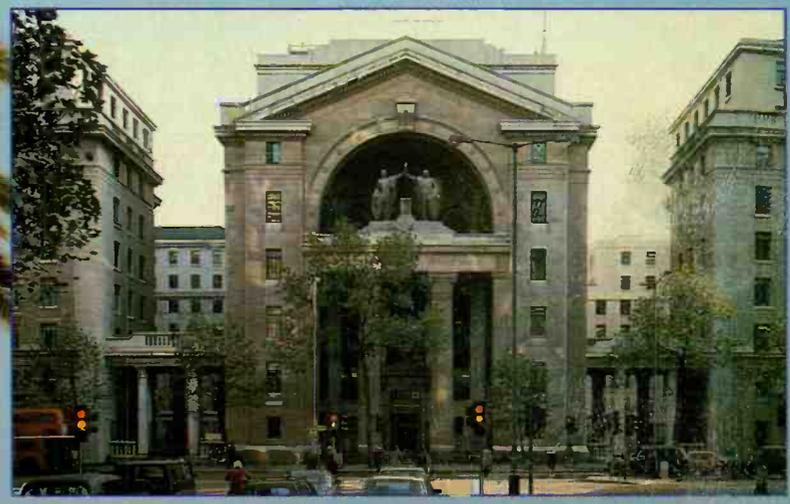


FOR THE
RADIO LISTENER

shortwave magazine

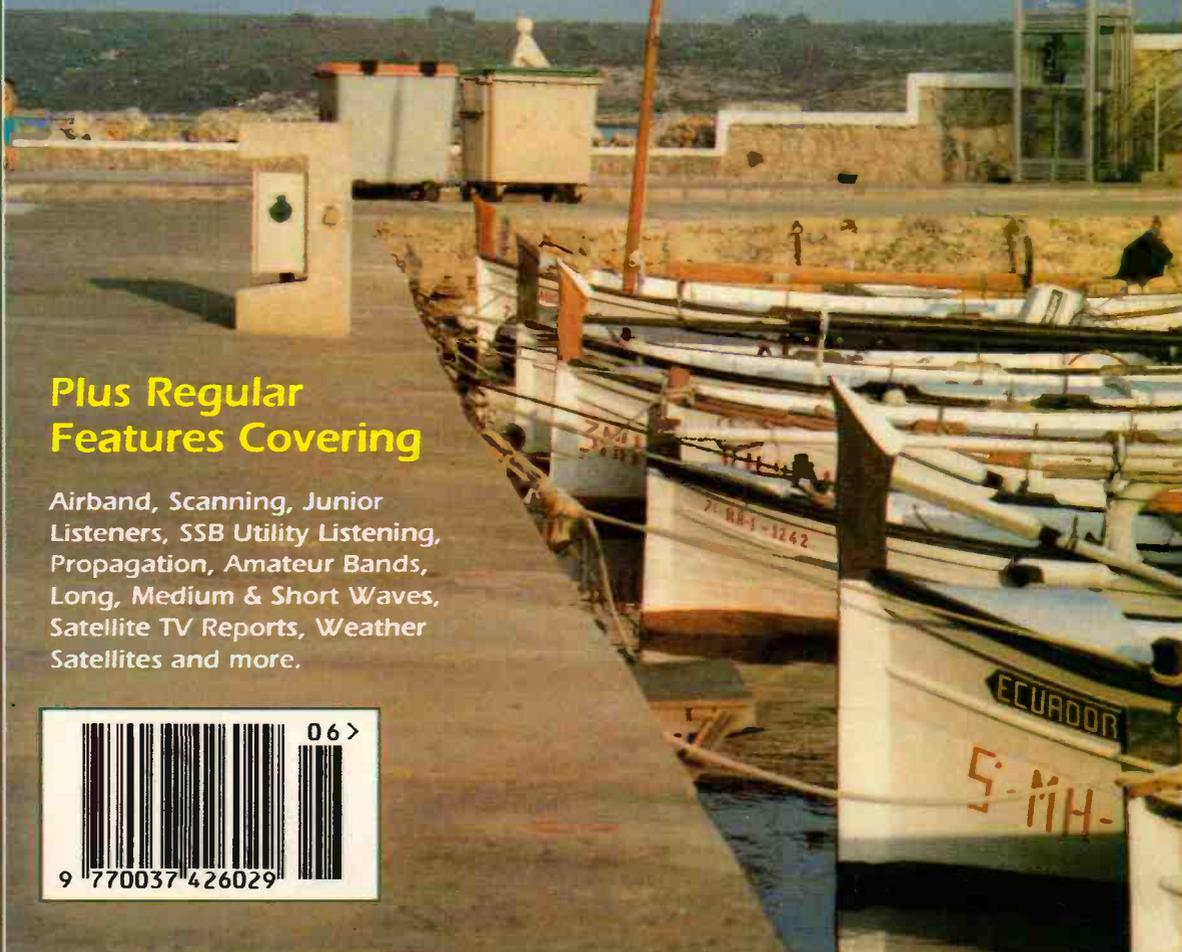
June 1993 £1.90 ISSN 0037 - 4261

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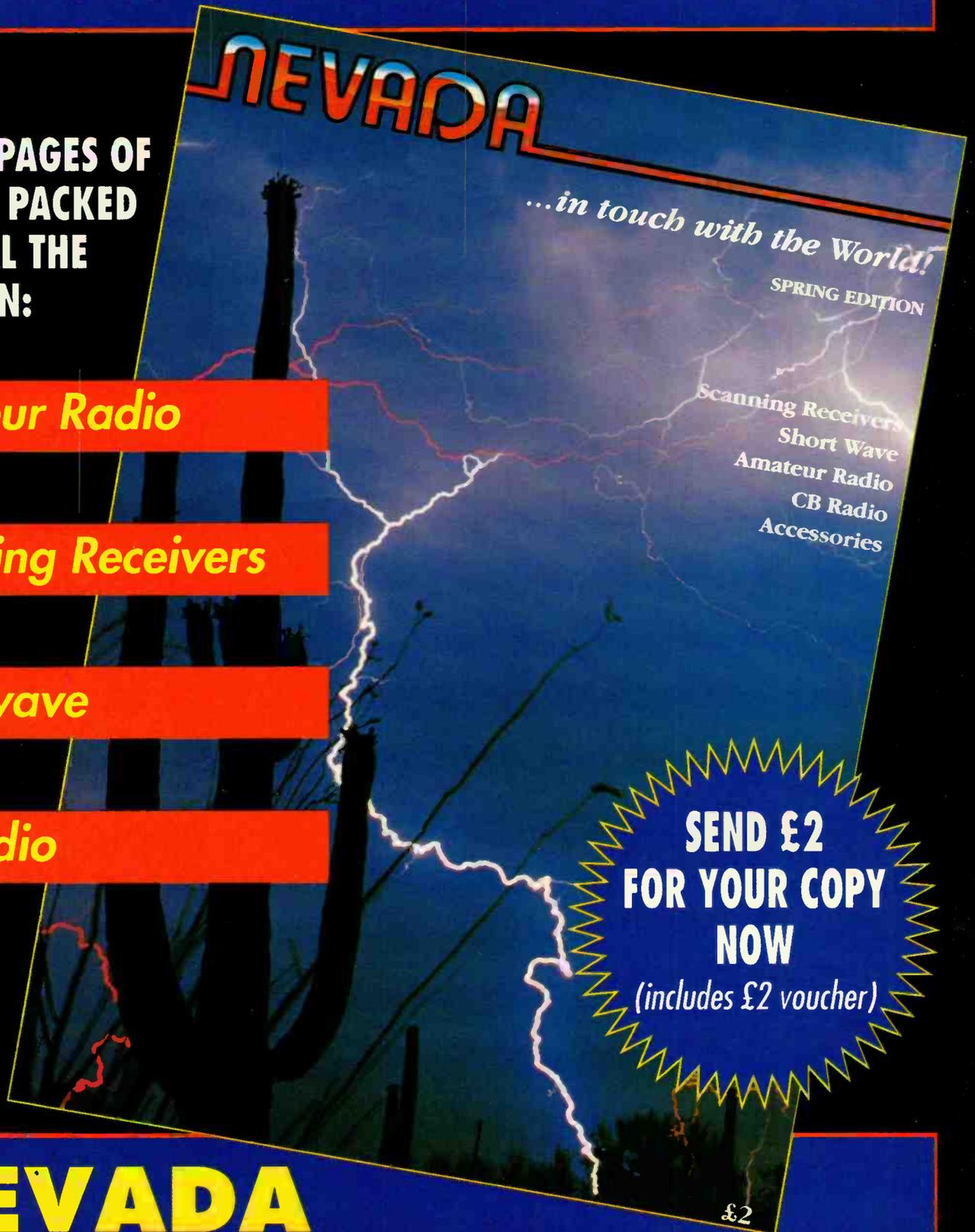
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short wave magazine

VOL. 51 ISSUE 6 JUNE 1993

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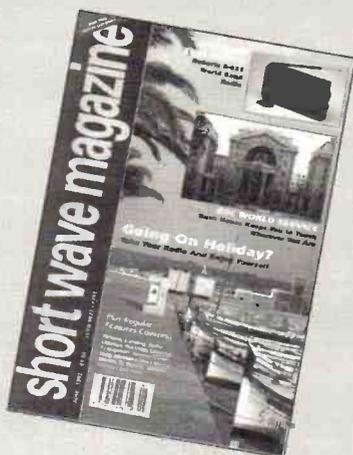
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Cover:
Why not take your
short wave radio on
holiday with you and
enjoy yourself even
more?



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good listening

editorial



SWM SERVICES

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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.

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Broadstone (0202) 659930. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Poole (0202) 659950.

It's an Ill wind . . .

One of the failings of v.h.f. f.m. transmissions as far as the motorist is concerned is the need to constantly retune the radio as the signal disappears. Ever since RDS became available I have been promising myself that my next car would be fitted with an RDS-equipped radio. I have never managed to achieve this - until recently. While it was parked in the car park opposite the main Police Station in Bournemouth recently someone decided that my radio would be better off in their car. Entry was gained by simply destroying the door lock barrel and the entire radio installation removed - nothing else, just the radio. After six weeks of arguing with the insurance company over the value of the radio fitted as standard equipment we finally came to an arrangement and now I have a radio with RDS.

After just one week and a long journey with RDS I wonder how I put up without it. It's great to be able to listen to Classic FM without having to constantly retune or put up with a constantly disappearing signal. The 'joins were almost seamless' in modern parlance - just an almost inaudible 'plop' as the RDS changed frequency. Mind you, like our new office telephone system - designed, I am certain, by someone who has never used a telephone in their life - the set has so many features that at my age I will never master them all!

Sackcloth and Ashes - Again!

To those of you trying to make the Green Dipper my humble apologies. The gremlins got into the system with a vengeance last month and somehow the wrong drawing was picked up and placed. The correct set of drawings is on page 12 of this issue. Did you try the Crossword last month? Were you frustrated by the lack of a clue for 23 Down? For once I relied on the artwork supplied being correct and didn't try to solve the puzzle. It should have been obvious that the second of two 13 Down clues was really 14 Down, but there was also a problem with 4 Down, which was one letter short for the anagram. I have decided that 4 and 23 Down will not be taken into account when judging the results.

Dick Ganderton G8V FH

letters

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

The Editor reserves the right to shorten any letters for publication but will try not to alter their sense. Letters must be original and not have been submitted to any other magazines. The views expressed in letters published in this magazine are not necessarily those of *Short Wave Magazine*.

Thanks!

Dear Sir

May I, through your excellent magazine, express my appreciation for the repair service offered by AOR (UK) Ltd.

My scanner had been repaired by another dealer and returned to me, and returned to them and returned to me with the comment that it worked fine and was within specification.

The set was sent off to AOR after a 'phone call to Mr Hillier and returned in working order, with the parts that had been changed.

Once again, my thanks to Mr Hillier and AOR (UK) Ltd for taking such a sympathetic view of the matter.

R. Drake, Northants

Holiday Radio

Dear Sir

With reference to the letter from Terry Broadhead in April's *SWM*, regarding taking his AR-2000 on holiday. I take mine to Cyprus every year, it has also been to Spain and Gibraltar. Only once did the check-in officers at Heathrow ask to see it!

You must carry it in your hand luggage, and you cannot use it on the aircraft in case it interferes with Navigational Aids, etc.

The Captain of Cyprus Airways even wrote down all the frequencies that they used when I told them what my hobby was.

I have taken my scanner abroad twice a year for the past 12 years. It is not on the prohibited list of articles allowed on aircraft.

Hoping this will help a fellow s.w.l.

**M.J. Gardiner BRS94668
Southampton**

Mains Adaptation

Dear Sir

In response to A. Barber's letter regarding the problem with a 3-pin plug fitting in the travelling case of the SW55. Basically, 'what problem'! My mains adaptor is fitted with a standard plug and fits into the SW-55s case with no problem as all. You place the 3-pin plug 'pins down' in the far left-hand corner of the base, with slight re-education of the wires, it fits with no straining on the case hinge at all. Hope this helps other SW-55 owners - a great little radio.

**Andy Gray
Notts**

letters

Broadcast Bands

Dear Sir

I was interested in Robert Connolly's letter in the February issue of *SWM* and support his idea for a one-off special on Band II v.h.f. f.m. broadcast stations. It might also be useful to do a feature on the audio equipment used in the

stations of f.m. stereo broadcast stations and to cover the licensed ethnic/community and minority-interest music stations available on v.h.f. There is more to broadcasting than just transmitters and receivers!

Ivor Nathan
London

Microwave Magic

Dear Sir

While preparing Christmas dinner this year, my wife commented that potatoes cut in two do not cook well in the microwave oven, 'because of the flat side'. This leads me to wonder whether for optimum cooking, the food should be in the shape of a microwave antenna for efficient absorption of the available energy. Should she whittle the potatoes into a Yagi shapes, or would another form be more efficient for microwave dish of the day? Would any readers care to comment?

Nick Day
Cheltenham

RSGB Not for SWLs

Dear Sir

I sympathise completely with the remarks made by Bill Solley in the March *SWM* regarding the treatment of listeners by the RSGB.

Although a licensed amateur for 10 years, my first love has been and always will be short wave listening. I was always disappointed by the tiny section devoted to listening in *RADiO COMmunication* and by the fact that the society assumes that listeners are only interested in the amateur bands!

In 1991, having got very despondent with the RSGB, I decided to look elsewhere. Through a friend I found the International Shortwave League and have never looked back. In fact, I've enjoyed being a member so much that I have recently volunteered my

services to the HQ as Publicity Officer.

It's the only organisation I know of that treats the licensed amateur and short wave listener with equal respect. The monthly journal *Monitor* covers all sorts of topics from amateur band transmitting through to broadcast band listening, from QRP to members' own reminiscences. The League runs contests (for transmitting and receiving), has awards available for the winners, has its own very efficient QSL bureau and runs regular nets at various times.

I can only suggest to Bill that he refers to the piece about the ISWL in the February edition of 'Junior Listener' as it contains the current membership prices plus the address of the HQ. Believe me, it's well worth it.

Chris Carrington
Derby

The AR88

Dear Sir

I was most interested in the article about the famous AR-88 in the May '93 edition of *SWM*.

I acquired one myself some months ago and after clearing some minor faults and getting rid of all the dead spiders, I have got it going like the proverbial bomb. Although lacking some sensitivity at the top end of its range, it is much

more fun to drive than the modern push-button black boxes.

Your author mentioned the apparent difficulty in replacing such components at the r.f. gain control, which is shown on the service sheet as having a value of 66megohms. This is not the case. The service manual - I have a copy of the Canadian Air Force one - uses the old American nomenclature where M means

Code Free Licence

Dear Sir

There has been a lot of talk about the code-free licence recently. There are, however, many who wish to get the Class A at the moment and who have trouble getting around to starting or finishing.

I am, I regret to say one of these many who lacks self discipline and time to achieve this licence at home. Please could we have more information on courses. I'm sure they would receive great support. Evening and maybe during holiday time with an exam at the end? This would certainly help in clearing all those Class Bs who plan but don't achieve getting their licenses due to other priorities.

M J Alderman
Chelmsford

Ed: My first suggestion is to contact your local amateur radio club. Many of these run courses almost all year round. Drop me a line if you are involved with some such course.

Dear Sir

Well, well, well. Talk about whinge! The letter from W. Mitchell (April '93) seems to tar all 'B' licence holders with the same brush. And what's this 'unfair disadvantage' that English speaking amateurs have over foreign counterparts? Didn't he pass his Morse test in English? Don't the rest of the world talk English on the radio? If 'he, she or it' wants to learn another language and talk to the world in a foreign tongue, go ahead! Just don't expect the rest of us to follow.

If all you B licensees want to talk to the world without an A licence, use the satellites. You can talk to the world, be free of interference and enjoy world-wide communication at the same time. Also you can do this with very little power.

But beware!! Should you contact the world by satellite don't be TOO eager to let some of your A licence friends know where you are getting to. Some are of the opinion that we 'cheat' as the satellite is a 'repeater in the sky'. Or that we should not be talking around the world because we are not 'real amateurs'. No, Mr Mitchell, you are no smarter than we are, but that through progress and the dedication of amateurs world-wide we are able to speak to the world (in English) through that progress.

After all, if it were not through progress we would all be communicating by semaphore! Things I believe will change in amateur radio for the better. Passing a Morse test does not give you the experience that I believe is needed to make confident contacts throughout the world.

I. Duffin G7HXL, Norfolk

Unwanted Gifts

Dear Sir

Regarding Mr Buggins letter 'Unwanted Gifts' in the May issue. Surely, their 'relatives' should know if a receiver would be appreciated or not?

H. Richards, South Humberside

'thousand' (mille) and Meg means megohms, so all is not lost.

The r.f. gain control is not 66M Ω , it is 66 thousand ohms, a value that could easily be replaced with a standard 50k Ω pot, without any appreciable effect on performance.

On curious thing to note in this receiver is the way in which negative bias for r.f. and a.f. stages is obtained from resistors in the common h.t.

negative line, rather than the normal use of cathode bias resistors. No doubt the author will elaborate in this in future articles. I look forward to reading more about this super receiver in forthcoming editions of *SWM*.

As a matter of interest, the weight of this monster is 100lb, which explains why the floor of my shack sags at one end!

Les Painter
Swansea

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

May 30: Plymouth Radio Club Rally will be held at Plymstock School, Plymstock. Doors open from 10.30am to 4pm. There will be car parking, traders, Bring & Buy, Talk-in, Raffle and refreshments. Derek Foster G7ESZ. Tel: (0752) 767181.

June 6: The Spalding & DARS are holding their Jubilee Mobile Rally at Springfield Gardens, Spalding. T Kettlewell. Tel: (0775) 722940.

June 20: The 4th Belfast Radio Rally will be held in The Chimney Corner Hotel, 630 Antrim Road, Glengormley. Doors open 12 noon (11.30am for disabled). Bring & Buy, trade stands, lucky dip and meals available. Talk-in on S22. Admission £1 and proceeds to the RAIBC in northern Ireland. Tel: (0232) 471370.

June 27: The 36th Longleat Amateur Radio Rally, Longleat House, near Warminster, Wiltshire. There will be trade stands, RSGB bookstall, large craft fair, camping & caravanning facilities and a licensed bar and catering on site. Shaun. Tel: (0225) 873998.

July 4: The York Radio Rally will be held in the Tattersall Building, York Racecourse, Knavesmire, York. Doors open at 11am, entrance fee £1. Ample free parking, amateur radio, electronics and computers, arts and crafts, Morse tests, licensed bar and cafe. Talk-in on S22. Andy Suter. Tel: (0904) 708164.

July 11: Galway Radio Experimenters will be holding their annual radio and computer rally at Newtownsmith, Galway. Doors open at 12 noon. Large trade show and lots to interest the entire family. Large Bring & Buy, free parking and refreshments available. Talk-in on S21. E17DIB. Tel: 091-53592.

July 11: The Horncastle Amateur Radio, Electronics & Computing Fair will take place at the Queen Elizabeth's Grammar School Sports Hall. Tony Nightingale G6CZV. Tel: (0507) 522482.

July 11: The Sussex Amateur Radio & Computer Fair will be held at Brighton Racecourse from 10.30am to 4pm. There will be trade stands, Bring & Buy, picnic area, refreshments, car parking and a free shuttle to Brighton sea front.

***August & Flight Refuelling ARS Hamfest** will take place at the Flight Refuelling Sports ground, Merley, Wimborne. The event will run from 10am to 5pm and will include the usual mix of traders, Bring & Buy, craft exhibitors, car boot sale and field events. Overnight camping facilities available for the 7th. Talk-in on S22. Richard Hogan G4VCO. Tel: (0202) 691021.

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. June 21 - Bristol DXpedition Alderney. Dave Bailey G4NKT. (0272) 672124.

South Bristol ARC: Wednesdays. Whitechurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitechurch. June 2 - Astronomical Evening by G7NQQ, 9th - 80m Activity Evening, 11th - 'Bulls Eye' at North Bristol ARC, 16th - At The Speed of Light by G6PJS, 23rd - Preparation for Longleat, 30th - Home-brew First Evening Terry's Trophy by G4YTH. (0275) 832222.

BEDFORDSHIRE

Shefford & DARS: Thursday, 7.45pm. Church Hall, Amptthill Road, Shefford, Beds. June 3 - Pedestrian DF Hunt, 17th - NFD Planning. P. Bradfield. (0462) 700618.

BERKSHIRE

Maidenhead & DARC: 1st Thursday & 3rd Tuesday, 7.45pm. The Red Cross Hall, The Crescent, Maidenhead. June 15 - Sparks in the Ether (1925 and all that) by G3TWG. Neil GOSVN. (0628) 25952.

CHESHIRE

Stockport RS: 34 Ladythorn Road, Bramhall, Stockport, Cheshire. June 9 - DXpeditions by HS0/G3NOM.

DERBYSHIRE

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. Hayley Winfield, 2 Hilts Cottages, Crich, Matlock.

DEVON

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. June 18 - 5B4 Christmas by G4VPM. Walt G3HTX. (0803) 526762.

Co DURHAM

Great Lumley AR & ES: Wednesdays, 8pm. The Community Centre, Front Street, Great Lumley. Barry G1JDP. 091-388 5936.

EAST SUSSEX

Hastings E&RC: 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. Fridays, 8.30pm. Ashdown Farm Community, Downey Close, Hastings. Gary Fellows G7GHP.

Southdown ARS: 8.00pm Chasely Home for Disabled Ex-Servicemen, Southcliff, Bolsover Road, Eastbourne. June 7 - Antennas from Slim Jims to HF Beams. Jan G4XNL. (0323) 412699.

ESSEX

Chelmsford ARS: 1st Tuesdays, 7.30pm. Marconi College, Arbour Lane, Chelmsford. June 1 - Constructors, Competition. Roy & Ela Martyr. (0245) 360545.

Vange ARS: Tuesdays 8pm, Barnstable Community Centre, Long Riding, Basildon, Essex. June 3 - Junk Sale, 10th - First Aid by G0BTS, 17th - QRP by G3IOI, G4VZF & G4XTS, 24th - Discussion. GONJY (0268) 552606.

GREATER LONDON

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. Chiswick Town Hall, Heathfield Terrace, Chiswick, W4. June 15 - Pre-Low Power Field Day. G0JRY. 081-749 9972.

Edgware & DRS: 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. June 10 - Experiences in Sri Lanka by G0LUH, 24th - Morse Training Evening. Rod Bishop. 081-204 1868.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. June 11 - Dip Oscillators & Their Use by G3DWW, 25th - Intruder Watch by G3JVC. Chris Frost. 081-397 0427.

HEREFORD & WORCESTER

Bromsgrove & DARC: Fridays. Avoncroft Arts Centre, South Bromsgrove, Worcester. June 4 - Pre-NFD Meeting. Joe Poole. (0562) 710010.

HERTFORDSHIRE

Dacorum AR & TS: 1st (informal) & 3rd (formal) Tuesdays, 8pm. The Heath Park, Cotterells, Hemel Hempstead. June 15 - WWII Radar Countermeasures by G3WFM. Dennis Boast. (0442) 259620.

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. June 10 - Social Evening, 24th - Operating at Tolmers Scout Camp. Roy G4UNL. 081-804 5643.

Verulam ARC: 2nd & 4th Tuesdays, 7.30pm. RAF Association Headquarters, New Kent Road, St Albans. June 22 - Frequency Synthesisers, How they work & their limitations by G0SNO. Walter Craine. (0923) 262180.

HUMBERSIDE

Wirral & DARC: June 2 - Drink & Waffle at Eastham Ferry Hotel, 9th Practice DF Hunt, 8pm, 16th - Drink & Waffle The Greave Dunning, Geasby, 23rd - Mobile Treasure Hunt, 7.30pm 30th - Eileen Medley DF Hunt, 8pm. Paul. 051-648 5892.

Wirral ARS: 1st & 3rd Wednesdays, 7.45pm. Ivy Farm, Arrow Park Road, Birkenhead. June 16 - Members' Surplus Sale, other meetings Natter Nights.

KENT

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

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

LANCASHIRE

Rochdale & DARS: Mondays, 8pm. Cemetery Hotel, 470 Bury Road, Rochdale. June 7 - HF Airband by G0PUD. G0PUD. (0706) 32502.

LINCOLNSHIRE

Spalding & DARS: Fridays. The Leisure Centre, Old Fire Station, Spalding. June 11 - Wire Aerials & Matching Units by G4OO. D. Hoult. (0775) 750382.

NOTTINGHAMSHIRE

Mansfield ARS: 2nd Mondays, 7.30pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. June 14 - Packet Update & Demonstration by G0KIU. Mary G0NZA. (0623) 755288.

South Notts ARC: Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. June 4 - On Air HF & VHF, 11th - Design and Construction of High Current Power Supplies by The Wizard, 20th - Second Fox Hunt. Ray G7ENK. (0602) 841940.

SOUTH YORKSHIRE

Barnsley & DARC: Mondays, 7.15pm. Darton Hotel, Station Road, Darton, Barnsley. March 1 - On the Air Night, 15th - Junk Sale, 22nd - AGM. Ernie G4LUE. (0226) 716339.

SUFFOLK

Sudbury & DARC: 1st Tuesdays, 8pm. The Five Bells Inn, Great Cornard, Sudbury. June 1 - Project for the Construction Competition is Set. Colin GOPAO. (0787) 77004.

SUSSEX

Crawley ARC: Wednesdays, 8pm & Sundays, 10.30am. hut 18, Tilgate Forest Recreational Centre, Tilgate, Crawley. June 20 - Microwave Round Table, 23rd - DXCC by G3LOP.

WARWICKSHIRE

Mid Warwickshire ARS: 2nd & 4th Tuesdays. June 8 - Metalwork & Mechanical Construction by G8HJS, 22nd - Fox Hunt. Don Darkes. (0926) 424465.

Stratford upon Avon & DARS: 7.30pm. The Home Guard Club, Main Road, Tiddington, Stratford-upon-Avon. June 14 - Mobile Operation by G4ABS, 28th - Technical Topics Evening. A. Beasley G0CXJ. 060-882 495.

WILTSHIRE

Trowbridge & DARC: 3rd Wednesday. The Southwick Village Hall, Southwick, Trowbridge. June 2 - 144MHz DF Contest, 7.30pm 16th - Natter Nite. Ian G0GRI. (0225) 864698.

SOUTH YORKSHIRE

Chapel Green ARS: Thursdays, 6.30pm. Chapel Green Project, 230 Lane End, Chapelton, Sheffield. Roy Saunders 2E1BJD. (0742) 846720.

Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

junior listener



Rallies

The International Short Wave League (ISWL) have written to inform me they are going to be attending the following rallies.

June 27 - Longleat Radio Rally, Longleat Park

August 8 - Flight Refuelling ARS Hamfest, Wimborne, Dorset

September 11 - Scottish AR Convention, Cardonald College, Glasgow.

ISWL representatives will be on hand at all League stands to distribute information, answer questions and, of course, enrol new members!

