within our grasp. Here in Geneva at Telecom 91 you are at the centre of a world-wide technological network that is working steadily to turn that dream into reality.



BBC

MONITORING

Up-to-date, reliable and accurate news from around the world.

BBC Monitoring is an integral part of the BBC World Service and provides a unique news and information service drawing on radio, TV and agency broadcasts from 130 countries worldwide (with the exception of North America).

We monitor over 50 different languages ranging from well known languages such as Arabic and Russian to less known tongues such as Amharic or Tajik. All material is gathered from public broadcasts and transcribed into English without any editorial comment or analysis.

The news and information culled from these sources is published in a variety of forms to suit different customers' needs. The NEWSFILE is transmitted 24 hours a day containing all the latest headlines as the news breaks and can be delivered either by telex or fax. It is also available on a contract or casual basis with the customers paying for material as it is used.

The world of broadcasting in all its different guises is covered in the weekly publication **WORLD BROADCASTING INFORMATION** giving news of developments in radio and TV broadcasting, satellite broadcasting and cable networks. Stories covered include

the launch of pirate radio stations, teletext news services, rebroadcasting deals, issuing of radio licences, introduction of new transmitters and frequencies, changes in broadcasting behaviour, signing of TV agreements, reports from media commissions and the launching of commercial TV and radio networks. Updates on transmission schedules are also published.

Political news is covered in-depth in the **SUMMARY OF WORLD BROADCASTS** which contains the full text together with summaries or extracts of all important speeches, commentaries, communiques and interviews with prominent figures in politics or commerce. Reports are published six days a week providing a comprehensive record of world events. Economic reports are published once a week covering all aspects of commerce from budget plans and trade agreements to details of joint ventures. The SWB is delivered in hard copy and electronic form and is also available through three database hosts: Mead Data's NEXIS; FT PROFILE; and Reuter:TEXTLINE.

If you would like further information or **FREE** samples of any of the BBC Monitoring products, please return the coupon below:

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THE WORLD SERVICE

of The Christian Science Monitor™

MONITOR RADIO

The Christian Science Monitor's World Service provides 24-hour world news programming via three shortwave radio stations: WCSN, Scotts Corners, Maine; WSHB, Cypress Creek, South Carolina; and KHBI, Saipan, Mariana Islands. Their global news programming includes: live, up-to-the-minute newscasts on the hour and half-hour; in-depth news analysis from correspondents all over the world; features programs; and letterbox (over-the-air response to letters received from our listeners worldwide).

To receive a program guide please write us at:

The World Service of The Christian Science Monitor
P.O. Box 860, Boston, MA, U.S.A. 02123

The European DX Council

The European DX Council was founded in Denmark in 1967 as an umbrella organisation for the increasing numbers of short wave listeners', or DX, clubs on the continent. Today the Council has 25 clubs as either full members or as observers. Through these clubs some 30 000 listeners are represented. Since its formation, the Council has done much to increase co-operation amongst European listeners and in enhancing contacts between broadcasters, engineers and listeners. In addition the Council plays an important role in promoting international radio listening in Europe.

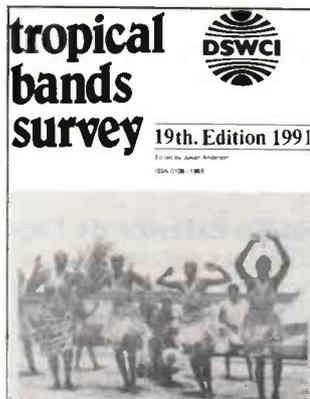
The headquarters of the European DX Council have been in the United Kingdom since 1980 and the current Secretary-General, Michael Murray, and Assistant Secretary-General, Simon Spanswick, are both British. From two offices in Britain, the Council publishes a monthly magazine, *Euro DX*, which contains updates from short wave listeners' clubs in Europe and EDXC observer clubs in the rest of the world, details of the latest news in international radio broadcasting in terms of programmes,

technological developments and previews of new receivers.

A number of working parties comprised of members from across the European continent carry out research in to a variety of

aspects of international radio listening including, for example, reception reporting. Many short wave listeners send reports of reception quality to stations who then confirm the reports with verification cards, known as QSLs. Some stations require different information from listeners and the European DX Council is attempting to find a common reporting formula which will meet the requirements of stations and listeners alike.

Every year the European DX Council holds a conference which is widely attended by short wave listeners, broadcasters and engineering staff. They come from all around the world to the EDXC Conference - from almost every country in Europe, as well as from North America, Asia and the Pacific. The Conference takes place in a different European location each year with the groundwork carried out by one of the Council's member clubs and in the last few years the event has been staged in Barcelona, Antwerp, Paris and Stockholm. In 1992 the annual meeting will move to Tampere in central Finland over a three day period in August. Delegates will have the opportunity to talk to listeners from different parts of the world and to meet with broadcasters from Europe, Asia and the Americas. In addition, the Finnish DX Association which will act as the local organiser plans to arrange superb listening facilities in this unrivalled area for



A typical publication from a member club

reception. During the conference issues affecting international radio broadcasting and listening will be discussed, and papers on many aspects of short wave listening and future technologies will be presented.

The European DX Council sees the future of international radio as being most positive. We have seen the important role that it plays in providing news - a veritable life line at times - to areas of the world in conflict or where the local media is heavily censored. We have witnessed the emergence of new means of delivering the radio signal to listeners which offers new standards of quality undreamt of but a few years ago. And the European DX Council will continue to promote the ideals of international radio by encouraging new listeners to explore the short wave bands using the latest pocket-sized equipment and offer advice wherever it is needed.

The European DX Council and international radio - interconnecting the world.

Publications from the European DX Council:

EDXC Reporting Guide

A recently updated guide for listeners on how to send reports of radio reception to broadcasters, with samples of reception report forms in English, French, German and Spanish.

Price: £1.50/SFr3,75

EDXC QSL Survey

Many listeners combine their regular listening with collecting reception report verifications, or QSLs as they are known, in the same way as others might collect stamps. The European DX Council has carried out a comprehensive survey into the policies of international radio stations on the issuing of QSLs as they are known. The findings are published in this document which aids listeners who want to know whether the multitude of short wave broadcasters issue QSLs and the individual requirements.

Price: £1.00/SFr2,50

EDXC Radio Land List

The Council's Land List details the world's present and past "radio countries" and can be used to keep track of all the countries which a listener has heard.

Price: £1.50/SFr3,75

EDXC Club List

A comprehensive guide to more than 25 short wave listeners' clubs in Europe and around the world with details of their publications, membership fees and activities.

Price: £1.00/SFr2,50

Euro DX

Published ten times each year, this magazine is available on subscription and provides an unique guide to the many short wave listeners' clubs under the EDXC umbrella as well as comprehensive coverage of the international radio scene from the viewpoints of broadcasters and listeners.

Annual subscription: Europe £6.50/SFr16,00
Worldwide £8.00/SFr20,00

All publications are available from the International Radio Pavilion at Telecom '91, or by post from: EDXC, PO Box 990, London SE3 9XL, England



International Radi

BBC WORLD SERVICE

From its headquarters in Bush House, London, the BBC World Service broadcasts programmes in 37 languages to every part of the world. With four short wave transmitting stations in the United Kingdom and twelve relay stations overseas many equipped with the very latest transmitting technology, World Service is now heard more clearly than ever before. The 24 hour-a-day English service carries news on the hour, every hour and is renowned for impartiality and reliability. The same up-to-the-minute reliable news is carried by the language programmes broadcast from Bush House. Upon his release from house arrest after the abortive coup in August, Mikhail Gorbachev credited the BBC World Service - which he had listened to during his incarceration - as "being the best" of the international broadcasters. Today the BBC World Service audience is increasing as the number of stations which rebroadcast its programmes increase. A number of east European countries carry BBC programmes in English and other languages on medium wave and FM transmitters bringing Bush House to new listeners. New European alternative programmes are being introduced during October 1991 in preparation for the single market of 1992 and closer integration of European states.

World Service Television has been launched and is available in most parts of the world by satellite.

Radio Austria International



From the city of Vienna come programmes in German, English, French, Spanish, Arabic and Esperanto on Radio Austria International, part of Österreichischer Rundfunk, ÖRF, the Austrian state broadcaster. A small international broadcaster in comparison to many, the station makes use of its own transmitters at

Moosbrunn and is relayed by Radio Canada International.

YLE Radio Finland

Radio Finland is the international service of Oy Yleisradio, the national broadcasting corporation of Finland. Programmes are financed through the television licence fee, with no contribution from the Finnish government. Radio Finland which has an extensive daily schedule of programmes in Finnish, English and French has expanded over the past few years and reintroduced German programmes in 1985 and more recently started a Russian service.

Radio Finland also broadcasts news summaries in classical Latin which the Head of YLE's External Service describes as "something of a gimmick" but suggests reaches a different sort of listener, perhaps the "more scholarly".

Radio France International

Currently embarking on a massive expansion of its transmitting facilities, Radio France International is almost the French equivalent of the BBC World Service. State controlled, it broadcasts around the clock in French and also in English, Arabic, Spanish, Portuguese, Serbo-Croat, Russian, Romania, Polish, German, Vietnamese and Chinese. RFI offers in depth coverage of affairs in Francophone countries, particularly Africa. Transmission facilities are in France and overseas in French Guiana, with exchanges providing additional transmitters in Gabon, Japan and China. RFI is to build new overseas relays in Djibouti and Thailand and upgrade existing sites in France and French Guiana.



Deutsche Welle

An enormous modern tower block in Cologne is the headquarters of Deutsche Welle, one of Germany's two international broadcasters. A relative newcomer to the international scene - it was formally instituted by the West German government

in 1960 - it today broadcasts in 28 languages. Some staff from the now defunct Radio Berlin International (the external broadcaster of the former East Germany) are employed, and the old RBI transmitting stations in the eastern part of the country are now used by Deutsche Welle. Overseas sites in Malta, Antigua, Portugal, Canada, Sri Lanka and Brasilia provide global coverage. News is a mainstay of the station's output, together with features and regional programmes.

Radio Norway International in

Oslo broadcasts in English on Saturdays and Sundays, and in Norwegian throughout the week. In addition to news about Norway, English programmes include alternating monthly features such as Scandinavian Business Report and The Arts Programme. There are plans, subject to finance being made available by the Norwegian government, to extend the English Service to all days of the week.



Radio Exterior de Espana

REE has recently launched a Spanish World Service operating twenty-four hours a day on short wave and satellite in addition to its broadcasts in English, Arabic, French, German, Ladino, Russian, and Sefardi. A relay agreement with Radio Beijing enables programmes to be more clearly heard in Asia and supplements REE's own transmitters near Madrid and Toledo.



Radio - Station Profiles

 **RADIO SWEDEN**
S-105 10 Stockholm



Based in Stockholm, Radio Sweden broadcasts international and Nordic news in Swedish, English and six other languages including Latvian and Estonian to the Baltic states. Radio Sweden boasts the longest running "DX" or specialist short wave listener programme, "Sweden Calling DXers" which started in 1948. A new schedule has been launched preparing for

extensive satellite transmissions which begin in the spring of 1992. The new programme line-up includes an hour-long English programme to Europe on medium wave.

Swiss Radio International broadcasts from the Swiss federal capital, Berne, in seven languages. Whilst SRI is not the largest international broadcaster it does offer a round-the-clock news service which is respected world-wide. Programmes also include features on life in Switzerland and the country's relationship with the surrounding European Community. At weekends the English service carries the long-running popular "Short Wave Merry-Go-Round" which offers advice on how to improve short wave reception for beginners and old hands alike. SRI programmes are transmitted from five sites in Switzerland and via relay transmitters in Gabon and by means of an exchange agreement with Radio Beijing some programmes are carried on Chinese transmitters for Asia.

Radio Moscow

Probably the world's largest broadcaster, with an enormous range of transmission facilities spread throughout the Soviet Union. Today the station is comprised of 47 language sections with round-the-clock English and Russian World Services. The station is probably the easiest to receive in the world - often you are never more than 10 kiloHertz away from Moscow!

Republican Radios

The Soviet Republics are becoming more widely known outside the Soviet Union and as part of their profile-raising exercise many have introduced English language broadcasts to overseas audiences. These include:
Estonian Radio which has English on Mondays at 2130 gmt on 5925 kHz;
Georgian Radio with English at 1700 gmt on 12030 kHz
Latvian Radio's English is heard at 2030 Monday to Friday on 5935 kHz, on Sundays at 1730 on 5935 kHz repeated Mondays at 0600 also on 5935 kHz;
Radio Vilnius, Lithuania has English at 2130 on 9675 and 6100 kHz and at 2200 on 17720, 17690,

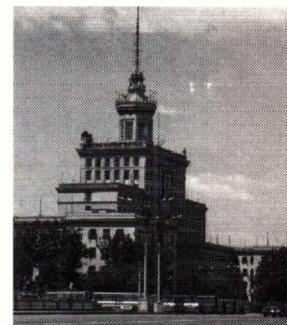
15180, 9750, 7400 and 6100kHz;
Radio Kiev, Ukraine has English at 2000 on 9865kHz and at 2300 on 15525, 15485 and 11790kHz.

Radio Australia

Based in Melbourne, Victoria, Radio Australia operates 24 hours every day in English and also carries programmes in seven other languages to Asia and the Pacific. Thanks to the wonders of short wave signals, listeners outside Radio Australia's principal target area of the Pacific region can tune in with reasonable ease. Extensive sports coverage at the weekend enables fans to keep in touch with their favourite football teams and to check whether they have won the Australian football pools. It is feared that there may be some cutbacks as Radio Australia's parent, the Australian Broadcasting Corporation, is facing budgetary problems at present. Radio Australia makes use of four transmitter sites in Australia and would like to build an overseas relay station when funding allows.

Radio Beijing

Radio Beijing, the overseas radio service of the People's Republic of China, was established in 1947 when it began broadcasting in English. Since then it has expanded to include 40 other languages including Esperanto. Programmes include news and commentaries on international affairs, reports and features on domestic issues and language courses. Programmes are carried on transmitters at six sites throughout the People's Republic, a relay transmitter in Mali and through exchange agreements for limited times on the facilities of Radio Canada International, Radio France International, Radio Exterior de Espana, Radio Moscow and Swiss Radio International. Schedules, calendars and a variety of other literature about China is available from the station.



All India Radio

Studios in New Delhi produce the programmes of All India Radio which broadcasts to Asia, Australasia, Africa, the Middle East and Europe. The General Overseas Service broadcasts in English for much of the day whilst another 23 languages are carried at various other times. All India Radio, which is government controlled, has embarked on a transmitter development programme which involves the construction of new short wave transmitting stations to improve audibility throughout the Asian region.

Radio Japan

Radio Japan is the overseas service of NHK, Japan's public broadcasting service. Japan began





NRD-535 HF Receiver

These are the latest products from the JRC stable of high class communications equipment: Available from your normal European dealer.



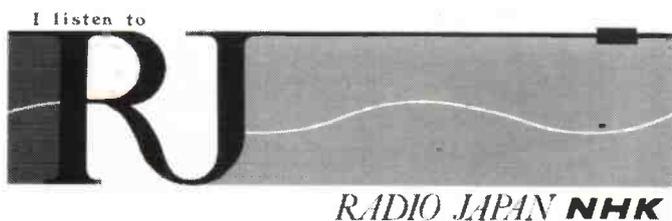
JST-135 HF Transceiver



Japan Radio Co., Ltd.

Profiles

overseas broadcasting in 1935 with a service to North America, but all foreign transmissions stopped at the end of World War Two. Radio



Japan was launched in 1952 and today its output consists of news and a range of programmes designed to provide information about Japan and the Japanese, their traditions and modern cultures. There are also Japanese language courses and a DX programme. The station broadcasts twenty-one languages each day from transmitters in Japan and in addition makes use of facilities in Gabon, Canada, Sri Lanka and French Guiana. Radio Japan's General Service broadcasts world-wide alternating between English and Japanese whilst the Regional Service is directed to specific areas such as Europe or South East Asia.



The Voice, as it is affectionately known by listeners around the world, is part of the United States Information Agency and operates with public funds

appropriated by the US Congress. VoA broadcasts in 44 languages including English with news forming an important part of programme output. Indeed, the Voice's Charter requires it to "serve as a consistently reliable and authoritative source of news". The charter also directs VoA to present "a balanced and comprehensive projection of significant American thought and institutions". VoA programmes are transmitted from three sites in the United States and from relays in the United Kingdom, Ascension Island, Germany, Greece, Portugal, Antigua, Thailand, Sri Lanka, Morocco, Botswana, Belize and the Philippines. VoA also operates a regional station in Europe called simply VoA Europe, broadcast on the medium wave frequency of 1197 kHz from Munich.

Christian Science Monitor World Service

One of the newest stations in the world, but already one with a comprehensive transmission network and a large following. Launched in the Spring of 1987, the station now has two transmitting sites in the United States and one in Saipan in the Pacific. Weekday programmes consist of a two hour block of news, analysis and features, together with the popular "Letterbox" show. At weekends, religious programmes are aired, including a relay of the Sunday service from the First Church of Christ, Scientist in Boston, Massachusetts.

Frequencies to Try

BBC World Service in English to Europe uses 648 kHz medium wave and 3955, 6195, 9410, 12095 and 15070 kHz

Radio Austria in English to Europe at 0730, 1130, 1430, 1630 and 1930 on 13730 and 6155 kHz. German also heard throughout the day on the same frequencies.

Radio Finland in English to Europe at 0630, 1400, 1830, 1955 and 2130 on 6120 kHz. Also on 9560 and 21550 (in single side band) during some transmissions. Finnish heard throughout the day on the same frequencies.

Radio France International has English to Europe at 1600 daily on 6175 kHz. French is heard at other times of the day on the same frequency.

Deutsche Welle broadcasts to Asia in English at 0900 gmt on 21680, 21650, 21465, 17820, 17780 and 11915 kHz. German heard throughout the day in Europe on 6075 kHz.

Radio Exterior de Espana's English service to Europe at 1900 on 15395, 15375, 11790, 9875. Also in Spanish throughout the day on 11790 kHz.

Radio Sweden is heard in English and Swedish on 6065 kHz in Europe.

Swiss Radio International has English and other European languages on 9535, 6165 and 3985 kHz.

All India Radio heard in Europe at 1845 and 2045 on 11620, 9950 and 7412 kHz.

Radio Japan in English to Europe at 0700 on 21575 and at 2300 on 11735 kHz.

Voice of America to Europe in English between 1700 and 2200 on 15205, 11760 and 6040 kHz.

World Service of the Christian Science Monitor in English to Europe at 0600 on 11705, 9840 and 9455, at 1800 on 21780, and 21640 kHz, at 2000 on 17555, 15610 and 13770 kHz.

All times are given in UTC(=GMT)



Twenty Things You Always Wanted To Know About International Radio

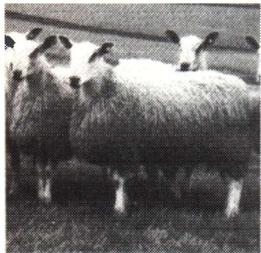
■ Programmes in **Esperanto** are still transmitted by a number of international radio stations including Radio Beijing and Radio Austria International.

■ *Radio Surinam International* is the world's **smallest** multi-lingual international radio station. It does not even have its own transmitters, but uses those of Radiobras in Brazil.

■ International programmes from Radio Moscow have fallen by 115 hours 30 minutes a week since the beginning of 1991. The total **weekly output** is now 1,137 hours 30 minutes.

■ Radio Austria International maintains the world's largest collection of **QSL**, or station verification, cards.

■ **Sheep** play a very important part in international radio. They are used as lawn mowers in big radio stations to keep the grass short around the antennas.



■ The former **jamming transmitters** in the Soviet Union are now mainly used for broadcasting regional programmes to local listeners.

■ *Radio Kuwait* will be **back** on short wave with international radio by February 1992 and will be fully operational by the summer of 1993. The station's facilities were severely damaged during the war.

■ The **most boring** programmes from an international radio station probably came from Radio Tirana in Albania until recently. Does the thought of a commentary on "The Role of Marxism-Leninism in the Youth Camps of the Albanian People's Republic" fill you with inspiration?

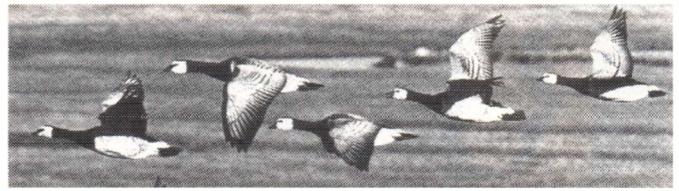
■ Iran plans to have the **world's largest** short wave transmitting station with sixteen 500kW transmitters at Sirjan, 800km south east of Tehran.

■ Deutsche Welle is leading the world by experimenting with a short wave version of the **Radio Data System**.

■ *Icelandic Broadcasting in Reykjavik* and *Radio Georgia in the USSR* are the two **latest** stations to start **broadcasts in English**. Both started during the summer of 1991.

■ BBC World Service broadcast **more hours** per week during the **Gulf War** than at any other time since the Second World War?.

■ International radio signals travel at around **300 000 000 kilometres a second**, or 186 000 miles a second?



■ **Birds** have caused the postponement of the building of a huge new short wave relay station for the *Voice of America* and *Radios Free Europe and Liberty in Israel*. The site of the station in the Arava Desert is on the migratory routes of birds and environmentalists claimed the station would harm the birds.

■ Radio Finland broadcasts each week in **Classical Latin**.

...Ectamen nedue enim haec movere potest appetit ...

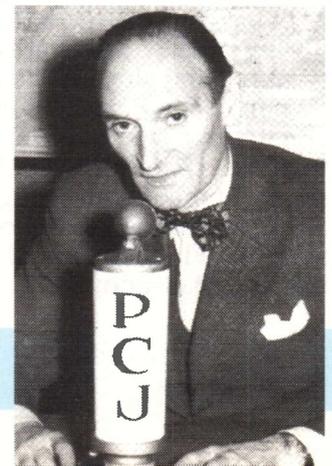
■ Swiss Radio International introduced a **radio teletype (RTTY)** news service in August 1991 on short wave - probably the first radio station to have its own news agency.

■ The Dutch station PCJ was the **world's first** regularly scheduled, continuously operating international radio station. It started in 1927.

■ As a general rule, lower short wave frequencies offer **best reception** during the hours of darkness - whilst higher frequencies provide better reception during the daytime.

■ **To avoid confusion** amongst listeners, international radio makes use of **Universal Time - UTC**. This saves listeners having to keep track of different time zones throughout the world. UTC is the same as **Greenwich Mean Time** or GMT.

■ Short wave listeners who specialise in picking up far-off and weak radio stations are known as **DXers** - DX is an old radio telegraphy abbreviation for 'long distance'.



Short Wave Radio Receivers

Choosing a Radio for International Radio Listening

Having the right equipment is important for any thing one does, be it sorting out a plumbing problem or repairing the car. Listening to international radio is no different because you will need a receiver which is suitable for world-wide reception. Today the receivers come in many shapes, sizes and prices and if you are looking for a new short wave radio, it helps to know what will offer you best value for money.

It is important that a short wave receiver has good sensitivity - that is the ability to pick up weak signals - and good selectivity - the ability to separate the signal you want from adjacent broadcasts which may interfere with yours. There are some helpful independent guides which offer advice in this area based on tests of



The new Sony ICF-SW77 portable receiver

receivers including the BBC World Service *Waveguide* fact sheets and the comprehensive *Receiver Shopping List* published by Radio Netherlands. Both are available free of charge upon request from the stations.

It is best to decide first of all on a budget and be prepared to stick to it. Don't be pressed by an over zealous salesperson into buying something you cannot afford. Receivers can be divided into three main categories:-

- Small travel portable receivers
- Table top receivers
- Semi-professional receivers

For the international traveller, holidaymaker or businessperson, the first category is likely to appeal. You will come across two types - the old-fashioned sort with a dial and pointer for frequency display and the more up-to-date type which has digital frequency display. The benefit of this newer type is that the set tunes precisely to the frequency of the station you want and you have a visual confirmation to that effect. Digital sets mostly have calculator-like keypads which enable frequencies to be keyed in directly, rather

than having to tune across the short wave bands manually.

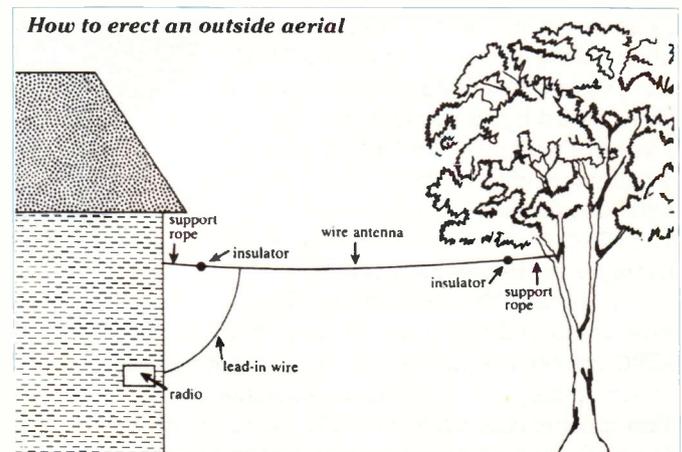
Digital sets also tend to cover all of the short wave radio spectrum, which means that stations broadcasting on frequencies outside the official "broadcast bands" (and there are more and more of these) can be received. Some of the radio sets on the market offer coverage of only the broadcast bands and so will not receive stations operating on other frequencies. If you are buying a "dial and pointer" receiver, check that it covers these frequencies :

5950	-	6250 kHz
7100	-	7500 kHz
9400	-	9950 kHz
11500	-	12100 kHz
13600	-	13900 kHz
15000	-	15600 kHz
17500	-	17900 kHz
21450	-	21750 kHz

The World Administrative Radio Conference in 1992 is likely to allocate additional frequencies for short wave broadcasting which is another good reason for purchasing a digitally-tuned radio with coverage across the short wave spectrum from 2000 kHz to 30000 kHz.

When choosing a travel portable receiver, check that it is the right size for your needs. If you want to listen to local stations as well, make sure it has FM - some sets offer stereo reception, too. Medium wave and long wave are also useful if you want to listen to local programmes, or international programmes rebroadcast locally.

The price of travel portables ranges from around £30 (Sfr 75) up to £200 (Sfr 500) for the most sophisticated - and smallest - of the world's sets. At the moment the ultimate in compact digital short wave radios is the Sony ICF-SW1. It is the size of an audio cassette and offers stereo reception on FM and ten short wave memories. The cost may be prohibitive, though, as it is



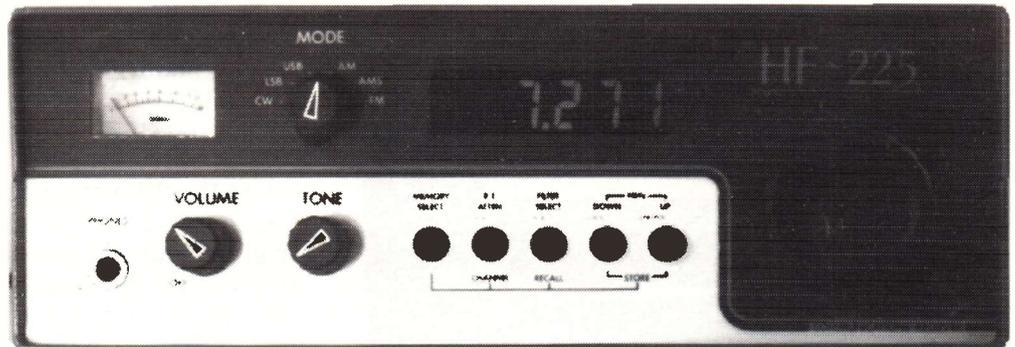


The Yaesu FRG-8800 receiver

towards the top of the travel portable price range. At the other end are sets from Grundig, Panasonic and Philips (known as Magnavox in North America), as well as Sangean which is often sold in electrical retail chains under different brand names.

