

FOR THE
RADIO LISTENER

shortwave magazine

October 1993 £1.90 ISSN 0037 - 4261

ANTENNA SPECIAL ISSUE



**BUILD A SIMPLE
LOOP ANTENNA**

●
**DIFFERENTIAL
MATCHING
AMPLIFIER**

●
**REVIEWED
FOR LA320 ACTIVE
LOOP**

&
**UNIVERSAL M1000
DECODER**

●
**THE CASE OF THE
FLUSHING TOILET**



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Cover:

Our cover this month shows the antenna arrays of the Hillbillies Contest Group. The inset picture shows a community telecomms mast somewhere in Germany. This type of tower carries antennas for just about every type of radio service imaginable.



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good listening

editorial

Earlier this year it was decided to re-vamp RadioLine in an attempt to revitalise the service. This was *Short Wave Magazine's* own '0898' telephone information service that, initially, had proved to be popular with

readers. Unfortunately it took a lot of editorial staff time to update it weekly - time that, with a limited staff, simply was not available. My primary aim must be to ensure that your favourite magazine appears on the bookstalls on time, every month - a target that has been met ever since we took over the title in 1987.

The new style RadioLine should have been a success - it had everything going for it. But it has not! The listening figures have not approached those enjoyed by the service when it was first launched and the cost of having it professionally produced has ensured that it makes a loss! It is with regret, therefore, that I have decided that RadioLine has to be withdrawn. RIP.

Leicester ARS

The two-day show at the Granby Halls, Leicester on 29 & 30 October should prove to be as successful as in previous years. Two years ago we experimented with a clinic, run by the late Peter Rouse, on SSB Utility Listening. It proved to be so successful that we repeated the experiment last year with Mike Richards and Decode. This year it is the turn of Godfrey Manning and Airband. Godfrey will be available during the show to offer help, information or just natter about anything to do with Airband. Even if you are not into Airband, it is still well worth visiting the show.



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 £36(UK) £39 (Europe) and £41 (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, Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield B74 4JF. Tel: 021-353 9326.

Back Numbers and Binders

Limited stocks of most issues of SWM for the past five years are available at £2.00 each including P&P to addresses at home and overseas (by surface mail).

Binders, each taking one volume are available for £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 back numbers, binders and items from our Book Service should be sent to: **PW Publishing Ltd., FREEPOST, Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling.

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letters

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

Brickbats and Bouquets

Dear Sir

I would like to thank ERA and Mr Bill Green for their excellent service I have been given. I purchased from them a new Synoptic decoder that has a few bugs in the firmware. I returned it to them the day after the Cardiff post strike finished and the received the unit back with a new version (1.3) chip in four days and free of charge.

Thank you again ERA.

**R. Evans
Gwent**

Dear Sir

The suspicion I get when reading 'good and friendly service' is that the writers of these letters have had bad or poor service at some time from advertisers.

How about a list of traders giving bad or poor service?

Those, for example that require ten days to clear a cheque before despatching goods. Those who clear a cheque in ten minutes but don't acknowledge receipt of an item for repair three weeks after despatch. Finally, those traders who hold repairs for four to six weeks before starting the job.

**J Fairgrieve
Edinburgh**

Morse & the RAE

Dear Sir

I read with great interest the letter from Allan Young on Tonbridge, whose comments I heartily endorse.

My suggestion regarding Morse and A and B licences is as follows:

I would first propose that all who sit for the RAE and pass should eventually be allowed to become A licence holders. Initially, those who pass the RAE should be B licence holders for a period of, say, three years, after which time they should then be allowed to apply for an A licence.

For those who wish to use Morse in addition to having an A licence, they should take the Morse test as usual and be given the advantage of having a suffix after their callsign for identification and recognition, i.e. G3???CW.

I think this system would allow the new licence holders to have a period of apprenticeship of three years to acquire the necessary skills to become competent operator A licence holders.

**H R Hawkins
East Sussex**

Dear Sir

I agree the c.w. mode using Morse is useful, but what has this got to do with **must** for an 'A' licence?

**R Johnstone
Inverness-shire**

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 any other magazines. The views expressed in letters published in this magazine are not necessarily those of Short Wave Magazine.

Vintage Radio

Dear Sir

John Tuke, with his Thirties radio, suffers from pulling and wind-wobble. He should try the effects of putting a small variable capacitor in the antenna lead. This would, of course, reduce signal strength, but it would improve selectivity and reduce or eliminate the other troubles.

For s.s.b. reception, it often helps matters to use a much smaller grid leak. This prevents 'squegging', and gives better control of the re-inserted carrier, thus allowing strong, as well as weak signals to be resolved.

C.R. Eve (Jersey) cannot oscillate at all. I suggest that he should use a **large** grid leak, say 5M Ω , returned, not to cathode, but to **h.t.+**. In this way, I persuaded an L63 triode, in a Hartley circuit, to go into oscillation with only 4.5V on the anode, the h.t. (and l.t.) supply being a 6V motor cycle battery.

**H.S. Stevens
Buckinghamshire**

Dear Sir

Eric Westman's article 'Mystery Man of the BBC' in the August issue hardly does Leslie Lambert, A.J. Alan, justice. He was not a 'nonentity', nor was he merely a 'civil servant'. This was official dis-information.

Around 1909 Lambert was a good conjurer, attending several society and royal functions. Early in 1914 he had given a performance at Marlborough House and had met Queen Alexandra. It is thought that by this time he may have had an amateur licence. When WW1 started in August 1914, he was already involved in Naval Intelligence ('Room 40'), and in September 1914 he joined a primitive interception station at Hunstanton. The qualifications required included faultless Morse operation at a minimum of 25 words per minute. This station quickly became a key station in DFing and intercepting German naval communications.

One day, Queen Alexandra unexpectedly visited Hunstanton when Leslie Lambert was on duty. She immediately recognised him, and greeted him cordially - leaving the other ratings open-mouthed! Lambert refused to tell them how he knew royalty. He was clearly an accomplished W/T operator at this time. There is thus the mystery of why and when he became an experienced radio operator before WW1, since he does not appear to have gone to sea in either the Merchant or Royal Navies.

After WW1, Lambert was inducted into GC&CS - the forerunner of GCHQ. GC&CS stood for 'Government Code and Cypher School', and came into operation in 1920. His name appears in the GC&CS staff list for 1922. (Public Record Office, File CAB/63/29). He was still engaged in radio intelligence duties.

Around 1921, GC&CS discovered by interception and crypt analysis that the new Soviet government was helping Indian Nationalists and funding the Communist Party of Great Britain. The decrypted texts of some of these incriminating signals were published. Lambert certainly played a part in this operation.

In May 1927, the Metropolitan Police raided the

London offices of the All Russian Cooperative Society (ARCOS), which was a commercial front for large-scale intelligence operations. Much incriminating material was discovered. Again, Lambert was involved in intercepting the signals traffic. The result was the destruction of much of the Soviet spy network.

In 1930, an illicit radio transmitter link between the Comintern in Moscow (Communist International) and a terraced house in London was operating. Lambert and another GC&CS technician did the DF, and another GC&CS staff member successfully decoded the traffic.

Some time in the 1920s, Lambert obtained an amateur radio licence with the callsign G2ST. Are there any QSL cards in existence?

Lambert continued to serve British radio intelligence for many years, and became a cryptographer. His life at Bletchley Park early in the Second World War was one of monotonous regularity.

He died in late 1941 in a Norwich nursing home, after having had an operation for, I believe, cancer.

Leslie C. Lambert, *alias* A.J. Alan, was not only a mysterious man, he was also a man who liked mystery.

Further Reading

The History of Broadcasting in the United Kingdom.

Volume 1: The Birth of Broadcasting. Pub.

Professor Asa Briggs. OUP London 1961.

Pages 285-286.

This is London.... Stuart Hibberd. Pub. MacDonald & Evans, London 1950. Pages 17-19, 97 and photo opp.

Page 89 and page 212.

GCHQ - The Secret Wireless War 1900 - 1986. Nigel West. Pub. Weidenfeld and Nicholson, London 1986.

Pages 35, 81, 91 and 94.

The Eyes of the Navy. Admiral Sir William James. Pub. Methuen & Co, London 1956. Pages 28-29.

File CAB/63/29. Public Record Office.

Most Secret War. Professor R.V. Jones. Pub. Hamish Hamilton, London 1978.

Pages 60 and 122.

Now for something different. I would like to add to the article by S. Pope on the T1154/R1155 equipment.

The R1155 was my first 'professional' short wave receiver. As a schoolboy s.w.l. in the 1950s, it took me a whole year to save up to buy a brand new one in its original transit case. My parents bought me the external power supply/loudspeaker unit.

The R1155M was really an R1155A, but during production a corrosive soldering flux was used in error. As this would eventually give rise to serious problems, the R1155M was restricted to ground use only. Not a good surplus buy!

The R1155C was modified for use in Coastal Command aircraft needing h.f./d.f. ('Huff-duff') on the highest frequency range of 7.5 to 18.5MHz. They were used for locating German U-boats by DFing their h.f. communications and also DFing the l.f./m.f. homing signals used to attract other U-boats to an Allied convoy before attacking it. This set would now be extremely rare.

The trap circuits mentioned for the R1155A, E and M were called 'Athlone Traps' because they prevented i.f. breakthrough from this Irish broadcasting station operating around 560kHz. To aircraft flying at 10000 feet or so, this station gave a surprisingly high field-strength! The i.f.

bandwidths in all R1155s was about 4.5kHz for 6dB 'down' and 18kHz for 60dB 'down'.

The low power testing of T1154s in grounded aircraft was picked up by German radio intelligence. The differing pattern enabled them to determine whether a heavy raid was likely that evening. For safety, the radio testing was usually done before the bombs and ammunition were loaded into the aircraft during the afternoon. If the testing was spread out through the working day, then RAF activity that night would probably be light.

The 'Key Type F' Morse key used with airborne T1154s was hideous - the spark retardant foam inside made the key 'soggy', and the 'upside-down' internal construction made it difficult to adjust and operate properly. I tried one on my

amateur radio TX and almost immediately gave the key away in disgust!

An early aircraft/flying boat Marconi communications and DF equipment was described in *Short Wave Magazine* in November 1938, pages 26-27, in an article by C. A. Rigby. It's not hard to see that this is the 'granddaddy' of the T1154/R1155 equipment.

The T1154/R1155 was called 'Marconi Geep' and a total of about 80000 equipments were built in the war. So many were required that production was divided between the Marconi Company and four or five other firms, including Ekco at their 'shadow' factory at Aylesbury. After the war, the T1154/R1155 was produced for several years as the AD87/8882B civilian equipment by The Marconi Company.

Individual manufacturers of wartime equipment can sometimes be identified by internal test and inspection stamps, as these may carry the initials of the manufacturer. Of course, sub-assemblies could be made at one factory and used at another, just to confuse things and improve security!

Finally, the complete RAF technical manual for the T1154 and R1155 equipments is *AP 2548 Volume 1* - now as rare as the Dead Sea Scrolls!

Further Reading

AP 2548 Volume 1.

Transmitters T1154 Series and Receivers R1155 Series.

With A/Ls 1-9 RAF Air Publication.

Wireless Direction Finding.

R. Keen, Pub: Wireless World/Iliffe London. 4th Edition 1947. Chapter 13.

'The Marconi General Purpose Aircraft Wireless Equipment.' J.L. Scott, *Marconi Review No 76* (1945). Page 1 onwards.

A History of the Marconi Company. W. J. Baker. Pub: Methuen & Co, London. 1970. Page 309 and photo Plate 10.

The Setmakers. K. Geddes and G. Bussey. Pub: BREMA London. 1991. Page 262 and photo page 271.

**George Saunders G3OYN
Caversham
Reading**

grassroots

Club Secretaries:

Send all details of your club's up-and-coming events to: Lorna Mower, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Please tell us your County and keep the details as brief as possible.

rallies

***October 3:** The Great Lumley Amateur Radio & Electronics Society will take place in the Community Centre. Doors open 10.30am for the disabled and 11am for others. There will be trade stands, Bring & Buy and refreshments available. Talk-in on S22. Admission £1. Barry G1JDP. Tel: 091-388 5936.

October 9/10: The All Ireland International Radio & Hobbies Exhibition will be held at Dundalk. Raymond. (0762) 870423.

October 10: The Kidderminster & District ARS Rally will be held at Sourport-on-Severn high School, Minster Road, Sourport-on-Severn. Usual traders, Bring & Buy, flea market, refreshments, talk-in on S22 with Admission £1.00 per car/pedestrian. G8JTL. Tel: (0384) 894019.

***October 29 & 30:** Leicester ARS at Granby Halls, Leicester. The 22nd Annual Leicester Amateur Radio Exhibition will be held at the Granby Halls, Leicester. Doors open at 10am each day (9.30am for the disabled). All the usual facilities. Frank G4PDZ. Tel: (0533) 871086.

***October 31/November 1:** The Sixth and Seventh North Wales Radio & Electronics Show will be held at the Aeronwy Conference & Exhibition Centre, Llandudno. Bring & Buy stand and a good range of traders from both radio and computing sides of the hobby. Doors open to the public at 10am on both days. B. Mee GW7EXH. Tel: (0745) 591704.

October 31: The Bishop Auckland Radio Amateur Clubs Rally will be held at Spennymoor Leisure Centre, Spennymoor. There will be the usual stands and Bring & Buy, catering and bar facilities, plenty of car parking and the complex has much to offer for all the family other than the rally. Doors open at 11am, 10.30am for the disabled. Access for the Bring & Buy is 10am. Mike GOPRO. Tel: (0388) 766264.

November 7: Donegal Tir Conaill ARS Annual Radio Rally, Jacksons Hotel, Ballybofey, Co. Donegal. Bring & Buy, leisure facilities on site. Ken McDermott. Tel: 010-353-74-31109.

November 21: The West Manchester Radio Club Winter Rally will be held at the Bolton Sports & Exhibition Centre, Silverwell Street, Bolton. All the usual trade stands, societies, Bring & Buy, etc. All at pavement level with facilities for the disabled. Refreshments/meals available all day as well as a bar. Doors open at 10.30am for the disabled, 11am for the general public. Admission £1, children free. Dave. Tel: (0204) 24104.

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

AVON

RSGB City of Bristol Group: last Mondays, 7pm. The Small Lecture Theatre, Queens Building, University of Bristol, University Walk, Bristol. October 25 - AGM. Dave. (0272) 672124.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitchurch. October 6 - 10th Anniversary, 13th - CW with Club Members, 20th - Home-Brew, 27th - Simple Computer Programming Workshop. For more information ring 0275832222 on a Wednesday evening.

BUCKINGHAMSHIRE

Atari RUG: G. Rayer, 38 Brockhurst Road, Chesham HP5 3JE.

CHESHIRE

Stockport RS: 34 Ladythorn Road, Bramhall, Stockport, Cheshire. October 13 - RIS by Alan Clayton, 27th - Home-built Receivers by G3RJV. J. France 061-439 4952.

CORNWALL

Cornish RAC: 7.30pm. The Village Hall, Perranwell Station, Perranwell, Nr Truro, Cornwall. October 7 - Multimeters, 11th - Computer Section. Geoff. (0209) 820836.

DERBYSHIRE

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. October 6 - Junk Sale. Mrs Hayley Winfield, 2 Hilt Cottages, Crich, Matlock, Derbyshire DE4 5DD. (0773) 856904.

DEVON

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. October 22 - Peter Chadwick G3RZP, RSGB President. Peter G4UTO. (0803) 864528.

DORSET

Dorset Police ARS: 1st Thursdays & 3rd Tuesdays at Head Quarters, in the Bar & Social Club. PC915 Richard Newton. (0202) 229351 or PC828 Bob Knight. (0202) 552099 ext 2031.

EAST SUSSEX

Southdown ARS: 8pm Chasely Home for Disabled Ex-Servicemen, Southcliff, Bolsover Road, Eastbourne, East Sussex. October 4 - Equipment Sale. Jan G4XNL. (0323) 412699.

ESSEX

Vange ARS: Thursdays 8pm, Barnstable Community Centre, Long Riding, Basildon, Essex. October 7 - Junk Sale, 14th - Steam Trains, 21st The PX4 Computer Discussion, 28th - Construction Contest. Doris. (0268) 552606.

FIFE

Dundee ARC: Tuesdays, 7pm. College of

Further Education, Graham Street, Dundee. October 5 - Holiday, 12th - Construction Night, 19th - Members Night, 26th - Construction Night. GM4FSB, 30 Albert Crescent, Newport on Tay, Fife DD6 8DT

GREATER LONDON

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. Chiswick Town Hall, Heathfield Terrace, Chiswick, W4. October 19 - Mobile Radio Equipment by G0HP. Colm. 081-749 9972.

Edgware & DRS: Thursdays, 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. October 14 - Operating QRP by G0JJQ, 28th - Morse Training Evening. Rod Bishop 081-2041868.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. October 8 - Desert Island Radio, 29th - AGM. 081-397 0427.

HAMPSHIRE

Horndean & DARC: 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. October 7 - AGM. S. Swain (0705) 472846.

HEREFORD & WORCESTER

Bromsgrove ARS: 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. October 12 - EMC Problems, 26th - Electromagnetic Waves, RSGB Video. Barry Taylor. (0527) 542266.

Bromsgrove & DARC: Fridays. Avoncroft Arts Centre, South Bromsgrove, Worcester. Joe Poole. (0562) 710010.

HERTFORDSHIRE

Dacorum AR & TS: 1st (informal) & 3rd (formal) Tuesdays, 8pm. The Heath Park, Cotterells, Hemel Hempstead. October 19 - Talk by Mike Dennison G3XDV. Dennis Boast. 8 Juniper Green, Warners End, Hemel Hempstead, Herts HP1 2NQ.

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. October 14 - The Schneider Trophy Air Race by G3NQT, 28th - Visit to Hertfordshire Display Company with G4VMR. Roy G4UNL. 081-804-5643.

HUMBERSIDE

Wirral & DARC: October 6 - Drink & Waffle at Chimneys, Hooton, 13th - Talk at Irby Cricket Club, 20th - Visit to Mersey Tunnel, 27th - The Friedrichschafen Adventure. Paul 051-6485892.

KENT

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. October 19 - Junk Sale. A.G. Messenger. 081-777 0420.

Medway AR&TS: Fridays, 7.30pm. Tunbury Hall Catkin Close, Tunbury Avenue, Walderslade, Chatham.

October 1 - Junk Sale, 15th - Interference by G0OAT. Gloria. (0634) 710023.

Sevenoaks & DARS: Sevenoaks DC, Council Offices, Argyle Road, Sevenoaks. October 18 - Air Crashes by Dick Vance.

West Kent ARS: 3rd Fridays, 8pm. The School Annex, Albion Road, Tunbridge Wells, Kent. October 1 - Informal Meeting, 15th - Crowborough Radio Station by G3FET. John Taylor G3DHV. (0892) 664960.

LANCASHIRE

Rochdale & DARS: Mondays, 8pm. Cemetery Hotel, 470 Bury Road, Rochdale. October 18 - Bring & Buy Sale. G0PU. (0706) 32502.

NORFOLK

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumping, The Livestock Market, Harford, Norfolk. October 6 - Construction Competition, 13th - Glimpses of Norwich 1909-1939 by G3NJQ, 20th - Real Radio Night on the Air, 27th - Construction of a 12ft e.m.e. Antenna by G4EOL. Sheila Snelling G0KPW. (0603) 618810.

NOTTINGHAMSHIRE

Mansfield ARS: 2nd Mondays, 7.30pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. October 11 - Demonstration of p.c.b. Manufacture by G8EHX and G6CUK. Mary G0NZA. (0623) 755288.

South Notts ARC: Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. October 1 - WAB Award Scheme by G0FEZ, 8th & 22nd - Construction and On Air from Fairham College, 15th - Open Forum, 29th - Junk Sale. Julie Brown G0SOU. (0602) 211069.

SURREY

Sutton & Cheam RS: 1st & 3rd Thursdays, 8pm. Sutton United Football Club, The Borough Sports Ground, Gander Green Lane, Sutton, Surrey. October 21 - Junk Sale. Tel: 081-655 9945.

WARWICKSHIRE

Mid Warwickshire ARS: 2nd & 4th Tuesdays. October 12 - Satellites & Amateur Radio by Brian Slatter. Don Darkes. (0926) 424465.

WEST MIDLANDS

South Birmingham RS: West Heath Community Association, Hamstead House, Fairfax Road, West Heath, Birmingham. G1DK1. 021-4743784.

WILTSHIRE

Trowbridge & DARC: 3rd Wednesday. The Southwick Village Hall, Southwick, Trowbridge. October 6 - Earthquake Disaster Relief Operations by G0KRJ, 20th - Antenna Systems Matching by G0DAB. Ian G0GRI. (0225) 864698.

Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

junior listener

American Forces News

Following Mark Jones' recent enquiry about reception of this station, **John Parry** has written in with some extra information. Apparently, American Forces News (AFN) began its days back in 1943 after US troops arrived in this country to support the war effort. The US military managed to persuade the UK government to allow them to install a network of low power radio transmitters. These were set up on many of the larger US bases to broadcast entertainment to the local troops.

The developments continued when in June 1944 the Allied Expeditionary Forces (AEF) program was introduced. This used a high power (100kW) transmitter

based in Crowborough and became very popular. Towards the end of hostilities, the AFN set-up a pair of transmitters in southern Germany which became the basis of today's transmissions. One of their more famous programmes was *Midnight in Munich* that had a very large UK audience and played requests until late in the night. During the mid forties the station expanded its range of frequencies with 100kW transmitters in Munich and Stuttgart and short wave frequencies of 8.565MHz and 6.080MHz. Sadly this has now changed somewhat and the station has to compete with an array of high power continental stations. Thanks to John Parry for this interesting report.

Guide to the Galaxy!

With so many different services now becoming available over satellite based systems, it's surprising how little information there is about what's up in the skies. Fortunately, Radio Sweden have come to the rescue with the excellent *DXers Guide To The Galaxy* by George Wood. This forty-eight page, A5 book provides a very good overview of the current satellite systems.

The first section deals with the TV Receive Only (TVRO) systems that are used primarily for domestic broadcasting. This section contains a listing of just about every satellite in current use. The coverage is world-wide, but with particularly extensive listings of American and European systems. The listings also give details of the frequency bands and the range of services being transmitted. This extends to cover the rapidly growing transmission of radio stations over satellite. The book concludes with a review of the other services that make use of satellites. These include the weather, military and amateur services. One of the problems facing the author is that of producing an up-to-date listing as the satellite scene is constantly changing. The current edition (5.4) was printed in February of this year so is reasonably accurate.

Perhaps the most surprising feature of this excellent book is its price - its free! To order your copy just write to **George Wood DX Editor, Radio Sweden, S-105 10 Stockholm, Sweden.**



Africans
broadcasting from
Africa to Africa

Channel Africa

In the August column, I mentioned a QSL address for Channel Africa. They were very quick off the draw and replied straight away with full station details. The station used to be called Radio RSA, but its work as the external arm of the South African Broadcasting Corporation continues as Channel Africa. As you would expect from a major broadcaster, they run a very comprehensive transmitter network.

They have a total of 58 antennas all operating with either 250 or 500kW short wave transmitters. The frequency range covered is 3 to 27MHz with four basic types of antenna used. The antennas themselves are pretty sophisticated with gains from 17 to 20dB. When you match that to the powerful transmitters, that makes for an awful lot of radiated power! If you would like to try and catch this station, English language broadcasts go out as follows:

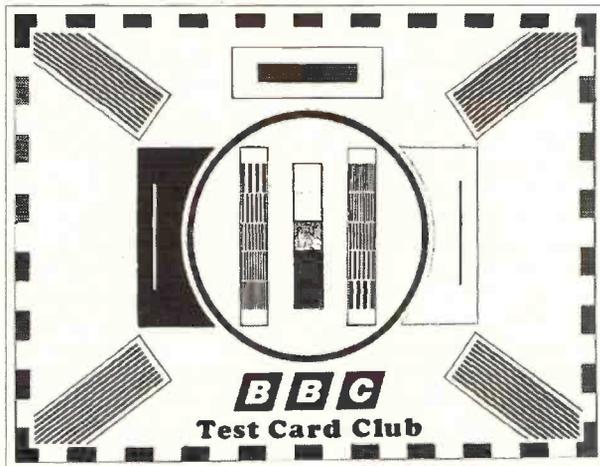
5.96MHz at 0158-0355UTC
3.995MHz at 0258-0455UTC
7.23MHz at 0358-0455UTC
9.695MHz at 0458-0555UTC
15.22MHz at 0558-0655 & 1558-1655UTC
17.805MHz at 0958-1055UTC
9.73MHz at 1058-1155UTC
4.945MHz at 1558-1755UTC
11.75MHz at 1658-1755UTC

Channel Africa can be contacted at **PO Box 91313, Auckland Park 2006, South Africa.**

World DX Monitoring Service

Hank Bennett W2PNA has written sending me details of the World DX Monitoring Service. The service started as an individual's effort to learn just how many DXers there are. In the interim the service was taken over by a magazine and has since matured into the present monitoring service. As part of the registration process you are given a unique identity rather like an amateur callsign. This identity can then be used in your correspondence with other listeners and broadcast stations. You also get an impressive registration certificate. For full details of the service and registration details contact **Hank Bennett, WDX Monitoring Service, PO Box 3333, Cherry Hill, New Jersey 08034, USA.**

Test Cards



Since 1963, Keith Hamer has built up a collection of BBC archive material covering many topics such as graphic design, engineering achievements and anything associated with BBC Trade Test Transmissions. To coincide with the 30th year of the establishment of Keith's unique BBC Archive Collection, he has recently launched the BBC Test Card Club. Members receive a quarterly magazine called *Test Cards*, this 20-page A4 magazine covers many aspects of BBC Engineering (past and present).

The annual subscription to *Test Cards* is £8.50 (£11 world-wide via airmail). A leaflet is available by sending an s.a.e. to Keith.

Keith Hamer, 7 Epping Close, Mackworth Estate, Derby DE3 4HR. Tel: (0332) 513399.

Frequency Schedule

We have received some details of Radio New Zealand's schedule for the period 2 October 1993 to 19 March 1994.

UTC	Freq (MHz)	Comments
1650-2136	9.55	Monday-Friday
2137-0658	15.120	Daily
0659-1206	9.700	Daily
1207-1648	9.510	Occasional Use

WXSAT Late News

The American WXSAT NOAA 13 stopped transmitting during early September, apparently due to electrical problems with its on-board timing system. It appears this fault is similar to the one which may have disabled the Mars Observer 1 probe.

The new CIS METEOR 2-21 WXSAT was launched around late August/early September. Early Kepler elements for 2-21 may have contained an error, leading to possible mis-identification of the WXSAT. Transmissions on 137.40MHz received in Plymouth on 1 September matched closely the current elements for METEOR 2-16. Positive identification should have been made by the time this is published. The signal appears unusually weak.

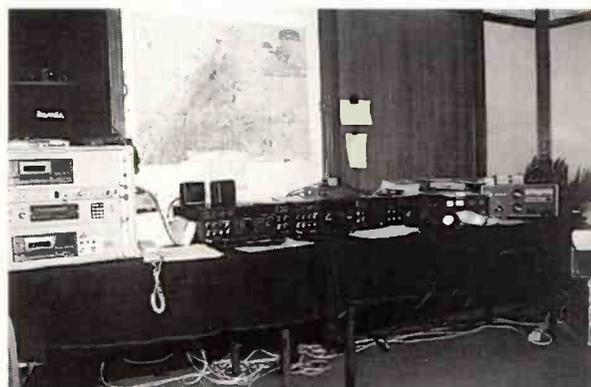
Radio & TVDX News

Cellular phones are now operating in Greece, Panafon (Vodafone + France Telecom) and Stet Heelas (Nynex and others). Stet covers Athens with over 30 base stations and Panafon covers both Athens and Attica and intends to cover all of Greece and Crete by 1996. The Telecoms boards of both the States of Guernsey and Jersey have signed with STC Submarine Cables for two undersea fibre optic cables to be laid by an operational date of September 1994. The system will provide a ring network around the islands and improved UK contact. At the present time, a Dartmouth - Guernsey fibre optic link is in operation and plans are afoot for connection onwards to Goonhilly providing full global communication.

'S-PLUS' is the new Swiss 4th channel which opens late September 93 is intended to keep the younger generation tuned to the local Swiss channel rather than viewing the German language alternatives such as RTL, SAT-1, etc. Another defection to the UK standard Ceefax Teletext system with Belgium dropping their own Percival system. And the new transmitter now under construction at St. Pieters-Leeuw (15kW SW Brussels) will be a mega-power transmitter replacing the Wavre Ch. E28 transmitter. The 'Tele 21' service from Wavre and Tournai (Ch.E63 vert) transmitters is now called 'Sport 21' whilst Anderlues Ch. E61 transmits the 'ARTE 21' scrambled channel.

And in brief 'Televise Samoa' is now on-air thanks to TV New Zealand who assisted with the planning and installation for the 6th Pacific Nation TV service. In South Korea 4 religious radio stations (rather than TV stations) have been allowed to go on-air. These are the Buddhist Broadcasting System (BBS) with stations in Kwangju and Pusan, the Protestant-Christian (CBS) in Chunchon and the Roman Catholic Pyonghwa Broadcasting System (PBC) in Taegu. And in nearby Thailand the government have allowed the first privately owned TV station to be opened and franchise applications are now awaited.

New Kenwood Dealer



Kenwood have appointed a new amateur radio dealer in the south west. Based in Weston-super-Mare, QSL Communications is run by Graham Patterson. Graham has many years of experience in the amateur market and has built his reputation on the wide range of high quality QSL cards that he prints. QSL Communications will also be attending many of the rallies up and down the country.

QSL Communications, Unit 6 Worle Industrial Centre, Coker Road, Worle, Weston-super-Mare BS22 0BX. Tel: (0934) 512757.

Malaysian Radio News

The South Midlands Communications team who were recently in Sabah Malaysia (9M6) providing communications for the Camel Trophy event have scored more points.

With great help from the Sabah licensing authorities, Richard Diamond G4CVI received permission to operate on 50MHz as G4SMC/9M6. SMC have also donated a 50MHz beacon to Sabah, which will be sited on the Sabah Medical Centre using the callsign 9M6SMC on 50.014MHz.

BARTG AGM

The BARTG AGM will take place on Saturday November 13 at 2pm in The Green Wine Bar and Restaurant, The Green, Mere Green Road, Four Oaks, Sutton Coldfield.

Topics to be discussed will include the subs for 1994, plans for the BARTG 1994 rally, the



direction for BARTG and data comms in the next few years, highlights and hiccups of 1993 and the election of a new committee.

if you intend to go to the AGM, please contact: **Ian Brothwell G4EAN, 56 Arnot Hill Road, Arnold, Nottingham NG5 6LQ. Tel: (0602) 262360.**

QTI have Landed

QTI Talking Newspaper Association have finally come to rest in Cockermouth and had a name change to QTI Tape Magazine Association. This charity is dedicated to the production of an audio tape magazine for radio enthusiasts who are unable to read articles in print. The *QTI Tape Magazine* is compiled so as to help them keep in touch with modern radio communications, to benefit their training as radio amateurs, to entertain them with stories of radio and rigs and so that they can enjoy articles in print that most of us take for granted.

Each issue of QTI contains articles from current radio magazines, including *Short Wave Magazine*. This is virtually a 'one-man-band' outfit run on a shoe-string. They are always in need of financial help, but there are no salaries or perks to fund. If you think you would like to help in any way, contact: **QTI Tape Magazine, Towers Cottage, Towers Lane, Cockermouth, Cumbria CA13 9ED.**

Radio! Radio!

The second edition of *Radio! Radio!* by Jonathan Hill has now been published. It is a profusely illustrated history of the British radio receiver. There are 244 pages, A4 containing nearly 1000 photographs of classic British radio sets spanning the late 19th Century right through to the 1970s.

This book costs £25 post free from the publishers, **Sunrise Press, 2-4 Brook Street, Bampton, Devon.**

The Yupiter MVT-3100

The Yupiter MVT-3100 covers the frequency range 143-162, 347-542 and 830-960MHz with 100 memory channels designed to cover marine, p.m.r., military aircraft and 900MHz u.h.f.

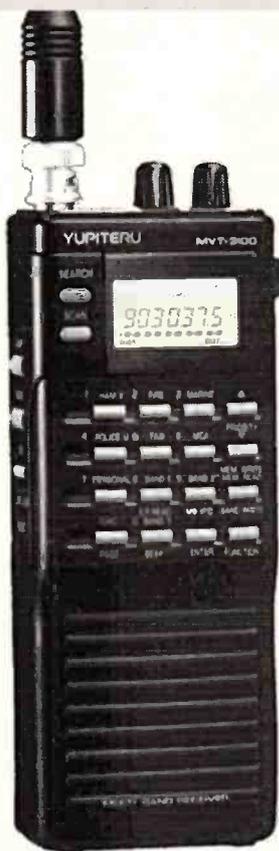
Costing just £199, the handheld is available from: **Nevada, 189 London Road, North End, Portsmouth PO2 9AE. Tel: (0705) 690626.**

SMART Winners

ICS Electronics Ltd., are pleased to announce their success in the 1993 SMART award competition for research and development funding to small companies, sponsored by the DTI.

Nationwide, 180 awards were made from 1400 applicants and within the south-east of England, 34 awards were made from 401 applicants.

ICS Electronics Ltd., Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD. Tel: (0903) 731101.



news

DXpedition

On the weekend of October 2 & 3, a group of radio amateurs will undertake a small expedition to the Island Pampus. The Island Pampus is a fortress-island near Amsterdam. It was built in 1895 as a part of the 'Position of Amsterdam' - a circle of 42 fortresses around Amsterdam.

The Pampus Foundation is trying to restore the fortress to its original state. Therefore, this group of amateurs have created a new award - The Pampus Award. The profits from the award will be used to help the Pampus Foundation continue its work.

The locator they will be operating from is JO22MI, which is unusual and there are not normally radio contacts from this locator. Two special call signs will be in use, PA6PAM and PA6PUS. If you hear/work both stations you can apply for the Pampus Award by sending an extract from your log to: **Award Manager Pampus Award, Rob de Visser PA3AGT, Gloriantstraat 17-3, 1055 CV Amsterdam, The Netherlands.**

The cost of the award is £2.50 or \$5, No IRCs please. The application period is open until December 31. A QSL will be sent for every contact.

The operating times will be October 2 1100UTC until October 3 1100UTC on the following frequencies. 3.650-3.7, 7.050, 14.190, 21.250, 145.375MHz f.m. and 144.375MHz s.s.b.

Anniversary Bargains

Technical Software are ten years old this year. To celebrate their first decade of producing amateur radio and s.w.l. systems, they are offering their best products at bargain prices.

For BBC computers, you can get the RX-8 program (FAX, SSTV, RTTY, c.w., AMTOR, packet, UoSAT & ASCII receive system) at the bargain price of £159, a saving of £100. Or the GX-2 program (FAX, SSTV transceive system) can be obtained for £49, a saving of £50.

If you have a Spectrum computer there is 25% off the FAX, weather satellite receive system.

They are making offers on their other products too. Anyone who buys one of their popular TX-3 or RX-4 programs gets a Morse Tutor, Logbook or Locator program with it free!

These offers are available on purchases made in October and November 1993 only. **Technical Software, Fron, Upper Llandwrog, Caernarfon, Gwynedd LL54 7RF. Tel: (0286) 881886.**

Power Supply



The Ambassador Centurian p.s.u. enables 12V d.c. equipment to be used easily from a mains supply. It provides up to 20A of current and will give a no-break

uninterrupted back-up of up to 12 ampere hours.

Design features fitted include three colour coded i.e.d.s on the front panel, and you can opt for a fan to be included.

If you would like the full details on this piece of equipment, contact: **Diplomat Communications Systems, Unit 3 Summerlea Court, Herriard, Basinstoke, Hants RG25 2PN. Tel: (0256) 381656.**

ALINCO, AKD, AOR, ARRL, BARENCO, BENCHER, BNOS, BUTTERNUT, CUSHCRAFT, DATONG, DEECOMM, DEWSBURY, DIAMOND, EMOTATOR, ERA, GLOBAL, HITACHI, HY-GAIN, HIMOUND, ICOM, ICS, JIM, JRC, KANTRONICS, KENT, KENWOOD, LOWE ELECTRONICS (WHO?), MALDOL, MANSON, MFJ, MICROSET, MOMENTUM COMMUNICATIONS, OPTOELECTRONICS, PANASONIC, PERMANOID, REVCO, REVEX, RF CONCEPTS, RF SYSTEMS, RSGB, SIGNAL, SONY, SSC, SSE, TONNA, TOYO, WIN, YAESU, YUPITERU.

ALMOST THE WHOLE A TO Z !!

In that little lot, you'll find Shortwave receivers, scanners and specialist airband receivers, together with power supplies, rotators, aerial hardware, datacoms equipment including decoders for FAX, RTTY, Morse etc., filters, connectors and connecting leads, antenna accessories like wire, baluns and low-pass filters, books, maps, videos, software, pre-amps, TNC s and other datacomms equipment, test gear, ATU s, HF beams and verticals, VHF beams, verticals and mobile mounts with a huge range of mobile antennas - if it is worth having, you can be sure we've got it - and we can support it!

Leicester's here once again and you're all hoping for fantastic bargains. Well, look no further, we've got 'em all! We've really butchered the opposition for the last few years and this year we will do the same again - but maybe we'll do it differently. See you there, I hope !

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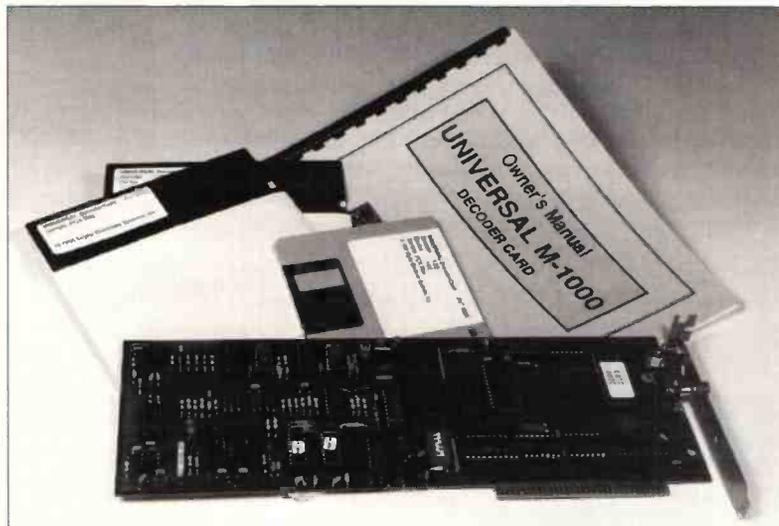
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0661 860418

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0752 607284

Universal M-1000



In the last of this series of Universal decoder reviews, Mike Richards looks at the compact M-1000.

Unlike the other decoding systems in the Universal range, the M-1000 is computer dependent and needs an IBM compatible PC. However, for those who already own such a computer, the M-1000 represents a very attractive and economic way of entering the world of decoding. The excellent range of modes supported places it in competition with decoders at many times the price. Included in its arsenal are standard RTTY, Morse, Packet, SITOR plus five extra ARQ modes, data analysis and a comprehensive FAX system.