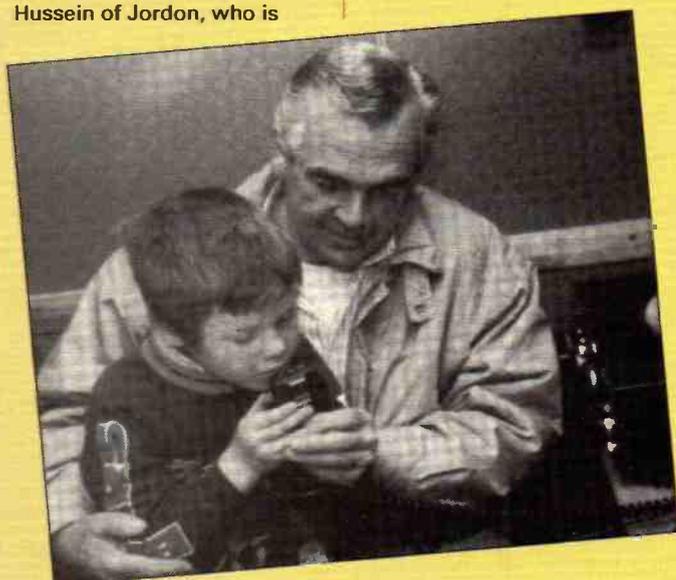
GB00SH

In February, a special event station, GB00SH was put on the air for several days from the Hospital for Sick Children in Great Ormond Street, London. The studios of the hospital's internal radio station, Radio GOSH, were kindly loaned to the amateur radio team by Station Manager Peter Losch. King Hussein of Jordan, who is

licensed as JY1, agreed to participate in a sked to take place during the opening ceremony.

A number of the young patients were able to visit GB00SH to sample the delights of amateur radio.

In the photograph you can see young Robert, aged just 6, trying amateur radio under the watchful eye of Dave GOBDC.



Last Chance for A Bonaire QSL

TWR will stop short wave broadcasts from Bonaire in July 1993 after nearly 28 years of daily transmissions. The results of a recent listener survey revealing a dwindling short wave audience in South America, and the lack of funding were the primary reasons for the decision. There is a long term commitment to

continue and expand the medium wave broadcasting from Bonaire.

Also, TWR Bonaire plans to begin the distribution of radio programmes to numerous radio stations throughout Latin America. So, try listening on 11.815 and 15.345MHz in the mornings and 9.535 and 11.930MHz in the evenings.

**Trans World Radio,
Bonaire, Netherlands
Antilles.**

Jargon Buster

C.B. Almey of Wisbech in Cambridgeshire is new to radio and just joined the ranks of *SWM* readers. The first problem he has encountered is that of acronyms and general jargon. In particular he wants to know what u.s.b. l.s.b. and b.f.o. mean. Instead of just expanding the acronym, I'll add a short explanation of each of the terms.

The first two are different types of **Single Sideband** (s.s.b.) transmissions known as **Upper Sideband** (u.s.b.) and **Lower Sideband** (l.s.b.). So what does all this mean? To explain it we need to think about how a speech signal from a microphone is changed into a radio signal. To do this we have to change the frequency of the speech signal. For general communications a speech signal is usually regarded as containing audio frequencies from around 300Hz to 3000Hz. If we wanted to generate a signal for use in the 14MHz amateur band we would need to somehow change the audio frequency up to this higher, radio frequency. This is done by mixing the speech signal with a fixed radio frequency from an oscillator inside the transmitter. After the mixing there are four signals that need to be sorted out.

- 1: The original speech signal.
- 2: The radio frequency oscillator.
- 3: The radio signal plus the speech signal.
- 4: The radio signal minus the speech signal.

So which of these do we want? The answer is 3 or 4 as these represent the upper and lower sideband signals respectively. The other frequencies need to be filtered out.

Now that we've generated the signal, let's look at how we can resolve it at the receiver. If you try tuning to the 14MHz amateur band with your receiver set to a.m. you'll see that the signals are very distorted and impossible to resolve. In order to receive an s.s.b. signal you have to mix it with a radio carrier in the same way as when the signal was generated. It's here that the **Beat Frequency Oscillator** plays its part. This is a stable oscillator that's used in the receiver to resolve s.s.b. signals. For those with receivers that include an s.s.b. mode, these are built-in. Whilst some have a knob for adjusting the b.f.o. frequency, the more sophisticated type simply have a switch for upper or lower sideband.

If you're one of the many who don't have an s.s.b. facility on your receiver all is not lost. You can use an external b.f.o. to resolve s.s.b. signals. Whilst this is not as effective as a built-in unit it does at least give access to the world of s.s.b. signals. If you'd like to try your hand with an external b.f.o., a constructional article was published in the August '85 edition of *Practical Wireless*. Photocopies of this can be obtained from the editorial offices priced £1 inclusive.

Novice Course

TriTec in Sheffield are running a Novice Licence Radio Course, starting On June 28 at 3pm. If you're interested, then contact TriTec, Thomas Street, Sheffield S1 4LE. Tel: 750581.

news

Obituary

Stan Crabtree G30XC

On behalf of Stan's wife, Helen, and their two children Elaine & David, I regret to tell you that Stan died from a sudden heart attack on Wednesday, March 17. He was 62.

His enthusiasm and hunger for detail was obvious to all those who have read his frequency papers and radio magazine articles in *Short Wave Magazine* and *Practical Wireless* over very many years. He became an

internationally recognised authority on the history and development of mercantile marine radio equipment and operating. At the time of his death he was devoting much of his spare time researching into the life of the very first mercantile marine radio operator, whose German family he had finally traced.

During his many years as an amateur he held and operated under several prefixes, including GM, VQ4, VQ1, C56 and 5A.

**Michael Robertson
G3USX.**

TVDX News

There's a new Swiss TV network - 'S PLUS' opening end August with RTL opening offices in Zurich. Transmitting in German to compete with other popular German programmes from PRO7, SAT1, etc., local advertising will also be sourced for the service together with an exclusive programme feed. The 1994 operating budget will be 50 million Swiss Fr and population coverage approximately 70%. The selected terrestrial transmission frequency will be typically Ch. E36 u.h.f. or via cable distribution. With the high ownership of satellite and v.c.r. equipment one can foresee problems akin to the projected UK Channel 5!

French channel TF1 is now transmitting CEEFAX standard Teletext on a test basis in parallel with Antiope (the French version of t/text) until end 1993 when Antiope will cease and CEEFAX takes over the full service. The next step to Antiope's end will be the France 3 network, who already have page 888 in CEEFAX.

Cambodia will have its first u.h.f. TV channel transmitting the 'Channel 5' programme (a Thai based network) in Phnom Penh. The 20kW transmitter is part of a \$12 million deal signed between Phnom Penh officials and the Shinawatra Group from Bangkok and gives a 20 year transmission contract. The state run 'Channel 7' network will also gain financial help from Bangkok. **Roger Bunney**

Receiver Kit

MFJ have just introduced a new short wave receiver kit designed for both the novice constructor and the old timer who wants to experience a little piece of nostalgia. Based on a regeneration design, first made popular in the 1920s, the receiver covers 3.5 to 22MHz in five switched ranges.

The kit is supplied complete with all components, metal work, knobs, etc., and a very detailed manual of about 40-pages.

For details of the UK availability of this kit, which was seen by many of the *SWM* & *PW* readers who went to the Dayton Hamvention in April, contact:
Waters & Stanton Electronics, 22 Main Road, Hockley, Essex SS5 4QS. Tel: (0702) 206835.

Islands on the Air

The Lagan Valley ARS will be running a DXpedition to Copeland Island between June 11 and 13. They will be running 10-80m amateur bands and all s.w.l. reports ill be QSLed.

IOTA No B EURO122 GI

Lat. 50°41'N long 5°33'W

ORA IO74FQ

WAB J58 North Down

QSL via Bureau or GI0DVU, QTHR.

New Scanners

Tandy have introduced three new scanners into their range. They range from the £149.99 PRO-44 50-channel programmable scanner through the PRO-46 100-channel scanner at £199.99 to the PRO-39 200-channel scanner at £219.99. Keep a look out for reviews in the future



Lost

On Wednesday April 14, I had the misfortune to lose my Yupiteru MT-7000 scanner. My fault, I left it on top of my car and drove off! When I discovered it was missing, I returned over the same area but to no avail, so I immediately telephoned the police to report the loss. Despite numerous local advertisements offering a

reward, the set has not been recovered.

The set was in a Yupiteru leatherette case and had a Yaesu 2m black rubber duck antenna fitted. The serial number is 20901832. Please help as I'm suffering terrible withdrawal symptoms without it. It's like losing an old friend.

Stephen Ades, 9 Tedder Terrace, Rock Lane, Hastings, East Sussex. Tel: (0424) 445349.

Scanners in the USA

Just before it adjourned last year, Congress sneaked through the long-feared ban on radios that receive cellular phone calls. When the bill becomes fully effective it will be illegal to manufacture or import into the US a general coverage receiver that scans the cellular phone bands. The measure had been attached to the Federal Communications Authorization Act (HR 1674, but when it became clear that the bill was not going to make it, Congressional sponsors move the provision to HR 6191, a bill that regulated '900' calls, and pushed it through. The Association of North American Radio Clubs opposed this legislation in letters to Congressional leaders, but our volunteer efforts were no match for the wealthy professional cellular lobby.

The bill gives the FCC 180 days to write regulations that deny equipment certification to any scanning radio that is capable of being equipped with decoders that convert digital cellular transmissions to analog voice audio. One year after the effective date of FCC regulations, it will be illegal to manufacture or import such a radio.

What is the effect of this legislation on existing radios? Nothing. The new law does not ban the use or purchase of any radio. What it is intended to do is dry up the supply of radios that pick-up cellular. It will do that initially by denying certification to any new models that do not comply. Eventually, the law will ban the manufacture in the US or import of radios such as the Icom R-1. However, if you can find a non-complying radio for sale after 1994 that received certification prior to 1993, it will still be legal to buy it and use it.

Will it still be legal to alter a radio to pick-up cellular?

Taken from *American Scannergram* the official publication of All Ohio Scanner Club.

Broadcast News

NHK Radio Japan is now being relayed by the BBC's Far Eastern relay station in Singapore whilst BBC World Service is using a new 300kW transmitter at the NHK Tokyo-Yamata station.

Radio Japan from Singapore:

0100-0300 on 11.86 MHz

0500-1000 on 11.74 MHz

2100-2200 on 6.035 MHz

BBC World Service from Yamata:

0900-1330 on 11.765 MHz

2100-0030 on 15.37 MHz

The latest schedule from **Radio Australia** suggests these frequencies for European listeners: 0700-0900 on 21.595; 0900-1300 on 21.725; 1430-1800 on 13.755 and 9.56MHz; 1800-2030 on 7.26 and 5.88MHz; 0730-0830 on 15.24MHz

Radio New Zealand undertook some test transmissions on its new 6MHz antenna array during April and now has added a 49m band transmission to its schedule. 6.035MHz is on daily between 1650 and 2130, but may not be audible in the UK. If it is, please let me know here at *Short Wave Magazine*.

Test transmissions as well from **Bulgaria**. The Bulgarian Telecommunication Company contracted a Danish organisation to organise tests on two 19m band frequencies during April which may enter service at some time in the future. Two 50kW



transmitters were deployed, one operating on 15.72MHz on a bearing of 2960 between 0800 and 1600, the other on 15.675MHz on a variety of bearings: 0800-0955 on 3310; 1000-1055 non-directional; 1100-1355 on 1260; 1400-1455 non-directional; 1500-1530 on 3310. These were curious frequencies, well outside the official portion of the 19m broadcast band, so are the Bulgarians about to move to more out-of-band channels? Keep your ears open!

Danish Radio's European transmissions are now operating at the following times:

1330 on 9.59 & 15.23MHz

1530 on 17.86MHz

1630 on 15.23 & 17.825MHz

1730 on 9.655MHz

1830 on 9.59, 15.22 & 21.705MHz

1930 on 9.59 and 15.22MHz

2030 on 9.59 and 17.73MHz

0430 on 15.175MHz

0530 on 7.215, 9.59, 15.17 & 17.815MHz

0630 on 9.59, 15.165 & 17.815MHz

0730 on 9.59, 11.735 & 17.815MHz

0930 on 21.705MHz

1030 on 17.795MHz

Radio Vilnius has made further cutbacks to its use of Russian transmitters. The English service is now on the air at 1900-1930 on 9.71MHz and all the medium wave channels of 1557, 666 & 612kHz; 2130-2200 on the same channels and 2300-2330 on 11.75MHz.

The Voice of Israel's European English service is now heard at:

0400-0415 on 9.435 MHz

1000-1030 on 17.545 MHz

1300-1325 on 17.59, 17.575, 15.65, 15.64, 11.603 & 11.587MHz

1700-1715 on 17.575, 15.64, 11.675 & 11.587MHz

1900-1930 on 17.575, 15.65, 15.64, 11.675, 11.603 & 11.587MHz

2130-2200 on 17.575, 15.65, 15.64, 11.675, 11.603 & 11.587MHz

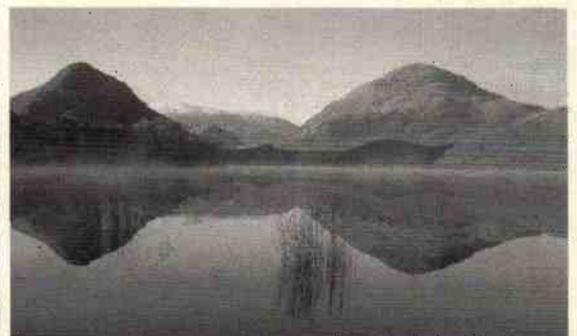
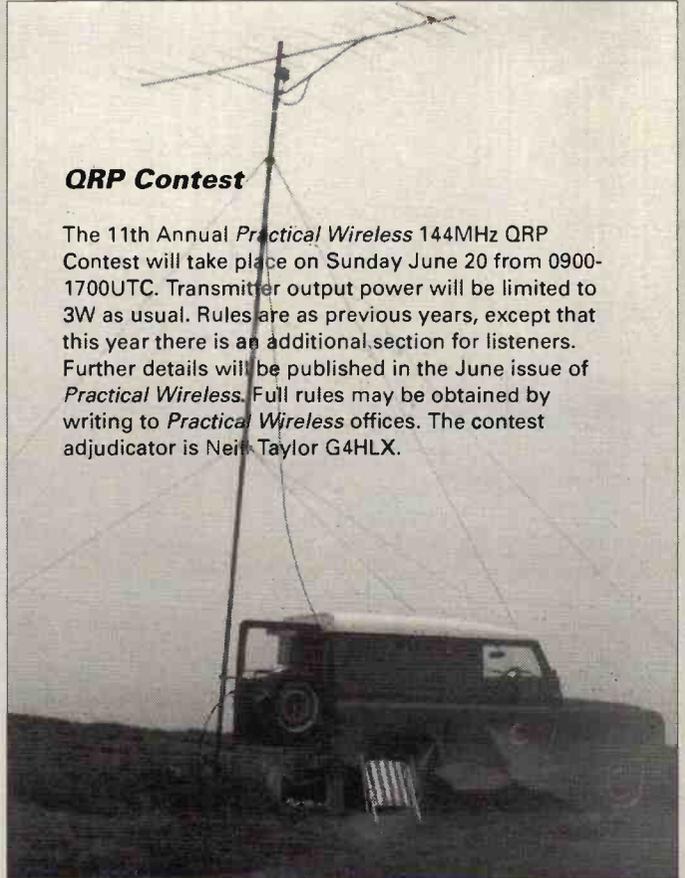
Peter Shore

Short Wave Magazine, June 1993

news

QRP Contest

The 11th Annual *Practical Wireless* 144MHz QRP Contest will take place on Sunday June 20 from 0900-1700UTC. Transmitter output power will be limited to 3W as usual. Rules are as previous years, except that this year there is an additional section for listeners. Further details will be published in the June issue of *Practical Wireless*. Full rules may be obtained by writing to *Practical Wireless* offices. The contest adjudicator is Neil Taylor G4HLX.



RADIO AUSTRALIA ▲ THE WILDERNESS SOCIETY

Persian on the Short Waves

KVOH began weekly short wave broadcasts in Persian from their Rancho Simi, California site on May 1. KVOH's sister station KHBN, on the island of Palau, also carries regular broadcasts in Persian.

KVOH also broadcasts 17 hours daily in English, Spanish and French on 17.775 and 9.785MHz, with 50kW beamed to South America and the Caribbean. KVOH operates 0300-0700 on 9.785MHz and 1400-0300 on 17.785MHz.

The new broadcast in Persian is scheduled from 0200-0230UTC on Mondays on 17.775MHz. French is broadcast from 1400-1430UTC on Sundays on the same frequency. Programmes in Spanish are scheduled daily from 1430-1800, 1830-2130 and 2200-2400 and from 1400-1430 Mondays to Saturdays, all on 17.775MHz.

English is scheduled on 17.775MHz from 0000-0300 daily, except Mondays, and 0000-0200 and 0230-0300 Mondays only. The teaching broadcasts of Dr Gene Scott, from the University Network, a US satellite station, are aired on 9.785MHz from 0300-0700.

Reception reports for KVOH should be addressed to:

Box 93937, Los Angeles, CA 90093, USA. Return postage in IRCs or US stamps is required.

RECEIVING YOU LOUD AND CLEAR! WORLD CLASS RECEIVERS - FROM A WORLD CLASS DEALER



JRC NRD535

Probably the finest receiver available to the short-wave listener (without the financial clout of a small government!) We also stock the full range of accessories, ready for instant fitting. For the listening purist, we also offer our unique IF filter/audio upgrade. Lowe Multiscan compatible.

From £1395.00

STILL AVAILABLE - Our famous free Listeners Guide. Pick up one at any branch or send us four first class stamps to receive your free copy, together with our latest Shortwave newsletter and price list.



KENWOOD R5000

Kenwood's only receiver now but still holding its own with the competition. Always in stock and again we hold the full range of accessories and are the only company to give a full TWO-YEAR WARRANTY. Lowe Multiscan compatible

From £999.95

Finance available through Lombard Tricity CREDITCHARGE or personal loans. Written details available on request. Ask about our own lay-away scheme.



ICOM R72E

Icom's excellent mid-price receiver. Ideal for listeners needing "modern" facilities like scanning, loads of memories and a clock. Now with battery backup. Lowe Multiscan compatible.

From £859.00

Need our second hand list? Try our new fax service! Dial 0628 580008 from your fax machine and follow the voice instructions. Service available 24 hours, 7 days so even when we're not here we will be! Watch this service grow as we learn!



YAESU FRG100

It set the world alight when launched but where are they? Join our waiting list now!! Yaesu's new compact receiver is the latest in a long and successful line. It has one or two excellent features but they're not immediately obvious. We know what they are though so pop into your local branch for the secret.

From £599.00

BRANCHES AT

BOURNEMOUTH - 0202 577760

BRISTOL - 0272 315263

CAMBRIDGE - 0223 311230

CUMBERNAULD - 0236 721004

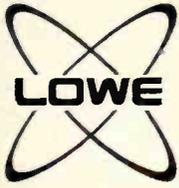
LONDON - HEATHROW - 0753 545255

LEEDS - 0532 452657

MAIDSTONE - 0622 692773

NEWCASTLE - 0661 860418

NEW BRANCH - PLYMOUTH - 0752 607284



LOWE ELECTRONICS

ICOM R7100E

The ultimate scanner! *W-i-d-e* coverage from 25 MHz to 20000 MHz. (We don't do free HF upgrades - after all if it's free, it can't really be worth much!) Every conceivable permutation of scanning and searching included and if that's not enough it's also Lowe Multiscan compatible.

From £1395.00



Need a short-wave antenna? You'll find the biggest and best range of active and passive antenna systems at every branch of Lowe Electronics. If it's worth having, we've got it in stock.

AOR AR3000A

Still one of our more popular scanners. Easy computer control with our Multiscan program from 100kHz to 2036 MHz, it's a true multiband and with all mode reception and 400 memories is a highly versatile receiver. Try one today at any of our branches.

From £939.00



We still do our free Airbands guide. Send us four first class stamps and we'll send you a free copy together with a bumper information pack of the latest scanners, antennas and accessories.

VT 225

Full coverage of both civil and military bands make this a firm favourite with our airband fans. True portability, 100 memories, scanning and searching plus keypad entry make this one of the most easily usable scanners. In stock always!

From £269.00

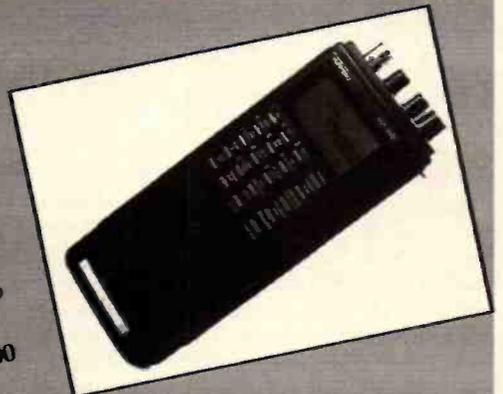


Got a discone? Want something better? What about a super new scanner antenna with real gain, just where you want it? Ask about the Butternut SC3000. You can buy it now at Lowe Electronics.

MVT7000

The world's best selling wideband scanner. Okay so it's not the cheapest scanner in the world but it is the easiest to use, the best quality of construction, and we've found it to be the most reliable of all the scanners we've ever sold. That's got to be worth that little bit extra!

From £369.00



LOWE ELECTRONICS

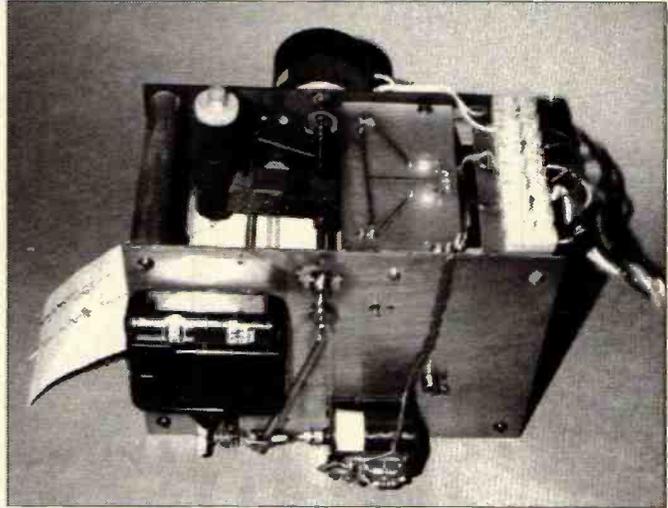
Chesterfield Road, Matlock, Derbyshire DE4 5LE

Tel: 0629 580800 Fax: 0629 580020

(HEAD OFFICE, MAIN SHOWROOM & MAIL ORDER)

Do-It-Yourself Chart Recorder - Part 2

Richard Noble continues his description of how he built his own chart recorder, dealing in this part with the pen drive and associated parts.



Pen Drive

Next we come to the pen drive sub-assembly. The power is supplied by a small electric motor of the type used by modellers. It should be nominally a 4 - 6V, 3000-5000r.p.m. variety, not the 7000-15000r.p.m. sort, as we are going to direct couple it, rather than use gears and complicate matters. The motor is attached to the side plate opposite to the one which carries the clock, but not in a solid fashion. Two small hooks, made by bending short lengths of $\frac{1}{16}$ in brass rod, are inserted into the two small holes either side of the motor position and soldered (or Araldited) to the copper foil of the p.c.b. side plates. The motor is held in place by a small elastic band passed from one hook to the other over the end of the motor. This holds it firmly but does allow a small rocking action, thus relieving any wobble in the fitting of the leadscrew.

Another advantage of this method of fitting is that it allows for easy maintenance of the mechanism and, in particular, it makes it a simple job to replace the travelling nut spacer. This is necessary

from time to time, as it is the part which suffers the most wear.

Leadscrew

The leadscrew is made by cutting a length of 4BA brass studding to fit comfortably between the plates, allowing for any centre-boss on the motor which sticks out through the side plate. This will probably result in a length of about 75 - 78mm. Then it is necessary to drill central and axial holes in each end with a 1.5mm diameter drill.

At this point you will feel totally let down, since this can only be done with a lathe, which we do not have. Once more we resort to an old instrument maker's trick, namely make a special jig instead. This takes a little longer but will achieve something very close to the desired objective solely by hand.

You will need a piece of scrap metal, steel, aluminium or brass, or even at a pinch, a piece of hardwood. Size is not critical as long as it is at least 25 - 50mm thick, the thicker piece probably producing the more accurate result. Start by drilling a 1.5mm diameter

hole right through it. Take it gently, letting the drill do the work so as to get a straight, constant diameter hole. If you are impatient and lean on it too heavily the chances are the hole will be bigger at the top than at the bottom.

Next take a piece of adhesive tape and wrap it around a $\frac{5}{32}$ in diameter drill so that the bottom of it is at a distance from the end of the drill equal to about half the thickness of your jig piece. Use this to slowly open up the 1mm diameter hole until the tape just touches the surface, giving you an enlarged hole to about half the depth of the material. Again, let the drill do the work so that it follows the smaller diameter hole as a guide.

You should now have a hole with two different, but coaxial, diameters. The fact that it may not be truly at right angles to the jig surface does not matter. The jig piece should be turned over and held in a vice or clamped to the edge of a table. If the brass studding is now pushed up into the bottom of the hole and held firmly, the 1.5mm diameter drill can be used to (slowly) drill a hole in the end, guided by the top of the jig hole. Since you do not have

three hands it is at this point that you will require the services of a colleague, girlfriend or 'she who must be obeyed'. The end result however should be a central, axial hole in the end of the studding.

The process should be repeated to obtain a second hole in the other end of the studding. At this point, **but not before**, the 1.5mm diameter jig hole can be opened up (carefully) to the same diameter as the motor spindle. This is likely to be a 2mm diameter hole as this seems to be a popular size and you should certainly try to choose a motor with a spindle no larger than this. Using this as a guide open up the hole in one end only of the studding by the same jig technique as before. If you are lucky the studding will now be a good push fit on to the motor spindle. If not just put a small amount of glue on the spindle before assembling. Cut a short length of $\frac{1}{16}$ in diameter rod and fit it to the other end of the studding in the same way, so that it protrudes by about 10mm or so. This provides a support pivot in a hole in the side plate. File the end of it to a roughly hemispherical shape.

Pen Support Lever

The pen lever is a wood block approximately 10 by 12mm, 45mm long. A 6mm hole should be drilled 10mm from one end and the other end should be filed or sandpapered to have a shallow curve as shown in **Fig. 4**. The 4BA tapped spacer should be a push fit into the hole. If it is loose, use a little glue to fix it. Check that the travelling nut runs freely on the leadscrew throughout its length. Two 1mm holes should be drilled on a horizontal line about halfway down the flat end of the pen lever, to take the two slider guide pins shown in **Fig. 4**. The pins are made from solid copper wire taken from a piece of heavy mains cable and should be pressed into the hole with a pair of pliers. The spacing should be such that the control blade of the slider potentiometer just slides between them with very little free play. Being copper they can easily be bent with pliers to make this happen.

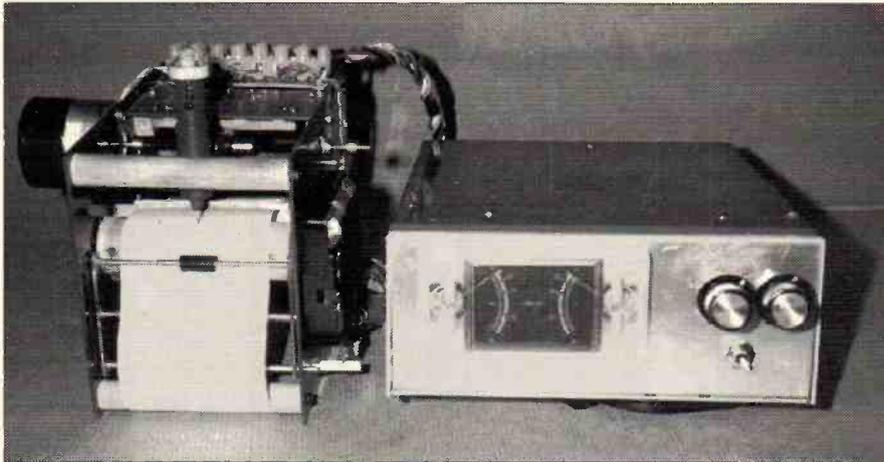
This method of construction not only provides the drive to the pen, but also acts as the pen lever support, allowing at the same time a free up and down movement to the pen.