Moving on to table top receivers, there is again a tremendous choice. More of these will be digitally tuned than the smaller portables which makes life easier for both the ardent and casual listener. Prices range from £150 (SFr 375) up to around £400 (SFr 1000). These offer more frequency memories, generally have provision for the connection of an outside

The Lowe HF-225 communications receiver



antenna and may perform better than the smaller sets. The principal manufacturers are Sony, Panasonic, Grundig, and Philips. There is also a receiver, manufactured by the small British company Lowe Electronics, which offers excellent build quality and superb reception too. The Lowe HF-225 costs around £430 (SFr 1075).

The final category is semi-professional. Sets here are the most expensive - from around £500 (SFr 1250) beyond £2000 (SFr 5000). They come with a multiplicity of functions which the average listener may not need, but offer superb reception when connected to a good outside aerial, which is a prerequisite for these sets.

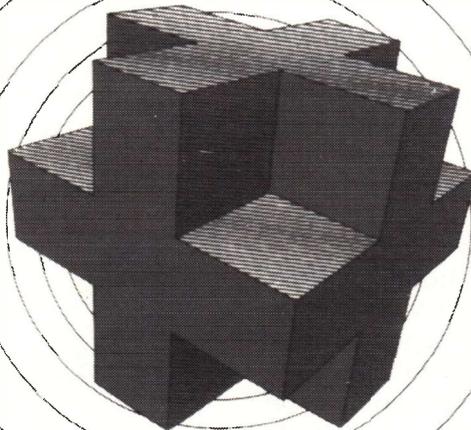
A semi-professional receiver is ideal if you want to take up short-wave listening as a serious hobby - become a DXer - or if your work requires you to keep a close eye on world events. However, it is as well to obtain advice from an independent source before purchasing such a receiver.

How the Red Cross Speaks to the World



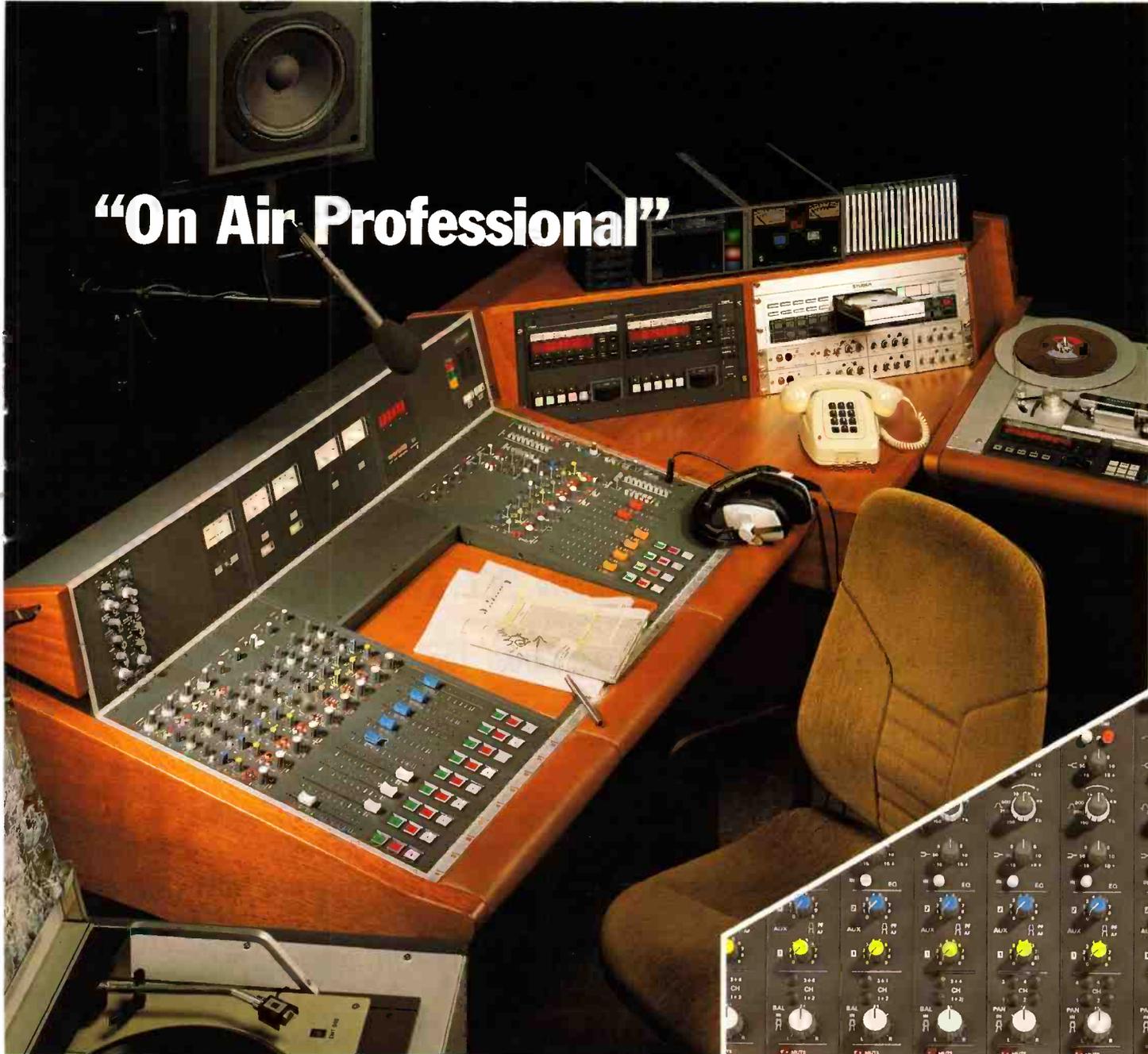
Red Cross Broadcasting Service

The International Committee of the Red Cross began broadcasting in May 1945. In Europe, many ex-prisoners of war were waiting to be taken back to their homes and they wanted their families to know they were alive. However, normal communications had broken down. Until the end of the 1940s, lists of prisoners of war and of displaced civilians were broadcast by the ICRC from the studios of Radio Geneva and were heard by listeners in various parts of Europe (In the first three and a half years of operation more than 600,000 names were broadcast). The ICRC realised the usefulness of radio for rapid communication in times of crisis. The 1948 International Broadcasting Conference in Mexico City granted the ICRC its own frequency - a unique asset among international humanitarian organisations. Test transmissions began in 1951 with the object of finding out whether listeners in different parts of the world could hear the broadcast. These continued sporadically until 1965, when the ICRC installed its own



studio at its Geneva headquarters and formed the Red Cross Broadcasting Service. Broadcasts became more regular and in 1978 the Swiss PTT gave permission for the ICRC to broadcast once a month omnidirectionally in English, French, German, Spanish and Arabic. Beamed transmissions were also made available to Africa, Asia and the Middle East. Today, RCBS broadcasts omnidirectionally twice a month on 7210 kHz in English, French, German and Spanish. Furthermore, broadcasts in English, French, Spanish, Portuguese and Arabic and beamed to Africa, Asia, Latin America and the Middle East. The programmes are beamed from the Swiss PTT's transmitters at Schwarzenburg (directional) and Beromunster (omnidirectional); facilities are placed at the ICRC's disposal free of charge by the PTT and Swiss Radio International. Listeners' reports are received from every continent and are regularly answered by QSL card.

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At an on-air console, efficiency and accuracy are decisive factors for good audience ratings. Technology is strictly a means to achieving this objective.

Based on Studer's vast experience in the manufacture of professional broadcast consoles, the series 970 is designed for both disk jockey on-air rooms and production studios, and keyed to the principle of flexibility with functional clarity.

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Its third intercept point is 14dBm, and its noise floor level is -138dBm .

What's more, it will operate reliably in temperatures ranging from

-10°C to $+50^{\circ}\text{C}$. Here's a unit with 5-step IF filters, IF shift, notch and peak

filters, two noise breakers, and a 3-step RF attenuator. You could look a very

long time and not find

another unit as powerful

as the R-5000 receiver.



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20125, Milano-Via Arbe, 50, Italy

SPECIFICATIONS

the need to remember a large number of f.m. frequencies. For example London's jazz music station is displayed as JAZZ FM, whilst Radio Two is shown as BBC R2.

One of the benefits of this system is that on a long journey across country it is not necessary to retune when listening to a national network - the radio does it for you. If you are travelling from Bristol to Newcastle and want Radio Two all the time it would be necessary, on a conventional radio, to tune to a new transmitter a considerable number of times as one passes through the service areas of each sender. With RDS, the set will search the band for the strongest Radio Two signal, checking with the transmitter for adjacent service area frequencies.

All of the RDS information is carried on an inaudible data tone transmitted on all frequencies. There are some strange effects, however, when listening to local stations on RDS. Driving through London tuned to Capital, the set may suddenly switch to LBC as the field strength of Capital falls below the minimum required by the receiver before the search facility is engaged. Similarly, driving around the M25, the set will switch to a number of different stations in a short distance as field strengths fall and rise. The other principal advantage of RDS radios is the Traffic Programme (TP) facility. This identifies stations which transmit traffic information and, as a traffic flash is broadcast, can automatically override whatever other station you are listening to with the flash. If selected during cassette operation, the flash automatically overrides the cassette for the duration of the flash. Stations broadcasting travel news now have specially encoded jingles which tell RDS receivers that a traffic flash is about to be broadcast and the RDS receiver constantly searches the band for these when TP is selected.

A facility, designed by Grundig, is RDS-Learn which enables the tuner to automatically store the 26 strongest RDS signals broadcast on the f.m. band.

Frequency coverage:	FM	87.5 to 108MHz
	LW	150 to 283kHz
	MW	528 to 1605kHz
	SW	5.95 to 6.20MHz (49m)
		7.10 to 7.30MHz (41m)
	9.40 to 9.90MHz (31m)	
	11.65 to 12.10MHz (25m)	
Memories:	FM	6
	FM-RDS TP	6
	FM-RDS	6
	LW	6
	MW	6
	SW	6
Audio:	20W per speaker SCV fitted	
Inputs:	Antenna (Automatic extend & retract via ON/OFF switch). CD player	
Dashboard cut-out:	Standard DIN aperture.	

The receiver plays the strongest signal and all other RDS stations can then be scanned consecutively using the RDS scan function

Using the Set

The radio has been well thought out and operation whilst on the move is simple. The main interest for readers of *SWM* will undoubtedly be the short wave operation and so I will concentrate on this. Tuning of the bands can be achieved automatically by means of station search or by manual scanning. Station search is activated by one of the two rocker buttons. There is a 3-stage sensitivity system. After the rocker button has been pressed once, the set tunes along the band, stopping on the very strongest signal. Scanning can be resumed by pressing the rocker button again. After a complete search of one frequency range (e.g. 49 metres) the set moves to the next band (in this case 41 metres) and searches that. Once all four short wave bands have been scanned, the scan resumes, this time stopping at all strong stations. The third scan will stop the

tuning on each signal received, both strong and weak. It is possible to start scanning on the highest sensitivity by pressing the rocker button until DX is displayed. All this takes rather a long time and can prove distracting when driving, since it is necessary to restart scanning all the time until an interesting signal is found. For this reason, I prefer the manual tuning option which allows complete control over reception, although one hand has to be kept on the set to achieve this. The radio can be tuned in 1kHz steps on short wave by repeated presses of the button, but it is possible to tune very quickly by keeping the tuning button depressed, allowing quick movement from one part of the band to another. At the end of each metre band, the set moves to the next band.

Up to six short wave frequencies can be stored in the memory in a simple operation. Stations are recalled by pressing the appropriate number button. Overall, up to 36 stations or frequencies can be stored in the WKC 4870 - six on f.m., six on FM-RDS, six on FM-RDS TP and six on each of medium,

long and short wave.

In practice, listening to short wave in the car is only really suitable for the strongest broadcast stations. DXing is not the most pleasant occupation on the move and certainly not the safest if you are driving! The test model had one annoying fault - a propensity for turning itself off whilst driving for no apparent reason. Other than this it performed very well and the audio output is excellent with good clarity and a powerful 20W per speaker.

Coupled to the audio circuits is the SCV or speed volume control. Some cars now have a speed-dependent signal generator fitted to the speedometer, computer or cruise control. This usually has an output on the back of the speedometer and is connected to the radio by means of a cable supplied. As the speed of the car increases, the volume of the radio or cassette player is automatically turned up and conversely as the car speed decreases, the volume is turned down. It is possible to adjust the SCV for optimum listening comfort.

Overall the Grundig WKC 4870 RDS is an excellent radio receiver for the car, offering reasonable coverage of the short wave broadcast bands, together with the invaluable addition of RDS facilities and a high quality tape player. However, this radio is not cheap at £440, although in relative terms it is a small part of the overall costs of a modern car. My thanks to Grundig UK Ltd for the loan of this receiver. ■



The front panel of the WKC 4870 RDS car radio can be removed for added security.

propagation

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

This time, I will lead with the super photograph of solar activity, Fig. 1, taken at 1105 on June 13 by **Cmdr Henry Hatfield**, via the spectrohelioscope at his observatory in Sevenoaks. We all know how active the sun was in mid-June and the terrestrial problems it caused. Now, thanks to Henry, we can actually see one of the events taking place on the sun, 93 million miles away.

In July, with the same instrument, Henry located 4 sunspot groups, 10 filaments and 7 quiescent prominences at 1425 on the 5th; 4gps, 12fs, 12qps and a plage with 3 ribbon flares during the morning of the 6th; 3gps, 12fs, 7qps at 1051 on the 7th; 3gps, 15fs, 8qps and 3 small flares around 0930 on the 11th; 3gps, 11fs and 13qps at 1335 on the 15th and 4gps, 11fs and 8qps at 0912 on the 17th. Unfortunately, his observations on the 10th and 15th were hampered by haze and cloud.

Ted Waring (Bristol) counted 20 sunspots on the 1st and 44 on the 25th. **Patrick Moore** (Selsey) provided the drawing he made of the sunspots, Fig. 2, which he observed at 0740 on the 3rd. Furthermore, my thanks to him for thinking of us while he was in California for the eclipse, because, at 0930 Pacific time on the 11th, he observed the sun and sent me a copy of his observation, Fig. 3. **Ron Livesey** (Edinburgh) located 5 active areas on the sun's disc on days 12, 15, 16, 17, 24, 25 & 27; 6 on days 11, 14, 16, 21, 26 & 29; 7 on the 28th; 8 on the 9th and 13 on the 5th.

Solar Radio Noise

Ern Warwick (Plymouth) heard 'gentle' solar noise with his communications receiver on 28MHz at 1140 on the 28th and 1715 on the 29th. While Henry Hatfield's 136MHz radio telescope recorded individual bursts of noise on the 5th and 10th and "very noisy" at times on the 11th. He also recorded a few bursts at 1297MHz on the 10th and 11th.

Auroral

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received reports of aurora from observers in North Dakota described as 'glow or unspecified form' overnight on 24/25; 'homogeneous arc or band' on 21/22; 'rayed arc or band' on 16/17; 'ray bundles' on 2/3, 3/4, 7/8, 8/9, 9/10, 17/18 and 18/19; 'active, moving and flaming' on 10/11, 11/12, 12/13 and 20/21 and 'coronal rayed structure' on 13/14. Observers in Winnipeg also saw the events on 9/10 and 20/21 and reports from New Zealand show that aurora was visible in the Southern Hemisphere on July 2, 3, 8-14, 17, 19 and 28. Maximum activity was seen down-under on the 9th and 13th when 23 observers reported the aurora was 'active, moving or flaming' and on the 13th when 10 observers saw 'coronal rayed structure'.

Fred Pallant (Storrington) reports a 'pronounced rasp' on the signals of



1505 13-6-91 33°N 246°

Fig. 1: Solar activity photo from Henry Hatfield.

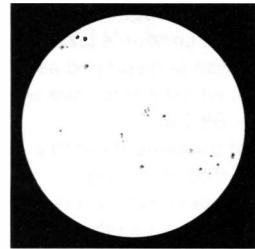


Fig. 2: Sunspots on July 3.

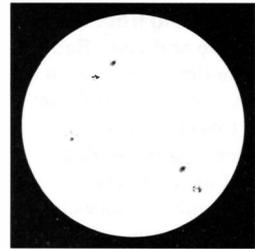


Fig. 3: Sunspots on July 11.

the German (DF0AAB) and UK (GB3RAL) 28MHz beacons at 1500 on the 13th. The logs of **Gordon Foote** (Abingdon) and **Ern Warwick** confirm that the German beacon, DK0WCY on 10.144MHz, gave auroral warnings daily from the 8th to the 14th. **Tony Hopwood** (Worcester) and **Doug Smillie** (Wishaw) between them heard tone-A signals on days 8, 9, 13, 14 & 17.

Magnetic

The various magnetometers used by **Tony Hopwood**, **Karl Lewis** (Saltash), **Ron Livesey**, **David Pettitt** (Carlisle) and **Doug Smillie** indicated activity on days 1, 2-4, 8, 9, 13, -15, 17-19 and 21-23.

Sporadic-E

I counted more than 60 East European f.m. broadcast stations between 66 and 73MHz while an intense Sporadic-E disturbance was in progress on the evening of July 21 and around 40 at 1745 on the 22nd, 0800 on the 27th and 1900 on the 29th. **Barry Bowman** (Prestwich) logged Radio Zagreb on 87.7MHz on the 21st.

Propagation Beacons

My thanks to **Chris van den Berg** (The Hague), **Gordon Foote**, **Henry Hatfield**, **Fred Pallant**, **Ted Owen** (Maldon), **Ted Waring** and **Ern Warwick** for their 28MHz beacon logs from which I compiled our monthly chart, Fig. 4. **Gordon Foote** logged 17 beacons on July 7 which is his highest daily tally to date. **Ern Warwick** copied signals, almost daily from **IK6BAK** on 24.915MHz, **PY2AMI** on 24.931 and 18.100MHz and daily from **ZS6DN/B** and **4X6TU/B** on 14.100MHz and **DK0WCY** on 10.144MHz.

Tropospheric

"DX on v.h.f. has been hard to find so far this year but July 4 and 5 provided some reasonably good reception from Scotland and North Yorkshire," wrote **Leo Barr** (Sunderland) on August 5. He listened to various programmes on BBC Radio 1 from **Holme Moss** and **Scarborough**, **Radio 4** from **Ashkirk** and **Radio Scotland** from **Rosemackie** and **Sandale**. "French stations 'bombing' in," said **Leon Greenfield** (Storrington) as he tuned through Band II on his stereo gear at 0930 on the 11th and **Simon Hamer** (New Radnor) logged all Scandinavian countries during an opening on the 14th.

The daily variations in atmospheric pressure can be seen in my television column elsewhere in this issue.

Beacon	June					July																											
	26	7	8	9	30	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	20	1	2	3	4	5			
DF0AAB	x				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
DF0THD					x																												
DLOIGI	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
EA3JA	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
EA6RCM	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
IY4M	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
HG5GEW			x	x	x				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x									
LA5TEN		x	x	x	x	x			x	x	x	x	x	x	x							x	x	x	x	x	x	x	x	x	x		
OK0EG		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x						x	x	x	x	x	x	x	x	x	x		
OH2TEN	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x						x	x	x	x	x	x	x	x	x	x		
PI7BQC																																	
PI7ETE																																	
PT7BCN																																	
PY2AMI	x	x	x	x					x							x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
SK5TEN		x	x	x	x	x			x	x	x	x	x	x	x							x	x	x	x	x	x	x	x	x	x	x	
VE2HOT	x																																
VK2RSY																																	
VK5WT																																	
VK6RWA																																	
WA4DJS																																	
ZD8HF	x	x	x	x	x				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
ZS1LA		x	x	x	x				x	x	x					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
ZS5VHF	x		x	x	x	x			x	x	x																						
ZS6PW	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Z21ANB	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4N3ZHK	x	x	x	x	x																												
5S4CY			x	x																													
5Z4ERR					x																												

Fig. 4: 28MHz beacon chart.

ssb utility listening

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

This month, some interesting frequencies and callsigns for US customs from one of our readers together with more of your logs. However, first a few queries that need clearing up.

Mr L. Banting of Wokingham has asked what has happened, if anything, to the marine channels below 4.0MHz following the recent re-shuffle of all the channels above that frequency. The simple answer is that nothing has happened to them, because there is no internationally recognised channelising system below 4MHz. So, all previous frequency allocations and the British alphabetical channels all remain the same.

On the same topic, Garrick Hickman of Cleethorpes asks how some of the coastal radio stations operate during the evenings as he hears the same operator transmitting from several different stations. This is quite common practice during quieter periods, when some of the smaller coastal stations are unmanned. Although I have not seen any details published, I suspect that the stations then switch over to automatic operation and are connected by telephone line to a central operator for transmissions. Garrick also asks for help identifying ships from their names and callsigns. This is a difficult one. The only comprehensive list that I am aware of is from Lloyd's of London and I suspect it costs a small fortune for a copy. Perhaps some of our marine buffs know of a cheaper alternative.

Still with marine, Mr K. Mayhew asks what the letters following 'GK' on Portishead's callsign prefix mean. They refer to frequencies used by the station, each operational frequency is treated as a separate station with its own callsign. I am afraid there are far too many to list here and I suspect they are only of academic interest anyway.

US Customs

Keith Elgin has sent in a comprehensive list for the US Customs and Drug



Fig. 1: A coastal radio station - Port Patrick Radio. British Telecommunications plc 1990

Enforcement Agency (DEA). Their main frequencies are shown in the table below, but note that channels that start with X-Ray are not currently being used.

Keith also mentions the COTHEN network with its SelScan system. COTHEN stands for Customs Over The Horizon Enforcement Network. The frequencies used (some in the table) are automatically scanned and when contact is established, the two stations lock to each other. The SelScan frequencies are: 7.527, 8.912, 10.242, 11.494, 13.907, 15.867, 18.594, 20.890, 23.214 and 25.350MHz.

Some callsigns to listen-out for include BALLYHOO followed by numbers which are customs patrol boats. Other customs vessels carry the callsigns BILLFISH, CAJUN, QUEEN 245, GUNSLINGER 465, HOLIDAY INN 358, IRON LIFTER 264, LADY DI 251,

MORNING STAR, PEARL 042, SEA BREEZE, TIDE WALKER 288, WAVE RUNNER and WINDJAMMER.

Paul H. of Newbury has helped out with even more information. He says that 5.696MHz is a USCG primary channel and 2.670MHz is also active. He mentions that USCG air patrols can also be heard using the Atlantic tracks NAT-A and NAT-B frequencies mentioned last month. Paul has also included some aircraft callsign identifiers and these are: HH-3F Pelican helicopters carry callsign suffixes with numbers in the range 1430 to 1438 and 1467 to 1497. Several Lockheed HC-130H Hercules are operated and have numbers 1500 to 1504, 1601 to 1603 and 1700 to 1721. HU-25 Guardians have the numbers 2101 to 2141. Numbers in the range 6001 to 6035 belong to HH-65A Jayhawk Helicopters and those between 6501 and 6596 are assigned to HH-65A Dolphin helicopters. The range 3501 to 3504 belong to E-2C Hawkeyes which are electronic surveillance platforms. As an example, Coast Guard 1711 is a Hercules operating out of Clearwater in Florida.

Paul mentions that the USCG operate about 80 fixed wing aircraft and 140 helicopters out of 27 bases. I know from personal experience that much of their effort is concentrated off the shores of Florida where they are heavily involved in drug busting operations. At the Southernmost tip of the Florida Keys at Key West, a Goodyear airship is operated at high altitude and this keeps a watch on shipping and fishing boats approaching the US coast from Cuba and South America. Good news for UK listeners is that the South Eastern area of the USA and the Caribbean

are very easy to hear on h.f. at most times.

Paul also included a page from the US magazine *Monitoring Times* on the hurricane hunters I mentioned recently. The article is by Skip Arey who says that NOAA (National Oceanographic and Atmospheric Administration) now operate two modified Navy P-3 Orion aircraft which are flown into the heart of the hurricanes to take measurements. He also says that the US Air Force are now using modified C-130 Hercules (listen out for the callsign 'Gull') for the same job. Skip's frequency list for the hurricane hunters varies a little from the one in this column in the August edition, so I have merged the two which hopefully means we may now have all or most of them. They are: 3.407, 5.562, 6.673, 8.876, 9.020, 10.015, 11.898, 13.267, **13.354**, **17.901** and 21.937MHz. The bold figures show the two we did not have before. If you hear the callsign KJY74 or 'Miami Monitor' then you know you have found them. He also mentions NOAA weather broadcasts on 7.880MHz as being a good source of hurricane information. Unfortunately, at my location that frequency is swamped by Hamburg Meteo with its constant carrier.

Your Logs

Simon of London has sent in a list of aviation and military logs. He uses and FRG-7700 with Datong FL-2 filter, a.t.u. and 20m long wire. His main interest is air band and he has recently logged Karachi and Bombay on 5.658, Tripoli on 8.894, Dakar on 8.861 and the AF113 region (Eastern) on 11.300MHz (actually Simon your FRG-7700 is reading 1kHz too high and I have corrected the figures). 11.300MHz is a good frequency for newcomers to cut their teeth on. It is quite easy to hear and there is often constant chat between stations like Tripoli, Addis Ababa, Cairo, Khartoum, Nairobi and Mogadishu.

Simon also heard RAF Strike Command 'Architect' on 6.739MHz calling the the royal flight 'Kitty Two'. RCAF Lhar was heard on 5.691 and Algiers on 8.895MHz. On 11.177MHz he heard a C-141 Starlifter with decompression problems talking to Croughton.

The book based on this column is still on schedule for release at the Leicester Show on October 25 and 26. I will be there and pleased to meet any regular readers. You will find me on the PW/SWM stand - I do not guarantee to be there all the time but the gang will know the times of my comings and goings.

Looking Forward

Next month, a detailed look at how the military use the North Atlantic tracks. Ron King who wrote the Complete UK v.h.f. & u.h.f. *Air Band Guide* has sent me loads of information.

MHz	Channel	MHz	Channel
2.8055	XA	12.2220	ZD
3.3690	VK	13.3120	YE
3.4280	YA	13.9070	TB
4.5000	ZA	14.4935	Unknown
4.9910	XB	15.8670	ZE
5.0585	XC	15.9535	XG
5.5710	YB	15.9640	VD
7.5270	ZB	17.6010	XH
7.7785	XD	17.9720	YF
8.9120	YC	18.5940	VC
9.2385	XE	19.1310	XI
9.8020	ZC	20.6310	VB
10.2420	TA	20.8900	TC
11.0735	XF	23.2140	TD
11.2880	YD	25.3500	TE
11.4940	VF	27.8700	VA

EUROPE
Peter Shore

There can be little doubt as to what has been dominating the European news during the past weeks: continuing and deepening civil conflict in Yugoslavia and the remarkable events in the Soviet Union at the end of August.

With Serbs fighting Croats in Yugoslavia, with little prospect of a brokered peace settlement holding, it's worth keeping one's ear on the Voice of Radio Yugoslavia from the Serbian controlled capital, Belgrade. The station carries English to Europe at 1830 on 15.165 and 6.165MHz and at 2100 on 11.735 and 5.96MHz. There are also transmissions to the Americas and Australasia at 0000 on 11.735 and 6.02MHz and at 1200 on 21.60, 17.74 and 17.725MHz. Meanwhile, if your Croatian is not too rusty, try for Studio Zagreb First Programme which can be heard on medium wave frequencies 1.602, 1.485, 1.143, 1.134 and 1.125MHz. The transmitter on 1.134MHz is most powerful, with 1200kW. From the now almost independent republic of Slovenia is Radio Ljubljana 1 on 918kHz with 600kW. The main Serbian domestic medium wave service is on 684kHz with 2000kW.

The Soviet Union

What else can one say about the Soviet Union, which may simply be an economic union by the time this edition of *SWM* reaches you. Events moved incredibly quickly from the announcement of the coup against Mikhail Gorbachev on August 19, flashed on Radio Moscow World Service, picked up by BBC Monitoring and used in morning news bulletins throughout the west. Broadcasting from the headquarters of Soviet Radio and TV was distinctly biased in favour of the coup and Radio Moscow's English language World Service reported events from that side of the fence.

Meanwhile, the KGB attempted to pull the plugs on the independent stations in Moscow, Echo of Moscow and Radio Russia. With their customary light handed touch, agents cut through a whole set of cables near Radio Russia and cut its links with the transmitters, together with a variety of telephone cables belonging to businesses and the public.