Installation

Installation proved to be very straightforward - both hardware and software giving no problems. The operations are very well described in the manual, which gives the operator a step-by-step guide. For the hardware installation you simply have to insert the supplied full length ISA card into a vacant eight or sixteen-bit expansion slot. Although the manual covered this well you would be well advised to consult your computer's operating manual. In the case of the

review model, the card fitted neatly into my aging Amstrad PC2086 with no problems. Once installed, you just have to connect the phono socket to the audio output of your receiver. As the M-1000 is happy to work with input levels of around 200mV, it should work with the fixed audio output of most receivers. This saves having to use the external speaker socket. To obtain the best performance from the M-1000, the input level needs to be set to match the requirements of the decoding program. This is done by adjusting a small pre-set potentiometer on the front plate of the M-1000 card. The software installation also proved to be very simple - just copy all the files from the supplied floppies to the required directory on your hard disk. For those without a hard disk, the programs could run from floppies with no problems. As there is no copy protection on the software, you are free to make your own back-ups. With the software installed, the final task is to run the initialisation program. This let you configure the package to run with your hardware set-up. The adjustments covered video modes and

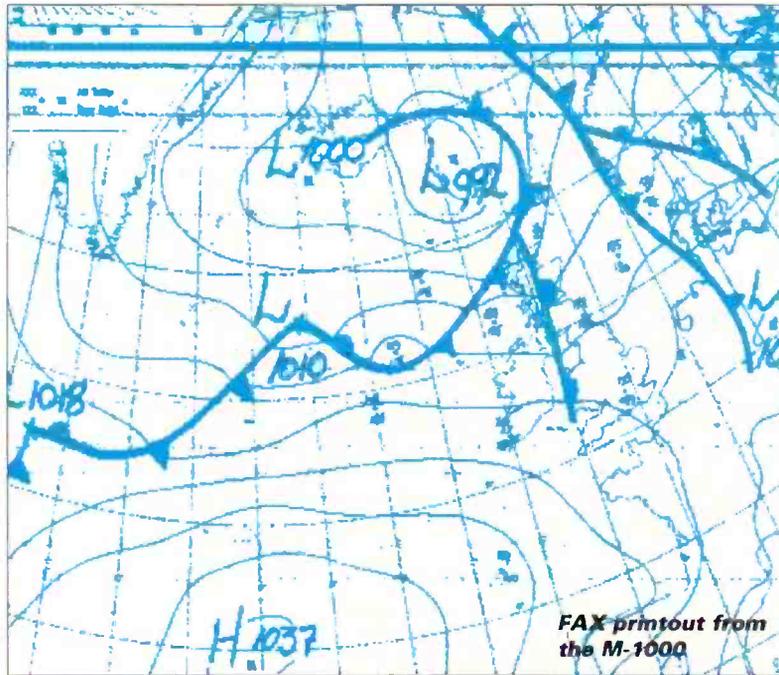
preferences, port addresses and printer port. Once the set-up had been completed, the details are stored in a disk file for future use. One unusual feature of the M-1000 is the provision of a separate FAX decoding program, I'm not sure why it couldn't have been integrated with the other decoding routines, but I'm sure Universal have their reasons. An interesting problem found during the review concerned the use of mouse drivers. My own machine, like most, is configured to load the mouse driver as part of the start-up routine. However, the M-1000 is not really designed to use a mouse so if you're not careful you'll tend to find the selection cursor flying around adjusting various parameters. The simple solution is either not to run the mouse driver or to make sure the mouse is safely tucked away before you run the program! Aside from this minor oddity, the decoding programs are very easy to use. The main options are selected and changed by moving a highlighted cursor along a bar at the bottom of the screen. Once the required option is highlighted the Up and DOWN arrow keys are used to adjust the setting. There are also a number of

short-cut keys available to take you straight into the required mode. This technique is used both for the main decoding program and the FAX system. For the new user there is a very convenient status line help facility. Once activated this gave a short summary of each option as it is selected. The only other point to watch is that hitting the Escape key gives an immediate exit from both programs. I was caught out by this on several occasions as most commercial programs ask if you really want to quit before throwing you out. This can be particularly disastrous of your part way through a FAX chart.

Operational Features

To help the operator get the best from the various different signals and reception conditions, the M-1000 is equipped with a number of useful facilities. One of these is the ability to change the alphabet used in the decoding process. The M-1000 featured ITA 2, Telex, Military and Literal. The Telex and Military modes are useful for providing a more accurate decode of this type of signal. The provision of the Literal

alphabet is really for use with the ARQ modes. By selecting this mode the various alpha, beta and other control codes are displayed. This information can be useful when decoding new or unusual stations. Next came what now appears to be a standard Unshift On Space function for helping to reduce errors when receiving normal text. The M-1000 gave the operator particularly good control of the audio tones used in the decoding process. In addition to opting for either the standard Low or High tones you had wide control over the shift. This could either be set in 5Hz increments from 60 to 1200Hz or stepped up through the standard shifts by pressing the Up and DOWN keys. This offered great convenience for the operator. A further sophistication is the addition of automatic filter tuning. Provided you are reasonably close with your initial settings, the M-1000 would carefully match the mark and space frequencies of the decoder to that of the incoming signal. At the end of the process not only are the filters altered but the resultant shift is shown on the main display. This can prove very useful for signal identification as the various signal types tend to use standard shifts. The final sophistication is the ability to alter the bandwidth of the detection filters. The M-1000 also included a number of useful post detection features to help reception under poor conditions. The Automatic Threshold Control helps to overcome problems caused by the variable propagations effects found on the h.f. bands. Those of you experienced in RTTY reception will no doubt have come across occasions when the mark or space tone is obliterated by an adjacent signal. The M-1000 can tackle this problem by decoding from just the mark or space tone. This is a very powerful and effective option for the serious DX listener. One of the problems facing newcomers is establishing the baud rate of



the various utility signals. The M-1000 has this taped with a special speed measurement facility. Perhaps the final sophistication is the combination of the speed read-out and filter tuning to create the AUTO-TUNE mode. Providing the manual settings are reasonably close, the M-1000 will automatically measure the speed and shift, set the decoder to those settings and display the result. This is a very powerful package both in terms of convenience and station identification. It should also be noted that you cannot expect the analysis to work properly when dealing with very weak or noisy signals. You also need to ensure that you have a healthy audio level.

Tuning Aids

A common problem when dealing with utility stations is finding the optimum tuning point. Not surprisingly there have been a wide range of different systems developed over the years. The M-1000 includes a number of different options to make the operator's life easy. As you would expect all the options are displayed on the computer screen. I was very pleased to see that Universal have done a very good job here in providing very quick response times. I've seen plenty of on-screen tuning aids that end-up being

far too slow for practical use. There's none of this with the M-1000 as all the options proved to be extremely effective. The main aids comprise a pair of vertical bargraphs located in the bottom right hand corner of the screen. The first of the two configurations uses one bar as an input level indicator and the other as a tuning point indicator. This gives a maximum display at the ideal tuning point. The alternative set-up uses the bars to represent the decoded mark and space respectively. Not only does this help show the correct tuning but it's very good for setting up the shift. To achieve this all you do is trim the receiver tuning and shift setting to achieve maximum displacement of the bars. The bargraph is supplemented by a Datascope facility that draws an oscilloscope type display on the screen showing the incoming signal crossing the centre point of the tone detectors. The optimum tuning point is shown by the maximum deflection of the trace.

FAX Reception

As mentioned earlier, FAX reception required the use of a separate decoding program. This is not particularly inconvenient as both the Decoder and FAX

programs loaded very quickly. It would be very easy to write a small batch file or configure your disk manager to make this operation even simpler. Once into the FAX program you are presented with a screen very similar to that used for the main decoder. In addition to setting the main polarity, speed and IOC parameters you also have access to the displayed palette. This could be set to one of four options which are Black and White (for charts), Monochrome (General) plus three pseudo colour presentations. One of the particular attractions of this program is the inclusion of an a.m. reception mode for

orbiting satellites. Automatic FAX reception is supported, but with a few limitations. Reception would stop as soon as the screen is full. This meant you would lose the bottom from most h.f. charts. The M-1000 FAX is also set to stop when an idle is detected instead of using the more conventional stop tone. This can create a problem with some chart types that have areas with little information. I really don't see why Universal don't use the stop tone like every one else - it would save the inconvenience of having your decoder stop part way through an image. However, this may all be academic as the program's limitation of just receiving a screen full, means that charts from most stations will be stopped before the stop tone anyway. These limitations mean that the FAX program's auto reception is limited to a single chart. Having received your image you have the option to print or store to a disk file. The images are stored in .PCX format so can easily be manipulated with standard graphics packages. A basic print routine is included, though you may get better results by using a commercial graphics program. Despite my moans about the auto FAX reception, the displayed results, using a VGA screen, are very good.

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Morse Reception

The Morse decoding mode of the M-1000 proved to be very quick and effective. There are three speed ranges provided but I found that the MEDIUM setting is fine for most signals. Correct tuning is shown by the word ERROR flashing on the display in time with the incoming signal.

Although slightly unusual, it proved to be a very fast and accurate tuning indicator. The centre frequency of the Morse decoder could be set of an extremely wide range from 500 to 1500Hz in 50Hz steps. This means the centre frequency can be matched precisely to that of the c.w. filters in your receiver. Synchronisation and tracking of signals is really very good indeed and made Morse a pleasure to monitor. The excellent internal filtering of the M-1000 meant that it could also handle poor quality signals very well.

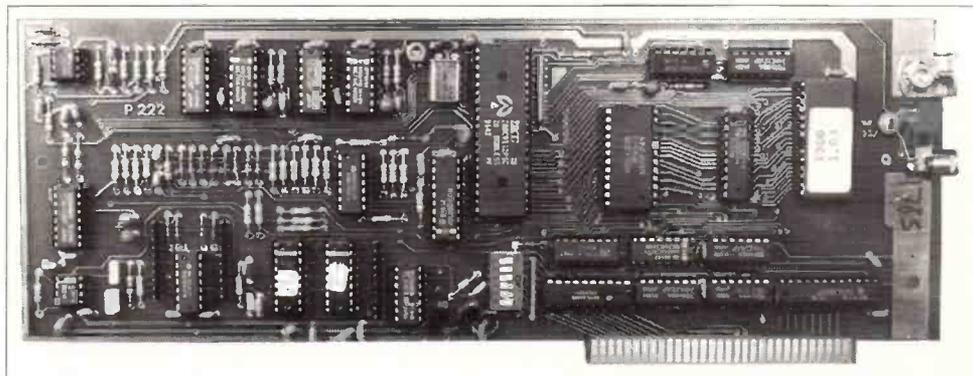
RTTY/SITOR

These are perhaps the two most monitored modes, so performance in these areas is critical. The M-1000 fared very well through a wide range of operational conditions. The good input filtering and post detection controls proved very useful when trying to dig a station out of the noise. Providing the input level is adequate and the tuning close enough the Auto-tune is a great way to match the decoder to the required signal. The basic SITOR ARQ modes are covered with three reception modes. Probably the most used will be the AUTOR mode that automatically detects the type of signal and quickly locks on. For the occasions when you want to stick with a particular mode and not be distracted you can manually select either ARQ mode A or B. If you want to monitor amateur Packet transmissions a standard implementation is

provided in the M-1000. Both h.f. and v.h.f. packet is catered for with baud rates of 300 and 1200 baud respectively. For

the very small number of stations that run with both channels active. A good example of this is the

single key press. There are also a number of data flow controls of which the Selcall is the most interesting. This



emulated the system used on the M-8000 and could be set to start decoding following receipt of a key word. A typical example would be the monitoring of press stations. You could set the system to start printing after the start signal

the more adventurous listener there is a selection of the more advanced ARQ modes. Included within this are ARQ-E, ARQ-E3 and the multi-channel ARQ-M2 and M4 systems. All of these modes featured both automatic and manual synchronisation which worked very well. The only problem I found was with the reception of the multi-channel modes. The selection of which channel to print is an automatic process. The idea being that the program decodes whichever channel is active. Whilst this is fine for the majority of cases, it's not a lot of use for

Brazzville aeronautical transmissions on 8.123MHz. This station frequently has flight plans running on both channels.

Advanced Facilities

Supporting the wide range of decoding options are a number of advanced features. One of these is the built-in mode memory system. This provided ten programmable memories that could store the full mode settings. Another aid to rapid mode selection is the pre-programmed short cut keys. These enable any mode to be selected with a

(ZCZC) and stop at the end of message (NNNN). To help capture all the valuable messages, the M-1000 can store the decoded text to a disk file. The system is effective, if a little clumsy - it just dumps a file named TEXT?? into the root directory. However, it's a simple matter to recover these files and tuck them away safely.

Summary

The M-1000 proved to be a very fast and versatile decoding system that interfaces well with the computer. The range of modes provided covers all the most popular systems as well as a few interesting variants. There are a few rough edges that could do with some attention - especially the FAX program. I was very pleased to see that the on-screen tuning indicators are fast enough to be useful - many programs fall down here. The M-1000 is also particularly good when working under the poor conditions. Despite my grumbles, the M-1000 represents good value and will I'm sure be very popular with computer users. The M-1000 decoder costs £379.95 and can be obtained from **Martin Lynch, 286 Northfield Avenue, Ealing, London W5 4UB. Tel:081-566 1207.** My thanks to Martin for the loan of the review model.

Just before going to press Martin Lynch told us that an enhanced model, the M-1200, at £400, is to be introduced.

Specifications

Modes:

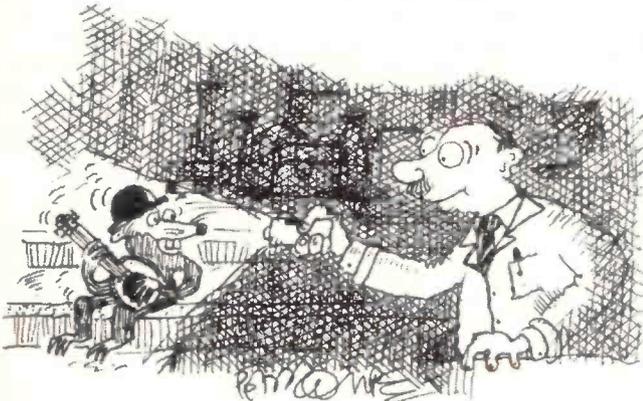
ASCII:	110, 150, 300, 600 & 1200baud
Packet:	300 and 1200baud
Baudot:	45, 50, 57, 74 and 100baud plus variable 40 - 200baud in 1 baud steps
Sitor:	Mode A and B plus AUTOR 100baud
ARQ:	M2 & M4 two channel 86, 96, 100, 172, 192 & 200baud four channel 172, 192 and 200baud
ARQ-E:	48, 64, 72, 86, 96, 144 and 192baud
ARQ-E3:	48, 64, 72, 86, 96, 100, 192 and 200 baud
Morse:	5 to 120 w.p.m. auto ranging
Data Bit:	synchronous and asynchronous 45 to 200baud
Facsimile:	a.m. and f.m. 60, 90, 120 and 240 l.p.m.
IOC :	288, 440 and 576

Demodulators:

Radioteletype:	Microprocessor controlled switched capacitor filters for channel and post detection
Morse:	Envelope detection using A/D convertor
Indicators:	On-screen bargraph of level, filter tuning and mark/space ratio
Input:	4-600Ω 200mV p-p nominal
Board size:	8-bit 305mm length

A DAY IN THE LIFE OF A RADIO INSPECTOR

J Edward Brown recalls the case of the Flushing Toilet.



It was an ordinary 1930s bungalow, but not exactly in the best part of town, and it hadn't become gentrified and trendy. The concrete path to the front door was badly cracked. Under the eaves was an ancient brush radio aerial, a mass of wires splayed out from the insulator, like a broom gone wrong.

"This house is old enough to have power wiring in conduit, and that could be the trouble," Kilocycle Ken the senior radio inspector said to Young Golly the radio inspector trainee.

Though it was idle speculation until they talked to the complainant, and had a look at her radio. It could be a faulty set.

Kilocycle Ken twisted the metal turn-type knob of the front door bell. An old woman wearing an orange floral smock, her hair in curlers, opened the door. She had an ancient fire shovel in her hand, defensively.

Kilocycle Ken launched into his patter. "Good morning, we are radio inspectors, called about your radio interference complaint to the Post Office."

She brightened, lowered the shovel and invited them inside.

The sitting room had the original high ceiling height reduced artificially by cords looped backwards and forwards, the plaster painted black, a fashionable trick, years ago. There were paper flowers, a wooden tea wagon, a carpet square with a surround of bare varnished floor, ferns, browned photographs of people, an old 78r.p.m. HMV gramophone with a stack of thick black disks in brown envelopes. There was a photograph of Michael Joseph Savage, the 1930s Labour Prime Minister on the wall, and a silver-paper passe-partout picture.

The radio was an old Pye with a short wave band.

"Don't see many of these around anymore," Kilocycle Ken complimented the old lady. "Good tone, 6V6 valves in the output, as I remember."

The old lady preened. "My husband bought it years ago, shortly before he died."

"And now you are getting interference on it," Kilocycle Ken said kindly. He noticed the wire for the aerial entered the house through a black tube with a brass screwed rod and protected by a brown porcelain lighting arrester, an ancient arrangement used when wireless was wireless and not radio.

Preserved in Time

Most radio interference complaints were from elderly people, at home all day, the radio their only companion. He'd been in many houses like this, preserved in time in a different age, with oak dining room suites, three piece lounge suites and probably in the bedroom would be an oak bedroom suite with a wardrobe, a double bed and a couple of chests of drawers.

"I see by the complaint sheet that your problem is very personal." Kilocycle Ken looked at the woman.

The complaint tittered, then whispered, "It's the toilet. I flush it - and the noise on the wireless! It's something terrible. I didn't know what to do. It's very upsetting - and mysterious, and - embarrassing."

"It's not particularly unusual," Kilocycle Ken said quickly, reassuringly. "Quite common in ageing houses. What happens is that when you pull the chain the rush of water through the pipes causes them to vibrate, thus upsetting your radio reception, probably by earthing your corrugated iron roof, which is acting as your aerial, despite your brush type aerial outside."

"My husband swore by that brush aerial, he could get America on short wave."

"Wonderful," Young Golly said vaguely, cynically.

Kilocycle Ken frowned at him. "But to work to check the theory, could we have the wireless switched on, please?"

She turned a knob. They waited. It had to warm up. No instant transistor sound here.

"You don't get interference on your hi-fi," Young Golly said suddenly.

The complainant looked at him. "It's a gramophone," she said sarcastically.

Kilocycle Ken asked, "Have you got any George Formby records? I like his music, but they never play it on wireless anymore."

"No," she said regretfully. "Gracie Fields is one of my favourites. 'We'll Meet Again'."

"Elvis Presley?" Young Golly asked.

"Did he make 78 r.p.m. records?" the old woman snapped.

RC818 (SSP £199.99)

Multi-band Digital Preset Stereo World Radio with Cassette Recorder

This flagship model demonstrates the leading edge of Roberts technology. With a clear LCD display of all functions, it has 5 tuning methods, 45 preset stations, dual-time display, standby and clock/alarm plus a cassette section for timed recordings from the radio. Provision is made for single side-band and CW transmissions as well as stereo FM on headphones and stereo record/playback of cassettes.

Comes complete with a mains adaptor.

- 5 Tuning methods – direct frequency keying, auto-scan, manual scan, memory recall and rotary
- 45 memory presets
- SW metre bands from 120m to 11m
- BFO control for reception of CW and SSB
- FM stereo on headphones
- AM wide/narrow filter

Waveband coverage:
LW 150-519 kHz; MW 520-1620 kHz;
SW 1.621-29.999 MHz; FM 87.5-108 MHz • Radio standby function



- Pre-programmable radio to tape recording
- LCD display
- Signal strength and battery condition indicator
- Sleep timer
- Safety lock switches
- Adjustable RF gain
- 700 mW Power output

R817 (SSP £169.99)

Multi-band Digital Preset Stereo World Radio

Offers all the outstanding features of the RC818, minus the cassette section.

An unequalled combination of value, quality, technology and choice....in short....

ROBERTS

R808 (SSP £119.99)

Multi-band Digital Preset Stereo World Radio

The R808 has all the advanced features of the R817 with the exception of BFO (Beat Frequency Oscillator) but in a more compact case specially designed for the regular traveller.

R621 (SSP £59.99)

10-Band Compact Stereo World Radio (FM/MW/SW1-8)

All the functions of a much larger model are combined in this compact radio with clock/alarm. Easy SW bandspread tuning with LCD tuning/stereo indicator and FM stereo on ear or headphones. The clock/alarm shows dual time on a backlit display with up to 60 min sleep timer and snooze with wake to radio or buzzer. Comes complete with soft carrying pouch and stereo earpieces.



R101 (SSP £49.99)

9-Band Miniature World Radio (FM/MW/SW1-7)

Exceptional sound quality and facilities in a truly pocket-sized, ultra-light receiver. Easy to tune with featherlight touch-band switches. LED tuning/stereo and waveband indicators. Wide SW bandspread tuning with stereo FM via ear or headphones. Complete with soft carrying pouch and stereo earpieces.



For your nearest stockist contact:

ROBERTS RADIO CO. LTD

127 Molesey Avenue, West Molesey, Surrey KT8 2RL
Tel: 081 979 7474 Fax: 081 979 9995

NOW THATS WHAT I CA

SHORTWAVE EQUIPMENT

Six of the Best

Kenwood R5000

Although several years old, the R5000 receiver from Kenwood still dominates the receiver sales. With or without the v.h.f. option extending the range to 118-174MHz, the price versus performance cannot be beaten.



Deposit only £99.00 and 12 payments of £75.00. Total £999.00 or with v.h.f. converter, deposit £149.00 and 12 payments of £87.50. Total £1199.00 Zero APR.

Yaesu FRG100

Now one year old, the FRG100 has proved itself to be the hot favourite for mid-priced shortwave receivers.



Deposit only £50.00 and 12 payments of £45.75. Total £599.00. Zero APR.

Drake R8E

The only receiver fitted with ALL optional filters as standard, the Drake is still one of Lynch's best sellers. Offered with v.h.f. converter or not, the R8E is a firm favourite for computer control or a top of the range desk top receiver.



Deposit only £99.00 and 12 payments of £75.00. Total £999.00 or with v.h.f. converter, deposit £157.00 and 12 payments of £89.00. Total £1225.00. Zero APR.

Lowe HF150

Still continues to be the best budget selling shortwave receiver. Offered with NiCads and telescopic whip, the HF150 is the ultimate for compact listening.



Deposit only £50.00 and 12 payments of £30.00. Total £410.00. Zero APR.

Icom ICR72E

Typical Icom quality, the new ICR72E still shows the others how to offer a top quality receiver at a lower than normal selling price.



Deposit only £79.00 and 12 payments of £65.00. Total £859.00. Zero APR.

Yaesu FRG8800

With or without v.h.f. option, the Yaesu receiver holds its value very well. Several have come in used, in excellent condition. Offered with 6 months warranty. Have interest free and save money!



Deposit only £65.00 and 12 payments of £38.75. Total £530.00 or with v.h.f. fitted, deposit £81.00 and 12 payments of £41.50. Total £579.00. Zero APR.

M8000

Reviewed as the best decoder in Short Wave



Magazine last month, the M8000 is the ultimate in stand alone "code crackers" for your receiver.

Deposit only £319.00 and 12 payments of £80.00. Total £1279.00. Zero APR. 14" SVGA Monitor required at £199.00.

M900

Baby brother to the M8000, the M900 is offered with a video card enabling on



19

MARTIN

G4

THE AMATEUR RAD

Hello Chaps! Here is another I've bought together the ve Scanners & Decoders for yo products including the m. antennas, books, pre-amps, fi whole magazine

DECC

The Fau

screen fax display, in addition to the RTTY/Sitor and c.w. modes.

Deposit only £67.00 and 12 payments of £38.50. Total £529.00. Zero APR.

M400

As supplied to the MET and RTS, the M400 is a neatly packaged decoder offering



The deposits on my INTEREST FREE SCHEME have been reduced to a minimum & I have EXTENDED the payment period to make it even easier. Martin Lynch is a Licensed Credit Broker, (and always has been). Full written details available on request.

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ALL SHORT WAVE RADIO

93

LYNCH HKS EXCHANGE CENTRE

selection from the Lynch Stable.
y best in Shortwave Receivers,
i to choose from. To list all my
ss of accessories, (including
ters & so on), would take up the
Perhaps one day...

ODERS ous Five

reception of RTTY/Sitor, FAX (to printer), Pocsag, Golay, DTMF, CTCSS and DCS. As reviewed in August SWM.

Deposit only £45.95 and 12 payments of £29.50. Total £399.95. Zero APR.

M1200 NEW!!

The latest version of the famous M1000, the new M1200 is a complete decoder on a card to install in your PC. All modes displayed on screen in full colour, if you've got a

SCANNER EQUIPMENT

The Magnificent Seven

AR1500EX

Every one scrambles for the MVT7100 and forgets the AR1500EX. Performance on shortwave is actually better for sensitivity and you get ALL the options!

Deposit only £49.95 and 12 payments of £25.00. Total £349.95. Zero APR.



AR3000A

Still the best selling Base/mobile scanner, the AR3000A from AOR will make the most of the receiving equipment in your shack redundant. Special offer this month only - LOW DEPOSIT and pay over a whole 18 months!

Deposit only £149.00 and 18 payments of £44.44. Total £949.00. Zero APR.



MVT7100

The latest from Yupiteru and still selling very well. Wide band, all modes including u.s.b./l.s.b. selectable. Offered with FREE set of spare NiCads and on INTEREST FREE.

Deposit only £59.95 and 12 payment of £32.50. Total £449.95. Zero APR.



VT225

For the serious Air Band enthusiast, this dedicated handle is the only choice for Civil and Military listening.

Deposit only £29.95 and 12 payments of £20.00. Total £269.95. Zero APR.



MVT7000

Almost identical performance to the new MVT7100 but without the s.s.b. facility. Offered with FREE spare NiCads!

Deposit only £48.95 and 12 payments of £26.95. Total £369.95. Zero APR.



ICR7100

Almost at the top of the Icom range, the NEW ICR7100 is the professional choice for scanner enthusiasts. With h.f. modification giving a full 50kHz to 2000MHz, the receiver is in a class of its own.

Deposit only £315.00 and 18 payments of £60.00. Total £1395.00 or with the h.f. board fitted, £343.00 and 18 payments of £64.00. Total £1495.00. Zero APR.



ICR1E

Still the very smallest pocket scanner available on the market today. Supplied with NiCads and charger, after 3 years, nobody has got anywhere near the compactness of the ICR1E.

Deposit only £44.00 and 12 payments of £29.95. Total £395.00. Zero APR.



PC. then make it's a day - install a M1200!!



Deposit only £49.95 and 12 payments of £29.50. Total £399.95. Zero APR.

MCL1200

A stand alone decoder built in this country that works as well as the MCL1200 from Momentum is got to be worth considering. Price is so low that the competition can't get near it and offer interest free, it's got to be worth considering! Amtor/Sitor/c.w. and RTTY are all standard.

Deposit with High Definition 9" green display, deposit only £48.00 and 12 payments of £29.25. Zero APR.

I've expanded the Lynch Mob even more and now have SIX phone lines - so get dialing. You've got Jennifer, Chris T, Brian, Tony, Chris P, Steve, Richard, Graham & even me to choose from!!

Dial 081 566 1120 NOW

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the
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YUPITERU

THE NEW MVT 7100

Set to be THE handheld scanner of 1993 this radio has to be heard to be believed! Now with SSB reception here are some of the many features:-

- ★ Covers 530KHz-1650MHz
- ★ Modes NFM/WFM/AM/LSB/USB
- ★ Memories 1,000 channels
- ★ Freq steps 0.05/0.1/1/5/6.25/9 12.5/20/25/50/100 KHz selectable
- ★ Scan Speed 30 Ch. per second
- The set is supplied with a full compliment of accessories **NOW IN STOCK!**



MVT 7000 HANDHELD

- ★ Receives 8 to 1300 MHz 100KHz-1300MHz (at reduced sensitivity)
- ★ 200 Memory channels
- ★ AM/FM/NFM
- ★ Rotary or keypad freq control
- ★ Large display with signal strength meter EACH SET IS SUPPLIED COMPLETE WITH:- Full set of high power NiCads, AC charger, DC power lead and carry strap **NOW IN STOCK!**



YUPITERU

Original Leatherette soft carrying cases for MVT-7100 or MVT-7000

£15.95 plus £1.25 p&p

State which model when ordering

MVT 8000 MOBILE/BASE

This new model is the mobile version of the popular MVT 7000 Handheld above.

- ★ Receives 8 to 1300MHz, 100KHz to 1300MHz (at reduced sensitivity)
- THIS RADIO IS ESPECIALLY SENSITIVE AT UHF FREQS. Set is supplied with mains power unit. **NOW IN STOCK!**



AIRBAND RADIOS VT-225 CIVIL/MILITARY AIRBAND

A powerful pocket scanner that leaves the competition standing. - A super sensitive set designed for optimum performance on the Civil/MilitaryAirbands.

- ★ Receives 108-142 MHz Civil Airband 222-391MHz Military Airband 149.5-160MHz Marine Band
- ★ 100 Memory channels
- ★ AM/FM on VHF
- ★ Priority channel function



VT-125 UK CIVIL AIRBAND RECEIVER

Using the same technology as the VT225, this set covers the full Civil Airband - hearing distant signals that are inaudible on some other scanners.

- ★ Covers 108-142MHz
- ★ 30 Direct entry memories
- ★ Search steps 25, 50, 100KHz SUPPLIED COMPLETE WITH NICADS AND UK CHARGER **£189**



FAIRMATE

HP2000

STILL ONE OF THE MOST POPULAR HANDHELD SCANNERS ON THE MARKET. Over the last year the HP2000 has outsold almost all other models.

- ★ Continuous coverage from 500KHz to 1300MHz
- ★ 1000 channels of memory
- ★ Keypad or rotary control
- ★ AM, FM and WIDE FM modes
- ★ Search steps from 5 to 995KHz

Supplied with full set of accessories/charger **£299.99**



NEVADA

MS1000 BASE/MOBILE SCANNER

MOBILE VERSION OF THE HP2000 HANDHELD BUT WITH SEVERAL ADDITIONS:-

- ★ Switchable audio squelch
- ★ Tape recorder output socket
- ★ Automatic - signal operated tape recorder switching
- ★ Metal case for improved EMC compatibility
- ★ Receives:- 500KHz - 600MHz, 805 - 1300MHz. Supplied with mains power supply **£299**



AOR SCANNERS

NOW IN STOCK

THE NEW AR1500 EX

ENHANCED MODEL FOR THE UK. With a new circuit board and many improvements this set is better than ever. Covers 500KHz to 1300MHz receiving NFM, WFM, AM, and SSB.

- Supplied with a large selection of accessories including:-
- ★ Charger
- ★ Soft case
- ★ Ear piece
- ★ Dry cell battery case
- ★ 5 mtr LW antenna

NOW IN STOCK £349



AR3000A

MULTIMODE SCANNER

- ★ Receives 100KHz - 2036MHz.
- Modes:- USB, LSB, CW, AM, FM, WFM **£899**



Introducing the new

YUPITERU MVT-3100

A low cost scanner built to the same high standards we expect from Yupiteru, covering Marine, PMR, UHF Military and 900MHz bands. ★ Receives 143-162MHz, 347-542MHz, 830-960MHz ★ 100 memory channels ★ Mode - FM

★ Frequency steps:- 10KHz-143-155MHz, 430-440MHz 12.5KHz-155-162MHz, 347-429.9MHz, 440-452MHz, 830-960MHz



BLACK JAGUAR BJ200 MKIV

A new and completely revamped version of this popular scanner. Now using surface mount technology performance is better than ever.

- ★ 50-88, 26-30, 115-178, 200-280, 360-520 MHz
- ★ Selectable AM/FM
- ★ 16 memories

IDEAL FOR: Civil/Military Airbands **£239**



NEW COMMTEL SCANNERS

We are pleased to introduce a new range of scanners under the Commtel brand. Although a new name to the UK, Commtel scanners are made by one of Japan's largest and most respected manufacturers. They have been building high quality products for the American and European markets for many years.

We have tried and tested the first samples and can thoroughly recommend these scanners. They are reliable and easy to use.



COMMTEL 102

A 3-band 10-channel scanner. ★ Frequency coverage: 66-88MHz, 138-174MHz, 380-512MHz **£99.95**

COMMTEL 203

Easy to programme, covering all the popular bands up to 960MHz. Its double conversion receiver provides excellent reception. ★ 200 channels ★ Frequency coverage: 68-88MHz, 118-174MHz, 380-512MHz, 806-960MHz

★ Scan delay ★ Lock out **£199.00**

COMMTEL 204

Top of the range with a triple conversion receiver. Selectable AM/FM. ★ 200 channels mem. ★ Frequency coverage: 68-88MHz, 118-174MHz, 220-512MHz, 806-999.99MHz

★ Selectable AM/FM ★ Scan delay ★ Search function **£249.95**

COMMTEL 205

A superb base/mobile scanner with easy-to-read front panel display/control button. ★ 400 channel mem. ★ Frequency coverage: 25-512MHz, 760-1300MHz ★ Direct access up to 207,002 frequencies ★ Modes - AM, NFM, WFM ★ Audio squelch ★ Scan delay ★ Plus many other features **£344.00**

SONY

As a Sony Shortwave Centre we stock the complete range of Sony Shortwave products - here is a selection of the popular models.

SW33

JUST RELEASED, this new model covers 13 bands

- ★ 76-108MHz
- ★ All major SW broadcast bands
- ★ World time clock, adjustable by city name
- ★ 17 memories

Supplied c/w Compact Antenna, Carrying Case, Short Wave Guide Book **£139.95**

SW77

The SW77 covers 150KHz to 30MHz plus 76-108MHz. With a rotary tuning dial, 125 scan memories, reception of AM, FM, USB, LSB, CW, tape record facility, this is a superb all rounder **£399.99**

SW1E

Pocket shortwave plus VHF radio supplied with headphones, case and shortwave guide. This model won't hurt your pocket! **£179.99**

SW7600

One of Sony's most popular VHF and Shortwave radios, 76-108MHz FM, 150KHz - 30MHz Shortwave receives AM, FM, SSB..... Well Rated! **£179.99**

SONY SW55

A new multiband radio from Sony with dual conversion receiver that gives outstanding results.

- ★ 150KHz-30MHz, 76-108MHz
- ★ All modes including SSB
- ★ 125 multi-function memories

Plus lots more facilities **£279.99**

AN1

An external active antenna with built-in pre-amp, covers 150KHz - 30MHz. Fully portable with easy to mount fixing brackets. **£58**

AN3

Active antenna for Aircraft and VHF reception, suitable for Sony Air 7 and others. **£58**

JAPANESE LOW LOSS COAX

Super low loss coax - essential for optimum performance with wideband UHF scanners and receivers. This cable is good for frequencies up to 3GHz.

- Model 5D (8.1mm) 75p per metre
- Model 8D (11.1mm) £1.79 per metre
- Model 10D (13.1mm) £2.75 per metre

We stock a range of PL259, BNC & 'N' type connectors for the above cable **£ CALL**

THIS MONTH'S BEST BUY NEW HARI SHORTWAVE RECEIVING ANTENNA

- * Professional Construction
- * 1-30MHz Freq. coverage
- * Worldwide reception
- * Fitted Balun for optimum performance
- * Suitable for all types of Shortwave receiver
- * 14 Metres long

We have often been asked for a general coverage Shortwave antenna that would allow good worldwide reception of both Broadcast and Amateur bands. This new high quality antenna manufactured in Germany, fits the bill. Beautifully constructed to professional standards, it gives full coverage of Shortwave bands from 1-30MHz. Constructed from high quality.

£59.95 £4.75 p&p

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USE YOUR CREDIT CARDS
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HUGE STOCKS - FAST DELIVERY - PERSONAL SERVICE

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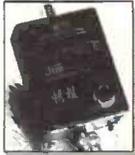
ACCESSORIES

WIDEBAND PRE-AMPLIFIERS

These low noise pre-amplifiers are a must for the scanner enthusiast and will improve reception on many brands of base/handheld radio.

SCANMASTER GW-2

A low noise GaAs FET pre-amp covering 1-1400MHz with variable gain [-3 to +20dB]. Requires PP3 battery.



£59.95

JIM M75

Similar to GW-2 above but with selectable band pass filter for improved performance and (25-2100MHz) freq coverage.



£79.95

JIM PSU101 MK IV

A combined desk stand and power supply/charger for handheld scanners. Suitable for most popular models. Special versions now available please call for more details.

£29.50

JIM PSU101 TA

A new 9V version of the popular desk stand and power supply, suitable for most Tandy and new Commel scanners. Please advise model when ordering.

£29.50

SCANNING ANTENNAS

SCANMASTER BASE (500 kHz - 1500MHz)

New high quality wide band receiving antenna uses fibre glass/stainless steel, with 4 small radials. 'N' type connector. Length 1.1 metres.

£39.95 + £4.75 P&P



SCANMASTER MOBILE (25-1000MHz)

A wideband high quality magnetic mount mobile antenna - wired ready to go with 12ft of low loss coax and BNC connector. Approx. 18" long.

£29.95 + £4.75 P&P

SCANMASTER DISCONE (25-1300MHz)

Stainless steel top of the range 'N' type connector. Complete with short mounting pole and clamps '8 elements with vertical whip' - complete with short mounting pole and clamps etc. Best value at..

£49.00 + £4.75 P&P

SCANMASTER DOUBLE DISCONE (100-1300MHz)

Our very latest antenna - gives outstanding performance. Nearly 2.5dB gain over a standard discone plus transmit on any frequency in its range! We've heard signals on this antenna that were inaudible on many others!



INTRODUCTORY PRICE..... £59.95

SCANMASTER ON GLASS

(25-1300MHz) ideal for mounting on the rear window - discreet but excellent reception. Supplied c/w 15 ft. cable plus BNC connector ready to go.

£29.95

DIAMOND D505 (500kHz - 1500MHz)

Mobile version of D707. £94.95 + £4.75 P&P

DIAMOND D707 (500kHz - 1500MHz)

A base ant. with 20dB pre-amp 3.5ft long fibreglass. Requires 12V DC supply.

£125.95 + £4.75 P&P

YAESU

NEW FRG-100 HF RECEIVER

Call us now and be one of the first to own this brand new general coverage receiver. To the first customers we will offer a UK Mains Adaptor free of charge plus a G5RV Antenna. Order Now.....

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ICOM

IC R7100

Covers 25 - 2000MHz. Includes 900 memory channels with all mode capability. Five different scan options and an automatic record facility, what more you ask? Full brochure available. Special offer.....

£1395

IC R72

Covers 100kHz to 30MHz on the HF Bands and offers all mode reception (FM), with the optional board) Easy to use and ideally suited to the new com. A full 99 memory channels with scan facility and a 10dB preamp fitted as standard.

£895

IC R1

Icom's most popular pocket-sized wideband scanner Frequency from 150kHz to 1300MHz with 100 programmable memories. AM, FM and WFM Modes. Sleep timer and clock facility. Optional NiCads, carry cases, and fast chargers are available.

£395

IC R100

Mobile or base extra wideband scanning receiver covering 500kHz to 1.8GHz with 100 memory channels and receives AM, FM & WFM Modes.

£629

VIDEOS

Three times Emmy Award winning producer, Richard Moseson NW2L, has pulled out all the stops to create a series of interesting, informative and entertaining VHS videos on Amateur Radio backed by CQ Magazine USA.