A set of drawings covering the mechanical parts of the chart recorder and referred to in the articles is available on receipt of a **large** s.a.e. direct from the Editorial Offices at Broadstone. Mark the envelope Chart Recorder.

The next step is the fitting of the pen holder and pen. This is made from a fine pointed fibre-tipped pen and its cap. A typically suitable type is the Berol 'Handwriting' pen, though there must be many more equally good. Remove the cap and with a fine hacksaw saw the top off so that when the pen is re-inserted, the tip protrudes

about 5 - 7mm as shown in **Fig. 5**.

Internal retaining bits may fall out after this. If they do they should be glued back in, more or less where they came from so as to provide a stop for the pen to be pushed against. The aim is to hold the pen in the same place it occupied before the top was sawn off. This process should have also conveniently removed the pocket clip.



The pen holder can then be glued to the hollowed end of the pen lever. Try to glue this so that with the pen inserted and just touching the paper drive roller the pen lever is approximately horizontal.

You may now be wondering why the pen in the diagrams is such a short dainty little thing. One reason is that professional recorders have dainty pens, but if you try to buy one you will find it very expensive. A better reason is that we want to get inside it anyway and while we are doing this we might as well make it neat. Simply saw the pen off at whatever length you consider appropriate. This may be messy but does work. To make a really neat job push the cap out of the sawn-off bit and re-fit it to your little pen. The main reason for getting into the pen is that such fibre tipped pens usually dry out, if left open to the atmosphere for hours on end. A few drops of Glycerine in the end will greatly improve the performance. In addition you can continuously top up your pen with the appropriately coloured 'Quink' doped with a little Glycerine to avoid frequent replacement.

Pen Lifter Mechanism

The final mechanical sub-assembly is the pen lifter, made from no more than a piece of bent $\frac{1}{16}$ in diameter brass rod, a small solenoid and a rubber band as shown in **Fig. 5**. Between the side plates the rod is bent rather like an engine crank and the part outside is simply bent down at right angles, so as to lie parallel to the side plate,

where it can be pulled by the solenoid. The solenoid is attached to the side plate in such a position that when operated it allows the pen to drop down. When the solenoid is not activated the rubber band pulls the lifter rod so as to lift the pen from the paper. This way round, the solenoid is only operated occasionally, reducing power consumption.

If the paper tends to curl as a result of being wound into a roll, then a paper tensioner can be added. This is just a wide block of wood pivoted as shown in **Fig. 5**, to which a piece of felt has been glued. In falling under its own weight it provides frictional drag on the roll, keeping the paper flat. The pivot can be just a length of $\frac{1}{16}$ in brass rod pushed through a hole in the wood block and holes in the side plates.

The method of attaching the solenoid armature will depend on the type of solenoid selected. **Fig. 4** shows the slotted end variety which is easy to use in this application. Other types will have to be left to the ingenuity of the builder, but at worst

you can always drill a 3mm diameter hole in the armature (a very sloppy fit) and push the lifter rod through it.

Finishing Touches

One other small refinement is needed in the pursuit of accuracy. Although the leadscrew is rigidly attached to the motor spindle, this does not unfortunately guarantee it remains in a known fixed position. Most

small motors of this type have from 1 - 2mm of end-play in the spindle, which must be taken out to prevent a similar size uncertainty in the pen position.

This can be done by applying a force to the other end of the leadscrew, to push the motor spindle against the internal end-stop. One method is to attach a piece of springy brass shim to the side plate, so

that it presses against the previously rounded end of the leadscrew pivot where it comes out through the side plate as illustrated in **Fig. 6**.

A second refinement worth adding is small bushes where the leadscrew spindle and the pen-lifter rod go through the fibreglass side plate, because although fibreglass is regarded as tough, it will wear if there is a lot of movement. These are simply made as short (3 to 4.5mm long) pieces of $\frac{1}{16}$ in diameter brass tube pushed through the glass fibre sides and soldered or glued after they have been aligned to run smoothly.

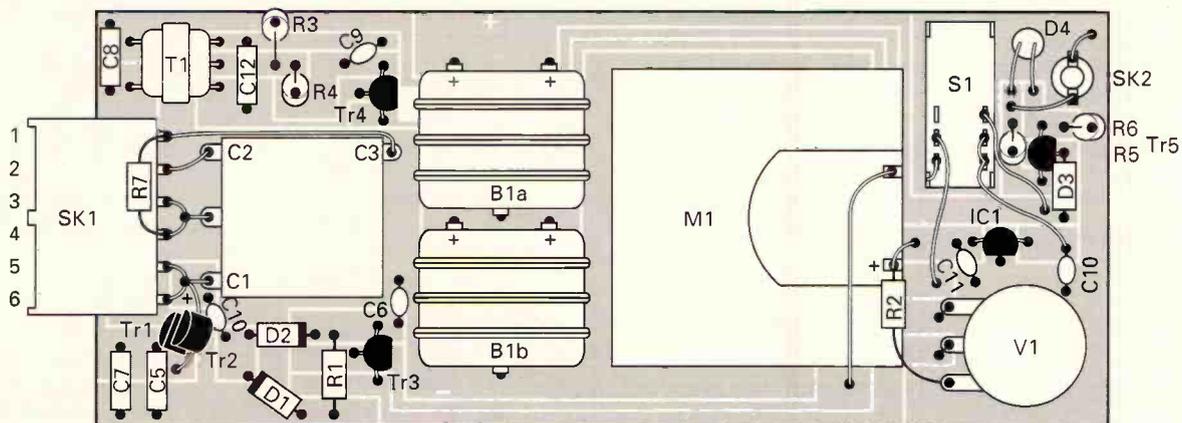
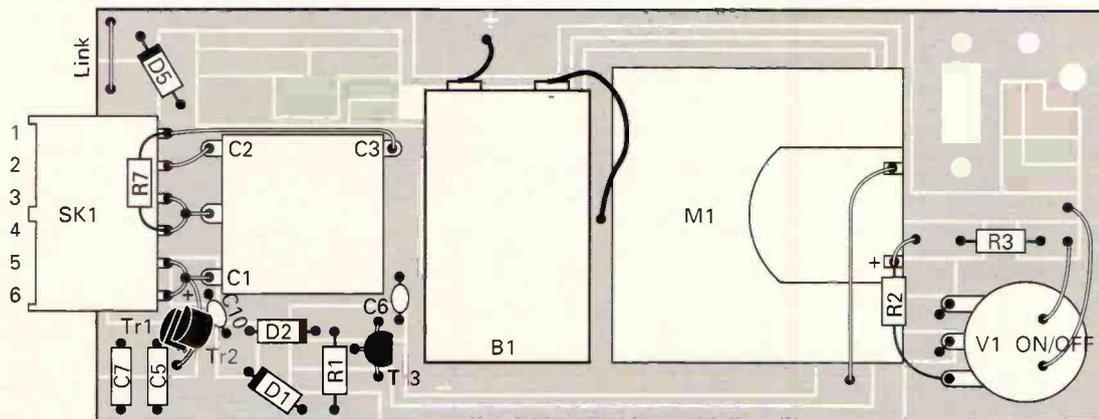
In Part 3 a start will be made on the electronic control systems of the recorder.

Note: A convenience kit of all mechanical parts, finished and drilled, including p.c.b.s, motor, solenoid, clock, paper roll, pen, etc., but no electronic components other than the slider potentiometer, is available from the author. SAE for details to: **R & W Noble, Penbidwal House, Pandy, Aber-gavenny, Gwent NP7 8EA.**

A Green Bandspread Dipper

Unfortunately the gremlins really got to this article last month. Somehow the wrong combination of **Figs. 4, 5 & 6** was used on page 42 of the May 93 issue. The p.c.b. copper foil pattern, **Fig. 4**, was correct. However, **Fig. 5** was used twice. The author has also pointed out that, as drawn the NiCads shown in **Fig. 5** have no means of being charged! So, here is **Fig. 5** with a PP3 9V dry battery shown instead of NiCads and a correct **Fig. 6**.

The p.c.b. is now available from the *SWM PCB Service*, Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield, B74 4JF. Tel: 021-353 9326. The price is £5.75 inc. post & packing.



SHORT WAVE MAGAZINE PCB SERVICE

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

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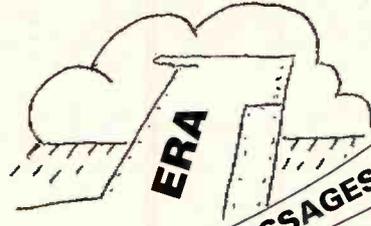
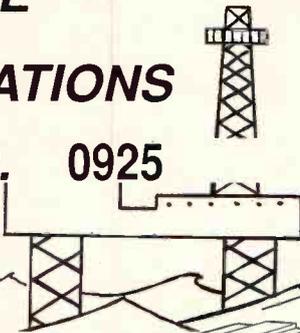
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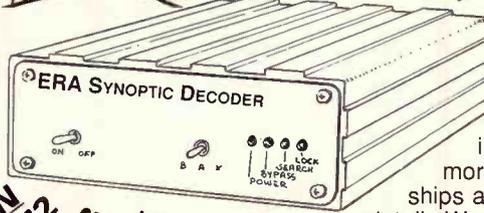
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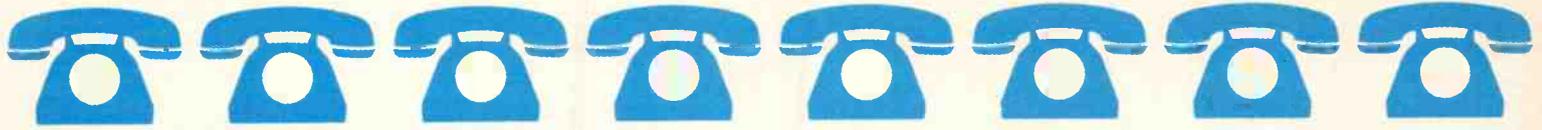
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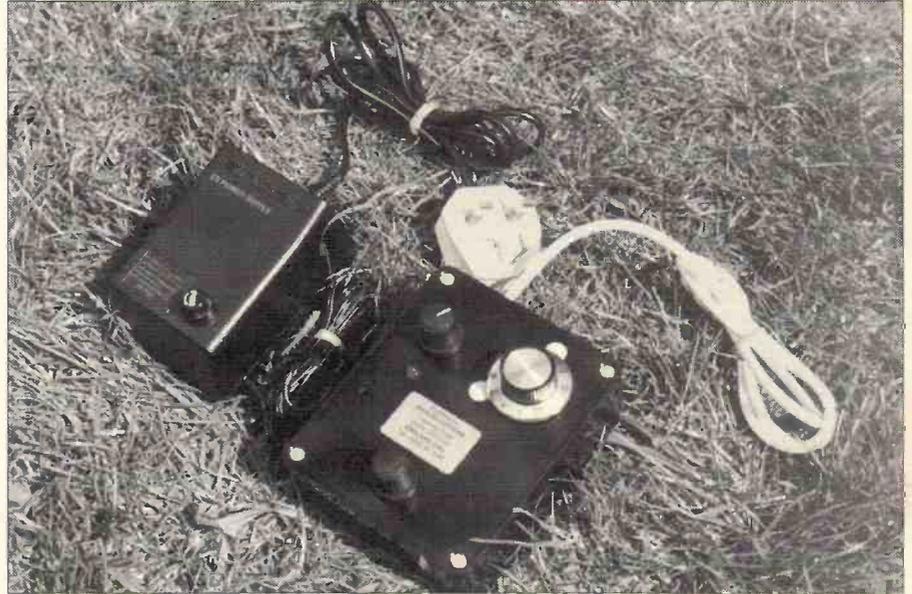
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D-400 TVDX TUNER

Avid TVDXer, Roger Bunney, has been looking at an interesting and inexpensive TVDX tuner from HS Publications.



With the growth of interest in TVDXing as a hobby so the market in imported v.h.f./u.h.f. multi-standard TV receivers has mushroomed. This type of receiver will usually offer several receiving systems - as a normal System B/G (5.5MHz sound vision spacing), perhaps including the UK/Eire system I at 6MHz and with the French System L, an odd standard with positive-going video and a.m. sound. System B/G/I of course use - going video with f.m. sound. Colour receivers usually include PAL and SECAM, the more upmarket receiver may feature NTSC and hopefully the East European system D with a 6.5MHz sound/vision spacing. The receiver, be it colour or mono, will utilise its own onboard tuning system accessed by an infra red remote control, though the more basic mono TV may be manually operated - with real knobs!

Short-comings

Efficient and convenient as this method of operation is, there are basic short-comings

in such a packaged system - at least within the TVDXing environment. TV signals can be weak and can suffer from adjacent channel signals resulting in heavy interference. It's a well known fact both in TVDXing and general short wave DXing that reducing the receiver's i.f. bandwidth will improve the signal/noise performance sufficient to resolve or help identify the unknown signal. What this means on a weak TV signal is that the signal in a wide bandwidth is masked with grain and snow - and perhaps nearby frequency interference, reducing the i.f. bandpass will reduce the wideband noise and interference, improve the signal quality - hopefully sufficiently to identify the signal. On a short wave radio a weak signal will be covered in general 'shash', reducing the bandwidth will drop the level of 'shash' and make that weak signal much clearer.

Many short wave receivers incorporate variable bandwidth switching as a main control feature, progressively switching in reduced bandwidth functions until the required clarity or

adjacent channel interference is cleared. TV receivers are designed for the domestic market which will have no switched selectivity and in general have an i.f. passband as wide as a barn door! Clearly a wonderful standard for the very strong signals such as from Sporadic-E - and in full colour - though in the weak signal or heavy interference market the performance will leave much to be desired.

To the writer's knowledge there are no TV receivers produced that have variable selectivity - though there is a low threshold enthusiasts' satellite receiver with such functions which I hope to review later. I personally have been involved in TVDXing with narrow i.f. bandwidth TV receivers since the early 1960s when the old System A 405-line receivers were modified and pressed into service for TVDXing.

Then dual standard TVs came along, with 405/625 switching. It was possible in many instances to modify the switching assemblies so that the essential video detector/amplifier and timebases were switched, but

the i.f. strip proper remained in the 405-line setting thus achieving a possible wide/narrow i.f. bandwidth switching TV! Into the 1980s 405-lines ceased and all receivers available in the UK were 625-lines u.h.f. only. So, in 1981 I designed a system, published in *Television* magazine, featuring a wideband v.h.f./u.h.f. Varicap tuner. The i.f. output (35MHz) fed into various filtering circuits to produce bandwidth switching between wide (6MHz), medium (3MHz) and narrow (2MHz). The output, at 35MHz, is then fed into a modified upconverter that took the input 35MHz up to about Ch.28 - Ch.32 and fed as a u.h.f. signal into any domestic TV. A further unit was designed that allowed French System L signal conversion for display on a conventional UK TV. Using these techniques it is, therefore, possible to obtain high performance TVDXing reception on any u.h.f. domestic TV, all outboard operational functions being carried on the additional tuning system with the TV acting, in effect, as an r.f. v.d.u.!

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Outboard DX Tuner

So much for the theory and need for the outboard tuning systems. In the mid-1980s well known TVDXers Keith Hamer and Garry Smith introduced, through their company HS Publications, the D100 tuning system. This was an outboard DX tuner that featured a wideband v.h.f./u.h.f. tuner (v.h.f. including the channels above Band 1), three i.f. selectivity positions and feeding out at u.h.f. The D100 later incorporated variable audio subcarrier tuning so that any TV system audio carrier could be tuned - including satellite subcarriers if the u.h.f. output from a conventional satellite tuner is fed into the D100 with the latter tuned to the satellite tuner output around Ch.35. The updated D100 with all necessary functions sells for around the £100 mark. However, HS Publications felt that there was a need for a more inexpensive tuner and thus the D-400 was born.

Two Units

Unlike the D100 tuner package, the D400 comes as two units, the p.s.u. and the tuner itself. The p.s.u. is a modified and fused ZX Spectrum power supply. Plugged into a standard 13A socket this provides a 13V supply via a twin flex 2m long and 3.5mm mono plug to the tuner proper.

The tuner itself is small, housed in a black a.b.s. plastics box some 120mm long x 100mm wide x 45mm high, excluding knobs. Three controls are provided, a main tuning knob top right, a band selector to the top left (Bands 1/3/u.h.f.), while the third, towards the bottom centre, is the variable bandwidth/gain control.

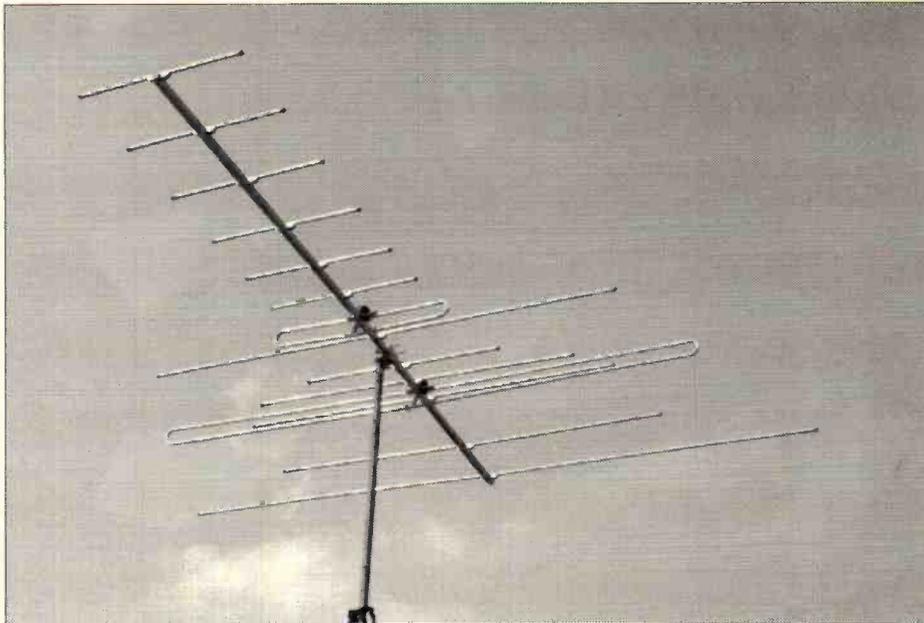
Coverage

Band 1 coverage runs from Australian Ch. 0 (always the optimist) through to Ch. R4 vision (45-87MHz); Band 3 Chs. E5-12 (170-230MHz) and u.h.f. somewhat restricted ch.21-51 (actually 455-720MHz) on the

unit. At the rear of the tuning box is a recessed 75Ω coaxial socket, the 3.5mm power input socket and a coaxial u.h.f. output lead - 90cm long - terminated in a standard coaxial plug for connection to the u.h.f. domestic TV.

ability to reduce or eliminate interference on closely adjacent channels such as Ch.E2 and R1 - extremely difficult on a wide bandwidth receiver - that you can appreciate the value of dedicated TVDXing equipment. The expert can obviously modify a TV proper at the i.f. output of the internal tuner for selectivity adjustment, but few readers, I suspect, will be able to undertake such modification and the outboard tuning system is both effective and simple.

The system does work well, in an intense Sporadic-E opening it's best left in a narrow position to save repeated adjustment. Both Band 1 and Band 3 signals either in a high level Sporadic-E or low level Tropo-spheric



A wide-band Band I, II & III antenna used for TVDXing by Roger Bunney.

review sample. Calibration is simply 1 - 10 on the main knob, which relates to a couple of large stick-on markers - a blue dot for Band 1 and yellow for Band 3. The dots relate to the knob calibrations and are rather large and perhaps imprecise when sitting on a blank channel awaiting weak m.s. (meteor scatter), though more than satisfactory for a high signal level Sporadic-E or tropospheric opening. On test I located Belgium Chs. E8, 10 - always a weak signal here - fairly easily. A chart is supplied, indicating the Band 1/2 channel settings in relation to the knob markings. The bandwidth control operates in wide bandwidth anti-clockwise, rotating the control clockwise progressively reduces bandwidth down to about 3MHz from the widest at 6MHz, or so. If the control is rotated to the extreme anti-clockwise position, i.e. maximum bandwidth, there is a (intended) fall off in gain. A bright red l.e.d. compliments the upper panel of the tuner

Simple Operation

To operate the tuner is relatively simple, once the main TV is set up and the tuner adjustments are mastered. Fire up the Sinclair PSU with the D-400 connected, rotate the bandwidth control clockwise, connect to and tune the main TV through the Ch.30 to Ch.40 section, there will be seen various peaks of noise and screen blankings. A lower noise peak than the rest will be found, that is the 'real' signal output from the D-400. Now look for signals from the local u.h.f. channels using the D-400, if nothing is seen you have selected the wrong noise 'peak'. Once the correct tuning point is found DX hunting can commence.

The real advantage of a tuning system like this is the wideband coverage and the ability to reduce i.f. bandwidth to improve weak signals and reduce noise, plus the rejection of adjacent channel interference. It's only when you have experienced the

mode are well received. The u.h.f. band is less so well catered for with, unfortunately, only partial band coverage and lack of calibration - I suspect the tuner is really intended for the v.h.f. TVDX market though a pity that for those amongst us without the cash for a D100 that are wanting improve performance at u.h.f. The only other comment relates to the size of the calibration dots which are one channel wide, smaller dots I feel would have been better.

Otherwise the unit works well, has excellent v.h.f. coverage with the incorporation of i.f. selectivity for weak signal working and reducing interference. The p.s.u. runs cold. The D-400 tuner costs £49.95, including UK postage, direct from **HS Publications, 7 Epping Close, Mackworth Estate, Derby DE3 4FS. Tel: (0332) 513399**. If you are writing for details please include a large stamped self-addressed envelope. ■

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- ★ Scan Speed 30 Ch. per second

The set is supplied with a full compliment of accessories including Telescopic Antenna, Car Connector, NiCad Batteries, Carrying Strap, Belt Clip, Earphone, Original Manufacturers English Manual, UK Spec. Charger. First Supplies will be limited - reserve your set now! **PRICE £449**



MVT 7000 HANDHELD

- ★ Receives 8 to 1300 MHz 100kHz-1300MHz (at reduced sensitivity)
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One of the new additions to the Sony range, the SW77 covers 150kHz to 30MHz plus 76-108MHz. With a rotary tuning dial, 125 scan memories, reception of AM, FM, USB, LSB, CVV, tape record facility, this is a superb all rounder.....**£349**

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DIAMOND D707

(500kHz-1500MHz)

A base ant. with 20dB pre-amp 3.5ft long fibreglass. Requires 12V DC supply. £99.00 + £4.75 P&P

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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 comer. A full 99 memory channels with scan facility and a 10dB pre-amp fitted as standard

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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.

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

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PHILLIPS D1875

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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

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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



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Receiver Economy model but with an excellent set of 'EARS'. LCD display. Portable or Mains Power

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Japanese top of the range general coverage receiver, 0.1 - 30MHz Lots of Options available

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DRAKE R8E

Don't let its looks fool you - this is a top-class receiver direct from the States and a company known for its quality and reliability. 100kHz-30MHz supplied as standard (no hidden extras) with all filters and synchronas detector. Recent reviews agree - the performance of the R8E is second to none. Only

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| Scanners 2 by Peter Rouse, Both books full of good info | £8.95 |
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New 160 Page guide covers 26MHz to 12GHz

NEVADA COMMUNICATIONS, 189 LONDON ROAD, PORTSMOUTH PO2 9AE

DXing Africa on the Tropical Bands

There are at present 33 countries on the African continent broadcasting on the Tropical Bands. With patience and good propagation, most of them may be heard and indentified. Dick Moon offers some help and information for the would-be Africa-DXer.

There are, of course, several African countries also broadcasting on the higher short wave frequencies, but we are concerned only with the 60, 75 and 90m bands. Apart from their own vernacular languages, broadcasts are frequently made in English, French and Portuguese, usually on the hour with a newscast. The programme content consists mainly of pop or indigenous music, the latter being readily recognised by its distinctive African beat.

The best time for hearing the weaker and more difficult stations is during the winter months, when QRN is low and the dark path is at its longest. Most of the stations sign on between 0300-0400UTC, and sign off around 2300UTC, with frequent breaks during the day. It should also be noted that with most of the economies in a poor state, equipment is generally old. Consequently frequencies are liable to drift quite frequently by a few kilohertz either way.

As the majority of the countries will QSL your reports, especially if IRCs are included, I have included the station addresses so that you can build up an African QSL book.

Let's get going and see what the 'Dark Continent' can provide for the DXer.

1 REPUBLIC OF SOUTH AFRICA

R.Orion; R.Orange; RSA, PO Box 4549, Meyerton, Johannesburg, 2000.

Freq: 3.215 (R.Orange);
3.320 (R.Suid Africa);
4.810 (R.South Africa);
4.880 (Radio 5)

Lang: English; Africans

South Africa transmits on four frequencies, signing on at

0300. On 3.320 and 4.810MHz, **RSA** transmits from 0300-0530 and again from 1640-1930 when **Radio Orion** takes over the frequency for the remainder of the 24hr. period. 4.480MHz is allocated to **Radio 5** which transmits from 0300-0445 and from 1630-2400.

The interval signal is the call of the Bokmakerie accompanied with a folk song played on a guitar.

2 SWAZILAND

Trans World Radio, PO Box 338, Mbabane.

Freq: 3.200; 4.760; 5.055MHz

Lang: English; German; Portuguese, French; Vernacular
The kingdom of Swaziland is a land-locked enclave within the borders of South Africa, and is one of the bases for **Trans World Radio**, an International religious broadcasting company. The sign on for 3.200MHz in Ndebele and for 3.240MHz in Shona is 0300. The other frequencies sign on between 1530 and 1800.

The interval signal is the last bar of *We've a Story to Tell the Nations*, on hand bells.

The interval signal is the last bar of *We've a Story to Tell the Nations*, on hand bells.

3 LESOTHO

BBC relay and Lesotho National Broadcasting Service, PO Box 552, Maseru.

Freq: 3.255; 4.800MHz (LNBC)

Lang: English; SeSotho

Lesotho is another autonomous enclave within the boundaries of South Africa. Apart from having its own service, it is also the base for a BBC relay station. The local service transmits from 0300-2200, and the BBC, on 3.255MHz, broadcasts at various intervals during the day.

The National Antem is played at the opening and closing of the LNBC transmissions.

4 BOTSWANA

R. Botswana, Private Bag 0080, Gaborone.

Freq: 3.356; 4.830MHz

Lang: English; SeTswana

Botswana, a self governing country, has borders with South Africa, Namibia and Zimbabwe. It is the home of the famous Chobe Game Reserve and the Okavango Swamps. **R. Botswana** signs on at 0300 and signs off at 2200.

The distinctive, and easily recognisable, interval signal consists of cow-bells and farmyard sounds.

5 MOZAMBIQUE

R. Mozambique or R. Maputo, CP 2000, Maputo.

Freq: 3.2105 (Maputo); 3.281 (Beira); 3.338v (Maputo); 3.371.4v (Beria); 4.858 (Maputo); 4.864.2 (Maputo); 4.927MHz (Maputo)

Lang: Portuguese; English; Vernacular

Despite a civil war, which has been raging in the country for many years, **R. Mozambique** continues to operate on several frequencies, although fluctuations in frequency are frequent.

The national station on 3.210 and 4.864MHz signs on at 0300 and signs off at 2200.

The interval signal is a tune called *Mbira* played on a zylophone with spoken IDs in Portuguese, English and Swahili.

6 NAMIBIA

R.Namibia, PO Box 321, Windhoek, 9000.

Freq: 3.270; 3.290MHz

Lang: English; Africaans; German; Vernacular

The newly created state of Namibia took over the old Radio Southwest Africa equipment and frequencies, and now broadcasts from 0230-2200. The sign-on and off tunes are *Rondo Russo* for the English programme, and *Das Sudwesterlied* for the German and Africaans programmes.

7 ZIMBABWE

R.Zimbabwe, PO Box HG 444, Highlands, Harare.

Freq: 4.828 (Radio 1); 5.011MHz (Radio 2)

Lang: English; Vernacular

Zimbabwe broadcasts on the tropical bands from Gweru, and signs on at 0300 running through to 2200. The interval signal for **R.1** is a peal of church bells and for **R.2** is a mix of local instruments.