An amateur shortwave transceiver was pressed in to action in the Russian 'White House' parliament building and sent the news to the outside world, including many foreign correspondents. Remarkably, the coup leaders failed to have foreign journalists' links with home cut and so much live reporting found its way out of the country only to be promptly broadcast back in on the BBC World Service, Radio Liberty and the Voice of America.

The TASS news agency, which operates on short wave as well as by

satellite and land line, had an unprecedented close-down during the second night of the coup. It was on Wednesday morning when it was announced that the tanks which had surrounded Radio Moscow had left that more real news started to emerge on the short wave bands from Radio Moscow. It seems that the staff at the station were pressed in to telling the junta's side of events and may even have been under guard in the studios.

Many of Radio Moscow's regular English programmes failed to be broadcast, being replaced by programmes of classical music. Some news bulletins were up to two minutes shorter than the regular eleven minutes, indicating that things were not as they should be. There was a dramatic turn around on Wednesday when at the end of the 1500UTC news bulletin, an apology was broadcast to the effect that some news had not been up to the usual high impartial standards of Radio Moscow as a result of exceptional circumstances.

Mr Gorbachev, on his release, confessed to having used a short wave set to keep in touch with events inside his own country during his time under house arrest. He said he listened to the BBC, Radio Liberty and the Voice and that the signal from London was best of all. For listeners wanting to try to keep in touch with Radio Moscow, frequencies to try are

0700 on 7.315, 11.73, 11.775, 11.98, 11.995, 13.775 and 15.45MHz

2000 on 1.143 (medium wave), 6.0, 7.33, 11.63 and 11.898MHz

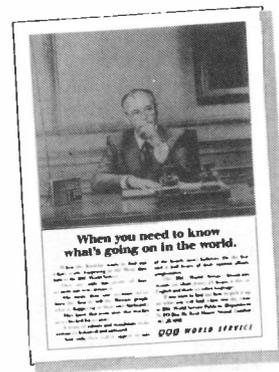
The 2000 broadcast contains the 'British hour'. Meanwhile, with the Baltic states now recognised as independent by many western countries, it will be interesting to see what happens to their external services. Lithuanian Radio and TV which had been occupied for many months by Soviet interior ministry troops was vacated at the end of the coup. The station had only been traced on its own transmitter which uses 6.10MHz and none of the half dozen or so frequencies which came from transmitters elsewhere in the Soviet Union, principally in the Russian Federation. Keptuning around the bands between 2130 and 2230 during which there are transmissions in English to Europe and North America. Let us know here at *SWM* what you find.

Radio Georgia has introduced an English service heard daily at 1700 on 12.07MHz - audio quality is appalling, but it's worth persevering with just for the novelty of it.

And So To Other News

A service recently inaugurated had the opportunity to prove itself during the Soviet coup crisis. Swiss Radio international has launched a radio teletype service which operates on

We said in 1989...He said in 1991.



'We were able to catch some broadcasts and find out what was happening. We got BBC best of all. BBC best of all.'

Mikhail Gorbachev
Soviet Union
August 1991

When he really needed to know, we kept him in touch.

BBC WORLD SERVICE
IN 27 LANGUAGES

BBC House, London W1A 0AB

Fig. 1: A recent BBC World Service advertisement.

short wave at 50 bauds at:

1830-1930 on 17.53MHz

2000-2130 on 10.515MHz

0030-0130 on 10.515MHz

0200-0300 on 10.515MHz

None of these transmissions is directed to Europe, so reception may be difficult, but if you have the equipment give it a try. You'll need to have a German dictionary at hand, though, since the service is entirely in German.

There's a new German language course from Deutschlandfunk starting this autumn. The course is called 'Deutsch - Warum nicht?' which, if your language skills aren't quite up to it, means German - Why Not? A course book is available free of charge from DLF in Cologne to accompany the lessons. Write to DLF, Postfach 51 06 40, W-5000 Cologne, Germany marking the envelope 'German - Why Not?'. DLF can be heard on 1.296MHz at 1915 daily with the language course on Wednesday and Saturday at 1900UTC.

Israel has cut back its external service, with no transmissions during the night time period. The complete English service from Jerusalem now consists of transmissions at:

1330 on 11.507, 15.59 and 17.59MHz

1700 on 11.507, 11.675, 15.59, 15.64

1900 on 11.587, 11.605, 11.675, 15.64, 17.63 and 17.685MHz

2130 on 11.587, 11.605, 15.10, 15.64, 17.575 and 17.685MHz

There is a possibility that transmissions between 2200 and 1230, which are currently suspended, may be re-introduced during the winter schedule, depending on whether additional funding is allocated by the Israel Broadcasting Authority.

Radio Tirana in Albania is another station suffering from cuts at present. Indeed, it is a shadow of its former self. English is one of the languages which seems to have escaped the axe for the time being, and it can be heard:

1730 on 9.48, 7.155 and 1.395MHz

2130 on 9.48, 7.245 and 1.395MHz

The North American service is at: 0230/0330 on 11.825 and 9.58 MHz

The world's tallest transmitting mast collapsed during August. Routine maintenance on the long wave transmitter mast just outside Warsaw was under way and the supporting guy ropes had been replaced - and then it fell down. No one knows quite why, but it does mean that the long wave transmitter on 225kHz will be off the air for a while yet.

Icelandic Radio now has a short English news bulletin at 0730 on weekdays. This can be heard on 9.265, 6.10 and 3.295MHz. The news is not the most thrilling that is ever heard, as little actually happens in the island country. Based outside Milan, the Italian Radio Relay Service operates an increasingly comprehensive schedule, with regular broadcasts of United Nations Radio in a number of east European languages. The IRRS can be heard daily between 0500 and 0700 on 9.815 MHz, on Saturday at 0700 until 0900 and 1930 to 2100 and on Sunday at 0400 to 1500 and 1930 to 2100. The broadcasts are in A3A mode.

New Schedules

New schedules come into effect during October and I'll bring you details of frequency changes in the next 'European Bandscan' column, as well as in the monthly 'Back-Scatter' in our sister publication, *Practical Wireless*.

One European broadcaster that is changing its schedules quite significantly is Radio Sweden. It plans to be on the Astra satellite next Spring and is therefore introducing longer programmes, including an hour long European English programme which will be carried on medium wave during the evening. Unfortunately my spies in Stockholm didn't manage to get the precise time as this magazine went to press, but keep your set tuned to 1.179MHz which is the frequency Radio Sweden's high powered medium wave transmitter uses. And so that's all from Europe this quarter. See you in the January edition of *SWM*.

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

There is an underlying demand for a book that covers the basic theory and practice of satellite television and reception - the sort of book that answers the 'how', 'why' and 'where' when confronted with a problem or uncertainty. A book that fulfils that demand has now been published in its 4th edition. Though sourced in the USA, it has been expanded considerably through its various editions into an international reference work.

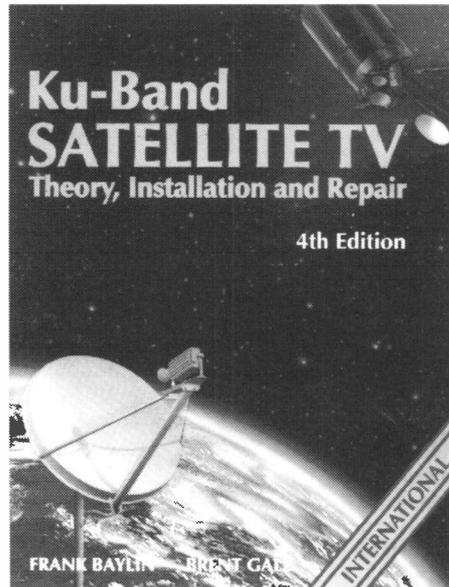
Ku-Band Satellite TV - Theory, Installation and Repair compiled by Frank Baylin and Brent Gale in the International edition, hit the bookstores in July 1991 and is therefore as up-to-date as will be found anywhere.

The book covers the basics of satellite communication - signal processing, transmission and reception at microwave, types of satellites, their launch and orbital stabilisation, the complete component operation guide to all parts of the TVRO system, dishes, feeds, LNBS, polarisers, cable, actuators, receivers, filters, broadcast system standards, a 'how to select' section, interference, installation and setting up of a TVRO system, scrambling, distribution systems, fault finding, a massive appendix including many footprint maps for world-wide use. I was particularly pleased to see a detailed discussion on Ku band feeds including polyrod lens, the latter is a component about which little information is available. Another subject that has been given coverage is retrofitting Ku feeds for Ku/C Band operation (11/4GHz) to allow 2-band operation. This technique is rarely seen in the UK, where dish sizes are generally too small to allow C Band operation. (I am hoping to research small dish C Band reception with specialised equipment later in '91 and if acceptable results are achieved information will be given in these pages later on.

Ku-Band Satellite TV is a massive volume of some 432 pages of 200 x 275mm, with many illustrations, diagrams and photographs. I can recommend the volume as an essential reference work into Ku-Band TVRO installation, theory and practice. Of course, as with any book covering a specialised subject that has a relatively small market it is rather expensive, the UK price is £23.00 inclusive of postage. Airmail to Europe add a further 10% and elsewhere in the world add 20% - it's heavy weighing in at over 2lbs! The UK distributor is J. Vincent Technical Books, 24 River Gardens, Purley, Reading RG8 8BX, UK (phone/fax 0734 414468 or cellphone 0836 582785).

Orbital Links

It's a sad fact that when a crisis happens, then the satellite news feeds become extremely active, as I type this in the evening of August 20 both Gorizont downlinks (11 and 14°W, Ku



band at 11.512GHz) are carrying news reports from broadcasters' Moscow correspondents. Though, unlike recent events in the Gulf, no 'live from the front' camera reports have been seen. News feeds comprise the respective reporter talking straight to camera with recorded video inserts from the streets. It's apparent though that the recordings are but minutes old and this evening produced some sombre yet dramatic scenes over the Gorizont feeds. Later at night, 14°W seemed to be carrying 2-way interviews plus street scenes and 11°W downlinked a more continuous successions of street scenes, many from the roof top or windows of the news studio building. Interesting to note that Sky News were playing out all recordings of the street resistance that came over the Gorizont/Visnews-Moscow circuit. The Gorizont satellite circuits were incredibly busy with an almost continuous succession of reporters in 2-way contact with their broadcasting networks. By August 21, the coup suddenly ended and the media featured even more intensive coverage over the various satellite feeds. Certainly these 3 days in August produced dramatic events and for the satellite enthusiast able to track across the sky to the several hot birds carrying the news downlinks - he too joined in the drama and tension as it unfolded in real time in his living room. Similar to the Gulf War earlier this year, the era of satellite news feeds really brings the horror live conflict into the home.

Elsewhere in Europe, the on-going conflict in Yugoslavia has been portrayed over several regular news compilation feeds and of course during the RTV-Beograd TV service on Eutelsat 1 F4 7°E (11.178GHz hor).

Of course, in late July the Moscow Summit Talks were very much in evidence with the visit of President Bush to the USSR with countless news programme feeds carried over the Gorizonts - unusually a Visnews Mobile uplink on Russian soil for this event originating both 625 lines PAL and 525 lines NTSC.

Fig. 1: The new satellite book.

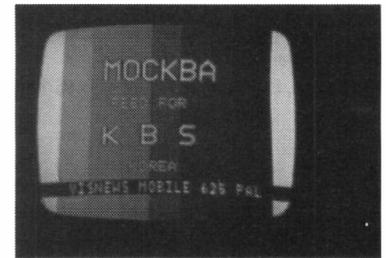


Fig. 2: Caption over Gorizont



Fig. 3: Caption over Gorizont.



Fig. 4: Caption over Gorizont.

Orbital News

There is more hopeful news of a possible recovery of Olympus, since correction commands at the end of July from several earth stations successfully instructed the craft to go into a 'sun acquisition mode', which warmed the satellite up sufficiently to thaw on-board rocket fuel and recharge batteries long exhausted. Two days later, on July 31, the satellite was rotated to face the earth and it is now being relocated back to its starting slot at 19°W where it is hoped the satellite on-board systems can gradually be run up and, in due course, return to service.

Spring 1992 (hopefully near to Easter) should bring a new TV channel into programme operation initially in the London and those areas served by cable, with an eventual aim for a pan-European audience via satellite. 'Star Television' will be the UK's first 'black' channel which will receive training and production facility assistance from LWT and has been set-up by 'Voice Communication' who publish a 'black' newspaper and intend the new service will carry about 50% music, various bought-in entertainment offerings and programmes from its own production facility in due course.

The Norwegian authorities have been upset by alcoholic type commercials carried over CNN, Discovery, Eurosport and Super Channel which have appeared over cable systems in Norway. Such advertising is considered illegal and talks have been taken place during August to resolve the problem.

China (People's Republic) has now reached agreement with satellite company PanAmSat for launching future craft in the PAS series for slotting

over the Atlantic at 39.5, 43°W, Pacific 190, 192 West and the Indian Ocean at 68, 67°E. PAS-2 is due for launching over a Long March rocket in early 1993. The ailing AUSSAT Pty Ltd is still trying to sell transponder time over AUSSAT but charges are such that few are interested in any involvement - costs of TVRO equipment are high, due in part to the government's ruling that B MAC be used for DTH transmission. Plessey have the monopoly for constructing B MAC decoders which has pushed up the price of a TVRO system to \$2500 local. Despite the vast debts (around \$900 million) Ausat are proceeding with 2 more AUSSAT satellite launches!

SES Luxembourg, operator of the Astra satellites have issued a press statement containing the statement that there has been no malfunction of the solar panels on Astra 1B with the suggested loss of 25% of power; that no transponders on Astra 1B have been switched off to preserve power; and that Astra 1A has not lost 5 of its 6 backup transponders. Arabsat 3 is due for launch end 1992 but will operate in S Band only. The Italian TV service RAI that was downlinking over Olympus prior to the latter's loss orbit have been considering use of a TDF or TV SAT bird for its RAISAT service. Thailand is hoping to have her own satellite operational by mid 1993. Yet another sports channel is under discussion by France, to operate from this Autumn over Eutelsat II F1 13°E. And finally 'Channel E', an educational channel may well return to the satellite screen early 1992 from an as yet unnamed satellite, the production facility will be based in Dusseldorf.

amateur bands round-up

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As this comes to be written in the middle of August, the weather has at last picked up - to being close and muggy! We just can't win.

Letters

Congratulations to **Brian Lucas** on his new G7JTW call; his training-school group achieved 90% passes in the RAE, but so far only two have opted to actually take out a licence.

Brian mentions the high-spots of his list as - on h.f. - VP2EY, HL0BLA, 9K2EY, YC0JBE, PJ9EE, YFOCHA, SU1ER, VK2PS, ZL10K, ZL2BAQ, TA3G, HC2HVE, 5B9A, JH1RFM, 5Z4BI, YA4GA, 4X31AD, JA2AEV, JR2CQS, N4MM, N4AA, ZC4BS, EW2F, PZ1EL, YZ4Z, YP0A, SV5TS, 7X2DG, JY9MO (QSL via WB20QY), TK5CW, IG9/IT9FTB, KC6TYA/AG & C31LHK. As for v.h.f., PA0PRT, ON1ALD, F9NW, FD1NXU, ON4ALF/A & FC1RCX were on 145MHz, while 50MHz turned up I2ADN/IM0, FC1ERF, GW4GSH, FC1LTE, FC1DVO, ON4KST, FC1BDW, IOAMU, IK5ERI, IK2DMF/P7, FC1RG, IK4MEB, IK0JLO, OE6LOG, ON5SE, ON1ALD & ON1BFO. 'Specials' included SK3IK/P2, GB5OATC, EJ7FRL (Fastnet lighthouse), Y9SOP, GH4WKS/P (QSL via G0GNF) & UY7U.

Gerald Bramwell (Swinton) has thought up a neat wheeze to get a second antenna in place; he has found a source of washing-line that uses a metallic core, and gone on to convince the XYL of the need for a better washing-line facility - a horizontal delta loop. Top Band was a mite low on DX, but some USSR and European stations were noted on s.s.b., while 3.5MHz gave 9J2GA, VK3DZM, Z21HS, 7X2BK, PY5CC, plus the usual smaller fry. The DX on 7MHz included 7X2DG, 7X2BK, VP8CEM, PT7CB, EA8BDW, ZS5AV, CE3PWD, 5B4MF, PY7WK, PZ1EL, CE0ZIS, RY0Q, T77C & 2E1AAC. The last mentioned must have misread his new licence, as the Novice B licensees can only operate h.f. under supervision and using the supervising amateur's call. Turning to 14MHz, VO1PMD, VE3DMO, K1ZM, KC8PG, VE2EBR, KM4ZR, KA2CIK, WB2LWD/MM, KN4DB, W2KW, W3IAU, K9RH, UH6HU, UL7QF, RW9HZZ, 9H1EL, T77C, VP2MAO, OH2BH/P/EA8, 9L3DX, LU7HJM, CX4HS, 5Z4BI, IG9/IT9FTP, YV5PV, PZ1EL, 7Z2LU, VK5WD, 4X6KA, ST2YD, ZX7SM, VP2MR, LU2FPC, CE2CC, LU9DER, PY2RRS, JR1SSH, HC8GR, CE7ZK, 4X4DD, YV5BY, OA4AKZ, 6W1EX, LU7QB, S79KMB, TA5C, 9K2YA, 6W2QF & VK9NS. On to 28MHz where LU4EJ, ZP5CGL and the usual crop of Europeans were noted.

A thoughtful note from **Ted Trowell** (Sheppey) who mainly listens to the c.w., but he did note ON7BW on 'phone on Top Band; also on that band was OH0BBF. On 7MHz the tally was UZ9MXM, SO5ASL (QSL to G4ASL),

UH0V/UV3HD, 4U1ITU & RH0Y/UV3QX. 10MHz accounted for ZL2AGY & ZL4HB, while on 14MHz there were PZ1DY, VK2APK, N6EA, W2LZX, YN1CC, CT3FN, G4AAL/8R1, HB0/Y24AO & OH0BDA; which just leaves the RA1N/UA3SDT sported keying on 18MHz. On a different tack, Ted wonders about the S8 'metronome noise' noted on 7MHz, both with him and in Belgium, all day and evening - any offers?

Now to **Dennis Sheppard** (Earl Shilton), who has got the FR50B going again, only to have what sounds like an electrolytic capacitor go up and in the process to stink the place out! However, on 28MHz, Dennis logged N1API, WA4HMX, N31GK, 8P6DX, ZS6BBP & Z21HJ. On 21MHz there were VP2EY, JA0BYS, JA7DYJ, NJ1CH, JR8BUU & WA4BZJ; not so much on 14MHz where KC6TGF, N6LGS, VK2WC, VK3RE & VK7GK were noted down; 3.5MHz sideband offered N1CRE, TI2CC, VE1TAY, PY4NY & ZP6HR. That left Top Band, where s.s.b. stations noted included G14ERM, UB4IKW, UA2FDU, UZ2FVW, LY91BVJ, GM4ABQ/P, ON7BW, G2HKU & F/G3WLX; and to round off, Ancient Modulation was noted from G3KJP, G4PC and G5ZH before the rig 'went' up and Dennis turned to the keyboards for a spot of relaxation!

DX!

At the time of writing, the bands wait with bated breath: both the two Hungarian groups (HA0MM/HA0NNN and HA5PP/HA5HO) are in Albania (ZA) with licences plus the Romeo Stepanenko effort from Burma (XZ). If both erupt on the same, band things are going to be lively! (Since this was written the upset in the USSR has broken out, and maybe in consequence, neither has been heard to date.)

More Letters

Vince Cutajar (Malta) sticks to the WARC allocations; on 24MHz he found



Fig. 2: ES4RY.

G O G L A N D I S L A N D (IOTA EU 133)							
R1AP				RUSSIA OBL 169 ZONE 15			
TO RADIO		CONFIRMING OUR QSO/UR SWL REPORT					
	DAY	MONTH	YEAR	UTC	MHZ	RST	2-WAY
		MAY	'91				CW SSB
QSL MANAGER ES4RZ (EX UR2RZ)							

Fig. 1: Gogland Island QSL card.

YS1AG, AP2JZB, ZF1A, S79KMB, VQ9AP, A22AA, 9M8ZZ (Sarawak) and 7X2BK, while 18MHz was the vehicle for PA3ERL/CT3, ZF2QJ, VQ9AP, OA8ACO, F00IGS, JY5EC, AA0FB (Kansas), YS1RRD, J79MD, TX9SP, TK/IOHCJ, K2BS/6Y5, YV2BYT and FP5DX.

B. J. Salt (Harlow) discusses his antennas. At the moment Bernard has a Delta Loop, inverted and fed with 300Ω slotted ribbon to an a.t.u. for 14/21/28MHz, and in consequence the old 21MHz half-sloper has been replaced by a 7MHz version. Bernard demonstrates the system works by logging (14MHz) VK3DEG, VK5QJ, PY3AVF & ZL4AN; (21MHz) VK2KHD, YB2FRR, W1HNA & PY4PZ; (28MHz) LU5DON, LU7FJD, KR2I & UD6DCG.

Simple equipment is quite able to compete with the hi-falutin' stuff, given it is well handled. **Eric Masters** (Welling) uses a Howes receiver and a Lake DTR3 QRP c.w. transmitter/receiver. The antenna used is some 25m of wire, end fed against a counterpoise. As to the use of such simple low-power gear, Eric points out his contacts with, for example, G3YCC up Hull way were in broad daylight.

D. McLean (Yeovil) noted that daytime conditions on the h.f. bands were far from good during the period in review but picked up at nights. Nevertheless, as usual he managed to pull the odd plum out of the pudding, by

way of 7MHz contacts with EJ5ID and EJ7FRL (Fastnet). Turning to 14MHz the crop included DL2SCQ/TF5, GS6UW/P, F5TV/P, HI8FHD, HL4GAH, OX3KM, PJ9EE (Bonaire), T6AS(=YA), TR8CA, V63AO, VKs, VU2NI, W6NZX & W7IHI both in Utah, 4K2BCA, 4L1NV & 5H3DC. 21MHz gave A41KY, BY4RSA, BY5RT, BY5RY, BV2BT, BV2DQ, CE3US, CE7NFA, DL2SCQ/TF4, EL2J, EK1NWB, F05CS, FY5EM, HC1JH, HK3JJH, HK5DM, HK6MLW, I8KCI/IL8, ID9/IK2BTI, IG8R, IK3BBN/IL4, IK3PQH/IL3, IO4ABF, JT1BG, K7LCT (Montana), KE7PF (Arizona), N6BFM/9K, OA4CFC, OD5ZJ, OX3KM, PJ2MI, R9H, SJ9WL, SV8/IK6FNG, SV0HV/SV9, T77C, TA5C, TI0RHU, TL8GZ, TR8CA, TR8SA, TU2CI, TU2VM, TU2XZ, TV6A (IOTA EU-032), UA0FF, UA0QCA, UC210/LY, V51BG, V85GA, VE8CB, VO2JD, VP2EI, VP2MAO, VP8CEM, VQ9IO, W7LN(Utah), W6s, YB23AR, YCs, Z27JV, ZD8ACJ, ZSs, 3C1EA, 4K5ZI (Snake Is), 4U1ITU, 5K1B, 5W1CW, 5U7NU, 5Z4BI, 7Q7JH, 7Q7LA, 8R1UN, 9J2AD, 9J2HN, 9J2BO, 9H3ML, 9L3BM, 9U5BZP, 9Q5TE/AM over Africa, 9VIY & 9Y4BA. On 24MHz HP2CWB, T77J, VP2EST, ZP6XDW & 9Q5TE were all pulled in, and for 28MHz the score was F5TV/P, FR5DX, IA5MNR (Elbe), HV3SJ, T77C, VP2EY, VP8CGL, ZB2IB, 3B8FQ & 5R8JD.

Up in the Far North, **Don Robertson** (Wick) notes how different the bands sound up there as compared with, say SE England. Since the summer days are longer up there, and the winter days so short, the contrast between them and the good equinoctial periods seems far more noticeable. Also, the presence of at least hints of auroral conditions is much more frequent in the far north of Scotland. I must admit that I would dearly love to visit Shetland in mid-summer just to see if I can spot the difference between Shetland and, say, Thurso, radio-wise.

Finis

Finally, to revert to the matter of Gogland, **Ron Gallier** (Islington) received photographs and QSL cards via ES4RY, which you can see over the next few issues.

dxtv round-up

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

Let's start this time with news from our overseas readers and see how their efforts compare with ours in the UK. **Lt. Col. Rana Roy** (Meerut, India), received pictures, in Band I via Sporadic-E, on May 1-3, 5, 12, 14-17, 23, 24, June 1, 2, 6 and 8-12. He saw Arabic programmes, base-ball, cartoons, dancing, a documentary on Indian cinema and Teletext from Dubai TV; aerobic exercises, animated films, children's films, digital clock, news and weather announcements from the USSR and adverts, karate, multiple-images and pop-music from unidentified sources. During the tropospheric openings on May 4, 5, 15, 17, 21-25, June 5 and 10-12, Rana received pictures, in Band III at varying strengths and often in colour, from Agra, Bhatinda, Bhawalpur, Fiasalabad, Gwalior, Jalandhar, Kasauli, Lahore, Mussoorie and Rawalpindi. He often found that stations sharing the same channel were fighting for on screen predominance as the prevailing conditions ebbed and flowed.

Excluding the 2nd, 17th, 20th, 23rd, 24th and 29th, **Victor Spiteri** (Gibraltar) logged pictures, spread through the rest of July, from stations in Belgium (RTBF1), Czechoslovakia (CST & 'ISR-P'), Germany, (ARD1 news), Holland (PTT-NED1), Italy (RAT UNO), Spain (TVE1, Basque programme & Canary Island regional news) and Switzerland (+PTT-SRG1 Textvision), in Band I. Also amid typical Sporadic-E fluctuations, he saw cartoons, chat-show, cycling, films, folk-dancing, news, show-jumping and tennis from unidentified sources. While the higher television frequencies were open on days 1, 9, 12-16, 19, 21, 22 and 28, he

watched a variety of programmes, often in colour, from Portugal (RTP) in Band III and Italy and Spain in the u.h.f. bands.

"While operating six metres from the Azores 05-27 June 1991, tens of hours were spent monitoring and decoding TV transmissions received via Es," wrote **Bob Cooper Jr. ZL4AAA** from New Zealand in an extensive report about his special expedition to study Sporadic-E propagation. Bob, using the callsign CU3/K6EDX, is seen with ZL1GG and CU3AK on the left of **Fig. 1** beneath their 28 and 50MHz beams. Throughout the period they kept watch on Chs. E2 (48.25MHz) and R1 (49.75MHz) and identified signals from Belgium, Germany, Norway, Portugal, Spain, Sweden and Switzerland on Ch. E2 and Austria (Ch. E2A), Czechoslovakia, Hungary, Poland and the USSR on Ch. R1.

Conditions In The UK

Before any of us can receive television signals that have travelled way outside their normal range, some form of atmospheric disturbance must take place. Very often, during the past months, conditions have appeared right, but nothing exciting has happened. I think our general feelings were summed up by **David Glenday** (Arbroath) who began his letter to me on August 2 with the following words, "DX has continued to be poor compared with previous years. Sporadic-E has not been very spectacular and although tropospheric DX from the continent has been received on almost half the days during July, its just been all the usual Dutch, German & Danish

coastals from across the North Sea and signal strengths have generally been weak." However, by keeping a regular watch on the television bands, I think, between them, readers got the best they could out of each opening as it presented itself.

Band I

I received strong test-cards from Sweden at 0750 on July 11 and the Norwegian regional Melhus at 1300 on the 16th. **John Woodcock** (Basingstoke) saw a Laurel & Hardy film from Italy (RAI) and strong signals from Sweden on the 19th, the USSR (Estonia) on the 23rd and 26th, Italy, Sweden and the USSR again on the 27th and, he thinks, Yugoslavia on the 29th. The latter was a news reader with 'HTV' in the top right-hand corner. **Bob Brooks** (Great Sutton) watched a programme from Italy and *The Muppets*, *Wheel of Fortune* and News from Spain (TVE) on the 5th and logged test-cards from Norway (Hemnes) and (Bagn & Gamlem) on the 6th and 8th respectively. Bob's haul continued with test-cards from Sweden (SVT Kanal 1) and the USSR (TSS) during the morning of the 8th, Denmark (DR Danmark) and Sweden on the 11th, News (TG1) from Italy and a film from Spain on the 12th, a test-card from Iceland (RUV Island) and programmes from Italy and Spain on the 15th.