- ★ Getting Started in Ham Radio
 - ★ Getting Started in Packet Radio
 - ★ Getting Started in Amateur Satellites
 - ★ Getting Started in DX'ing
- All videos £19.95 each, plus £2.75 p&p. Running time approx. 50 mins.

BOOKS...

- VHF/UHF Scanner Frequency Guide New 160 Page guide covers 26MHz to 12GHz..... £9.95
- Shortwave Con Freq List 0-30MHz..... £9.99
- Marine Freq Guide Near the coast?..... £4.95
- VHF/UHF Airband Guide..... £6.95
- Scanners 2 by Peter Rouse..... £10.95
- Short Wave Communications..... £8.95
- Flight Routings Guide Book (1993 version)..... £5.95

JUST RELEASED

NEW THIRD EDITION UK SCANNING DIRECTORY

Now with spiral binder and even more frequencies! This book is the last word for scanner enthusiasts - order yours now.

Price: £16.95 plus £2.75 p&p

KENWOOD

R5000 RECEIVER

Based on the receive section of the TS440S HF Transceiver both in looks and design this model covers 100kHz to 30MHz all mode, 100 memories and facility for optional filtering. RECOMMENDED.....

£ CALL

MICRO-READER

ERA Microreader

Data Communications decoder - decodes RTTY, CW, AMTOR (A) & SITOR (B). 16 character LCD display needing only connection to receiver extension speaker socket. Shortly to become available will be the large 4-line LCD display with built-in parallel printer driver port. Variable in-built morse tutor. (Call and reserve your optional display now).....

£169.00

RECEIVERS

LOWE HF-225

Receiver (30kHz - 30MHz) Optional extras inc FM/AM detector, Ni-cads, Speaker, Case & Active Ant. Long standing favourite. Quality filtering included.....

£479.00

LOWE 225 EUROPA

A deluxe version that includes better filters, keypad and FM detector.....

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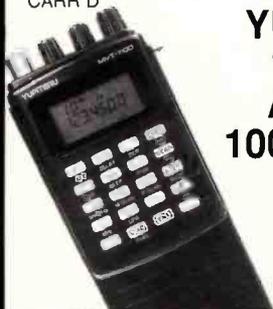
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"Before his time," Young Golly said.

"They don't make records like they used to," Kilocycle Ken said nostalgically.

"They are mostly my husbands, Caruso and classical orchestral. He did like music."

The radio was tuned to the National Network programme.

"I used to love the old morning serials," she said.

"Portia Faces Life, Doctor Paul, but all gone."

"Where is the bathroom?" Kilocycle Ken asked gently.

It had a copper geyser, a cracked pedestal basin, a tin bath, a canary in a cage, a Shanks lavatory pan with a plain wooden scrubbed toilet seat.

Kilocycle Ken gravely fondled the dangling porcelain handle on the old-fashioned chain of the overhead cistern. "Antique, probably worth a bit of money." He tugged the handle.

The plumbing clanked and roared and hissed. In the sitting room the old wireless almost leapt off the table with the vibration from the old-electro-magnetic speaker.

Real Man's Job

"Dear, oh dear," Kilocycle Ken said. "You do have a problem, but I think we can fix it for you. Have you got a step ladder?"

"Only got kitchen steps."

"High enough. I'll see if I can find the pipes causing the trouble, tie them together so they don't rattle, solve your problem."

He got a pair of khaki combination overalls from the car and a small transistor radio.

The man-hole for the ceiling space below the roof was in the bathroom. Kilocycle Ken balanced on top of the steps to reach the access.

"Why don't you send the boy up?" she asked.

"This is a real man's job," Kilocycle Ken said gravely.

Young Golly yawned.

"You don't see tradesmen like you used to," the old woman said.

"We are not tradesmen," Young Golly said stiffly. "We are professional radio interference investigators."

"Have you got a torch?" Kilocycle Ken asked, unprofessionally.

She had a small plastic torch which gave a weak glimmer.

He hoisted himself up. "Any mice?" he called.

"There are no rodents in this house," she snapped.

"Any borer in the house?" Young Golly asked.

"Why?"

"All wooden houses have borer."

"Not this one, my husband had it treated."

Kilocycle Ken crawled across the rafters. He sometimes wondered why he crawled around ceilings. Was that what life was about?

He found the pipes. The torch died. He rattled the water pipe and the metal electrical conduit pipes, which were touching, listened on the transistor radio. The noise was loud.

He had a small coil of soft copper wire in the overalls pocket.

He bound the two pipes together, very tightly, by feel.

"Flush the toilet," he called.

The woman hesitated. Young Golly did the deed. The toilet roared and there was no reaction on the wireless.

Short Wave Magazine, October 1993

The old woman almost smiled.

Kilocycle Ken didn't really know how it happened. He was trying to go backwards towards the man-hole when he got his leg caught in the joist, and his foot went through the ceiling.

He could see daylight.

Young Golly sneezed.

A Procedure

The old woman let out a roar, surprisingly loud for such a person. "Come down out of there, young man. Oh what have you done!"

She sat on the toilet, moaned, "Oh my ceiling."

"Easily repaired," Young Golly said. "Bit of plaster stuff, comes in a packet, mix it with water."

It was a few minutes before Kilocycle Ken reappeared. Then he was wearing a bowler hat.

"Charlie Chaplin?" Young Golly asked.

"My husband used to wear that! I wondered what had happened to it."

"One finds many strange things in the ceilings,"

Kilocycle Ken said.

"My ceiling?"

"Such accidents are not unknown. There is a procedure. Somebody will call to inspect the damage and it will be made good. Just as good as new. Better than new."

"I should have endured the radio interference," she moaned.

Kilocycle Ken said, "Can't agree with that. Your programmes from now on will be received crystal clear."

She sighed. "Thank you - anyway."

"She must be very lonely," Kilocycle Ken said, outside. "She should take in boarders."

"Nobody boards today," Young Golly said scathingly.

"But she should turn the house into flats. You've already started her on the road to renovations."



I suppose steam radio had gone out of fashion when you were being trained!

A DIFFERENTIAL MATCHING AMPLIFIER FOR LOOP ANTENNAS

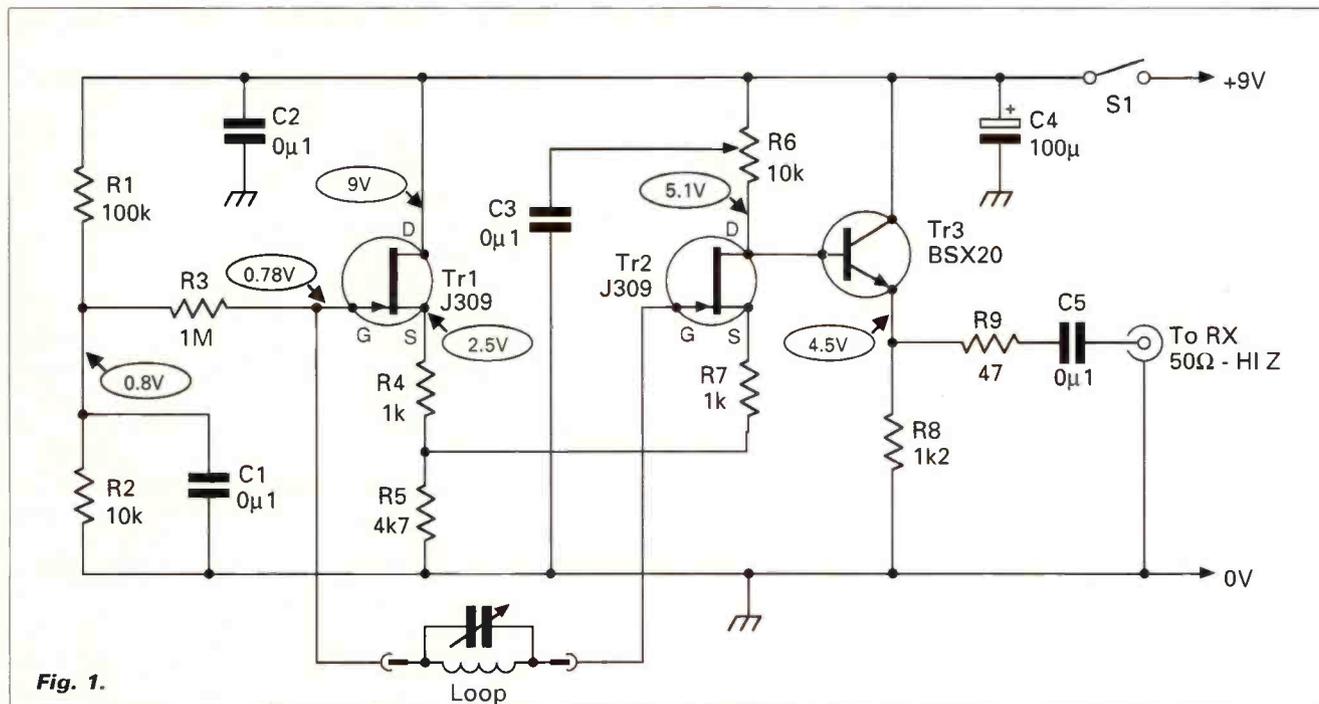


Fig. 1.

David Porter G4QYX, describes an amplifier to improve the sensitivity and selectivity of a loop antenna.

With both night-time and day-time DXing becoming popular, night-time for overseas stations and day-time DX for the reception of UK and Eire 'local' radio stations, there is an incentive to construct a loop antenna. It might be one of the many 'standards', such as a 500mm or 1m diameter type, or one to your own design.

It is generally acknowledged that the signal pickup of the 500mm and smaller loops is considerably reduced compared to the signal obtained from the 1m loop. Having said that, verbal harassment to a 50cm loop user is also considerably reduced. After all they're sometimes not appreciated in quite the same vein by other members of the family!

In order to increase the signal from the 500mm loop, making it in effect, electrically equivalent to a 1m loop, I've added a differential

amplifier (d.m.a.). This latest design differs from earlier versions, in that the output is accurately matched to 50Ω to suit modern communication and portable receivers. Provision is made for a self contained preset gain control to be incorporated.

Adjustment of the gain control ensures that overloading, and possible cross-modulation effects inherent in modern receivers, may be neatly avoided.

Circuit Explained

Referring to the circuit diagram, shown in Fig. 1, you will see that the loop antenna is connected to the amplifier directly, without matching or secondary loops being needed. The two field-effect transistors (f.e.t.s) Tr1 and Tr2, are used in a long tailed pair

configuration. The d.c. bias to these f.e.t.s, determined by potential divider R1 and R2, is fed directly, via a 1MΩ resistor, to the gate of Tr1 (a J309 type), and via the actual loop winding itself to the gate of Tr2 (another J309 type).

The input impedance of the amplifier is greater than 1MΩ, and so ensures negligible loading to the tuned circuit. This keeps the loop antenna Q high, and so gives better selectivity and excellent efficiency.

Using high tolerance (2%) balancing resistors, R4 and R7 (1kΩ each), and the common resistor R5 (4.7kΩ), ensures an accurate current balance in Tr1 and Tr2. This balancing of the currents gives good differential amplification.

The d.c. bias on the gates of the f.e.t.s is arranged so that, the voltage at the drain of Tr2 is about 0.6V above

Antenna Special

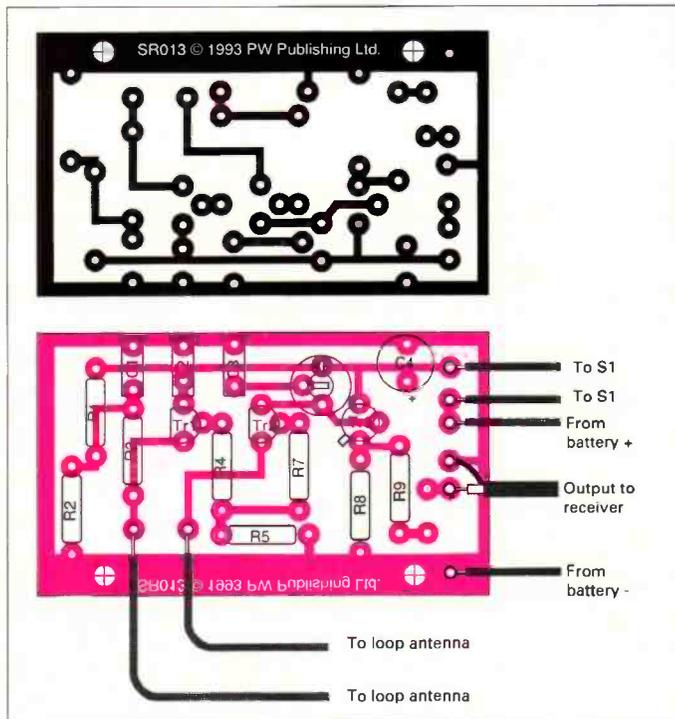


Fig. 2: Full size printed circuit board layout for the differential matching amplifier.

both 50Ω matching and d.c. block respectively.

The 9V supply, from a PP3 or 6F22 battery, is decoupled, at r.f. by C2, a 0.1μF ceramic type and at lower frequencies by C4, an electrolytic capacitor. Overall current consumption is 5-7mA and an alkaline battery is recommended. Do not be tempted to use a mains power supply as noise from the mains can find its way on to the output amplifier and spoil otherwise good reception.

Construction

The amplifier may be constructed on the printed circuit board as shown in Fig. 2. Or it may be constructed on 0.1in matrix board. Miniature components are used, throughout, 30V disc ceramic capacitors and metal film 0.6W resistors are recommended. Suppliers of components and equivalents are given in the component list.

After fitting the the components to the board and soldering, the board is carefully checked for solder bridges etc., and is secured in the box by 2x2.5mm nuts and bolts.

In the prototype, an abs plastics box, measuring 150x80x50mm, was used, with the on/off switch (S1) placed in the lid. The connections to the loop antenna are by two leads - crocodile clips on one end and 2mm plugs on the other. Two 2mm sockets are mounted in the ABS box. The layout will depend on the box you choose.

The output socket could be a Belling Lee TV 'surface' type, and then URM76 or URM202 coaxial cable can be used with a standard TV antenna plug. The connections to the receiver, will be to suit the plug/socket on the receiver itself.

The coaxial output lead may be up to 10m long without detriment to the signal, but 2-3m is sufficient to allow the loop orientation, and tuning to be within easy reach whilst sitting at the receiver.

Voltage Readings

Voltage reading should be taken using an high-impedance multimeter. I find a digital meter easiest, and the low loading of the multimeter doesn't change the readings much. If you are using an Avo or similar low(ish) impedance (20kΩ/V) meter, the

the half supply voltage, (5.1V). With the base to emitter volt drop, a nominal 0.6V in Tr3, its emitter quiescent output voltage is at half supply voltage (4.5V). When set at this point, the transistor acts in a wide range linear fashion, and reproduces faithfully the signals input to its base.

It is also the action of Tr3, an emitter follower, that enables 50Ω loads to be driven.

The control of overall gain is by means of the preset resistor R6. This control shunts 'excess' signal away, via C3 on the slider of the gain control. The combination of R9 and C5 act as

Component List

Resistors

Metal film 0.5W 2%

47Ω	1	R9
1kΩ	2	R4,7
1.2kΩ	1	R8
4.7kΩ	1	R5
10K	1	R2
100K	1	R1
1MΩ	1	R3

Miniature cermet preset

10kΩ	1	R6 (RS 187-539 or Maplin WR42V)
------	---	---------------------------------

Capacitors

Miniature disc ceramic

0.1μF	4	C1, 2, 3, 5 (Maplin YR75S)
-------	---	----------------------------

Miniature electrolytic 16V working

100μF	1	C4
-------	---	----

Semiconductors

J309	2	Tr1, 2 (RS 295-602) (Maplin QH59P)
BSX20	1	Tr3 (RS 296-172) 2N2369 is also suitable

Miscellaneous

Small s.p.s.t. miniature toggle switch, a suitable plastics material (ABS) box (150x80x50mm), a suitable connector pair such as Belling Lee coaxial TV connector and the surface socket, 2mm plugs, and socket, either a p.c.b. or a piece of Veroboard, nuts, bolts, wire, crocodile clip, PP3 battery and connector.

continued on page 29

THE FERRI-TEN EXPERIMENT

The Ferri-Ten is a small, external ferrite loop, receive antenna for the 28MHz band. It is one of a series of ongoing experiments, conducted by Richard Q Marris over the years looking into the RX and TX performance of various ferrite rod materials, at v.h.f. and u.h.f.

The circuit (Fig. 1) is as simple as possible. The construction is physically simple, and clearcut, but must be carried out with extreme care to achieve good results. The cost is minimal, in fact, apart from the ferrite rod, the whole thing can be made up from bits and pieces from the junk box or surplus market.

The Ferri-Ten covers up to approximately 45MHz. Its peak performance is targeted in the Ten Metre band (28-30MHz), although it also covers 21MHz, where the performance is falling off, due to the adverse LC ratio for that band.

The ferrite rod used is an Amidon type R61-050-400 (100mm long x 12mm diameter). This is made of a nickel-zinc material with a permeability of 125, and said to be useable up to 10MHz for ferrite rod antennas. However, it has been found that this can be 'stretched' up to the lower v.h.f. frequencies with careful design and construction of the windings.

The antenna consists of an inductance, L1, resonated with a 60pF variable capacitor, C1. As the 28MHz band resonates with the plates of C1 approximately 20% enmeshed, it is obvious that the value of C1 could be reduced. Also on the rod is a coupling coil L2, which is connected to the RX, via a series coupling capacitor, and a short length of RG58 feedline. With most RXs a pre-amplifier will be required, and it is suggested that this should be wide-band with an adjustable gain up to about 20dB.

The chassis was made from a piece of 3mm thick Perspex measuring 115 x 75mm. Onto this is mounted the rod and coil assembly, using a suitable Terry clip at either end, the variable capacitor (C1) fitted with an insulated extension shaft, a small tag strip

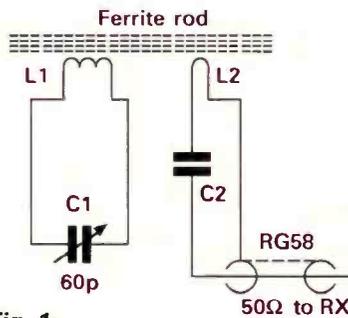


Fig. 1.

and a length of RG58 feedline held with a cable clip. All screws are countersunk, underneath the 3mm thick plastics chassis. This layout can be seen on Fig. 1, and the photographs. A further refinement would be a slow motion drive on C1.

Coil L1 consists of three full turns, of 16 AWG Thermoleze insulated wire, located at the centre of the rod and wound so that there is no physical contact between the wire and the ferrite rod. This is achieved by winding four closewound turns of wire, around the rod, and letting it unwind to $3\frac{1}{2}$ turns, the result being a coil with a 1.5mm air gap between wire and ferrite rod. The ends of the wire are carefully bent to three turns (opened to about 2.5mm apart) for soldering to C1, with short leads. With careful mounting of the rod, and C1, the air gap between the coil and rod can be achieved. The wire ends are approximately 10mm long. One end is soldered direct to the metal body of C1, the other to the stator solder tag, giving a very rigid coil assembly. Attempts to use a coil former resulted in a lower frequency range and a drop in sensitivity.

The coupling coil, L2, is one turn of pvc covered, stranded 7/0.2mm wire, wound onto the rod, with the ends secured by a short piece of heat shrink sleeving. In series with L2 is a 100pF silver mica coupling capacitor. The position of L2 is critical. On the prototype it is 16mm from the outer turn of L1. Individual layouts may differ, and L2 positioning

should be adjusted, as described later.

The whole assembly should be rigid. On the first mock-up the 1.5mm thick chassis used was found to be slightly flexible, and altered the tuning. For this reason the chassis should be a minimum of 3mm thick plastics. It is suggested that a spot of epoxy adhesive should be applied, where necessary, to ensure component rigidity, but not onto L1!

Using the antenna for the first time produced quite adequate signals, on a high gain RX, without a pre-amplifier. To adjust L2 it is necessary to tune to a captive signal source, or a 28MHz beacon, and move the single turn of wire, slightly inwards and out for optimum coupling. Overcoupling produces a wideband, double hump effect. Undercoupling produces a peak, with a loss of signal strength. The optimum coupling point can be found by moving L1 outwards, minimally, from the point where overcoupling can first be detected. Once settled, L2 should be held in position with a spot of hot candlewax.

The coaxial RG58 feedline used has an impedance of 50Ω. Should any other impedance type be used, then it is suggested that alternative values of C2 be tried and L2 coupling adjusted as required. Other forms of coupling have been tried, but the described method has been found to be the best for this application.

It has been found that this antenna, being directional, can be rotated to reduce QRM, QRN and domestic electrically generated noises.

You Will Need

Capacitors

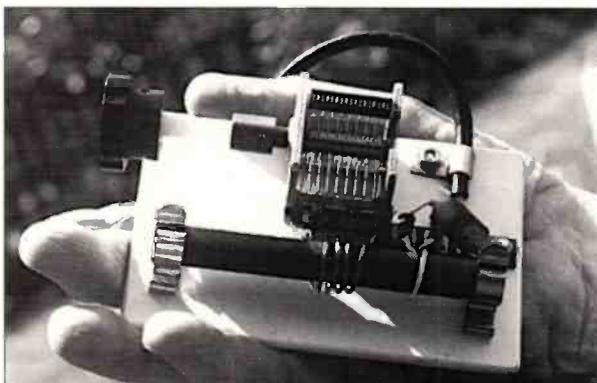
Air-spaced variable
C1 1 60pF (see text)

Silver mica
100pF 1 C2

Miscellaneous

Ferrite rod 100mm long x 12mm diameter, Amidon Type R61-050-400; Thermoleze insulated wire, 16AWG, (Amidon); 115 x 75 x 3mm (minimum) Perspex, or other plastics, chassis; Terry Clips to hold ferrite rod (2); RG58 coaxial feedline; Nuts, bolts, cable clip etc.

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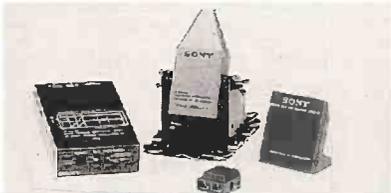
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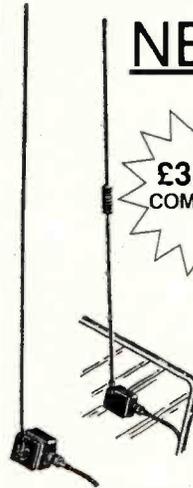


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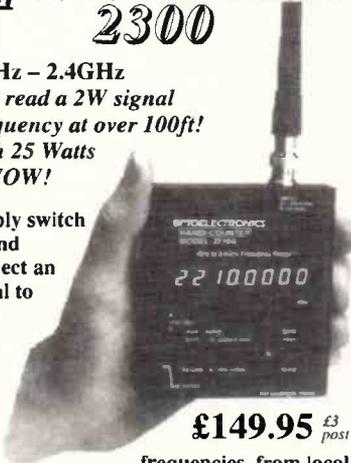
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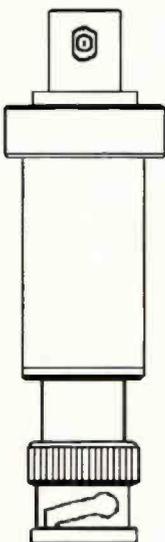
ACEPAC3A For those with a larger budget, ACEPAC3A is also available for the AR3000A & AR3000 receivers. Installation is recommended on a hard drive but can be run from 3.5 or 5.25 inch floppies depending on machine compatibility. Features are similar to AORSC but ACEPAC3A has a more versatile spectrum graph type display. A descriptive leaflet is available to request. **Suggested Retail Price £139.00 plus £2.00 P&P**

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Antenna Special

A Differential Matching Amplifier for Loop Antennas

continued from page 23

reading may be lower than you expect, especially the voltage at the junction of R1/R2.

Important measurements are the voltages at the sources of the f.e.t.s, they should match to within $\pm 0.2V$. If on test it is found that these voltages are not similar, it may be necessary to swap over the f.e.t.s, or try a third f.e.t. to find a balanced pair.

Operation

Mount the boxed amplifier on a suitable part of the frame of the loop antenna. Try to locate the amplifier as near as possible to the tuning capacitor, keeping the leads to less

than 300mm. Connect the output of the d.m.a. to the receiver using coaxial cable and ensure that the preset potentiometer is fully clockwise.

Switch on the d.m.a. and tune the loop to a strongly received signal. Adjust the preset resistor R6, until overloading does not occur in the receiver on this strong station.

I'm sure you will find the combination of a loop antenna and this amplifier to be useful. The amplifier functions efficiently and offers useful gain up to 10-12MHz.

The project was originally designed for use with a large wooden framed loop antenna but will work just as well with a ferrite rod antenna. The original winding, through the d.m.a., produced excellent results on feeding it to the receiver.

I'm indebted to Trevor Brook G3WBQ, of Surrey Electronics for his

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help with the original circuit, and to testers, Derek Bell of Preston, and Barry Davies of Warrington, for trying the prototypes.

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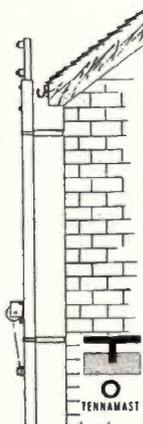
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A SIMPLE RECEIVING LOOP ANTENNA

Several years ago Len Buck G0DLR bought a Yaesu FRG7700 receiver. This was a useful addition to the shack, except after dark, when hordes of medium wave signals appeared to swamp the higher h.f. bands with whistles and other intermodulation products. The simple loop antenna described in this article was built to overcome these problems.

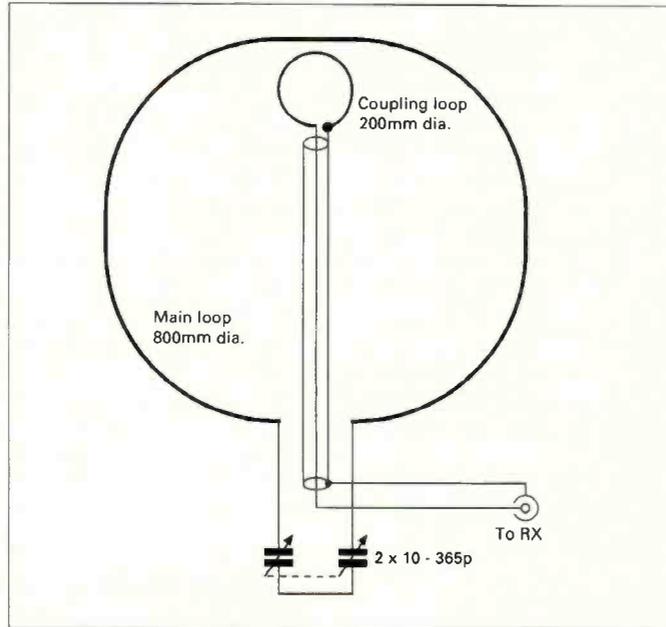


Fig.1: Circuit diagram of the simple receiving loop antenna.

The recent upsurge of interest in small loop antennas led me to think that the inherent narrow bandwidth of this design would be the solution to the i.m.d. problem, and so a simple and rather 'Heath Robinson' loop was made up using a short length of H100 coaxial cable. This provided a loop about one metre in diameter, supported by a cruciform wooden structure and tuned by a 3-gang capacitor liberated from a decrepit broadcast radio. Coupling was by a 200mm diameter loop of the same cable. The results on the 14MHz band were impressive, with stations that were totally lost under a welter of i.m.d. noise when switched to a 11m long wire, being received in the clear when using the loop.

Aesthetically Pleasing

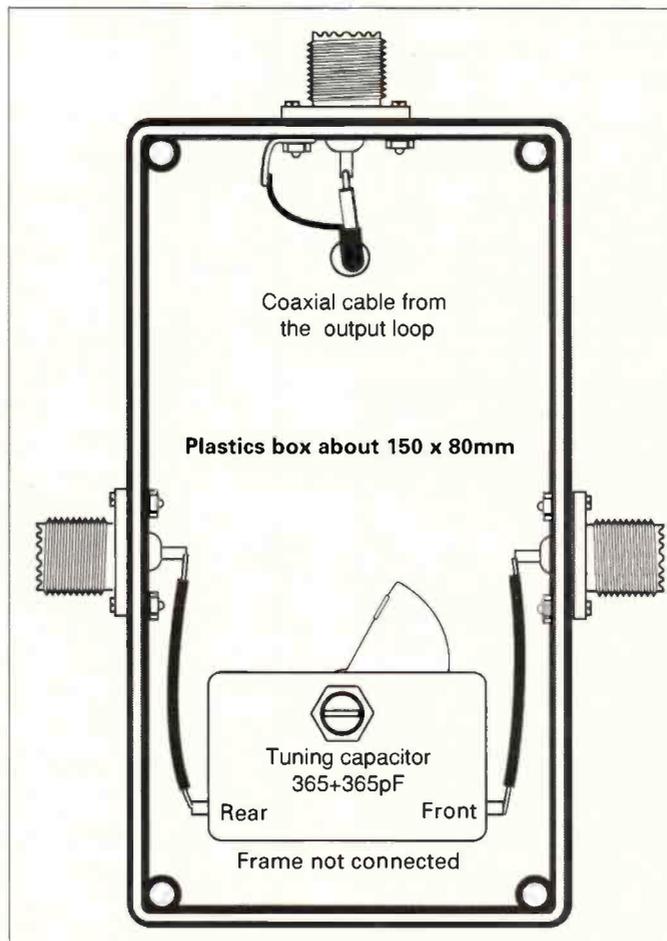
Spurred on by these encouraging results a start was made on a more aesthetically pleasing version that would sit on top of the receiver and grace the shack. It was decided

that the material for the main loop would be 10mm diameter copper tubing, partly because this would be self-supporting and partly due to the fact that there was a bent and battered piece, several metres long, buried in rubbish at the bottom of the garden!

This was disinterred and straightened and provided a good useable length of 2.4 metres that was duly bent into a loop approximately 800mm in diameter. It was found that the ends of the tube could, with a little filling, be fitted into a standard PL259 plug body. When soldered into place these provide a neat way of terminating the ends. The centre pins of the plugs are shorted out to the bodies with suitable wire links.

Some plastics boxes that had seen previous service were found in the junk box and it was decided to use two of these measuring 150 x 80 x 45mm deep. One is inverted and used to mount the loop and house the capacitor and the other as the base. A pair of SO 239 sockets are mounted on opposite sides to accept the ends of the loop, and a third socket is situated on one end to act as the output connection.

The tuning capacitor in my prototype is fitted with its spindle emerging from the bottom panel and one section is connected to each of the loop sockets, providing, in effect, a split stator component. This helps prevent hand capacity effects when tuning the loop. The capacitor that I used was too large to allow the use of the original box lid, and therefore the second box was needed to



continued on page 33 ►

Fig.2: Layout of the box. The box must be a plastics type to ensure that the tuning capacitor and sockets are isolated.

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**From
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**From
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Journal**

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A personal recommendation

When asked to recommend the best book for the short wave listener, I unhesitatingly say "Passport to World Band Radio". This book is absolutely the best accessory anyone can have. Every section carries the unmistakable authority of the world's best shortwave companion, and there are almost 400 pages of information including 50 pages of receiver reviews by Larry Magne, probably the best informed reviewer in the world. This outstanding publication costs a mere £12.95 (+£1.55 p&p) and is available from stock at all times. If you own a short wave radio, you simply must have "Passport" by your side.

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Antenna Special

complete the enclosure. However, various two section capacitors are available which may be compact enough to allow the use of a single box. The value should be 10 - 365pF per section - with the loop described this will provide a tuning range from about 8 - 30MHz.

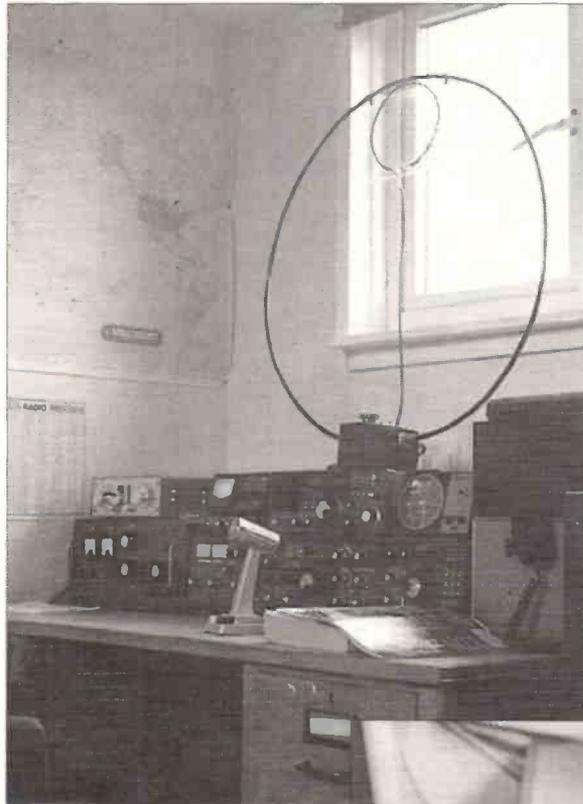
Coupling Loop

With the loop connected to the sockets the next step is to mount the coupling loop. This is made of RG58 coaxial cable formed into a single turn, 200mm diameter, with the inner and outer connected together at each end. This is attached to a piece of plastics sheet by small wire ties, with suitable terminations being provided by 2BA nuts and bolts. The assembly is suspended at the top of the main loop using a couple of small plastics cable clips bolted to the corners of the plastic sheet. A length of RG58 coaxial cable, connected to the coupling loop, is taken down to the output socket through a small hole in the capacitor housing.

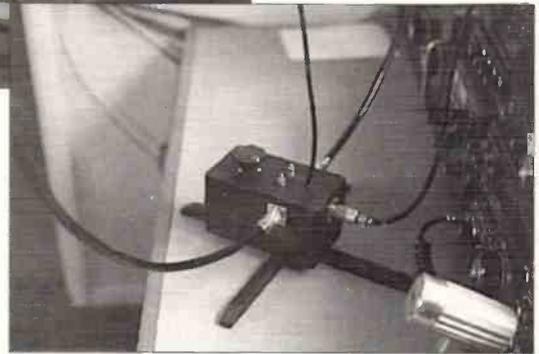
The antenna is now complete and it only remains to fit the base. In my case, this was of course the second box, which was stuck in place using Araldite. However, whether one or two boxes are used, the loop will be found to be top heavy and eager to fall over at the least provocation. A simple wooden base is the simplest cure, as shown in the photograph.

Sharp Tuning

The loop should be connected directly to the receiver and not through a matching unit. The tuning is sharp, but not so sharp as to create difficulties. My own



loop gives coverage from 8 - 35MHz and despite the capacitor having too low a voltage rating for normal h.f. transmitting use, it has proved to be quite satisfactory when used with low power. An s.w.r. of better than 1.3:1 is achieved with careful adjustment. However, because of the high Q factor, this only holds over a narrow bandwidth without retuning. The radiation pattern is along the planes of the loop, so this is a



directional antenna, though it is not discernable when used for h.f. reception.

The Simple Loop Antenna can be set on top of the receiver. The extra terminals on the top of the plastics box are authors additions.



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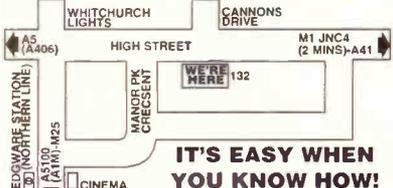
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IMPROVEMENTS TO THE HEXAGONAL LOOP ANTENNA

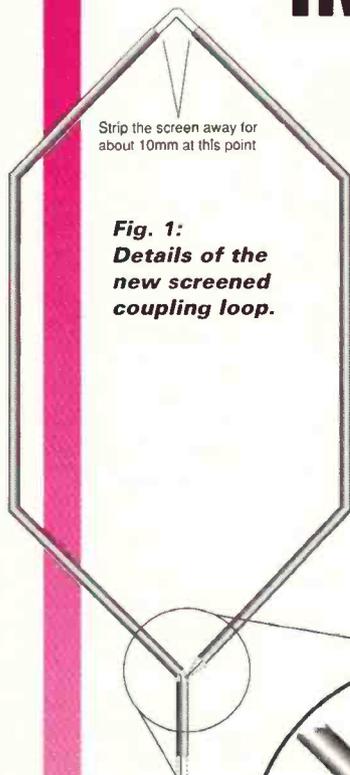


Fig. 1:
Details of the new screened coupling loop.

John Wells offers some practical modifications to the John Ratcliffe designed Hexagonal Loop Antenna to improve its performance.

The Hexagonal Loop Antenna that I built to John Ratcliffe's design, described in *SWM* April 1989, did not seem to work very well. The null was disappointing, being only about one 'S' meter point less than the maximum! On the plus side, the loop tuned sharply, too sharp for comfort with direct drive to the tuning capacitor even with a 75mm knob, slowing the Q was good, and it covered the correct frequency range.

I came to the conclusion that the antenna was acting as much as a vertical antenna as it was a loop. It needed screening, but as this is not very practical with this design I choose an easier method.

Faraday Loop

The first step is to screen the coupling loop, replacing the open wire with a 'Faraday Loop'. First, remove the inner coupling loop completely, together with its coaxial cable. Measure 40mm from the

innermost turn of the tuned winding and make a pencil mark on each of the six support points. The pencil marks are the position of the new loop to be used for coupling. Carefully measure the required circumference, mine was 2160mm, add the required length for a lead-in cable, arriving at a total length for the coaxial cable needed for the new element of about 4 metres.

The coaxial cable selected should be of a type with a well filled outer braid - I used UR43. The type described as 'Low-Loss' TV cable is not necessary. In fact it is undesirable, as the outer braid is often not well filled in these cables.

At one end of the cable remove both the outer and inner insulation for about 60mm, 'tailing' the braid in the process. You should have about 50mm of the inner conductor protruding.

Measure 2160mm - the circumference of your loop - from the end of the inner insulation and remove 10mm of the outer insulation, 5mm each side of your mark. Be very careful not to nick the braid while doing this. Bend the cable round into a loop and wrap the end of the inner conductor, together with the braid 'tail' around the middle of the exposed braid. Solder both in place - as quickly as possible to avoid melting the inner insulator!

Now measure halfway round the loop and mark. Remove the outer insulation and the braid as well this time, for about 5mm each side of the mark, leaving a 10mm gap in the braid. The drawing makes this clear, I hope! Make absolutely sure that there are no braid 'whiskers' straying into the gap!

Now install the new loop inside the original tuned winding, over the pencil marks, fastening it to the frame with Nylon P-clips and 12mm No. 6 screws. You may find it easier to tape the loop in place temporarily to ensure a good tight fit with the clips once installed. Keep the loop well stretched to ensure straight sides evenly spaced from the winding. Terminate the far end of the coaxial cable to suit your receiver.

Tuned Winding

Since the tuned winding can't easily be screened, it must be balanced. Carry out the following experiments. Connect the

loop to your receiver and tune in a fairly strong local radio station. It should be fairly near to ensure ground-wave reception with no fading. Don't expect any marvellous nulls yet! However, the loop should work with about the same signal strength as the original design, when the loop is tuned. Now, using about 150mm of wire with a croc-clip on each end, connect one side of the tuning capacitor to the earth junction point on the braid of the coaxial cable pick up loop. You will need to reduce the setting of the tuning capacitor to peak the signal. Now remove the croc-clip and re-connect to the other side of the tuning capacitor. You will probably now need to re-tune again. Note the difference between the two settings.

Now un-solder the tuned winding ends from the tuning capacitor, reverse them and re-solder. Repeat the croc-clip experiment.