8 ZAMBIA

ZNBC Radio Zambia, Broadcasting House PO Box 10015, Lusaka.

Freq: 3.290; 4.910MHz

Lang: English/Vernacular

Zambia, formerly Northern Rhodesia, has two tropical band frequencies. 3.290MHz is very difficult to catch, usually being swamped by R. Namibia, but 4.910MHz may readily be heard from sign on at 0255 until 2200. The interval signal is the very distinctive and thrilling call of the fish eagle.

9 ANGOLA

R.Angola, CP 1329, Luanda.

Freq: 3.354 (Luanda); 3.376 (Luanda) 4.820 (Huila); 4.971 (Cabinda); 5.041MHz (Benguela)

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NEW ICF-SW77 Similar specification to 2001D but with jog-shuttle dial tuning for accuracy£349



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| Fairmate HP2000..... | £269 |
| Nevada MS1000..... | £269 |
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| Yaesu FT26..... | £279 |
| Yaesu FT76..... | £279 |
| Yaesu FT23R..... | £229 |
| Yaesu FT411..... | £249 |
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| ICF-AIR7..... | £249 |
| ICF-PRO 80..... | £309 |
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Lang: Portugese/Vernacular
Another one of Africa's war-torn countries, Angola still manages to transmit on several frequencies, and is heard from 0500-2300.

The interval signal is played on a vibraphone.

10 ZAIRE

La Voix du Zaire, BP 3164, Kinshasa.

Freq: 4.862MHz v (**Bukavu**)

Lang: French; Vernacular

This somewhat turbulent country broadcasts from 0300-0700; 1000-1245; 1500-1830. It shares its frequency with R. Maputo.

11 MALAWI

Malawi Broadcasting Corporation, PO Box 30133, Chichiri, Blantyre.

Freq: 3.3806MHz

Lang: English; Vernacular

Malawi transmits with a power of 100kW from 0255-0710; 1400-2200.

The interval signal is a cock crow and drum beats.

12 TANZANIA

R. Tanzania, PO Box 9191, Daar es Salaam.

Freq: 4.785; 5.050MHz

Lang: English; Swahili

R. Tanzania broadcasts on two frequencies, which may be heard between sign on at 0200 until 2100.

The interval signal is a tune played on a celeste.

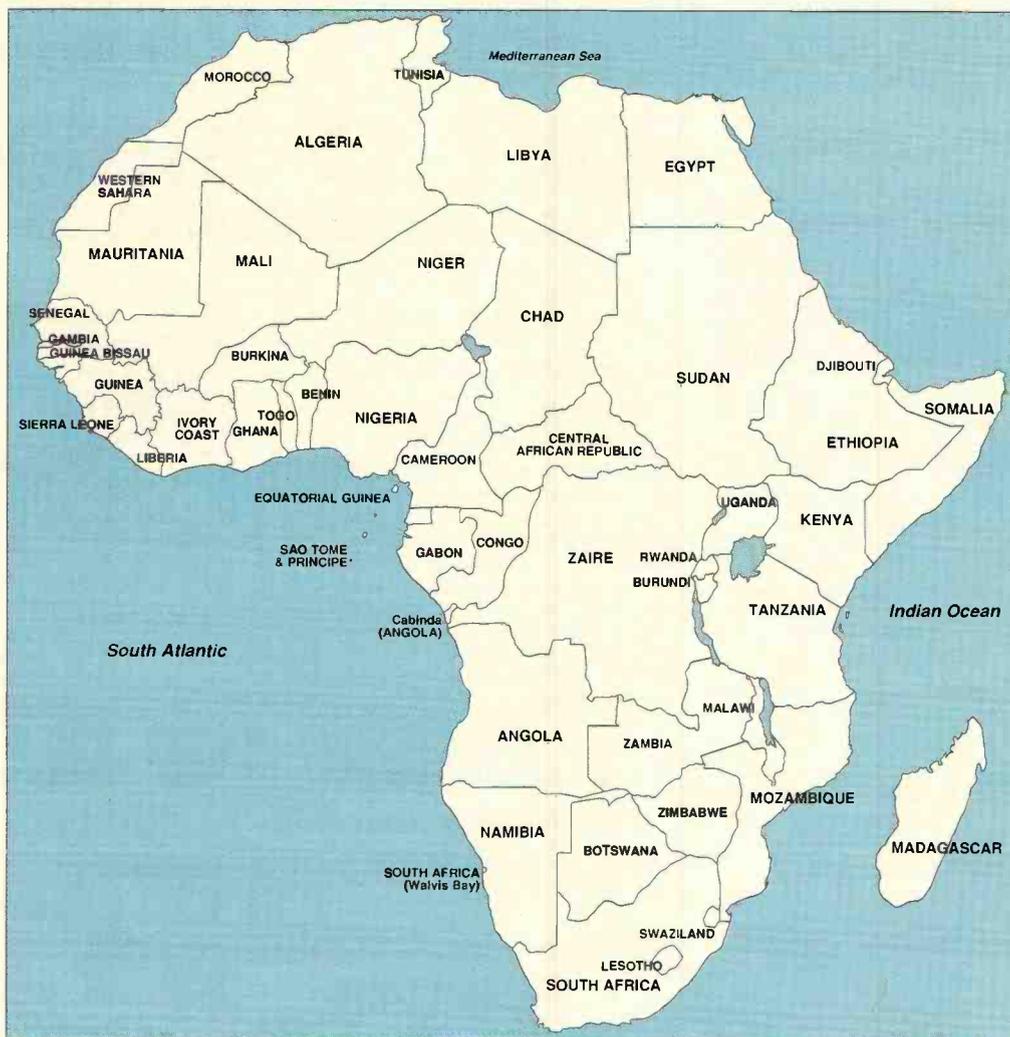
13 KENYA

The Voice of Kenya, PO Box 30456, Nairobi.

Freq: 4.885 (NE & Coastal service); 4.915 (Central service); 4.935MHz (General service).

Lang: English; Vernacular.

The General Service of the **Voice of Kenya** on 4.935MHz can usually be heard between sign on at 0200 until sign off at 2010 broadcasting in English. 4.915MHz is difficult to identify as it is on the



same frequency as R. Ghana.

The interval signal is played on flutes and drums.

14 UGANDA

R. Uganda, PO Box 7142, Kampala.

Freq: 4.976v; 5.026MHz v

Lang: English; Vernaculars

The Blue Network of **R. Uganda** transmits from 0600-0600 and from 1300-2100. The transmission on 5.026MHz has co-channel competition from ORT Parakou, Benin on 5.025MHz, and is best heard between 0300 and 0600 before Benin signs on.

The interval signal is played on a zylophone.

15 CONGO

La V/de la Revolution Congolaise, BP 2241, Brazzaville.

Freq: 4.765MHz

Lang: French/Vernacular

After being dormant for some years, **RTV Congolaise** registered short wave broadcasting in 1989. Transmissions are from 0400-0700 and from 1700-2100. The sign on is a typical African tune, with the *National Anthem* played at sign on and sign off.

16 GABON

R. diff Television Gabonaise, BP 10510, Libreville.

Freq: 4.777; 4.890MHz (R. France relay)

Lang: French; Vernacular

The National service of this ex-French colony puts out 100kW, and transmits from 0455-0800 and from 1600-2300. The station open and closes with the *National Anthem* and has an interval signal played on

indigenous instruments.

17 EQUATORIAL GUINEA

R National de Guinea Equatorial, Apartado 749, Bata, Mbini.

Freq: 4.926; 5.003MHz

Lang: Spanish; Vernacular

This small spanish speaking country, sandwiched between Gabon and Cameroon, broadcasts between 0430 and 2200, both channels carrying the same programme.

The station opens and closes with the *National Anthem*.

18 CAMEROON

Cameroon RFT, BP 1634, Yaounde.

Freq: 4.000 (**Bafoussam**); 4.750 (**Bertoua**); 4.795 (**Douala**); 4.850

(Yaounde); 5.010MHz (Garoua).

Lang: French; English; Vernacular

Cameroon, of World Cup Soccer Fame, is situated on the Gulf of Guinea and consisting as it does of a mixture of ex. British and French colonies, broadcasts in English and French, as well as the vernacular languages. Sign on is from 0430-2400 on 4.850 and 0430-0800 and 1630-2300 on the other frequencies.

The interval signal is either played on drums, flute or zylophone.

19 CENTRAL AFRICAN REPUBLIC

Rdiff. TV Certrafricaine, BP 940 Bangui.

Freq: 5.035MHz v

Lang: French; Vernacular

As its name implies, this small country lies in the centre of African continent, and is bordered by Chad, Sudan, Cameroon, Congo and Zaire. It puts out 100kW and is on the air between 0430-0700 and 1630-2300.

The interval signal is a piano chord.

20 CHAD

Rdiff. Nationale Tchadienne, BP 892, N'Djamena.

Freq: 4.905v (N'Djemina); 5.286MHz (Moundou)

Lang: French; Arabic; Vernacular.

Chad is located in Northern Africa, just south of Libya, and transmits from 0430-0730 and 1600-2300 on 4.905MHz, and from 1025-1600 on 5.286MHz.

The interval signal is played on an indigenous instrument.

21 NIGERIA

Radio Nigeria.

Freq: 3.326 (Lagos); 4.770 (Kaduna); 4.990MHz (Lagos)

Lang: English; Vernacular
Nigeria is one of the more

highly developed countries in Africa and has a sophisticated communications system. The tropical band broadcasts may be heard at the following times: 3.326MHz; 0430-1000, 1700-2300; 4.770 and 4.990MHz; 0430-2305 (English news at 1600; 1700)

22 BENIN

Rdiff. et Television du Benin, BP 366 Cotonou.

Freq: 4.870 (Cotonou); 5.025MHz (Parakou)

Lang: French; English; Vernacular

This small country on the west coast of Africa transmits from 0500-0845; 1200-1400; 1600-2300 on 4.870MHz and from 0500-0800 and 1700-2200 on 5.025MHz.

The interval signal is on local instruments.

23 TOGO

Rdiff. Television Togolaise, BP 434 Lome.

Freq: 3.221 (Kara); 5.046MHz (Lome)

Lang: French; Vernacular

Togo is sandwiched between Benin and its larger neighbour Ghana, and broadcasts from 0525-0005 on 5.040MHz, and 0525-0900; 1200-1400 and 1600-2305 on 3.221MHz.

The interval signal is a peal of chimes, and the *Hymn Togolaise* is played at sign on and sign off.

24 GHANA

Radio Ghana, PO Box 1663 Accra.

Freq: 3.366 (Radio 2); 4.915MHz (Radio 1)

Lang: French; English; Vernacular.

Radio 1 transmits from 0530-0905; 1200-2300 and Radio 2 from 0525-0900 and 1700-2300. 4.915MHz is a shared frequency with the Voice of Kenya. The interval sign is a drum beat.

25 IVORY COAST

Rdiff. Television Ivoirienne, BP V191, Abijan.

Freq: 4.940MHz

Lang: French; Vernacular.

Broadcasts are from 0600-0800 and 1700-2400

The Ivory Coast signs on with clock chimes and the *National Anthem*.

26 LIBERIA

Radio ELWA, PO Box 192, Monrovia.

Freq: 3.230; 4.760MHz

Lang: English

This station is the owned by the Cultural Broadcasting Service of the Sudan Interior Mission, but has been inactive for some months.

27 SIERRA LEONE

Sierra Leone Broadcasting Service, New England, Freetown.

Freq: 3.316MHz

Lang: English; French; Creole

This is a tough one as the station only puts out 10kW.

The interval signal is a 5-note chime, followed by a military band.

28 GUINEA

Rdiff. TV Guineenne, BP 391 Conakry.

Freq: 4.900MHz

Lang: French; Vernacular

Not to be confused with its next door neighbour, Guinea-Bissau, the Republic of Guinea is situated adjacent to and almost surrounds Sierra-Leone. Transmission times are 0555-0800 and 1200-2400.

The interval signal is played on a guitar.

29 MALI

Rdiff. TV Malienne, BP 171 Bamako.

Freq: 4.783; 4.835MHz

Lang: French; Vernacular.

A large, sparsely populated country in central West Africa, Mali broadcasts on two frequencies from 0600-1000 and 1800-2400.

The interval signal is played on a guitar.

30 BURKINA FASO

Radiodiffusion-Television Burkina, BP 7029, Ouagadougou.

Freq: 4.815MHz

Lang: French; Vernacular.

Formerly known as Upper Volta, Burkina Faso broadcasts from 0530-0900 and 1700-2400.

The interval signal is played on a Balafon.

31 NIGER

La Voix du Sahel, NP361 Niamey.

Freq: 5.020MHz

Lang: French; English; Vernacular.

Niger transmits from 0530-0700 and 1700-2200.

The interval signal is played on a flute.

32 MAURITANIA

Rdiff TV de Mauritanie, BP 200, Nouakchott.

Freq: 4.845MHz

Lang: Arabic; French; Vernacular.

Mauritania is an Islamic Republic situated on the extreme west coast of Africa and broadcasts from 0630-0830 and 1600-0100.

The interval signal is played on a Mauritanian guitar.

33 RWANDA

Rdiff. de la Republique Rwandaise, BP 83 Kigali.

Freq: 3.330MHz

Lang: French; Vernacular

This tiny country sandwiched between Tanzania and Zaire broadcasts from 0300-0600; 0900-1200 and 1330-2100.

The interval signal is played on a local harp.

We have now concluded the total round-up of African countries operating on the tropical bands, and it just remains for you to switch on and start your collection.

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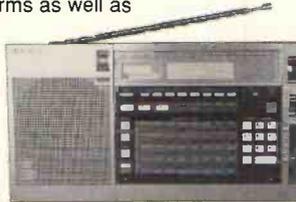


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The Infantry Wireless Set No. 38

Ron Ham describes one of the radios designed for use during the Second World War.

At the beginning of WWII the British Army needed portable wireless sets for man-to-man and man-to-vehicle communications. Such a set had to be easy to use and as economical on batteries as possible and, because the infantryman carried almost everything, the set and accessories had to be as light-weight as 1940s technology allowed.

Do remember that this all happened 20 years before low voltage and minimal-current semi-conductors replaced the thermionic valve at the heart of wireless equipment.

Power Supply

Briefly, valves, depending on the type, require a low tension supply ranging from 1.4 to 6.3V and a high tension of between 90 and 250V. This also meant that the insulation of all other components in the circuit must be capable of working at these high voltages. When five or six valves were used in domestic receivers, the power was derived from the a.c. mains via a multi-voltage step-down transformer built into the set.

However, for portable use the energy came from batteries and the development of efficient, robust and low consumption valves became very urgent. All of these features were vital for military equipment especially as men's lives could depend upon their ability to communicate with another unit quickly and reliably.

The One Man Station

In my view, WS-38, made about 1941, was years ahead of its time because, with this set, a man became a complete wireless station. He could transmit and receive signals anywhere between 6 and 9MHz and, with simplicity in mind, the designers arranged for the transmit and receive frequency to be selected by the rotation of a single knob.

An instruction card, **Fig. 1**, packed with each set, shows how a soldier should carry it along with his gas-mask, haversack, helmet and most likely a rifle. The incoming signals were received via a headset which was designed to fit under a steel helmet and his voice was transmitted through a pair of throat microphones, thus leaving both hands free for writing messages or firing a rifle in battle. These microphone assemblies have a pair of pickups, which look like small leather pads, held in position, one each side of the throat by an elastic neck band and, believe it or not, the sound quality was reasonable.

The large dry battery, with a four-pin output socket, that provided the 3V and 150V required to drive the WS-38 was carried in the haversack and the antenna rods were kept in a long canvas container slung from the users shoulder. The signals satchel, displayed behind the set in **Fig. 2**, contained the headset and microphone, an extra battery and a padded metal case

packed with five spare valves (4 x ARP12 and 1 x ATP4).

A Look Inside

One side of this compact set with its five valves, four ARP12s (Army Receiving Pentode) and one ATP4 (Army Transmitting Pentode) is seen in **Fig. 2** and the opposite side, showing much of the component layout, is the subject of **Fig. 3**. Although both illustrations show the control panel with its single tuning knob in the centre and combined on/off and send/receive switch at the bottom, the best view of the angled socket for the antenna rods is in the top left of **Fig. 3**.

The hefty multicore cable travels from the set to the soldier's haversack where it is connected by a multi-way plug to a dedicated junction box seen at the lower left of **Fig. 2**. The latter has a short lead and plug for the battery and two non-reversible sockets for the headset and microphone jacks. WS-38 is protected by a metal container, measuring approximately 195mm long, 160mm wide and 97mm deep and is fixed to the control panel framework by a 2BA screw in each corner. This flat sided case enables the set to be operated while standing on an ammunition box, floor or table.

WEAR THE MK. 2. LIKE THIS—

[AND WEAR YOUR RESPIRATOR AND HAVERSACK AS USUAL]

CHECK YOUR KIT WITH THIS LIST

| | |
|--|---|
| W.S. Set 38 Mk. 2 | 1 |
| W.S. Set Carriers No. 2 | 1 |
| Mic., Throat, Nos. 1 or 2 | 2 |
| Phones, DLR, Nos. 1 or 2 (with canvas headband and mic. support strap) | 2 |
| Batteries, dry, HT/LT Nos. 1 or 2 | 2 |
| Aerial Rods F, Section 1 | 1 |
| Do. Section 2 | 1 |
| Do. Section 3 | 1 |
| Cases, Aerial No. 3 | 1 |
| Hooks, brace (1 spare) | 2 |
| Satchel, Signals | 1 |
| Junction Boxes No. 2 | 1 |
| Working Instructions card | 1 |



CARRY IT AS UNDER WHEN NOT IN USE

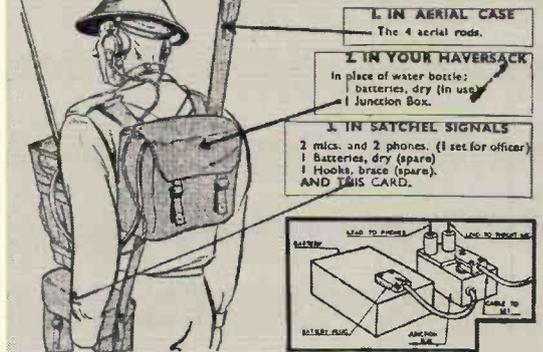


Fig. 1: An instruction sheet on how to wear the No. 38 set.

Construction

There were no printed circuit boards in those days for mass production, so the majority of military sets were hand-wired and the joints for each component were individually secured, usually by members of the fairer sex with an electric soldering iron.

The three-gang tuning capacitor and its associated trimmers, the headset and microphone transformers and the large coil box occupy the left, centre and right of the upper side of the main chassis, **Fig. 3** and their positions, relative to the valves can also be seen in **Fig. 2**. Although each of the four ARP12s (CV1331/Mazda VP23) require 2v at 50mA for its filament and 120v on its anode, the ATP4 (CV1366/Mazda V248A) needs 2.6V at 300mA and 150V respectively. It is interesting to note, I assume to save extra filament current and space, that a westector, fitted among the parts in the large coil box, is the receiver's detector.

Continued over



Fig. 2: The junction box and signals satchel of the WS-38.

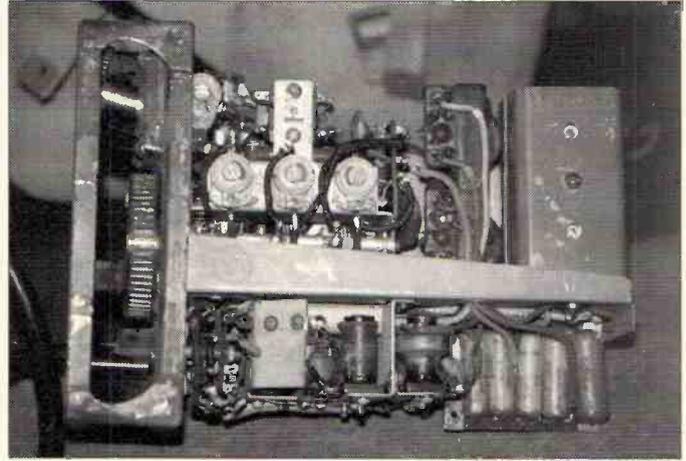


Fig. 3: The component side of the chassis.

Preservation

A variety of military sets are on display at the Chalk Pits Museum (Amberley, Sussex.) and visitors to the wireless exhibition building often ask if any of these sets work. The general answer is 'no', mainly because most of the capacitors, resistances and transformers, used in manufacture, have failed due to old age, damp storage and lack of use.

The next obvious question is "why aren't the faulty parts replaced and the radios made

to work?". Of course, this could be done, but there are two very good reasons why not. First, such equipment, especially the transmitter, is of little use today so there is no point in doing the time-consuming repairs and secondly, if any of those original components, nearly 50 years old with their wartime army markings, are removed and replaced by present day parts, students in the future will only see a hotch-potch of electronic bits instead of the military designs and technology of the early 1940s

when factories were in full wartime production.

Used In Anger

Should a valve be broken through mechanical shock, which could easily happen in battle, it was possible for a soldier to replace it by following the instructions under the lid of the spare valves container. WS-38 had a range of between 5 and 10 miles and, in addition to another WS-38, the operator could communicate with units equipped with the more

powerful WS-18 (a back pack set with provision for a hand microphone and a Morse key), WS-19 (fitted in armoured-cars and tanks), WS-22 (used in lighter vehicles), WS-46 (similar to WS-38, but has three crystal-controlled pre-set frequencies and a button type Morse key on the control panel) and the Canadian built WS-58. The signals transmitted by all of these sets could be received at headquarters or in a 'wireless-wagon' on the army communications receivers type R103, R107 and R109. ■

Listen With Grandad

by Leon Balen & David Leverett



My Grandma she say, if your Grandad was RAF Sergeant George Jenkins stationed here in the war, he MY Grandad also.

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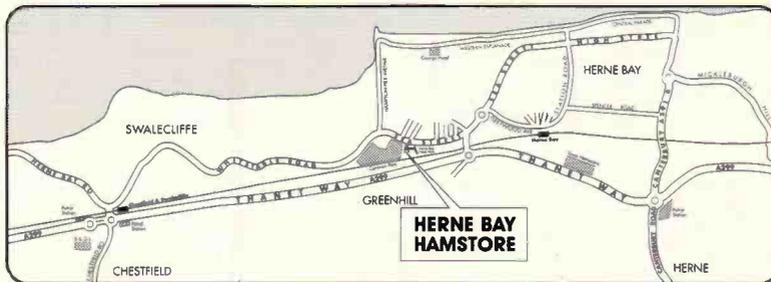
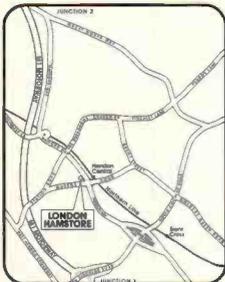
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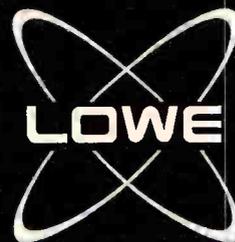
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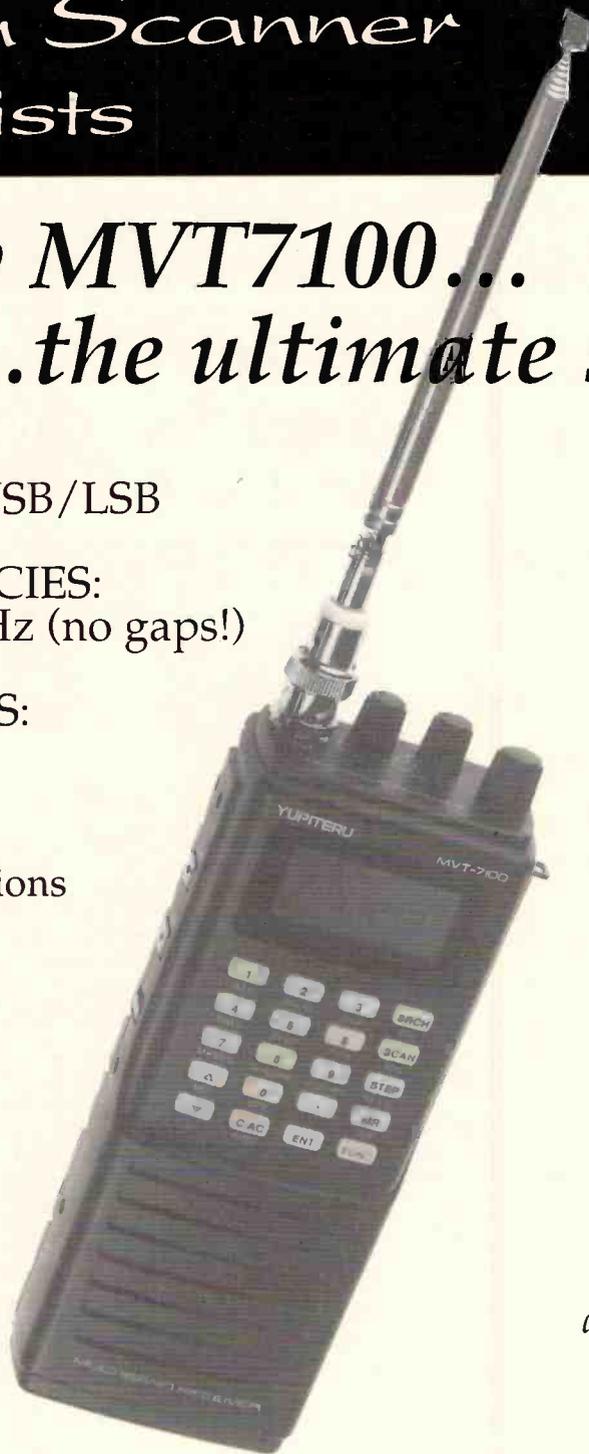
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The Mancinis



Edwina and Tony Mancini, with Ron Ham on the left, at Chalk Pits Museum.

Joan Ham met well-known TVDXers Edwina and Tony Mancini on a glorious Sunday afternoon at Chalk Pits Museum. It is always interesting when familiar names are augmented by faces and personalities. Ron and I 'know' many people through these pages and enjoy meeting and talking to them when they come to the Chalk Pits. On a glorious sunny Sunday in July, Edwina and Tony Mancini, having driven all the way from Derby and spent the night in Arundel, visited the museum and made themselves known. I took the opportunity to find out about these regular contributors to Ron's television column.

Edwina is a nursing auxilliary and Tony is in the electrical business. How did they both become hooked on watching television pictures from many countries? What was the peculiar appeal of receiving less than perfect reception of English programmes with foreign language subtitles, or of seeing familiar products advertised in unfamiliar,

strange-sounding, catch-phrases?

Curiosity

The earliest recollections were Tony's, going back to the age of nine or ten when his natural curiosity was fed by a teacher who happened to be a radio amateur. Two nights a week, he and other interested boys stayed after school and learnt to build receivers, crystal at first progressing later to one- or two-valve sets. Their local government surplus emporium was Eddy's in Nottingham, advertised in *PW*. Leaving school, Tony went to work for Rediffusion at their headquarters at Castle Rock. The firm was then installing 'wired vision and radio', the forerunner of cable TV. It was here that Tony first heard of DXTV and decided that he would like to investigate the phenomenon.

Tony's first installation was an East German Mini-star television fed by an old BBC1 'H' antenna and he found it worked well, producing his first pictures. With this, he was hooked. I asked Edwina

what she thought about it and she said frankly that she thought he was 'off his rocker', until it dawned on her that the first test card she saw was coming all the way from Czechoslovakia! Like Tony, she was thrilled. They realised that this was serious, and they must add to their monitoring equipment. Next was added a Hitachi with a turret tuner and a Bush converted to French Canal+ and Bands I and III. They never really bothered with Band II. Every kind of propagation was interesting at all seasons, meteor scatter, Sporadic-E and tropospheric.

Edwina and Tony live in a unique area, which they described as a bowl. To the east is about eight or nine kilometres of hills running due N-S and about 200 metres high. The ground is full of iron and tin mines, which Tony thinks bend the signals, as their reception does not conform to that expected by the location. At home they can receive Norway and Sweden, theoretically shielded from them by hills, but on top of the

hills, they pull in Spain.