Test-cards from Denmark, Iceland, Norway (Hemnes, Melhus & Steigen), Sweden and the USSR, a violinist from Italy and pictures from Poland (TVP) and Spain were seen on the 16th, cartoons from Italy and animals from Spain on the 17th, the Flag and close-

down from Czechoslovakia (CST) and a film from Spain on the 20th, cartoons and sport from Spain on the 21st, a film and 'TVE Teledario from Spain on the 22nd, *Dynasty* and an Arab programme from unidentified stations, 'Soap' from Spain and a film with Russian captions on the 23rd.

Test-cards from all Scandinavian countries, adding Bremanger to the Norwegian regionals and cycling from Spain were seen on the 26th, ballet, farming and a film from Italy and cartoons from Spain on the 27th, dancing from Italy and cartoons and news from Spain on the 28th, news from Italy on the 29th and captions from Spain's 'TVE' on the 30th.

Russ Burke (Northampton) received test-cards from Norway (BAGN) on June 28, various unidentified signals on the 29th and pictures from Germany (ARD), Italy and Spain on the 30th. He wrote in his log on the 30th, "so much co-channeling it's difficult to decipher what's what!". However, at 1600 he saw a caption "PUCHAR EUROPY" on Ch. E2, which he thinks was from 'ARD' Frankfurt, but would like confirmation. Between July 4 and 6, 12 and 14 and 20 and 23 he mainly logged Italy, Spain and the USSR and would like help in identifying a programme caption 'ZAPIS' and the following sequence, "At first a large number '1' appeared in the centre of the screen (2-3 secs.) then 'CIRCOM' appeared in the centre of the screen with 'REGIONAL' underneath it."

The Band I idents seen by David Glenday in July came from Austria (ORF1), Czechoslovakia (CST1 & ISR-P), Finland (YLE TV1 & Oouitset), Germany (Aktuelle, ARD1, DRS &



Fig. 1.



Fig. 2.

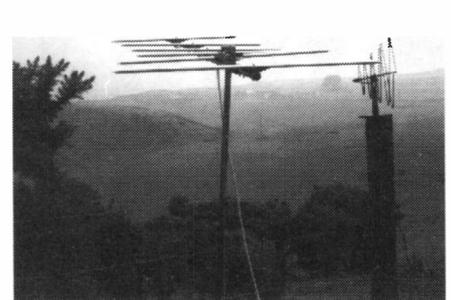


Fig. 3.



Fig. 4: SAT 1 breakfast programme.



Fig. 5: ARD-1 news.



Fig. 6: Czechoslovakia.

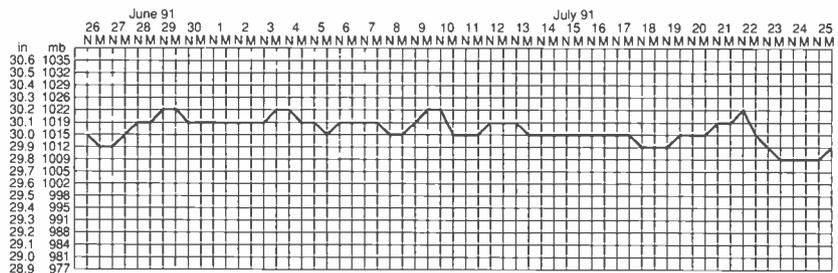
Tagesschau), Hungary (MTV1 & Reklam), Italy (RAI UNO), Poland (TVP1), Portugal (RTP1), Spain (TVE1&2), Sweden (SVT1), Switzerland, the USSR (Leningrad TCH) and Yugoslavia (Bectn, JRT, & tvns).

In New Radnor, **Simon Hamer** logged Hungary, Italy, Rumania (TVR), USSR and Yugoslavia on the 12th, USSR on the 14th, Italy (Laurel & Hardy) on the 15th, Finland, Iceland, Italy (*Murder She Wrote*), Norway and Sweden on the 16th, Poland and USSR on the 20th and 21st and, a good haul, Albania (RTSH), Austria, Finland, Hungary, Norway (Bremanger & Gulen), Poland, Sweden, Switzerland (+PTT/SRG1) and the USSR on the 26th and Spain on the 29th. Simon tells me that our old friend Bert Mills (Rhyader) has built himself a multi-band tuner which scans the channels and among the idents he has logged so far are CST, JRT, MTV, NRK, RUV, SVT, TSS and TVE.

Programmes from Italy and Spain were predominant in **Barry Bowman's** (Prestwich) log on June 30, July 5, 21 and 27 and from Spain on days 22, 23, 26 and 28-30. On those days he saw the captions Telejournale from Italy and Documentos TV Mercoles, Informa, Teledario and Vista de Pajoro from Spain, plus Tagesschau from Germany on June 30 and idents from Norway on July 26 and Teletext from Austria on the 27th.

While parked on "a bit of old road between Helmsdale and Brora," on the 23rd, **George Garden** (Edinburgh), Fig. 2, looked for DX with a JVC 610 colour receiver, a Panasonic portable video-recorder and independent v.h.f and u.h.f antennas, Fig. 3. The v.h.f. Yagi

Fig. 13.



was kindly loaned by David Glenday and George was rewarded with pictures from Spain on Ch. E3 (55.25MHz).

At 1900 on the 29th I heard television sync pulses and their respective sound channels, with my elderly, ex-military R216 receiver, fed by a chimney mounted dipole, on Chs. R3 (v.77.25 & s.83.75MHz) and R4 (v.85.25 & s.91.75MHz).

Picture Archives

The German captions SAT1 and Tagesschau are visible in Figs. 4 and 5 respectively, both of which were received by Russ Burke, in the u.h.f band, during a tropospheric opening at the beginning of August 1990. Bob Brooks produced the logs from Czechoslovakia TCH, Fig. 6 and Spain Madrid, Fig. 7 and Rana Roy shows how a 525-line picture, that he received from Burma on Ch. A2 (55.25MHz) at 1620 on January 9, resolves on a 625-line receiver, Fig. 8.

Tropospheric

John Woodcock received weak French signals during the afternoons of July 8,

14, 16 and 22 and I saw the first signs of a tropo-opening while travelling home from Sissinghurst Castle, Kent, on the 10th, when frame-bars appeared in Band III on the receiver in my car. Next morning, at 0945, there was a strong Belgian test-card (BRT TV1) on Ch. E8. On many days in July, David Glenday received pictures from Norway (NRK) in Band III and Belgium (BRT1 & 2), Denmark (TV2), Holland (NED1, 2&3) and Germany (ARD1, NDR3, RB1, RTL+, SAT1, WDR1 & 3 & ZDF) in Bands IV and V. Simon Hamer received pictures from each Scandinavian country in Band III and Denmark and Sweden in the u.h.f bands on the 14th and Germany in both bands on the 16th. While out portable on the 23rd, Fig. 3, George Garden received a good mono signal from the Durris transmitter of BBC1 on Ch.22. "There was a thick blanket of fog on the far horizon at the sea, but nothing landward", said George and added, "high pressure was over the continent and low pressure over the UK. Talking about pressure, the slightly rounded readings for the period June 26 to July 25, Fig. 13, were taken at noon and midnight from the recording chart of the Barograph installed at my home

in Sussex. Having recently installed my JVC3060, with its own rod antenna, in the rear of my car I was delighted to see strong pictures from France on Chs. L5 and L9, in Band III, while parked near Goodwood at 1655 on August 1.

Satellite Watch

Les Jenkins (Godalming) keeps a regular watch on the satellite TV bands and among the many stations he has logged in recent months are two from Spain, Figs. 9 and 10, received from Eutelsat 1 F2 at 7C East, the wording Cinevideogroep, Fig.11, which he found on Eutelsat 2 F1 and a German test-card (ARD/BADN1 Plus), Fig.12, on DFS 1A at 23.5C East. Les would like some gen about Fig.11 if anyone can oblige.

SSTV

During the month prior to August 7, **John Scott** (Glasgow) copied signals from a station in England and Wales taking part in a slow-scan television net around 7.04MHz in addition to pictures from Austria, Scotland and the USSR between 14.228 and 14.234MHz.



Fig.7: TVE.

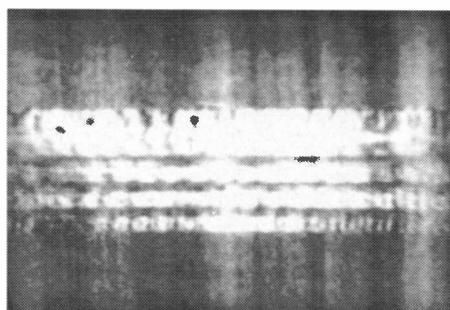


Fig. 8: Burmese TV.

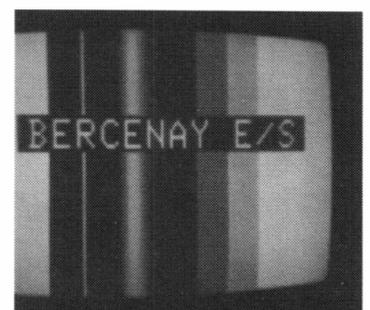


Fig. 9: Eutelsat 1 F2.

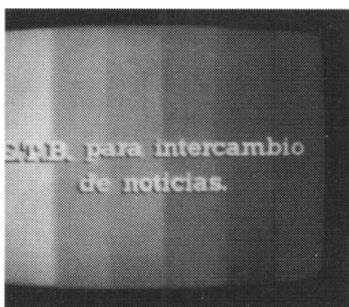


Fig.10: Eutelsat 1 F2.



Fig. 11.

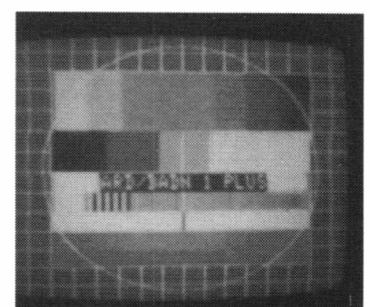


Fig. 12: DFS - Kopernikus.

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

You can't mistake the CAA Flying Unit calibration aircraft with their distinctive high-visibility red stripes. Just in case you do, though, the front page of *GAS/L* 7/91 shows HS.748 G-AVXI (its sister is G-AVXJ). To check an i.l.s., the aircraft might fly straight and level towards the field from a point 30nm away. Clockwise orbits are also flown through the centre-line. In the case of v.o.r. beacons, clockwise orbits are again needed. Pilots watch out!

Although a dated airframe, I like the surprisingly wide cockpit of the 748 which gives the feel of a larger machine. Behind the cockpit with its basic flight crew of two, there's a bulkhead and then, further back, provision for a sideways-facing navigator(!) on the right. Some of the original instrumentation is now so old that you'll find examples in my own Museum collection! Waxing sentimental rather than scientific for a moment, I do like the sound of the Dart engine (with its centrifugal compressor) and propeller combination found on 748s and Viscounts.

Your Air Experiences

Elaine Richards G4LFM (our News & Features Editor) was rash enough to fly to Mahon, Menorca. I've been there many times so I know what it's like! After much interrogation, Elaine gave enough information for me to identify the aircraft as a Boeing 737-300. According to the pictures in the *TEA International Inflight Magazine*, the aircraft has a glass cockpit fit, each pilot sitting behind two cathode ray tube display screens. The upper one usually displays the director horizon and the lower one the navigational situation with the old h.s.i. replaced by a more sophisticated map. In the middle are the controversial engine instrument displays and also two flight management computer display/keyboard units. It's still recognisably a 737 though, particularly as the central control pedestal has hardly changed from the earliest series. Now explain why the aircraft visible through the cockpit window is a rival manufacturer's Airbus.

Tim Christian (Norfolk) has seen the start of E3A AWACS operations at first hand. The aircraft, a Boeing 707 airframe derivative, have flown over Tim's house at spectacularly low level. They have also been observed to track the Coltishall approach.

Follow-Ups

Tim has found h.f. reception to be difficult due to recent ionospheric events. The sun is still at a very active point on the 11-year cycle and keeps throwing out all manner of radiation and particles which intensify the ionisation of the upper atmosphere. A little ionisation is a good thing, signals bouncing around the world using the ionised layers as a mirror. Too much ionisation, in the wrong layers, simply absorbs the signals which can't then make any further progress.

In July, I summarised Tim's description of Consol Stavanger, the only such station left that still serves the UK now that Bushmills, Lugo, Plonéis and Seville are defunct. The Ministry of Transport and Civil Aviation published a guide to the system and Tim has sent me the 1955 edition (are there any spare copies that readers can buy, Tim?). The guide book explains how each Consol station has three antennas disposed along a straight line. Bearings taken from close to the extended antenna line are less accurate than those received when at right-angles to it. The most accurate bearings from Stavanger will be taken when the receiver is 067° or 247° from the transmitter. As the dot/dash pattern repeats at intervals around the beacon, a rough estimate bearing (accurate within about 15°) needs to be taken first; ordinary direction finding loop antenna techniques are adequate.

Moving on to August, the mention of Croughton sent **Paul Hilton** (Newbury) to his well-endowed local library where he researched enough history to make an article on its own! In brief, then, Croughton was established by the USAF in 1952 for receiving, with transmitters at nearby Barford St. John. It is part of a global network for sending control messages to Strategic Air



Fig. 1: SA.365N Dauphin 2 G-HEMS flies for the Helicopter Emergency Medical Service based at the London Hospital. On the evening of May 13 it squeezed into Stonegrove Park, Edgware, while on a job.

Command aircraft. Nowadays data and satellite communications are also handled. Paul questions the safety hazard to aircraft overflying high-powered transmitters and indeed the quarter-million topographical chart is marked with the appropriate warning symbol in the Barford St. John area. Nearby high-powered transmissions could interfere with airborne navigation equipment, and it is also for this reason that operating radios, personal computers or cellular telephones whilst in flight is generally prohibited.

Question Time

Beacons are the subject of this month's questions. **Peter Hallam G14GVS** (Carrickfergus) will be pleased to know that I've found out where the n.d.b. with callsign SWY is (669.5kHz). It's a locator beacon on Stornoway (N58°17.20' W006°20.59') and as such would be expected to have lower power than an n.d.b. intended for *en route* navigation.

A v.o.r. beacon was discovered by **Clive Allen** (Chesterfield). It's on the B5035 road between Wirksworth and Ashbourne. I've identified it for you as Trent (TNT, 115.7MHz with d.m.e. on channel 104).

Clive also wants to know where to obtain topographical charts. The UK is covered by three charts at half-million scale or alternatively 18 charts at quarter-million (1:250000). Topo charts are like a small-scale Ordnance map, with aeronautical information (airspace boundaries, tall obstructions, spot heights, aerodromes, etc.) superimposed on the ground features. The recent editions also show the locations of navigational beacons. Suppliers of charts and other information is shown at the end of the column. All sell to the general public by post.

Frequency & Operational News

Welcome aboard **R. Jackson** (Peterborough) who's just bought his first issue. May it be the first of many! Aircraft obviously interest Mr. Jackson but he feels confused by advice he was given that "Military aerodromes don't use the airband." Perhaps this is because there are really three separate airbands for communications purposes! Most commonly, one thinks of civil (and sometimes military) communications in the 118-137MHz range. Suitable radios are capable of receiving a.m. signals and the channel spacing is 25kHz for now - but expect 12.5kHz to be adopted a few years

hence. The military also use a range of frequencies between 225-400MHz, again a.m., and already spaced by 12.5kHz channels. Lastly, long-range communications (e.g. in the case of trans-oceanic flights) are on various frequencies within the range known as h.f. (2-30MHz) and here specialised upper sideband signals are involved. Not all receivers can handle u.s.b. even if they cover the right frequencies.

That summarises the important airbands - those used for pilots and controllers to talk to each other. There are also various other navigational beacons and facilities; for a full summary, see the information box in the August issue (back numbers are on sale from the editorial office). I hope I've cleared up any confusion - but if not, please write in again and ask more!

If you're looking for the Inverness n.d.b. (INS, 109.2kHz) it has been temporarily replaced by another beacon on 327kHz. Back to normal on November 15, according to *GAS/L* 7/91.

At Birmingham, the new Eurohub has been opened, British Airways and Birmingham European being the first incumbents. This has resulted in a re-numbering of all the stands at Birmingham. Good to see a development going ahead despite the recession. According to *Airstrip*, the journal of the Midlands Branch of Air-Britain, Birmingham s.s.r. 'squawk' codes are in the range 7260-7277. What, then, is 4313? Aircraft training near the Coventry n.d.b. (CT, 363.5kHz) 'wear' this squawk.

Pan pan pan! Civil pilots presently unsure of their position call 121.5MHz where the London Air Traffic Control Centre's Distress and Diversion (D&D) Cell will render assistance if the aircraft is south of 55°N. If north of this parallel, then the Scottish Centre performs the same function. If you don't even know which side of the line you're on - just call anyway and someone will take care of you!

Now military pilots have access to the same facility but on 243MHz. The difference is that auto-triangulation equipment picks up the signal and produces an automatic map plot which shows bearings from the nearest receiving relays. Where the lines cross - that's you! On 121.5 the D&D controller 'phones various aerodromes, each works out the appropriate bearing, and the plot is manual. So here's some good news. Within the next two years 121.5 will also be equipped with auto-triangulation, so I read in *A/C* 7/1991.

Also from the *A/C*s, this time 7/1991, comes the latest on flow management. **51** →

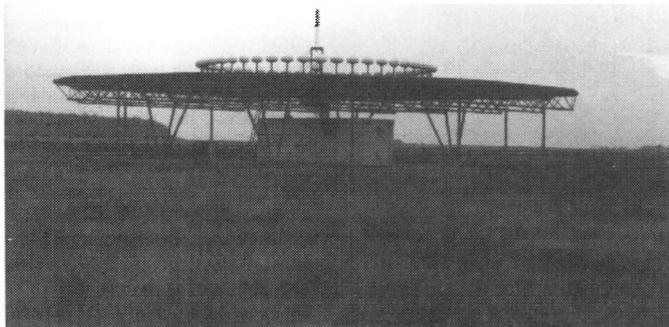


Fig. 2: A typical v.o.r. beacon, Bovingdon (BNN, 113.75MHz).

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

The DTI Radiocommunications Agency has now published an information sheet clarifying the legal position relating to the use and ownership of scanning receivers in this country. For example, no licence is required to receive authorised sound broadcasts intended for general reception, such as from the BBC and local stations or from radio amateurs. Additionally, no licence is required to use a radio receiver, provided it is not capable of transmitting. However, it must be used only for receiving the channels meant for general reception, such as, at sea, weather or navigation information.

The document continues, "It is an offence to use radio to eavesdrop on other services. There are many authorised users of radio, such as the Police, the other emergency services, the Armed Forces, aeronautical and maritime interests and businesses. These users need radio to enable them to carry out their activities and are protected by law from unauthorised people listening to their transmissions. Eavesdropping, or listening to messages that are not intended for you, is an offence. Disclosure of what is heard is also an offence as is listening in to telephone calls, including those made via cellular telephone networks".

For the most part, the document makes it quite clear what is permitted, however some aspects, particularly those relating to "channels meant for general reception" could be subject to different interpretations. The document produced for the use of law enforcement officers, which I mentioned last month, was much more precise in this respect.

I would also like to have seen the scope of the document extended to cover short wave broadcast and utility station monitoring. This is becoming increasingly relevant for owners of scanning receivers as many of the latest models feature extended frequency ranges which include the short wave bands. A good example of an anomaly which can occur, is the reception of American Police and Fire departments in the 30-50MHz band. These services are quite happy to have people monitor them and will often send verification of reception back to listeners. Reading the information sheet it would seem that it is an offence under British law to listen to them. However, in practice, the likelihood of being prosecuted for doing so would be slight as any conviction would depend on the court's interpretation of the legislation and the circumstances under which the case was being tried.

If you would like a copy of the sheet which is imaginatively entitled 'Receive Only - Scanners Etc information sheet' RA169 (July 1991). Write to: The Library, DTI Radiocommunications Agency, Waterloo Bridge House, Waterloo Road, London SE1 8UA quoting the above title. If you have any queries

relating to monitoring particular services then you can write to the licensing section at the same address but make sure that you include the title of the radio service effected in the address. Note that you will NOT be able to obtain permission to listen to Emergency, Maritime and Aeronautical services.

Dave Garston from Sussex is having a problem in deciding which receiver would be the most suitable for monitoring the v.h.f. and u.h.f. aircraft bands. He wonders if there is any advantage in buying a dedicated aircraft band receiver as opposed to a scanner.

I know from the letters I receive, that aircraft band listening is very popular amongst scanner owners and that the more dedicated listeners often use separate receivers for these bands. This may seem odd when you consider that, in many cases, there is very little difference in price between the two. A scanner usually offers a much larger frequency range and more sophisticated operating features. However, that's not the end of the story, most scanning receivers are primarily designed for the reception of terrestrial services using n.b.f.m. transmissions. This defines many of the receiver characteristics such as the i.f. filter bandwidth and r.f./i.f. gain distribution. In order to provide a.m. reception, an additional detector stage is required as well as some form of Automatic Gain Control circuit in order to prevent distortion occurring when strong signals are received. The level of residual a.m. noise produced by the i.o. frequency synthesiser also has to be minimised in order to obtain the best weak signal performance.

In order to provide a.m. and n.b.f.m. reception in scanning receivers, many of these parameters have to be compromised in order to achieve an acceptable level of performance when using either mode of reception. In a dedicated receiver, all of the design characteristics can be selected especially for a.m. reception with the correct bandwidth i.f. filters for the channel spacing in use and special

a.g.c. circuits ensuring the optimum amount of gain regardless of received signal strength. This means that you don't have to fine tune the receiver in order to resolve the offset signals sometimes used in the v.h.f. airband and the background noise level on weak signals should be much lower than that found with a scanning receiver.

The advantage of a scanning receiver, however, is that it can receive other frequency bands and services - for example airfield ground communications and navigation aids, and when you fancy a change you can listen to air-sea rescue co-ordination on the v.h.f. marine band.

To summarise: if you are sure that you are only interested in monitoring aircraft communications choose a dedicated airband receiver. However, even if you are only slightly interested in other forms of communication go for a scanning receiver. The extra features offered by most modern scanners will more than compensate for the slightly poorer a.m. performance.

Choosing A Scanner

Whilst I am on the subject of choosing a receiver, several readers have written to me recently asking for my opinions on particular models of hand-held scanner. I can't really say if one model is better than another, as it all depends on your individual requirements. For example one model is popular amongst military airband enthusiasts because it has a large number of memories which are handy for storing 'TAD' numbers. Another model has a slightly better r.f. performance and a simpler set of keyboard entries. A smaller model offers a sophisticated automatic search and store facility but has poor strong signal handling performance. You have to decide which characteristics are the most important for the type of listening you are going to use it for. If you know someone who already owns a scanner then ask their advice and if possible see if you can borrow it

for a short period. This will help you to decide exactly what features you should be looking for before you part with your hard earned cash.

As a general rule, I would only choose one of the continuous coverage scanners offering manual selection of a.m. and n.b.f.m. I get so many letters from listeners asking how they can add additional frequency bands or a.m. reception to older equipment that I believe you shouldn't consider any other choice, unless the price makes it a real bargain - even then I would think twice! If you are interested in listening to the short wave bands don't expect too much from the scanners offering these frequency bands. The strong signal handling, local oscillator noise and i.f. filtering is not likely to be up to the standards of a dedicated h.f. receiver but providing you are aware of this then you shouldn't be too disappointed with the performance, which is usually more than adequate for broadcast reception. Treat any short wave frequency coverage as a bonus rather than as the main reason for buying a scanner.

If you can't afford a new model then consider buying second-hand. Most amateur radio dealers have several models on offer that they have taken in part exchange for new equipment. I would strongly recommend this option instead of buying a model with limited features, which may well have been originally designed more than 10 years ago specifically for the American market.

My Own Choice

Roger Lindfield from Hertford writes to say how much he enjoys reading the column, but says that he can't ever remember me describing what scanner I use and wonders if I own any professional or specially modified equipment. Well Roger, you are correct in saying that I haven't mentioned which equipment I use, other than the occasional reference to a specific item. The reason for this is that I tend to change items of equipment fairly frequently depending upon my interests at the time.

At the moment the antenna is a vertically polarised log-periodic beam (Create CLP5130-2) that I modified to extend its frequency coverage down to 70MHz instead of the usual 105MHz. This feeds a home-built mast-head pre-amplifier based on a design which appeared in a 1978 issue of *VHF Communications*. Although the design has been around for some time I still haven't been able to better it in terms of its strong signal handling performance verses noise figure. The output of the pre-amp is connected to the scanner via a short length of low loss heliax feeder and splitter, but not before first passing through a series of notch filters based helical resonators. I have to use





these in order to minimise the effects of several commercial base stations which operate almost continuously only a few hundred metres away from my location.

My main receiver is a rather battered and much modified Icom IC-R7000 that manages to resist the influence of the local signals whilst still remaining reasonably sensitive. The tuning knob makes up for its limited scanning facilities and I know that if I can hear a signal it is usually a genuine one and not an internally generated image or spuri.

The other receiver I use a lot is an AOR AR3000, which these days tends to operate under external computer control, automatically logging activity within preset search bands. Any interesting signals are checked out later with the IC-R7000. A modified AOR AR2001 lives in the car and a modified Icom IC-R1 resides in my pocket.

As you can see most of the receivers have been modified in some way, I have yet to find a receiver which will meet all of my requirements so I use different models for different purposes. I tend to buy second-hand if possible - along with a service manual which I find invaluable when fault finding or re-aligning equipment. Obviously, this is not practicable for many readers, but I find it more economical

than continually buying new equipment and I have less to worry about when experimenting. I tend to choose receivers on their r.f. performance rather than number of scanning modes and facilities, but this is a personal decision - perhaps I just haven't got used to the concept of the receiver finding the signals for me!

AR2002 Computer Control

Paul Morrey writes from Staffordshire asking for advice on the computer control of his AOR AR2002. He owns a Commodore Amiga A500 and wonders if I know of any suitable programs that will fit the bill. The AR2002 has an external control socket fitted as standard on the rear panel. However, this is not a standard RS232 computer port like the AR3000 has fitted. It requires separate specially formatted data and clock signals in order to communicate directly with the microprocessor control chip. This is not particularly easy unless you are proficient at writing your own software. The best option may be to try and obtain an interface unit which will convert standard RS232 commands to the special format required by the 2002.

One such example was the AOR RC pack, which Lowe Electronics used to sell but which is now only occasionally

available second-hand. This unit would still require a program for the Amiga before it could perform automatic logging. So, a better option may be the 2002 Scanmaster sold by Garex Electronics. This unit operates like a dedicated computer specially designed to control the AR2002. The Amiga is only required to operate as a dumb RS232 terminal. The Scanmaster can be left operating the AR2002 without the Amiga being connected. Any received signals being automatically logged and stored for later retrieval. The Amiga can then be used to extract and manipulate the stored data and program in the parameters ready for the next unattended search. As the computer is not required whilst the Scanmaster is actually operating, it can be used to run other programs or be turned off to avoid causing interference to the scanner. This last point can be a major advantage if you have a particularly noisy computer in terms of radiating r.f. 'hash'.

Contact: Garex Electronics, Station Yard, South Brent, South Devon TQ10 9AL for further details or ring (0364) 72770.

Operating Blind

D. Trusler of Basingstoke writes with an interesting question. He has just become interested in buying a scanning receiver and wonders if I can recommend a suitable model to him. His main interests are Air, Marine and Amateur transmissions but as he is blind, he requires something that is easy to operate without having too many control buttons or memory channels. This question is a little beyond my area of knowledge so I wondered if there were any other blind or visually impaired readers who may be able to make more qualified suggestions or comments. If you can help then drop me a line and I will pass on the information.

That's all for this time around, the next issue should be of additional interest to all scanning enthusiasts with a pull-out *What Scanner* and the opportunity to win an AOR AR2000 handheld - but you will need to get your thinking caps on, so until next month -

Good listening.

airband

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A long term plan will integrate departure flow regulation in various European countries so an approved departure time should now be the start of a smooth transition between all *en route* airspaces without holding along the way. Let's hope this will make that elusive slot worth waiting for.