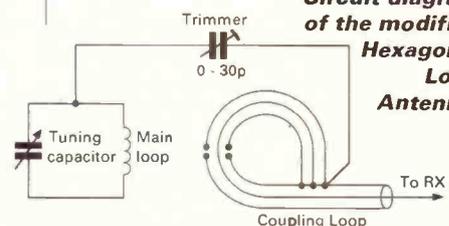
Connect the tuned loop wire whichever way round gave the least difference between the two croc-clip pairs of settings. This is the right way round for minimum imbalance in the stray capacity of the loop.

Now take a small capacitor, say about 20-30pF. Solder one end to the braid junction point. Now, with the croc-lead, connect the other side of the trimmer to the end of the tuned loop - the outside turn - at its junction with the tuning capacitor. Now try the antenna for a null. Adjust the trimmer for the best null, continually retuning the loop and rotating it. The final setting of the trimmer is very critical - probably to less than 1pF - but you will now get nulls down to noise level even on the strongest signals! If it appears that the trimmer needs to go below minimum, reconnect the croc-lead to the other side of the capacitor used for tuning.

Finally, replace the croc-lead with wire and critically re-balance the trimmer. You will find that the same trimmer setting will serve over the whole band, but its setting will be more critical at the h.f. end, so use that end for the final 'tweak'.

Good Hunting!

Fig. 2:
Circuit diagram of the modified Hexagonal Loop Antenna.



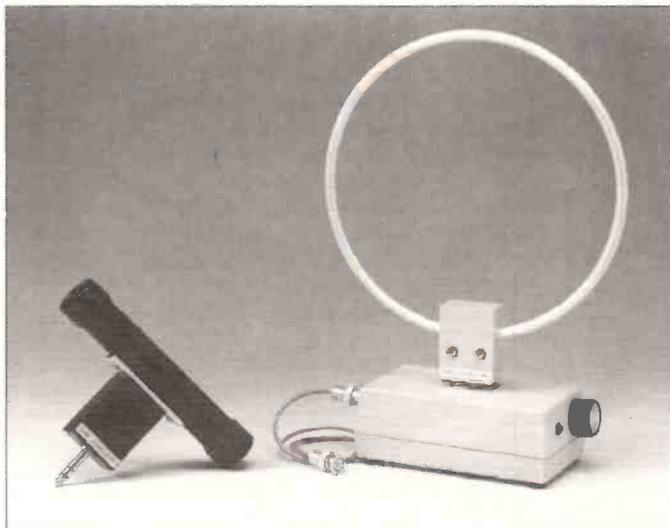
AOR LA320 ACTIVE ANTENNA REVIEWED

Whilst receivers and power supplies have been getting ever smaller, the antenna problems facing the listener on the move remain. Mike Richards has been looking at the AOR LA320 active antenna system.

Even the best receivers are hopeless without an effective antenna. The AOR LA320, reviewed here, is designed to overcome many of the problems. As you can see from the photo, the LA320 uses the loop antenna system that has proved so popular with broadcast enthusiasts. One of the main advantages of this system is its directional properties, giving the operator the facility to null-out some interfering signals.

Getting Started

The LA320 arrived very well packaged with all the necessary bits and pieces required to get on the air quickly. There was even a 9V PP-3 size battery and a BNC - BNC lead for connection to the receiver. It's worth remembering that you will probably need an adaptor to convert between the BNC and the connector used on your receiver. Despite the fact that few receivers feature BNC connectors, there are probably many adaptors available for this series of plug, so it's a good choice. In standard form, the LA320 covers 1.6 to 15MHz using two plug-in antennas. The higher frequency antenna is enclosed in a 215mm diameter aluminium loop and covers 5 to 15MHz. For coverage of the frequencies above 15MHz, AOR recommend using a simple whip antenna. Coverage from 1.6 to 5MHz utilise an encapsulated bar antenna. For those with an interest in the lower frequencies, there are two optional bar antennas available covering 0.2 to 0.54MHz and 0.54 to 1.6MHz respectively. Changing between the various antenna options is easy thanks to the use of a standard 6.3mm stereo jack to make the connection. Not only does this give a simple and strong mounting



calibrated, you just set it for maximum signal strength. Although the tuning is very sharp, the sensitivity of the control is just about right. Once a station has been tuned-in you need to turn the antenna for best signal strength. Alternatively, you can use the directional properties of the antenna to minimise interference.

On The Air

So what is it like to use? To give the system a realistic test I used it with the excellent Lowe HF-150 receiver. This powerful little receiver doubles as a very good portable running off of eight internal Ni-cads. The LA320 antenna is connected to the

standard 50Ω antenna socket with the sensitivity set to normal. The sensitivity of this combination proved to be very good indeed. It is equally at home with utility signals as it is with broadcast stations. The directional properties of the bar antennas are particularly sharp and great for cutting out many of the annoying heterodynes that often spoil short wave reception. The 5-15MHz loop did show directional reception, but nowhere near as distinct as with the bar antennas. The only drawback with active loop systems such as this is that of local interference. If you attempt to use the system next to a computer or TV you will find most signals are swamped by interference. However, for its intended use the system is very good.

Summary

The AOR LA320 performed extremely well throughout the review. The sensitivity is excellent and likely to satisfy the needs of all travellers. The only disadvantage is the number of antenna units required to give full coverage. However, if your interest is limited to the short wave bands you can manage with the two standard units and a simple whip. The AOR LA320 costs £119.00 inclusive of v.a.t. while the 320L (0.2-0.54MHz) and 320M (0.54-1.6MHz) optional antennas are priced at £29.90 each. Carriage is extra on all these prices. The LA320 can be obtained from **AOR (UK) Ltd, Room 2, Adam Bede High Tech Centre, Derby Road, Wirksworth, Derbys DE4 4BG.**

Product Details

Supplied:

LA320	Base Unit
320S	Element 1.6-5.0MHz
320H	Element 5.0-15.0MHz
BNC - BNC	Coaxial patch lead
Battery	006P 9V dry battery

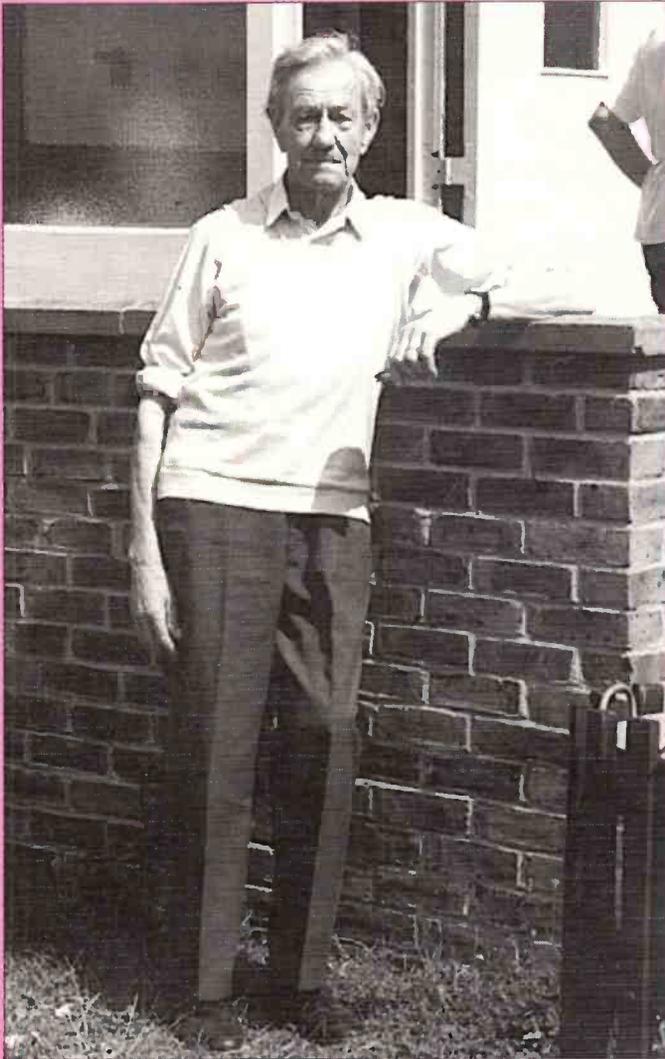
Options:

320L	Element 0.2-0.54MHz
320M	Element 0.54-1.6MHz

method, but it enables the antenna to be rotated - essential with directional antennas.

Operation

With the battery fitted and the appropriate antenna plugged-in, operation could hardly have been easier. The only control is the combined rotary power and tuning knob mounted on the front panel of the base unit. The tuning system used a pair of voltage controlled Varicap diodes to adjust the loop frequency. The requirement to tune the antenna can be particularly helpful when the system is used with cheaper receivers. These often have poor front end selectivity and can suffer badly from strong local signals. The use of a tuned antenna system, such as the LA320, can often help to alleviate the problem. Getting back to the operation of the LA320, the tuning control proved to be extremely easy to use throughout the frequency range. The knob is not



The Man from Marconi

Joan Ham was delighted when Ted Owen visited the Chalk Pits Museum in person and she was able to take time by the forelock and sit him down in the new library for a chat about his interesting past.

The Wireless and Communications library at The Chalk Pits Museum recently received a valued addition to its Marconi archive, a fine photograph of the 5SW transmitter. This was at Chelmsford and was the first official Empire Broadcasting Station. The kind donor was Ted Owen who spent 31 years of his working life with The Marconi Company installing or commissioning communications and broadcasting equipment.

Ted's life in the world of wireless began in 1922 when he became 20W, having learnt his Morse from a Royal Flying Corps Officer in 1918. At this stage, he concentrated on reception and clearly remembers hearing his first signal in June 1922. This, rather prophetically, was the opening of the Marconi War Memorial at Marconi House. Ted describes the Buglers sounding the *Last Post* coming from his receiver. Another very clear memory of

those days was of hearing the original tests between Poldu and Marconi's floating laboratory, the yacht *Elettra*. This was a long series of calls, "Hallo *Elettra*, Poldu calling, Hallo *Elettra*, Poldu calling".

By 1923 he had notched up his first American broadcast station, WMAF calling from the Round Hills Radio Corp. Soon after this, Ted started transmitting and achieved the first two-way 56MHz contact with Stephen Cutler, G20L. The next memory was of logging the flight of the *Southern Cross* by Kingsford Smith in 1930. The expedition had been well advertised among the wireless fraternity because their reports were sought, and Ted remembered the signal breaking up when the trailing antenna of the aeroplane touched the waves! The other recollection of that year was of receiving a television picture across the Atlantic Ocean. It was transmitted by the Alexanderson system and the

sepia picture, illuminated by a neon tube, was the size of a postage stamp. Ted reckons that the mechanical scanning in use made it almost impossible to resolve, but they saw part of the callsign, WX... and 'a man in a JR hat' for just a few seconds. This was achieved at Marconi's station at Broomfield, near Chelmsford, in the Research Department.

At this stage I asked Ted about propagation conditions that had brought about this prototype DXTV, and although this was not immediately recalled, he did say that in 1937-8 he could cover all the UK with 3.5MHz using 1 watt of power. The firm was not really doing much in the way of television at that time and although they knew about transistors and had developed printed circuits in the 30s their potential and significance seems to have escaped notice and little was being done with them either.

Ted's career with Marconi took him to the outposts of Empire - in fact, he put two Marconi stations on the old Empire Air Routes so that their flying boats could keep in touch. He also installed transmitters at Entebbe, Dar-Es-Salaam and Lindi in Africa and Jiowani, India. In 1932, he joined the newly formed Royal Navy Wireless Auxiliary Reserve, in which he was No. 25. They were trained to the required Morse speed of 30w.p.m. at the Admiralty, where Hungarian was transmitted at them to ensure accuracy!

The War overtook Ted as he was on his way out to India. He remained a civilian in this reserved occupation, but says that as soon as the other British passengers were clear of Europe, they all seemed to become brigadiers and lieutenants! Returned to this country, Ted continued installing equipment, especially d.f. stations, at RAF bases. As might

be supposed, his unique expertise was also utilised in other ways during the war.

After 1945, the amateur world changed as did life in all other aspects. Not only was a new call sign launched - G2SF - but with an increase in power from 10 to 100 watts. Still active in this field, his interest returned to reception and especially to terrestrial magnetism. He has built a magnetometer producing results which he is gratified to find agree with the official stations at Eskdalemuir and Hartland. He contributes his findings monthly to the British Astronomical Association.

I found it irresistible to ask Ted, with a long life in the experimental side of a famous country, how he compared old and modern amateur equipment. He expressed high praise for the best of the home-built sets. He once took an amateur receiver of the detector - i.f. - self excited reaction type and found it so sensitive that it could not be measured. The signal was still there when it should have cut off.

Professionally, The Marconi Company was still doing things by hand as late as the 1970s and without the aid of computers. He was amused to recall that their first computer cost over £400, weighed 40lbs and could not do square roots! When I asked what it could do, he compared it to today's £5 pocket calculator.

I asked him what he thought there was left for amateurs to do. It always seems, when talking to old-timers, that all the excitement and discoveries have already happened, but Ted felt that there would always be room for the experimental amateurs, although there might not be as much scope for them to contribute. Their real value, he said, was in collecting reception data and confirming its quality in various conditions.

Roberts R817



The top end of the world band radio market has for many years been dominated by Japan's Sony Corporation. But today, other companies are entering with products that are less expensive, yet probably equal in many respects to the sets produced by the giant manufacturer. Peter Shore has been looking at the new Roberts R817 receiver.

One example amongst the top-end products is the Roberts R817 receiver, sold by the long-established British family firm, but manufactured by the Taiwan-based Sangean company, who also make sets for Siemens of Germany. It is very loosely based on the original Sony 2001 (the predecessor of the 2001D), but both the circuitry and design have moved on considerably since the days of Sangean's first imitations of the early Sony product. The R817 is a large, table-top radio set, with all the functions that have now become commonplace on receivers in the higher price bracket. The UK Roberts' specified R817 offers continuous coverage from 150kHz through to

29.999MHz, as well as Band II v.h.f., 87.5 to 108MHz, with stereo reception if listening through headphones.

The design is not startling. The set measures 296mm wide x 192mm high and 68mm deep, so it is quite large. The finish of the radio is steel grey, with white for the labelling of the controls. The front panel is conventionally divided into two almost equal halves, with the loudspeaker grill to the left, taking up a little under 50% of the surface, and the operational area to the right. This is where the liquid crystal display is located, together with the 35 main buttons and knobs that allow the user to control the receiver. Time is constantly displayed in the l.c.d., and this can be switched between two clocks, allowing local time and UTC to be selected.

Frequency is shown in megahertz on the short wave and f.m. bands, and in kilohertz on long and medium waves. There is a signal strength meter in a horizontal bar on a purple background, with a numeric scale from one to seven along the top of the bar is at the base of the display. Other parts of the display show various additional functions, including the memory number.

A long 7-section, telescopic antenna is situated on the top of the receiver. A pull-out stand on the back allows the set to be used at an angle on a desk-top.

Using the radio

Switching the set on, the display immediately shows the frequency to which the set is tuned, and the signal strength is shown, provided a station is operating on that channel. Volume is adjusted by a rotary knob on the right-hand side of the radio. Tuning is possible in the usual variety of ways offered by modern receivers: four buttons allow band selection while a large tuning knob, a little way above the volume control, allows a band to be searched manually. The speed of manual tuning using the knob can be altered - a small control on the right-hand side switches from slow to fast and allows the knob to be locked. In fast mode, the set tunes in 100kHz steps on v.h.f., in 9kHz steps on long wave and medium wave, and 5kHz steps on short wave. Selecting 'slow' changes the steps to 50kHz on v.h.f., and to 1kHz on long, medium and short waves.

As an alternative manual tuning is possible by two buttons on the front panel marked ^ and v. Frequencies may be directly entered using the keypad below the display. It is necessary to press the button marked **FREQ** first - something that I find annoying - followed by the frequency in either kilohertz or megahertz, and then a single depression of the **ENTER** key.

The tuning speed of the buttons is fixed to 100kHz on v.h.f., 9kHz on long and medium wave and 5kHz on short wave.

When the set is being tuned on short wave, a beep sounds each time the top or bottom frequency of a broadcast band is reached.

Automatic scanning is available: holding down either the ^ or v keys for half a second or more starts the set tuning along the band, stopping when a signal is received. It is necessary to restart the scanner once the set has stopped on a frequency where a signal is present. If scanning is started within a short wave broadcast band, the set will scan only within that band, moving to the opposite end of the band when the top or bottom frequency is reached. Outside the bands, the set scans until the next broadcast band is reached, when it will beep and scan within the frequency range of that band.

When using automatic tuning, there is a major problem on long wave: the old long wave channels are the only ones which can be tuned! 200kHz is selected instead of 198kHz, and so on, even though it is some years since the channel allocations were altered.

The broadcast bands can be quickly accessed by pressing **METRE** and then the number key which relates to the appropriate band - all 13 broadcast bands are programmed for rapid selection. The handbook which accompanies the set suggests that a random frequency within the broadcast band is tuned under

these conditions. But I found that selecting a band, the last frequency received on that band was recalled - useful for rapidly comparing signals, for example, of a broadcaster using two different channels.

The set has switchable bandwidth on long, medium and short waves, giving narrow and wide positions.

Memories

Today's digital receivers, almost without exception, offer memory facilities and the R817 is no exception. 18 frequencies can be stored on short wave, and nine on each of the three other bands. Storing a frequency, and subsequent accessing of a stored channel is straightforward: to store, the user needs to select the frequency, either directly via the keypad, or manually using the tuning knob or buttons, and then press the button marked M and the number of the memory position that is to be used. Recall is just a matter of selecting the wave band and tapping the number of the memory (1 - 9 - and on short wave only, 01 to 09).

SSB

Single sideband reception of non-broadcast signals is possible as the R817 is equipped with a beat frequency oscillator, of b.f.o. When an s.s.b. signal is encountered, the b.f.o. switch can be moved to ON and reception is adjusted by rotating the b.f.o. knob on the front panel. Used in conjunction with the a.m. r.f. gain control, quite good results can be achieved when listening to radio amateurs.

Other facilities

As I mentioned earlier, there is a dual time clock, which also acts as an automatic timer, switching the receiver on at predetermined time, or sounding a buzzer, depending on one's preference. It is easy to set the alarm time: depress the STANDBY button, and enter the time such as 74 5 for 0745 or 2 2 1 5 for 2215.

Headphones can be connected by means of a standard 3.5mm stereo plug, and this allows f.m. signals to

be heard in stereo. An external antenna can also be connected, also with a 3.5mm plug.

Performance

I have been checking the set's performance on short wave, and overall the results have been good. Sensitivity, the ability to receive weak signals is fairly good, measuring -86 to -94dB for 15dB S+N/N ratio. As for selectivity, the ability of the set to discriminate between the signal one wants and others on adjacent channels, with the filter in wide position, the test results were 29dB down at ± 5 kHz and 68dB down at ± 10 kHz, which is fairly good. In narrow, the results were 54dB down at ± 5 kHz and 71dB down at ± 10 kHz, equating to good performance.

Strong signal handling is fairly good, but image rejection is about 38 to 46dB, depending on the frequency, which can only be described as moderate.

The current drawn from the battery is 138mA, which is high, but is compensated by the fact that 4D size batteries are used to power the set. In addition, 3AA size cells are needed for clock and memory back-up. It is advisable to use a

mains adapter to power the receiver to reduce running costs: the model I have been testing was not supplied with an adapter, although the handbook lists one under 'accessories'.

Overall assessment

The set is attractive and well-built. It is heavy, weighing some 1.6kg without batteries, so it is not really suitable for the globe trotting business or leisure traveller. At home, however, the R817 offers good value for money. Performance is generally good to very good, and the connection of an external antenna helps to pull in weaker signals. The radio is easy to use, with large controls, so will not be unattractive to anyone with physical disabilities. The absence of a raised 'blip' on the 5-button keypad will, however, be frustrating for people with impaired vision.

Sound quality from the relatively large loudspeaker is good (a nominal 800mW), and through headphones the ability to receive stereo is a positive point. The incorrect channels on long wave is annoying, but not disastrous since manual slow tuning with the rotary tuning knob is in

1kHz steps, thereby allowing the correct frequency to be tuned.

The provision of a b.f.o. is useful, although I do hope that any successor model has switchable u.s.b. and l.s.b.

The R817 is a receiver that I would not mind owning, and using regularly. The number of memories on short wave is, perhaps, a little limited in this day and age when several hundred are offered by competing models. But at around £170 this is probably not a major point against the receiver.

I must, however, comment on the *Wave Handbook*, which fell out of the box. The index lists AFRTS, the American Armed Forces Radio and Television Service. Page 20 of the handbook lists AFRTS on short wave. They went over entirely to satellite five or six years ago! Perhaps I should offer to compile an up-to-date booklet....

The Roberts R817 has a price tag of £169.99 including VAT. My thanks to Roberts Radio Company Ltd for the loan of the review model.



The RC818 is much the same as the R817 but with a cassette section added.

Propagation

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

The South Downs Astronomical Society's annual public exhibition was held on July 11 at their observatory in the old RAF wireless station on Trundle Hill, overlooking the Goodwood racecourse. Their display of astronomical telescopes, high-powered binoculars and various mounts included a refractor telescope with a solar projection box fitted below the eyepiece, Fig. 1. The sun's image is displayed on a paper screen at the base of the box in Fig. 1 and any sunspots are pencilled in. **Because it is so DANGEROUS TO THE EYES AND BRAIN to look directly at the sun,** similar methods to this are used by all regular sunspot observers.

Solar Reports

In June, Ron Livesey (Edinburgh), using a 2.5in refractor and a 4.0in projection screen, located three active areas on the sun's disc on days 6, 8, 9, 26 & 27.

Despite broken or wispy clouds on some days in the month, Cmr Henry Hatfield (Sevenoaks), using his spectro-helioscope, located one sunspot group,

11 filaments and eight small quiescent prominences on the 8th; 18fs and 10 small qps on the 15th; 15fs and 8qps on the 20th, 20fs and six qps on the 23rd; one grp, a slightly active plage, 19fs, five small qps and a bright plage on the sun's east-limb on the 25th; 18fs, nine small qps on the 26th; one grp, 16fs, six small qps and a small, slightly active, plage on the 28th and two grps, 18fs, six small qps and a 'tree' like prominence on the west-limb at 1035 on the 29th. Early in July he found 1grp on the 1st and 2nd and two grps on the 3rd, 4th and 5th and an average of 13fs and six small qps over the five days. He observed three active plages and a small circular flare on the 3rd and a plage almost flaring in a group near the west-limb at 1025 on the 4th.

Henry's radio telescopes recorded individual bursts of solar radio noise on June 20 & 29 and continuous noise all day on the 24th, on 136MHz and small bursts on the 20th & July 2 on 1297MHz.

From his observatory in Selsey, Patrick Moore, kindly sent a

drawing of the sunspot groups, Fig. 2, as they appeared on his projection screen at 1130 on June 29. In Bristol, Ted Waring projected nine sunspots on July 6, 10 on the 16th and 11 on the 24th.

Auroral

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received reports of 'active' aurora for the overnight period on June 3/4, 4/5, 11/12, 12/13 & 19/20, 'glow' on 14/15 and 'rays' on 22/23, 23/24 & 30/01 from North Dakota where the summer skies are darker than here in the UK.

Magnetic

The various magnetometers used by John Fletcher (Tuffley), Tony Hopwood (Upton-on-Severn), Karl Lewis (Saltash), Ron Livesey, David Pettitt (Carlisle) and Tom Rackham (Goostrey), between them recorded some form of disturbance on June 3-12, 16, 17 & 20-29 inclusive, with magnetic storms on the 4th, 10th & 11th.

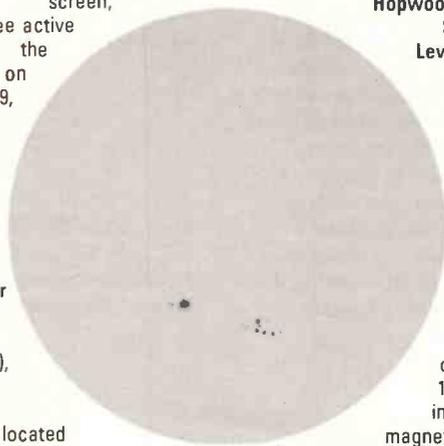
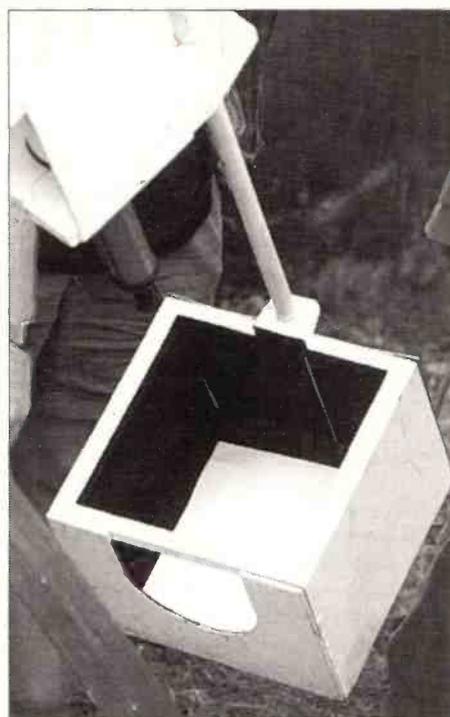


Fig. 2.

Propagation Beacons

First, my thanks to Gordon Foote (Didcot), Henry Hatfield, Ian McDermid (Comrie), Ted Owen (Maldon), Ted Waring and Ford White (Portland) for their 28MHz

Fig. 1: A refractor telescope fitted with a solar projection box below the eyepiece. This enables the sun to be studied in complete safety.



beacon logs from which I prepared the chart seen in Fig. 3. Henry reports that the signals from EA3JA were 'very loud' on July 8, 14, 15, 18 & 20. While Ian was idly tuning through the 28MHz band at 2220 on the 17th, he found it dead except for a lone strong signal from the Italian beacon IY4M. Between them they added CT0APO, IK1PCB, OH9TEN and S55ZRS to Fig. 3 this time.

Band II

Dave Coggins (Knutsford), using a Grundig Satellit 700 RDS receiver, heard stations from Italy and Spain, in Band II via Sporadic-E, during the evenings of July 8 & 9 respectively. He also heard a strong Arabic voice on 87.6MHz at 1400 on the 10th from an unidentified station.

While S.M. Hockenhill (Bristol) was using his Philips car-radio on the 10th, he heard Portuguese and Spanish stations competing with the local signals from Mendip and Wenvoe. He tuned just below 88MHz and heard continuous Arabic music fighting with a Spanish station. On arrival home he studied the *World Radio TV*

Handbook and is now sure that the music was coming from Rabat, in Morocco, on 87.9MHz.

More Sporadic-E At 1220 on the 17th, caused Tim Bucknall (Congleton) to hear mainly Italian and possibly a Scandinavian stations between 87.6 and 88.1MHz. He also heard a repetitive tune, with an occasional break, from an unidentified source on 97.5MHz.

Tropospheric

While trying a new Panasonic receiver on Cairn 'O Mounth on June 29, George Garden (Edinburgh) received a signal 'coming in waves' from a German station on 96.3MHz and strong signals from Metro FM (Newcastle area) and TFM (Independent Radio Tees).

Dave Coggins logged BBC Cymru on 94.2MHz, almost daily, during the first week in July, Mercia FM (97.0MHz) at 2117 on the 6th and Ireland's RTE on June 27, July 1 & 6. Daily atmospheric pressure readings for the period June 26 to July 25 can be seen in my 'Television' column elsewhere in this issue.

Fig. 3.

Beacon	June					July																							
	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
CT0APO				X						X											X	X							X
DF0AAB			X	X	X	X							X						X										
DK0TEN	X	X	X	X	X	X						X	X	X			X	X	X	X	X	X	X	X			X	X	X
DL0IGI	X	X	X	X	X	X	X			X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
EA3JA											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	X	X	X	X
IK1PCB	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
LA5TEN				X	X					X	X	X	X	X	X			X	X	X								X	X
OK0EG																					X								
OH2TEN		X	X	X	X	X	X					X	X	X	X	X	X			X						X	X	X	X
DH9TEN			X	X	X																		X	X		X			
SK2TEN						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	X	X
SV3AQR													X	X			X	X	X	X	X	X	X	X			X	X	X
S55ZRS			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																											
5B4CY				X	X								X						X		X	X						X	

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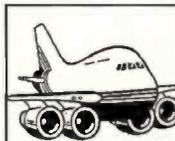
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With the recent publicity in the UK media concerning leaks of a John Major interview and personal 'chat' lifted from recordings, which then became public knowledge, a great deal of interest has been apparent as to the potential viewing of 'non-broadcast' TV by satellite enthusiasts - I have already been approached by one respected national paper and a TV programme maker seeking details of 'what can you see and how can it be done'. Having formerly worked in broadcasting for many years, I respect the privacy of TV workers and their 'behind the studio scenes' informal natters amongst themselves and their guests. I'm not happy to encourage eavesdropping as a nation-wide hobby for the population as a whole, though the unusual news feeds, outside broadcasts and TV links are a part of the sat-zapping pastime.

Having given an almost policy statement (!) one satellite enthusiast, **John Locker** by name, came across a quite remarkable SNG rehearsal recently whilst checking across the 12.5GHz segment of Eutelsat II F1 at 13°E. Activity on screen related to a recent death with live interviews and inserts from around the UK with mentions of a Mrs. Robinson and a link from Caithness - in the pouring rain. The *Sunday People* the following weekend told the story. The rehearsal was for the future death of the HRH Queen Mother as to be carried by ITN and called 'Operation Mrs. Taybridge'. The BBC carried out a similar rehearsal a few weeks earlier. Sad as it may seem, all noted personalities have prepared obituaries, ready for any untimely end, residing in the VTR libraries of broadcasters.

I had a letter the other day from **Bandula Gunasekera** in Sri Lanka. He is very active with C Band (4GHz) satellite reception and from the Gorizont satellite at 40°E our very own Super Channel programming has recently been carried on occasions for test purposes, followed some days with the Deutsche Welle programme. This is received from Eut. II F1 13°E in Moscow and then uplinked onto the 40°E bird. Also via the same bird are EBU Moscow news feeds Eastern bound for Tokyo. Just as an aside, Gorizont 11°W often can be seen downlinking various Astra channels. These are received in Moscow and uplinked onto 11°W

for downlinking across Europe in Ku FSS band 11.525GHz on the Loucht transponder. This same satellite is well worth checking out for the occasional test card, WTN Westbound news feeds out of Moscow and various other video offerings! The diet of neighbouring 14°W is rather more staid being usually Visnews feeds and the occasional 2 way interview.

In Bahrain veteran TVDX **Bud Lloyd-Bennett** has migrated to the microwave bands, not with direct satellite reception but the terrestrial microwave service (MMDS) offered by Bahrain TV. Several satellite channels are received and transmitted over the 2GHz band MMDS system for reception at home using small dishes (around 500mm maximum). Bahrain retransmit CNNI, TV5, Star Sports, MTV and Dubai Satellite TV with more upcoming (Wot, No BBC WSTV?!). Satellite reception is now allowed in Bahrain subject to government permission. A UK offshoot called 'Satlink' have a local subsidiary offering C Band installations from a 2.3m dish upwards to 5m. The cheapest 2.3m dish installed runs to £1000 and the 5m with tracking hits a hot £7500.

It's amazing, the poor technical quality of some satellite linked programmes, August 11 saw an attractive female presenter standing at the track side of a large car racing circuit at 1550BST voicing into an item for 'Wire TV' - The Cable Network based in Bristol. Picture quality was excellent but the radio mic audio was appalling, if not completely unuseable, how such quality can actually hit the air is beyond me! At the end of the live offering the OB crew very rapidly cut carrier (a fast derig!) and the 13°E 12.56GHz France Telecom transponder resumed after some seconds of shash with the usual Telecom caption.

If you're up early in time for the BBC/ITV Breakfast Show offerings then often live inserts are carried on several satellites and its just a case of seeking them out. The *Big Breakfast* leases Eutelsat I F1 25°E on a daily basis and GMTV often use 13°E I was delighted to see Norman Wisdom staggering across the the Isle of Man sands on his morning health run and 'finding' a TV crew and uplink truck waiting to interview him (2 August, VISENG-SNG-1', 11.59GHz horizontal).

A more dramatic suggestion

for a TV channel has originated from Saddam Hussein in Iraq who is wanting to open a satellite channel offering 'good taste, culture and arts' that would be beamed to Europe and the Middle East via both Arabsat and Eutelsat. Iraq International Television will provide the service. If transponder facilities can be sourced, then test transmissions will start during autumn, with an on-air target of mid winter.

Good news for the USA's first DBS service from DirecTV. They plan to operate with a digitally compressed satellite operation (using SpectrumSaver) from early 1994. Already 12 cable programmers have signed to open on the bird, including CCN, MGM, Sci-Fi, Nashville Network and Country Music TV (CMTV). Hughes intend that eventually 150 channels will be downlinking using compression. Manufacturers are well advanced with prototype equipment with a shelf price around \$600 for an inclusive receiving package.

Filmnet is going fully digitally compressed for their European programme distribution of 3 channels on a single transponder over Intelsat 601 @ 27°W Using the UK's NTL System 2000 compression all cable head ends are being equipped with MPEG Scientific Atlanta decoders to a cost of an equivalent £2 million. This should, in one swoop end all the piracy that currently takes place with Filmnet.

Eutelsat are planning their own hot spot in the sky at 13°E to rival the Astra offerings at 19°E. Eutelsat plan their 'Hot Bird' that will be 100% TV downlinking from early '95 offering at least 16 channels with a recently announced 'Hot Bird Plus' to fly the following year again for the 13°E slot and exclusively TV. Already Eutelsat have been 'moving' certain corporate activities such as the BT conferencing feeds from 13 to 16°E Interesting that downlink powers will be very high on 'Plus' running with 110W TWTs needing only 400mm dishes.

July 7 saw Poland open a new Earth station at Psary, 200km South of Warsaw providing digital satellite communications via TDMA (Time Division Multiplexed Access technology) between Warsaw and much of Western Europe. A new VSAT station has also been opened at Poreby, 50km North of Warsaw giving access for 2000 VSAT terminals.



Figs. 1-4: A selection of test cards used prior to news feed distribution snapped by Andrew Sykes using only an 800mm offset dish.

Vintage satellite Eutelsat I F1 is to be moved from 25°E to a new slot at either 36 or 50°E providing direct access from stations far to the East of Moscow - Turkmenistan, Kazakhstan and Uzbekistan - into Central and Western Europe. Poor old Eutelsat I F2 is to be pushed out of orbit into space and switched off - RIP.

Readers contemplating the purchase of either the latest German Smart Card the replacement 8502 microprocessor chip that will decode - it is claimed permanently - all of Sky's Videocrypted transmissions will be advised not to buy since a new Series 8 Sky Smart Card is shortly being issued that will be used for an upgraded encryption decode. Currently the 8502 hack has been partially defeated with clear video alternating with encrypted every few seconds.

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DXTV Round-up

Ron Ham, Faraday, Greyfriars, Storrington,
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Reports were still coming in about the June openings after I had completed my work for the September issue, so, because it is important to make a record of these disturbances, I will open with them this time.

Band I

Within the 33 day period between June 24 and July 26 inclusive, **Bob Brooks** (Great Sutton) found Sporadic-E disturbances, influencing the paths of television signals, throughout Band I, on 28 of those days. Spread through the active periods, he logged pictures from Denmark (DR Danmark), Finland (YLE TV1), Germany (ARD), Hungary (MTV), Iceland (RUV), Italy (RAI-Uno), Norway (NRK & the regionals Hemnes & Stavenger), Poland (TVP), Portugal (RTP), Romania (RTV), Spain (TVE & regionals Barcelona & St. Lucia), Russia (NTA) and Sweden (STV).

In addition to adverts, cartoons, clock-captions, various logos, test-cards and programme schedules, he saw athletics, ballet, dancing, such films as *As Time Goes By*, *Birds*, *Elephant Boy*, *Laurel & Hardy* and *High Chapperal*, football, news and news-specials from Germany (Weltspiegel), Fig. 1, Italy, Portugal, Russia (HOBECTN), Fig. 2 and Spain (Teledario), plays, programmes about animals, cookery, flowers and puppets, singing, tennis, television specials like *The Bill*, *Murder She Wrote*, *Robin Hood* and *William Tell*, Teletext, Tour de France and weather reports.

Between 1400 and 1700 on June 28, **John Woodcock** (Basingstoke) received pictures from Italy (RAI) and Spain (TVE1). In July, he logged short duration signals from Spain at 1312 on the 10th, a news programme from Spain at 0905 on the 16th, a mixture of pictures from Italy and Spain at 1840 on the 18th, an unidentified picture with a large

figure '1', in the bottom right hand corner, at 1828 on the 19th, a cartoon from Spain at 0728 on the 20th and possibly, Germany's ZDF at noon on the 25th.

During the evening of June 10, **Paul Field** (St. Albans), using a DX100 converter received pictures, from Ireland (RTE1) and Poland (TVP1). At 1920 and 1940 he logged programmes in Band II on Chs. R3 and R4 and for about 30 minutes after he heard Austrian and/or Swiss voices.

In Arbroath, **David Glenday** logged television signals from Germany (ARD1), Hungary (MTV1), Russia (2nd Programme on Ch. R1 and 1st Programme on Ch. R2, in colour) and Spain (TVE1) on June 11, Norway (NRK), Poland (TVP1) and Russia on the 22nd, Portugal (C-1) and Spain (TVE1 & 2) on the 26th and Poland and Spain on the 28th. David tells me that Russian TV is now so commercialised. He has seen adverts for Cadbury's Fruit 'n Nut, Hewlett-Packard computers, Kodak film, Schweppes, Sony electronic goods, Twix and various brands of shampoo.

In June **Neil Purling** (Hull) noted Sporadic-E openings on days 8-12, 15, 21 & 22. Among those days he saw a variety of adverts, logos, news (Taggeschau and Hirek) and sport, programmes and test-cards from stations in Austria (ORF), CIS, Germany (ARD1), Iceland (RUV Island), Italy (RAI), Norway (NRK & the regionals Melhus fighting with Steigen), Poland (TVP), Spain (TVE1 & 2) and Sweden (Kanal-1, Sverige).

While using his JVC receiver, with its own rod antenna, on Cairn O' Mounth at 1726 on June 28, **George Garden** (Edinburgh) watched a comedy programme from Spain's TVE.

The July Sporadic-E log from **Simon Hamer** (New Radnor) includes Albania (RTSH), Austria (ORF-1), Czechoslovakia (CST/CTV), CIS stations on Chs. R1, 2, 3, 4,

Denmark (DR), Finland (YLE), France (TDF), Germany (ARD1), Hungary (MTV1), Iceland (RUV), Italy (RAI-Uno), Norway (NRK), Poland (TVP), Portugal (RTP1), Romania (TVR1), Spain (TVE1 & 2) and Sweden (SVT1) spread through days 8, 15, 16 & 25.

Picture Archives

From Leiden, Holland, **Peter de Jong** sent a couple of 'announcements' that he received from the satellite Astra 1C, Figs. 3 & 4. From Meerut, India, Lt. Col. **Rana Roy** sent photos he took in 1992 of a test-card that he received from Iran, Fig. 5, on Ch. E2, via Sporadic-E, on May 11 and a Band III programme from Pakistan (STN), Fig. 6 during a tropospheric opening on November 6.