Habit-forming

TVDXing is definitely habit-forming, and the home station has grown to accommodate their interest. They now have television receivers by Ferguson, Hitachi, Philips, a D100 converter, a multi-system Grundig receiver and video recorder, and just to play with, a Citizen hand-held covering the vhf and uhf bands.

Two such dedicated TV anglers could not miss out on the new sport, and so a Luxor satellite television system with 900mm dish in the garden was added to the Mancini menage. Edwina enjoys driving the antennas around and clocking up stations, but Tony is quite happy to sit and watch his favourite programmes translated out of English.

Our visitors, needless to say, were not confined to Edwina and Tony, but we also met the Grundig and Citizen which had travelled from Derby with them and were put through their paces. ■

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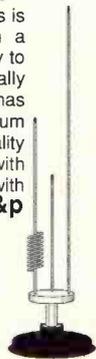
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An Innocent Amateur Abroad

Geoff Craddock G0HHH found the opportunity to operate in Canada too good to miss.

Opening the front door, we faced the usual pile of bills, junk mail and normal correspondence, amongst which was a Data Post Letter with a Canadian post mark.

Bearing in mind the fact that our son and his family live in Canada, my wife's first reaction was "My God, what's wrong now?" So, in fear and trepidation, the envelope was quickly torn open. Lo and behold, enclosed were two return tickets to Toronto and an invitation to fly out two weeks later to visit them.

The reaction from my better half was, "What am I going to do, I haven't got a thing to wear?" So it was panic stations as far as clothes were concerned. My first thought was, "Can I get a reciprocal licence quickly?". Letters were rushed off to the Department of Communications in Toronto - thanks to the RSGB for their help with addresses - for the licence and to the CARF (Canadian Amateur Radio Federation) and the CRRL (Canadian Radio Relay League) for details of 144MHz repeater frequencies, all these letters with the request that replies be sent to my son's address in Barrie, Ontario. So far, so good.

Hand-held

Besides packing our cases with clothes, mainly ladies', I hasten to add, I tucked the really important things, like the little hand-held FT-209. This just happened to have extended TX facilities, essential in North America as all 144MHz repeaters generally operate from 146MHz upwards. The magmount with antenna broken down to fit into the suitcase, neck mic, spare battery and the car charger, the latter most essential because of the 110V mains supply in Canada, were also packed. So there, we were ready to go!

The big day came, we bought the usual duty frees at Manchester Airport. Air Canada looked after us remarkably well, and the seven hour flight passed without event. On arrival at Toronto we were met by our son, Bill and started the drive to Barrie, about 100km north of the city. The traffic out of Toronto has to be seen to be believed, nearly dead straight roads with about six lanes in each direction, packed with traffic, it being the rush hour. I would hate to be loose in that traffic as a stranger to the city. Anyway, we

did not have any hassle as Bill certainly knows his way around.

The difference in time hits you most on the first night of arrival, the time difference being five hours. At eight o'clock there it was 1am our time, but the understanding family let us go to bed at 3am, so we were quite lucky!

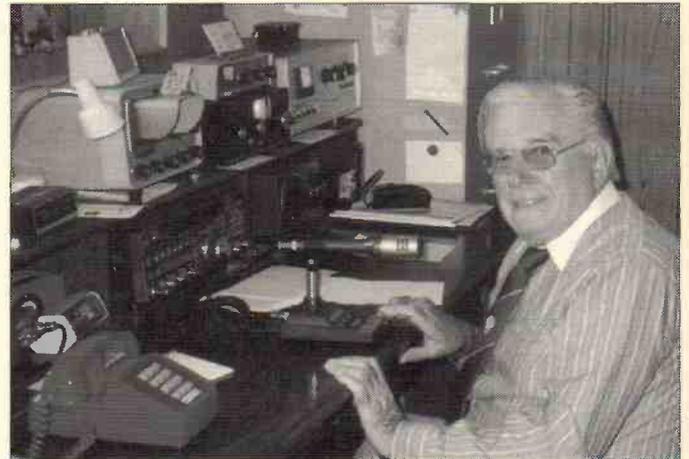
However, we soon got over the time difference and were delighted to see our grandchildren and Pat our daughter-in-law again. My, how children grow in the short space of three years since our last visit.

VE3 Callsign

"There are two letters, for you Dad", says Pat, one was from the CARF and one from CRRL, both enclosing details of the repeater frequencies, but nothing from the D of C, Toronto. Panic stations! A telephone call to Toronto revealed the fact that, "Yes, we have had your application, it has been processed and the letter of authority was written on the 17th, inst", it was now the 25th, and the letter eventually arrived on the 27th. By the way, this delay did not stop me getting out on the frequencies due to my taking verbal approval as authoritative! So off I went with my VE3 callsign.

Right, having set up the equipment, the magmount in the corner of the lounge and the hand-held, with separate speaker, on the nearest table, I donned the neck mic and tuned to the local repeater VE3TTB on which a QSO was already in progress, waiting until the end of the conversation I put out a call to VE3PB and VE3QQ, Stan and Al respectively who were on the point of going QRT, Stan, I reminded, I had spoken to some three years ago, at which point he had said, "Wait a moment and I will come back to you." In the meantime Al VE3QQ said, "Stan has the best log in all Canada." Sure enough, Stan VE3PB, or Peanut Butter as he calls himself, came in with, "Yes Geoff, we spoke on this frequency at 11.05am on the 21st September 1987, and your QTH is Kidderminster". Stan I understand is well into his eighties and keeps daily skeds with his local pals.

Many more contacts were made on 144MHz, and I was made to feel welcome at all times. Every Wednesday night is Club Net Night, other than when it's a



Geoff Craddock G0HHH at home in Kidderminster operating his base station.

meeting night. After the half hour net they have a Sales and Wants half hour, the net controller pausing between announcements to enable interested amateurs to come in, make their comments and to offer new items if required. Phone numbers are given to enable further details to be given. A pity that we are not able to do the same over here.

Club Repeater

The repeater that I have mentioned, VE3TTB, is a Club repeater and is accessed by transmission of the carrier, no tone burst is needed. Furthermore, you are greeted with audio which announces, "Welcome - to - Vee - Eee - Three - Tee - Tee - Bee - Repeater". I was rather impressed with this!

Talking of repeaters, it is interesting to note that there are 31 repeaters in Toronto alone, that is Metropolitan Toronto, of which 12 are for 430MHz. and one each for 1297 and 52MHz. Some repeaters are privately owned, while some are used for Autopatch, to access the local phone system. It must be born in mind that local calls are free of charge. Much use of this facility is made by the younger generation, including my grand daughter who is thirteen years of age!

I wonder how many readers can recall the days when we had 50 free calls a quarter and the system was run by the GPO?

Open Arms

I had made a provisional arrangement with some of my amateur friends in England to try to make contact on the h.f. bands. On my last visit to Barrie I had noticed a bungalow quite close to my son's home that sported a tower with a

Tribander mounted at about 12m. So, plucking up courage, I decided to have a word with the amateur in occupation. I need not have worried, I was welcomed with open arms.

Bill VE3CUC, incidentally, a WW2 Lancaster pilot, was only too happy to meet my needs and after a quick telephone conversation to the UK to GO1ZE, who spread the news around, we succeeded in making contact with home on two occasions. Bill's rig is a FT-7/67GX and it certainly lived up to expectations. Might I add that the registration number on Bill's car is VE3CUC! Apparently any licence number is available in Canada provided that it has not already been allocated. Will we ever be able to do this over here?

I mentioned earlier that I had extended transmit frequencies available on my hand-held, it may have been a US model, because all the 2m repeater frequencies in North America start from 146MHz. So, be warned, there is a problem with a UK set - unless you know a man!

Our visit to Canada ended with a visit to the Barrie Radio Club, I was taken there by my old friend Peter VE3PKN, the meeting being presided over by his daughter Alex VE3PKA, who was nominated and re-elected as President for the ensuing year. Yours truly had the pleasure of being co-scrutineer! A very interesting talk was given by Phil VE3FAS, ex-G4BKJ, on 'The compilation and use of the Smith Chart' and I there had the chance to renew acquaintances made three years ago. A very pleasant ending to our visit.

All in all, a very good holiday and one that my wife and I will long remember. To think I have not even mentioned the Porterhouse, New York and 'T' bone steaks! ■

They Don't Only Broadcast the News - The BBC World Service

As it enters its seventh decade of international broadcasting, BBC World Service is continuing to expand, transmitting programmes to an audience of more than 120 million people in every country on earth. Its aim, though, is not to broadcast to the last vestiges of the Empire, as Peter Shore explains.

It was the week before Christmas 1932 that the BBC's Empire Service started transmitting programmes, in English, to the far-flung reaches of the British Empire from Daventry in the Midlands. A few days later, on Christmas Day, King George V's Christmas message was transmitted by the BBC. By 1937, foreign language services were inaugurated, with Arabic, German and Italian amongst the first. During the Second World War, the BBC's overseas services were listened to throughout occupied Europe, beaming messages to resistance movements in France, Norway and the Low Countries, and news that was a little more truthful than that from the German stations which operated. The fortunes of the BBC External Services ebbed and flowed in the years after the war, subject to the whim of the Government, which prescribed the languages and the number of hours that each service might broadcast. One of the most telling examples, perhaps, of Whitehall's short-sightedness was the closure of the cutbacks to the Spanish services which took effect the week before the Argentinean invasion of the Falkland Islands.

Today, World Service broadcasts in English and thirty-eight other languages, from the recently restarted Albanian Service (stopped in the 1960s) through to Vietnamese. Almost anywhere you go in the world, you will meet people who listen to, and sometimes rely on, programmes from Bush House to

provide the latest news, often about their own country, let alone the rest of the world. The powerfulness of the World Service's broadcasts can be attested to by the reaction of governments to what they consider to be controversial and perhaps inaccurate news reports. At the time of the demolition of the mosque in Ayodyha and the subsequent inter-religion riots, World Service was blamed for inciting unrest for reporting the incident, something which the state-controlled All India Radio and its television colleagues, Doordarshan, censored heavily. The Kenyan election campaign was another example. The Kenyan authorities were displeased with much of the coverage of the intimidation and sharp practices which occurred and were reported in an even-handed manner by World Service in English and Swahili. Of course, mistakes do happen, and even the World Service news room has been known to get things wrong, but not with quite the same frequency of some other news organisations.

Tuning in to London

If you are off on your travels, whether business or pleasure, tuning in to London is a relatively easy thing to do. Since 1980, millions of pounds has been spent on upgrading transmission facilities in the UK and overseas. World Service operates three transmitting stations in the UK: Skelton, in Cumbria, Woofferton in Shropshire (shared with the Voice of America) and Rampisham in Dorset. Overseas, there are transmitters on Cyprus, in Oman, the Seychelles, Ascension Island, Singapore, Hong Kong, Antigua and Lesotho. In addition to its own transmitting stations, World Service has relay agreements with the Voice of America and Radio Canada International and with NHK Radio Japan to exchange transmitter time. World Service also rents medium wave and short wave transmitters in the former Soviet Union and Albania to reach audiences in China, Asia and South East Europe.

World Service radio is also carried on satellites over Europe, Asia, the Middle East and North America which can all be received on domestic satellite equipment,

although with different sized dishes!

There are still some blackspots when it comes to reception: the south of France seems peculiarly problematic, as does some parts of Italy. It may be that the signals from the UK sites simply skip over these areas, or that the mountains prove particularly difficult for signals to pass over. Australia and New Zealand are also known to be poor at times, although two cities in New Zealand now have World Service for most of the day on medium wave.

Programmes

Once you've tuned in to World Service (times and frequencies for some parts of the world are listed in the box opposite), what can you expect to hear? Well, there's news on the hour throughout the day and night, with nine minute summaries at 0300, 0600, 0800, 1600, 2000, and 2200; half-hour bulletins in *Newsdesk* at 0000, 0200, 0700, 1100 and 1800 and the flagship *Newshour* three times a day at 0500, 1300 and 2100. British news bulletins are at 0309, 0609, 1609 and 2209 and in both *Newsdesk* at around 20 past the hour and in *Newshour* at around 40 minutes after the programme begins. But there is much more than news and current affairs:

London Calling is the monthly programme guide for the World Service and is available inside the BBC Worldwide magazine.

SHORT WAVE LISTENING ON HOLIDAY

World Service Frequency Guide

Europe (inc. Turkey & Greek Islands)

Daytime: 15.070; 12.095; 9.41 & 17.64MHz
 Evening: 6.195; 7.325; 9.41, 6.18MHz & 648kHz

North Africa

Daytime: 17.705 & 15.07MHz
 Evening: 15.07; 12.095; 9.41; 7.325 & 6.195MHz

West Africa

Daytime: 17.79 & 15.40MHz
 Evening: 15.40; 15.07; 12.095 & 9.41MHz

Southern Africa

Daytime: 21.66; 11.94 & 6.19MHz
 Evening: 15.40; 6.19, 3.255MHz & 1197kHz

East Africa

Daytime: 21.47; 17.885 & 15.42MHz
 Evening: 15.42; 9.63 & 6.005MHz

India

Daytime: 15.31 & 11.955MHz
 Evening: 17.79; 15.31; 11.75 & 9.74MHz

Thailand

Daytime: 17.79; 11.955; 9.57 & 6.195MHz
 Evening: 17.83; 15.36; 11.75 & 9.74MHz

Caribbean & USA: Eastern

Daytime: 17.84; 15.22 & 9.515MHz
 Evening: 15.07; 12.095; 9.59 & 6.175MHz

USA: Central, Mountain and Pacific

Daytime: 17.84; 15.26; 15.22; 11.82 & 9.74MHz
 Evening: 12.095; 9.64; 9.59 & 5.975MHz

religion, music, drama, science and sport all feature in the day-to-day line up. Each Saturday afternoon, *Sportsworld* runs from 1400 to 1700, with coverage of major sporting events in the UK and overseas. Each day, *Sports Roundup* provides results and news, on the air at 0315, 0945, 1245 (except Sunday), 1745 and 2245. Voices familiar to listeners

to BBC home services appear on World Service: Dave Lee Travis presents *A Jolly Good Show* [Saturday 0815, 2315 and Tuesday 1515]; John Peel is heard in his own show on Saturday at 1715, Tuesday 0330 and Thursday 0830 and *The Ken Bruce Show* is on Sundays at 0030, 1130 and 1830. The only person missing seems to be Terry Wogan!



The BBC World Service Newsroom, where all the various bulletins are compiled for broadcast in many language all around the world.

This is a selection of frequencies which are used for some time during the day and evening; they may not be on the air constantly. Full frequency information is available from **BBC World Service at Bush House, The Strand, London WC2B 4PH, Tel: 071-240 3456**. Details of programmes and frequencies appear in *BBC Worldwide* magazine, published monthly and available in good bookshops and at airports, or direct from Bush House, price £1.75

Television

World Service has moved in to television and now provides a service to Europe, Asia and the Middle East and Africa. The European service draws on programmes from BBC1 and BBC2 and is available on subscription. The transmission is D2-MAC and is carried on Intelsat VI. In Asia and the Middle East, the service is news based, with World Service news bulletins on the hour, every hour. Programmes following the news range from *Top Gear* to *Film 93*, *Mastermind* to *Horizon*. Unlike Europe, the Asian and Middle Eastern service is not scrambled, and is free

to anyone who can receive AsiaSat 1 at 105° East. In Africa, World Service Television is available from 0000 to 0900 and 1500 to 1700 in the same package as M-Net International. There is a subscription charge. Many hotels are now starting to include World Service Television on their room televisions, particularly in Asia, alongside WSTV's arch-rival, CNN. It is interesting to compare the quality of the two services, so if you get the chance, see what you think.

Just about wherever you are, you can keep in touch with home - and the rest of the world - by tuning to the BBC. Happy holidaying!

One of the Continuity Studios in Bush House.

Listening on Holiday on Malta

The first thing Nick Williams noticed on arriving on Malta for a holiday was the forest of antennas on nearly every rooftop. He soon found out that, whilst TVM (Television Malta) transmits one programme in English and Maltese, up to nine other television transmissions are regularly received from Sicily and the Italian mainland.

Many cafes and bars have a television set showing an Italian programme, often with quite severe co-channel interference, although reception intends to improve during the evening. I did not see any private satellite dishes during our stay on Malta, only some large ones belonging to the national telephone company

and seventy-five years - finally left.

I have no information regarding the locations and power of the v.h.f. f.m. stations, but as the total area of the Republic of Malta (Malta plus the neighbouring islands of Comino and Gozo) is less than that of the Isle of Wight and the terrain, though hilly, is not mountainous, I

mainly in Maltese, but they do play a lot of English records. The **Voice of the Mediterranean** has a daily programme in English from 1400 to 1500UTC on 11925kHz which is repeated the following day on 1557 and 9765kHz at 0800 to 0900 local time.

In addition to the Maltese stations there are numerous Italian transmissions from both RAI and local stations to be heard in the v.h.f. f.m. radio band. The medium wave band is quite uncluttered in Malta, so that several Arabic language North African stations were clearly audible, even during the day.

available (about 55p) listing all the Italian TV programmes, those of the RAI radio networks and Radio and TV Monte Carlo.

Delightful Experience

Finally, our visit to Malta was a delightful experience, the islands are rich in history depicting the many sieges and invasions that they have endured over the centuries. Unarmed police, driving on the left, red pillar boxes and telephone kiosks are all a pleasant reminder of their most recent colonial past. Malta is currently enjoying a period of prosperity unprecedented in its history and there is full employment.

But the last word must belong to a Maltese old school friend of my wife's. You see, there are only about two sets of traffic lights on Malta and when I was commenting on them she exclaimed, "Red means go doesn't it? I usually just follow the traffic!" ■

Listening Guides

There is no local equivalent of *Radio Times* but the excellent daily English language *Times of Malta* (for about 23 pence) lists all the Maltese radio stations, the Maltese and Italian TV stations viewed there and the BBC World Service on short wave. The Italian language *Nuova Guida TV* is

would imagine that they are audible everywhere. **Island Sounds** sounds very much like a UK commercial station with its British DJs and relays of BBC World Service news and programmes (via satellite) throughout the day. **Radio 101** employs American DJs and relays CNN radio news and VOA Europe news and programmes throughout the day and all through the night. **Radio Malta Two** also relays many BBC World Service programmes. **Radio Malta One** and the other v.h.f. f.m. stations appear to broadcast



Famous view of the Grand Harbour in Valetta, a good vantage point listening too.

Telemalta Corporation. However, I read in the local paper that a cable company, Melita Cable TV Ltd has been given the go ahead to begin laying cables, so presumably the Maltese will eventually have quite a large choice of programmes from both Italy and the ever expanding satellite services.

I was surprised to learn that there were no domestic broadcasting stations in Malta until after World War Two. Up to that time Rediffusion provided wired radio programmes in English and Maltese, which at least were immune from jamming! The first stations to broadcast from there were those set up by and for the British forces stationed in Malta. These stations broadcast originally on short wave from the nineteen forties and then on v.h.f. f.m. until 1979, when Malta became a republic and the British Forces, - in residence for over one hundred



The 'Silent City' of Medina offers spectacular views of the Island from its battlements.

| | |
|-----------|---|
| 999kHz | Radio Malta One |
| 1557kHz | Deutsche Welle/Voice of the Mediterranean |
| 88.0MHz: | Super One |
| 100.2MHz: | Radio One Live |
| 101.0MHz: | Radio 101 |
| 101.8MHz: | Island Sound |
| 102.3MHz: | Radio Malta Two |
| 102.6MHz: | Bay Radio |
| 103.0MHz: | RTK |

Table 1: Maltese medium wave and v.h.f. f.m. stations

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.

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- 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

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R808 (SSP £119.99)

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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)

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All the functions of a much larger model are combined in this compact radio with clock/alarm. Easy SW bandsread 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)

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Roberts R621 Review

The new Roberts R621, reviewed here by Mike Richards, is likely to appeal to those just going on their holidays.



Many short wave listeners would dearly love to take their stations on holiday with them to take advantage of all that spare time. Unfortunately, this is not possible for most because of baggage restrictions. However, all is not lost as small portable receivers, such as this latest model from Roberts, provide a convenient solution. Not only is the new R621 very compact, but it gives full coverage of the h.f. broadcast bands. So, let's take a closer look to see how the R621 fares.

Quality Feel

Like all Roberts products, the R621 was very well presented and had a reassuringly solid feel. As you can see from the photographs, the front panel was dominated by the analogue tuning dial and liquid crystal display unit. Apart from the clock settings, all the operational controls were located on the top and sides of the receiver.

In addition to the receiver itself, there was a handy instruction manual that covered all the R621's features very clearly and concisely. A particularly nice touch was the inclusion of a

Wave Handbook. This small (111 x 190mm) booklet lists the frequencies and times of all the main international broadcast stations. As you can imagine this was a great help when operating away from home without all the normal reference books. Just to complete the package, there was also a soft protective cover that included space for the miniature drop-in earphones.

Tuning Around

As with most receivers in this price range, tuning was by an analogue dial that, in this case, was operated by a knob on the side panel. The review model showed very little backlash and so had a very positive feel. Although the scale length was only 26mm, the reduction ratio had been well chosen to give very positive control. On the short wave bands this was enhanced by bandspreading each broadcast band so that it occupied the whole of the tuning display. This

resulted in easy tuning even on the more congested bands.

Selection of the required band was made using a ten position slider switch on the top panel. There was also a useful confirmation of the band selection on the l.c.d. readout. This was supplemented by a tuning and stereo indicator, also on the l.c.d.

One of the important considerations of any broadcast receiver is sound quality and the R621 came out very well. The rather small internal speaker (62mm dia) produced the expected bright sound. However, using the supplied headphones

gave a much fuller sound that was well balanced for a wide range of music and voice types. As the headphones were fed via a standard 3.5mm jack, it would be easy to connect other types of headphones. When tuning around the short wave bands the selectivity proved to be very good indeed. I found I was easily able to separate signals and there was a minimum of splatter from adjacent stations. This is an area where

many of the cheaper receivers fall down, so this was a good result from the R621. The general ease of use was further enhanced by the remarkably accurate tuning dial. This enabled stations to be found with a minimum of searching. As you can see, the general performance of the receiver section of the R621 was remarkably good.

Clock/Alarm

To further extend the usefulness of the R621, Roberts have included a handy clock/alarm facility. The main l.c.d. was used to display the time regardless of whether or not the receiver was turned on. In addition to being able to handle standard clock facilities, the R621 had a dual time button that could be set to an alternative time zone. This was particularly useful for keeping track of UTC. Switching between the two display modes was achieved with a single button press. Just to complete the facilities, the R621 featured a range of useful alarm modes. For those who like



SHORT WAVE LISTENING ON HOLIDAY

to drop off to sleep with the radio playing there was a sleep mode. This could be set for a playing time of 15, 30, 45 or 60 minutes. For a more conventional alarm, you could choose to be woken with either the radio or a tone. The tone system was remarkably effective and built-up from very quiet to extremely irritating over a period of about one minute. If the alarm isn't cancelled, this sequence repeats every other minute for an hour! If you are like me and tend to doze in the morning, you could hit a button to give five minutes peace in between alarm soundings!

Summary

The Roberts R621 is certainly a very well thought out portable receiver that should find favour with the traveller. The combination of compact size and sound performance make it a very attractive receiver.

The Roberts R621 can be obtained from all Roberts outlets and the recommended price is £59.99. My thanks to Roberts Radio Co Ltd. for the loan of the review model.



Specification

| | |
|---------------------|---|
| Frequency Range: | 530 - 1710kHz |
| | 5.9 - 6.2MHz |
| | 7.1 - 7.4MHz |
| | 9.5 - 9.9MHz |
| | 11.65 - 12.05MHz |
| | 13.6 - 13.9MHz |
| | 15.1 - 15.6MHz |
| | 17.5 - 17.95MHz |
| | 21.45 - 21.95MHz |
| | 87.5 - 108MHz (f.m.) |
| Speaker: | 62mm 8Ω |
| Output Power: | 120mW into 8Ω |
| Headphone Socket: | 3.5mm Stereo |
| Antenna: | f.m. & s.w. Telescopic m.w. Internal Ferrite Antenna |
| Power Requirements: | 3 x IEC R6 cells (AA) External via coaxial socket, 4.5V at 200mA |

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Dee Comm SWL Antenna Tuning Unit



Roger Bunney decided to buy a budget-priced antenna tuning unit with a 'Made in Brum' label. This is what he thought of it.

Unpacking the large box produced a feeling of initial disappointment.

The antenna tuner unit was rather large and the front panel artwork rather poorly reproduced - not unlike a glossy photocopy - and emblazoned with a coloured Union Jack confirming its British pedigree. The two large tuning knobs - one at each end - were both loose, caused, it transpired, by the screws holding the tuning capacitors to the chassis of the tuner unit not being fully tightened. The black, mild steel cover is held *in situ* with two small self-tapping screws, which gives a rattling loose fit. Once the cover and the tuning knobs had been removed the problem was identified and the two tuning capacitors tightened.

The rear panel of the tuner unit carries two SO329 antenna input/output sockets. The input socket also has a single terminal connected in parallel with the input SO329 socket for the attachment of a long wire antenna. In one corner is an extremely large brass terminal - the earth connection. In fact, it is the largest brass terminal I've seen and would do justice to any early radio.

The tuning gangs are compact and were originally designed for f.m./a.m. domestic radio use, since both the v.h.f. and m.f. vanes are visible. The coil is magnificent, with the turns wound round the spiral threaded former -

full marks for a perfect linearly wound coil. Connections to the tapped coil run to a 12-position switch mounted in the centre of the front panel.

Performance

How well did the Π network tuning unit work? My random length 'L' antenna runs from the house a lattice mast to a height of 10m and then downwards to ground level, a total length of perhaps 15m. In the shack a basic Lowe SRX30 short wave receiver is in use. Although the receiver has an input pre-selector tuning control, this was 'off-tuned' to give incorrect input tuning.

Various frequencies were selected from 29MHz down to 560kHz at the low frequency end of the medium wave. Above about 28MHz the a.t.u. produced no improvement, but below this the atmospheric noise level could be heard peaking. I found the most dramatic improvement to be on the medium wave band, where up to 2½ 'S' points could be obtained with careful tuning. On short wave between ½ to 2 'S' points were obtainable.

Tuning the a.t.u. was not critical other than on the

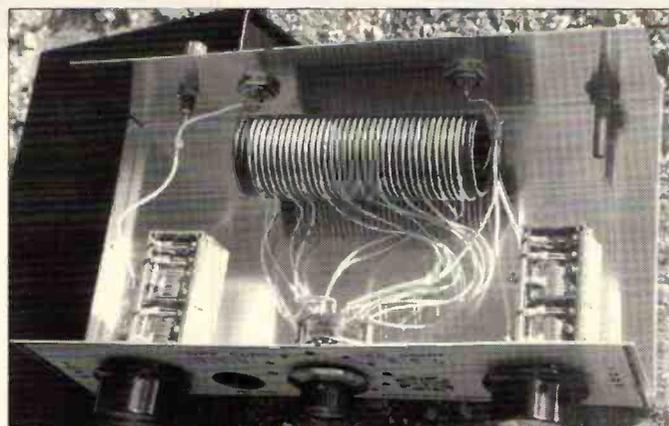
medium wave band. One useful point of the tuning capacitors is that a small geared mechanism is fitted to the tuning gangs, giving 1½ turns from minimum to maximum capacitance.

Summary

Performance was very good and showed considerable improvement of signal transfer into the receiver, particularly on the medium wave band. However, I was not impressed with the size of the beast which could, I feel, have been fitted into a more compact housing. The artwork also left a little to be desired.

As a budget-priced, ready made a.t.u. it's not bad value and it works! The unit weighs in at 5.5kg and measures 283mm wide by 159mm deep (less knobs and rear sockets) by 78mm high excluding the stick-on feet.

The antenna tuning unit is manufactured by **Dee Comm, Unit 1, Canal View Industrial Estate, Bretell Lane, Brierley Hill, West Midlands DY5 3LQ tel: (0384) 480565** and costs £39.95 including VAT.