By the time I write the next column, I'll have done my share sitting in the Heathrow take-off queue on the way to Jersey in a 'stick insect'. See you then!

The next two deadlines (for topical information) are October 18 and November 11. All correspondence to 'Airband,' c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS.

Suppliers of Aeronautical Information and Charts

AERAD Customer Services. Building 254, P.O. Box 10, London (Heathrow) Airport, Hounslow,



Fig. 3: The cockpit crew of a Lufthansa Boeing 747, left to right: the captain, the flight engineer, the co-pilot. Lufthansa

Middlesex TW6 2JA. (081-562 0795). Own-brand radio-navigation charts and supplements. Airport let-down plates. Free catalogue.

Airtour International. Elstree Aerodrome, Borehamwood, Hertfordshire WD6 3AW. (081-953 4870). Topographical charts, Pooley's Flight Guide (light aerodromes) and other general items. Free catalogue. Civil Aviation Authority. Chart

Room, CAA House, 45-59 Kingsway, London WC2B 6TE. (071-832 5568/9, directline). Topographical and London Area Helicopter Routes charts. Also: airspace restrictions, hazardous areas, intense aerial activity, winch-launched activities - spread over 3 charts, free (RAC 5-0-1, RAC 5-0-1.1, RAC 5-0-2).

Civil Aviation Authority. Printing and Publication Services, Greville House, 37 Gratton Road, Cheltenham,

Gloucestershire GL50 2BN. (0242 235151). Various publications, and agents for ICAO documents. Free catalogue but send reply envelope with postage for 150g.

Godfrey Manning Aircraft Museum. 63 The Drive, Edgware, Middlesex HA8 8PS. (081-958 5113). Telephone if information is needed more urgently than can be provided by an answer in this column. Also, visitors welcome by prior appointment.

Oxford Airport Shop. Oxford (Kidlington) Airport, Kidlington, Oxfordshire OX5 7RA. (0865 841234, via CSE Aviation switchboard). Jeppesen radio-navigation charts.

Royal Air Force. No. 1 Aeronautical Information and Documentation Unit (1AIDU), RAF Northolt, West End Road, Ruislip, Middlesex HA4 6NG. (081-845 2300 ext 209). Own-brand RAF Flight Information Publications (FLIPs). Charts, supplements, Flight Information Handbook, helicopter landing sites. Supplements include u.h.f. allocations.

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

The first candidate for my regular Photo Call is **Simon Utill** from south-east London. Simon has written before, but this time included a photo of his station. As you can see, his station has developed well over the years and now features a Pocom data decoder and the popular ICS FAX-1 for FAX reception. I also note that he uses the very effective Datong audio filter. His latest project is studying at the local college for the Radio Amateur's Examination.

If you would like your station featured in this section just send in a photo of your shack with details of your equipment and main interests. I know it's not always practical, but I prefer photos with the operator included.

Admiralty List of Radio Signals

In the August issue, I gave details of how you could obtain a copy of this much sought after publication. However, the recent changes to maritime frequency allocations means there are many updates currently under way. Because of this it may be worth hanging on for a while before buying. The two volumes under amendment are numbers one and three. These deal primarily with coastal and weather stations. When I get wind of the new issues, I'll put a note in the column.

Broadcast RTTY

I've received a press release from Swiss Radio International giving details of a new experimental transmission. They have just started using 50 baud RTTY to broadcast programme material. The initial transmissions will be in Swiss national languages targeted at Swiss nationals living abroad. However, they hope to expand the service later-on into a mainly English language service covering a wider range of issues. The fully developed service is expected to offer a wide range of news and features about Switzerland and the Swiss view of the world.

The initial experimental transmissions will be limited mainly to internal issues and areas having a direct influence of Swiss nationals living abroad.

The transmitters for this experiment are at Schwarzenburg near Bern and are rated at 20kW so should put in a good signal. For those interested in monitoring the test transmissions, the schedule is shown here:

- 17.53MHz, 1830-1930UTC, 170°
- 10.515MHz, 2000-2100UTC, 50°
- 10.515MHz, 0030-0130UTC, 230°
- 10.515MHz, 0200-0300UTC, 295°

The bearing shown next to each of these transmissions is the antenna beam heading.

As these transmissions are experimental, SRI are very keen to receive reception reports from as far and wide

as possible. They are promising to verify reports and are particularly interested in receiving sample print-outs of programme material. The address for reports and further information is:

Swiss Radio International, PR and Marketing, CH-3000 Bern 15, Switzerland. The more response they get the more likely they are to continue transmissions, so it's in our own interests to help them.

RTTY Weather Signals

Many of you will no doubt have come across RTTY stations that send a seemingly endless stream of mainly five digit number groups. I'm sure you've also wondered just what it all means. Well, this month I'll attempt to shed a little light on the subject. A good example of one of these stations is the Bracknell transmission (GFL26) on 4.489MHz. So what does it all mean?

The data is actually a coded form of weather report from many observation stations throughout the world. This is the raw data that is fed into sophisticated computers to track weather systems and verify satellite data. These observations are very important to meteorologists as they give information on the actual conditions at the time of observation, rather than a forecast.

To give you a clearer idea of the format let's analyse a typical report. To keep things as simple as possible I'll start with a SYNOP report. This is the name given to the code used for surface observations from a land station. I've shown a typical example from Bracknell in Fig. 1. To locate the start of the transmission look out for the letters aaxx. These letters tell us that what follows is a surface observation from a land station using the SYNOP code. The following five digit group tells us the date of observation 25th and the time 06 hours. The final digit shows the method of wind speed measurement. The 4 means that an anemometer calibrated in knots was used. The next group is the stations index or identity number. Here the reading is from Wein/Schwechat-Flughafen in Austria. In the next group the first two digits show whether precipitation data will be included and if the station is manned. Next comes the height in metres to the base of the lowest cloud which, here, is 400m. Finally comes the visibility - 7km. Of the remaining groups on that line, the first number is called a symbolic number and indicates the type of data contained in the rest of the group. I've shown these here:

- 1: Air temperature data.
- 2: Dew point temperature data.
- 3: Station-level pressure data.
- 4: Mean sea-level pressure.
- 5: Three hour pressure tendency.
- 6: Precipitation.
- 7: Present and past weather (rain, snow, etc).

```
zczc 042 55555
smeu02 egrr 250600
aaxx 25064
11036 11470 73206 10197 20155 39984 40205 51011 60022 70162 81842
333 20183 81818 86080=
11518 12870 72303 10140 20124 39793 40227 53006 69972 8703/ 333
20115 31009 87357=
```

Fig. 1: Bracknell Meteo on 4.489MHz.

8: Clouds.

9: Special phenomena.

You will notice that the next line starts with a three figure group - 333. This shows that the data that follows is for the region rather than just the specified observation station. This data is organised in symbolic number order as I've just described for the main data. The end of the report from each station is indicated by the equals sign =.

Although much this may seem complicated, with a bit of practice, you can pick up a lot of information very quickly. The trick is not to decode every number group, but just pick on those of particular interest. For example, if you're interested in plotting temperatures, all you need to note is the station index and the content of the symbolic group starting with 1. In this group the first digit tells you the sign, 0=+ve and 1=-ve. The final three digits tell you the temperature in degrees Celsius. Don't forget to move the decimal point one place to the left! In the example quoted the temperature at 0600UTC was 19.7C.

You are probably asking how do I find out what the codes mean? The answer is to be found in the *Klingenfuss Air and Meteo Code Manual*. This contains explanations of all the reporting codes with a listing of all the station identifiers. Much of this data can also be found in the Admiralty List of Radio Signals Vol. 3. The book is available from the Short Wave Magazine Book Service. I would be very interested to hear your experiences with these stations, so please write with your hints and tips.

Marine Frequency Allocations

Now that some of the dust has settled following the recent frequency allocation changes, I think it's time I brought you up-to-date. It was originally expected that stations would gradually change over to the new allocations, but it seems that most of them splashed out and bought new crystals straight away! As the new allocations are quite complex I'll run through each band and detail the sub-band frequencies and usage. I'll also stick to utility modes and ignore all s.s.b. frequencies.

4MHz Band

4.154-4.17MHz, FAX & special systems.

- 4.1725-4.1815MHz, RTTY
- 4.187-4.202MHz, c.w
- 4.2025-4.207MHz, RTTY
- 4.2075-4.209MHz, SITOR
- 4.2095-4.219MHz, RTTY
- 4.2195-4.2205MHz, SITOR

6MHz Band

- 6.235-6.259MHz, FAX Special Systems
- 6.2613-6.2625MHz, Oceanographic data transmissions
- 6.263-6.2755MHz, RTTY
- 6.281-6.2845MHz, RTTY
- 6.285-6.3MHz, c.w.
- 6.3005-6.3115MHz, RTTY
- 6.312-6.3135MHz, SITOR
- 6.314-6.3305MHz, RTTY
- 6.331-6.332MHz, SITOR

8MHz

- 8.302-8.338MHz, FAX & Special Systems
- 8.3403-8.3415MHz, Oceanographic data transmissions
- 8.342-8.655MHz, c.w.
- 8.371-8.376MHz, c.w.
- 8.3765-8.396, RTTY
- 8.3965-8.414MHz, RTTY
- 8.4145-8.416MHz, SITOR
- 8.4165-8.436MHz, RTTY
- 8.4365-8.4375MHz, SITOR

12MHz

- 12.370-12.418MHz, FAX & Special Systems
- 12.4203-12.4215MHz, Oceanographic data transmissions
- 12.422-12.4765MHz, c.w.
- 12.477-12.5495MHz, RTTY
- 12.555-12.5595MHz, RTTY
- 12.560-12.5765MHz, RTTY
- 12.577-12.5785MHz, SITOR
- 12.579-12.6565MHz, RTTY
- 12.657-12.658MHz, SITOR

16MHz

- 16.551-16.615MHz, FAX & Special Systems
- 16.6173-16.6185MHz, Oceanographic data transmissions
- 16.619-16.6683MHz, c.w.
- 16.6835-16.7335MHz, RTTY
- 16.739-16.804MHz, RTTY
- 16.8045-16.806MHz, SITOR
- 16.8065-16.9025MHz, RTTY
- 16.903-16.904MHz, SITOR

18/19MHz

- 18.848-18.868MHz, FAX & Special Systems
- 18.8705-18.898MHz, RTTY

18.8985-18.8995MHz, SITOR
19.6805-19.703MHz, RTTY
19.7035-19.7045MHz, SITOR

22MHz

22.182-22.238MHz, FAX & Special Systems
22.2403-22.2415MHz, Oceanographic data transmissions
22.242-22.279MHz, c.w.
22.2845-22.374MHz, RTTY
22.3745-22.3755MHz, SITOR
22.376-22.4435MHz, RTTY
22.444-22.445MHz, SITOR

25/26MHz

25.123-25.159MHz, FAX & Special Systems
25.1615-25.171MHz, c.w.
25.173-25.208MHz, RTTY
25.2085-25.2095MHz, SITOR
26.1005-26.1205MHz, RTTY
26.121-26.122MHz, SITOR

Universal Decoders

One of the famous names in utility monitoring is Universal Shortwave Radio in the USA. They handle the Universal Radio range of decoding systems that produce very good results. Although this equipment has been much sought after in the UK, the only way to own one was to arrange a personal import from the USA. This has put many people off as they are not prepared to risk all the complications of guarantee claims etc. Well, the good news is that Dewsbury Electronics have now started importing this equipment. The first to become available is the M-900 decoder. This handles RTTY, SITOR A & B, Morse and FAX. The output is fed to a video monitor and parallel printer port for maximum versatility. For more details see Dewsbury's advert or phone (0384) 390063/371228.

USSR

With the rapidly changing political situation in the USSR, the TASS and APN news transmissions are becoming very interesting. To help you to monitor these I've compiled a selection of their English RTTY transmissions. At present, all English language transmissions come from Moscow. However, with the continuing trend towards independence we may see English transmission from the regions. Obviously, I would be very interested to hear of any such transmissions.

Now on with the list. I shown each transmission as; frequency, callsign and times in UTC. All transmissions are 50 baud 400Hz shift except where shown otherwise.

APN Moscow

15.64MHz, RWM72, 0500
15.72MHz, RWM74, 0800
15.91MHz, RGG43, 0700-1200
16.075MHz, RFM27, 0700-1200
16.085MHz, RND71, 0700 & 0800



Fig. 2: The station of Simon Utili.

16.145MHz, RWM77, 0400-1500
16.25MHz, RME22, 0400-1000
17.52MHz, REM55, 0600 & 0700 & 0800
18.835MHz, RWN74, 0400 & 0500 (100 baud)
19.07MHz, RRG25, 0500 & 0600 & 0700
19.83MHz, RWW76, 0700 & 0800
20.695MHz, RMC25, 0700 & 0800
21.793MHz, RKE29, 0600
21.805MHz, RNE34, 0500 & 0700

TASS Moscow

5.47MHz, RKC29, 0415-0545
6.87MHz, RTV55, 0415-0545
8.06MHz, RAW71, 0415-0545
8.14MHz, RNN51, 0415-0545 & 1900
10.105MHz, RKA79, 0415-0545
10.27MHz, RKA25, 1300-2300
10.79MHz, RKA71, 1600 & 1700 & 2100
10.865MHz, RZA24, 1700
11.47MHz, RNK33, 1700 & 1800 & 2200
12.085MHz, RCB55, 0415-0545 & 0700 & 0900 & 1300
12.285MHz, RKU74, 0415-0545
12.315MHz, 0430-1800
12.325MHz, 0415-0545 & 1700
14.49MHz, RKN36, 0430-1700 & 2000
14.51MHz, RIC75, 0000 & 0500 & 1900
14.7MHz, REB24, 0500-2200
15.575MHz, REN30, 0500-1700
15.93MHz, RBI78, 0415-0545
16.05MHz, RCE54, 0600-1800
16.14MHz, RGW28, 0600-1700 & 2100

If you have any information on USSR press transmissions, please write with the details.

Atari Software

Grosvenor Software have just announced a new version of their BMKMULTY programme for Atari ST/STE users. I gave a mini-review of the IBM PC version of this package back in the June 'Decode'. This latest version operates on Atari 520/1040 ST/STE computers with high or medium resolution screen.

Although the software has been designed with the needs of the amateur radio operator in mind, it has great

appeal to short wave listeners. The modes covered are RTTY, SITOR A & B and Morse. The programme operates using a split screen with received text in one section and transmit text in the other. As this facility is not required by short wave listeners you'll be pleased to hear that the number of lines allo-

cated to the transmit section can be defined by the operator. For shortwave listening you can reduce this to one line, so giving the maximum screen area for received text.

The SITOR listen mode has also proved to be particularly effective and features very fast synchronisation and error rejection. The Morse reception is also notable in being able to receive at up to 200 words per minute.

Interfacing the BMKMULTY with the radio requires the use of a simple terminal unit. There are many designs around that are suitable, but if you'd rather avoid construction, Grosvenor can supply a ready-built unit for £50.00 plus £2.00 post and packing. The BMKMULTY software on 3.5in disk costs £49.00 plus £1.00 post and packing.

For more details send an s.a.e. to Grosvenor Software (G4BMK), 2 Beacon Close, Seaford, East Sussex BN25 2JZ, or phone (0323) 893378.

Frequency List

Now for this month's frequency list. I've used the standard format, i.e. frequency, mode, speed, shift, callsign, time and notes. If you'd like a copy of my main frequency list just send three first class stamps to the address at the head of the column.

2.474MHz, RTTY, 50, 850, PBC, 2204, Dutch navy
3.2425MHz, FAX, 120, 576, NMF, 0532, USCG Boston
4.211MHz, SITOR B, 100, 170, GKE2, 2132, Portishead
4.2155MHz, SITOR B, 100, 170, OXZ, 0830, Lyngby Radio
4.963MHz, RTTY, 100, 850, DHN, 0959, German
5.083MHz, RTTY, 100, 425, DHJ51, 0804, German Military
5.107MHz, RTTY, 50, 425, -, 2252, Tehran
8.0515MHz, SITOR B, 100, 320, WOO, 0618, Ocean Gate
8.123MHz, ARQ 342, 96, 400, TNL, 2346, Brazzaville 2 chan 4
10.215MHz, RTTY, 100, 800, HZN48, 2105, Jeddah Meteo
11.0303MHz, FAX, 120, 576, AXM34, 0602, Canberra Meteo
11.0275MHz, RTTY, 50, 400, 9PL, 2312, Kinshasa Air
12.2125MHz, RTTY, 50, 400, YZ07, 0548, Tanjug, Press
12.5895MHz, c.w., -, -, WCC, 2218, Chatham Radio CRC
12.6035MHz, SITOR B, 100, 170, SVS, Greek ship press
12.992MHz, SITOR B, 100, 170, WLO, 0435, Mobile Radiopress
13.524MHz, RTTY, 50, 400, YIO72, 1608, INA Baghdad - news
13.737MHz, RTTY, 50, 170, KSA, 1930, Nairobi
14.785MHz, RTTY, 50, 170, ATP, 1440, Delhi press
14.764MHz, RTTY, 75, 425, GNA, 1538, Bahrain news
16.106MHz, RTTY, 50, 400, FZM62, 0525, French Press
16.145MHz, RTTY, 100, 400, RWM77, 0704, APN Moscow - English
16.302MHz, RTTY, 75, 425, LJV, 1438, Yugoslavia - Diplomatic?
16.820MHz, SITOR A, 100, 170, IAR, 1508, Rome radio
16.9333MHz, c.w., 22 w.p.m., -, WCC, 1803, Chatham, English press
18.388MHz, RTTY, 50, 425, LSA, 1005, Tripoli
18.363MHz, RTTY, 50, 425, 9PL, 1950, Zaire
19.1018MHz, ARQ E3, 192, 400, RFLI, 0901, FT De France
19.505MHz, RTTY, 50, 425, -, 0745, Latina press Cuba
21.758MHz, RTTY, 50, 425, HGX59, 1217, Hungary
22.955MHz, RTTY, 50, 425, -, 1440, Rome news

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The move of METEOSAT 3 to its new location over the Atlantic at 50° longitude west and the start of official transmissions just after midnight on August 1 was an unexpected bonus for those using METEOSAT receiving equipment. I found the signal several weeks ago during a routine scan with a hand-held and home-made dish while looking for GOES which I also found, but with the stronger signal nearby.

My main dish now points to the 'new' satellite and we can look forward to some good imagery of the eastern seaboard of America. Eumetsat have moved METEOSAT 3 from its position over the UK to fill the gap caused by delays in the construction and launch of a new American GOES satellite.

METEOSAT 3 Schedule

This is now called Atlantic Data Coverage (ADC) and primarily covers the eastern coast of North America (section L1), the whole of South America (sections L3 and L5) and most of the Atlantic (sections L2, L4 and L6). There are also high resolution digital formats of the North Atlantic, though I am not equipped to receive these!

Gordon Bridge of Eumetsat has kindly supplied me with the transmitting schedule and so the main sequences of a.p.t. frames are listed here. The frames are the usual four minute slots and are grouped together so that there are no simultaneous a.p.t. and high resolution transmissions. Sections L1 to L4 are transmitted in infrared at 0014, 0134, 0214, 0314, 0514, 0614, 0814 and 0914UTC. Sequences of visible frames are transmitted from 1418, 2018 and 2346UTC as well as shorter sequences at other times. Sequences of water vapour images are transmitted at 0050, 0350, 0550, 0650 and 0950UTC. An administrative message is transmitted at 0242 and 0842UTC.

METEOSATs 4 and 5

METEOSAT 4 remains the operational satellite with 5 now classed as the 'hot stand-by'. Imagery remains good and the burning oil wells near Kuwait are still producing smoke that can be monitored on the C3D frames.

GOES

A new broadcasting schedule for GOES started on 27 June 1990. As mentioned in this column recently, UK observers can hear GOES at its best during the evening. It is currently reaching about 18° elevation around 1730UTC, which drops to about 13° by 2100UTC. At its minimum, it is only 3° above the horizon as seen from western Britain. As a guide for those able to receive usable signals, the following frames are transmitted:

1510UTC A selection of METEOSAT pictures!

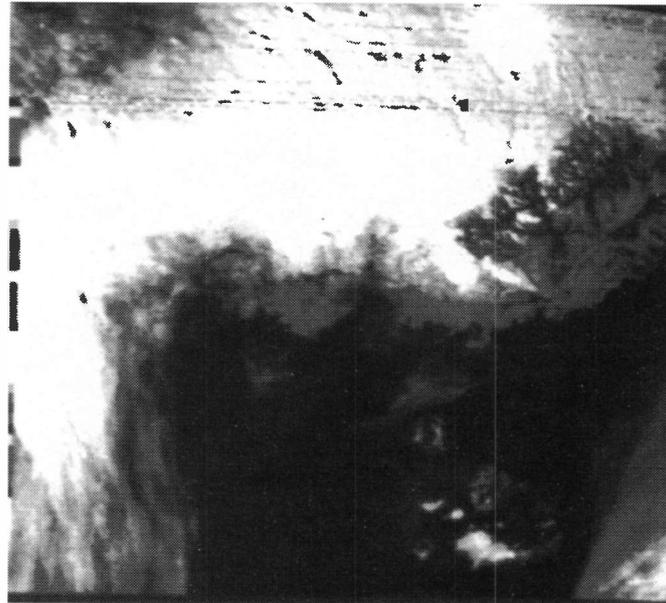


Fig. 2: East coast of Greenland including Iceland, from Jim Granville.

1610UTC Three composite Mercator images from a NOAA satellite.

1630UTC Nine frames of the standard quadrants from GOES.

1720UTC Six images recorded by a NOAA satellite.

1754UTC More pictures from METEOSAT.

1845UTC More composite images from a NOAA satellite.

For those readers who are recent recruits to the fascinating world of satellite monitoring, some further information might be helpful.

Polar Orbiters

The first satellites to provide live transmissions of the weather back in the 1960s were put into orbits with high inclinations so that they would pass near to the polar regions, and therefore pass over every part of the earth as it revolves. The orbits of these satellites are designed to have certain characteristics, such as (in the case of the NOAAs) always passing a particular place at about the same time each day. The difference between the daily pass times of the METEORS, NOAAs and FENGYUN series of WXSATS is the result of small differences in their orbital parameters.

The METEORS are not sun-synchronous - they pass by a few minutes earlier or later each day (there being two series of METEORS in different orbits). The Chinese FENGYUN satellites have orbits that take them over each place within a minute or so of the same time each day. All of these satellites have orbits that are in the range 800 to 1200km high and with current sensor technology they can resolve

ground details to about one kilometre, which is transmitted (in the case of the NOAAs and FENGYUN) at about 1700MHz. Special equipment is needed to both track the satellite and decode this signal and I will give more information about this work in the future.

For the large number of v.h.f. stations around the world, the sensor information is degraded to about four kilometres resolution for transmission in the 137MHz band. This type of transmission is called 'automatic picture transmission' (a.p.t.) and has been adopted internationally as the standard for weather satellites. It is unusual in having the actual image data amplitude modulated on to a 2400Hz carrier which then frequency modulates the main r.f. carrier. Each line of image data lasts half a second and so we receive images at 120 lines per minute.

Geostationary satellites

The polar orbiting satellites take up to 20 minutes to pass over a ground station and cannot be used to monitor a specific weather feature continuously. Because of the importance of continuous monitoring, a series of weather satellites occupying positions in the Clarke Belt, that is orbits where the period is 24 hours and the satellite appears to hang in the sky, were planned on an international basis.

The first European geostationary satellite METEOSAT 1 was launched on 23 November 1977 and successive METEOSATs have been positioned above the Greenwich meridian at about longitude 0°. By carefully controlling the position of the satellite, (this is called 'ranging'), pictures are taken of the whole disk and are then divided

into sections that are individually broadcast as a frame. Currently number 4 is being used while 5 undergoes tests. METEOSAT 3 is still in working order and so it has been moved as mentioned. The resolution of the sensors on METEOSAT varies from about 2.5km for the visible images to 5km for the infra-red ones.

Finally, if you use one dish to point at different geostationary satellites you need to adjust the angle (polarisation) of the feed each time. **Guy Denier** of Neuilly, France sent me a program written in GWBASIC to calculate the polarisation offset angle which, he says, is used by the satellite television (TVRO) suppliers.

New METEOR

As mentioned a month ago, a further METEOR launch was expected for mid-August. I had a call from **Dave Rogers** of Swindon to ask about the new satellite and just two hours later it came over Britain transmitting on 137.30MHz. It remained on for a day or so but was then switched off. It will be METEOR 3-5, having the same type of picture as 3-4 and the now familiar 'clap' sound. The satellite was travelling northbound on 16 August at 1230UTC and was still active during the following westerly orbit.

Other METEORS

METEORS 3-3 and 2-20 were operating during mid-July but by the end of the month METEOR 3-4 came back on, having passed through its spell near the terminator where illumination is poor. Also coming back on in early August was 2-19, and this change was predictable because 2-20 was also approaching the terminator and could be expected to be switched off. The Russians have been keeping at least two METEOR satellites operating at any one time.

NOAA Problems

A message just in asks for people to monitor NOAA-9 which is no longer considered to be an operational satellite. It is being used for testing procedures. Problems may have hit NOAA 12. Apparently someone reported that the one minute time marks were off. Officially NOAA 12 is not the operational satellite but it is expected to replace NOAA 10 in a few weeks time. Using a good predictions program you can identify the periods when NOAAs 9 and 12 will be operating.

OKEANs 2 and 3

During July and August there do not seem to have been many transmissions from OKEAN 3 and I have recorded very few pictures, though the few that I have seen include dramatic radar

images of the eastern coast of Greenland. **Peter de Jong** who lives in Holland also reports receiving pictures.

Other Signals

If your receiving system includes a scanner then you may have heard some of the other satellite signals that can be heard occasionally in the 137MHz band. I have received a large collection of satellite information from **Paul Wilson** of Macclesfield including a list of currently operating satellites, and the frequencies include: ATS 1 transmitting on 137.35MHz, ATS 3 transmitting on 136.37 and 137.35MHz and IUE on 136.86MHz. The collection includes recent data on interplanetary craft such as Galileo and Magellan, and gives their transmission frequencies, though unfortunately one requires a forty foot dish and liquid helium-cooled amplifiers to detect the signals!

Letters

Lester Jones of West Kirby sent me a printout from his receiving system showing some shower clouds approaching Britain, but unfortunately the contrast was not quite high enough for publication. **Ian Thomas** of Preston has had some difficulty with picture production. He uses a Cirkit crossed dipole and Maplin mast-head pre-amp feeding an Icom R-100 receiver. A Cirkit decoder then feeds a BBC Master computer. Ian comments that his recorded signals are clear but the pictures sometimes slope. Software can synchronise a picture either by using the information within the signal, in which case the picture will be straight while the signal is good, but may slip if the signal fluctuates.

The other method of synchronisation is by using the computer's internal clock. This can also give good, straight pictures, but the movement of the satellite shows the Doppler effect, and so the picture may lean slightly one way and then the other after the satellite has passed its closest point. Ian asks about the availability of satellite predictions software for the BBC Master computer. I believe that AMSAT have such software and they can be contacted at: AMSAT-UK, Ron Broadbent, 94 Herongate Road, Wanstead Park, London NE12 5EQ. Please remember to enclose an s.a.e.

Several *SWM* readers including **John Din** of Bristol, have written enquiring about clubs and local groups for weather satellite enthusiasts. The main national club is the Remote Imaging Group (RIG) whose membership secretary is: Des Watson G3YXO, Norton, Gote Lane, Ringmer, Near Lewes, East Sussex BN8 5HX. Again please remember to enclose an s.a.e.