Weather

"The weather here has been mostly hot and dry, with very little rain", wrote **David Ashley** (Norwich) at the end of June. John Woodcock reported thunderstorms in his area on July 19.

Joan and I watched a very stormy weather front coming in from the south-west, Fig. 7, while we were near Hastings pier on the 13th. Note the empty beach for a 'summers' day, hi. The falling pressure from midday onward on the 13th, as this storm came in, is clearly shown on the pressure chart, Fig. 14. The atmospheric pressure readings for that chart, covering the period June 26 and July 25, were taken at noon and midnight from my own barograph.

In July, I recorded 3.17in of rain compared with 3.29in for the same period in 1992. The heaviest amount, of 1.0in, fell on the 19th and the 28th saw the month's highest relative-humidity of 82%.

Tropospheric

David Glenday found improved tropospheric conditions almost daily throughout June. He logged pictures from Denmark



Fig. 1: Germany.



Fig. 2: Russia.

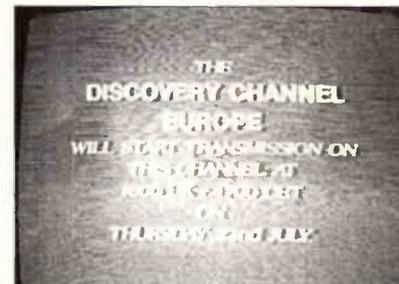


Fig. 3: From Astra 1C.



Fig. 4: From Astra 1C.

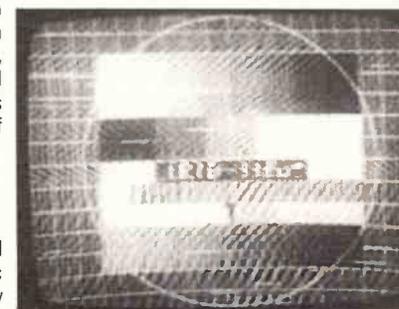


Fig. 5: Iran.



Fig. 7: Stormy weather.

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Fig. 6: Pakistan.

(DR), Germany (ARD1), Holland (NED1), Norway (NRK) on Chs.E6 and 7 and (TV2) on E12) and Sweden (Kanal1) in Band III and Belgium (BRTN1 & 2), Denmark (TV2), Germany (ARD1 Plus, MDR3 with "mdr SPUTNIK" logo, NDR3, RTL+, SAT1, VOX, ZDF and 3SAT), Holland (NED1, 2 & 3), Norway (NRK) and Sweden (TV2) on many channels in the u.h.f. bands.

"The beginning of June saw continental tropospheric DX on 11 of the first 14 days", wrote David on July 2 and continued, "the DX from the evening of the 28th, through the 29th, to the early hours of the 30th was some of the best I've seen". He saw test-cards from Denmark (DR) overpower BBC1 from Craigkelly on Ch. E31 and their TV2 overpower CH4 from Angus. In addition, Dave saw Norway's TV2, on Ch. E37, with the TV2 Norge 5534 test-card for the first time and Sweden's TV-2 obliterate Scotland TV from Craigkelly on Ch. E24. Sounds a muddle readers but that often happens during a good tropo-opening.

The first week in June brought new DX for David Ashley when he added Norway 2, Sweden's SVT 1 & 4 and signals from Grampian's Durris transmitter to his u.h.f. log. During the month he logged Belgium (BRT1) on the 5th and 30th, Denmark (TV2) on days 3-6 & 30, France (TF1) on the 3rd, Germany (ARD1, N3, SAT1, ZDF) on the 3rd-6th, 29th and 30th, Holland (NED1,2&3) on days 1, 3-8, 29 & 30, Norway (CH2) and Sweden (SVT1&4) on the 4th and from the UK, Carlton, Central, Grampian, Meridian, Tyne Tees and Yorkshire TV spread over the days previously mentioned.

During his expedition to Cairn O' Mounth on June 28, George Garden, using a JVC610 and a wideband multi-director antenna, received coloured pictures in Band III from Denmark and Germany and Belgium (TV2) and Germany (ZDF) in the u.h.f. bands. He decided on this outing when he noted a ridge of high pressure was gradually intensifying over the North Sea and as it moved eastward it began to decline.

On the 29th, Simon Hamer received pictures from Denmark (DR) and Germany (ARD) in Band III and from Denmark (TV2) and Germany (N3,

West3 & ZDF) in the u.h.f. bands. "Two German regional stations familiar to TVDXers are now on Astra 1C satellite", said Simon and explained that, "WEST-3 is on transponder 39 and Bavaria's BRF-3 can be found on transponder 45, in crisp clear colour".

SSTV

When home at weekends, John Scott (Glasgow) enjoys tuning around the slow-scan television segments of the h.f. amateur bands. In June he copied calling captions from stations in France,



Fig. 8: French SSTV.



Fig. 9: German SSTV.



Fig. 10: Swedish SSTV.



Fig. 11: German SSTV.



Fig. 12: Swedish SSTV.

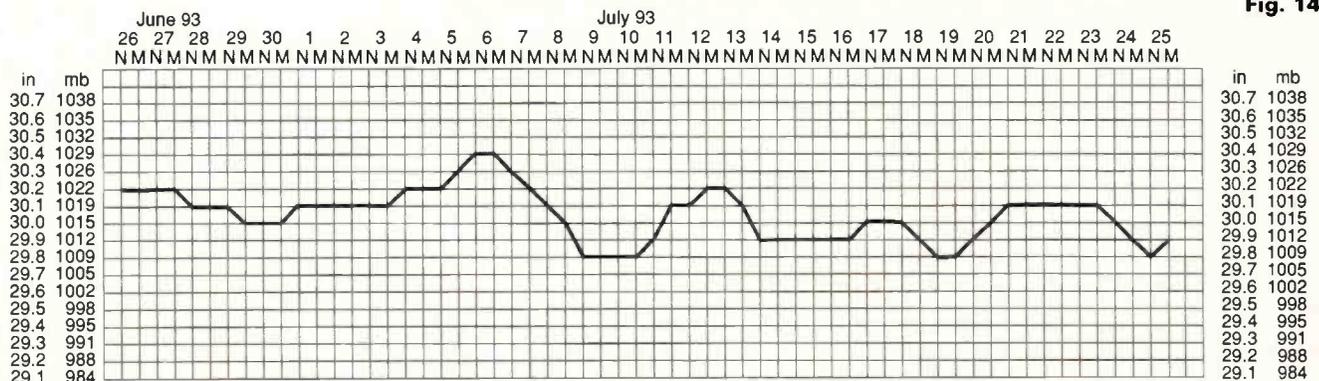


Fig. 13: The Netherlands SSTV.

Fig. 8, Germany, Fig. 9 and Sweden, Fig.10, cartoons from Germany, Fig.11 and Sweden, Fig.12 and a 'parrot' from Holland, Fig.13, mainly around 14.230MHz.

"Some good SSTV pictures have been received from SM5EEP/HB9ANT/HB9AXG", said John and explained that, in July, these were copied between 14.230 and 14.233MHz from 1500 to 1700. John found a Spanish station, EA2JO, transmitting SSTV from 2130 to after 2200 on some days and says that the late afternoon seems a good time to check the 14MHz band for slow-scan signals.

Fig. 14.



Bandscan

EUROPE

By Peter Shore

If you can cast your mind back a few years, you may remember that Radio Tirana broadcast some of the most bizarre, and boring, programmes to be heard on short wave. Of course, if you were a student of the Marxist-Leninist school, then you were doubtless riveted by the commentaries on the *Albanian Clothing Workers Resistance to the Imperialist Attempts to Destabilise the Marxist-Leninist Principles of Revolutionary Albania*, or titles of a similar style.

But reality has caught up with Albanian broadcasting who have decided that, despite savage cuts to the overseas service, reducing the number of languages on the air to 12, further pruning is necessary. Now Radio Tirana is down to just 8 languages, and the English service is reduced from an hour a day to just 45 minutes. The second half-hour programme has been halved to 15 minutes a day. The broadcasts can be heard, beamed to Europe, at 1430 to 1500 on 9.76 & 7.155MHz and at 2200 to 2215 on 11.815, 9.76 & 1.395MHz, and to the Americas at 0130 to 0200 on 11.84 & 9.58MHz and at 0230 to 0245 on the same frequencies.

BBC World Service Television got something of a shock at the beginning of August when Rupert Murdoch's global News Corporation bought over 60% of Hutchvision, the parent company of STAR-TV in Hong Kong. World Service Television's Asian service was launched in November 1991 as one of five channels on STAR-TV, with a ten-year contract. At the time, STAR's ultimate owner was a Hong Kong Chinese entrepreneur, but Murdoch, keen to get his hands on a Hong Kong-based broadcaster, and frustrated in his attempts to buy another commercial operation based in the colony, bid over US\$500 million for STAR.

What this means for the London-based BBC World Service Television channel is unclear. Already a number of Asian leaders have protested about Murdoch's acquisition of STAR, fearing interference in the internal affairs of Asian countries.

World Service is sanguine, saying only that the deal confirms that STAR-TV has enormous potential and therefore it was right to go into partnership with the company. However, will Murdoch try to launch a rival

news service, perhaps based on SKY News seen in Europe, or will he try and influence the BBC? Time will tell.

Morse code is not the most commonly used means of communication these days, but it seems that the news has not reached the former Soviet republic of Lithuania. Radiocentras, a commercial broadcaster in the capital Vilnius has been carrying out test transmissions on 9.40MHz in upper sideband. The power of the transmitter is just 5kW, but the station has put in good signals across much of Europe. Reports on the slow-speed Morse tests are welcome, and should be sent to: Radiocentras, Box 1792, Vilnius, Lithuania. Make sure that you include a couple of international reply coupons for a verification.

Radio Vilnius, the international service of the Lithuanian republic, has announced that a commercial organisation in Lithuania is sponsoring overseas broadcasting until at least the end of 1993. The station's finances have been extremely shaky in recent months, and there was some doubt whether or not it would be able to remain on the air.

With no sign to the end of the conflict in Bosnia, Radio Netherlands began a programme for Dutch troops serving in the region with UN peace-keeping forces. The weekly, 55 minute long programme, is in Dutch and is beamed from the station's transmitting station on the Flevoland polder on 9.59 and 11.73MHz at 0830UTC.

An interview with a senior member of Radio Austria International's management carried on Radio Japan revealed that because of objections by environmentalists, the station can only use one of its two 500kW transmitters at its Moosbrunn site at any one time. There are also two 100kW senders at Moosbrunn and there seems to be no problem using both of those together, and in tandem with one of the two 500kW. The matter has been referred to Austria's High Court, and the outcome is pending.

This story has similarities with one that has affected neighbouring Swiss Radio International. Environmentalists



have managed to prevent the station from building a new short wave transmitting station in recent years to replace existing sites at Schwarzenburg, Sottens and Sarnen. Nobody in Alpine countries seems to want high powered transmitters and their associated antennas anywhere near their homes!

Meanwhile, you can tune in to Radio Austria International from Vienna at

0530, 0830, 1030, 1230, 1530 & 1930 on 13.73 & 6.155MHz.

One service to Europe has ended and one has merged into another in the past three months. The BBC's French Service to Europe ended abruptly on July 2, after more than 50 years on the air. It was down to just a medium wave service by the time it closed, and it appears that almost no one was listening to it.

Back in October last year, the French section Bush House started a digital music and news stream, fed by satellite, to local stations in France who could buy all or part of the output. This seems to be the only way to reach listeners across the country, unless they are die-hard DXers. The BBC's French Service continues to broadcast on short wave to Africa, where there are many more people who tune to the high frequency bands.

Meanwhile, Deutschlandfunk closed down at the end of June. Deutschlandfunk was the European international broadcaster of West Germany, but with the reunification of the country, it was doubtful whether it was efficient to run both DLF and its sister operation, Deutsche Welle, which broadcasts in non-European languages outside the continent.

On July 1, DW took over DLF's European language services,

announcing in the English service that it was "Deutsche Welle - English for Europe". The station continues to use the medium wave frequency of 1.269MHz at 1915UTC, as well as the Astra satellite.

Astra 1C is now successfully transmitting on several of its transponders, and a number of new radio stations are on the air. Virgin 1215 AM is on the Sky News transponder, and there are three new Spanish stations - the first on Astra - on transponder 30. Look out for World Radio Network relaying some National Public Radio programmes from the USA within a matter of weeks, as well as a number of international radio stations.

Back to good old fashioned steam radio, and news that one of Britain's last remaining wireless set manufacturers, Roberts Radio of West Molesey in Surrey, has introduced the Roberts Revival. The set is ideal for everyone keen on nostalgia, or who simply wishes to be reminded of the good old days. The radio's case is an authentic replica of an early Roberts set (probably still around in a good many homes even today), made of solid wood with leathercloth covering. Inside, though, it's all new, with f.m., medium wave and long wave, complete with modern circuitry. It runs on a PP9 or via a mains adapter. The only draw back is that it does not have short wave. But if you want to tune in to what's left of European medium wave radio, and hark back to the days of the Ovaltines on Radio Luxembourg, the Revival is perhaps just up your street.

SSB Utility Listening

Graham Tanner,
42 David Close, Harlington, Middlesex UB35EA

Just a brief word about anonymity. Several letters that I have received recently have asked that I keep the senders name out of the magazine. I am happy to do this, my policy is to use only a writers name and not mention a place name, although in some cases I will use an initial and place name. If you want to be completely anonymous, please say so in your letter.

USAF KC-135s

During 1991, the US Air Force underwent a major change in its structure. One part that seems to have remained unscathed was the Air National Guard (ANG). Each US State has at least one ANG unit operating either combat, transport or tanker aircraft. Many States operate different types and several operate all three. It is the latter two that are of interest, since the large aircraft types are more likely to venture overseas, and they are also more likely to operate on h.f. This month, I have a list of callsigns used by KC-135 refuelling aircraft (Table 1) operated by various ANG units. Each of the units is based within the State, and many of them use callsigns that relate to the State (the abbreviation ARS is for Air Refuelling Squadron).

As you can see from the list, some of the unit callsigns are still unknown, generally because the unit has just changed from one aircraft type to another. Another non 'active-duty' organisation is the Air Force Reserve (AFRes). They also operate three squadrons of KC-135 refuelling aircraft; these are the last five units in the listing. These are often heard on the usual USAF GHFS frequencies, and also several of the NAT and CAR networks. During times of crisis, these aircraft often support the deployment of fighter aircraft.

Round the World

A letter from Keith Elgin mentioned the 1993/4 Whitbread Round the World Race, which is due to start at about the time these pages are read (i.e., late September 1993). I have received a 'press pack' from the organisers and the following will be of interest to those who wish to monitor race progress.

The first leg of the race starts from Southampton on September 25, and is due to end about nine months later back at Southampton. New technology from BT means that live (or pre-recorded) video pictures can be beamed back from boats in the race; this will be accomplished using the INMARSAT-A satellite system. Also, each yacht in the race

will be fitted with a SatCom-C unit that will transmit the yachts position whenever Race HQ 'calls' them; this will be translated and tabulated by BT for the media, and you can see this in newspapers, on TV and on Teletext.

According to the organisers, there is a very good chance that the yachts will use h.f. for various other communications during the race; these are most likely to be national radio networks from the country of each competitor. The UK legs of the race (the first and last legs) will probably use Portishead Radio for this kind of contact, so keep a lookout on their calling frequencies. The calling frequencies for the Portishead maritime service were listed in the February 1993 issue of this magazine, so I won't repeat them here. Keep a good watch on these frequencies, and be ready to QSY to other frequencies as the yachts and shore station jump to a working frequency.

So that you know which yachts to listen for, a list of names and countries is given below (Table 2). There are two classes of yacht in the race - the MAXIS and the WHITBREAD 60s. The details are in country order, I don't want to be accused of favouritism! The 'Europe' entry in the Whitbread 60s is a yacht crewed by members from numerous European countries. For those of you with suitable equipment, the INMARSAT-A frequencies to monitor are 1540-1550MHz.

To give you an idea of the size and duration of the event, I have also included details of each 'leg' of the race (Table 3).

Your Letters

Ian Lockwood writes with his usual extensive log full of interesting and varied stations. His equipment comprises an AOR 1500EX with a 16m wire antenna in the loft. He reports hearing naval 'tri-graph' callsigns (e.g., '3UH' and 'C3T') and code-word callsigns on 7.904MHz, and suggests that this may be another frequency being used in the UN blockade of the former Yugoslavia. Station 'ICEMAN' said that he was patrolling various areas, and there was talk of boarding some ships. This certainly sounds like one of their frequencies, but without further reports it is difficult to be certain; it's certainly a frequency to 'watch' though.



Right: A close-up of the nose of a KC135 of the New Jersey ANG - hence the nose-art of a blonde 'Jersey Girl' (the nearest to a 'page 3' girl that the magazine editor would publish!).



Left: Alaska ANG KC135 at RAF Mildenhall during September 1991. It used the callsign Chena 94 when it flew back to Alaska.

Table 1 - Air National Guard KC-135 callsigns

108thARS	Chicago - O'Hare, Illinois	Wendy, Coder
116thARS	Fairchild AFB, Washington	Expo
117thARS	Topeka, Kansas	Tempo
126thARS	Milwaukee, Wisconsin	Upset
132ndARS	Bangor, Maine	Maine
133rdARS	Pease AFB, New Hampshire	Pack
141stARS	McGuire AFB, New Jersey	Jersey
145thARS	Rickenbacker AFB, Ohio	Pearl
146thARS	Pittsburgh, Pennsylvania	Steel
147thARS	Pittsburgh, Pennsylvania	Shake, Steel
150thARS	McGuire AFB, New Jersey	Rocco, Jersey
151stARS	Knoxville, Tennessee	Soda
153rdARS	Meridian, Mississippi	
166thARS	Rickenbacker AFB, Ohio	Sluff
168thARS	Eielson AFB, Alaska	Chena
191stARS	Salt Lake City, Utah	Utah
196thARS	March AFB, California	
197thARS	Phoenix, Arizona	Copper
203rdARS	Hickam AFB, Hawaii	
63rdARS	Selfridge ANGB, Michigan	Ramit
72ndARS	Grissom AFB, Indiana	Mash
74thARS	Grissom AFB, Indiana	
314thARS	Beale AFB, California	Darr
336thARS	March AFB, California	Rats

Table 2 - Whitbread Race Yachts.

Whitbread 60s		Maxis	
Europe	<i>Intrum Justitia</i>	France	<i>La Poste</i>
Italy	<i>Brookfield</i>	N Zealand	<i>NZ Endeavour</i>
Japan/N.Zealand	<i>Yamaha</i>	Russia	<i>Odyssey</i>
Japan	<i>Tokio</i>	Spain	<i>Fortuna</i>
Spain	<i>Galicia 93 Pescanova</i>	Switzerland	<i>Merit Cup</i>
Ukraine	<i>Hetman Sahaidachny</i>	Uruguay	<i>Uruguay Natura.</i>
Ukraine/USA	<i>Odessa</i>		
UK	<i>Dolphin & Youth W60</i>		
USA	<i>Winston</i>		
USA	<i>US Women's Challenge</i>		

Table 3 - Whitbread Race Dates and Course

leg	start date	distance (naut miles)	from - to
1	25 Sept 93	5938	Southampton - Punta Del Este, Uruguay
2	13 Nov 93	7558	Punta Del Este - Fremantle, Australia
3	9 Jan 94	3272	Fremantle - Auckland, N. Zealand
4	20 Feb 94	5914	Auckland - Punta Del Este, Uruguay
5	2 Apr 94	5475	Punta Del Este - Fort Lauderdale, Florida
6	21 May 94	3818	Fort Lauderdale - Southampton

Amateur Bands Round-up

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

An anguished cry came from a reader recently. He tried to put up an outside antenna but came smack up against neighbour problems. Whatever can he do, he asks? Above all, first be on the right side of the neighbours. Be friends but don't fall out!

Three possibilities exist: 1. An antenna in the loft (or indeed anywhere indoors); 2. an 'invisible' wire outside; and 3. give up!

Option 1. Since our anguished correspondent is aiming at a licence I have discarded the otherwise obvious active antenna. Indoor antennas can be useful and should be tried first; if results seem good, then stick with it; at h.f., stay with a single element. However, the electrical QRM may be overpowering.

Looking at Option 2, the pundits tell us that a thin wire is lossy and hence useless. They overlook that it is a damn sight better than QRT! I have an old coil of 28s.w.g. (around 0.3mm) in the workshop, and a bit of this is so arranged that on 3.5MHz the current reaches maximum at the top of the vertical part; by using a tuner on 1.8, 3.5, 7 and 10MHz against earth, I can now comment that all continents have been raised - not just heard - on the three latter bands with acceptable reports, and Top Band is acceptable. (Useless, the pundit said!) Because of the thin wire, I can now use clear nylon monofilament line to hold the wire up. This acts as a light very long efficient insulator, and is itself invisible. (You need advice from a fishing expert for tying knots in it though)

The biggest trick is getting the antenna up without creating suspicions. To carry a coil of wire up the ladder is asking to be questioned. My method is a bit like this: Go up with coil of monofilament in pocket, and garden twine in hand. Put up obvious strings to hold climbing plants; while up there put up the nylon also, and drop the end to ground when no-one is looking!. Go down, connect your thin wire, hoist the nylon back aloft, and make secure. Now head for the far end. Once again get your nylon organised. Now comes the tough bit. You have to get the wire across between the prepared ends, preferably when no-one is looking. Very early on Sunday morning in summer is favourite here. Many years ago, for a bet, I got a thin wire over two houses and across two roads to a distant tree without even being noticed; and the owner of the house hadn't noticed the wire a year later!

As for efficiency - no antenna at all is very inefficient!

Letters

Mel Thurlby had only been going for six weeks when he wrote at the end of July; as he has bought an FT-747GX, I can guess at a new amateur ere long in the Barton-upon-Humber district! The antenna is an omnidirectional Antron 99. Seeing my mention of the YLs expediting to VP2M, Mel was pleased to locate a string of Europeans working VP2M/AB6MP around 0650UTC on 14.250MHz. I also noted this same operator at the much more 'normal' time of mid-evening. 0715 was the time for VE8RCS working VO1TED/VE8 on Ellesmere Island plus Europeans and KH6XM. Just to confirm this last call, Mel identified NH6XM in Hawaii only a few moments later. Among the Europeans, Mel is as puzzled as any of us by the present European prefix changes, but a copy of Geoff Watts' Lists will be the right answer. Write, with a s.a.e., to Geoff Watts at 62 Belmore Road, Norwich for the details.

From Hafnardsfjordur in Iceland **Geoff Crawley** wonders why he can often hear European CBers on 27MHz while the amateur 28MHz band is dead. Two possible answers come to mind; one is that the m.u.f. just happens to lie between the two bands for the path to Iceland, while the other one suggests that since so many available CB antennas are vertical, signals from them are launched at a much lower angle than the 28MHz horizontal favoured on the amateur band. Of course, once the signals reach the ionosphere, the high-angle stuff will disappear into space - but what comes down again will have lost its 'verticality' of polarisation and so be useful to Geoff's antenna. That's my guess anyway! But unpredictability was ever a factor (and half the fun!) around 28MHz

From Birmingham, **John Collins** stuck to 14MHz telephony and his Eddystone 870A; outside he has a wire fed to the receiver through an antenna tuner. John notes that EL2PP - a YL - said her card would be slow due to 'problems' in Liberia. Between midnight and 0100UTC, John noted also VE8PW, ZC4KS, HB0/DL2GB, a VE3, Z3Z2M, P43TAT, 9H4B, W5RRR, Y11MH, an oddity signing RX4ASB & 3D2RF.

In Swinton, **Gerald Bramwell** gave Top Band away as they say in VK-land, because of an S9 plus static throughout the period. Oddly enough, it's not been too bad at all this summer in Mid-Wales. On 3.5MHz sideband Gerald notes Europe, S. America, Oceania, Africa but no N. Americans north



This is the excellent but simple to use FT-747GX similar to the transceiver that Mel Thurlby is now using.

of VP2EY. As for 7MHz, again the Ws are sparse, though VE1DCG was noted; JK60TO and US7I were noted as on c.w. 14MHz gets almost a page to itself, with c.w. from EA9AID, ZV7A, HI5CT, UA9AJ, W25WUMU, K5MR, KC1F, KW2J, WB5IG, K4OAR, WZ3Q, KT3Y, US0RR; plus RTTY from UG6GG, WA9WJE, K0FF, W4JXM, VU2YK, FY5FJ, W3GG, PY7AJC, VE1QA, KB2HK and dozens of DX s.s.b. stations. 18MHz is also liked, because here the list is almost as long, with c.w. from PP1RRG, WA1PMA, VE2EOS, W4XJ, 4X1VF, VP2VE and s.s.b. stations with N. Americans plentiful. At 21MHz it was all s.s.b., save for W11XI on the key, while 24MHz s.s.b. showed with ZD7DP and D44BS. A change of mode to frequency modulation was used on 28MHz to book in 7X2DG.

Mark Malone is in Great Horwood, and uses a Realistic DX-302 fed from a Datong active antenna in 'inverted-V' position. On 14MHz this netted JX3EX, W1SEB, W4FLA, 9H4B, G3AGP/EA3, 4Z4DX, EA6ZY, 4L4KK and lots of Europeans. 9H1EL was noted on 21MHz, and a visit to 7MHz various Europeans including G3KPV.

Robin Guppy of Westcliff-on-Sea exchanged the antenna to a half-sized G5RV; on 14MHz I see K1PS, KF6QL, TI4CF, N2IDM, VK60Q, JA9GI, VE2AFU, ZL400, 9A3IJ, WA4AFE, N1CZI, 9H1EU, JA1JRK, PY1AQT, 4Z4UR, VE7GQ and VP2APB. A turn on 3.8MHz saw Robin log VO1FG, EA1HP and a string of GB calls. T71CE was logged on Forty, while an OZ came in on 18MHz.

On now to **Simon Griggs** in Chelmsford where 28MHz c.w. produced EA8/DL70M. 3.5MHz, when visited, gave VP5JM, W4WJD, WA2UZI, K4ODL, KE1E, K3YGO, VO1BTM, K3JRR, AC4SH, W4QCU, WB5RNG, K4CEB and CO2PX, all on sideband. 7MHz needed c.w. to decipher VP9NMX, WA9TOC, VE1BN, 9X5HG, UA9AAV, K3XIA, W3IRE and PY7ZK. Mixed

modes on 21MHz, where the c.w. netted FY5YE, KC4VAE, CU2BJ, V19BWO, 9H1EL, TA2AI, LU9EDY, KP2J, VA9FMZ & CP8BT, while on s.s.b. Simon noted FG5FC, XX9AS, NC2E/KP4, RH1E/VA9XMC, C56/DL70TA, ZP5PX, PR7SGT, D44BC, LU6AMD, WB5MXX, VP2MR, HK5JPS, ZD8Z and JA8ASQ. The final list is for 14MHz, again c.w. first: EA9UK, UZ9CXA, a couple of T94, KC4NZB, CE3FCF, 4Z4DX, 4X4JU, SV, KI6CG, RZ0Y/UA0VWV, RW9C, 9H3XX, U19ACQ, while on sideband CU2YA, EA9UK, YV5ENI, KC4PE, YV5DPO, 9K2GS, 4X4JU, AC4NJ, 9K2HA, TI4CF, 9K2JC, 9K2ZZ and HV2JO made the lists.

Ted Trowell on the Isle of Sheppey, with the XYL's help, has laid in more ground radials. In addition, they have built a screened receiving loop using heavier coaxial cable. This is interesting since by receiving on the loop he can hear, for example, ON7BW on Top Band when that station is inaudible in the noise with either of the two outside antennas.

Finally, **D.L. Maclean** in Yeovil who has a tower and a beam - but his rotator control unit has been away for repair! The columnar answer to this one is always to park the beam looking west on the one hand, and secondly to keep an old second-hand rotator in reserve. At least, looking west the beam is wide enough to cover the Americas and long-path VK/ZL, with the odd European off the back.

Deadline

As usual, the beginning of the month to the address above. Anything that 'misses the bus' is of course held for the following month.

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Fifty years on, one Shorts Sunderland flying boat remains in airworthy condition. This example is an MR5, G-BJHS, which carried the military serial ML 814 and was named *Islander*. Unfortunately, like so many important aircraft, its future does not lie in Britain where we don't seem to cherish our aviation heritage as strongly as do the Americans. In early August, the aircraft arrived in the care of Kermit Weeks in the USA. I spoke to its pilot-in-command for that historic trip, **Ken Emmott** (Farnham). Kermit, who now takes over flying the aircraft, also went along for the experience.

Powered by four Pratt and Whitney R1830 radials of 1200hp each, the aircraft is only capable of operation from water. Beaching gear is provided, to enable the machine to be pulled out onto a slipway for safe keeping, and you can see these wheels attached to the example on static display in the RAF Museum Battle of Britain Hall, Hendon. The 36 hour (airborne) Atlantic crossing had therefore to be staged via suitable stretches of water.

The route was as follows: Calshott (Southampton), Lough Derg (River Shannon, Ireland), Reykjavik (Iceland), Goose Bay (Canada), Toronto, Lake Winnebago (Oshkosh). I don't need to remind readers that Oshkosh hosts what must be the world's biggest fly-in rally! Towards Iceland, a patrolling RAF Nimrod (the Sunderland's modern-day counterpart) joined up in an impromptu formation. Unfortunately the next sector was delayed for four days due to restricted visibility and low cloud at the Canadian end. On the way in to Toronto, Ken's son arrived in formation in a Piper Malibu and there was also an escorting fleet of airborne photographers - all trying to formate on the relatively unmanoeuvrable Sunderland. At Oshkosh, the Sunderland's flypast was the opening item of the display!

In June next year, the aircraft will appear in further displays before moving to its new, permanent home on Lake Agnes at Polk City, Florida, where it will remain airworthy as part of Kermit's Fantasy of Flight theme park.

What problems are there in ferrying a vintage aircraft? Triplicated Global Positioning Systems were installed, which compute their position from satellite transmissions. Ancient technology, consisting of an astro-compass and an optical drift sight, provided a cross-check. Although

h.f. was carried, it became consistently unserviceable, so it was fortunate that much of the flight was conducted either in v.h.f. range or with the help of other aircraft relaying messages. Although most of the communications transceivers were the original ones with valves, a modern portable set was also carried as a standby. Conducted entirely under visual flight rules, this voyage was a far cry from the high-altitude instrument-controlled luxury of the airliners on the North Atlantic Organised Track System.

You can read more about this particular aircraft in *The Last Flying Boat* by Peter Smith (Ensign Publications, Hampshire Books Ltd., 2 Redcar Street, Southampton SO1 5LL), which costs about £20.

You Are Clear to Display

Kevin Earwicker (Bournemouth) saw the Red Arrows arrive the evening before their display in early August. During a display, Squadron Leader Adrian Thurley, in Red One, growls at the other eight pilots on 243.45 with 242.2 and 377.6MHz also available. You could hear this on the soundtrack of the TV coverage of the IAT Fairford display. I was struck with how calm the Italian Frece Tricolore team sounded in comparison!

There are in fact ten Hawks making up the Arrows of which nine fly in each display. They have a spare aircraft - but not a spare pilot! The Team Manager (who also often commentates) flies the extra aircraft to each venue. The Arrows are not just a public relations exercise; they are an operational 'shadow' squadron and need to practise their routine flying skills in case of going on active service in time of war.

Chris and I saw the Arrows perform at Silverstone. Not being interested in Grand Prix racing (to me, aircraft have more appeal than cars, although this is not familiar as my five-year-old nephew Adam disagrees!) we watched the event from a nearby public road. After a most agreeable pub lunch, with plenty of helicopters passing overhead on their way to the racetrack, we were able to view a part of the Arrows' display that is normally ignored. After each pass, the formation has to change to the next figure - perhaps from Diamond Nine to Concorde Turn. This repositioning takes place away from the crowd and is perhaps the tricky bit. Also, the other seven



Fig. 1: Boeing PT-13D at the PFA Rally, Wroughton
Photo: Chris Mlynek



Fig. 2: Chipmunk G-BBMV at the PFA Rally, Wroughton
Photo: Chris Mlynek

aircraft need to hold off whilst the Synchro Pair perform. To land after a display, the fighter pilot's run in and break is necessary to separate the formation. Having overflowed on runway heading, the Arrows peel off to the downwind leg in turn, thus achieving adequate separation.

Information Sources

Have you got Airband Factsheet (Issue 2) yet? On it are the addresses of AERAD and the RAF (see next paragraph). All you need to do is to send a stamped, self-addressed envelope (capable of holding one A4 sheet) to the Broadstone editorial offices and make sure that you mark it clearly as being a request for the Airband factsheet.

Tracey Gardner (Leicester) wants me to clarify the differences between the *En Route Supplement* as produced by AERAD and the RAF 1 AIDU. Both are available to the public by mail order, see the addresses on Airband Factsheet. I

have just bought the Europe & Middle East AERAD publication for £9 plus postage. The nearest RAF version covers the British Isles and North Atlantic. AERAD is intended for civil operators and doesn't tell you about u.h.f. channels. It is notable for a decode list of ICAO indicator letters. The RAF publication deals with airfields likely to be visited by military flights and is good on u.h.f.; it also shows offshore oil/gas installation navigation aids. Unlike AERAD, it has a look-up table from which the details of beacons can be found if only the Morse ident is known.

Tracey is disappointed that not all beacons are listed. Certainly, the RAF publication might gloss over those serving the smaller civil aerodromes but, in the case of beacons like Fenland (FNL, 401kHz) there is a further explanation. With a reliable range of only 15mm, this beacon is known as a terminal n.d.b. It is not really suitable for en-route navigation. Having arrived in

CONTINUED ON PAGE 55 ►

Scanning

Alan Gardner
PO Box 1000, Eastleigh, Hants SO5 5HB

A large number of the letters I receive are concerned with local transmissions causing interference to weaker signals on completely different frequencies. This tends to be a common problem, particularly when continuous coverage, hand-held, scanners are used with external antennas. I have covered this subject before in the December 1990 and April 1992 columns but readers have been asking for specific design information so this month I thought that it would be a good idea to take a more detailed look at simple filter circuits.

Interference problems usually occur because the r.f. stages of the scanner have only been designed to cope with the relatively small signal levels which are normally anticipated when the supplied antenna is used. The much higher signal levels produced by a base station antenna overload the receiver and produce unwanted spurious signals on other frequencies.

FM Broadcast Band

The most common problems seem to be associated with f.m. broadcast stations operating in the 88-108MHz band. One of the reasons for this is that most antennas designed for use with scanning receivers are optimised for use in the 108-136MHz v.h.f. aircraft band. However they also work reasonably well only a few MHz away in the f.m. broadcast band, where the radiated signal power can be 2500 times stronger than that normally found in the aircraft band.

If you are only interested in one group of frequencies such as the v.h.f. airband one solution would be to fit a bandpass filter (such as the AOR ABF 125) between the antenna and the receiver. Bandpass filters are a combination of high and low pass filters which are designed to only allow frequencies in one specific range to pass to the receiver. This is a good method if you are only interested in one small band of frequencies, but if like me, you want to be able to monitor several different frequency bands some other solution is required.

Notch Filters

One way is to fit a filter designed to reject a specific interfering signal. This type of circuit is usually referred to as a notch filter, several of which can be cascaded in order

to give the required rejection. The simplest notch filter would just consist of either a parallel or series tuned circuit connected in line with the antenna feed to the receiver. The parallel tuned circuit produces a high impedance path to the signal at its resonant frequency whereas the series tuned circuit presents a low impedance path shunting the unwanted signal to earth.

The basic circuit configuration and formula for component values is shown in Fig. 1. In the case of the f.m. broadcast band, a capacitor value of 10pF gives a good starting point, and an inductance of 0.26µH should make the circuit resonant in the middle of the band at around 98MHz. You may have to adjust the inductor slightly to get the best rejection of the strongest signals, which tend to be the BBC national services at the low frequency end of the band.

By adding additional sections it is possible to increase the amount of rejection produced by the filter and so improve its effectiveness. An example where series and parallel circuits have been combined and the component values chosen to give a compromise between maximum rejection of the f.m. broadcast band whilst minimising any loss of signals in the adjacent frequency bands is shown in Fig. 2. In really bad cases it may be necessary to use several single notch filters tuned to individual frequencies. For example the circuit shown in Fig. 1 could be repeated with each stage tuned to a slightly different frequency. e.g. National radio services such as Radio 1, 2, 3, 4, Classic FM and any local stations which may be present.

Short Wave Interference

If the problem is due to short wave broadcast stations or CB transmissions overloading the receiver, fitting a 30MHz highpass filter in line with the antenna feed will reject frequencies below 30MHz whilst allowing those above to reach the receiver. Alternatively strong u.h.f. TV signals or cellular telephone base stations can be rejected by fitting a lowpass filter tuned to 470MHz.

Simple high and lowpass filter designs are shown in Figs. 3 & 4. These are just intended to be examples but it is possible to cascade several different filters together to give the required response, e.g. a band pass or band reject filter can be produced by

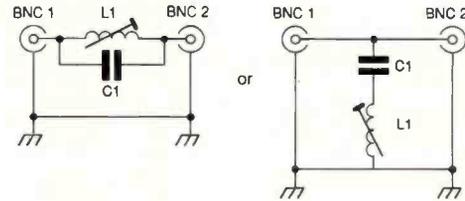


Fig. 1: Simple notch filter.

$$F \text{ in MHz} = 1 / (0.006283 \times \sqrt{L \times C})$$

(L is in µH, C is in pF)

For 98MHz notch frequency

C1 = 10pF

L1 = 0.26µH Cirkit 35-00603 core part way in.

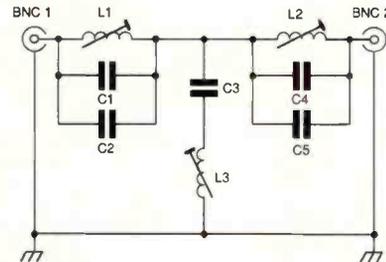


Fig. 2: 3-section notch filter.

For 98MHz notch frequency

C1, 2, 4, 5 = 6.8pF C3 = 5.6pF

L1, 2 = 0.194µH Cirkit 35-00403 core at base.

L3 = 0.47µH Cirkit 35-10803 core level with top.

combining the high and low pass sections in series or parallel with the correct choice of cutoff frequencies. Alternatively they can be used to combine or split different frequency bands as I described in the January 1992 column.

Construction

When constructing any r.f. circuits it is important to follow a few simple rules. The first (and as far as I am concerned the most important) is to keep all component leads as short as possible, including connections to plugs and sockets. This is vital, as even a few millimetres of component lead can act as a tuned circuit that can cause all sorts of unpredictable results. For this reason it is a good idea to use the smallest components you can find, surface mount capacitors are ideal for this purpose - if you can see them! When more than one inductor is used in a circuit care must be

taken to stop any signals being coupled between them. One way to do this is to mount the inductors at right angles to each other or provide screens between them. If the components are mounted on a piece of copper p.c.b. material this can be used to provide a common earth connection and all the sections of the circuit connected to the enclosure earth plane. Sections can then be screened from each other by soldering small pieces of copper p.c.b. material at right angles to the earth plane.

The circuit should be built inside some form of screened enclosure. Small diecast metal or screened plastics boxes are ideal for this purpose. Alternatively, if you want to save money or make the unit as small as possible, you can use more pieces of copper p.c.b. soldered together to make a neat housing.