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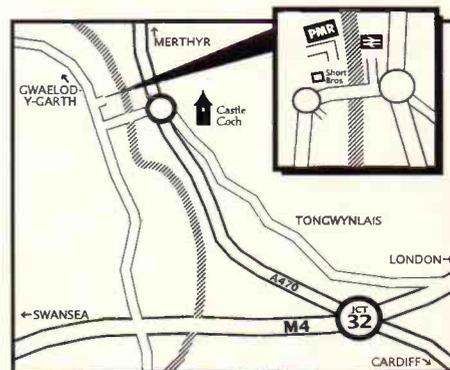
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On the Waves - An Alternative S

Peter Wood G0HWO had a short, if conventional, apprenticeship to amateur radio. It began with a period of short wave listening, lasting about a year, whilst he studied for the Radio Amateur's Examination.

My first short wave radio was a 3.5MHz (80m) direct conversion receiver which I built from a C M Howes Communications kit. Listening on the band was enhanced by using equipment I had built myself and which I heard other's talking about over the air.

The experience taught me about really listening, as opposed to spinning a dial, as discussed in a book I read much later titled *The Complete DXer* by Bob Locher W9KNI. Bob talks about basic, intermediate and advanced listening and there are some really good tips on the subject in his book.

After several years with an amateur radio licence and experience on various bands and modes, I am still drawn to periods of listening, turning up interest and suspense equal to any good TV programme!

Gripping

One Boxing Day, I had settled down in front of my transceiver for a listen on the 14MHz (20m) band. The next ninety minutes proved to be some of the most gripping I have spent listening on the amateur bands. At 1924 GMT I stumbled across the Carribus Net (Caribbean/US Net on 14.312MHz) KA2WHU was net control and in contact with Bill YV4BBG based at Maracay, 12km west of Caracus in Venezeula.

It quickly became clear that something was up. Bill had picked up a maritime mobile radio amateur in some sort of difficulty. Details were being gathered as I arrived on the band. The /MM was

somewhere in the Caribbean and evidently shipping water. But what sort of vessel was it?

Painstakingly it emerged that the name of the boat was *Transition* - a 40ft sailing boat of some kind, with three people on board. It had sustained some unknown damage the day before during a squall. The skipper, Ben Brown, explained that, although the bulkhead inside the boat was flexing ominously and the boat was taking on water, the pumps were holding their own at that point.

Squall

The signal from the boat was unreadable to me, but clearly audible to Bill in Maracay and also, albeit with difficulty to Miami Coastguards. Apparently, Ben was receiving both clearly but Bill acted as a reliable relay.

On board were Ben, his wife and crew member Howard. Ben KB7FKY had only obtained his amateur licence the previous August and he and his wife were moving from their home in Port Orchard, Washington to Puerto Rico. *En route* they were struck by a squall.

The boat's position was given as 13° 04' North and 75° 32' West on a heading of 240° running about 4.5 knots. Miami Coastguards were keen to have a description of the boat (white with a 300mm wide blue band around the hull) along with the colour of the life rafts and jackets.

Ben reported local conditions as wind 15-20 knots from the North. Visibility was about 8km and the barometer steady at 29.8 with waves at 2m.

All this amounted to a manageable situation as things stood, but Ben was concerned about the boat's seaworthiness if conditions worsened. With all this detail, I had a very clear and dramatic picture of the situation in my mind's eye.

A local ship radioed into the coastguards offering help, but was too far away to be useful. Eventually a naval vessel was identified as being about 240km distant and willing to assist. Frankly, had I been in the small boat's situation I would have pulled into the nearest harbour! Ben was more inclined to sweat it out to Puerto Rico, which I reckoned was about 520km away or divert to Jamaica 360km north north east, if things got difficult.

Eventually it was agreed that Ben would press on but would keep in touch with Bill on an hourly basis as long as propagation held up. No details of the boat's antenna or radio were gleaned, although I gathered that some sort of emergency maritime radio gear was available on board as well.

Propagation did change and frustratingly I dropped out of the picture. Curiosity got the better of me so I wrote to Ben's PO Box in Washington, copied over the air, in the hope that eventually he would receive the letter and let me know the outcome along with a few of the details. Four months later I received his reply.

By then Ben and his wife Bobby were settled in Puerto Real, a small fishing village on the west coast of the island where they were now working. Ben wrote that following their frightening experience, Bobby no longer wanted

anything to do with their 40' Valiant cutter-rigged sailboat - it was up for sale!

Sloshing Water

Ben explained during their transit from Panama to Puerto Rico, they had fallen off the top of a steep 10m wave. The toilet, with its associated hoses, was torn from its foundations allowing large quantities of water to come in. This event occurred at 2.00am; Ben had been on watch and the others asleep. They were awoken by the sound of sloshing water. A bulkhead had separated from the hull, which in turn allowed the hull to flex as it pounded into the rough seas.

As a result of the ingress of a large amount of water, Ben had alerted the coastguard before investigating the cause. Initially the bilge pump failed to work properly, but eventually things came under control. They continued towards the southwest tip of Haiti, where the current, which was sweeping them west, eased.

At this point the engine heat exchanger gave up the ghost and they tacked east for several days. The wind died 42 nautical miles from Puerto Rico, so Ben cross-connected the salt water into the fresh water, removed the thermostat from the engine and motored through the infamous, but flat calm, Mona Channel.

They arrived at their destination from Seattle, Washington, 6400 nautical miles away after four months and one day. In a PS, Ben said they ran aground less than a metre away from the dock, where

Short Wave Listening Experience

he and his crew were greeted by his father holding a bottle of champagne!

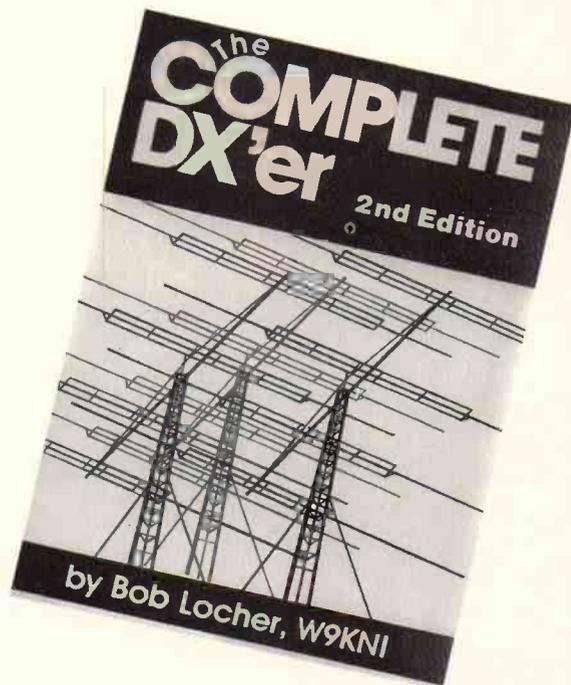
Real Life Drama

Apart from actually being on the boat, what other hobby could offer you the same excitement and real life drama occurring thousands of kilometres away, yet simultaneously in your own home? Transmitting is exciting, but so is short wave listening and often cheaper, too. Either way, you just never

know what you might stumble upon next. A lady in space possibly? ■

1) C M Howes Communications, Eydon, Daventry, Northants NN11 6PT. Tel: (0327) 60178. Send s.a.e. for details of easy-to-build kits.

2) *The Complete DXer, 2nd Edition* by Bob Locher W9KN1. Published by Idiom Press Box 503, Deerfield, Illi 60015, USA. Available from SWM Book Service. See page 80.



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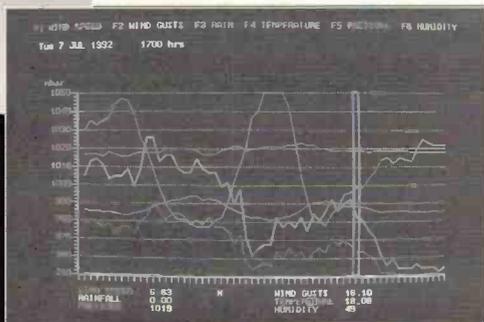
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Propagation

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

The value of combined astronomical and radio reports was again clearly shown early in March. There can be little doubt that the solar noise recorded by **Cmdr Henry Hatfield** (Sevenoaks) at 136MHz and the increased number of beacon signals on the 6th, was caused by that large sunspot group, near central meridian, **Fig. 1**, at 1300 on the 8th.

This was observed by **Patrick Moore** (Selsey) and drawn from his telescope projection screen. Even though the sun is moving into its quiet stage no one can be sure when a group like that in **Fig. 1** will appear. For example look at drawing, **Fig. 2**, that Patrick made of the sun's disc, 10 days earlier, at 1430 on February 27.

Solar

From Edinburgh or Glasgow, depending where his travels took him, **Ron Livesey**, using a small refractor telescope and projection screen, observed four active areas on the sun's disc on February 7, 12, 22, 23, 24, 25 & 28 and six on the 27th. **Ted Waring** (Bristol) counted 10 sunspots during his observations on the 20th.

However, in March, Henry Hatfield, using his newly modified spectrohelioscope, located three groups of sunspots on the 9th, a small ribbon flare on the 10th, 3grps and a small flare in a new plage on the 11th, 3grps with active plages on the 12th, 2grps, both with active plages on the 13th and 14th, a long chain of spots on the 15th, 2grps and a medium pillar prominence on the 17th, a small group with a slightly active plage on the 24th and a group, plus 9 filaments, on the 28th. Henry's radio telescopes recorded individual bursts of solar noise at 1297MHz on March 10 and at 136MHz on February 7, 12 & 13 and on March 6, 10, 11, 13 & 28.

Auroral

Ron Livesey, the auroral co-ordinator for the British Astronomical Association received reports of visual aurora, taking the form of a 'glow' on

| Beacon | February | | | | | | | | | | March | | | | | | | | | | | | | | | | | |
|--------|----------|----|----|---|---|---|---|---|---|---|-------|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 26 | 27 | 28 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| DL0IGI | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| E43JA | | | | | | | X | | X | | | | | | | | | | | | | | | | | | | |
| IY4M | | X | X | | | | | | | | | X | | | | | X | | X | | | | | | | | | |
| KA1NSV | X | X | | X | | | | X | X | | | | | | | X | | | | | | | | | | | | |
| KB9DJA | | | | X | | | | X | X | | | | | | | X | | | | | | | | | | | | |
| KD4EC | | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| KJ4X | | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| NX20 | X | X | | X | | | | | X | | | | | | | | | | | | X | X | | | | | | |
| OH2TEN | X | X | X | | | | | | X | | | | | | | | | | | | | | | | | | | |
| OH9TEN | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| PY2AMI | | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| SK2TEN | X | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SV3AQR | X | X | X | X | X | X | X | X | X | X | | | X | | | X | X | X | | | X | X | X | | | | | |
| VE2HOT | | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| VE3TEN | X | X | | X | | | | | X | | | | | | | | | | | | | | | | | | | |
| VK2RSY | X | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| VK6RWA | | | | | | | | | | | | | X | | | | | | | | | | X | X | | | | |
| VK8VF | | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| WC8E | | X | X | | | | | | X | | | | | | | X | | | | | | | | | | | | |
| WJ9Z/B | | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| W3FGQ | | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| W3VD | X | X | | X | | | | X | X | | | | | | X | | | | | | X | X | | | | | | |
| W9UXO | | | | | | | | | X | | | | | | | | | | | | | | | | | | | |
| ZD8HF | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| ZS1LA | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| 5B4CY | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |

Fig. 3.

the overnight period of February 18/19 and 21/22 from an observer in Tipperary; 'quiet arc' on 19/20 from Glasgow; 'rays' on 16/17, 17/18, 27/28 and 28/01 from North Dakota and 'active, moving or pulsing' on 1/2, 2/3, 4/5 and 18/19 from North Dakota, Reykjavik and Tipperary.

Magnetic

The various magnetometers used by **Karl Lewis** (Saltash), **Ron Livesey**, **David Pettitt** (Carlisle) and **Tom Rackham** (Goostrey) between them recorded magnetic disturbances on February 1, 2, 7, 8, 9, 10, 16, 17, 20, 21, 22 & 23.

Propagation Beacons

First, my thanks to **Gordon Foote** (Didcot), **Henry Hatfield**, **Ted Owen** (Maldon), **Ern Warwick** (Plymouth) and **Ford White** (Portland) for their 28MHz beacon logs and associated information that enabled me to combine their efforts and produce a chart of beacon signals heard in the UK on the dates shown in **Fig. 3**. "The first 4 days of the period were good, together with March 6th," wrote Gordon Foote and explained that he

found the clearest signals were those logged on March 1st and the worst days" for him, were March 15, 16, 17, 24 & 25 when no beacons were heard. Gordon also copied W3FGQ (28.292MHz) for the first time at 1740 on the 6th.

Band II

I trust that the following information will help **Andrew Thomason** who is interested in DXing on the v.h.f. broadcast band. As you may know, Andrew, most countries use Band II (87.5-106MHz) for their national broadcasting from limited range transmitters. However, when there is an atmospheric disturbance, such as Sporadic-E, then you are likely to hear Italian stations between 87 and 88MHz and East European television sound on 91.75 and 99.75MHz. Briefly, when the atmospheric pressure is high and the weather is fine and clear, there is a good chance of a tropospheric opening when Belgian, Dutch, French and German stations can appear in addition to 'locals' from distant parts of the UK. There is a lot of fun to be had, especially when out on high ground, with a good domestic portable.

Tropospheric

Around 1800 on Monday March 15, **James Muir** (Hamilton) was driving 11kms.w. of Stirling, some 467m (1442ft) a.s.l. when he stopped to tune his Philips car radio. To his surprise, he found generally good signals from the BBC transmitters at Ashkirk, Black Hill, Darvel, Forfar, Meldrum, Perth and Sandale and from the transmitters of Radios Borders at Eyemouth, Forth at Craigkelly, Tay at Dundee and Perth, Central FM at Earl's Hill and Classic FM at Black Hill and Pontop Pike.

"I was not aware of any particularly favourable conditions at my time of listening," said James, who certainly had a good haul of v.h.f. stations. However, I would imagine that the improved conditions on that Monday were due to the high pressure and the changing temperature that was moving across the UK at the time. I spent that afternoon on a seat in a public garden, in the warm sunshine without a coat, writing my *PW* column on my lap-top computer. By 1700, the air was definitely getting cooler. Tuesday morning we awoke to a thick fog and it was positively cold.

Between 0900 and 1115 on March 7, **Leo Barr** (Sunderland), using a Sony ICF-SW7600 receiver BBC Radio 1 FM from Ashkirk, Black Hill and Holme Moss, Radio 2 and Radio Scotland from Ashkirk, Radio 3 from Holme Moss and Radio 4 from Ashkirk. He also logged Classic FM from Black Hill and Holme Moss and Pennine FM for the Halifax and Huddersfield Area. Leo noted the fog when he awoke on the 7th and remembered that such weather conditions were often associated with enhanced v.h.f. conditions. Now you proved it, Leo.

Further information about Sporadic-E plus the daily atmospheric pressure readings, for the period February 26 to March 25, can be seen in my Television column elsewhere in this issue.

Fig. 1.

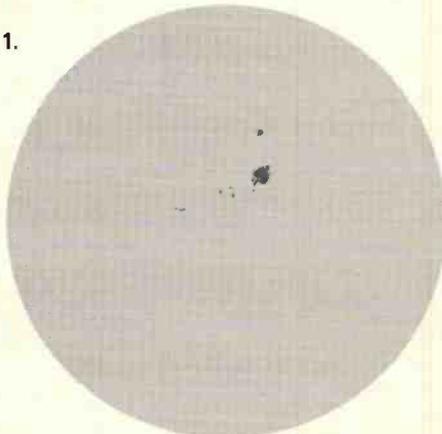
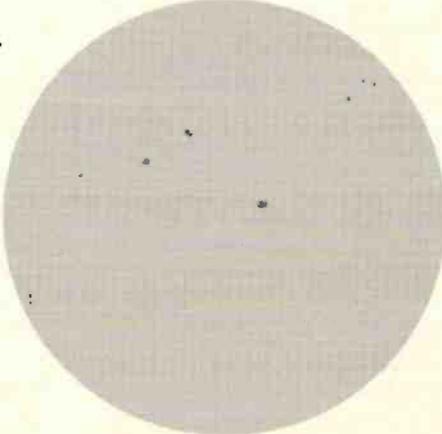


Fig. 2.



Satellite TV News

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

The political and religious events across Europe recently have been reflected in greatly increased satellite activity across the Clarke Belt - certainly when 'something happens' so all transponders fire up to cover the event. Take, for instance, the French general elections of March 21 and a week later on the 28th. The evening period covered, of course, the day's voting round-ups and the counts to find the winner. Reports from across France were being directly SNG-linked back into the French terrestrial networks (SNG = satellite news gathering). Favourite spots for the news report inserts are the French Telecom satellites though Eutelsat II F1 at 13°E was very active in the 12.5GHz band. The March 21 evening saw 12.51GHz Reuters/Vis-Europe transponder on 13°E carrying a continuous 'Reuters TV Paris' feed - at least four transponders were carrying dedicated news reports on this bird. SNG company Uplynx were sited in Paris and their downlink at 11.66GHz vertical featured shots of their main Parliament building. Eut. II F3 at 16°E was busy with a Belgium SNG truck - VTM SNG3 - that came over the border to Ussel, France and was linking back for national networker TF1. A little confusion was noted on the Marseille circuit carried over Eut. II F4 at 7°E, the usual interviewer and the Paris reverse talk-back missing in the earpiece!

Apart from politics, religion commanded the satellite stage during the past few weeks. Ramadan seemingly ended around March 19/20. RTM Morocco, on the 19th, relayed an outside broadcast event from an outside arena over their RTM programme downlink on Eut. 16°E (10.97GHz vertical), literally thousands of pilgrims circulating anti-clockwise around a dark structure or shed with thousands stationary around the perimeter, close ups revealed intense emotion. The broadcast continued for some hours, the importance of which I took to be the end of the Ramadan period.

Billy Graham arrived in Germany with the '93 Mission Europe from March 17 through to the 21st. Live transmissions from Essen were relayed over several Eutelsat birds and DFS Kopernikus with translations/commentaries in English, Welsh, French, Italian, Spanish, Norwegian, Swedish, Polish and numerous other languages.



An exciting catch earlier this year, west-bound news circuit on 2nd hop from Andrew Sykes.



The Atlantic Express news circuit from Intelsat 601 27.5°W 11.016GHz horizontal from Andrew Sykes.



Noise Problems

Wall-mounted antenna systems such as a dish with an H to H motor or actuator jack - and terrestrially the standard motorised v.h.f./u.h.f. installation but bracketed to the wall of a house can give rise to motor noise being conducted into the structure, along the walls and causing much grief or anger from neighbours in adjoining terrace/semi properties. Such anguish is sufficient for them to complain, take the matter to the council or demand no antenna movement after bedtime. This was the case of one satellite enthusiast. An appeal to readers has produced a solution.

Colin Paton (Greenock) suffered noise from a wall mounted 900mm dish. He almost completely silenced the beast by spraying from the top expanding builder's foam down the inside of the support mast/tube - having taped across the bottom. After about 40 minutes the tape can be removed and extra foam sprayed up inside the mast from beneath to fill any remaining gaps. Once solidified any hardened foam stalactites can be sawn off. This type of foam (from B & Q, DIY, etc) is used for filling gaps around window and door frames - a small aerosol can costing around £6.50.

Another suggestion comes from **Gavin Taylor** (Peterborough). If the

dish cannot be ground mounted in a garden (which is obviously a complete answer to structure born noise) then Gavin advises the insertion of a 15Ω 20W resistor in the motor wire power feed - not the reference signal wire circuit - this will slow the motor down but with the reduction in speed is a considerable reduction in noise. A switch can be used to short out the resistor thus giving a normal/slow (noisy/quiet) option.

Apart from structure born noise there will be directly radiated noise from the motor unit itself. This airborne noise is generally of a sharp rasping nature and most unpleasant. Has anyone made an acoustic housing to dampen out and reduce such a problem? Thanks to Colin and Gavin for their suggestions.

Satellite News

First it's press release time! An unusual development from Intelsat who have agreed to lease from the Russian Informkosmos group up to three Express satellites (Express is the updated version of Gorizont). The first Express is due for launch mid 1994 and will offer ten C Band and two Ku band transponders in stable parking slots. Intelsat are to expand Global facilities for the United Nations, New York to further

increase communications for disaster, relief and support. Currently the UN operate five leases, three x 9MHz C Band segments on 601 at 27°W to reach from NY to the Middle East/Western Sahara, one x 5MHz in Ku on 602 at 63°E, and one x 9MHz C Band on 505 at 66°E. The latter communicate with earth stations in Iraq, Kuwait, Pakistan and Cambodia. Intermediate linking is via a ground station at Naqoura, Lebanon.

The new Intelsat series VIII satellites no. 801, 802 will be launched by Arianespace starting 1996. The series 8 craft will feature 38 C Band high powered transponders and be used for TV, VSAT and video conferencing.

If *SWM* readers were not aware, BBC Radio is now carried over Astra 1B 11.552GHz (UK Gold). On the audio sub-carriers will be found - Radio 1 - 7.74MHz; Radio 4 - 7.56MHz; Radio 5 - 7.92MHz; World Service 7.38MHz.

Graeme Wilson, past TV-DXer is station engineer of United Christian Broadcasters Ltd., now carrying programming via Astra 1B trdr 20 Sky Sports on audio sub-carrier 7.56MHz. Programming is a mix of 25% the spoken word and 75% music. Graeme is seeking reception reports and programme comments, in particular hearing of the signal quality on the footprint fringes i.e. the Middle East, Israel, etc. The service is free for relaying on cable, etc., though UBC would appreciate hearing of cable carriage take-up to maintain an audience count and profile. Please write to Graeme Wilson, PO Box 255, Stoke on Trent, Staffs ST4 2UE, UK.

Star TV (Hutchvision, Hong Kong) are already testing with digital compression over AsiaSat 1 and may offer some form of compressed service by this coming Autumn. Plans are confirmed for the Chinese to launch Star TV's AsiaSat 2 via a Long March 2E rocket in 1995. Further to the North, Discovery Channel is now available via the Eisi Channel for 15 hours weekly across Japan via their Superbird satellite. Nippons BS-3N will be launched by Arianespace Spring 1994 which will be operated by NHK/Satellite Broadcasting Inc. and provide 3 TV DBS level channels. The future BS-4 satellite series will be launched and operated totally by private company funding with NHK, JSB and similar experienced groups intimately involved in the project. Two BS-4 birds have project launch dates during 1997 which will replace the then anticipated ailing BS-3A series.

DXTV Round-up

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

I am often asked what's so special about DXTV?, my quick answer is that it is another aspect of specialised interest in the wide-world of radio communications. For instance, the vast majority of medium wave and short wave enthusiasts enjoy finding and listening to signals from stations in far off lands. The only difference between them and the TVDXer is that the latter looks for television pictures that have travelled far in excess of their normal range. In both cases, the abnormal long distance (DX) reception is caused by some form of natural disturbance within the earth's complex atmosphere. Now there is an added meaning, the fun has become a science, because, by studying the effect these disturbances have on radio and television signals, something is being learnt about the natural cause.

The Troposphere

March was a strange month for propagation because the predominantly high atmospheric pressure throughout the period February 26 to March 25, Fig. 1, should have produced many more tropospheric openings than it did. Therefore, this suggests that there are other factors in our complex weather systems, such as sudden changes in temperature and/or humidity to take into consideration. This all means that, whatever the weather, frequent checks on Bands III (175-230MHz), IV (471-608MHz) and V (615-856MHz) are essential to finding DXTV signals. Keep in mind, that if these three bands are open, then DX will most likely be found in Band II (87.5-106MHz) and on the 144 and 432MHz amateur bands. The daily pressure readings seen in Fig. 1 were taken at noon and midnight from the recording chart of the barograph installed at my home in Sussex

Wavebands

Just as a good broadcast receiver, with a long wire antenna, is ideal for the medium wave band and one of the popular multi-range communications receivers, with a suitable antenna, gives very satisfactory results on the short wave bands, a three-band television set, or converter, is required for TVDXing. In round figures, the frequency coverage of the medium wave is 600kHz to 1.6MHz and the short waves,

divided into several bands, range between 1.7 and 30MHz.

The majority of television receivers on sale and in use in the UK and parts of Europe are dedicated to about 48 channels in the u.h.f. Bands IV and V only. However, some countries still use Bands I (48-68MHz) and III for their national TV networks, which means that three-band, multi-channel sets are available giving the TVDXers, like the short wave buffs, the opportunity to tune through the bands. In general, international television transmissions share particular channels in their part of the radio frequency spectrum, so, while an opening is in progress, pictures, from many different stations, may be fighting for predominance on your screen. A sharp look out for captions or test-cards is a good way of identifying the origin of the signals.

Band I

For instance, a browse through the *World Radio TV Handbook* (available from *SWM Book Service*) shows that in Band I, Ch. E2 (48.25MHz) is used by stations in Belgium, Germany, Norway, Portugal, Spain, Sweden and Switzerland; Ch. R1 (49.75MHz) in Czechoslovakia, Hungary, Lithuania, Poland and Russia; Ch. IA and IB (53.75MHz) in Italy and Ireland respectively; Ch. E3 (55.25MHz) in Denmark, Finland, Germany, Greece, Iceland, Norway, Portugal, Spain, Sweden and Switzerland; Ch. R2 (59.25MHz) in Czechoslovakia, Estonia, Hungary, Lithuania, Poland, Romania and Russia; Ch. IB (59.75) in Italy; Ch. IC (61.75MHz) in Ireland and Ch. E4 (62.25MHz) in Austria, Denmark, Finland, Iceland, Norway, Spain and Sweden. Mixed among that lot is Austria with their Ch. E2A sharing 49.75MHz plus the French channels 2, 3 and 4 on 55.75, 60.5 and 63.75MHz respectively.

Fig. 1.

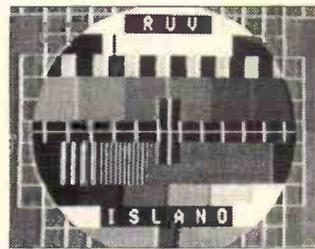
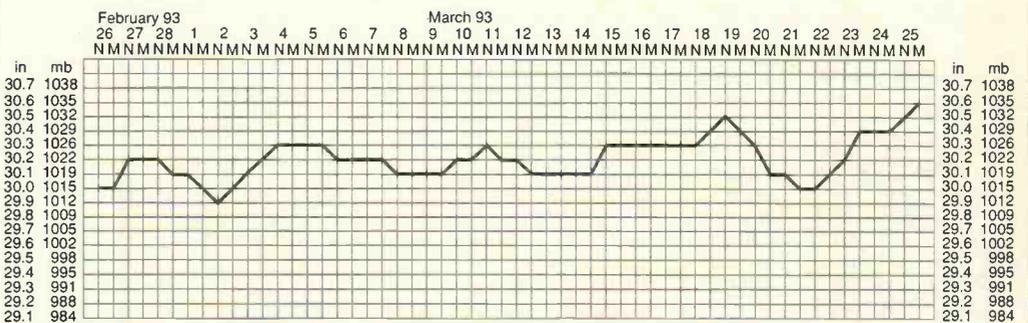


Fig. 2: Iceland.

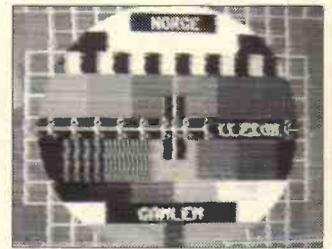


Fig. 3: Norway.

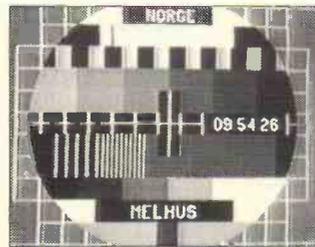


Fig. 4: Norway.

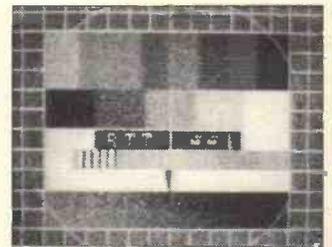


Fig. 5: Tunisia.

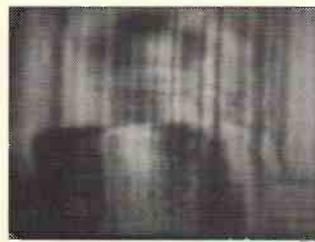


Fig. 6: SE Asia.



Fig. 6: Bangkok.