There are many readers who are already monitoring FAX transmissions from various terrestrial stations and

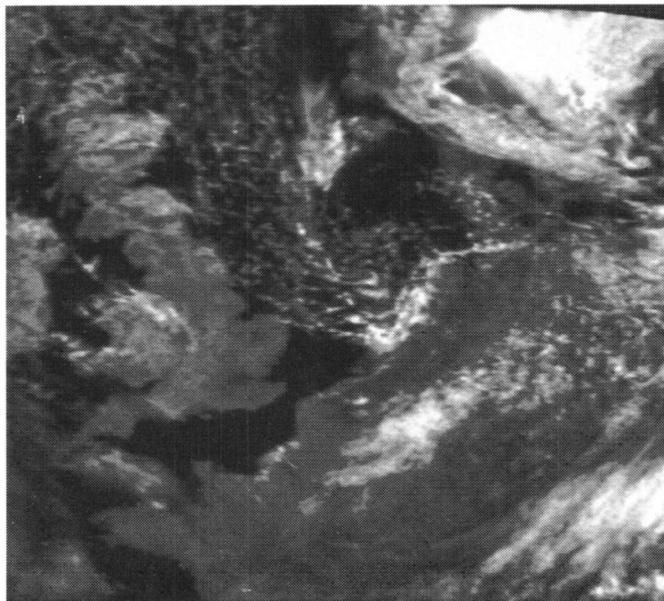


Fig. 3: Britain and Europe during summer 1991 also from Jim.

these broadcasts often include satellite pictures. **Dale Oubridge** of Honiton uses his Philips computer for FAX decoding and, like several other readers, has decided to set up equipment for the WXSATS. Reader **Alan Jarvis** of Cardiff is similarly expanding his equipment to include WXSAT reception. Alan has been monitoring a variety of signals for many years and was able to tune into METEOR 3-4 with his receiver while following its progress using the InstantTrack program running on his 386SX computer.

Every few weeks, the Russians switch over their weather satellites, for instance METEOR 3-4 may be replaced by METEOR 3-3 using the same frequency. At those times one needs to use good software to identify which satellite is then operating. **Bill Hills** of Bournemouth spotted the METEOR change-over in late July and requested new Kepler elements to positively identify the replacement satellite.

Television Weather

Robert Fulford of Exeter has been admiring the weather pictures shown on national television and wonders whether they are from the high resolution images transmitted by the polar orbiting satellites or METEOSAT. I don't have specific information on this, but the pictures are almost certainly of the a.p.t. type. A glance at some of the pictures in the journal of the Remote Imaging Group shows the high quality obtainable by using facsimile equipment to decode NOAA (and other) pictures. The best computer WXSAT decoding equipment can also produce this quality but getting a hard copy printout from a computer inevitably degrades the image quality.

At amateur level, we use fixed v.h.f.

antennas but professionals use tracking Yagis. Some years ago I was part of a team using the Winkfield ground station to track the British scientific satellite UK6 which had a beacon on 137.56MHz, and a multi-stacked Yagi was used to follow it. Robert wonders whether the authorities will phase out v.h.f. in favour of the s.h.f. transmissions, which could easily be coded, and asks me whether I think this will happen. Some time ago I put that question to the Meteorological Office and they very kindly replied indicating that as far as they were concerned there were no plans to do that, but people operating such systems might well be asked to agree not to make commercial pictures available to third parties. This seems very fair.

Pictures

Several sets of photographs arrived recently. **Peter Cotton** of Comar Electronics and **Dave Cawley** of Timestep Weather Systems have provided pictures, as has **Jim Granville** of Blackpool. Jim sent me a set of six and so I have included the first two this month. Jim adds a touch of nostalgia by mentioning that he was aircrew around 1945 and while posted to Montreal he brought back Dakotas via Greenland and Iceland. He adds that Flying Fortresses were flown to the UK via Greenland and some crashed on the icecap. Jim says that apparently some of the planes are still there bedded in the ice.

Several pictures have come from regular correspondent Peter de Jong. He monitors the WXSATS and sends in reports, the latest of which included a superb badge from ESA. The problem is - must I return it! **Ken Reece G8UYB** of Northwich sent me a copy of the

Christmas Day message issued on the METEOSAT administration notice. He uses a RIG dish, a Timestep Weather Systems pre-amp, the Dartcom down-converter, a Martelec receiver and an Amiga 500 computer running the Amigasat V2.0 software written by Geoff Hatto. Ken comments favourably on this program which he says requires 2Mb to use the image processing facilities fully.

New Amateur Publication

A new magazine recently came to my notice, called *WeatherSat Ink*. It is based in America and is a publication of the Amateur Remote Imaging Society which is to be a quarterly journal. The summer edition contains articles by some well-known USA authors and describes developments in the field of LNAs (Low Noise Amplifiers) which are essential for using with h.r.p.t. equipment. My thanks to Dave Cawley for supplying a copy of this publication.

Frequencies

NOAAs 9, 11 a.p.t. on 137.62MHz
 NOAAs 10, 12 on 137.50MHz
 METEORs 2-17 to 2-20 use 137.85MHz
 METEOR 3-3, 3-4 or 3-5 on 137.30MHz
 OKEAN 2 or 3 on 137.40MHz occasionally
 FENGYUN 1-2 was on 137.80MHz
 Remember that there will normally be one METEOR of each type operating, and they are changed every few weeks.

Kepler Elements

I will send a print-out of the latest elements upon receiving an s.a.e. All known weather satellites are included, together with their transmission frequencies if operating. It has happened before that the day after I have sent out a set the Russians have changed satellites! However, if you have each satellite included in your tracking program you should be able to spot any changes.

Abbreviations

a.p.t.	automatic picture transmission
h.r.p.t.	high resolution picture transmission
km	kilometre
MHz	megahertz
r.f.	radio frequency
s.a.e.	stamped addressed envelope
UTC	Universal Co-ordinated Time
v.h.f.	very high frequency
°	degree



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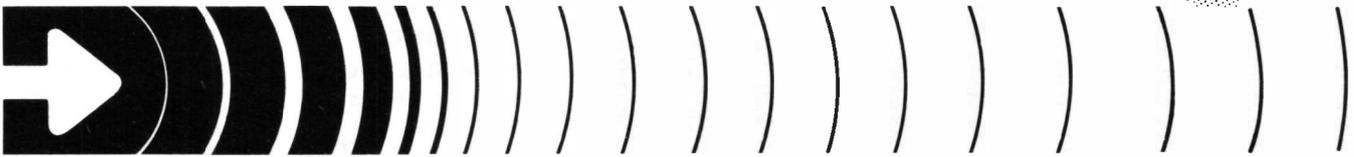
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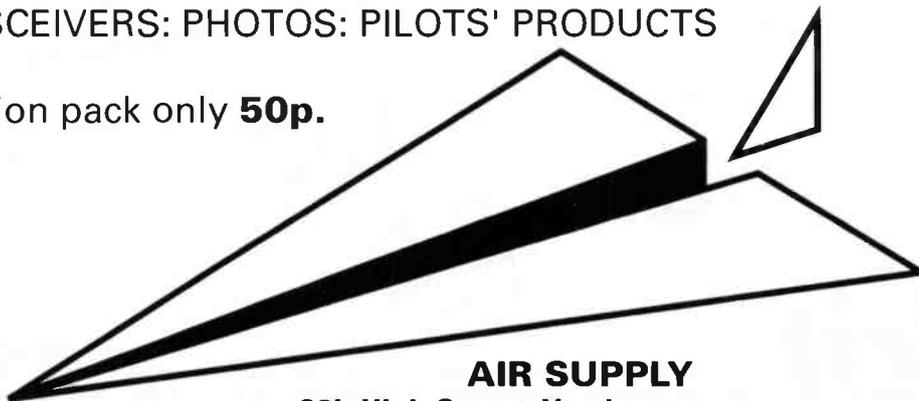
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Brian Oddy G3FEX. Three Corners, Merryfield Way, Storrington, West Sussex RH20 4NS

The 30kW upper sideband plus pilot carrier signals from Radio HCJB in Quito, Ecuador in the 11m and 13m bands provide listeners with excellent examples of the system being proposed for future h.f. broadcasting.

It seems to me that a substantial reduction in channel occupation could be achieved by some broadcasters to using the independent sideband (i.s.b) system. A programme could then be broadcast in two languages, e.g. English on the lower sideband (l.s.b) and, say, French on the upper sideband (u.s.b.), using the common low level pilot carrier as a reference.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless otherwise stated, all logs were compiled during the four week period ending August 4.

A marked reduction in the strength

of the signal from Konstantinow, Poland on 225kHz was noted during daylight by **Kenneth Buck** in Edinburgh, but other signals were unaffected. Whilst compiling his list, he used a newly constructed 650mm square loop. The 80mm wide plywood former was wound with 30 turns of 20 s.w.g. enamelled wire, each turn being spaced half the wire diameter. A 2N3819 source follower f.e.t. was used to couple the loop to a Lowe HF-225, thereby minimising loading and ensuring good impedance matching.

Since Atlantic 252 commenced its 'all night service' from Clarkestown, **Scott Caldwell** (Warrington) has found it almost impossible to receive any other broadcasts on 252kHz. He rates their signal as SINPO 55555 at 1830. In Co. Down, **Eddie McKeown** has similar problems on 198kHz from the potent signal from the BBC Droitwich transmitter (500kW), but he seized the opportunity to log the co-channel

signal from BBC Westerglen (50kW) whilst the Droitwich transmitter was undergoing some maintenance work!

MW DX

Despite local thunderstorms and static, **Jim Willett** (Grimsby) managed to receive 13 broadcasts from stations in the USA, Canada, the Caribbean and S.America. The first to reach him was VOXM in St. John's, NF on 590, rated SIO233 at 0010. By 0030 the signal from CJYQ in St. John's on 930 was peaking SIO333. Around 0100 Jim logged CKYQ Grand Bank, NF 610; CJCH in Halifax, NS 920; also CBD St. John's, NB 1110, all rated SIO222.

Between 0120 and 0200 Jim heard three stations in New York: WINS 1010, WOR 710 and WABC 770; also WGAR in Cleveland, OH 1220 and ZDK in St. John's, Antigua on 1100, all rated SIO222. At 0220, CFRA in Ottawa ON 580 was audible at SIO222.

Considerable fading was noted on the signal from R.Globo in Rio, Brazil on 1220 at 0230. The Caribbean Beacon, Anguilla 1610 peaked SIO222 at 0330.

In Bristol, **Tim Shirley** also logged VOXM 590, WOR 710 and WINS 1010. In addition, he heard CHAM in Hamilton, ON on 820 at 0200 and he is awaiting QSL cards/letters to confirm his reception of WGTO in Pine Hills, FL on 540; CHLC in Hauterive, PQ 580; WPTF in Raleigh, NC 680; also CFPL in London, ON 980.

Whilst in N.Wales, **Sid Morris** searched the band from a location 500m a.s.l. near Barmouth, Gwynedd. Using a Nevada MS 1000 mobile scanner with a telescopic antenna he picked up advertisements intended for listeners in New York at 0230, broadcast by WINS on 1010kHz. At 0250 he heard a quiz show from CJYQ on 930kHz.

The skywave signals from some of the low power stations in Spain have been reaching the UK. Soon after dark, **Darren Beasley** (Bridgwater) heard San Sebastian on 1296 (5kW), Pamplona 1584 (2kW) and R.Onteniente 1602 (2kW). Later, RNE-5 on 1098 (10kW) was rated 22333 by **Noel Carrington** in Sutton-in-Ashfield. **Eddie McKeown** logged Valencia on 1134 (10kW) as 21311 at 2224; Zamora 702 (5kW) as 21121 at 2355 and Oviedo 531 (10kW) as 21311 at 0037.

Some low power BBC relays have attracted the attention of DXers in daylight. No doubt the long sea paths helped the signals from the 2kW Radio 4 relays in Newcastle on 603 and Redmoss 1449 to reach **Sean Cooper** in Wells-next-the-Sea, Norfolk; also the 2kW R-4 relay in Redruth on 756 to be received by **George Millmore** at SIO333 in Wootton, IOW. George also rated the ground wave signal from the 0.75kW R-4 relay in Lots Road, London on 720 as SIO333. In N.London, **Ron Galliers** listened to the R.Wales relay in Uandrinod Wells on 1125 (1kW), rated 32222 at 0945.

MW Local Radio DX

In Scotland, **John Stevens** (Largs) checked the band on the evening of July 25 and heard for the first time Airport Information Radio, either from Heathrow or Gatwick, on 1584kHz. The signal became audible at 2015 and rated SIO222. It lasted just over 3

DXers:

- A: Leo Barr, Sunderland.
- B: Tim Bucknall, Congleton.
- C: Scott Caldwell, Warrington.
- D: Noel Carrington, Sutton-in-Ashfield.
- E: Sean Cooper, Wells-next-the-Sea.
- F: Tony Elkins, Bury St. Edmunds.
- G: David Forester, Newcastle-under-Lyme
- H: Ron Galliers, N.London.
- I: Francis Hearne, Bristol.
- J: Sheila Hughes, Morden.
- K: Eddie McKeown, Co. Down.
- L: George Millmore, Wootton, IOW.
- M: Sid Morris, Rowley Regis.
- N: Tim Shirley, Bristol.
- O: John Stevens, Largs.
- P: Phil Townsend, E. London.

Local Radio DX Chart

Freq kHz	Station	BBC ILR	Power kW	DXer
558	Spectrum R.	I	7.50	H,J*,LM
585	R.Solway	B	2.00	B,K,M,N
603	Invicta Snd(Coast)	I	0.10	C,D,E,G,H*,J,L,M*,P
603	R.Gloucester	B	0.10	B,G,I,L,M
630	R.Bedfordshire	B	0.20	B,D,E,G,H*,I,J,L,M,P
630	R.Cornwall	B	2.00	L,M*
657	R.Chwyd	B	2.00	A,B,D,G,H,J,K*,L,M,P
657	R.Cornwall	B	0.50	L
666	Devon Air R.	I	0.34	I*,J,L
666	R.York	B	0.80	C,D,E*,G,K*,M*
729	BBC Essex	B	0.20	E,H,L,M,P
738	Hereford/Worcester	B	0.037	B,G,H,L,M,P
756	R.Cumbria	B	1.00	A,B,K
756	R.Shropshire	B	0.63	B,C,D,G,H,L,M
765	BBC Essex	B	0.50	D,E,G,H,L,P
774	R.Kent	B	0.70	E,F,G,J,L,P
774	R.Leeds	B	0.50	A,B,C,D,G
774	Severn Sound (3CR)	I	0.14	I,L,M
792	Chiltern R.	I	0.27	D,E,G,I,L,M,P
801	R.Devon	B	2.00	G,L,M*
819	Hereford/Worcester.	B	0.037	G,H,I*,L,M
828	Chiltern Radio	I	0.20	E,H,I*,P
828	R.Aire(Magic 828)	I	0.12	A,B
828	R.WM	B	0.20	B,C,G,M
828	2CR	I	0.27	C,L
837	R.Cumbria	B	1.50	A
837	R.Furness	B	1.00	B
837	R.Leicester	B	0.45	B,D,E,G,H,J,L,M,P
855	R.Devon	B	1.00	L
855	R.Lancashire	B	1.50	A,B,C,D,G,K,M*
855	R.Norfolk	B	1.50	E,H,J,M*,P
873	R.Norfolk	B	0.30	D,E,H,J,L,P
936	GWR (Brunel R.)	I	0.18	H,J,L,M
945	R.Trent (GEM-AM)	I	0.20	B,C,D,G,H,L,M
954	Devon Air R.	I	0.32	L
954	R.Wyvern	I	0.16	G,M
990	WABC (Nice & Easy)	I	0.09	B,C,E*,G,K*,M
990	R.Aberdeen	B	1.00	A,E,K
990	R.Devon	B	1.00	L
990	Hallam R.(C.Gold)	I	0.25	E
999	R.Solent	B	1.00	J,L
999	R.Trent (GEM-AM)	I	0.25	B,D
999	Red Rose R.	I	0.80	A,C,G,K
1017	WABC Shrewsbury	I	0.70	B,G,M,M*
1026	R.Cambridgeshire	B	0.50	E,G,H,J,P
1026	R.Jersey	B	1.00	J,L
1035	Northsound Radio	I	0.78	A,E
1035	R.Kent	B	0.50	E*,H,J,L,P
1035	R.Sheffield	B	1.00	B,G
1035	West Sound	I	0.32	K
1107	Moray Firth R.	I	1.50	K
1107	R.Northampton	B	0.50	J,L,M*
1116	R.Derby	B	1.20	B,D,G
1116	R.Guernsey	B	0.50	L
1152	BRMB (Xtra-AM)	I	3.00	I*,M
1152	LBC (L.Talkback R)	I	23.50	L
1152	Piccadilly R.	I	1.50	B,C,G

Freq kHz	Station	BBC ILR	Power kW	DXer
1152	R.Broadland	I	0.83	E,K*
1161	GWR (Brunel R.)	I	0.16	J,K*,M
1161	R.Sussex	B	1.00	J,L
1161	R.Tay	I	1.40	K*
1161	Viking R.(C.Gold)	I	0.35	A,E
1170	Ocean Sd.(SCR)	I	0.12	J,L
1170	Signal R.	I	0.20	B,C,G,M
1242	Invicta Snd(Coast)	I	0.32	H,J,P
1242	Isle of Wight R.	I	0.50	I*,L
1251	Saxon R.	I	0.76	E,H
1260	GWR (Brunel R.)	I	1.60	J,L
1260	Leicester (GEM-AM)	I	0.29	G,J,M
1260	Marcher Sound	I	0.64	B,C,G
1260	R.York	B	0.50	A,E
1278	Pennine R.(C.Gold)	I	0.43	B,C
1305	R.Hallam (C.Gold)	I	0.15	A,B,D,G
1305	Red Dragon (Touch)	I	0.20	K*,L
1323	S'thern Sound(SCR)	I	0.50	L,P
1332	Hereward R.P'boro	I	0.60	D,E,G,J,K*,P
1332	Wiltshire Sound	B	0.30	G,I*,J,L
1359	Essex R.(Breeze)	I	0.28	H,J,K*,P
1359	Mercia Snd(Xtra-AM)	I	0.27	G,K*,M
1359	R.Solent	B	0.85	L
1368	R.Lincolnshire	B	2.00	A,B,C,D,E,G
1368	R.Sussex	B	0.50	H,J,L,P
1368	Wiltshire Sound	B	0.10	J,L,M*
1413	Sunrise R.	I	0.125	J*,L,P
1431	Essex R.(Breeze)	I	0.35	H,J,N*,P
1431	Radio 210	I	0.14	J,L
1449	R.Peterboro Cambs	B	0.15	E,G
1458	GLR	B	50.00	E,I*
1458	GMR	B	5.00	B,C,G,L
1458	R.Cumbria	B	0.50	K
1458	R.Devon	B	2.00	E*
1458	Radio WM	B	5.00	B,G,M
1476	C'ty Snd(1st Gold)	I	0.50	H,J*,J,L
1485	R.Humberside	B	1.00	A,E
1485	R.Merseyside	B	1.20	B,G,K,M
1485	R.Oxford	B	0.50	I*,L
1485	R.Sussex	B	1.00	H,J,L
1503	R.Stoke-on-Trent	B	1.00	A*,B,C,G,H,L,M
1521	R.Mercury	I	0.64	H,L
1521	R.Nottingham	B	0.50	A,D,G,M*
1530	Pennine R.(C.Gold)	I	0.74	A
1530	R.Essex	B	0.15	H
1530	R.Wyvern	I	0.52	G,L,M
1548	Capital R. (Gold)	I	97.50	E*,J*,L
1548	R.Bristol	B	5.00	L
1548	R.City (City Talk)	I	4.40	B,C
1548	R.Hallam (C.Gold)	I	0.74	B,C,D
1557	Chiltern R.(Gold)	I	0.76	A*,G
1557	Ocean Sound (SCR)	I	0.50	J,L
1584	Gatwick	I	0.10	H,L,O,P
1584	Heathrow	I	0.10	H,O,P
1584	R.Nottingham	B	1.00	A,B,D,E*,G
1584	R.Shropshire	B	0.50	M
1602	R.Kent	B	0.25	G,H,K*,L,P

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

long medium & short

Long Wave DX Chart

Freq kHz	TX Location	Country	Power kW	DXer
153	Bechar	Algeria	1000	L*,N*
153	Donebach	Germany	500	A,B,C,D,F,H,I*,J,K*,L,N,P,Q
153	Brasov	Romania	1200	N
162	Allouis	France	2000	A,B,D,E,F,H,I*,J,K,L,O,P,Q
171	Kaliningrad	USSR	1000	A,F,I*,J,K,L
171	Moscow	USSR	500	H
177	Oranienburg	Germany	750	A,D,F,I*,J,L,O
183	Saarouis	Germany	2000	A,B,C,D,F,H,I*,J,K,L,O,P
189	Motala	Sweden	300	A,I*,J
189	Tbilisi	USSR	500	N*
198	Warsaw 3	Poland	200	E*
198	BBC Droitwich	UK	500	B,D,E*,H,I*,J,K,P
198	BBC Westerglen	UK	50	A,J*
207	Munich	Germany	50	A,C,D,F,H*,I*,J,L,D,P
207	Azilal	Morocco	800	L*
216	Roumoules	Monaco	1400	A,B,C,D,F,H*,I*,J,K*,L,O,P
216	Oslo	Norway	200	A,H*,I*
216	Baku	USSR	500	L*
225	Konstantinow	Poland	2000	A,H*,I*,J,L
234	Junglinster	Luxembourg	2000	A,B,C,D,F,H*,I*,J,K,L,O,P,Q
243	Kalundborg	Denmark	300	A,C,D,F,H*,I*,J,L,O,P,Q
252	Tipaza	Algeria	1500	H*,L*,D
252	Atlantic 252	S.Ireland	500	A,B,C,D,F,G,H*,J,K,L,M,P,Q
261	Burg	Germany	200	F,J,P
261	Moscow	USSR	2000	A,D,H*,K,L
270	Topolna	Czechoslovakia	1500	A,H*,I*,J,K,L,O,P
279	Minsk	USSR	500	AL*

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

minutes before fading and it has not been heard since!

Logs from several new contributors have been included in the chart this time, they make a welcome addition and are much appreciated.

Short Wave Reports

Solar flares have disturbed the ionosphere less frequently and good h.f. DX reception has been noted on some days. Nevertheless, the solar activity is still at a very high level and further disturbances can be expected.

Daily variations in propagation have been noted in the 25MHz (11m) band. Some mornings, such potent signals reached the UK from R.Australia via Darwin 25.750 (Eng to Asia, Middle East 0900-1100) that it was easy to forget they had travelled half way round the world! A typical report came from **Phil Townsend** (E.London), who rated them as SIO434 at 1000. However, at other times their signal has been weak, almost inaudible or lost in the noise.

The broadcasts in Arabic from the Voice of the UAE in Abu Dhabi on 25.690

- DXers:**
 A: Kenneth Buck, Edinburgh.
 B: Tim Bucknall, Congleton.
 C: Scott Caldwell, Warrington.
 D: Noel Carrington, Sutton in Ashfield.
 E: Tony Elkins, Bury St.Edmunds.
 F: Ron Galliers, N.London.
 G: Francis Hearne, Bristol.
 H: Sheila Hughes, Morden.
 I: Eddie McKeown, Co.Down.
 J: George Millmore, Wootton, IDW.
 K: Sid Morris, Rowley Regis.
 L: Fred Pallant, Storrington.
 M: Don Phillips, Bridlington.
 N: Tim Shirley, Bristol.
 O: Cliff Stapleton, Torquay.
 P: Phil Townsend, E.London.
 Q: Ted Walden-Vincent, Gt.Yarmouth.

have usually been clearly received in the UK. In Winchester, **John Coulter** rated them as SIO444 at 1010. Despite the variations in propagation the 30kW single sideband signals from HCJB in Quito on 25.950 (u.s.b. + p.c. 24hrs) have been audible in the UK for much of the day. At 0745, **Chris Shorten** (Norwich) rated them as SINPO 34444.

In Canada, **Alan Roberts** (Quebec) checked the band daily and noted poor reception from all areas. However, in

an improvement on July 29, between 1140 and 1320UTC, he logged the Voice of the UAE in Abu Dhabi 25.690 as 35333; RNI Oslo 25.730 as 25222; DW via Julich 25.740 as 35444; R.Moscow 25.780 as 15111; RFI via 25.820 as 25222 and HCJB 25.950 as 25222.

Good DX has been noted on 21MHz (13m) some mornings. R.Australia's signals to C/SE.Asia via Darwin 21.525 (Eng 0100-0800) was 44344 at 0508 by **Alan Smith** in Northampton; to Asia via

Carnarvon 21.775 (Eng 0100-1000) as 44434 at 0851 by **Leo Barr** in Sunderland; to SE.Asia, M. East via ? 21.720 (Eng 1100-1330) as SIO222 at 1115 by **Philip Rambaut** in Macclesfield.

During the day there are many 13m broadcasts to Europe. Some noted were R.Japan via Moyabi 21.575 (Eng 0700-0800) 32233 at 0716 in Co.Down and 43333 at 0759 by **Rhoderick Illman** in Thumrait, Oman; UAE R.Dubai 21.605 (Ar, Eng 0615-1640, also to N.Africa) 44433 at 1050 by **Ron Damp** in Worthing; R.Pakistan, Islamabad 21.520 (Eng 1100-1120) 54344 at 1100 in Norwich; RCI via Sackville 21.545 (Eng, Fr 1400-1530) SIO333 at 1400 by **Bill Clark** in Rotherham; HCJB Quito 21.455 (u.s.b. + p.c. 0000-2400) SIO434 at 1630 by **Cliff Stapleton** in Torquay; also 21.480 (Eng 1900-2000) 44433 at 1916 by **Jim Cash** in Swanwick; WSHB Cypress Creek 21.780 (Eng 1800-2000, also to USA) SIO555 at 1900 in Edinburgh; WYFR Okeechobee 21.615 (Ger, It, Eng to Europe 1600-?) 35443 at 2115 by **John Nash** in Brighton.

Those to other areas included R.Romania Int, Bucharest 21.665 (Eng to Pacific areas 0645-0715), heard at 0645 by **Don Phillips** in Bridlington; R.Prague, Czechoslovakia 21.705 (Eng, Cz to Asia, Pacific areas 0730-0830) logged as 43333 at 0730 by **Sheila Hughes** in Morden; R.Austria Int, via Moosbrunn 21.490 (Ger, Fr, Eng to M.

DXers:

- A: Charles Beanland, Gibraltar.
 B: Darren Beasley, Bridgwater.
 C: Jim Cash, Swanwick.
 D: Bill Clark, Rotherham.
 E: Antonio De Abreu-Teixeira, Durham.
 F: David Edwardson, Wallsend.
 G: Ron Galliers, N.London.
 H: Simon Hamer, New Radnor.
 I: Sheila Hughes, Morden.
 J: Rhoderick Illman, Thumrait, Oman.
 K: Cyril Kellam, Sheffield.
 L: Eddie McKeown, Co.Down.
 M: Steve Milner, Skipton.
 N: John Nash, Brighton.
 O: Sergey Olejnik, Ukraine.
 P: Fred Pallant, Storrington.
 Q: John Parry, Northwich.
 R: Roy Patrick, Derby.
 S: Don Phillips, Bridlington.
 T: Tim Shirley, Bristol.
 U: Chris Shorten, Norwich.
 V: Alan Smith, Northampton.
 W: Cliff Stapleton, Torquay.
 X: Phil Townsend, E.London.
 Y: Ted Walden-Vincent, Gt.Yarmouth.
 Z: Jim Willett, Grimsby.