Aligning Circuits

Once you have built your circuit

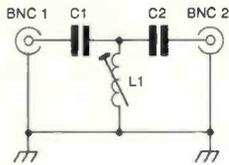


Fig. 3: Simple high pass filter.

C in pF = 3180/F in MHz
L in μ H = 3.97/F in MHz
For 30MHz cutoff C1, 2 = 106pF L1 = 0.132 μ H
C1, 2 made from 68pF & 39pF in parallel
L1 Cirkit 35-10303 core at base.

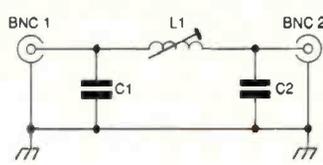


Fig. 4: Simple low pass filter.

C in pF = 3180/F in MHz
L in μ H = 15.88/F in MHz
For 470MHz cutoff C1, 2 = 6.8pF L1 = 0.034 μ H
C1, 2 Cirkit 04-68903
L1 Cirkit 35-00103 core part way down.

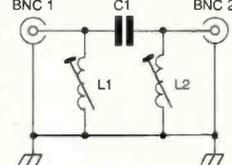


Fig. 5: Alternative high pass filter.

C in pF = 1590/F in MHz
L in μ H = 7.94/F in MHz

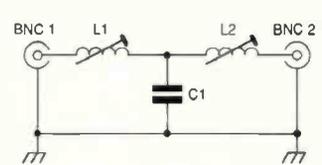


Fig. 6: Alternative low pass filter.

C in pF = 6360/F in MHz
L in μ H = 7.94/F in MHz

the next problem is to check that it is working correctly. The actual resonant frequency of circuits will vary slightly from the design values due to the method of construction and the loading effects of external circuits such as the antenna or receiver. All of these factors will add additional inductance and capacitance to the input and output ports of the circuit which will de-tune the resonant

frequency slightly. This can be compensated for by varying the component values to bring the circuit onto the correct frequency. In order to simplify tuning, I have only used variable inductors in the examples shown. In order to be able to do this it may be necessary to use parallel combinations of capacitors in order to obtain the correct values.

The easiest way to tune a filter

circuit is to use a receiver with a signal strength meter. If your scanner hasn't got one then you will just have to rely on your ears to judge signal strengths. Tune your receiver to the interfering signal and connect the circuit with your antenna. Slowly adjust the coil until you can detect a reduction in the signal level. Keep on turning the core until the signal starts to increase again. Turn the

core back in the opposite direction until you have found the point at which the signal is at a minimum, the circuit is now tuned.

I hope that these simple examples give you some ideas for experimentation and help to solve any interference problems you may have.

Back to the more usual format next month, so until then - Good Listening.

Airband

CONTINUED FROM PAGE 53

the general vicinity of the airfield, certainly within a 15mm radius of it, the terminal beacon will help the pilot to home in for a final approach.

Not being a chemical engineer I can't tell Tracey too much about the gas venting stations marked on the various charts except to say that overflying them is best avoided. Their fumes might be harmful to aircraft occupants, especially if the consciousness of the pilot is impaired. Some have tall flames that are hard to see on a bright day. In one recent accident, the pilot flew near an industrial plant that was giving off foul-smelling fumes. The pilot thought that this smell was due to an on-board electrical fire and decided on an immediate precautionary landing, during which the aircraft ran through a hedge and was damaged. It might seem embarrassing to damage a perfectly serviceable aeroplane in this way, but at least the pilot was playing safe.

Frequency and Operational News

In the July *GASIL* from the CAA, three aerodromes have had frequency changes. At Perth, 119.8 replaces 122.3MHz on the Approach. Prestwick has a Radar service on 119.45MHz. Wattisham's Aerodrome Traffic Zone (ATZ) and

Military ATZ have been re-activated, the frequency now being 124.925 which replaces 135.2MHz. Another new ATZ is at Deenethorpe. At last, the Ipswich n.d.b. (PSW) has a new frequency of 389.5 which replaces 328kHz and should solve the earlier problem of co-channel interference from a French beacon.

Under the Heathrow approach in Cranford lives Dieter Kreuchen GOPER, who like many others takes advantage of listening to this column as read by me and Chris for the *QTI* Talking Newspaper. Dieter reports a change of Heathrow Delivery to 121.975MHz, which replaces 121.7MHz. During off-peak times, Delivery is closed and the first contact by departing flights is Ground 121.9MHz.

Clearance Delivery (to give its full name) liaises between the flow management regulator at LATCC and the departing flight. Once a slot time has been confirmed, Delivery passes the initial clearance as issued by LATCC. This will typically consist of departure route, initial squawk (transponder code that identifies the aircraft on radar) and first frequency to contact after finishing with Heathrow. A number of set Standard Instrument Departure routes are available at larger airports and Heathrow's terminate at Brookmans Park, Compton, Daventry, Dover, Mayfield, Midhurst, or Southampton at which points the



Fig. 3: A Beagle Bulldog at the PFA Rally, Wroughton.

Photo: Chris Mlynek

en-route flightplan is then followed. So, the important thing about Delivery (or, during off-peak hours, Ground) is that this is the first frequency to be contacted by any departure. After that, the aircraft will follow a series of hand-offs from one controller to another, and the pilot will clearly read back the next frequency before changing to it.

Now that British Airways have taken over Brymon, Chris Brenton (Plymouth) notes that Dash-7 flights from his home town of Newquay and Heathrow have been given BAW 15* callsigns, where * is a letter denoting the flight within the day. Competition is in the form Newquay Air, equipped with Piper Navajos.

The next three deadlines (for topical information) are October 15, November 5 and December 3. Replies always appear in this column and it is regretted that no direct correspondence is possible. All letters to 'Airband,' c/o The

Abbreviations

CAA	Civil Aviation Authority
GASIL	General Aviation Safety Information Leaflet
h.f.	high frequency
hp	horsepower
IAT	International Air Tattoo
ICAD	International Civil Aviation Organisation
kHz	kilohertz
LATCC	London Air Traffic Control Centre
MHz	megahertz
n.d.b.	non-directional beacon
nmn	autical miles
QTI	Quotations of Technical Interest
u.h.f.	ultra high frequency
v.h.f.	very high frequency

Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex, HA8 8PS. Genuinely urgent information/enquiries: 081-958 5113.

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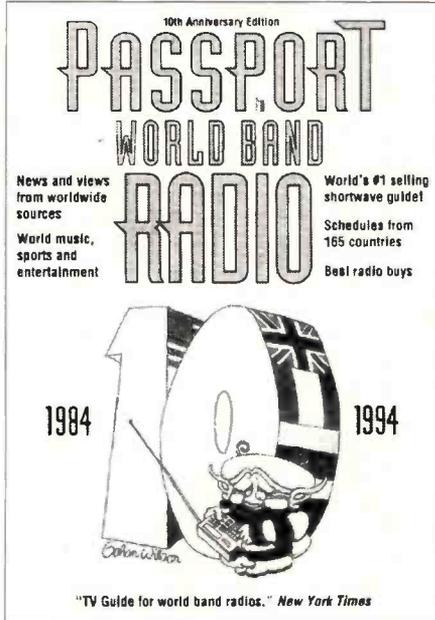
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The closing date for this offer is 28 October 1993 (UK), 25 November (overseas).



Info in Orbit

Lawrence Harris
5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5QB

This column is mainly devoted to the monitoring of weather satellites, though I cover some other satellite activity in the 137MHz band as well. The postbag for this column continues to grow; the largest number of requests are for Kepler elements, with many others asking for general or specific information about satellites. Some special offers are included this month.

NOAA 13

I write this near the middle of August, having recently picked up the first weather pictures from the new American WXSAT NOAA 13 transmitting a.p.t. on 137.62MHz. It is always exciting to collect such pictures from a new WXSAT, and we had an early indication of the launch - see later. Two callers also confirmed reception.

I recorded both signal and picture, and will be happy to provide copies of the images to anyone who wants them - formats available include PCX and Timestep's NOA. Both that image (of Europe) and the following one (which includes the UK) are available. Both contain twin visible light pictures, characteristic of soon-after-launch NOAA transmissions before the infra-red sensors are operational. They show slightly different spectral responses, suggesting that they were not from the same sensor.

Overnight signals from NOAA 13 (southbound around 0100UTC), produced, as expected, two blank images containing only non-image data (calibration and minute markers). Just send a formatted disk with return s.a.e. and one extra stamp.

Current WXSATs

At the beginning of August, I found NOAA 9 unexpectedly off when it would normally have been transmitting. This suggested that launch of NOAA 13 was imminent because it was going to use the same frequency. However, NOAA 9s 137.77MHz beacon continued to transmit on each pass. It later ceased transmissions, but I unexpectedly picked it up again while writing this column.

Subsequently NOAA 13 became operational as reported above. The American WXSATs NOAA 11 and now 13 both transmit a.p.t. (pictures) on 137.62MHz and have beacons on 137.77MHz. These beacons contain a considerable amount of data themselves, but that is another story!

NOAA 11 passes Britain travelling northbound around 1530UTC each day - see Fig. 1 from Roger Ray of Telford. It travels

southbound over Britain around 0300UTC. NOAA 13 follows a similar orbit but passes us around midnight (southbound) and then mid-day (northbound). We shall see pictures like Fig. 1 but brighter, from NOAA 13, around 1300UTC each day, the sun being higher in the sky.

The saga of the CIS WXSAT METEOR 3-4 continued during July with sporadic visible-light pictures being transmitted on 137.30MHz, alternating with almost blank images. Transmissions then became erratic.

During the second half of July, METEOR 3-4 was near the terminator - the night/day boundary. I used the InstantTrack program to display its orbit, then selected the option that gives a birds-eye (global) view of the footprint. This allowed me to monitor its distance from the terminator during a 24 hour period. Comparing this with the live image, the WXSAT could be seen to be almost following along into the terminator, never straying far into sunlight.

The bars seen along the edge of a METEOR picture represent the dilation of the aperture, and therefore change with the brightness of the scene below. Instead of altering, they remained fixed, suggesting a fault condition.

On July 28, METEOR 3-4 was finally switched off, leaving just METEOR 3-3 operating (continuously) on 137.85MHz. Further METEOR launches are planned during the next few months.

METEOSAT 5

I received a call asking for confirmation that METEOSAT 5 (MOP-2) was transmitting around 1 August. Checking with my small, portable antenna I received strong transmissions from both METEOSAT 4 and 5, the two being separated by several degrees. EUMETSAT is the organisation that controls METEOSAT operations.

METEOSAT 4 (officially called MOP-1) was manoeuvred a few degrees to the east of longitude 0°, with MOP-2 being manoeuvred a few degrees to the west. They were some 10° apart. I was pleasantly surprised to find that MOP-2 was also transmitting Primary Data at high signal strength and I collected some of the best images that I have ever received. Meanwhile further MOP-2 tests are being scheduled.

METEOSAT encryption

Details of the proposed future encryption of METEOSAT Primary and Secondary data arrived on my desk just a few hours before my

Fig. 1: NOAA 11 Europe in spring from Roger Ray.



Fig. 2: St Lawrence River - Canada from Laurence Patton.



deadline! A very quick glance reveals that some Primary Data (PDUS) will be encrypted from 1994, with full encryption from 1995. Major changes to WEFAX transmissions are also scheduled. Full details will be published next month.

Letters

A number of correspondents have sent several pictures - perhaps I might be able to persuade Editor Dick Ganderton to give extra space sometime to publish several at one go? Meanwhile Fig. 2 is from Laurence Patton of Perth and shows an edited image of the entrance to the St Lawrence River near Quebec. Laurence is a keen s.w.l. as well as a WXSAT monitor and has bought several well-known programs for decoding and image processing. He has added in place names before screen photography.

The existence or otherwise of 'WeatherWatch', is queried by B. Berman of Burton-on-Trent, who has been trying to make contact. This organisation was based at Alton in Hampshire some years ago, and provided a telephone number from which current information about WXSATs could be obtained. I have not had any response from the organisation, to my letters, and others report similar experiences. If any reader can provide further information about 'WeatherWatch' I will include it.

Fellow Plymothian Jason Turner recently fitted a CD-ROM unit to his computer and then obtained some WXSAT and other images from NASA's various space missions. NASA inform me that such CD-ROMs are now commercially available. Perhaps when I manage to get a job...

BBC Hardware

A kind offer comes from Roger Ray of Telford who is willing to provide some Maplin equipment for use with a BBC computer. I recently mentioned an item on this matter and was surprised with the number of

enquiries. Those readers who are interested should send a letter with s.a.e. to Roger, to my address - see top of column. Mark it for Roger's attention, and I will be happy to forward all correspondence.

JVFAX 5.2

A second kind offer for readers of this column has come from James Burns. He has the latest version of JVFX, and permission from the author to make copies available to anyone who sends either a 5.25 or 3.5in disk with return postage and packing included, and one extra stamp. Write to James at 110 Park Road, Calderbank, Strathclyde ML6 9TD.

WXSAT BBS

Many hobbyists are using modems fitted to their computers to collect data, and I receive requests for the telephone numbers of BBS (Bulletin Board Systems) carrying WXSAT information. Before describing what's on offer, it might help beginners to explain what is involved.

Modems

Computers communicate with each other in various ways, the most usual being the use of a common standard of disk to transfer information. Direct communications between computers are accomplished by connecting a suitable cable between interfaces on the back, usually the serial port. To connect the computer to a remote machine, the usual method is to use a telephone line.

Before signals can be transferred through this network they have to be converted to a compatible form, which involves modulating the signal at one end, and therefore de-modulating it at the other. The unit which does this is called a modem.

The rate at which data can be transferred depends mainly on the quality of the telephone line. Bursts of noise heard so often during

normal telephone conversations have the effect of corrupting any signals being transmitted, so normal practice is to use some form of error checking program - referred to as the protocol - incorporated within the software. Whenever two computers communicate, they must use the same protocol. The rate of data transfer is referred to as the baud rate - the number of bits of information per second. My modem uses a baud rate of 2400.

I logged into the three main UK BBS for WXSAT users - Dartcom's, RIG's, and Timestep's, with some interesting results. One use for such BBS is the supply of recent Kepler elements, ideally covering all current NOAA and CIS WXSATS and preferably some of the 'stand-by' craft. Older series two WXSATS are unlikely to be re-activated.

Other useful services can include programs and data files for down-loading. It is important to realise that logging on to such BBS is generally free (other than the cost of the call), and is effectively a service provided by the system's operator (sysop). That is why larger firms, like Timestep Weather Systems and Dartcom, are currently providing them. The other BBS is maintained by the Remote Imaging Group for the benefit of its members (of which I am one) and is funded by them.

Modem Facilities

The communications program normally has an option to retain terminal activity - storing all information received from the server computer. This allows you to subsequently plan future communications sessions - usually down-loading files - in the minimum of time, and therefore cost. Data can be examined later at leisure. Using this facility I reduced the time taken to collect a set of WXSAT elements from a remote computer, to about 90 seconds - costing within 15p!

Dartcom BBS

This BBS is at the offices of Dartcom, a supplier of WXSAT equipment based near Tavistock in Devon. I have not received any product details from them for several years, so have assumed they are catering for a different market.

I called up their BBS during July - access was very quick (you are requested to give a password) and within seconds I was scanning their file list. The introductory screen advises you of their general equipment supplies. An occasional message - a sort of quote of the day - was periodically printed but was of no interest to me. What did confuse me was a request by their software to transmit an average of one file for each ten of theirs that I down-loaded. I was quite happy to do this,

in fact after I had seen their list of current WXSAT transmissions, which was not accurate, I prepared a file containing an up-to-date list. Unfortunately their software did not appear to have any facility to allow me to send it. I contacted Dartcom by phone and was told that they did not actually accept file input because of the virus risk!

Dartcom advise that they update their Kepler element list at the beginning of each month so I logged in on August 2 and down-loaded BULLETIN.TXT that contains the data for many satellites in NASA 2-line element format. For beginners, it is worth mentioning that this is probably the most common format for all satellite Kepler elements, consisting of just two lines of data containing each parameter in a fixed position, and can be read by most predictions programs.

I was pleased to see that this data was current and would recommend this file to anyone wanting a comprehensive collection of elements. Transfer was completed by the Dartcom 'server' computer that transmitted the file in ASCII format - straight on to the screen! Transmission took about 40 seconds.

Dartcom's BBS number is (0822) 88249.

RIG BBS

The Remote Imaging Group operates a BBS for members, with access currently permitted to all. The first signing-on procedure seemed rather long in comparison with the other BBS, and I would recommend users enter NO to the offer of ANSI graphics, otherwise this takes some unproductive seconds to display.

The board carries Kepler elements 'pinched' (it says) from the Timestep board. The file TWOLINE.NEW contained elements from the previous week, but fortunately with no warnings (see Timestep BBS). During this and later contacts I did notice a number of data transmission errors occurring; this had been pointed out to me by other users of the system.

The files list was quite comprehensive, containing several programs and data files that will be of interest to WXSAT monitors. The recently changed METEOSAT schedule was included. There were other Kepler element files, one of which I down-loaded without noticing that it was over nine months old!

I was surprised to see that RIG, like both the other BBS, contained an inaccurate WXSAT operating status. It was date stamped yet stated that NOAA 10 was off when in fact it had been transmitting for nearly two weeks. I logged back on to the BBS and sent a copy of my own observations. After a few days I again logged on, but found there had been no correction - NOAA 10 was

Fig. 3:
METEOSAT 4
image from
Roger Ray.



still described as being off. A few days after NOAA 9 was commanded off I logged on and found that both NOAAs 9 and 10 had a wrong status given.

The availability of several useful programs and files plus recent Keplers makes this a useful service for members.

The RIG BBS number is (0945) 85666. Membership enquiries to Ray Godden G4GCE, Wayfield Cottage, The Clump, Chorleywood, Herts WD3 4BG.

Timestep BBS

When I first logged on to this board I got an unwelcome surprise! It starts by warning users that legal action will be taken against anyone distributing the data it contains.

I receive large numbers of requests, from both newcomers and more experienced people, for printouts of recent Kepler elements, and it had been my intention to use these elements for that purpose. The data originates from US Space Command and is normally issued on a 'free-to-all' basis; additionally, I receive this same information from NASA on a weekly basis through another route, and this is the data that I normally distribute. I hope to obtain clarification!

As with the RIG and Dartcom BBSs, the WXSAT status was not accurate, so I transmitted a copy of my current observations. It was not used. By early August, however, the BBS had been updated to show the correct status of NOAAs 9 and 10.

The board contained several useful files including a more comprehensive satellite listing, plus some picture files. I was particularly impressed with the file TWOLINE that is updated late on Friday nights with elements within about 24 hours old. As yet, I daren't distribute them!

Finally, the BBS warns that it will be withdrawn soon except to those users that have registered a password on the system. Well worth registering.

BBS System Operators

I welcome any comments from these, or any other BBS operators, or others, for inclusion in this column. All the above comments are based on my own recorded communications with those systems. If anyone knows of other BBS carrying WXSAT or indeed any type of satellite information, please let me know so I can pass the word along.

Kepler Elements

Paul O'Brien is a teacher at a school in Co. Antrim where they have recently acquired a WXSAT tracking system, and wanted a source of Kepler elements to update their program. I can send printouts of the latest elements upon receiving an s.a.e. and extra stamp towards the cost of data collection. Transmission frequencies are included if operating. This data originates from NASA.

Peter Rouse

Like many other SWM readers and contributors I was deeply saddened to hear of the passing of Peter. Just prior to his entering hospital, he had rung me to say that he had some unused WXSAT hardware which he felt might be of use to readers of this column. Sadly this was superseded by events. Kindness was one of his many qualities which I will not forget.

Frequencies

NOAAs 11,13 a.p.t. on 137.62MHz; NOAAs 10, 12 on 137.50MHz; NOAA beacons on 136.77 and 137.77MHz; METEORS 3-4 or 3-5 may use 137.30MHz and METEOR 3-3 on 137.85MHz

Abbreviations

a.p.t.	automatic picture transmission
AOS	Acquisition of signal
AVHRR	Advanced Very High Resolution Radiometer
BBS	Bulletin board service
CGA	Colour Graphics Adapter
DOS	Disc Operating System
EGA	Enhanced Graphics Adapter
EMS	Expanded (or extended) memory
ESA	European Space Agency
GOES	Geostationary Operational Environmental Satellite
GOMS	Geostationary Operational Meteorological Satellite
h.r.p.t.	high resolution picture transmission
LOS	Loss of signal
NASA	National Aeronautics and Space Administration
PDUS	Primary Data User Station
SVGA	Super VGA
VGA	Video Graphics Array

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Decode

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

Like most people, my name seems to appear in all manner of mailing lists and hence I get my fair share of junk mail. However, now and again something really interesting appears that makes it all worthwhile. An example of this was a catalogue from Pasternack Enterprises in the USA. The mailshot comprised a plain envelope with a fairly cheaply produced catalogue and no covering letter. I had half a mind to throw it in the bin until I thumbed through the pages. I could hardly believe my eyes as the catalogue comprised fifty-nine pages crammed full of coaxial products. Included within this were just about every combination of patching lead in standard lengths from 6 to 72in. They were also quite happy to quote for any other cable length.

If you ever wanted a coaxial adaptor, Pasternack list over three-hundred different types! There are also some very unusual (and expensive) professional adaptors. How would you like a rotary coaxial joint rated at 15kW between d.c. and 11GHz? If you would, Pasternack have some at a mere \$1295! The catalogue was completed with an extensive selection of attenuators and dummy loads. These ranged from simple low power receiver attenuators through 50W d.c. to 18GHz units. I know this is nothing to do with utilities, but I was so impressed with the range, I thought they deserved a mention! If you'd like more details write or phone: Pasternack Enterprises, PO Box 16759, Irvine, CA 92713 USA. Tel: 714-261-1920 or Fax: 714-261-7451.

New Books

This month sees the release of annual updates of two Klingenfuss publications - *Guide to Facsimile Stations* and *Air and Meteo Code Manual*. This is a good opportunity to review these two popular books.

The *Guide to Facsimile Stations* does exactly as the title suggests and provides comprehensive guidance for the FAX listener. The first part of the book provides brief specifications of around seventy-seven decoding systems and accessories. Although there is a strong continental slant, all the main UK products are represented. For the technical minded, there are descriptions of the FAX transmission process along with details of all the standard start and stop tones. This is particularly useful for anyone thinking of producing their own FAX decoding

systems. If you're into satellites, you will find detailed information on the various weather satellite systems as well as decoding information for the APT Predict and FANAS codes used by some RTTY meteo stations. No guide to FAX stations would be complete without a frequency list and the Klingenfuss guide can justifiably claim to be the most up-to-date as it is comprehensively reviewed annually.

Perhaps one of the most important features is the detailed transmission schedule for every listed FAX station. This lets the operator view the range of charts available and plan the ones to receive. The book even includes chart decoding details so that you can convert the chart type abbreviations into something a little more meaningful. There are also full QSL address for all the major weather authorities that can provide useful reference material. Most of the remainder of the book is taken up with a wide selection of charts received from FAX stations all over the world. Not only does this provide interesting data on the various chart types, but it illustrates many of the propagation related problems that effect FAX reception.

The FAX enthusiast will find the *Guide to Facsimile Stations* is both interesting reading and a very practical reference.

The *Air and Meteo Code Manual* provides an essential reference for everyone involved in aeronautical and meteorological utility monitoring. An example of its usefulness is contained elsewhere in this month's column. The first sections of the book are dedicated to meteorological information and provides extensive decoding information for a wide range of code forms: AIREP, ARFOR, BATHY, METAR/SPECI, PILOT/PILOT MOBIL/PILOT SHIP, ROFOR, SHIP/SYNOPTAF, TEMP/TEMP DROP/TEMP MOBIL/TEMP SHIP TESAC, TRACKOB and WITEM. This comprehensive information is supplemented by a world-wide listing of around 8000 observation stations and their respective numeric identifiers. In addition to the decoding tables there are plenty of worked examples to illustrate the way in which the codes are used.

The second half of the book concentrates on decoding the various types of aeronautical information. Following an introduction to the Aeronautical Fixed Telecommunication Network (AFTN) the guide gives details of

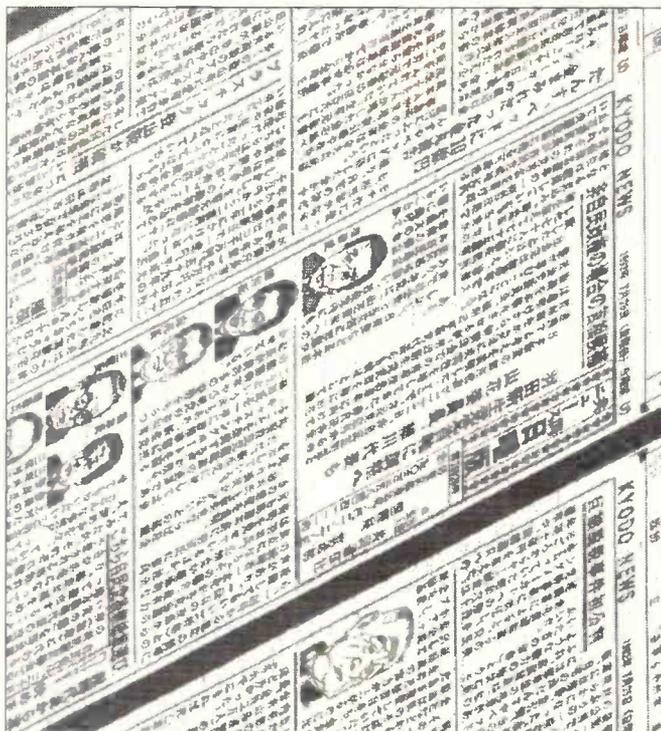


Fig. 1: An example of poor clock synchronisation.

the AFTN and ATS message systems that are in common use for the communication of aircraft flight plans. As with the meteorological section, there were plenty of worked examples to help the newcomer understand the way in which the code is used. To further help with decoding there were approximately 130 pages of location indicators, addressee designators and aircraft type designators.

As you can see, the *Air and Meteo Guide* provides a comprehensive range of information. Although this information can be obtained from other 'official' (& expensive) sources, its concentration into one document makes the *Air and Meteo Code Manual* an excellent reference.

Both the books covered here have just been released in their thirteenth edition and are available from the *Short Wave Magazine* Book Service price £18.00 for *Guide to Facsimile Stations* and £18.00 for the *Air and Meteo Code Manual*. See the Book Service pages for the appropriate post and packing rates.

Simple WX Decoding

Ronald Still of Bournemouth writes asking if there's a quick way of decoding the RTTY weather stations such as Bracknell Met on 4.489MHz. The problem with these stations is that the data has been encoded to facilitate processing by computer. This means that it's bound to be difficult for us mere mortals to decode! The obvious solution is to use a computer based decoding system.

There are a few excellent systems available such as Skyview and ICS-SYNOP and the hardware Synoptic Decoder from ERA Ltd.

However, not everyone can justify the additional expense of such systems and so a manual alternative is required. Although you can perform complete decoding manually, it's a very tedious task that few have the patience to do. What we can do is pick out a few items of information that are likely to be of interest and ignore the rest. To further simplify the task, we could only look at SYNOP and SHIP reports. These are by far the most common reports and also likely to be of most use to the listener. Because all of these reporting systems send their data in a pre-defined order, it's comparatively easy to pick out the required information. I will attempt to show you how you can extract the following from each report: date, time, weather station, wind speed and direction, temperature and current weather. This should be enough to give an idea, of the weather patterns at a number of locations.

I always find the best way to understand this type of decoding is to look at a few examples so here we go!

The first is a report received from Bracknell on 4.489MHz.
ZCZC 302
SMUK22 EGRR 141200
AAXX 14124
03809 31465 50905 10184 20131
40118 56006 70242 81831 333 81818
84075=

The first marker to look out for is AAXX or BBXX. In these transmissions AAXX shows that it's a SYNOP report from a land station whilst BBXX shows a SHIP report. The first four digits of the following number show the date and time of the reports. Our example shows the 14th of the month at 1200UTC. The number at the start of the next line is called the station identifier and lets you know where the weather

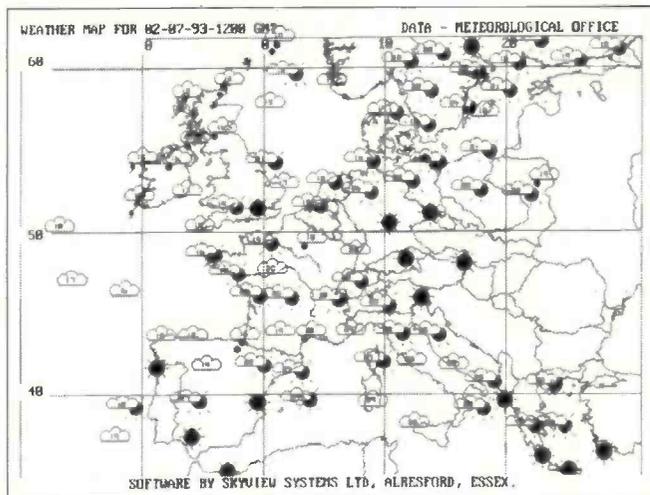


Fig. 2: A synoptic chart from Skyview Systems.

readings were taken. To work out the station details you will have to use to a reference book such as the Klingenfuss *Air and Meteo Code Manual*.

In this example 03809 is Culdrose. We now need to skip the next five digit group and look at the last four digits of following group (50905). These tell us the direction and speed of the wind. In this case the direction is 090 degrees and the speed 05 knots. To establish the temperature we move onto the next group that starts with the number 1. The following digits shows whether the temperature that follows is positive or negative (0 for +, 1 for -). The final three digits show the temperature to one decimal place. In our example this is 18.4C.

To capture the weather at the time of the reading we need to skip to the eighth or ninth group which should start with the number 7. The next two digits show the weather using a comprehensive coding system. Rather than go through this in detail, I'll just show the broad categories here:

- 00-49 No precipitation
- 50-99 precipitation

Generally speaking the higher the number the worse the weather. Complete details can be found in the *Air and Meteo Code manual* or *Admiralty List of Radio Signals Vol 3*.

Our example shows no precipitation.

As practice makes perfect, here's another example for you to try.

03853 31562 11403 10230 20186
40116 57021 70511 81101 333 81820=
Decoding this should result in the following:

Yeovilton, wind 140 deg 3 knots, temp 23C, No precipitation (haze).

And one more:

07110 31462 62606 10192 20138
40125 52006 70341 82136 333 82816
85273=

Brest, wind 260 deg 6 knots, temp 19.2C, no precipitation (clouds forming).

Incidentally, the = sign at the end of each of these reports marks the end of each stations readings.

With a bit of luck you should now be starting to get to grips with this short form manual decoding. If

you would like more information check out the *Air and Meteo Code Manual* or write to the column.

ICS News

I've just received a hot press release from ICS Electronics giving details of new products and updates. The first concerns the release of PACTOR updates for decoders in the AEA range. PACTOR is that burst mode signal found on the amateur bands that sounds like a cross between SITOR and FEC! The models concerned are: PK-232MBX, PK-900, DSP-1232 and DSP-2232. A check through their price list shows that the upgrade is priced at £69.95 plus £3.00 for UK carriage. Those of you contemplating a new decoder will be pleased to hear that all the afore mentioned decoders are now supplied with PACTOR included as standard. The prices are: PK-232MBX £385.00, PK-900 £549.95, DSP-1232 £799.95, DSP-2232 £999.95.

The second new release will have particular appeal for IBM PC users. Decoders such as the PK-232MBX usually operate with a special driver program installed on the computer. This provides a whole range of sophisticated control functions designed to add to the already comprehensive features. Perhaps the most common of these programs is PC-PAKRATT. The latest development

is the release of PC-PAKRATT for Windows. One of the most significant advantages of this system is the ability to multitask decoding with other operations. In this way you can carry on using your word processor or database while PC-PAKRATT works in the background decoding all the incoming signals. As is normal with Windows applications, PC-PAKRATT requires Windows 3.1 with 4Mb disk space and 2Mb RAM. PC-PAKRATT also supports the full range of AEA data controllers. For more details contact ICS Electronics at Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD, Tel: (0903) 731101.

JVFAX Update

Now that a number of readers are using this excellent FAX program, I'm starting to receive a few queries that I can answer through the column. I recently received a letter from Peter Lee of Coulsdon asking about a.m. FAX reception.

Whereas all h.f. FAX transmissions use f.m. or f.s.k., the orbiting satellite systems use a form of a.m. for their pictures. In these cases an 1800 or 2600Hz tone is amplitude modulated with the picture information. The JVFX decoding system can process this type of information, but Peter Lee reports very little success. Having looked at Peter's set-up I can see that the problem is the interface that's being used. Like most people, Peter is using the simple comparator interface that connects to the serial port of the computer. Although this works quite well for f.m. signals, it cannot work for a.m. This is because the comparator is effectively an overloaded amplifier and swings between its positive and negative limits. Whilst this helps with f.m. reception, it completely eliminates any a.m. information present in the signal! The only solution is to use one of the more sophisticated interfaces that are described in the JVFX documentation. The only snag here is that all the ready-built units only appear to be available in Germany. Can anyone help with a supplier of analogue interfaces for the JVFX decoder? If you can,

please write to the address at the head of the column.

The second JVFX topic is also relevant to many other computer based FAX programs and concerns clock speeds. I've seen many examples of charts received of systems that do not have the clock speeds optimised. I've shown an example to illustrate the point. As you can see in a bad case you end up with a very badly skewed image. This is due to the computer's internal clock being out of synchronisation with that of the transmitting station.

Although all FAX programs have facilities to correct this error, it's often overlooked. One good way to check for synchronisation is to tune into the Rugby MSF time signal on 60kHz. This produces a very precise one second pulse that's ideal for setting-up FAX decoders. First set your FAX unit to 120 lines per minute and an IOC of 288. Then tune into the Rugby signal and adjust your receiver until you start to see a vertical line appearing on the screen. Using the instructions for your decoder you then need to adjust the clock frequency so that the line stays parallel to the edge of the screen. One important point BEFORE you start this operation, make a written note of the original clock setting. If you should get in a mess you can use this to get back to where you started!

Frequency List

Now for this months' collection of readers logs. If you would like a copy of my Decode list or Day Watson's Beginners list, just send three first or second class stamps to the address at the head of the column. By the time you read this I will have returned from my holiday in sunny Menorca and I should apologise for the delay experienced by anyone who's asked for a list over the past few weeks. For obvious reasons, I don't like to advertise when I'm away from home!

This month's log has been compiled from reports from the following: Day Watson, Lee Williams, Gavin Jones and Andy Keddie.

Frequency	Mode	Speed	Shift	Callsign	Time	Notes
6.446MHz	FAX	120	576	GYA	0955	RN Northwood
7.592MHz	RTTY	50	400	YZD6	1819	TUNJUG press
7.75MHz	FAX	120	576	RAW78	0800	Moscow met
7.8424MHz	RTTY	50	400	CNM201X	1655	MAP Rabat press
7.88MHz	FAX	120	576	DDK3	1330	Hamburg met
7.959MHz	RTTY	50	400	9BC23	1913	IRNA Tehran
8.165MHz	RTTY	50	400	5YD	2015	Nairobi
10.973MHz	ARQ	100	170	-	1145	Swiss Embassy
12.0626MHz	RTTY	75	85	-	2325	US Military
12.110MHz	RTTY	50	400	YOM21	1114	ROMPRES
12.186MHz	RTTY	50	400	-	1742	JANA Tripoli
12.886MHz	CW	-	-	EAD	1915	Madrid
13.9965MHz	RTTY	50	400	STK	0030	Khartoum
14.912MHz	RTTY	75	400	-	1425	Yugoslav diplo
18.972MHz	RTTY	75	400	DFZG	1545	MFA Belgrade
19.357MHz	FEC-A	96	600	-	1324	Nigerian Embassy
19.8215MHz	ARQ	100	170	-	1330	UN Geneva
20.734MHz	ARQ	100	170	-	0808	UN Geneva

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Note: l.w. & m.w. frequencies in kHz;
s.w. in MHz; Time in UTC (=GMT). Unless
stated, logs compiled during the four
week period ending July 31.