Sporadic-E

Briefly, Sporadic-E is a sudden disturbance within the 'E' region of the earth's ionosphere and while it is in progress moving clouds of more densely ionised gas will reflect signals, by varying degrees, between about 20 and 150MHz. The peak is the lower TV band between 40 and 80MHz. When Band I is hit by and extensive Sporadic-E, as it may have done by the time you read this, it can be just as crammed with 'extra' signals as any of the short wave bands. Such disturbance are expected at anytime, during the daylight hours, between late April and early September, peaking in June and July.

Picture Archives

Typical examples of this come from, **Andy Gilbert** (Worthing) who has a multi-standard Grundig receiver coupled to a 2-element beam for Band I and a 6-element for Band III and, with this set-up, ring the 1990 Sporadic-E season he received strong coloured test-cards from Iceland (RUV Island), Fig. 2, the Norwegian regionals 'Gamlem' and 'Melhus', Figs. 3 and 4 and a weaker one from Tunisia (RTT), Fig. 5. The line 'shudder' beginning to show on Figs. 2 and 3 happens during the the deep and sharp fading which usually occurs at the onset and toward the end of a Sporadic-E opening.

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Fig. 8: Poland.



Fig. 9: Hungary.



Fig. 10: Turkey.



Fig. 11: SSTV caption.

Band I

In addition to Sporadic-E certain disturbances in the upper 'F2' region of the ionosphere can send television signals, around Ch. E2/R1, off over thousands of miles, in fact during the winter months it's not uncommon to receive pictures in the UK that began their journey in China, but, they are difficult to identify because they are usually warped and without frame lock.

"Some 'F2/TEP' was trickling in even in mid-February from SE Asia," wrote Lt. Col. Rana Roy from Meerut, India on March 5. He logged such smeary and distorted pictures during these events, mainly on Ch. E2, from Bangkok TV, possibly Thailand and other unidentified stations from January 4 to 9 inclusive and on February 10 and 19. Typical of this mode of propagation were the pictures he received on Ch. E2 from SE Asia, Fig. 6, at 0835 on January 5 and from Bangkok TV3, Fig. 7, on the 8th.

In New Radnor, Simon Hamer received pictures from Denmark (DR) on Ch. E3 and Germany on Ch. E2 on the 18th.

Your Weather Reports

"We have had some very strange weather for almost a month from January 28 to February 23," stated Rana Roy on March 5 and explained, "It became very warm with temperatures going up to 33°C during the day and 16°C at night. Such temperatures are in April. From February 23 it rained for five days and there was heavy snowfall in the Himalayas bringing down temperatures to 7°C at night and 18°C during the day. It is as cold as it should be in January."

"It's very dry again with sharp frosts at night," wrote John Woodcock (Basingstoke) on March 26. This is about like us John with only 1.38in of rain for the month and some of the overnight frosts, during the latter half, went down to 26°F. The bulk of the March rain fell overnight on the 22nd (0.60in) and

the rest on the 30th (0.20in) and 31st (0.50in).

"March has been surprisingly mild this year, with plenty of dry, warm weather and mostly light winds," wrote David Ashley (Norwich) at the end of the month.

From Arbroath, David Glenday reports, "March was another month of high pressure, with only the occasional low sweeping across the country, except for the last week which was typically 'low' for this time of year".

Tropospheric Openings

From his home in Meerut, Rana Roy received pictures, in Band III, from such stations as Amritsa on Ch. E7, Jalandhar (E9), Lahore (E5), Marh (E8) and STN (E11) during tropospheric openings on January 24, 27, 31 and February 8, 10, 12, 13, 15, 16, 17, 18, 23 & 24. Here in the UK, Simon Hamer reported two 'very selective' events when he received pictures from Sweden (SVT1) on Ch. E6, in Band III and (SVT2) on Ch. E30 in Band IV on March 9 and Germany's 'ARD/MDR1' on Ch. E6 and 'MDR3' on Ch. E34 on the 26th.

John Woodcock copied weak signals from France (Canal+), in Band III, around midday on March 1, 7, 9 and 19. David Ashley received pictures from Holland (NED1, 2 & 3) during improved u.h.f. conditions during the evening of March 10, all day on the 11th, the daylight hours on the 12th and 13th, all day on the 20th and the evening of the 29th.

"Sadly, little tropospheric DX to report," wrote David Glenday, who, on two days only, logged u.h.f. pictures from Holland (NED1, 2 & 3) on the 12th and Denmark (TV2) and Germany (ARD1, NDR3, SAT1 & ZDF) on the 13th.

Portable DXing

While parked on high ground, near Biddulph, on March 19, Tim Bucknall (Congleton) tuned through the u.h.f. band and, although the

pressure was low at 964mb, he identified various strengths of pictures from BBC1 on Chs. 28, 33, 46 and 55; BBC2 on Chs. 29, 34, 40, and 62; Central TV on Chs. 25, 26 and 43; CH4 on Chs. 21, 32, 50 and 65 and Granada on Ch. 59. From home on the 2nd and 7th he found 'messy co-channel distorted pictures at the lower end of Band III'."

Satellite TV

Among the items received toward the end of December from Eutelsat, by Peter de Jong (Leiden, Holland) were captions from Poland Fig. 8, Hungary Fig. 9 and Turkey Fig. 10. While moving his 'dish' antenna about in March, John Scott (Glasgow) received test-cards from Hungary (Budapest), Middle East (MBC) and Turkey (TGRT). John passes the video signal through his Robot slow-scan television converter which enables him to produce hard copy, on A4 paper, from his dot-matrix printer.

SSTV

John Scott spent a most enjoyable afternoon, on March 20, logging slow-scan television pictures during a contest. The stations he received were mainly from Europe and Scandinavia and he tells me that the signals from Russian club stations were very strong at times. Although John printed out some very good examples of the Arktika club's captions, I selected Fig. 11, because of the lines across the top and bottom of the call-sign which illustrates to our new readers the damage that interference can do to the reception of a good picture. Part of a contact between UZ3AZG and HB9BYD (Switzerland), Fig. 12, plus the caption from a German station, Fig. 13, further confirms John's point about strong signals. Among the pictures he copied during March were two with camera shots of people and equipment, Figs. 14 and 15.



Fig. 12: SSTV Switzerland.



Fig. 13: SSTV Germany.



Fig. 14: SSTV picture.



Fig. 15: SSTV picture.

Australia
by Greg Baker

Since I last wrote our local bushfire brigade has bought a swag of u.h.f. CB f.m. transceivers including three hand-held sets. These latter three are so we can keep in touch when we are on foot tackling fires away from our fire tanker. They come equipped with speaker microphones so those using them look a little like the police we see here on that popular television programme *The Bill*. They work well and are a great asset to our efforts. Now for some news and frequencies.

Frequencies

I read with great interest *SWM's* February Marine Radio special. For those with an interest I have dug out a few Australian frequencies from the *Handbook for Radiotelephone Ship Station Operators*. Some will no doubt be frequencies in world-wide use but nonetheless may be worth a listen for the Australian end. The main frequencies for establishing routine communications with an Australian coast station or another ship are 2.182, 4.125 and 6.215MHz. Coast stations provide broadcast of routine weather forecasts and weather and navigational warnings on 2.201, 4.426, 6.507 and 8.176MHz. There are coast stations at Sydney, Melbourne, Perth, Darwin, Townsville and Brisbane. The Adelaide station was closed in January 1993 and the Brisbane station is only open during our daylight hours. Other frequencies worth trying are 2.112, 2.524, 4.620, 8.291, 12.290, 16.420MHz; for yachts and pleasure craft try 2.284 and 2.524MHz; for professional fishing vessels try 2.112, 2.164, 4.535, 4.620, 27.72 and 27.82MHz; for commercial vessels try 1.715, 1.725, 1.775, 2.008, 2.032, 2.436, 2.638 and 27.68MHz.

Time Signals

Australian time signals can be heard on 6.4495 and 12.984MHz from the Naval Communication Station in Canberra and on 5.000, 8.638, 12.984 and 16.000MHz from VNG, the Department of Administrative Services station in Sydney.

Radio Australia Antennas

From browsing the other columns in *SWM* it would seem that there is no shortage of people listening to Radio Australia from all of its transmitter sites. So that these people know a little more of where the signals originate I include here a list of the antennas at each site.

| Site | Antennas |
|------------------|---------------------------------------|
| Brandon Qld | 2 curtain arrays and log periodic |
| Cox Peninsula NT | 7 multi-band slew-able curtain arrays |
| Carnarvon WA | 4 multi-band slewable curtain arrays |
| Shepparton Vic | 35 curtain arrays and rhombics |

Publications

Two new sources of information for s.w.l.s have recently been issued here. One is a book called *Radio and Television Stations*. It lists all Australian broadcast stations. It sells for \$A24.95 (about £12) post paid to anywhere in the world. I believe that stocks are low so it would pay to check before ordering. Enquiries can be made to the Australian Government Publishing Service at GPO Box 84, Canberra, ACT 2601, Australia.

The other source of information is the Australian Broadcasting Authority's computer disk data bases of broadcast stations. Two disks are available. One covers u.h.f. and v.h.f. television stations; the other covers f.m. and a.m. radio services and includes specialised narrow-casting services. They cost \$A60 (less than £30) each and postage and packing is an extra \$A5. They come in MS-DOS PC compatible form in ASCII and dBase III (.DBF) format. A text file explains the various fields. For information on overseas postage contact Data Disks, Australian Broadcasting Authority, PO Box 34, Belconnen, ACT 2616, Australia.

Australian Forces Overseas

Australia has sent defence personnel to Somalia as part of the UN peace keeping mission in that country. Following the precedent set during the Gulf Crisis, the government was keen that these troops keep in touch with home via a dedicated radio service. The then Minister for Defence Science and Personnel, Gordon Binney, approached the Australian Broadcasting Corporation (ABC) to put out a special short wave service through Radio Australia. The ABC refused without the promise of Australian Defence Forces funding.

After some intense political games the service eventually went to air with the ABC providing normal Pacific bound Radio Australia services free of extra charge, the Department of Defence providing and paying for its own segments and



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the National Transmission Agency (NTA) providing transmission services out of Cox Peninsula in the Northern Territory free for Radio Australia services and at cost for Department of Defence services. The service is on 17.900MHz from 0300-0400UTC daily with Australian Armed Forces Radio (AAFR) and continuing on the same frequency from 0400-0530UTC with the relay of Radio Australia's Pacific English Language Service.

Transmissions on AAFR are a mixture of news, music, sports results and family messages. These messages are telephoned into the Russell Hill defence complex in Canberra on a toll free telephone line set up for the purpose. The service has proved popular among Australian troops, which is also being picked up by Australian troops in other parts of the world including Cambodia. To satisfy the growing demand, experimental transmissions are under way using the Harold E Holt communication base at Exmouth in Western Australia and the naval radio station at Belconnen in the Australian Capital Territory. These experiments are aimed specifically at Somalia and Cambodia but will eventually cover other ground based personnel, ships at sea and RAAF aircraft on station. It is intended that Australian naval radio will eventually take over all transmissions.

QSL for any of these transmissions to Australian Armed Forces Radio, c/o Lieutenant Kerry Martin, B-4-22, Russell Offices, Canberra, ACT 2601, Australia. All QSLs will receive a reply.

Pay Radio

I reported in 'Bandscan Australia' for September 1992 that the BBC was operating pay radio in Sydney. *SWM* News column noted too that a company called Soundcom are operating pay radio in Australia.

Soundcom is a company that provides programme music to businesses in the main cities via f.m. sub-carrier technology. Currently there are two main channels: instrumental for offices, shopping centres and other low-key areas; and vocal for businesses such as fast food outlets and restaurants.

Soundcom's venture into pay radio will not commence until later this year according to Soundcom in Sydney. The service to be called Digital Music Express will offer up to twenty programmes covering the spectrum from classical to rap. It will start initially in the larger population centres of Sydney and Melbourne where a series of microwave transmitters will be fed from a common satellite source. Subscribers will rent a small microwave receiver and decoder for around \$A30 (less than £15) per month. This equipment will be operated by an infrared remote control and the display panel for the set will show such information as track title, album name, record company and record number.

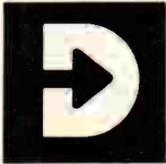
Although much of the material will originate in the USA, local audiences expect a fair proportion of Australian content in areas such as rock where Australian musicians have made a mark. The method to ensure appropriate Australian content has yet to be decided but will either be injected locally or uploaded from Australia to the USA and broadcast directly from there. When the system is operational I will report the details.

I welcome any news and comments. In particular I am interested in any s.w.l. information on Australian stations heard by *SWM* readers so I can chase up more details and interesting snippets from this end. My address is PO Box 208, Braidwood, N.S.W. 2622, Australia. For personal replies please send two IRCs.

Station Locations

Those with beam heading computer programs may be interested in the following latitude and longitude information for Australian domestic h.f. stations.

| Station/Location | Lat S | Long E |
|--------------------|-----------|------------|
| VL8T Tennant Creek | 19° 40.0' | 134° 15.5' |
| VL8K Katherine | 14° 24.0' | 132° 10.5' |
| VL8A Alice Springs | 23° 49.0' | 133° 50.5' |
| VLM, VLQ Brisbane | 27° 18.5' | 153° 36.0' |
| VLW Perth | 31° 51.5' | 115° 49.0' |



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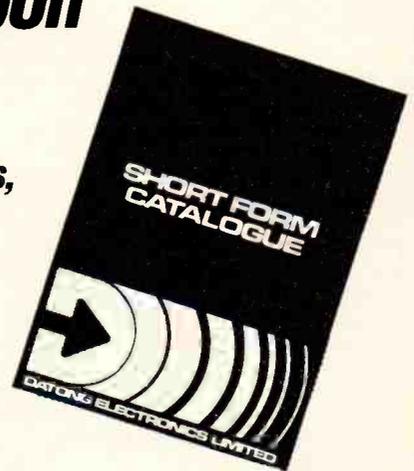
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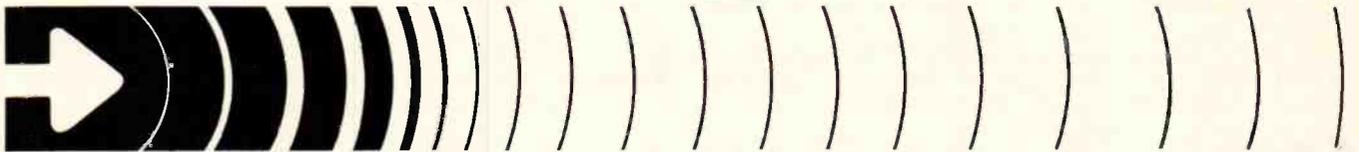
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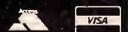
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There seems to have been a considerable number of changes to the frequencies allocated to the various civil aircraft oceanic areas. **Mike Bennett** has very kindly supplied me with a comprehensive list from Air Radio Incorporated (ARINC) but I am going to hold off publishing full details for a while because I am not convinced that all the changes are now complete.

John Pearson asks if h.f. is going to continue in use because he understands that from about 1995-96 onwards, it will be abandoned because satellite navigation will make it obsolete. I am not sure where John got his information from because it does not make a lot of sense. Controllers will still need to speak to crews regardless of how accurate their navigation is. I know that crews do not like h.f. Two years ago when I flew on Concorde to New York, the crew grumbled about that 'World War Two antique radio system' and in an age of push button technology with satellites and fibre optics providing us with crystal clear communications they must find the hiss, snap and cracks and pop of h.f. a bit of an inconvenience.

I am aware of ideas to replace civilian h.f. communications with something like satellite links but I am also aware that a fast moving aircraft is not the easiest of platforms on which to mount a high gain, directional antenna system to achieve that end. The cost of conversion would also prove a major problem for many small but essential stations operating in regions of sparse population such as South America, Australia, Asia and the Pacific. I suspect therefore that h.f. is with us for a while yet but if anyone has any definite news of forthcoming changes please let me know.

Still with the same bands **Mr P D Burrill** of Leeds asked what r.f. power the aircraft and ground stations use? Strangely enough nothing in my fairly extensive library provides the answer but I do recall seeing an advertisement for an h.f. aircraft radio that specified a mere 25W. I suspect commercial airliners and ground stations use more than that but I doubt if we are talking more than a few hundred watts at most. Does anyone have the definite answer?

Back to Concorde and **Keith Elgin** has provided a schedule for the British Airways and Air France flights so that you can try and monitor them.

Air France Concorde 001 from

New York arrives at Paris 21.45 hours daily.

Air France Concorde 002 departs Paris at 10.00 for New York daily.

British Airways Concorde 01 departs London at 10.30 for New York daily.

British Airways Concorde 02 from New York arrives London 18.10 daily.

British Airways Concorde 03 departs London at 19.00 for New York daily.

British Airways Concorde 04 from New York arrives London 22.25 daily.

British Airways Concorde 05 from Washington arrives London 18.45 (Tues, Fri, Sun).

British Airways Concorde 06 departs London for Washington (Mon, Thurs, Sat).

Concorde 01
8.906MHz at 16.49 Speedbird

Concorde 02
5.649MHz at 20.58 Speedbird

Concorde 04
5.649MHz at 21.30 Air France

Concorde 001
All times quoted are UTC

The Weatherman and the Frozen Wastes

Ian Lockwood has logged a station I mentioned some time back. It's the one-man weather station on Bermuda using the call sign 'Southbound 2'. Ian found a station on 6.228MHz and says it can be heard most nights after 2200. The station provides weather information for small craft in the Caribbean. Ian also logged a host of



Concorde taking-off at London's Gatwick Airport.

UK times are BST and French times are one hour ahead in summer.

Aircraft usually go supersonic about 35 to 40 minutes after take-off with a similar time gap going subsonic before landing. Because they are quickly out of range of v.h.f. stations it will only be a short while after or before the sonic transition stage that they will join or leave the h.f. networks. Keith has recently logged the following which will give you an idea of times and frequencies:

8.906MHz at 17.04 Speedbird
Concorde 02

3.016MHz at 20.29 Air France
Concorde 001

8.906MHz at 16.49 Speedbird
Concorde 02

5.598MHz at 16.41 Speedbird
Concorde 02

8.879MHz at 11.37 Air France
Concorde 002

8.879MHz at 12.01 Speedbird

UN callsigns on 5.310MHz and US coastguard stations at Norfolk, Portsmouth, Boston and Miami on 5.659MHz (primary) and 8.984MHz (secondary).

Mike le Ves Conte has logged a few exotics despite complaints from most regulars that conditions during the first three months of the year were poor. Mike's log included Mauritius a.t.c. on 5.634MHz, Piarco and Santa Cruz controllers both on 8.851MHz, Lima a.t.c. on 10.024MHz and Tokyo a.t.c. on 11.330MHz and possibly a quick burst of the Australian Flying Doctor service on the same frequency.

However, the real catches come with the McMurdo Centre on 8.897MHz (2205) and British Antarctic bases on 9.106 (2155) discussing air drops and ship supplies. This is the first time anyone has submitted logs to the column with these catches even though I know a number of readers

have tried hard without success. Sadly, Mike, your first prize bag of genuine Antarctic snow was ruined when some fool left it out of the fridge and the cat licked up the resulting water.

Ron Galliers has had little luck lately but came across a station callsign NUC and calling November 391 for test purposes. Apart from being certain that the station was British and military Ron wonders who. So do I, so I will add it to the list of frequencies to check occasionally. Ron's only other entry of note was Air Force One with Andrews a.f.b. on 11.209MHz.

Callsigns are another issue that have cropped up lately with several readers asking where they can get lists. First of all, **Stephen Legg** has been monitoring MARS (Military Afflicted Radio Service) stations and asks about the call sign CUZ on a US Navy ship. **Graham Tanner** tells me that this was probably NNN0CUZ which is the destroyer tender USS. *Puget Sound*. Graham adds that some MARS call signs included in the American publication *Shortwave Directory* by Bob Grove. It is available in the UK from Interbooks (Tel: (0983) 30707) but be warned, it does not come cheap. Stephen asks about a full inexpensive list but as far as I know there is not a complete list anyway. **Mr M C P Bennett** also mentions that *International Callsign Handbook* by Gayle Van Horn is a useful reference particularly for USAF callsigns. Again it is from Interbooks, but again not cheap.

Who needs Megabucks?

Finally, an interesting letter from **Mr C Vasili** of London who was using an Icom R71 attached to a well known and quite expensive active antenna (not Datong). The set-up gave poor performance with high noise levels. He then went and bought a Sangean ATS-803A and a 20m long wire and to his surprise found a massive increase in performance. He then tried the long wire with the R-71 and again found reception was fine. I am happy to mention his letter because it provides two points that I frequently stress to beginners: An active antenna, no matter how good, is a last resort for people who cannot put up a long wire or dipole and you do not need an expensive receiver to enjoy our hobby.

Happy listening until next month.

Amateur Bands Round-up

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

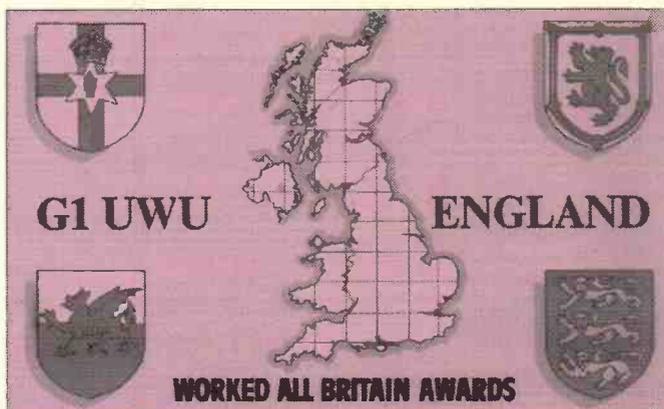
Hello again! As I sit down to write this piece, I'm shaking off the 'dreaded lurgy' which visited this QTH in its 'large extra-potent' form...so if the column doesn't make sense blame the gent with the callsign who brought it back from Arizona!

Why do we seem to see a peak in conditions around the spring and autumnal equinoxes? Basically, the earth wobbles, a bit like a child's top as it runs down. At the equinox, sunrise/sunset occurs at the same time everywhere, so the output from the sunspots gets the best chance of working on the ionosphere. In mid-winter our day is shortest, the antipodean one longest, so the southern latitudes get the best - and vice versa in summer of course. As a result the big world-wide h.f. contests tend to crowd into spring and autumn.

E. H. Trowell in Minster is having a complete mains rewire so whenever he found time to go into the shack the power was usually off! Ted is one of the users of a vertical - in his case an HF9 which is ground mounted with lots of radials and chicken-wire. The trick here is this: first mow the grass as short as possible. Now get a roll of the chicken-wire and lay it out flat on the newly mown area. You may be able to get a second or third roll pegged out all side-by-side. Now solder the chicken wire seams together at several points. Connect by braided stuff to the earth terminal in the shack for an end-fed antenna, or to the coaxial cable braid for a vertical. The grass will grow through and hide the earth mat nicely, and when you mow, you keep the cutters set just high enough to clear the wire. If you do the job properly in the beginning the mower won't come near the wire. As for the neighbours, if you tell 'em you are laying the wire to stop the moles, with a bit of luck they'll copy, then you can strap their mat to yours!

In Swindon **Viv Franklin** has moved his gear out of the bedroom into the cosy little box-room; alas he was also made redundant which gave him extra time for sorting out the 'half-mile of wire' - Viv's words, not mine! Were I going to move my heap of junk - Heaven forbid! - I'd be looking to get rid of as much wire as possible.

Turning to his list, Viv listened on 3.5MHz sideband for CN8AP, C31HK, C31SP, D2EL, FM5DM, FY5FY, FG5FC, JT0AJ, JW9VDA, JX3EX, OD5ZZ,



One example of the over-printed QSL cards available, this one from the WAB Group.

TL8WZ, TAs, T70A, T77T, T14CF, VP2VA, VP2EY, XE1ABA, 3A2ALU, 9V1XQ, 9K2WA, ZLs, JAs & Ws. 14MHz was sounded for CN8FR, EA9KB, JA2FG/P1, other JAs, LU3DFJ, PT7BZ, TK5BF, PY2GOU, 4X6SJ, 9P9EM, various VK/ZL and the smaller fry. A flip to 18MHz found JAs, KL7XD, OJQ/OH1VR, PJ8AD, TZ6VV, VEs, VKs, ZL4AG, W0MKX & 5Z4FM. Up again and 21MHz showed AP2JZB, CN8HB, EA9PX, HL5FXP, JA1MAO, W9TQA & 3X0HNU.

Leighton Smart (Trelewis) found time to lash up a top-loaded vertical for the 28MHz band in his loft. Having spent 10p to make it (for the connector to join the feeder to the antenna!) it was tried out and promptly produced VP5, HK6, SV1 and some Yanks. On Top Band, Leighton originally thought he would never get out of the valley, but to his surprise some forty countries are now in the log.

Contests are always a good time for new countries, points out **Eric Masters** in Worcester Park. Eric always felt his c.w. wasn't good enough for this, but he has realised that the call and the contest exchange are all that you need, and the listener can of course lock on to these over a period of more than one QSO.

Next it's **Luciano Marcquardt** in Hereford; QSLs in response to his reports have been received from C31SD in Andorra, heard on 3.5MHz, plus HL5AP, JA6AV, 7S4SKI, 3Z9WU, all reported to on 14MHz, and 4N7DO from 21MHz. The list of stations heard includes UA0APA & AP2KAH on 28MHz, 3X0HLU working PY7ZZ on 24MHz, and A92BI, ZB2JI, 7Q7JL, UV1AD, 5N0ABA, ZD8VJ & PY0FM chatting to HL9HH. On 14MHz Luciano

booked in JW7FD, VP2MR, A61AD, CR7EDX, UH8, UJ8, AP2JZB, 8P6AE, ZL3APW, XR3A & VK4CY on Lamb Island: 5B4ES, YV5USB & CM6WO represented Forty, and the C31SD mentioned before was doubtless gladdening the heart of his contact KD2ZB.

'Who or what was S0RASD?' enquires **Tim Allison** of Middlesbrough in a first letter. S0 is the prefix for Western Sahara that lies on the mainland close by EA8 and expeditions and operations from there are handled by Lynx DX Group, via EA2JG. Tim adds a note that the Desert Storm net now gather at 1700 on 14.280MHz ± the QRM on Tuesday and Saturday.

Another first letter comes from **Andy Wright** who is in Sawley, Notts. Andy has a Kenwood R2000, and some 24m of end-fed wire tuned-up by an antenna tuning unit. At the back-end, he operates an audio filter, type BP34. Favourite bands are 3.5, 7, 14 & 21MHz, which get a working-over most days. On Eighty, Andy noted PJ2M1 (0206UTC), VP2VA (0341UTC), T14CF (0426), HC8A (0530), D44BC (0504), VP5JM (0532), CO1HJ (0413), HK4DHL (0411), PZ1EL (0444), KG4CW (0350), HR2MDP (0550) & HR2BDC at 0605. 7MHz was represented by VK7AAB at 2029, and on 14MHz Andy noted VU2YK & 9H1FN. A flip to 21MHz saw 9A3VD, LA9DAA, DL9ZOG/MM off the coast of Israel & YC0TPB; 28MHz logged ZP1HV. I have shown times for the 3.5MHz loggings just to rub home the effect a different listening time or band can have - and of course on Eighty, the sideband DX can appear right at the top of our band, or even higher - the Americas have up to 4MHz.

Gerald Bramwell only notes on

c.w. contact, UH2E/UC2LBS on 14MHz. On RTTY he found UZ9CWA on 3.5MHz; EROF & UZ9CWA again on 7MHz; CN8NP, XX9LF, KB2HK, EA8RA, HK4OTF, W3LVQ, KP2N, 4M5KVS, LU6FEM, HZ1AB, 4M5RY, PY2RO & KB2VO on 14MHz; 21MHz giving VE2EWD, WA4DDH/2, RB0HZ, W6KNF, WF5T, N8ESD, OD5PL, N5PSI, N7KA & WA7FKV. Gerald's other mode is sideband listening, and here there are so many I will have to pick out the tops. On 28MHz most of Eastern USA and Canada are noted, on 24MHz I note 5B4/G3K0X, 7X2VXK, various CIS stations and Ws. On 21MHz one could say almost 'everything bar the kitchen sink' in the way of DX and the same goes for 14MHz. Perhaps the pick on 7MHz were Y11BGD & A92BE, while on the 3.5MHz band all continents are represented!