Tropical Band DX Chart

Frequency MHz	Station	Country	UTC	DXer	Frequency MHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	2100	H	4.810	R.Yerevan 2	USSR	2044	L,P
2.325	ABC Tennant Creek	Australia	2100	H	4.820	La Voz Evangelica	Honduras	0350	V
2.420	R.Sao Carlos	Brazil	0210	Z	4.820	R.Moskva 4	USSR	2044	G,L,P
2.485	ABC Katherine	Australia	2100	H	4.825	R.Moscow	USSR	2044	I,L,P
3.210	R.Mozambique	Mozambique	2100	D	4.830	Gaborone	Botswana	2100	P
3.215	R.Orange	S.Africa	2040	B,D,S,T	4.830	R.Tachira	Venezuela	0353	V
3.225	RRI Tanjung Pinang	Indonesia	2238	F	4.835	RTM Bamako	Mali	2030	G,P,R
3.230	R.Nepal	Kathmandu	1640	T	4.845	R.Fides, La Paz	Bolivia	0230	Z
3.240	TWR	Swaziland	1950	S,Z	4.845	DRTM Nouakchott	Mauritania	2051	G,P
3.255	BBC via Maseru	Lesotho	2100	B,S	4.850	R.Yaounde	Cameroon	2027	G,I,L,N,P,V,Z
3.270	SWABC 1, Namibia	S.W.Africa	2102	H,P,S	4.850	AIR Kohima	India	2028	P
3.315	AIR Bhopal	India	0130	T	4.855	R.Aruana	Brazil	0324	E
3.315	SLBS Freetown	Sierra Leone	2100	B,S	4.865	PBS Lanzhou	China	2053	P,R
3.320	R.Orion	S.Africa	2045	B,H	4.870	R.Cotonou	Benin	2042	A,P,S,Z
3.325	FRCN Lagos	Nigeria	2100	B,F,S	4.875	USSR	2345	E	
3.330	R.Kigali	Rwanda	1945	F,N,Q	4.885	R.Clube do Para	Brazil	0355	V
3.340	R.Altura	Peru	2355	M	4.885	Ondas del Meta	Colombia	0434	V
3.355	R.Botswana	Gabarone	2000	Z	4.885	Voice of Kenya	Kenya	2025	D,P
3.365	GBC Radio 2	Ghana	2100	B,G,L,P,S,U	4.890	DRTS Dakar	Senegal	1812	N
3.377	R.Nacional, Luanda	Angola	0011	H	4.895	Voz del Rio Arauca	Colombia	0358	E,V
3.905	AIR Delhi	India	1553	J	4.895	R.Moscow (Kalinin)	USSR	2024	P
3.915	BBC Kranji	Singapore	2026	G,L,N,P,Z	4.900	V de la Rev.Conakry	Guinea	2025	B,P
3.955	BBC Daventry	England	2042	G,I,L,S,X	4.905	R.Relogio, Rio	Brazil	0230	Z
3.965	RFI Paris	France	2043	G,I,L,S,U,W,X	4.905	R.Nat.N.djamaena	Chad	2025	A,G,L,P,S
3.980	VDA Munich	W.Germany	2040	G,I,L,U,X	4.910	R.Zambia, Lusaka	Zambia	2055	B
3.985	R.Beijing, China	via SRI Berne	2110	D,G,I,S,U,W,Y	4.915	R.Anhanguera	Brazil	0000	S,V,Z
3.985	SRI Berne	Switzerland	1910	G,I,L,N,X	4.915	R.Ghana, Accra	Ghana	2025	D,G,I,P,R,S
3.995	DW Cologne (Julich)	W.Germany	2115	A,G,L,S,W	4.915	Voice of Kenya	Kenya	1920	L,P
4.040	R.Moskva 2	USSR	2055	I	4.920	R.Quito	Ecuador	0422	V
4.055	R.Moskva 1 (Kalinin)	USSR	2005	N,Q	4.930	R.Moscow	USSR	2027	G,P,S
4.080	R.Ulan Bator	Mongolia	2330	Z	4.935	Voice of Kenya	Kenya	1920	A,F,G,I,N,P,S
4.220	PBS Xinjiang	China	2230	F	4.940	R.Kiev 2	USSR	2027	G,I,L,P
4.500	Xinjiang	China	2230	F	4.940	R.Continental, Barinas	Venezuela	0340	V
4.588	R.Rivajavin	Argentina	0005	Z	4.950	R.Nac.Luanda	Angola	2027	B,N,P
4.600	R.Baghdad	Iraq	2012	F,L,S	4.955	R.Marajoara, Belem	Brazil	0453	V
4.735	Xinjiang	China	2230	F,G,L,S	4.958	R.Baku	USSR	2000	S
4.740	R.Mamore	Bolivia	2330	M	4.970	R.Rumbos, Caracas	Venezuela	0150	Z
4.740	R.Afghanistan	via USSR	2040	B	4.975	R.Uganda, Kampala	Uganda	1920	L,O,P,S
4.750	R.Bertoura	Cameroon	2045	P	4.990	AIR via Madras	India	0000	S
4.755	RRI Ujungpadang	Indonesia	2200	F	4.990	FRCN Lagos	Nigeria	1925	C,L,P,S,Z
4.755	R.Haunta 2000	Peru	2320	M	5.005	R.Nacional, Bata	Eq.Guinea	2125	I,S,W
4.760	Yunnan Kunning	China	2125	B,P,S	5.020	La Voix du Sahel	Niger	2047	B
4.760	ELWA Monrovia	Liberia	2034	A	5.025	ABC Katherine	Australia	2100	Z
4.765	Brazzaville	Pep.Rep.Congo	2045	D,F,G,I,L,P,R,S,X	5.025	R.Uganda, Kampala	Uganda	1855	N
4.765	R.Moscow	via Cuba	0525	G	5.030	R.Impacto	Costa Rica	0500	Z
4.770	FRCN Kaduna	Nigeria	2100	A,D,F,G,L,N,S,Z	5.035	R.Bangui	C.Africa	2020	N,P,S
4.775	R.Gabon, Libreville	Gabon	2030	Z	5.035	R.Alma Ata	USSR	2200	B,E,L,S,W
4.775	RRI Jakarta	Indonesia	2000	F	5.040	R.Tbilisi 1	USSR	2045	B
4.785	RTM Bamako	Mali	2046	P	5.045	R.Cultura do Para	Brazil	2200	B,L,S
4.785	R.Baku	USSR	0010	Z	5.047	R.Togo, Lome	Togo	2040	G,L,P,R,S
4.790	TWR Manzini	Swaziland	1835	N	5.055	RFD Cayenne	French Guiana	0530	Z
4.795	R.Douala	Cameroon	2046	B,L,P,S	5.085	R.Pakistan, Karachi	Pakistan	0100	Z
4.800	LNBS Lesotho	Maseru	2042	B,N,P	5.260	R.Alma Ata 2	USSR	2205	B,L,S
4.805	R.Nac.Amazonas	Brazil	2230	Z					

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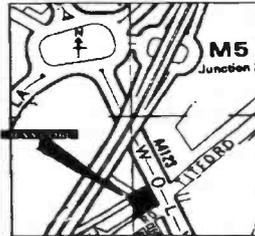
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Medium Wave DX Chart

Freq kHz	TX Location	Country	Power kW	DXer
526	Vatican City	Italy	5	Q*
531	Ain Beida	Algeria	600	I*,J*
531	Leipzig	Germany	100	E,L*,M*
531	Oviedo	Spain	10	L*,M
540	BRT-2 Wavre	Belgium	150/50	F,I,L*,M,N,R
549	Les Trembles	Algeria	600	M*
549	DLF Bayreuth	Germany	200	F,I,L*,M,R
549	Moscow	USSR	100	I*
558	Espoo	Finland	100	Q*
558	Valencia	Spain	20	F,L*
567	Berlin	Germany	100	F*,L*
567	RTE-1 Tullamore	Ireland (S)	500	D,E,F,I*,J*,M,N,R
576	Muhlacker	Germany	500	I*
576	Stuttgart	Germany	500	E*,L*,M
585	FIP Paris	France	8	I,M
585	RNE-1 Madrid	Spain	200	E*,J*,L*,N*
594	Frankfurt	Germany	400	I,L*
603	BBC-R4 Newcastle	UK	2	G
612	RTE-2 Athlone	Ireland (S)	100	D,E,F*,I*,J*,M,N,S
612	Sebaa Aioun	Morocco	300	J*
612	Lerida	Spain	10	J*
621	RTBF-1 Wavre	Belgium	80	E,J*,L*,M,N*,R
621	Barcelona	Spain	10	J*
630	Vigra	Norway	100	L*
639	La Coruna	Spain	100	J*,M*
648	BBC Drfordness	UK	500	F*,G,J,L*,M,N,R,S
657	RCE-2 Madrid	Spain	20	J*
657	BBC-R,Wales	UK	2	E,N*
666	Bodenseesender	Germany	300/180	J*,L*
675	Marseille	France	600	I*,L*,N
675	Hilversum-3 Lopic	Holland	120	F,J,M,R
684	RNE-1 Sevilla	Spain	250	E*,F*,J*,L*
693	BBC-R5 Postwick	UK	10	G
702	Aachen/Flensburg	Germany	5	L*
702	Monte Carlo	Monaco	300	Q
702	Zamora	Spain	5	L*
711	Rennes 1	France	300	E*,I,L*,M,R
720	BBC-R4 Lisnagarvey	Ireland (N)	10	A,M
720	BBC-R4 London	UK	0.5	G*,H,M,N*
729	RTE-1 Cork	Ireland (S)	10	M,N*
729	Oviedo	Spain	50	L*
738	Paris	France	4	M,Q*
747	Hilversum-2 Flevo	Holland	400	E,F,H,I,M,N,R
756	BBC-R4 Redruth	UK	2	M
783	Burg	Germany	1000	N
792	Limoges	France	300	M
792	VDA via Kavala	Greece	500	K*
792	Al-Hiswah	Yemen	750	K
801	Munich	Germany	420	E*
810	BBC-Scot.Westerglen	UK	100	E,F,G,H,I,M,N
819	Toulouse	France	50	E
837	Nancy	France	200	M
846	Rome	Italy	540	E*,M*
855	Berlin	Germany	100	F*
855	Murcia	Spain	125	L*
864	Paris	France	300	I,M,R
873	AFN via Frankfurt	Germany	150	E*,N
882	BBC-Wales Washford	UK	70	D,F,G,H,I,M,N,R
891	Algiers	Algeria	600/300	F*,L*,M*
891	Hulsberg	Holland	20	M
909	BBC-R5 Moorside Edge	UK	200	G
927	BRT-1 Wolvertem	Belgium	300	F,M,N,R
936	Bremen	Germany	100	E
963	Pori	Finland	600	P*
963	RRE Seixal	Portugal	10	Q*
972	Hamburg	Germany	300	F*,M
981	Alger	Algeria	600/300	L*,M*
990	Berlin	Germany	300	E*
999	Hoyerswerda	Germany	20	E*
1008	Hilversum-5 Flevo	Holland	400	C*,I,N,R
1017	Wolfsheim	Germany	600	C*,F*,M*
1026	Graz-Dobl	Austria	100	C*
1035	Milan	Italy	50	C*
1044	Dresden	Germany	250	C*,E*,F*
1053	BBC-R1 Postwick	UK	10	G
1062	Kalundborg	Denmark	250	C*,F*
1071	Brest	France	20	C*,M

East 0500-0800) 45554 at 0732 by **David Edwardson** in Wallsend; BBC via Tsang Tusi 21.715 (Eng to Asia 0100-0900) 23223 at 0855 in N.London; R.Yugoslavia, Belgrade 21.605 (Eng to Australia 1200-1230) SIO433 at 1205 by **Bryan Kimber** in Hereford; BSKSA Riyadh, Saudi Arabia 21.505 (Ar to N. Africa ?-1700) SIO333 at 1330 by **Ted**

Walden-Vincent in Gt.Yarmouth; R. Moscow, USSR 21.785 (Eng to E.Africa 0900-?) SIO222 at 1500 by **Julian Wood** in Elgin; BBC via Limassol 21.470 (Eng to M. East, E.Africa 0900-1615) SIO333 at 1530 in E.London; RAI Rome 21.560 (It to Africa 1700-1745) SIO444 at 1700 in Winchester; R.Norway Int, Oslo 21.705 (Norw to W.Africa 1700-1730)

45554 at 1710 by **John Parry** in Northwich; WCSN Scotts Corner 21.640 (Eng to E.Africa 1600-1800) 44444 at 1738 by **Darran Taplin** in Brenchley.

Quite often the **17MHz (16m)** signals to Pacific areas from R. New Zealand have reached here in the early morning. At times their 100kW signals from Rangataiki, N.Island on 17.770 (Eng

DXers:

- A: Leo Barr, Sunderland.
- B: Charles Beanland, Gibraltar.
- C: Darren Beasley, Bridgwater.
- D: Tim Bucknall, while at Llandudno.
- E: Scott Caldwell, Warrington.
- F: Noel Carrington, Sutton in Ashfield.
- G: Sean Cooper, Wells-next-the-Sea.
- H: David Forester, Newcastle-under-Lyme.
- I: Ron Galliers, N.London.
- J: Sheila Hughes, Morden.
- K: Rhoderick Illman, Thumrait, Oman.
- L: Eddie McKeown, Co.Down.
- M: George Millmore, Wootton IDW.
- N: Sid Morris, Rowley Regis.
- O: Roy Patrick, Derby.
- P: Don Phillips, Bridlington.
- Q: Tim Shirley, Bristol.
- R: Phil Townsend, E.London.
- S: Ted Walden-Vincent, Gt.Yarmouth.

2200-0730) peaked SIO444, as noted by **Cyril Kellam** in Sheffield at 0658.

Also heard in the morning were VOA via Tangier 17.715 (Eng to Africa 0300-0700) 43333 at 0608 by **Robin Harvey** in Bourne; R.Romania Int, Bucharest 17.720 (Eng to Asia, Pacific areas 0645-0715) 54444 at 0703 in Swanwick; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) 34433 at 0835 in N.London; BBC via Kranji 17.830 (Eng to Australia, New Zealand 0600-1000) SIO333 at 0835 in Macclesfield; KHBI Saipan, N.Mariana Islands 17.555 (Eng to E.Asia 0800-1000) 34323 at 0935 in Bridgwater; R.Beijing, China 17.710 (Eng to S.Pacific 0900-1100) 33343 at 0935 in Norwich.

Later, the Voice of Greece, Athens 17.525 (Gr, Eng to USA, N.Europe 1500-1550) was 55555 at 1532 in Brenchley; RTVM Tanger, Morocco 17.595 (Fr, Eng, Ar to M.East, N.Africa 1500-1800) SIO444 at 1540 in Winchester; RSA Johannesburg, S.Africa 17.790 (Eng to W.Africa 1700-1800) 42333 at 1703 in Sunderland; Vatican R. Rome 17.730 (Eng to Africa 1730-1800) 43333 at 1734 in Oman; R.Suriname Int via RNB Brasilia 17.755 (Du, Eng to Europe 1730-1800) SIO322 at 1740 in Rotherham; R.Moscow, USSR 17.655 (Eng to Africa 1800-1900) 55444 at 1810 in Warrington; R.Netherlands via Bonaire 17.605 (Eng to W.Africa 1830-1925), logged at 1830 in Bridlington; RCI via Sackville 17.875 (Eng to Europe 2100-2150) SIO222 at 2149 in Elgin; RHC Havana, Cuba 17.815 (Fr, Eng to Europe 1900-2100) 43333 at 2050 in Worthing; BRT via Wavre 17.550 (Sp to Africa 2030-2055), noted as 'fair' at 2055 by **Charles Beanland** in Gibraltar; VOA via Tinang 17.735 (Eng to E.Asia 2100-0000) 33553 at 2110 in Northwich; R.Mexico Int, Mexico 17.765 (Sp to E.U.S.A, C.America 2000-2300) 32223 at 2110 by **Antonio De Abru Teixeira** in Durham; VOFC via Okeechobee 17.750 (Eng to Europe 2200-2300) SIO433 at 2200 by **Francis Hearne** in Bristol; R.Cultura, Sao Paulo Brazil 17.815 (Port to S.America 0900-0500) SIO333 at 0025 in Hereford.

The **15MHz (19m)** band is the hub of activity for many. Although for other areas, R. Australia have been heard here. Signals to Pacific areas via Shepparton on 15.240 (Eng 2200-0930) were 44333 at 0610 in Bourne; to Asia

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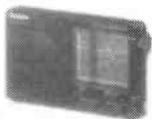
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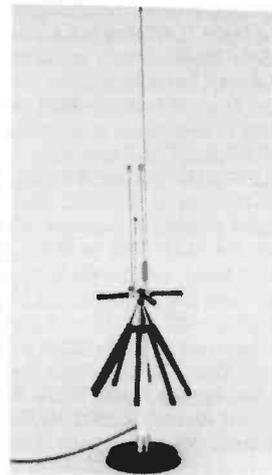
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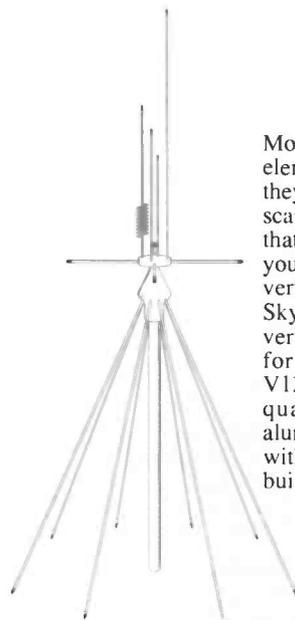
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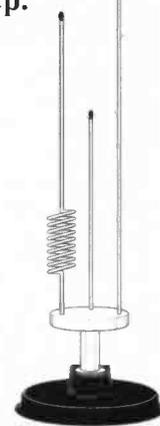


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Expiry Date

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long medium & short

DXers:

A: Sid Morris, Barnmouth.
B: Tim Shirley, Bristol.
C: Jim Willett, Grimsby.

via Shepparton 15.320 (Eng 2030-0800) 22322 at 0650 in Swanwick; to C.Asia via Darwin on 15.170 (Chin 2200-2300) 32222 at 2209 in N.London.

Other signals for outside Europe were heard: RFO Papeete, Tahiti 15.170 (Fr, Tah to SE.Pacific 1600-0930), noted as 33233 at 0528 in Northampton; BBC via Mahe 15.420 (Eng to E.Africa 0500-0630) 35553 at 0605 in Northwich; R.Austria Int via Moosbrunn 15.410 (Fr, Ger, Eng to M.East 0400-0800), heard at 0730 in Bridlington; RTL Luxembourg 15.350 (Eng, Fr to E.USA 24hrs) SIO555 at 0847 in Macclesfield; R.Beijing, China 15.440 (Eng to S.Pacific 0900-1100) 23333 at 0940 in Norwich; VOA via Munich 15.195 (Eng to M.East 0800-1000) 54454 at 1000 in Worthing; KTBN Salt Lake City 15.590 (Eng to USA 1500-0100) SIO322 at 1715 in Rotherham; R.Japan via Sri Lanka 15.345 (Eng to ? 1700-1800) SIO333 at 1730 in Sheffield; R.Sweden via Horby 15.270 (Eng to M.East, Africa 1830-1900) 44433 at 1830 in Brenchley; AIR via Delhi 15.360 (Eng to Africa 1800-2000) 34433 at 1913 in Oman; Voice of the UAE in Abu Dhabi 15.305 (Eng to N.Africa? 2200-0000) 44444 at 2342 in Wallsend.

Also noted were signals to Europe: HCJB Quito 15.270 (Eng 0700-0830) 43343 at 0700 in Morden; REE via Noblejas 15.240 (Sp 1000-1800) SIO444 at 1435 in Gt.Yarmouth; R.Sofia, Bulgaria 15.330 (Eng 1730-1900) SIO333 at 1759 in Winchester; Voice of Vietnam, Hanoi 15.010 (Eng, Fr, Sp, Ger 1800-2130) SIO333 at 1800 by Alf Gray in Birmingham; RNB Brasilia, Brazil 15.265 (Eng, Ger 1800-?) 21322 at 1803 in Co.Down; R.Korea, Seoul 15.575 (Eng

1800-1900) SIO333 at 1830 in Warrington; R.Afghanistan via USSR 15.510 (Eng 1800-1900) 55555 in Brighton; RCI via Sackville 15.325 (Eng 1900-1959) SIO444 at 1910 in Edinburgh; R.Damascus, Syria 15.095 (Ger, Fr, Eng 1805-2105) 54554 at 2002 in Bridgwater; Voice of Israel, Jerusalem 15.640 (Fr, Eng 2100-2200), noted as 'good' at 2100 in Gibraltar; SLBC Colombo, Sri Lanka 15.120 (Eng 1830-2130) 22322 at 2124 in Sunderland; RAE Buenos Aires, Argentina 15.345 (Ar, Eng, Ger, Fr, It 1800-2300 Mon-Fri, Sp 1800-0000 Sat/Sun) SIO444 at 2230 in Hereford; WWCR Nashville 15.690 (Eng, Sp 1200-0000) SIO343 at 2205 in Torquay.

The 13MHz (22m) signals from R.New Zealand to Pacific areas have reached the UK some evenings. Their signal on 13.785 (Eng 1800-2200, Sun to Fri) was 34333 at 1820 in Morden. Some of Radio Australia's signals have also been heard here: to Pacific areas via Shepparton 13.605 (Eng 1700-2130) rated SIO333 in Birmingham; to S.Asia via Carnarvon 13.745 (Eng 1530-2100) 43443 at 1849 in Brenchley; to Asia via Carnarvon 13.705 (Eng 2100-2300) SIO444 at 2200 in Edinburgh.

Among those using this band are R.FPI Costa Rica 13.630 (Eng to ?) SIO333 at 0725 in Sheffield; Voice of Israel, Jerusalem 13.750 (Heb to C.Europe 0400-2310) SIO212 at 1230 in Macclesfield; KHBI Saipan, N.Mariana Is 13.625 (Eng to S.Asia 1400-1800) 22222 at 1420 in Worthing; UAER Dubai 13.675 (Ar, Eng to Europe 1600-2100) 55555 at 1635 in Norwich; WHRI Noblesville 13.760 (Eng to USA, Europe 1600-0000) 33222 at 1935 in N.London; R.Austria

Transatlantic DX Chart

USA				
540	WGTO	Pines Hill, FL.	0116	B
680	WPTF	Raleigh, NC	0515	B
710	WOR	New York, NY	0130	B,C
770	WABC	New York, NY	0200	C
1010	WINS	New York, NY	0120	A,B,C
1220	WGAR	Cleveland, OH	0130	C
Canada				
580	CFRA	Ottawa, ON	0220	C
580	CHLC	Hauterive, PQ	0300	B
590	VOCM	St.John's, NF	0010	B,C
610	CKYQ	Grand Bank, NF	0100	C
820	CHAM	Hamilton, ON	0200	B
920	CJCH	Halifax, NS	0100	C
930	CJYQ	St.John's, NF	0030	A,C
980	CFPL	London, ONT	0000	B
1110	CBD	St.John, NB	0110	C
C.America & Caribbean				
1100	ZDK Granville R.	St.Johns, Antigua	0130	C
1610	Caribbean Beacon	The Valley, Anguilla	0330	C
South America				
1220	R.Globo	Rio, Brazil	0230	C

Int, Moosbrunn 13.730 (Ger, Fr, Eng, Sp to Africa 1700-2100) 35553 at 2000 in Northwich; BBC via Woofferton 13.660 (Arto N.Africa 2000-2100) 44343 at 2001 in Swanwick; WSHB Cypress Creek 13.770 (Eng to USA, W.Europe 2000-2200) 35343 at 2003 in Brighton; R.Netherlands via Flevo 13.700 (Eng to W.Africa 2030-2125) 45554 at 2052 in Co.Down; DW via Julich 13.780 (Eng to SE.Asia, Australia 2100-2150) 54544 at 2130 in Bridgwater; Voice of the UAE, Abu Dhabi 13.605 (Ar, Eng to N.Africa 2200-0000) 44554 at 2342 in Wallsend.

The 11MHz Band

Signals for Europe in the 11MHz (25m) band include HCJB Quito 11.835 (Eng 0700-0830) 44444 at 0804 in Bourne; R.Pakistan, Islamabad 11.570 (Eng, Ur 1700-1900) 55545 at 1700 in Norwich; R.Afghanistan via USSR 11.845 (Eng 1800-1900) 32423 at 1833 in Sunderland; RAI Rome 11.800 (Eng 1935-1955) SIO333 at 1935 in Birmingham; R.Beijing, China 11.500 (Eng 2000-2200) 45434 at 2025 in Swanwick; R.Yugoslavia, Belgrade 11.735 (Eng 2100-2145) 55455 at 2100 in Warrington; R.Romania Int, Bucharest 11.940 (Eng 2100-2130) SIO434 at 2100 in Sheffield; AIR via Aligarh 11.620 (Hi, Eng 1845-2230) SIO444 at 1914 in Rotherham; R.Japan via Moyabi 11.735 (Eng 2300-0000, also to M.East, Africa) 32333 at 2319 in N.London; R.Vilnius, Lithuania 11.790 (Eng 2300-?) 54334 at 2325 in Gibraltar; R.Sofia, Bulgaria 11.660 (Eng 2145-0000) 44444 at 2342 in Co.Down.

Some to other areas stem from RHC Havana 11.760 (Eng to C.Am 0400-0600) 43433 at 0500 in Northampton; R.Damascus, Syria 12.085 (Arto M.East 0500-1730) 43333 at 1220 in Worthing; Voice of the Mediterranean, Malta 11.925 (Eng to N.Africa 1400-1600) 44544 at 1420 in Brighton; VOA via Tinang 11.920 (Eng to Africa 1600-2000) 43333 at 1626 in Oman; Voice of Greece, Athens 11.645 (Gr, Eng to S.Africa 1800-1850) SIO455 at 1840 in Edinburgh; R.Globo, Rio de Janeiro 11.805 (Port to S.Am 0900-0400) SIO433 at 2230 in Hereford; Voice of Israel, Jerusalem 11.605 (Eng to USA 2300-2330) SIO444 at 2300 in Bristol.

The 9MHz (31m) signals to Europe include WCSN Scotts Corner 9.840 (Eng 0600-0800) SIO444 at 0615 in Bristol;

ISBS Reykjavik, Iceland 9.265 (Eng 0730-0745, Mon-Fri) SIO454 at 0730 by Simon Hamer in New Radnor; R. Norway Int, Oslo 9.590 (Eng 1700-1755 Sat, Sun only) SIO333 at 1730 in Birmingham; RNE via Madrid? 9.620 (Sp 1600-?) 44444 at 2010 in Gibraltar; Voice of Greece, Athens (Gr, Eng, Fr, Ger, Serb, Bulg, Ro 1900-2050) SIO433 at 2027 by Ron Pearce in Bungay; R.Cairo, Egypt 9.900 (It, Ger, Fr, Eng 1800-2245) SIO222 at 2130 in Elgin; VOIRI Tehran 9.022 (Eng, Fr, Ger, Sp, Ar 1800-2230) SIO434 at 2200 in Torquay.

Also noted were some to other areas: BBC via Antigua 9.640 (Eng to C.America 0500-0815) 44343 at 0604 in Bourne; ABC VLO9 Brisbane 9.660 (Eng to Australia 24hrs) 31541 at 0652 in Bridgwater; R.Mediterranean Int via Nardor 9.575 (Ar, Fr to N.Africa 0800-2100) SIO333 at 0800 by Steve Milner in Skipton; R.New Zealand, Wellington 9.700 (Eng to Pacific 0730-1210) 33333 at 0800 in Morden; HCJB Quito 9.745 (Eng to Pacific 0730-1130) SIO222 at 0825 in Macclesfield; R.Thailand, Bangkok 9.655 (La, Chin, Th, Viet, Eng, Cam, Mal, Jap, Bur to SE.Asia 0910-1455) 23332 at 1420 in Oman; R.Australia 9.860 (Eng to S.Asia 1800-2100) 43433 at 1905 in Brenchley; R.Nacional, Paraguay 9.735 (Sp to S.America 0800-2300) 33333 at 2200 in Durham.

Programmes for Europe in the 7MHz (41m) band included those from Vatican R, Rome 7.250 (Eng 0500-?) SIO444 at 0507 in Rotherham; WYFR Okeechobee 7.355 (Eng 0600-0800) 55545 at 0653 in Bridgwater; R.Prague, Czechoslovakia 7.345 (Ger, Cz, Sp, Eng, Fr 1700-2215) 55555 at 1850 in Warrington; RCI Montreal via Daventry, UK 7.235 (Eng 1900-1929) SIO555 at 1920 in Hereford; RAI Rome 7.275 (Eng 1935-1955), heard at 1935 in Bridlington; R.Romania Int, Bucharest 7.145 (Eng 1930-2030) 54344 at 1950 in Norwich; AIR via Aligarh 7.412 (Eng 2045-2230) SIO333 at 2059 in Bungay.

Seldom logged, are the 6MHz (49m) signals from the King of Hope, Lebanon 6.280 (Eng to Middle East, SE.Europe), SIO333 at 2050 in Bungay; R.Korea, Seoul 6.480 (Eng to Europe 2030-2130) 31331 at 2052 in Bridgwater; R.Globo Rio, Brazil 6.030 (Port to S.America 0900-0400) 22222 at 2340 in Durham; CKZN St.John's, NF 6.160 (Eng to USA/Canada 0930-0500) SIO222 at 0000 in New Radnor.