Medium Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener	Freq kHz	Station	Country	Power (kW)	Listener	Freq kHz	Station	Country	Power (kW)	Listener
520	Hof-Saale	Germany	0.2	A,R*	873	Frankfurt(AFN)	Germany	150	G,L,Q*,S*,T*	1296	Drfordness(BBC)	UK	500	Q*,S*,V*
531	Ain Beida	Algeria	600	S*	873	Zaragoza(SER)	Spain	20	G,Q*,S*	1305	Rzeszow	Poland	100	Q*,S*
531	Leipzig	Germany	100	A,C,F*,G*,Q*	873	Enniskillen(R,UI)	UK	1	Q	1305	Drense(RNE5)	Spain	5	G*,Q*
531	Dwiedel(RNE5)	Spain	20	A,C,G*,Q*,S*	882	Wachenbrunn	Germany	250	G	1314	Kvitsoy	Norway	1200	A,D*,G*,Q*,S*
540	Wavre	Belgium	150/50	A,C,F,G*,Q*,S,T	882	Malaga(COPE)	Spain	5	G*,M,Q*,S*	1368	Foxdale(Manx R)	IONM	20	E*,G*,H*,J*,Q,S*,T*
540	Solt	Hungary	2000	G*,Q*	882	Washford(BBC)	UK	100	V,D*,G*,K,L,Q,S,T,V*	1377	Lille	France	300	A,B,G*,K,Q*,S*
540	Sidi Bennour	Morocco	60	S*	891	Algiers	Algeria	800/300	A*,G*,J*,Q*,S*,T*	1386	Athens	Greece	50	A*,R*
540	Vitoria(EI)	Spain	10	G*	891	Huisberg	Netherlands	20	Q*	1386	Kaliningrad	Russia	500	A,G*,J*,K*,Q*,S*,T
549	Las Trembles	Algeria	600	G*,Q*,S*	900	Milan	Italy	600	D*,G*,L,Q*,S*,V*	1395	Lushnet(Tirana)	Albania	1000	G*,K*,Q*,S*,T
549	Bayreuth(DLF)	Germany	200	A,C,F,G*,J*,M,Q,S,T	900	Bilbao(COPE)	Spain	10	G*,Q*	1395	RNE5 via ?	Spain	2	Q*
558	Rostock(NDR)	Germany	20	K*,Q*,R*	909	Malorca(RNE5)	Spain	10	Q*	1404	Brest	France	20	A,B,G*,Q*,S*
558	Tirgu Jiu	Romania	200	S*	909	B'mans Pk(BBC2)	UK	140	T,V	1413	RNE5 via ?	Spain	?	F*,G*,Q*,S*
558	Valencia(RNE5)	Spain	20	C,G*,Q*,S*	909	M'side Edge(BBC2)	UK	200	E	1413	Prstina	Yugoslavia	1000	S*
567	Berlin	Germany	100	Q*	918	R Ljubljana	Slovenia	600/100	D*,S*	1422	Hausweiler(SR)	Germany	1200/600	A,D*,E*,F*,G*,J*,Q,S*,T*
567	Tullamore(RTE1)	Ireland (SI)	100	C,D*,E,F,G*,L,M,S,T,V	918	Madrid(R,Int)	Spain	20	G*,Q*	1431	Dresden	Germany	250	F*,Q*,S*
567	Marbella(RTE1)	Spain	10	S*	927	Volterem	Belgium	300	A,C,G*,L,Q*,S,T	1440	Marnach(RTL)	Luxembourg	1200	A,E,G*,J*,Q,S,T
576	Muhlacker(SDR)	Germany	500	A,F*,R*,S	936	Bremen	Germany	100	J*,Q,S*	1440	Dammam	Saudi Arabia	1600	F*,Q*,S*
576	Schwerin(NDR)	Germany	250	G*,J*,Q*,R*,T*	936	Venezia	Italy	20	S*	1449	Berlin	Germany	5	F*,Q*,S*
576	Riga	Latvia	500	S*	936	RNE5 via ?	Spain	?	G*,Q*	1449	Redmoss(BBC4)	UK	2	Q*
576	Barcelona(RNE5)	Spain	50	G*,Q*,S*	945	Toulouse	France	300	E*,Q*,S*	1458	Weidau(MDR)	Germany	5	J*
585	Paris(FIP)	France	8	C,F,K,S	954	Brno(Dobrochov)	Czech Rep	200	Q*,S*	1458	B'mans Pk(BBCWS)	UK	50	B*
585	Madrid(RNE1)	Spain	200	A,F*,G*,Q*,S*,T*,V	954	Madrid(CI)	Spain	20	E*,G*,Q*,S*,V*	1467	Esfahan	Iran	200	G
594	Frankfurt(HR)	Germany	1000/400	A,C,F,G*,J*,Q*,S*,T*,V*	963	Sofia	Bulgaria	150	Q*	1467	Monte Carlo(TWR)	Monaco	100*	B
594	Dujda-1	Morocco	100	S*	963	Pori	Finland	600	F*,G*,Q*,S*,T*,V*	1503	Stargard	Poland	300	G*,K*,Q*,S*,V*
594	Muge	Portugal	100	Q*,S*	963	Paris	France	8	G*	1512	Volterem	Belgium	600	A,E,G*,J*,Q,S,T,V*
803	Lyon	France	300	Q*,V*	963	Tir Chonaill	Ireland (SI)	10	G*,S*	1521	Kosice(Czatec)	Slovakia	500	G*,Q*,S*
803	Sevilla(RNE5)	Spain	50	Q*,S*	972	Hamburg(NDR)	Germany	300	A,G*,J*,Q*,S*,T*	1521	Duba	Saudi Arabia	2000	R*
812	Kiel(NDR)	Germany	10	I*	972	RNE1 via ?	Spain	?	G*,S*	1521	R.Mansra(SER)	Spain	2	G*,S*
812	Athlone(RTE2)	Ireland (SI)	100	A,C,D*,E,F,G,S,T,V	972	M'Lemos(RNE1)	Spain	2	R*	1530	Vatican R	Italy	1500/450	B,E,G*,K,Q*,S*,V*
812	Lerida(RNE1)	Spain	10	Q*,S*	981	Alger	Algeria	600/300	G*,Q*,S*,T*	1539	Manfingen(DLF)	Germany	700	G*,J*,Q*,S*,T*
821	Wavre	Belgium	80	C,F,G,Q*,S*,T*	981	Miegara	Greece	200	G*	1539	Valladolid(SER)	Spain	5	G*
821	Barcelona(OCR)	Spain	50	G*,Q*,R*,S*	981	Coimbra	Portugal	10	R*	1557	Nice	France	300	Q*,T
821	Santa Cruz(RNE1)	Tenerife	100	R*	990	Berlin	Germany	300	Q*	1557	Kaunas (R.Vilnius)	Lithuania	75	Q*
830	Dannenberg(NDR)	Germany	100	I*	990	R.Bilbao(SER)	Spain	10	G*,Q*	1566	Mayak	Russia	?	R*
830	Vigra	Norway	100	Q*	990	Redmoss(BBCScott)	UK	1	Q*	1566	Sarnen	Switzerland	300	Q*
830	Tunis-Djedeida	Tunisia	600	Q*,S*	999	Madrid(COPE)	Spain	50	D*,G*,Q*	1586	Sfax	Tunisia	1200	R*,S*
839	Praha(Liblice)	Czech	1500	Q*	1008	Las Palmas(SER)	Gran Canaria	?	G*,R*	1575	Burg	Germany	250	A,G*,Q*
839	La Coruna(RNE1)	Spain	100	C,D*,E,G*,Q*,S*,V*	1008	FlevoHilv-51	Holland	400	A,C,G*,Q*,S*,T*,V*	1575	Genova	Italy	50	B,S*
839	Zaragoza(RNE1)	Spain	20	G*	1017	Rheinsender(SWF)	Germany	600	A,D*,G*,J*,Q,S*,T*,V*	1575	Cordoba(SER)	Spain	5	G*,S*
848	Mallorca(RNE1)	Spain	10	Q*	1017	RNE5 via ?	Spain	?	D*,S*,V*	1584	Drense(BBC)	Spain	2	S*,V*
848	Orfordness(BBC)	UK	500	F,G,K,M,Q*,S*	1017	Burgos(RNE5)	Spain	100	Q*,S*	1593	Langenberg(WDR)	Germany	400/800	A,B*,D*,E*,F*,G*,J*,Q*,R*,S*,T*
857	Neuburg(NDR)	Germany	250	I*,Q*,R*	1026	Dob-Doi	Austria	100	Q*,S*	1602	Vitoria(EI)	Spain	10	D*,G*,S*
857	Madrid(RNE5)	Spain	20	G*,Q*,S*	1026	SER via ?	Spain	?	G*	1611	Vatican R	Italy	15	A*
857	Wrexham(BBCWales)	UK	2	F,K,M,T	1026	Alicant(SER)	Spain	3	S*					
866	Bodensees'dr(SWF)	Germany	300/180	Q*	1035	Lisbon(Prog3)	Portugal	120	D*,G*,Q*,S*					
866	Lisboa	Portugal	135	Q*,S*	1035	Tallinn	Estonia	500	S*					
866	Barcelona(COPE)	Spain	10	R*	1044	Dresden	Germany	250	A,G*,Q*,S*					
866	R.Vilnius	Lithuania	500	Q*	1044	S. Sebastian(SER)	Spain	10	G*,Q*,S*					
875	Marseille	France	600	A,B*,C,G*,Q*,S*	1053	Zaragoza(COPE)	Spain	10	Q*					
884	Sevilla(RNE1)	Spain	500	A,G*,M,Q*,S*	1053	Burghhead(BBC1)	UK	20	V					
884	Beograd	Yugoslavia	2000	S*	1053	Drabovnik(BBC1)	UK	150	D*,E,T					
884	Viseu(RDP1)	Portugal	10	R*	1062	Kalundborg	Denmark	250	A,G*,K,Q,S*					
893	Burghhead(BBC5)	UK	50	M,V	1071	Brest	France	20	A,G*,K*,Q*,S*					
893	Droitwich(BBC5)	UK	150	E,F,T	1071	Lille	France	40	D*,J*					
893	Postwick(BBC5)	UK	10	M	1071	Bilbao(EI)	Spain	5	G*,Q*					
702	Flensburg(NDR)	Germany	5	A,J*,Q*,R*	1080	Katowice	Poland	1500	G*,Q*,S*					
702	Monte Carlo	Monaco	300	Q*	1080	Granada(SER)	Spain	5	G*,Q*					
702	Zamora(RNE1)	Spain	10	G*,S*	1085	B'mans Park(BBC1)	UK	150	T,V					
711	Rennes 1	France	300	C,F,G,J*,Q*,S	1089	M'side Edge(BBC1)	UK	150	E*					
711	Heidelberg	Germany	5	Q*	1098	Nitra(Jarok)	Slovakia	1500	G*,K,Q*,S*					
711	Laayoune	Morocco	600	S*,T*	1098	RNE5 via ?	Spain	?	D*,G*,Q*					
711	Murcia(COPE)	Spain	5	G*,S*	1098	Lugo(RNE5)	Spain	10	K,S*					
720	Langenberg	Germany	200	R	1107	Munich(AFN)	Germany	40	D*,G*					
720	Lisnagarvey(BBC4)	Ireland (N)	10	C,S*,V	1107	RNE5 via ?	Spain	?	G*,Q*					
720	Norte	Portugal	100	Q*	1107	Caceres(RNE5)	Spain	5	S*					
720	Lots Rd,Ldn(BBC4)	UK	0.5	F,S	1116	Bari	Italy	150	S*					
729	Leipzig	Germany	5	B*,Q*	1116	Pontevedra(SER)	Spain	5	G*,Q*					
729	Putbus/Bergen(NDR)	Germany	10	I*	1125	La Louviere	Belgium	20	A,Q*					
729	Cork(RTE1)	Ireland (SI)	10	C,G*,Q*,S,T,V*	1125	Castellon(RNE5)	Spain	10	S*					
729	Dwiedel(RNE1)	Spain	50	G*,Q*,S*	1125	Vitoria(RNE5)	Spain	10	G*					
738	Paris	France	4	Q*,S	1134	COPE via ?	Spain	2	G*,Q*,S*					
738	Poznan	Poland	300	S*	1134	Zadar	Yugoslavia	1200	G*,Q*,R*,S*,T*					
738	Barcelona(RNE1)	Spain	500	G*,Q*,S*,V*	1143	Stuttgart(AFN)	Germany	10	G*,M,Q*,S*					
747	Flevo(Hilv2)	Holland	400	C,E*,F*,G*,Q*,S,T,V*	1143	Messina	Italy	6	G*,Q*,S*					
747	Cadiz(RNE5)	Spain	10	A,C	1143	Bolshakov(Mayak)	Russia	150	R*					
756	Braunschweig(DLF)	Germany	800/200	A,G*,G*,J*,Q*,S*	1143	Madrid(COPE)	Spain	2	R*,S*					
756	Lugoj	Romania	400	R	1152	Lerida(RNE5)	Spain	10	Q*					
756	Redruth(BBC4)	UK	2	Q*,S	1161	Strasbourg(Flnt)	France	200	E*,G*,Q*,S*,V*					
765	Sottens	Switzerland	500	E*,G*,Q*,S*	1179	Murcia(SER)	Spain	5	G*					
774	Bonn(WDR2)	Germany	5	R*	1179	Santiago(SER)	Spain	10	Q*					
774	Enniskillen(BBC4)	Ireland (N)	1	Q*	1179	Solivesborg	Sweden	800	G*,J*,K,L,Q,S,T,V*					
774	S. Sebastian(RNE1)	Spain	50	G*,Q*,S*	1188	Kuurne	Belgium	5	A,E*,G*,Q*,S*					
774	Plymouth(BBC4)	UK	1	D*	1188	Stolnok	Hungary	135	G*,S*					
783	Burg	Germany	1000	A,G*,Q*	1197	Munich(VDA)	Germany	300	D*,G*,Q*					
783	Miramar(R.Porto)	Portugal	100	G*,Q*,S*	1197	Virgin via ?	UK	?	D*,F*,G*,P,Q,S*,T*,V*					
783	Tartus	Syria	600	R*	1206	Bordeaux	France	100	G*,Q*					
792	Limoges	France	300	Q*,S*,T*	1215	Castellon(COPE)	Spain	2	Q*					
792	Lingen(NDR)	Germany	5	B*,I*,S*	1215	Virgin via ?	UK	?	D*,E,F,N,D,P,S					
792	Sevilla(SER)	Spain	20	G*,Q*,S*	1215	Droitwich(V)	UK	105	T					
801	Munchen-Ismaning	Germany	300	Q*	1215	Lisnagarvey(V)	UK	16	Q					
801	Burgos(RNE1)	Spain	10	G*,M,Q*,S*	1224	Vidin	Bulgaria	300	Q*					
810	Voru	Estonia	5	S*	1224	COPE via ?	Spain	?	G*					
810	Madrid(SER)	Spain	20	G*,Q*	1224	Virgin via ?	UK	?	E,P					
810	Burghhead(BBC)	UK	100	D*	1233	Liege	Belgium	5	G*,S*					
810	Westerglen(BBC)	UK	100	C,G*,M,Q,S*,T,V	1233	Nitra	Slovakia	40	K*,Q*					
819	Toufouse	France	50	A,Q*	1242	Marseille	France	150	D*					
819	Trieste	Italy	25	G*,M,S*	1242	Virgin via ?	UK	?	F,Q*,V*					
819	Rabat	Morocco	25	A*,B*	1251	Marcali	Hungary	500	Q*					
819	Warsaw	Poland	300	S*	1251	Tripoli	Libya	500	R*					
828	Hannover(NDR)	Germany	100/5	I*,Q*	1251	Huisberg	Netherlands	10	G*,S*					
828	Barcelona(SER)	Spain	50	S*	1251	Ponto	Portugal	10	G*					
837	Nancy	France	200	Q*,S*,V*	1260	Algeciras(SER)	Spain	5	G*					
837	Sevilla(COPE)	Spain	10	G*,Q*,S*	1260	Valencia(SER)	Spain	20	G*,Q*,S*					
846	Rome	Italy	540	B*,G*,Q*,S*,T*,V*	1269	Neumunster(DLF)	Germany	800	A,D*,E*,F*,G*,Q*,S*,T*,V*					
855	Berlin	Germany	100	Q*	1269	COPE via ?	Spain	?	G*,Q*					
855	Murcia(RNE1)	Spain	125	E*,G*,Q*,S*,T*,V*	1278	Dublin/Cork(RTE2)	Ireland (SI)	10	A,D*,G*,Q,S,T,V					
864	Santah	Egypt	500	R*	1287	Litomy(RFE)	Czech Rep.	300/200	A*,G*,Q*,S*					
864	Paris	France	300	C,Q*,S	1287	Lerida(SER)								

Long Medium & Short

Local Radio Chart

Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R	I	7.50	A,C,E,H,I,K,Q,R,V
585	R.Solway	B	2.00	A,E,P,S
603	Cheltenham(CD603)	I	?	E,I,J,Q,R,U,V,Y
603	Invicta SG (Coast)	I	0.10	A,E,H,I,P*,Q,S,V
630	R.Bedfordshire(3CR)	B	0.20	A,C,E,H,I,K,Q,R,S,V,Y
630	R.Cornwall	B	2.00	C,E,P*,Q,T*
657	R.Clywd	B	2.00	A,C,E,G,I,O,P*,Q,R,T*,V,Y
657	R.Cornwall	B	0.50	C,Q
666	DevonAir R	I	0.34	C,E,I,J,P*,QV
666	R.York	B	0.80	A,E,I,P*,V,Y
729	BBC Essex	B	0.20	A,C,E,H,I,K,Q,R,V
738	Hereford/Worcester	B	0.037	A,C,E,H,I,J,Q,R,V,Y
756	R.Cumbria	B	1.00	A,E,G*,I,P,Y
756	R.Maldwyn	I	0.63	E,I,M,N,Q,U,V
765	BBC Essex	B	0.50	A,C,D,E,H,I,K,Q,R,V,Y
774	R.Kent	B	0.70	A,C,H,I,Q,S,V
774	R.Leeds	B	0.50	D,E,G,Y
774	Gloucester(3CSG)	I	0.14	E,Q,R,Y
792	Chiltern (S.Gold)	I	0.27	A,C,E,H,I,K,L,Q,R,V,Y
792	R.Foyle	B	1.00	Y
801	R.Devon	B	2.00	A,C,E,I,J,P*,QV,Y
828	Chiltern (S.Gold)	I	0.20	A,C,H,I,K,V
828	R.Aire (Magic828)	I	0.12	E,G,Y
828	R.WM	B	0.20	E,R,Y
828	2CR (Cl.Gold)	I	0.27	Q,S,V
837	R.Cumbria	B	1.50	E,Y
837	R.Furness	B	1.00	E,P*
837	R.Leicester	B	0.45	A,C,E,H,I,K,Q,R,V
855	R.Devon	B	1.00	C,Q
855	R.Lancashire	B	1.50	E,G,P*,Y
855	R.Norfolk	B	1.50	A,D,I,V
855	Sunshine R	I	0.15	E,I,J,K,R,V
873	R.Norfolk	B	0.30	A,D,E,I,K,L,Q,V,W*
876	Brunel R (Cl.Gold)	I	0.18	A,C,E,I,K,Q,R,V,Y
945	R.Trent (Gem AM)	I	0.20	A,C,E,G,I,K,P*,Q,R,V,X,Y
954	DevonAir (Cl.Gold)	I	0.32	C,I,Q,V
954	R.Wyvern (WYVN)	I	0.16	C,E,I,R,V,Y
990	WABC (Nice & Easy)	I	0.09	C,E,I,R,V,Y
990	R.Aberdeen	B	1.00	O,P,T
990	R.Devon	B	1.00	C,I,J,Q,V
990	Hallam R (Gt.Yks)	I	0.25	A,I,V,Y
999	R.Solent	B	1.00	A,C,I,J,K,L,Q,S,V
999	R.Trent (Gem AM)	I	0.25	D,E,I,V,X
999	Red Rose (Gold)	I	0.80	E,P,Y
1017	Beacon R (WABC)	I	0.70	A,C,E,G,I,M,P*,Q,R,V,Y
1026	Downtown R	I	1.70	O,Y
1026	R.Cambndgeshire	B	0.50	A,C,D,I,K,V
1026	R.Jersey	B	1.00	C,I,K,Q,S,V
1035	NorthSound R	I	0.75	E*,I,O*,T*
1035	R.Kent	B	0.50	A,C,I,Q,V
1035	R.Sheffield	B	1.00	E,Y
1035	West Sound R	I	0.32	O,P
1107	Moray Frith R	I	1.50	I,O,P*,T
1116	R.Derby	B	1.20	A,B*,E,I,R,V,Y
1116	R.Guernsey	B	0.50	E*,I,Q,S,V
1152	BRMB (Xtra-AM)	I	3.00	E,R,X
1152	LBC (L.Talkback R)	I	22.50	A,I,Q,S,V
1152	Piccadilly R(Gold)	I	1.50	E,G,Y
1152	R.Broadland	I	0.83	P*,V
1152	R.Clyde (Clyde 2)	I	3.06	P*,O*,P*

Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
1161	Brunel R (Cl.Gold)	I	0.16	E,I,Q,V
1161	R.Bedfordshire(3CR)	B	0.10	A,E,I,V
1161	R.Sussex	B	1.00	I,K,Q,S,V
1161	R.Tay	I	1.40	O
1161	Viking R (Gt.Yks)	I	0.35	E,P*,Y
1170	GNR Teeside	I	0.32	O
1170	Portsmouth (SCR)	I	0.12	A,I,L,Q,S,V
1170	R.Orwell (SGR)	I	0.28	I,V
1170	Signal R.(S.Gold)	I	0.20	E,G,I,R,Y
1170	Swansea Sound	I	0.58	P*
1242	Invicta Snd(Coast)	I	0.32	A,E*,I,V
1242	Isle of Wight R.	I	0.50	E*,I,P*,Q,S,V
1251	Saxon R. (SGR)	I	0.76	A,E*,I,O*,P*,V
1260	Brunel R (Cl.Gold)	I	1.60	I,K,P*,Q,V
1260	R.York	B	0.50	A
1260	Sunrise R	I	0.29	E,I,R,V
1260	Marcher Snd (Gold)	I	0.64	E,G,I,M,P*,Y
1278	Bradford (Gt.Yks)	I	0.43	A,E,I,Y
1305	Barnsley (Gt.Yks)	I	0.15	A,E,I,P*,X,Y
1305	Red Dragon (Touch)	I	0.20	G,I,M,P*,Q,V
1323	R.Bristol (Som.Snd)	B	0.63	E*,I,V
1323	Brighton (SCR)	I	0.50	A,E*,I,Q,S,V
1332	Hereward R.(WGMS)	I	0.60	A,D,E,I,P*,V,Y
1332	Wiltshire Sound	B	0.30	I,Q,V
1359	Essex R.(BreezeAM)	I	0.28	A,H,I,K,P*,V
1359	Mercia Snd(Xtra-AM)	I	0.27	E,I,R,Y
1359	Red Dragon (Touch)	I	0.20	I,P*
1359	R.Solent	B	0.85	I,K,P*,Q,V
1368	R.Lincolnshire	B	2.00	E*,I*,V,Y
1368	R.Sussex	B	1.50	A,H,I,K,Q,S,V
1368	Wiltshire Sound	B	0.10	E*,I,P*,Q
1413	Sunrise R	I	0.125	H,I,Q,V
1431	Essex R.(BreezeAM)	I	0.35	A,I,K,P*,Q,V
1431	R.210 (Cl.Gold)	I	0.14	I,K,Q,V
1449	R.Peterborough/Cambs	B	0.15	D,I,Q,V
1458	GLR	B	50.00	A,I,K*,Q,S,T*,V
1458	GMR	B	5.00	E,G,O,Y
1458	R.Cn-Trent	B	1.00	A,E,I,P*,Q,R,V,Y
1521	Reigate (City Snd)	I	0.64	A,E*,I,K,P*,Q,T*,V
1530	Huddersfield(C.Gold)	I	0.74	O
1530	Sheffield (Gt.Yks)	I	0.74	I,P*,Y
1530	R.Essex	B	0.15	A,I,Q,V
1530	R.Wyvern (WYVN)	I	0.52	I,O,R,T*
1548	Capital R (Cap G)	I	97.50	A,I,K*,Q,S,T*,V
1548	R.Bristol	B	5.00	P*,Q
1548	R.City (City Talk)	I	4.40	Y
1548	R.Forth (Max AM)	I	2.20	O,P*
1548	R.Hallam (Gt.Yks)	I	0.74	O
1557	Chiltern R.(Gold)	I	0.76	I,O,P*,R,V,X
1557	Southampton (SCR)	I	0.50	I,P*,Q,S,V
1557	R.Lancashire	B	0.25	P*,Y
1557	Tending (Mellow)	I	?	B*,V
1584	Kettering (KCBC)	I	0.04	I,K
1584	R.Nottingham	B	1.00	A,D,I,K,P*,Q,V,Y
1584	R.Shropshire	B	0.50	I,R
1584	R.Tay	I	0.21	E*,O*,P*
1602	R.Kent	B	0.25	A,B,E*,I,P*,Q,S,V,Y

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

- Listeners:
- A: Ted Bardsy, N. London.
 - B: Leo Barr, Sunderland.
 - C: Darren Beasley, Bridgwater.
 - D: Vera Brindley, Woodhall Spa.
 - E: Tim Bucknall, Congleton.
 - F: Geoff Crowley, Hafnarfjordur, Iceland.
 - G: Martin Dale, Stockport.
 - H: John Eaton, Woking.
 - I: Gerry Haynes, Bushey Heath.
 - J: Simon Hockenhall, E. Bristol.
 - K: Sheila Hughes, Morden.
 - L: Rhoderick Illman, Oxted.
 - M: Stephen Jones, Oswestry.
 - N: Cyril Kellam, Sheffield.
 - O: Ross Lockley, Stirling.
 - P: Eddie McKeown, Newry.
 - Q: George Millmore, Wootton, IOW.
 - R: Sid Morris, Rowley Regis.
 - S: Harry Richards, while in Worthing.
 - T: Tom Smyth, Co.Fermanagh.
 - U: George Tebbins, Penmaenmawr.
 - V: John Wells, East Grinstead.
 - W: Francis Hearne, N.Bristol.
 - X: Francis Hearne, while in Nottingham.

CJYQ rated 43334 at 0230. At 0240 he heard CFDA Victoriaville on 1380 peaking 32233 and co-channel CKPC in Brantford, which was 22232.

Up in Iceland, **Geoff Crowley** (Hafnarfjordur) has observed that m.w. propagation has started to pick up. No doubt it will continue to improve as the long hours of darkness approach. His log was compiled between 2330 and 0100UTC.

Good reception of the broadcasts from some stations in N.Africa was noted after dark by **George Millmore** (Wootton, IOW), but none from the Middle East were heard. Reception from E.Europe was also favourable with more stations being logged.

Whilst checking the band at night in Cornwall, **John Hickenbottom** (St.Dominic) has noticed that many German stations share the same programme after midnight CET. This makes identification nigh impossible, so he compiled his list after dark but before 2200UTC.

Westdeutscher Rundfunk (WDR) have sent a copy of their frequency schedule to **Roy Merrall** in Dunstable. It shows that two main transmitters at Langenburg carry WDR2. One is on 702kHz

(200kW) from 0500-1600UTC and the second on 1593 (800kW) from 1600-0500UTC. There is a 4-6 minute overlap when both may be heard. They have only one other m.w. outlet, Bonn (5kW) on 774kHz.

Exploring the bands at a holiday location can be interesting and rewarding. Whilst enjoying a few days in Worthing, **Harry Richards** (Barton-on-Humber) compiled a m.w. local radio log for the chart.

Short Wave Reports

Effects of solar activity on propagation have been particularly noticeable in the **25MHz (11m)** band. Often the conditions have been unfavourable for the reception of R.Australia via Darwin on 25.750 (Eng to NE.Africa 0800-0855) in the UK. During one of the better periods it was 14421 at 0824 by **Leo Barr** in Sunderland.

There were no reports to indicate how well the broadcasts beamed to other areas reached their intended targets, but some listeners in the UK received them via back scatter and other modes.

They come from UAE R, Abu Dhabi 25.690 (Ar to Far East 0900-1100) SIO152 at 1000 by **Kenneth Buck** in Edinburgh; DW via Julich, 25.740 (Ger to E.Asia 1100-1355), 23222 at 1341 by **Gerry Haynes** in Bushey Heath; RFI via Issoudun 25.820 (Fr to Africa 0900-1545), 25212 at 0930 by **Eddie McKeown** in Newry.

More reliable reception from R.Australia has been evident here in the **21MHz (13m)** band. Their broadcast to SE.Asia via Darwin on 21.525 (Eng 0200-0800) 55444 at 0649 in Bushey Heath; to Pacific areas via Carnarvon on 21.595 (Eng 0100-0900) was 35343 at 0853 by **Tim Allison** in Middlesbrough; to Asia via Darwin 21.745 (Eng 0800-?) 34433 at 1115 by **Rhoderick Illman** in Oxted.

In the morning, occupants of this band include DW via Trincomalee 21.640 (Ger to Australia, NZ 0700-1000) 34553 at 0703 by **John Parry** in Northwich and SIO333 at 0915 by **John O'Halloran** in Harrogate; via Julich? 21.600 (Eng to W.Africa 1100-1150) 44444 at 1143 by **Chris Shorten** in Norwich; R.Prague, Czech Rep 21.705 (Eng to Pacific areas 0730-0800) 43443 at 0730 by **Robert Connolly** in Kilkeel; Radio Pakistan, Islamabad 21.520 (Eng to EU 0800-0845) 34323 at 0803 in Sunderland; R.Austria Int via Moosbrunn 21.490 (Eng to Australia 0830-0900) 15343 at 0830 by **Eric Shaw** in Chester; R.Japan via Moyabi 21.575 (Eng, Jap to EU, M.East 0700-0900) 45123 at 0756 in Newry; also 21.640 (Jap to EU, M.East, Africa 0800-0900) 55444 at 0850 by **Darren Beasley** in Bridgwater; R.Tunis via Sfax 21.535 (Ar [Home Service] 0700-1800?) SIO111 at 1145 by **Philip Rambaut** in Macclesfield.

After mid-day, UAE R.Dubai 21.605 (Eng to EU 1330-1400) was SIO323 at 1330 by **Tom Smyth** in Co.Fermanagh; RCI via Sackville 21.455 (Eng, Fr to EU, M.East 1330-1430) SIO333 at 1330 by **Phil Townsend** in E.London; BBC via Limassol 21.470 (Eng to E.Africa 0430-1615) SIO222 at 1406 by **Julian Wood** in Elgin; BSKSA, Saudi Arabia 21.505 (Ar [Home Service] 1100-1700) SIO455 at 1410 in Edinburgh; R.Portugal Int via Sines 21.515 (Eng to M.East 1430-1500) 44333 at 1430 by **Sheila Hughes** in Morden; BBC via Ascension Is 21.660 (Eng to Africa 0730-1745) 34433 at 1430 by **Simon Hockenhall** in E. Bristol; HCJB Quito 21.480 (Eng to M.East 1630-800) 34333 at 1745 by **Ronald Kilgore** in Co. Londonderry.

During the evening, R. Nederlands via Bonaire 21.590 (Eng to Africa 1730-2025) was 45534 at 1838 by **Darren Taplin** in Brenchley; RFI via Montsinery, Fr Guiana 21.685 (Fr to Africa 1600-2000) 34543 at 1905 by **Ross Lockley** in Stirling; HCJB Quito 21.480 (Eng to EU, Africa 1900-2000) 55234 at 1915 in Barton on Humber; WYFR via Okeechobee 21.500 (Eng, Ger to EU, Africa 1800-2000) SIO433 at 1942 by **Richard Howard** in Northampton; VOA via Greenville 21.485 (Fr to Africa 1830-2000) 33323 at 1945 by **Peter Pollard** in Rugby; HCJB Quito 21.455 (Eng, u.s.b. + p.c.) 44444 at 2035 in Worthing; WYFR via Okeechobee 21.525 (Eng to EU, Africa 2000-2300) SIO322 at 2036 by **Bill Clark** in Rotherham.

Later, VOA via Greenville, 21.485 (Eng to Africa 2000-2200) was 42442 at 2156 by **John Eaton** in Woking; VOFc via Okeechobee 21.720 (Eng to EU 2200-2300) SIO323 at 2210 by **Michael Williams** in Redhill and 45534 at 2243 in Hafnarfjordur, Iceland.

The **18MHz (15m)** band is being used by Catholic broadcaster WEWN in Birmingham, USA. Their 500kW amplitude modulated (a.m.) transmission on 18.930 (Port?, Eng, Sp to EU?) 1200-2155) rated 34553 at 1805 in Northwich. This

Long Medium & Short

Long Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	M*,D*
153	Donebach	Germany	500	A,B*,C*,D,E,F,G,H,J,K,L*,M,P,Q*
153	Bresov	Romania	1200	J*,K*
162	Altois	France	2000	A,B,C*,D,E,F*,G,H,K,L,M,O*,P,Q*
171	Kaliningrad	Russia	1000	A,E,J*,K,L,M*,P
171	Medi 1-Nador	Morocco	2000	H
177	Oranienburg	Germany	750	A,E,G,J,K*,L*,M,P,Q*
183	Saarouis	Germany	2000	A,B,C,D,E,F*,G,J,K,L,M,N*,O,P,Q*
189	Callanissetta	Italy	10	D*
198	Warsaw 3	Poland	200	F*
198	BBC Droghwch	UK	500	A,B,D,E,G,H,J,K,L,N*,O,P,Q*
207	Munich	Germany	500	A,E,F,G,J*,K,L*,M,P,Q*
207	Azial	Morocco	800	M
216	RMC Roumoules	S.France	1400	A,B*,E,G,H,J*,K,L,M,N*,P
216	Oslo	Norway	200	G*,J*,Q*
225	Raszyn Resv TX	Poland	?	E,G*,J*,K,L*,M*,Q*
234	Beidweiller	Luxembourg	2000	A,E,F,G,J,K,L,M,P
234	St.Petersburg	Russia	1000	J*
243	Kalundborg	Denmark	300	A,E,F,G,H,J*,K,L*,M,O*
252	Tijata	Algeria	1500	G*,K,Q*
252	Atlantic 252	S.Ireland	500	A,B,C*,D,E,F,G*,H,I*,J,K,L,M,O,P,Q*
261	Burg	Germany	200	A,E,F,G,K,L*,M,P
261	Taldom(Moscow)	Russia	2000	E,M*,O*
270	Topolna	Slovak Rep.	1500	A,F*,J*,K,L,M*,Q*
270	Orenburg	Russia	40	M*
279	Minsk	Belarus	500	J*,K*,L*,M*

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

Listeners:

- A: Ted Bardy, N.London.
- B: Vera Brindley, Woodhall Spa.
- C: Geoff Crowley, Hafnarfjordur, Iceland.
- D: Martin Dale, Stockport.
- E: John Eaton, Woking.
- F: Simon Hockenhill, E.Bristol.
- G: Sheila Hughes, Morden.
- H: Stephen Jones, Oswestry.
- I: Ronald Kilgore, C.Londonderry.
- J: Eddie McKeown, Newry.
- K: George Millmore, Wootton, IOW.
- L: Sid Morris, Rowley Regis.
- M: Fred Pallant, Storrington.
- N: Alan Roberts, Quebec, Canada.
- O: Tom Smyth, Co.Fermanagh.
- P: Phil Townsend, E.London.
- Q: Michael Williams, Redhill.

narrow band extends from 18.900 to 19.020MHz and is reserved for single sideband s.s.b. + p.c.) broadcasts from the year 2007.

There is much to interest the listener in the **17MHz (16m)** band! In the morning, R. Romania Int, Bucharest (Eng to Pacific areas 0645-0715) 22222 at 0645 in Morden; R.Japan via Yamata 17.810 (Jap, Eng to SE. Asia 0600-0900) 12331 at 0730 in Stirling; BBC via Kranji 17.830 (Eng to S. Asia, Australia, NZ 0500-1030) 33333 at 0740 in Kilkeel; AIR via Delhi 17.387 (In to Indonesia 0845-0945) 33333 at 0930 by **Tony Singh** in Hitchin; R.Japan via Yamata 17.860 (Eng to Oceania 0900-1000) 22232 at 0930 in Oxted; Voice of Greece, Athens 17.525 (Gr, Eng to Australia 0800-0950) 45433 at 0940 by **Peter Polson** in St.Andrews; KHBI, N.Mariana Is 17.555 (Eng to NE.Asia 0800-1155) SIO333 at 1020 in Rotherham; R.Australia via Darwin? 17.910 (Eng to S.Asia? 0800?-1300) heard at 1100 in Bushey Heath; Channel Africa, Johannesburg 17.805 (Eng to Africa 1000-1100) SIO243 at 1035 in Dunstable; R.Bulgaria, Sofia 17.830 (Eng to Eu 1030-1200) 44444 at 1100 by **Michael Griffin** in Ross-on-Wye; R.Pakistan Islamabad 17.900 (Eng to Eu 1100-1130) 54444 at 1112 in Norwich; BBC via Ascension Is 17.790 (Eng to C/W.Africa 0730-1200) 34333 at 1132 in Middlesbrough.

After mid-day, Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) was 44444 at 1315 in Brenchley; R.Tunisia Int via Sfax 17.500 (Ar [Home Service] 0700-1600) 34233 at 1327 in Woking; BBC via Skelton 17.705 (Eng to N/C Africa 0800-1615) SIO212 at 1400 in Co.Fermanagh; WEWN Birmingham 17.510 (Eng to Eu 1500-1555) SIO444 at 1500 in Harrogate; BBC via Ascension Is 17.880 (Eng to Africa 1400-2030) 34333 at 1801 in Co. Londonderry; WSHB Cypress Creek 17.710 (Eng to Eu 1800-2156) 55544 at 1830 in Bridgwater; R.Yugoslavia, Belgrade 17.710 (Eng to ? 1830-1900) SIO444 at 1835 by **John Coulter** in Winchester; R.Algiers Int via Bouchaoui 17.745 (Eng to Eu, E/C.Africa 1900-2000) 33333 at 1906 in Newry; VOA via Tangier 17.895 (Eng to N/W.Africa 1600-2100) SIO455 at 1955 in Edinburgh; VOA via Bethany 17.800 (Eng to Africa 1800-2200) 21111 at 2005 in Rugby; R.Nederlands via Bonaire 17.605 (Eng to W.Africa 1930-2025) SIO444 at 2004 in Northampton.

Later, RCI via Sackville 17.875 (Eng to Eu 2030-2130) rated 44423 at 2100 in Chester; R.Havana, Cuba 17.760 (Eng to Eu, M.East, Africa 2100-2200) 45544 at 2122 in Worthing and 55555 at 2137 in Hafnarfjordur; HCJB Quito 17.790 (Eng to Eu 2130-2200)

SIO433 at 2155 in Redhill; VOFC Taiwan via Okeechobee 17.750 (Eng to Eu 2200-2300) SIO444 at 2200 by **Cyril Kellam** in Sheffield; VOA via Tinang 17.735 (Eng to E.Asia, Pacific 2100-0100) 22332 at 2216 by **Robin Harvey** in Bourne.

During the early hours of some mornings R.New Zealand's **15MHz (19m)** broadcasts to Pacific areas have reached the UK. Their 100kW transmission from Rangataiki on 15.120 (Eng 1850-0658) peaked to 43423 at 0440 in Bushey Heath. It was also logged in Hafnarfjordur as 33443 at 0500. Some of radio Australia's broadcasts have also been received here: 15.170 from Carnarvon (Eng, Chin, Cant to Asia 0900-1430) rated 22221 at 0908 in Oxted; 15.575 from Darwin (Chin to Asia 2200-2300) SIO322 at 2200 in Harrogate; 15.320 from Shepparton (Eng to S.Asia 2200-0730) 22222 at 2330 in Kilkeel.

Also logged in the morning were BSKSA Riyadh, Saudi Arabia 15.060 (Tur to Turkey 0400-0600), rated SIO444 at 0450 in Northampton; HCJB Quito 15.270 (Eng to Eu 0700-0830) 33423 at 0819 by **Vera Brindley** in Woodhall Spa; AIR via Aligarh? 15.050 (Eng to Australia, NZ 1000-1100) 32222 at 1040 in Rugby; BBC via Antigua, 15.220 (Eng to N/C/S.America 1100-1400) 42432 at 1145 in Bushey Heath; DW via Kigali 15.370 (Eng to W.Africa 1100-1150) SIO222 at 1100 in Macclesfield; R.Diff TV Congolaise via Brazzaville 15.190 (Fr to Africa 1100-1700) SIO333 at 1107 in Dunstable.

After mid-day, WVCR Nashville, 15.685 (Russ, Eng to Eu 1000-0000) was 32322 at 1400 by **Martin Dale** in Stockport; WCSN Scotts Corner 15.665 (Eng to Eu 1400-1555) 44444 at 1450 in St.Andrews; Voice of Turkey, Ankara 15.325 (Tur 0900-1700?) 45444 at 1501 in Woking; Voice of Greece via Avlis 15.630 (Gr, Eng, Sw to USA 1500-1550) 54444 at 1535 by **George Tebbitts** in Penmaenmawr; KTWR Agana, Guam 15.610 (Eng to S. Asia, India 1500-1700) SIO322 at 1607 in Rotherham; KTBN via Salt Lake City 15.590 (Eng to USA 1600-0200) 13231 at 1732 in Co. Londonderry.

In the evening AIR via ? 15.075 (Eng to E.Africa 1745-1945) was 33433 at 1809 in Brenchley; R. Finalnd via Pori 15.440 (Eng to W.Eu, W.Africa 1830-1900) 45554 at 1852 by **David Edwardson** in Wallsend; Voice of Vietnam, Hanoi 15.009 (Eng to Eu 1900-1930) SIO333 at 1900 in Sheffield; RNB Brasilia, Brazil 15.265 (Eng, Ger to Eu 1800-2100) SIO322 at 1900 in Redhill; R.Romania Int, Bucharest 15.365 (Eng to Eu 1900-2000) 44444 at 1900 in Morden; VOIRI Tehran 15.260 (Eng to Eu 1930-2030) 54354 at 1932 in Newry; RNE via Noblejas, Spain 15.375 (Eng to Africa 1900-2000) 53343 at 1935 in Norwich; VOA via Tangier, 15.410 Eng to Africa 1600-2200) 43543 at 2000 in Stirling; also 15.205 (Eng to Eu 1700-2200) 33443 at 2140 in Middlesbrough; R.Damascus, Syria 15.095 (Eng to Eu 2005-2105) 23232 at 2030 in Ross-on-Wye.

Later, WINB Red Lion, 15.185 (Eng to Eu 2100-2245) was 32232 at 2119 in Worthing; UAE R, Abu Dhabi 15.315 (Eng to USA 2200-0000) SIO555 at 2200 in Edinburgh; also

15.305 (Eng to USA 2200-0000) 55555 at 2245 in Bridgwater; R.Korea, Seoul 15.575 (Eng to Eu 2145-2245) 33443 at 2200 in Chester; BBC via Ascension Is 15.400 (Eng to Africa 1500-2315) 55545 at 2209 in Bourne; R. for Peace Int, Costa Rica 15.030 (Eng, [u.s.b. + p.c.] 24hr) 34333 at 2300 by **Roy Patrick** in Derby; RTL via Junglinster 15.350 (Ger to USA 24hrs) 23312 at 0005 in Barton-on-Humber; HCJB Quito 15.155 (Eng to USA 0030-0430) SIO333 at 0140 by **Tony King** in Swindon.

Some of the **13MH (22m)** broadcasts to Europe originate from WYFR Okeechobee 13.695 (Eng 0500-0800, also to Africa), logged as 44444 at 0636 in Sunderland; Croatian R via Deanovec 13.830 (Eng 1303-1313) SIO333 at 1302 in Rotherham; R.Pyongyang, N.Korea 13.785 (Eng 1500-1550) 23332 at 1515 in Chester; R.Austria Int via Moosbrunn 13.730 (Ger, Eng, Fr, Sp 0500?-1900) SIO433 at 1800 in Northampton; R.Bulgaria via Plovdiv? 13.670 (Eng 1730-1900) SIO322 at 1830 in Co.Fermanagh; UAE R.Dubai 13.675 (Ar, Eng 0615-2100) 44444 at 1859 in Bridgwater; R.Kuwait via Khad 13.620 (Eng 1800-2100), heard at 2055 in E.Bristol; WHRI South Bend, USA 13.760 (Eng 1700-0000) SIO122 at 2055 in Redhill.

Those noted to other areas came from WSHB Cypress Creek 13.615 (Eng to Oceania 0800-0955) 24333 at 0855 in St.Andrews; SRI via Sottens 13.685 (Eng, Fr to Australia, NZ, S.Pacific 0900-1030) 44544 at 0915 in Middlesbrough; also 13.635 (Eng, Fr to SE.Asia, Far East 1100-1200) SIO444 at 1115 in Harrogate; VOA via Greenville 13.775 (Sp to C.America 1200-1300, Mon-Fri: Sp to C.America, Caribbean 1200-1400, Sat/Sun) 43323 at 1339 in Bushey Heath; R. Australia via Darwin 13.605 (Chin, Eng to China 1000-1430) 34444 at 1141 in Hafnarfjordur abd 33343 at 1359 in Worthing; R. Netherlands via flevo 13.700 (Eng to S. Asia 1330-1625) SIO354 at 1535 in Edinburgh; R. Pakistan, Islamabad 13.590 (Eng to M. East 1600-1630) 54444 at 1620 in Norwich; R. Vlaanderen Int, Belgium 13.685 (Eng to Africa 1800-1830) 33333 at 1800 in Ross-on-Wye; VOA via Selebi Phikwe 13.710 (Eng to Africa 1600-2200) 44444 at 1802 in Brenchley; AWR (KSDA) Agat, Guam 13.720 (Eng to Africa 1700-1900, Sat/Sun only) 35223 at 1815 in Newry; DW via Julich 13.790 (Eng to Africa 1900-1950) 34444 at 1931 by **Ken Milne** in Basingstoke; WVCR Nashville 13.845 (Eng to E.USA 1200-0100) 34222 at 1956 in Oxted; BBC via Rampsham 13.660 (Eng to Falkland Is 2130-2145) 45444 at 2140 in Co.Londonderry.

While beaming to Europe in the **11MHz (25m)** band WYFR Okeechobee 11.725 (Eng 0500?-0600?) rated 44444 at 0530 in Ross-on-Wye; HCJB Quito 11.830 (Eng 0700-0830) SIO444 at 0728 in Bushey Heath; WEWN Birmingham, 11.580 (Eng ?-0800?) 34433 at 0742 in Sunderland; R.Romania Int, Bucharest 11.940 (Eng 1300-1400) 43333 at 1330 in Penmaenmawr; Israel R, Jerusalem 11.587 (Eng 1900-1930, also to USA) 45554 at 1901 in Wallsend; R.Damascus, Syria 12.085 (Eng 2008-2108) 44444 at 2043 in Newry; AIR via Delhi? 11.620 (Eng 2045-2230) SIO444 at 2130 by **Francis Hearne** in N. Bristol; China

Long Medium & Short

Tropical Bands

Freq MHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	2038	G
2.325	ABC Tennant Creek	Australia	2040	G
2.850	KCBS Pyongyang	N.Korea	2005	K
3.200	TWR Ndebele	Swaziland	2345	B,G,K
3.210	Em.Nacional, Maputo	Mozambique	2100	E,F,G,J,K
3.220	R.HCJB Quito	Ecuador	0332	G
3.220	R.Togo, Lome	Togo	2136	F,K
3.230	R.Sol de Los Andes	Peru	0013	K
3.230	R.Oranje	S.Africa	2015	G,K
3.240	TWR Shona	Swaziland	6315	G,K
3.245	R.Clube Varginha	Brazil	2150	K
3.255	BBC via Maseru	Lesotho	2051	E,F,G,M,P
3.267	RRI Gorontalo	Indonesia	2125	K
3.270	SWABC 1, Namibia	SW Africa	2243	D,G,J,K
3.280	R.Beira	Mozambique	1850	G
3.300	R.Cultural	Guatemala	0326	G,K
3.316	SLBS Goderich	Sierra Leone	2051	B,E,F,M,P
3.320	Pyeongyang	N.Korea	0325	G
3.320	R.Allegre?	S.Africa	2059	B,J,M,D
3.320	R.Suid Afrika	S.Africa	1911	F
3.325	FRCN Lagos	Nigeria	2055	B,F,E,M
3.330	R.Kigali	Rwanda	2055	F,G,M
3.340	R.Altura	Peru	0020	K
3.355	R.Nac.Luanda	Angola	0025	K
3.355	R.Botswana	Gaborone	2055	B,E,F,G,M
3.365	R.Rebelle, La Julia	Cuba	0136	J
3.365	IBC R-2	Ghana	2055	B,D,E,F,G,H,J,L,M,N,O,P
3.365	TWR	Swaziland	2251	C
3.390	R.Malawi	Malawi	2010	B,F,G,M
3.395	RRI Tanjungkareng	Indonesia	2228	E,K
3.905	AIR Delhi	India	1753	G
3.915	BBC Kranji	Singapore	1646	F
3.955	BBC Skelton	England	2100	B,J,L
3.955	Channel Africa	S.Africa	1857	K
3.955	Novosibirsk rly A.Ata	Kazakhstan	1830	K
3.965	RFI Paris	France	2249	B,C,D,G,H,J,L,P,R
3.970	R.Buea	Cameroon	2155	B
3.975	BBC Skelton	England	0406	J
3.980	VOA Munich	Germany	2045	B,G,H,J,L,R
3.985	China R via SRI	Switzerland	2125	B,J,L,O
3.985	SRI Beromunster	Switzerland	2012	B,D,H,J,L,R
3.995	DW via Julich	Germany	2250	B,C,D,G,J,L
4.000	Boufoussam	Cameroon	2000	B,K
4.700	R.Waira, Chota	Peru	0319	G
4.755	R.Educ CP Grande	Brazil	0105	B,J,K
4.755	Caracol Neiva	Colombia	0015	B
4.765	Brazzaville	PR Congo	2025	B,D,F,J,P
4.770	FRCN Kaduna	Nigeria	2104	A,B,C,D,E,F,G,H,J,L,M,P
4.770	R.Mundiat, Bolivar	Venezuela	2337	K
4.775	R.Gabon, Libreville	Gabon	2104	B,C,D,F,G,J,M
4.780	RTD	Djibouti	1857	M
4.783	RTM Bamako	Mali	2105	B,C,F,M
4.790	Azad Kashmir R.	Pakistan	1743	F,K,Q
4.790	R.Atlantida	Peru	0040	K
4.800	AIR Hyderabad	India	1717	F
4.800	LNBS Lesotho	Maseru	1940	F,G,J,M
4.805	R.Nac.Amazonas	Brazil	0010	B,D,J,N
4.815	R.diff TV Burkina	Ouagadougou	2052	B,F,M

Freq MHz	Station	Country	UTC	DXer
4.820	La Voiz Evangelica	Honduras	0022	B,G,J
4.830	R.Botswana, Gaborone	Botswana	1940	B,D,F,G,H,J,M,P
4.830	R.Tachira	Venezuela	0030	B,E,G,J,N
4.832	R.Reioj	Costa Rica	0313	G
4.835	R.Tezutulan, Coban	Guatemala	0020	B,G,J
4.845	RTM Bamako	Mali	2050	L
4.845	ORTM Nouakchott	Mauritania	2038	B,D,F,G,L,M
4.850	R.Yaounde	Cameroon	2001	J
4.860	AIR Kohima	India	1925	M
4.860	AIR New Delhi	India	1906	F,M
4.865	PBS Lanzhou	China	2212	O
4.865	LV del Cinaruco	Colombia	0146	E,G,J
4.870	R.Cotonou	Benin	2035	A,B,C,F,G,H,J,L,M,P
4.885	R.Clube do Para	Brazil	0148	J
4.885	Voice of Kenya	Kenya	1950	F,G,J,M
4.890	RFI Paris	via Gabon	0403	J
4.895	Voz del Rio Arauca	Colombia	0027	G
4.905	Anhangava	Brazil	2220	K
4.905	R.Rologio, Rio	Brazil	0345	K
4.905	R.Nat.N'djamena	Chad	1905	B,F,G,J,L,M
4.910	Tennant Craek	Australia	2100	B,M
4.910	AIR Delhi	India	0130	F,G
4.910	R.Zambia, Lusaka	Zambia	2147	F,D
4.915	R.Anhangava	Brazil	0300	J
4.915	GBC-1, Accra	Ghana	2052	B,C,D,F,G,H,J,L,M,N
4.915	Voice of Kenya	Kenya	1850	G,J,M
4.920	R.Quito	Ecuador	0400	K
4.925	Em Merid, Arauca	Colombia	0022	K
4.925	R.Nacional, Bata	Eq Guinea	0151	J
4.935	Voice of Kenya	Kenya	2036	B,E,F,G,J,L,M
4.940	SLBC (Eng,Comm,Svcel)	Sri Lanka	0715	B
4.945	Channel Africa	S.Africa	1732	K
4.960	AIR New Delhi	India	0020	B
4.970	R.Rumbos, Caracas	Venezuela	0015	B
4.975	R.Uganda, Kampala	Uganda	1944	F,G,J,M
4.980	Ecos del Torbes	Venezuela	0010	J,L
4.985	R.Brazil Central	Brazil	0020	B,C
4.990	AIR via Madras	India	0035	B,C,J
4.990	FRCN Lagos	Nigeria	2100	B,F,G,J,M,N,P
4.990	R.Ancash, Huaraz	Peru	0051	K
5.005	H.Nacional, Bata	Eq Guinea	1945	B,C,F,G,H,J,M
5.010	R.Garoua	Cameroon	2038	F,G,H,L,M
5.015	R.Brazil Tropical	Brazil	2156	C
5.020	DRTN Niamey	Niger	2257	D,F,G
5.025	R.Parakou	Benin	2156	F,G
5.025	R.Uganda, Kampala	Uganda	1938	B,F,G,M
5.035	R.Bangui	C.Africa	1932	B,F,G,H,J,M
5.040	Voz del Upano, Macas	Ecuador	2157	C
5.045	R.Cultura do Para	Brazil	2200	D,G,J
5.047	R.Togo, Lome	Togo	1947	B,C,D,F,G,J,M
5.050	Voz de Yopal, Yopal	Colombia	0300	G
5.050	SBC Singapore	Singapore	1210	E,F
5.050	R.Tanzania	Tanzania	2932	B,F,G,M
5.055	Faro del Caribe	Costa Rica	0258	G,K
5.055	RFO Cayenne (Matoury)	FR Guiana	2340	B,F,G,J,K
5.055	TWR Manzini	Swaziland	0335	K
5.060	PBS Xinjiang	China	0123	K
5.075	Caracol Bogota	Colombia	0025	B,C,J,L,N

DXers:
A: Bill Clark, Rotherham
B: Robert Connolly, Kilkeel
C: Geoff Crowley, Iceland
D: John Eaton, Woking
E: David Edvardson
F: P. Gordon Smith, Kingston, Moray
G: Gerry Haynes, Bushey Heath
H: Sheila Hughes, Morden
I: Rhoderick Illman, Duxted
J: Eddie McKeown, Newry
K: Roy Merrill, Dunstable
L: Sid Morris, Rowley Regis
M: Fred Pallant, Storrington
N: Roy Patrick, Derby
D: Peter Pollard, Rugby.
P: Eric Shaw, Chester.
Q: Tony Singh, Hitchin.
R: Phil Townsend, E.London.

R, Beijing 11.500 (Eng 2000-2157) 54444 at 2145 in Norwich; R. Japan via Moyabi 11.925 (Eng 2100-2200) 32333 at 2152 in Woodhall Spa.
R. New Zealand's 9MHz (31m) broadcasts to Pacific areas have been received in the UK some mornings. During favourable conditions their signal on 9.700 (Eng 0658-1205) was 32332 at 0910 in Kilkeel. More often heard here was R.Australia via Carnarvon on 9.510 (Eng to S.Asia 1430-1800). In St.Andrews their signal was 44433 at 1520.

Also logged here were WCSN Scotts Corner 9.840 (Eng to Eu 0600-0800), SIO444 at 0715 in N.Bristol; WSHB Cypress Creek, 9.495 (Eng to

USA 1000-1155) SIO312 at 1020 in Macclesfield; AIR via Aligarh? 9.910 (Dari, Pushtu, Eng to Afghanistan 1315-1544) 33333 at 1330 in Hitchin; R.Jordan via Al Karanah 9.560 (Eng to Eu 1100-1630) 32233 at 1505 in Rugby; Voice of Vietnam, Hanoi 9.840 (Eng to Africa 1600-1630) 44344 at 1608 in Woodhall Spa; Voice of Ethiopia via Gedja 9.560 (Eng, Amh, Fr 1500-1800) SIO232 at 1730 in Dunstable; Polish R, Warsaw 9.525 (Eng to Eu 1930-2025) SIO444 at 1930 in Winchester; R.Vilnius, Lithuania 9.710 (Eng to Eu 2130-2200) 44344 at 2130 in Chester; R.Cairo, Egypt 9.900 (Eng to Eu 2115-2245) SIO333 at 2200 in Co.Fermanagh; R.Nac del Paraguay 9.735 (Sp 0800-0400) 35543 at 2215 in Wallsend; Voice of Turkey, Ankara 9.445 (Eng to Eu 2200-2300) 44434 at 2233 in Penmaenmawr; R.Vlaanderen Int, Brussels 9.930 (Fr, Du, Eng, Sp to USA 2230-0055) SIO333 at 2338 in Elgin; VOIRI Tehran 9.022 (Eng to USA 0030-0130) SIO433 at 0100 in Swindon.

In the **7MHz (41m)** band WWCR Nashville 7.435 (Eng to Eu 0000-1000?) rated 34333 at 0500 in Ross-on-Wyrr; WEWN Birmingham, USA

7.425 (Eng to Eu 0500-1000) 44333 at 0608 in Bushey Heath; WHRI South Bend 7.315 (Eng to E.USA 0000-1300) 35443 at 0620 in Woking; KTNB via Salt Lake City 7.510 (Eng to USA 0200-1600) SIO322 at 0840 in Rotherham; WJCR Upton 7.490 (Eng to E.USA 24Hrs) SIO111 at 0958 in Macclesfield; R.Australia via Carnarvon 7.260 (Eng to S.Asia 1800-2100) 32432 at 1945 in E.Bristol; AIR via Aligarh 7.412 (Eng to Eu 2045-2230) 53443 at 2205 in Stirling; RTM Sarawak 7.160 (Eng/Chin to S.E.Asia 2300-1500?) 32222 at 2300 in Kilkeel; WRNO New Orleans 7.355 (Eng to E.USA 2300-0400) 32222 at 0004 in Newry.

Some broadcasters use relays in the **6MHz (49m)** band to reach Europe. They include VOA via Woofferton 6.040 (Eng 0400-0700) SIO333 at 0645 in N.Bristol; R.Japan via Skelton 6.050 (Eng, Ger 0700-0830) SIO555 at 0700 in Sheffield; VOA via Woofferton 6.040 (Eng 1630-2200) 55544 at 1930 in Chester; RCI via Skelton, 5.995 (Fr, Eng 1930-2200) SIO444 at 2010 in Winchester.

QUARTERLY LIST OF EQUIPMENT USED

- August, September, October '93.

- #Tim Allison, Middlesborough: Lowe HF-225 + r.w.
- #Simon Bakewell, Moldgreen: Saisho SW-5000 + 10m wire.
- #Ted Barty, N.London: Drake R8E: RA1217 + loop or V Beam.
- #Leo Barr, Sunderland: Roberts RC-818; Sony ICF SW-7600 + 'Soooper Loop' or r.w.
- #Darran Beasley, Bridgwater: Philips D-2935 + loop or a.t.u. + 15m wire.
- #Vera Brindley, Woodhall Spa: Sangean ATS-803A; Saisho 3000; Sangean SW60 + r.w.
- #Kenneth Buck, Edinburgh: Lowe HF-225 + s.v. loop.
- #Tim Bucknall, Congleton: Sony ICF-2001D + AN-1.
- #Bill Clark, Rotherham: Sony ICF-2001D + built-in whip or r.w.
- #Robert Connolly, Kilkeel: Trio R-1000; Sangean ATS-803A + AN-1 or 30m wire.
- #Sean Cooper, Wells-next-the-Sea: M.Richards R191; Pioneer F-656 + loop or 20m wire.
- #John Coulter, Winchester: Yaesu FRG-7 + r.w.
- #Geoff Crowley, Iceland: Yaesu FRG-7000 + dipoles + Datong AD370.
- #Martin Dale, Stockport: Cedar CR-70A + a.t.u. + 23m wire.
- #Ron Damp, Worthing: Racal RA17; Yaesu FRG-7 + FRT-7100; Sangean ATS-803A + Hex Loop or 2 band Window.
- #John Eaton, Woking: Lowe HF-225 + r.w.; Sony SRF M-43.
- #David Edvardson, Walsand: Trio R-600 + inverted V trap dipole.
- #Steve Ferrington, Oxford: Lowe HF-225 + 40m or 5m wire.
- #David Forester, Newcastle under Lyme: Yaesu FRG-7 + r.w.
- #Peter Gordon-Smith, Kingston, Moray: Icom R-72 + a.t.u. + helical dipole.
- #Michael Griffin, Ross-on-Wye: Sharp + built-in whip or 10m wire.
- #Robin Harvey, Bourne: Matsui MR-4099 + telescopic antenna.
- #Gerry Haynes, Bushey Heath: Kenwood R-5000 + Rhombic.
- #Francis Heame, N.Bristol: Sharp WQ1370 + r.w.
- #Gerald Herman, Coventry: Walkman cassette/radio.
- #Simon Hockenhill, E.Bristol: Philips D-2345; HMV 1124 + 3m wire, ITT Coil.
- #Richard Howard, Northampton: Grundig 3400; Grundig 400; Sony ICF-7600DS.
- #John Hickinbottom, St.Dominic: Panasonic Rk-DX-25.
- #Sheila Hughes, Morden: Sony ICF-7600DS + loop; Panasonic DR48 + 15m wire.
- #Rhoderick Illman, Duxted: Kenwood R-5000 + AN-1 or a.t.u. + r.w.
- #Steven Jones, Swestrey: Matsui Hi-6.
- #Cyril Kellam, Sheffield: Sony ICF-7600DS + AN-1 or 25m wire.
- #Ronald Kilgore, Co.London: Drake R8E + a.t.u. + 30m wire.
- #Tony King, Swindon: Panasonic DR-49 + indoor mag-mount CB antenna.
- #Zacharias Liengas, Thessaloniki, Greece: Philips D2935; Sony ICF-7600 + r.w.
- #Ross Lockley, St.Andrews: Realistic DX-400 + Global AT-1000 + 50m dipole.
- #Patrick McKeever, Birmingham: Lowe HF-225 + 14m wire + Mag Balun or loop.
- #Eddie McKeown, Co.Down: Tatung TMR-602.
- #Roy Merrill, Dunstable: Kenwood R-5000 + 40m wire.
- #George Millmore, Wootton, IOW: Sangean ATS-803A; Racal RA17L + loops.
- #Ken Milne, Basingstoke: Matsui MR-4099 + whip or Mag Balun + r.w.
- #Sid Morris, Rowley Regis: Kenwood R-5000 + 11m wire.
- #John O'Halloran, Harrogate: Sangean ATS-803A + r.w.
- #John O'Halloran, Harrogate: Yaesu FRG-100 + dipole or r.w.
- #Fred Pallant, Storrington: Trio R-2000 + r.w. in loft.
- #John Parry, Northwich: Realistic DX-400 + 33m wire.
- #Roy Patrick, Derby: Lowe HF-125 + 22m wire or inverted V.
- #Peter Pollard, Rugby: Sony ICF-2001D + AN-1.
- #Peter Polson, St.Andrews: Lowe HF-225 + loop or indoor joystick.
- #Phil Rambaut, Macclesfield: Int.Marine Radio R-700M + r.w.
- #Harry Richards, Barton-on-Humber: Grundig Satellit 700 + AD-270 or Matsui MR-4099 + r.w.
- #Alan Roberts, Quebec, Canada: Lowe HF-225 + 41m or 11m dipole.
- #Eric Shaw, Chester: Lowe HF-225 + 7m wire.
- #Chris Shorten, Norwich: Matsui MR-4099 + 10m wire.
- #Tony Singh, Hitchin: Zenith 7000; Grundig Satellit 3400 + built-in whip.
- #Tom Smyth, Co.Fermanagh: Sangean ATS-803A; M.Richards R191 + whip.
- #Bill Stapleton, Torquay: Trio R1000 + dipoles or r.w.
- #John Stevens, Largs: Hammarlund HQ 186 or Icom R-70 + loop or r.w.
- #Darran Taplin, Brechney: Yaesu FRG-7700 + FRT-7700 + 35m wire.
- #George Tebbitts, Penmaenmawr: Blaupunkt Stereo Radiogramme circa 1963.
- #Phil Townsend, London: Lowe HF-225 + loop or r.w.
- #Fred Walden-Vincent, Gt.Yarmouth: Grundig Satellit 3400 + whip.
- #John Wells, E.Grinstead: RCA AR-880 + loop.
- #Michael Williams, Redhill: Lowe HF-225 + loop or 10m wire.
- #Julian Wood, Elgin: Kenwood R-2000 + Yaesu FRT-7700 a.t.u. + 5m wire.

Off the Record

Andy Cadier,
28 Romney Avenue, Folkestone, Kent CT20 3QJ

This quarter we are making a brief visit to a radio jingle factory, well actually a production studio. During the 1960s and 70s British music stations used American jingle producers who had accumulated many years experience in this field. Pams of Dallas were one of the most common suppliers to Britain's gradually expanding broadcasting industry. As local radio grew, composer/musician Alan Fawkes and Steve England - a radio commercial production manager - realised the business potential of a British 'home-grown' jingle market. In 1979 they formed Alphasound and in 1983 they moved into their present studios in a former school at Ashton-On-Mersey. Here facilities include a 16-track music studio, an 8-track commercial production unit and a 4-track editing suite, plus the old playground in which to park your car.

Customers can buy a custom-built jingle package specially composed for their own particular

requirement, or alternatively settle for syndicated set. These have the stations own identification sung and mixed with an existing backing track, which explains why so many stations have a rather similar sound.

Packages usually consist of 15 to 20 separate jingles, with an added option of having matching inserts personalised with DJs' names. In the 70s jingles were heavily into synthesisers and drum machines, now sounds tend to be softer with a greater emphasis on melody. Musicians and session singers re-record the same jingle many times, while the producer constructs the sound, feeling and quality his client requires.

Stations tend to use jingles as part of their corporate image, they identify the broadcast, highlight programme features and create breaks. The continued use of jingles does suggest they are indeed good for the broadcasting business. Radio stations play their jingles on instant

start digital cartridge machines using tape, floppy disk or CD formats. Pictured is a part of Alphasounds impressive facilities at St. Martin's Studios in Greenbank Road near Sale in Cheshire.

Did You Know?

Radio Caroline have approached Manx Radio, at the Isle of Man, regarding the possibility of using their 20kW 1368kHz transmitter to carry Radio Caroline North programmes. They sent a demonstration recording and are now awaiting a decision from the IoM Government who at present own the station. Free Radio Monitoring sent me an unconfirmed report that Radio Seagull Ltd. are to apply for a licence to broadcast from a ship moored at London's Docklands. It is a fact however that the Radio Authority are advertising several m.w. frequencies in the Capital.

Recently I was given a tour around Caroline's *MV Ross Revenge* at Dover Harbour where I discovered most of the gear returned by the Dutch authorities, following the raid in 1989, has now been refitted. The exception is an RCA 50kW ampliphase transmitter that will require a total re-build if it is ever to be used again, the components are in a huge heap on the transmitter room floor.

John Burch has written a book called *Wheel Turned Full Circle* in which he recalls the events surrounding Offshore Radio 1584kHz. This was a restricted service licensed station that broadcast from the *MV Galaxy* during August 1992 from Frinton in Essex. John is now involved with Iain Johnson in the production of an audio magazine called *Tender-Trip*.

The radio ship *Droite de Parole*, off Yugoslavia, is reported to have ceased transmitting its 'Radio Brod' programmes. It was initially stated that they had difficulties with their teleprinter reception and ship-to-shore communications while their 50kW transmitter was in use. European anti-pirate broadcasting legislation may have finally drifted quietly into the Adriatic.

Feedback

Following last quarters comments about foreign m.w. stations John Parry writes giving a brief history of American forces radio in Europe. I wonder how many other readers remember AFN's *Midnite In Munich* programmes just after the war? Talking about memories **Bob Marsh** says he enjoyed the 'underground' music played on Radio Geronimo in

the late 60s. As a result he bought a number of King Crimson LPs. Radio Geronimo broadcast from the transmitters of Radio Monte Carlo from midnight onwards. **Leo Barr** writing on this same subject says I made no mention of the English m.w. broadcasts provided by Sweden, Finland, Norway, Italy, Germany, Russia or Albania.

He says these transmissions are there but you need to know when to listen. **Mike Gauffman** is seeking information on the Tyrolean music station on 6.425 and 6.650MHz in the mid-70s. He also asks where Reflections Europe comes from? Mike also says during the 70s he DFed the Lincolnshire Poacher transmissions to a site in Buckinghamshire.

6.6MHz Echo Charlie Band

Bob Marsh and several other readers say 6.6MHz is known as the Echo Charlie Band, but does anyone know why? He also recalls the days before s.s.b. when m.w. stations used frequencies around this area. **Charles Vasili** says he has been monitoring this band for some time and has heard operators referring to the use of amateur band equipment connected to a transverter. **Simon Parker** also mentions the use of transverters obtained from areas of Europe where radio regulations are barely enforced. He says at one time s.s.b. CB sets like the Cobra 148 and the Stalker 9 were used, but these have given way to Kenwood and Yaesu transceivers or people using home-brew equipment. **John Clark** writes saying he has just monitored 6.690MHz and finds the general style of conversations to be more like licensed radio amateurs than typical CBers. **Geoff Crowley** of Hafnarfjordur in Iceland says he also receives these operators on frequencies around 3.4; 13.9 & 25.26MHz.

Mike Le Ves Conte mentions he has heard illegal operators boasting that they were 'uncatchable'. He also sent a list of examples where air traffic controllers and authorised users have been obliged to change channels to avoid illegal transmissions. Mike is also concerned at the general conduct of some licensed amateurs and the irresponsibility behind the misuse of air traffic and marine radio frequencies.

The next 'Off The Record' appears in the January issue of *SWM*. If you wish your letter or irregular station log to be included please ensure it reaches me by November 1.

SHORT WAVE IRREGULAR BROADCASTS CHART

Freq MHz	Programme Notes	Day	UTC	Monitors
3.910	Religious programme	Sun	1501	A,C,H
3.912	French air waves	Sun	0135	A
3.945	Scottish free radio	W/E	0114	A,G,H
6.200	Dutch station	Sun	0736	A,B,C,D,E,G,H
6.202	From North Kent	Sun	0700	A,D
6.205	Free radio in London	Sat	0939	A
6.205	Religious programme	Sun	1555	A,B,F,G,H
6.210	Relay, Q102 Dallas USA	Sun	1029	A,B,C,D,H
6.220	Italy, Christian radio	Dly	1629	A
6.226	From Dun Laoghaire	Dly	0658	A,B,C,E,F,H
6.235	Irish presenter J.R.	W/E	0708	A,B,C,E,H
6.240	Belgian relay station	W/E	1155	A,B,C,D,G,H
6.251	Northsea goes DX	Sun	0802	A
6.255	Coast commercial station	Sun	0955	A,B
6.266	Announced as 6.400MHz	Sun	0919	A
6.280	English programme	Sun	0920	A,B,C
6.285	Dutch coastal radio	Sun	0835	A,H
6.295	Ad. for Horizon Sales	W/E	0710	A,B,C,G,H
6.400	Short wave outlaws	W/E	1100	A,B,C,D,E,F,H
6.475	Radio de mon amis	Sun	1033	B,H
6.910	Dublin community station	Dly	1846	A,B,E,F,G
7.446	Scottish free radio	W/E	0855	A,B,C,D,G
7.473	French air waves	Sun	0808	A,B,C,E
7.484	German satellite station	Sun	0823	A,
11.400	French air waves	Sun	0914	A,H
12.255	Religious broadcasts	Sun	1504	A

Dly = Monitored daily.

W/E = Heard on Saturdays and Sundays.

- A: Free Radio Monitoring, Halesowen, W. Midlands.
- B: Bob Marsh, Bexleyheath, Kent.
- C: Simon Carrington, Sunderland, Tyne & Wear.
- D: Darren Smith, Hailsham, East Sussex.
- E: David Williams, Southampton, Hants.
- F: Geoff Crowley, Hafnarfjordur, Iceland
- G: John Parry, Northwich, Cheshire.
- H: Gerry Haynes, Bushey Heath, Herts.

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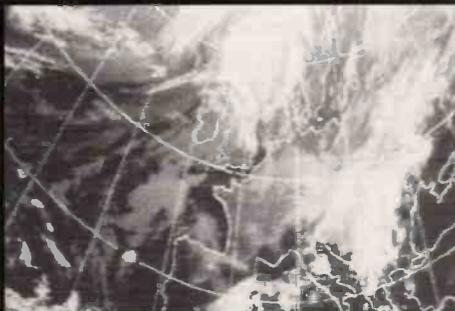
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The listener's check list and guide to European radio broadcasting. Covers m.w., l.w., v.h.f. & s.w., including two special fold-out maps. Also includes a full list of British stations, a select list of European stations, broadcasts in English and 'Making the Most of Your Portable'. **46 pages. £4.25**

FLIGHT ROUTINGS 1993

Compiled by T.T. & S.J. Williams
This guide was produced with the sole aim of assisting airband listeners to quickly find details of a flight, once they have identified an aircraft's callsign. Identifies the flights of airlines, schedule, charter, cargo and mail, to and from the UK and Eire and overflights between Europe and America. **122 pages. £5.95**

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This book covers the complete short wave range from 3 to 30MHz together with the adjacent frequency bands from 0 to 150kHz and from 1.6 to 3MHz. It includes details on all types of utility stations including FAX and RTTY. There are 19549 entries in the frequency list and 3590 in the alphabetical callsign list plus press services and meteorological stations. Included are RTTY & FAX press and meteor schedules. There are 11800 changes since the 10th edition. **534 pages. £24.00**

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Bill Laver
HF aircraft channels by frequency and band, main ground radio stations, European RT networks and North

Atlantic control frequencies. **31 pages. £3.95**

INTERNATIONAL RADIO STATIONS GUIDE BP255

Peter Shore
As in 'Broadcast Roundup', his column in *PW*, Peter Shore has laid this book out in world areas, providing the listener with a reference work designed to guide around the ever-more complex radio bands. There are sections covering English language transmissions, programmes for DXers and s.w.l.s. Along with sections on European medium wave and UK f.m. stations. **266 pages. £5.95**

INTERNATIONAL VHF FM GUIDE

7th Edition.
Julien Baldwin G3UHK & Kris Partridge G8AUU
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MARINE UK RADIO FREQUENCY GUIDE

Bill Laver
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Langley Pierce
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Joe Pritchard G1UQW
A technical guide for all short wave listeners. Covers construction and use of sets for the s.w.l. who wants to explore the bands up to 30MHz. Also covers the technical side of the hobby from simple electrical principles all the way to simple receivers. **276 pages. £15.95**

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Bill Laver
A handy reference book listing RTTY and FAX stations, together with modes and other essential information. The listing is in ascending frequency order, from 1.6 to 26.8MHz. **57 pages. £3.95**

RADIO LISTENERS GUIDE 1993

Clive Woodyear
This is the third edition of this radio listener's guide. Simple-to-use maps and charts show the frequencies for radio stations in the UK. Organised so that the various station types are listed separately, the maps are useful for the travelling listener. Articles included in the guide discuss v.h.f. aeriels, RDS, the Radio Authority and developments from Blaupunkt. **56 pages. £2.95**

SHORT WAVE INTERNATIONAL FREQUENCY HANDBOOK

Formerly the Confidential Frequency List and re-published in April 93, this book covers 500kHz-30MHz. It contains duplex and channel lists, callsigns, times and modes, broadcast listing and times. **192 pages. £9.95**

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3rd Edition
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This book gives details of frequencies from 26MHz to 12GHz with no gaps and who uses what. Completely revised and enlarged (February 1993), there are chapters on equipment requirements as well as antennas, the aeronautical bands, as well as the legal aspect of listening using a scanner. **156 pages. £9.95**

WORLD RADIO TV HANDBOOK 1993

Country-by-country listing of l.w., m.w. & s.w. broadcast and TV stations. Receiver test reports, English language broadcasts. The s.w.l.'s 'bible'. **£15.95.**

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Although written for radio amateurs, this book will be of interest to anyone who enjoys experimenting with antennas. You only need a very basic knowledge of radio & electronics to get the most from this book. Chapters include details on measuring resonance, impedance, field strength and performance, mats and materials and experimental antennas. **200 pages. £8.90**

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ARRL ANTENNA COMPENDIUM

Volume Three
Edited by Jerry Hall K1TD
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Compiled and edited by P. Linsley G3PDL & T. Nicholson KA9WRI/GW0LNO.
This book is a collection of antenna and related circuits taken from *Sprat*, the G-QRP Club's journal. Although most of the circuits are aimed at the low-power fraternity, many of the interesting projects are also useful for general use. Not intended as a text book, but offers practical and proven circuits. **155 pages. £5.00**

HF ANTENNA COLLECTION

(RSGB)
Edited by Erwin David G4LOI
This book contains a collection of useful, and interesting h.f. antenna articles, first published in the RSGB's *Radio Communication* magazine, between 1968 and 1989, along with other useful information on ancillary topics such as feeders, tuners, baluns, testing and mechanics for the antenna builder. **233 pages. £9.50.**

INTRODUCTION TO ANTENNA THEORY BP198

H. C. Wright
This book deals with the basic concepts relevant to receiving and transmitting antennas, with emphasis on the mechanics and minimal use of mathematics. Lots of diagrams help with the understanding of the subjects dealt with. Chapters include information on efficiency, impedance, parasitic elements and a variety of different antennas. **86 pages. £2.95**

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Doug DeMaw W1FB
Another book from the pen of W1FB, this time offering 'new ideas for beginning hams'. All the drawings are large and clear and each chapter ends with a glossary of terms. It is

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As the name suggests, this book offers a practical guide at everything to do with antennas, from h.f. to microwaves. It also has sections on propagation, transmission lines, antenna fundamentals and a helpful introduction to radio broadcasting and communication. The book neatly balances a practical approach with the minimum of mathematics, good diagrams and a lively text. **437 pages. £20.95**

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Dr James L. Lawson W2PV
This book is a polished and expanded version of a series of articles first published in *Ham Radio* following on from a series of lectures by the author, who was well-known as the expert on Yagi design. Chapters include simple Yagi antennas, loop antennas, effect of ground, stacking and practical antenna design. **210 pages. £10.95**

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Derek Stephenson
This book, the 2nd edition, is a hard bound volume, printed on high quality paper. The author is a satellite repair and installation engineer and the book covers all information needed by the installer engineer, the hobbyist and the service engineer to understand the theoretical and practical aspects of satellite reception with dish installation and how to trouble-shoot when picture quality is not up to anticipated reception. Mathematics has been kept to a minimum. 284 pages. £17.95

SATELLITE BDOK - A Complete Guide to Satellite TV Theory and Practice

John Breeds
This book deals almost exclusively with television broadcast satellites and is a comprehensive collection of chapters on topics, each written by an expert in that field. It appears to be aimed at the professional satellite system installer, for whom it is invaluable, but it will be appreciated by a much wider audience - anyone interested in satellite technology. 280 pages. £30.00

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Martin Davidoff K2UBC
The book is divided into four main sections - History, Getting Started, Technical Topics and Appendices. It provides information on spacecraft built by, and for, radio amateurs. In addition, it discusses weather, TV-broadcast and other satellites of interest to amateurs. 313 pages. £14.50

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A layman's guide
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Written in non-technical language, this book provides information covering important aspects of v.h.f. radio and tells you where you can find additional data. If you have a scanner, you'll find a lot of interesting signals in the huge span of frequencies covered, 100-300MHz & 50, 420, 902 & 1250MHz bands. 163 pages. £9.50

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ARRL SATELLITE ANTHOLOGY

The best from the Amateur Satellite News column and articles out of 31 issues of QST have been gathered together in this book. The latest information on OSCARs 9 through 13 as well as the RS satellites is included. Operation on Phase 3 satellites (OSCAR 10 and 13) is covered in detail. 97 pages. £5.95

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Various Authors
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Edited by Charles L. Hutchinson and David Newkirk
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Edited Ian White G3SEK
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RADIO

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PASSPORT TO WORLD BAND RADIO

1994

This book gives you the information to explore and enjoy the world of broadcast band listening. It includes features on different international radio stations, receiver reviews and advice as well as the hours and language of broadcast stations by frequency. The 'blue pages' provide a channel-to-channel guide to world band schedules. 416 pages. £14.50.

RADIOTELETYPE CODE MANUAL

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Joerg Klingenfuss

This book gives detailed descriptions of the characteristics of telegraph transmission on short waves, with all commercial modulation types including voice frequency telegraphy and comprehensive information on all RTTY systems and c.w. alphabets. 96 pages. £11.00

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Peter Rouse GU1DKD

The companion to *Scanners*, this provides even more information on the use of the v.h.f. and u.h.f. communications band and gives

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Peter Rouse GU1DKD

Covers a very wide area and so provides an ideal introduction to the hobby of radio communications. International frequency listings for aviation, marine, military, space launches, search and rescue, etc. Chapters on basic radio propagation, how to work your radio and what the controls do, antennas and band plans. 187 pages. £8.95

SHORT WAVE RADIO LISTENERS' HANDBOOK

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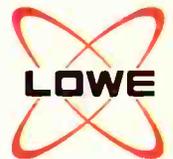
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