Equipment Used

Leo Barr, Sunderland: Matsui MR-4099 + r.w. in loft.
Charles Beasland, Gibraltar: Sangean ATS-803 + a.t.u. + r.w.
Darren Beasley, Bridgwater: Philips D2935 + a.t.u. + 10m wire.
Kenneth Buck, Edinburgh: Lowe HF-225 + r.w. in loft or loop.
Tim Bucknall, Congleton: Triumph 1000 or Unitra D-401 or Boots SRR 33T.
Scott Caldwell, Warrington: Saisho 2000 + 10m wire or Toshiba RT-SX1.
Noel Carrington, Sutton in Ashfield: Philips D2999 + a.t.u. + 65RV.
Jim Cash, Swanwick: Kenwood R5000 + trap dipole.
Bill Clark, Rotherham: Sony ICF-SW7600 + built-in whip or r.w.
Sean Cooper, Wells-next-the-Sea: Pioneer F-656 tuner + loop.
John Coulter, Winchester: Yaesu FRG-7 + r.w.
Ron Damp, Worthing: Racal RA17 + 30m inverted V dipole.
Antonio De Abreu Teixeira, Durham: Sony ICF-SW 7600 + 9.5m wire.
David Edwardson, Wallsend: Trio R600 + inverted V trap dipole.
Tony Elkins, Bury St.Edmonds: Icom R9000 + a.t.u. + 300m wire.
David Forester, Newcastle-under-Lyme: Yaesu FRG-7 + r.w.
Ron Galliers, London: Philips D2935 + a.t.u. + 30m wire.
Alf Gray, Birmingham: Codar CR70 + PR30 + a.t.u. + Ex-Army whip.
Simon Hamer, New Radnor: Sony ICF-2001D + Grundig S1400 + magnetic loop or Lafayette HE30 + a.t.u. + r.w.
Robin Harvey, Bourne: Matsui MR-4099 + s.w. loop.
Francis Hearne, Bristol: Sharp GFA3 cassette radio + r.w.
Sheila Hughes, Morden: Sony ICF7600DS or Panasonic DR48 + 15m wire.
Rhoderick Illman, Thumrait, Oman: Sony ICF 7600DS + whip or 23m wire.
Cyril Kellam, Sheffield: Sony ICF-7600DS + AN-1 or 25m wire.
Bryan Kimber, Hereford: Zenith R7000 or Realistic SX190 + 20m wire.
Eddie McKeown, Co.Down: Tatung TMR 7602.
George Millmore, Wootton: Tatung TMR 7602 + loop or Racal RA17L + v.l.f. converter + r.w.
Sid Morris, Rowley Regis: Kenwood R5000 + r.w. or Nevada MS 1000 + whip.
John Nash, Brighton: Kenwood R5000 + Datong AD370.
Sergei Olejnik, Kalush, Ukraine: Ishim-003 + 70m wire.
Fred Pallant, Storrington: Trio R2000 + r.w. in loft.
John Parry, Northwich: Realistic DX-400 + 33m wire.
Roy Patrick, Derby: Lowe HF-125 + 44m wire.
Ron Pearce, Bungay: Home-built 2 transistor receiver designed by G.Dobbs.
Don Phillips, Bridlington: Yaesu FRG-8800 + a.t.u. + r.w.
Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.
Alan Roberts, Quebec, Canada: Lowe HF-225 + 31m or 11m dipole.
Tim Shirley, Bristol: Icom R-71E or Trio R600 + loop or r.w.
Chris Shorten, Norwich: Matsui MR-4099 + 10m wire.
Alan Smith, Northampton: Matsui MR-4099 + a.t.u. + dipole.
Cliff Stapleton, Torquay: Trio R1000 + dipole or 25m wire.
John Stevens, Largs: Hammarlund HQ 180 or Icom R-70 + loop or r.w.
Darran Taplin, Brenchley: Yaesu FRG-7700 + FRA-7700 or FRT-7700 + Zepp.
Phil Townsend, London: l.f. converter + Lowe SRX-30 + loop or a.t.u. + r.w.
Ted Walden-Vincent, Gt Yarmouth: Grundig Satellit 1400L + r.w.
Jim Willett, Grimsby: RCA AR77 + 4m loop or Trio 9R-59DS + a.t.u. + X dipole.
Julian Wood, Elgin: Kenwood R2000 + Yaesu FRT-7700 a.t.u. + 6m wire.

This quarter, I am featuring tiny Radio Essex, based on an ex-naval wartime fort in the Thames Estuary, possibly the forerunner of local radio as we know it now. Broadcasts from 'Knock John Tower' started on 27 October 1965.

Like most of the fort based stations of this era, conditions were slightly primitive, due to being based on derelict structures at sea and because of their dubious legal position. Nevertheless, station staff made up for the missing facilities with a unique feeling of having to succeed at little to no cost.

An ex-military 1kW transmitter feeding a copper wire, supported by scaffolding poles, provided a good local signal. QSL cards were sent to DXers, and car stickers proclaiming 'Radio Essex is my station 24 hours a day' became a popular sight. In fact, this was the first attempt by any British station to run continuously. The BBC did not take up 24 hour radio until many years later.

The studio consisted of mainly semi-professional equipment, with Garrard 401 turn-tables, Vortexion Tape deck and a Reslo ribbon microphone. The studio mixer was built by station engineers, with a volume unit meter fixed to the wall!

Electricity supply came from one of three of the forts original Gardner diesel generators, restored by the Fort Captain, who was a mechanical engineer. An endearing feature of Knock John were the strange pranks played by the platform's resident ghost.

After just over a year on the air, the station's owner, Roy Bates, was fined for using unlicensed wireless telegraphy equipment. Previously, it was accepted that the fort stood outside British territorial waters. Suddenly, the GPO came up with measurements taken from a sandbank on a low spring tide. This, the court accepted, was land even if it was only dry for a few days each year, resulting in the tower being within the (then) three mile limit.

Radio Essex, or Britain's Better Music Station as it was later known, broadcast on 222 metres (1.349MHz) and closed down during December 1966.

Medium Wave Station

Only Dutch stations have been received recently, 1.611MHz Radio Barones at 2214 playing several records dedicated to British DXer Derek Taylor in Preston. I wonder if he reads *SWM*? On 1.617MHz, Radio Santana was heard at 2015 from Neede in Holland. Both stations featured quite a lot of English speech and plenty of Dutch barrel organ music.

Short Wave Stations

Radio Fax 6.205MHz has been reported by all monitors, the Radio Caroline programme mentioned on air never materialised. **Neil Oakley** writes from Whitstable saying that

OFF THE RECORD Pirates

Fax broadcasts a programme called *Sparks* featuring technical information and listeners letters on Mondays, repeated Tuesdays. Their 12.255MHz transmitter is also mentioned in the reports particularly from overseas. Radio Merlin International 6.240MHz is received very well by **Mark Jones** in Peterborough on his Saisho 5000. He reports Merlin to be broadcasting 24 hours a day.

Radio Zenith 6.235MHz has been heard on a Friday evening by **John Robertson** at 2150 and on Sunday at 0910 with a DX programme. At 0915 on 6.211MHz, a station was received playing continuous French songs, no identification was given and it ceased transmission halfway through a record.

WKNR (West & North Kent Radio) were very busy over Easter and are still active on 6.275MHz. **Ron Galliers** of Islington logged them at 0855, together with Radio Geronimo on 6.270MHz. This station has also been heard on 6.255 at 0930 on Sundays with an excellent signal in Folkestone. Radio Orion 6.290 at 10.35 and Radio Sierra on 6.540 were logged by **David Matthews** in Llandrindod, amongst many others.

Britain Radio International on 6.225 with a rather poor signal was reported by **John Robertson** of Northumberland, but he had much better luck with Midland Music Radio on 6.260MHz at 0055UTC. Rockabilly Radio 7.412 and Radio Free Massachusetts 7.400 are just two among a most impressive log provided by **Bob Marsh** of Bexleyheath. I will have to do a mini-feature on American stations.

Other stations logged were N. Ireland Relay Service on 6.272 at 0915 and Southern Music Radio on 6.229 at 0930. An unidentified Dutch station, possibly Radio Marabu, was monitored at 1058 giving details surrounding the closure of Radio 100, an M station in Amsterdam. The

Voice of Holland 6.285, with a test broadcast, was monitored by **Sid Morris** of Warley, West Midlands, as was Radio Mona Lisa 7.290MHz at 0920. At 1740 on a Wednesday evening P.F.B.S. Holland were heard on 6.220 with a QSO, the station being contacted was unconfirmed. From Scotland, Stella International were monitored with simultaneous transmissions on 7.447 and 6.293 at 2114, with a third frequency of 11.416 being announced but not copied. Two other Dutch stations providing quite good reception were Radio West International 7.450 and Radio Telstar 6.220 both at 0910UTC.

FM Stations.

Not a lot of space for these, but **David Conway** was studying for his school exams, in Dartford, when he found Dancer FM with a strong signal on 97.7MHz. This later moved to 100.4, but still announced the former frequency, presumably a recorded programme. Sid Morris writes saying a large number of f.m. stations in the Midlands have recently been closed down. At the time of writing this, I notice Granada TV's *Coronation Street* are running a story-line involving an f.m. pirate station. Surely, this creates an area of duplicity where it is illegal to film a report on a genuine pirate, but quite in order for actors to portray the very same activity. From the viewers point is there really any difference? Neither case would be less, or more likely to encourage others to emulate the situation. A more comprehensive list of readers logs covering the last three months is available for just two second class stamps from my Folkestone address.

News Up-Date

Offshore Echo's Magazine very kindly provided news about the

Voice of Peace, during Operation Desert Storm. Apparently, English staff left the ship for Tel Aviv and an American engineer is believed to have returned to the USA. Two Israeli DJ's stayed aboard. Radio NewYork Int. 7.520 or 7.435MHz are planning a Radio Caroline segment in their programming. The half-hour show is scheduled for Mondays at 0400...just think you can run your receiver on economy off-peak electricity. (The nearest thing to Free Radio!).

The Ross Revenge Support Group are reported to be continuing the maintenance of the former radio ship. There are no plans to use the Ross for broadcasting purposes again without a licence issued by a government authority. Some Radio Caroline supporters insist that any resumption of transmissions other than from the ship would not be the real station. Others say that Radio Caroline pioneered commercial radio in the UK and the time has come for it to become a leading influence in legitimate British broadcasting.

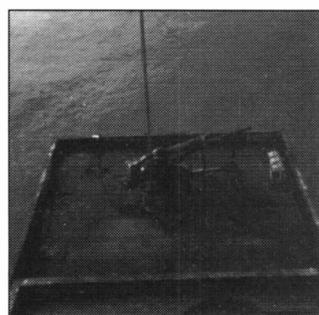
Independent Short Wave Radio

Several readers, including **Adrian Roberts**, asks if it is possible to broadcast commercially on short wave legally from the UK? The answer is you cannot get a licence for this part of the radio spectrum. If you consider such a station would have a reasonable business potential, and serve a public need, it could be worth making enquiries. Ultimately, a political decision would be required which could not only take a long time, but have no guarantee of success. You are asking for a licence to compete with the government funded BBC External Services, even though in a very small way.

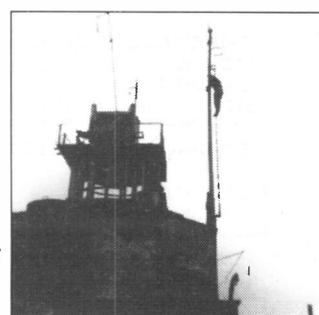
Finally

Many regular European and American pirate stations are listed in *Passport to World Band Radio*. (See *SWM* Book Service, or better still the *SWM* Subscribers Club).

Readers news and comments are very welcome at my address at the foot of this page.



Ex-Naval gun (with breech removed) The scaffolding poles to the right of the gun supported a washing line.



The forts superstructure showing part of the original radar turret, observation room, and a lot of copper wire.

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

SWM SUBSCRIBERS' CLUB

If you have a subscription then you will know all about the *Short Wave Magazine* Subscribers' Club. If you do not have a subscription then doubtless you will be wondering just what this page is all about. Membership of the *SWM* Subscriber's Club is free and automatic for all Subscribers and is our way of saying thank you to all those who have enough faith in their favourite magazine to pay for it 'up front'. Each month there will be Special Offers and occasional competitions with some really useful prizes to be won.

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Passport to World Band Radio 1992

SWM Subscribers can place their orders for this invaluable book at the special offer price of £11.00 including postage. A saving of £4.80 on the usual mail order price. These books will be amongst the first in the country as they have just left the USA, destined for SWM readers. If you don't already have a subscription and would like to take advantage of this special offer, why not fill out the coupon below and start your subscription today!

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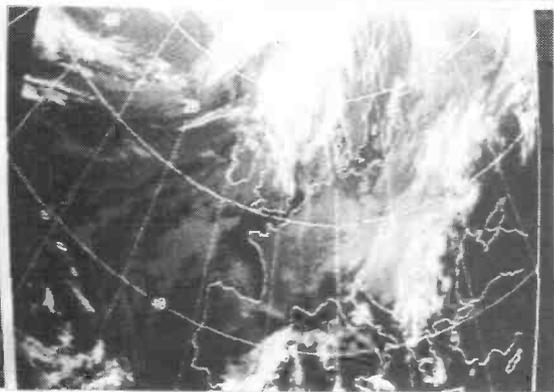
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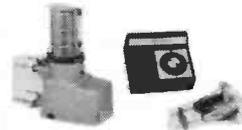
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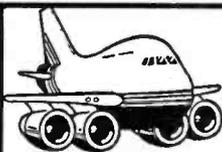


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FOR SALE Military Airband Listeners. I have frequency logs for sale covering 118-136 and 225-400MHz in 25kHz steps. Keep your frequencies in order! Plus provision at rear for a/field channel lists. £5.00 to T. Ford, 94 Everingham Road, Sheffield S5 7LG. Do I have a frequency you've been searching for?

WANTED top prices paid for your German gear of WWII vintage. Looking for receivers, transmitters, accessories. Will collect. Lissok, Rue M. Peodts 9, B-1160 Brussels, Belgium. Tel: 010-322-6737115.

FOR SALE Yupiteru MVT5000 scanner, £195. Sony ICF2001D receiver, £190 Psion CM 8K computer unused, £40. Panasonic RF2800 digital s.w. receiver, £65. WPO 144MHz f.m. receiver kit, £35. Wayne. Tel: (0506) 411598 Livingston.

FOR SALE Black Jaguar MkIII scanner, charger and case included, excellent condition, £95. Tel: (0795) 86826 Kent.

FOR SALE AR1000, £180 plus £5 P&P. Complete with accessories, hardly used, free car antenna plus u.h.f./v.h.f. frequency guide and air traffic book. Jolyun Maddocks. Tel: (0695) 421601 Ormskirk, Lancs.

FOR SALE Desk top short wave communications receiver, Realistic DX3020-30MHz a.m.-s.s.b., £70. Tel (0761) 417817.

FOR SALE Sony ICF-2001D 150kHz-30MHz, v.h.f. and airband with power supply, good condition, £180. AR1000 scanner 8-600MHz, 805-1300MHz, boxed, very good condition, £190. Buyer collects. Tel: 081-647 7784.

FOR SALE AOR 1000 MkII scanner, mint condition, boxed with manual and all accessories, £190 o.n.o. Tel: 081-958 5508 after 7pm Edgware Middlesex.

FOR SALE Yaesu FRG-8800, used only twice, £500 o.n.o. AT-1000 a.t.u., immaculate, £50 o.n.o. Microreader MkIII unused, £90 o.n.o. All must go at these low prices. Simon. Tel: Banbury 261455.

FOR SALE AOR 900 scanner, case, charger, three antennas, boxed with all instructions, £140. Or EXCHANGE for VC-20 v.h.f. converter

Fill in the order form on page 80 in BLOCK CAPITALS - up to a maximum of 30 words plus 12 words for your address - and send it, together with your payment of £2.35, to Trading Post, Short Wave Magazine, Enefco House, The Quay, Poole, Dorset BH15 1PP. If you do not wish to cut your copy of SWM, or do not wish to use the order form provided, you must still send the corner flash or your subscription number as proof of purchase of the magazine. Advertisements from traders, apparent traders or for equipment which it is illegal to possess, use or which cannot be licensed in the UK will not be accepted.

for Kenwood 5000 or ERA Microreader. Dave Shaw. 93 Quarry Moor Park, Ripon, North Yorkshire HG4 3AQ. Tel: (0765) 601637.

WANTED Creed 75 Teleprinter with keyboard, perforator/reader. Must be in very good condition. Also need operator/technical manuals and any sales brochures for this model. For private collection. Nigel. 2 Church Close, Lower Willingdon, Eastbourne, East Sussex BN20 9QY. Tel: (0323) 486822.

FOR SALE Yaesu FRG-8800, v.h.f. converter, Datong active antenna, £600 o.n.o. Tel: (09632) 251231 after 6pm.

FOR SALE Yaesu FRG-800 communications receiver with FRV800 v.h.f. converter, FRA-7700 active antenna, ERA Microreader, all boxed as new, genuine reasons for sale, £500. Tel: (0533) 778216 Leicester.

FOR SALE Sony 2001D, £175 o.n.o. Olivetti PR15 printer, £45 o.n.o. Commodore Vic 20, £15 needs attention. Tel: (0253) 860072.

FOR SALE Icom ICR-71E, immaculate, original box, manual, f.m. and 2.2kHz filter and d.c. input added, £535 o.n.o. Tel: (0533) 866756 after 6pm.

FOR SALE Yaesu FR-50B receiver, a.f. gain, r.f. gain, a.m., s.s.b., amateur bands, digs out DX very well, new receiver forces sale of much loved friend, £95. Nigel. Tel: (0732) 870816 Wrotham, Kent.

FOR SALE Icom R7000 base scanner 2.5-2000MHz, mint condition, 9 months old, boxed, £700 o.n.o. Tel: (0952) 618016.

FOR SALE Sharp double cassette f.m., f.m. stereo, s.w., m.w., l.w. radio cassette SF525, £150. Walton. Tel: 081-524 7254 Chingford.

FOR SALE Kantronics KAM with WEFAX and software, £140. FDK Multi 725X 144MHz TX, £120. Welz SP15M s.w.r./power meter, £25. Datong v.l.f. converter, £20. Tel: (0270) 501338 Crewe.

FOR SALE Shack clearance at give away prices. HFTS520SE with DG5 144MHz rig, QRP rig, meters, etc., 'phone to see if I have got what you want. G4RIP. Tel: (0775) 87236 Spalding.

FOR SALE Lowe HF-225 with keyboard a.m. filter active antenna g.w.o. checked at Lowes recently, £350 o.n.o. Tel: Alfreton 520656.

FOR SALE 40 band Realistic CB transceiver hand-held, £75. Also two-band, £32.00. Tel: 081-524 7254 Chingford.

WANTED Parmeko transformer model 6000/8 and Leak TL25 amplifier. Tel: (0661) 852874 evenings.

FOR SALE Lowe HF-225 general coverage receiver with K-225 keypad controller. Bought April 1991 and still in mint condition, boxed, with manual and Lowe listeners guide, £365. Tel: (0923) 672346 Watford.

FOR SALE AOR2001, £175. MVT7000, £235. Standard C500 v.h.f./u.h.f. hand-held, many accessories, £250. All boxed, v.g.c. Tel: (0379) 652043 Norfolk.

FOR SALE Have made a few experimental medium wave loops, now taking up much needed space. If interested send 50p to cover drawings by photocopier plus a large s.a.s.e. Mike Evans. 120 Loughton Way, Buckhurst Hill, Essex IG9 6AR.

WANTED Eddystone receivers. Serious collector requires all models. Details to Ken O'Brien. 18 St Helen's Road, Dorchester DT1 1SD. Or Tel: (0305) 264688 about 6pm.

FOR SALE Philips D2999 150kHz-30MHz + 88-108MHz f.m., mains/12V/Battery. Still under warranty. Mint condition, £140 o.n.o. Tel: (0995) 61612 Lancs.

EXCHANGE FRG-9600, v.h.f., u.h.f., mint condition, no mods for general coverage receiver, FRG-8800 or similar, Cash adjustment if required. G4LSL QTHR. Tel: (0748) 833559.

FOR SALE Yaesu FRG-7000 receiver, £250. Amstrad 2086 computer 32Mb hard drive 14in hi-res VGA monitor external 5.25in disk drive, mouse, manuals, etc., £650. Tel: (0732) 366704 Tonbridge.

FOR SALE Panasonic RFB-600 all mode receiver, little used, boxed, like new, bargain at £290. Datong AD370 active antenna with p.s.u., never used outdoors, like new, £49. Tel: (0222) 465463.

FOR SALE Protect your radio and computer with RS line voltage conditioner, £140 o.n.o. Datong v.l.f. converter, £25. Microwave Module 144MHz converter, £25. Steepletone MBR7 all band receiver, £25. All v.g.c. Tel: (0404) 84448 evenings Honiton, Devon.

FOR SALE Yupiteru MVT-7000 hand-held scanner, 2 weeks old, virtually unused, remaining one year guarantee, £240. Tel: 061-962 3905 Sale Cheshire.

FOR SALE Trio TR-9130 144MHz multi-mode transceiver, original box, mobile mount, etc., £350. Epson FX-800 dot matrix printer, fast 80-col, 9-pin with graphics and NLQ, £325. Tel: (0952) 618025.

FOR SALE Sony AIR7 scanner with Sony NiCad Pack and Sony suede case, rubber and metal antennas, boxed mint, £160 o.n.o. Chris Perkins. 26 Bramblewood Road, Weston-super-Mare, Avon. Tel: (0934) 512054.

FOR SALE Yaesu FRG-7 communications receiver 0.5MHz to 29.9MHz a.m., s.s.b. (u.s.b. or l.s.b.) c.w. Ideal short wave and amateur only £130. Tel: (029587) 749.

FOR SALE Icom R71E f.m. board fitted, immaculate condition, £625 o.n.o. Tel: (0903) 506276 Worthing evenings.

Continued on Page 80.

VERSATILITY AND SOPHISTICATION

THE ICOM IC-R7100 WIDEBAND RECEIVER



• Continuous coverage from 25 to 2000 MHz

The IC-R7100 allows you to receive signals on VHF or UHF including amateur, air, marine, citizens and utility bands plus FM and TV broadcasts.

• All mode capability

The IC-R7100 includes SSB (USB, LSB), AM (Normal, Wide), FM (Normal, Narrow) and WFM (Wide FM) modes to catch a wide range of signals. Using an optional TV-R7100, you can view TV broadcasts on your CRT monitor and listen to FM broadcasts in stereo.

• 5 basic scans

These search for signals over a wide range and skip undesired frequencies and unmodulated signals.

• Window scan

To select and specify the frequency, memory channel, mode, and more, the IC-R7100 is equipped with a 2-window system, a technological breakthrough. Window scan can select one window and then another alternately on the function display for a programmed duty cycle.

• Dual scan

Combines a basic scan with the window scan function. Each basic scan appears in its window and two can be combined to operate alternately, with over 40 possible combinations; only Icom's high-speed scanning can realise dual scan operation.

• 900 memory channels

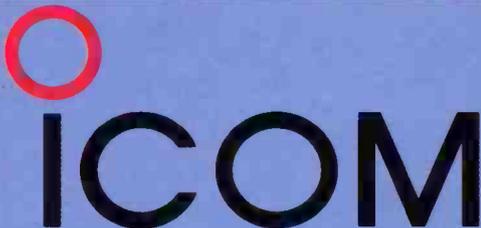
A total of 900 memory channels store frequencies, modes and tuning steps. Memory channels are grouped in 9 memory banks for ease of handling and editing.

• 20 scan edge memory channels

The IC-R7100 features an additional 20 scan edge memory channels to store 10 sets of frequencies for programmed scan.

Additional outstanding features

- High sensitivity and reliable frequency stability
- 0.1, 1, 5, 10, 12.5, 20, 25, 100 kHz and 1 MHz tuning steps available.
- Built-in 24-hour system clock with 5 ON/OFF timers.
- Automatic recording so important programmes can be caught when away from receiver.
- Noise blanker circuit for eliminating pulse type noise.
- Effective 20dB attenuator for strong signals.
- Noise squelch and S-meter squelch
- CI-V system for computer control through an optional CT-17.
- Frequency announcement in English with an optional UT-36.
- Large function display with selectable LCD backlighting brightness.
- Easy-to-read S-meter plus FM centre indicators.
- Dial lock function.
- AC and DC power operation.



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THE LOWE LISTENER LINE-UP

Even the F-117 has difficulty stealing past a good airband radio and more and more enthusiasts are discovering the enjoyment of listening to air traffic conversations between controller and pilot; both military and civil. The secret to this enjoyment is to have a receiver which has the necessary specifications to receive the signal you want to hear and when you want to hear it.

Cheap receivers lead to frustration. You may well be able to hear snatches of conversation, but when (or if) you hear the controller say: "Contact London on 119.2", you won't know how on earth to find 119.2 if the tuning dial covers the entire airband in a single space of 3 centimetres.

The R-537S from Signal. This handheld is a popular starter radio for the airband enthusiast. Fully tunable from 118MHz to 136MHz plus two crystal channels for spot-on accuracy. ~~£69.00~~ £59.95 (inc VAT)

The R-550. A new low-cost VHF airband scanner from Signal with continual coverage from 118MHz to 141.995MHz. Easy to programme with 40 memory channels (4 banks of 10). A good buy at £129 (inc VAT).

The VT-125. A beautifully designed commercial receiver dedicated to airband reception. Continuous coverage from 108MHz - 142MHz, 30 programmable memory channels, search speed 20 channels a second, priority scan, LCD display and more. Super-slim design. £179 (inc VAT).

The WIN-108. In specification for price, this handheld is the absolute leader in specialist airband radios. It does everything the airband listener wants and does it in an easy to use way. Covers all 200 Nav and 700 Comms channels with extensive memory, scan and search facilities. £179 (inc VAT).

The R-535. A favourite receiver for the airband specialist, the R-535 covers both 108MHz to 136MHz and 220MHz to 380MHz; thereby covering all the VHF and the vast majority of the UHF airband frequencies. 60 memory channels with high-speed scanning and extremely high performance. £254 (inc VAT)

We stock and sell the very finest range of radio receivers on the market. This page shows a few of them. Before you buy a radio from us, we invite you to ask us plenty of questions. We have been specialists in communications radios for over 25 years and will demonstrate our commitment to serving you before you spend a penny! We also offer full backup service for all the models we supply.

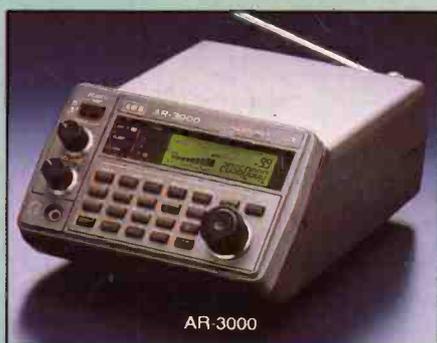
We even publish our own free "Airband Guide" to help you explore this wonderful hobby to the full. See details below.

When it comes to listening, look to Lowe.

The Fairmate HP-2000. A company acknowledged as leaders in the VHF/UHF monitor receiver field who have revolutionised the concept of the handheld receiver. Frequency range is continuous from 500kHz to 1300MHz, 1000 memory channels and frequency selection by keypad or tuning knob. £259 (inc VAT)

The MVT-7000. The very latest in the 'VT' family of scanners. It has wideband coverage (100kHz to 1300MHz), 200 memory channels, sophisticated memory search and priority scan facilities, AM, FM and wide FM modes and a large LCD display (with backlight). Each receiver comes complete with a set of Ni-Cads, 240v charger/adaptor, cigar plug/lead and telescopic antenna. £289 (inc VAT)

The staggering AR-3000. The ultimate. It covers 100kHz to 2036MHz without any gaps at all. From Long Wave to satellites! Ask for a full colour brochure or see it at one of our regional centres. 'SCAN'. A special Lowe software package for use with IBM PC's or compatibles for exciting additional interfacing with the AR-3000.
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AR-3000



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