Now to Birmingham where **John Collins** has an Eddystone 870A receiver and an antenna tuning unit. Amateurs noted include GW0SSB, a QRP G0NSL, JA8QC, JA8NFN, TU4EG, TA7I, VP9T S510J, P43A (Aruba's local radio club), P43LM, VP2EL, HC1NDT, HL10T, LU3DH, HK0NZY, A92BE, N90QS/T5, 9K2ZZ, 3A2LU, UA9ADQ, and an assortment of smaller fry.

Another first-timer is **Gordon Robertson** in Saltash, Cornwall. On the receive side there is a Sony ICF SW-55, and a Marconi B28 perhaps better known as the CR100. Some 20m of wire are strung around the loft, and tuned by way of one of the Joymatch antenna tuning units. On 28MHz P40AA, PY1FC, KP4GY, ZP7Y, LU8FDZ, HC7SK & YW59M were noted - the last noted one being an oddity - has anyone else any knowledge? 21MHz managed BV4AS, VP5P/P/WA0PUJ, VK6XG, V630M, HS1CDX, DU1GWQ, P29VR, V85BJ & JH4TEW. Going down again to 14MHz I note VU2AU, PZ1EL, JR4SAY, YV5ENI, CN8GM, ZF2TX & EP2MHB. Down again to 7MHz where PZ1EL, CX5FH, LU9MDQ, PY1RR, CE7OKZ, ZL2SQ, 3X0HLU, VK7AAB & A61AD were booked in. Finally, on Eighty we note ZL4BQ, PZ1EL, YC3AJ, 9V1XQ, PY0FM, 8P6JB & TP3CE on March 19, being a 'special' for the Council of Europe.

Finale

Letters, addressed as usual to the Box number above, to arrive please at the beginning of the month. By then, maybe I'll have shaken off the 'flu, and have UB5COS visiting too.



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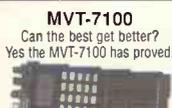
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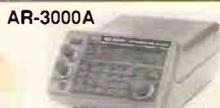
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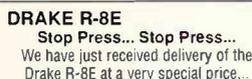
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Airband

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Topical news from a contact in the RAF (Oxford) concerns the future of Halton aerodrome, Buckinghamshire. When the Rothschild family donated the land to the RAF they were far-sighted enough to stipulate that it could only be used as an airfield. Luckily, this prevents any get-rich-quick property development scheme. As the Technical School is closing, there won't be a supply of willing apprentices to run future airshows, so this year's will probably be the last.

Flying will continue. The Flying Club and the Chiltern Gliding and Soaring Club are expected to remain based there as is 613 Gliding School. A game of pass the parcel has ensued following the closure of nearby Abingdon. The Oxford and London University Air Squadrons and 6 Air Experience Flight have been displaced from Abingdon and are now at Benson; this in turn has meant pushing out 612 Gliding School and temporarily re-housing it at Halton! I'm glad I'm not the one responsible for supervising all the upheaval!

Information Sources

Airport Timetables UK is now available in the Summer 1993 edition. For each UK airport, all scheduled flights are listed in day and time order. The exception is Heathrow where only overseas airlines are listed. I'm writing this review prior to publication date, but the format in previous years has been to show point of origin, flight number, aircraft type, configuration (number of seats, etc.), outbound destination, flight number, validity period and tour operator. It is made clear if flights night-stop at, or commence their day's work from, the aerodrome under consideration. It's yours for £11.50 including UK postage. Make cheques payable to Airtime Publishing Limited and send orders to 13 The Hollows, Long Eaton, Nottinghamshire NG10 2ES. Tel: (0602) 736998 (evenings). New from the same people is *Airport Timetables Dusseldorf and Frankfurt* which will cost you £5.85.

Have you got the latest edition of *Airband Factsheet* yet? Issue 2 is available from the Broadstone Editorial Offices and all you have to do is send a reply-paid, self-addressed envelope capable of holding one A4 sheet. Mark 'Airband Factsheet' clearly on your request and remember that this is available from Broadstone and not

direct from me here at the Museum.

Given the Selcall of an aircraft, the most likely registration can be looked up. Taking an example from **R. Keary** (Manchester) DL-BJ turns out to be B.767 VH-EAN. Simple - when you've a copy of *High in the Sky* by Davies, Barker and McKenzie (The Aviation Hobby Shop, 4 Horton Parade, Horton Road, West Drayton, Middlesex UB7 8EA, Tel: (0895) 442123).

Finals

There aren't many people whom I have personally met who have later had obituaries published in the national press. Monique Agazarian was an exception - in fact much of her aviation career was exceptional. On page 11 of the April 1990 issue is a picture of me having a flying lesson with her in the GAT-1 Simulator. Monique started her flying by delivering various military aircraft types from their factories during the war. I remember her teaching style as being one of definite confidence, achieved not by her subject being merely familiar, but having become second-nature. Her death was not due to a flying-related cause.

Happy Hols

On page 2 of the April issue, **Terry Broadhead** (Rotherham) asked about taking radio receivers on foreign holidays. Whereas I will leave the precise legal situation to the experts, here are some practical suggestions of mine. Remember, whatever radio you have, listen with an earpiece if the sound would otherwise be likely to disturb others. People stay in hotels for a quiet rest - and many such places have thin walls!

First stop is the security check. There's no fixed rule about this, and perhaps that's the trouble with these checks. The staff seem to have too little idea as to what they are looking for. It is sensible to be able to demonstrate that electronic equipment actually works because this suggests that the apparatus and its batteries are real. Equipment that has been tampered with could contain something nasty. The security staff might be further reassured if you carry a screwdriver and open the case of any electrical device. Having said that, I was once stopped for carrying a screwdriver which goes back to the point about security staff having inadequate guide-lines as to what's dangerous and what isn't.



A practice fly-past for the RAF 75th Anniversary celebrations.

On board the aircraft, operation of any electronic equipment risks interfering with essential navigation systems. The a.d.f. is particularly vulnerable, but there have also been reports of flight management systems failing when passengers operated lap-top computers. If you take a radio receiver on board, ensure it is switched off and with the earpiece removed. If the on/off switch is separate from the other controls, open the squelch and turn the volume to maximum. If the radio accidentally comes on in flight, you stand a better chance of hearing it and hence knowing to switch it off again.

Some countries (even one or two in the EC) are less tolerant of certain sightseeing activities than is the UK. There may be restrictive laws about the photography of military installations that might include bridges as well as aircraft! 'Plane spotting, viewing with binoculars and recording information such as a list of registrations, has been mistaken for spying in some cases.

Foreign customs can pose a further problem although the rules are more relaxed in the EC (go through the blue channel if eligible). Certainly take the equipment's receipt with you. If you can prove you own the equipment and that you bought it in your home country then there is less chance of being accused of importing the apparatus by way of business or otherwise. Finally, it no longer surprises me as to what some people attempt; do not try to operate a cellular telephone from within an aircraft! This is not only a risk to the aircraft itself, it also jams the telephone network as so

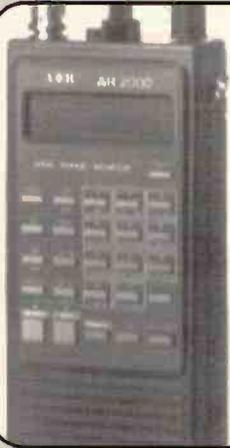
many cells are in line-of-sight radio range all at the same time!

News from Abroad

One popular holiday destination is the island of Malta, served by Luqa Airport. A report from resident **Joe Lewis Sammut** also mentions the Malta Air Charter helicopter service which connects Luqa and the neighbouring island of Gozo. Around April, when Joe wrote, flights to the island were increasing and Swiss Air were using the runway for touch and go training. Living only two miles away, Joe sees all this with his binoculars! Frequencies at Luqa are 118.9 (Ground), 121.0 (Radar) and 128.7MHz (Approach, this one not being listed in my copy of the *Aerad En-Route Supplement*). The Area Control Centre is on h.f. 5.661MHz u.s.b. Runways are 14/32 (the most likely for commercial movements) and the shorter 06/24.

Air Malta celebrates its 20th anniversary this year and took delivery of new B.737-300 9H-ABR in March. The postage stamp on Joe's letter also showed some aviation history: a Vanguard in BEA livery. My experience of the type is limited but I can tell you that the controls are quite heavy and the slightest attempt to roll into a turn results in a startling loss of height if you don't do something about it! To compensate, engine power is prodigious making engine-failed performance much less frightening than might otherwise have been the case. I did fly to Malta in 1973, and although this was Air Malta's first year I actually went by BEA Trident.

CONTINUED ON PAGE 63



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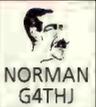
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- Sitor – CCIR 625/476-4, ARQ, SBRS/CBRS FEC, NAVTEX etc
- AX25 packet with selective call/sign monitoring, 300 Baud
- Facsimile, all RPM/IOC (up to 16 shades at 1024 x 768 pixels)
- Autospec – Mks I and II with all known interleaves
- DUP-ARQ Artrac – 125 Baud Simplex ARQ
- Twinplex – 100 Baud F78C Simplex ARQ
- ASCII – CCITT 5, variable character lengths/parity
- ARQ6-90/98 – 200 Baud Simplex ARQ
- SI-ARQ/ARQ-S – ARQ1000 simplex
- SWED-ARQ/ARQ-SWE – CCIR 518 variant
- ARQ-E/ARQ1000 Duplex
- ARQ-N – ARQ1000 Duplex variant
- ARQ-E3 – CCIR 519 variant
- PDL-ARQ – 100 baud Duplex ARQ
- TOM242/ARQ-M2/4-242 CCIR 242 with 1/2/4 channels
- TOM342/ARQ-M2/4 CCIR 342-2 with 1/2/4 channels
- FEC-A – FEC100A/FEC101
- FEC-S – FEC100 Simplex
- Sports Info. 300 Baud ASCII F78C
- Hellsreiber – Synchron./Asynchron.
- Sitor RAW – (Normal Sitor but without synchronisation)
- ARQ6-70
- Baudot F78BN
- Pactor – coming soon!
- **SYNOPSIS RTTY Decoder – coming soon!**

All the above modes are pre-set with the most commonly seen baudrate setting and number of channels which can be easily changed at will whilst decoding. Multi-channel systems display ALL channels on screen **at the same time**. Split screen with one window continually displaying channel control signal status e.g. idle Alphas/Beta/RQs etc, along with all system parameter settings e.g. unshift on space, **Shift on Space**, multiple carriage returns inhibit, auto receiver drift compensation, printer on, system sub-mode. Any transmitted error correction information is used to minimise received errors. Baudot and Sitor both react correctly to third shift signals (e.g. Cyrillic) to generate ungarbled text unlike some other decoders which get 'stuck' in figures mode!

Six options are currently available extra to the above specification as follows: 1) Oscilloscope. Displays frequency against time. Split screen storage/real time. Great for tuning and analysis. £35. 2) Piccolo Mk 6. British multi-tone system that only we can decode with a PC! £65. 3) Ascii Storage – Save to disc any decoded ascii text for later processing. £35. 4) Coquelet – French multi-tone system, again only on offer from Hoka! £65. 5) 4 Special ARQ and FEC systems i.e.. TORG-10/11, ROU-FEC/RUM-FEC, HC-ARQ (ICRC) and HNG-FEC. £75. 6) Auto-classification – Why not let the PC tell YOU what the keying system is?! £65.

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Scanning

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

My thanks to all the readers who have taken the trouble to write, FAX or phone me with comments relating to the legality of using scanning receivers and the possible introduction of new laws relating to their sale and usage. The danger is that new legislation will not be able to draw a distinction between monitoring cellular telephone calls, the emergency services, local taxi ranks, aircraft communications or short wave utility transmissions.

Father and son **John & Tony Bidgood** thought that the best way of promoting scanning was through the 'self training' aspect of the hobby. John has tried to actively promote the use of radio as an aid to communication skills at his son's school, as he feels it can be usefully incorporated into several different subject areas.

Paul Beaumont of London made several interesting points in his letter, the main one being that it is possible to monitor transmissions such as cordless phones or baby alarms without the use of a scanner simply by listening with the base unit turned off. In the case of cordless phones it is even easier to listen by simply tuning a domestic receiver to the high frequency end of the medium wave band. If scanning receivers were banned it would not prevent people who were determined to listen to various transmissions from doing so by other means. He also makes the point that the existing laws are very ambiguous in the way they are applied. For example the DTI Radiocommunications division make it quite clear that listening to civil aircraft communications is illegal unless permission has been granted by the user of the service being monitored. Paul wrote to the Civil Aviation Authority in order to obtain permission, but was told that permission could not be granted, however prosecution would not be carried out against persons who monitor transmissions as part of their hobby, i.e. for no commercial gain.

Several readers said that they thought that a licensing scheme for scanners would be a good idea, a few even suggested that this would be a way of helping the DTI Radiocommunications division to 'police' the airwaves by getting licensed listeners to monitor and report specific users or frequencies.

Jon Newman was keen on the idea of some form of licensing system - he also thought that banning scanners was more a case of 'shooting the messenger' than

actually dealing with the problem of insecure transmissions. He was 'very dis-chuffed' at the thought of a blanket ban on all scanners simply because someone had been caught 'with their pants down'. Jon was one of many readers who agreed with the point I made regarding the misuse of other modern technology such as message pagers, FAX machines, cellular phones and computers. He also wonders if the situation would change if the press ever reported a story along the lines of 'scanner user tunes into criminals'. Where a robbery is prevented or crime solved as a result of someone overhearing something they shouldn't have been listening to.

Bernard Greatrix thought that scanning as a hobby was in danger of becoming included in changes to privacy laws as a result of the recent spate of newspaper stories, which seem to directly relate scanning activities to crime, including monitoring police transmissions, taping private cellular telephone conversations and bugging. He likened the situation to computer hacking, where just a few individuals had given computer hobbyists a bad press.

Judging by the newspaper clippings you have sent me I would guess that in 90% of all the stories relating to cases where criminals have been caught in the act of monitoring police transmissions, the scanning receiver had been bought (or stolen) from a well known chain of high street electronic shops. If scanners had only ever been sold to hobbyists by specialist dealers the current situation may never have arisen. That's not to say that all criminals obtain their equipment from the high street, but that the easy availability of equipment makes even petty criminals aware of the potential for misuse.

Along similar lines **Roy Tait** sent me an amusing press cutting from his local paper *The Inverness Courier*. This relates the sorry tale of an attempted break into a local golf club by two men. They triggered the alarm and ran off, however when the police arrived they followed the footprints the men had made in the freshly fallen snow on the golf course. After a couple of miles they found them hiding under a bridge, one of the men had a scanning receiver but the batteries were flat. During the court case the defence made the point that 'the expedition was a non-starter as far as getting away with it was concerned' but that they would not have been caught so easily if the receiver had been



A new PC-based package is available to control this popular scanner.

working. He also added that scanners were readily available and that the shops selling them were not breaking the law but had been asked to keep a register of people buying them.

As a final note, in addition to the other crimes one of the men also pleaded guilty to 'using a scanning receiver with intent to obtain information for which he was not authorised'. It is interesting that this is one of the few cases which has come to court where this law has actually been applied. Another cutting came from **Alan Bellomy**, this was an unlikely tale that had been printed in the *Leicester Mercury* regarding the arrest of five 'Radio Hams' in Warrington. According to the report the men had arrived at a particular location after the local police had transmitted a message reporting a flying saucer crashing in the area. I would treat this story with a fair amount of scepticism as it seems remarkably similar to an incident which was supposed to have occurred in Holland some time ago that has already become part of scanning folklore. Can anyone supply more accurate information relating to this incident? Alan also sent me another cutting from the same paper - I wonder if the reporter uses a scanner or if there is one in the newsroom? This time the article focuses on the use of scanning receivers by racing enthusiasts during the European Formula One Grand Prix at Donington race track. The report features comments made by enthusiasts at the race, a spokesman for the DTI Radiocommunications Division and a couple of the racing teams who were using radio equipment. The

bottom line was that listening was illegal, the teams considered the information being passed to be confidential and that several of them used different methods to prevent eavesdropping. Once again, can anyone supply additional information?

Whatever the outcome of recent events and their effect on any new legislation, I am sure that it will have very little influence on the use of scanning equipment in connection with criminal activities. However it will almost certainly have the undesired side effect of outlawing a large number of respectable enthusiasts from the hobby.

Frequency Counter Modifications

My thanks to reader **Ted Seward** of Surrey who FAXed me details of his experiences in modifying an Optoelectronics 2300 hand-held counter following the information given in the March column. He found that the pre-scaler i.c. gave out a large amount of spurious noise causing the circuit to operate continuously producing a random count. He was able to correct this by adding a resistor between pin 28 of the main i.c. and the input of the new circuit. Providing the value is chosen correctly this doesn't effect the sensitivity but it does stop it operating on random noise. Ted found that a value of about 47k Ω gave the best compromise, with 100k Ω being too high in value and preventing the correct operation and 20k Ω having little effect. I have his modification and found that 82k Ω give satisfactory results; a lot would seem to depend upon the gain of the

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pre-scaler and the transistor used in the additional circuit. A small surface mount type pre-set pot may provide the most accurate method of adjustment should it be required. My thanks to Ted for passing on this information.

Databases

Ken Williams has written from Manchester to say how pleased he is with two of the computer databases I have previously mentioned in this column. He finds the 'Scanmaster' program very useful for keeping track of the contents of his scanners memory banks. You can obtain a copy for £8.50 from: Clarke Computer Services, 20 Silverdale Crescent, Alderholt, Fordingbridge, Hants SP6 3JZ. The other program he recommends is 'Amiscan'. This already contains a large number of frequencies which are of particular interest to Radio and TV DXers. You can obtain a copy for £7.50 from Tim Anderson, 2 Burry Road, St Leonards On Sea, East Sussex. I make no apology for mentioning these two packages again, as I believe they represent very good value for money for the average scanner and computer user. It is also nice to find that both suppliers are keen to receive comments from users so that improvements can be made to any later versions that may be produced.

Receiver Control Software

Good news for owners of Icom IC-R7100 scanners, someone has at last produced a PC-based program to remotely control and log signals heard with the receiver. The program is called 'Transcan' and provides the following features: the ability to search for and log to disk new active frequencies, complete with date, time and signal strength, the creation of 'memory' bank files containing comments; a 'flag' permitting the selective scanning of the bank; facilities for the up and down loading of internal memory contents; the ability to produce a simple spectrum analyser type display. All that is required in addition to the program is a suitable interface, such as the Icom CT17, to connect the PC to the computer. The cost of the program is likely to be in the region of £60.00 and further details can be obtained from Midac Systems, 33, Cannon Leys, Galleywood, Chelmsford, Essex CM2 8PB.

Owners of AOR AR-3000 or 3000As needn't feel left out as a new PC-based control package is now available from Nevada. The software is similar to that being offered by ACE communications in America where it is advertised as being used by the allied forces during the recent Gulf Conflict. Although the program may not appear to be particularly interesting



A PC-based program has, at last, arrived for the R7100.

when first used it is easy to operate and I believe one of the best currently available for the AR-3000/A that I have seen. The only minor criticisms are that I would have liked to have been able to specify a duplex frequency as well as the main frequency and have the ability to import/export information from the logbook to an external database.

The program contains several memory banks and search banks that can be interlinked as required. It also contains a large logbook which can be used to maintain a master frequency database, the contents of which can be exchanged between memory banks. During operation information contained in the logbook is displayed when the scanner is tuned to a frequency previously listed. Other features include a storage spectrum analyser type display which can be switched to display either signal strength or the number

of active passes. This is very useful if you want to identify new frequencies within a particular band. If you want to try the program you can obtain a demonstration version for £1.00 from Nevada Communications, 189 London Road, Portsmouth PO2 9AE.

Once again my thanks to all those readers who have sent me information during the past few months, all of which have been gratefully received. I hope to feature many of your ideas, comments questions and suggestions in future columns. If you have any information that you feel other scanning enthusiasts would be interested in, why not pass it on. Don't forget that you can either write, phone or FAX (0703) 262246 details to me and that I am particularly interested in obtaining a.m. modifications for the Tandy PRO 35, 37, 38 and 41 and the Bearcat 50 and 100XL. Until next month - Good listening.

Airband CONTINUED FROM PAGE 59

Frequency and Operational News

These changes have been listed for the first time in *GASIL* from the CAA (see March 1993 edition of the leaflet). Birmingham Radar is on 118.05 and 131.325MHz. Here as in all cases, hand-offs from one controller to another are always 'as directed'; the aircraft is told which frequency to contact next and the pilot must read this back correctly before changing to the new station. At Gatwick, 126.825 replaces 125.875 (Zone/Radar) and 118.95 replaces 118.6MHz (Radar/Approach). At Woodford, two frequencies have swapped their function. Approach is now 130.75 and Radar 130.05MHz, it having previously been the other way around. CAA AIC 32/1993 introduces Cat II i.l.s. at Luton (previously Cat III).

AIC 31/1993 quotes the new D117 Pendine Danger Area Activity Information Service frequency as 122.75MHz (Pembrey Range) or, outside hours of watch, London Information 124.75MHz. Aberporth D201, D201A and D201B has a Danger Area Crossing Service.

Contact Aberporth Control 133.5, Aberporth Information 122.15 or London Military 135.15MHz. Inchterf D514 has been withdrawn.

New losses of ATZ and MATZ apply to Bentwaters and Woodbridge, while Doncaster loses its ATZ. Due to the lead time in preparing 'Airband' the information is only intended as a guide for enthusiasts. If you are responsible for flight planning or navigation then you must refer to up-to-date NOTAMs.

According to the radio-navigation charts, the ident of the Shannon v.o.r. has changed to SHA (di-di-dit, di-di-di-dit, di-dah) from SNN.

You Write

Antennas were a problem for **Reg Phillips** (Kendal). His quarter-wave vertical is made of wire supported by an old billiard cue. For a ground-plane, the back of an old washing-machine finds a fresh lease of life. Despite any theoretical drawback to the use of steel as the groundplane, a 27MHz version was tested and the

s.w.r. was less than 2:1.

Thanks to **Mrs. B.** for sending an Easter card from Man. Hubby obviously tolerates his wife's aviation interest since he has built her a desk complete with storage for backnumbers of *SWM* - how thoughtful! Her teenage son is looking at careers in the aircraft production industry and has so far visited Aero Designs (part of Shorts) who are involved in the Sherpa and a Learjet project, and also Dowty who produce parts for the A.340. Mrs. B's younger son interrupts her attempts at hanging out the washing with his shouts of "Plane! Plane! Quick!", which I know is very distracting if you're an aviation enthusiast trying to concentrate on some mundane task.

The next three deadlines (for topical information) are June 4, July 9 and August 6. Replies always appear in this column and it is regretted that no direct correspondence is possible. All letters to 'Airband', c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS. Genuinely urgent information/enquiries: 081-958 5113.

Abbreviations

| | |
|---------|--|
| A. | Airbus |
| a.d.f. | automatic direction finder |
| AIC | Aeronautical Information Circular |
| ATZ | Aerodrome Traffic Zone |
| B. | Boeing |
| BEA | British European Airways |
| CAA | Civil Aviation Authority |
| GASIL | General Aviation Safety Information Leaflet |
| h.f. | high frequency |
| i.l.s. | instrument landing system |
| MATZ | Military Aerodrome Traffic Zone |
| MHz | megahertz |
| NOTAM | NOTice to AirMen |
| Selcall | Selective Calling |
| s.w.r. | standing wave ratio |
| u.s.b. | upper sideband |
| v.o.r. | very high frequency omni-directional radio range |

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73 from Dave G4KQH, Technical Manager.

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

As at mid-April, for several weeks now the only CIS operating WXSAT has been METEOR 3-3 on 137.85MHz. This is in a morning descending pass, so we have heard it passing over Greenland, Iceland, then Britain, then moving south. From mid-March the north pole has been seeing the sun again, so the satellite transmits visible-light images while over Greenland.

Dr E Duncan of Fife sent me a large format print taken from METEOR 3-4 last August, using his Timestep PROsatll system, as the WXSAT passed over Iceland and Greenland - see Fig. 1. These regions show up extremely well in METEOR images and this particular image shows the detail available. Dr Duncan tells me that he seldom obtained a clear view of Iceland in 1992 because of the cloud cover, and points out that his image shows "the permanent glaciers are predominant features". The detail along the coastline reveals individual icebergs. Around mid March, NOAA 10 was switched off for a few days during its coincident passes with NOAA 12 which uses the same frequency - 137.50MHz. Similarly, NOAA 9 has just stopped transmitting for a few weeks.

I noticed an unusual event on 10 March when NOAA 12 was travelling north at 1945UTC over Britain and switched over, as expected, from visible light to infra-red, as it entered twilight. To my surprise it then switched back to visible light for a minute or two, and again back to infra-red! I haven't seen this happen before; perhaps it was due to some brighter cloud catching the sensors in the twilight, and temporarily triggering a switch back to visible.

METEOSAT 3

I can still hear this geostationary WXSAT from its location at about 75°, though it is only about 4° above my western horizon as seen from Devon. Anyone wanting a transmission schedule should send me an s.a.e. with one extra stamp towards printing costs.

Forthcoming Launches

The latest information on the Russian GOMS geostationary WXSAT indicates a May launch. The next American polar orbiter NOAA 13 has been also been re-scheduled for a late May launch. The operational satellite GOES-7 is now midway over the United States and the next GOES launch is

projected for April 1994 with a second GOES launch one year later.

Other Sats

Other (non-WXSAT) signals heard recently in the 137MHz WXSAT band include MOS-1 and 1B on 136.11MHz, TRANSIT 5BN-5 on 136.65MHz and PROSPERO (X3) on 137.56MHz. If you want to tune in to even more satellites, remember the COSMOS navigation and military satellites that operate in the 150MHz band. You can hear several transmissions on frequencies including 149.91, 149.94, 149.97, 150.00 and 150.03MHz. Try your hand scanner outside - no Kepler elements are needed - just wait for up to twenty minutes!

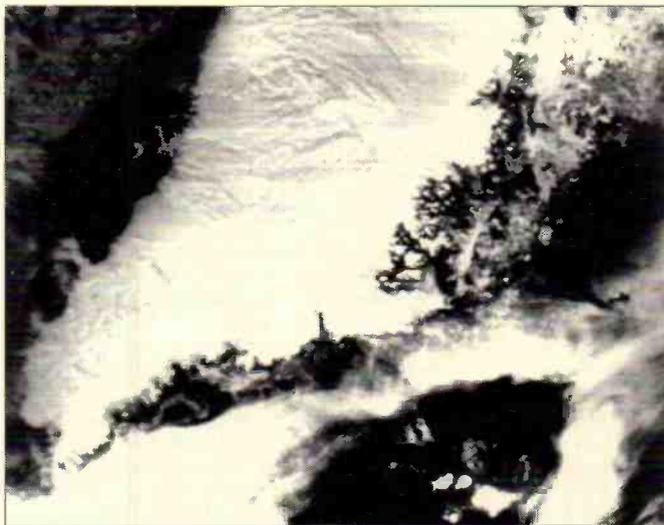


Fig. 1: Iceland; METEOR 3-4 image from Dr E Duncan.

Man, Earth, Space

The European Space Agency (ESA) will have an exceptional display at the Paris Air Show, which takes place between June 10 and 20 this year at Le Bourget airport, on the outskirts of Paris.

In a large pavilion, ESA will be showing the variety of Europe's space programmes on the themes Man, Earth and Space.

Missions in near-earth orbit will be demonstrated to the public in an aquarium where astronauts will manoeuvre around a structure representing the Columbus attached laboratory. Windows will enable public viewing of the activities and there will be simulated space walks.

The aquarium will show the difficulties involved in carrying out

space activities in very low gravity conditions. Subsequently the aquarium will be used for tests for orbital laboratories of the future. There will be full-scale mock-ups of METEOSAT and ERS to illustrate ESA's continuing interests, and illustrations of the future polar platform, now called ENVISAT.

The maiden flight of ARIANE-5 is scheduled for autumn, with ESA's main interests including the exploitation of space; there is to be a 1:10 scale model of the launcher. Other programmes in which ESA is involved include SOHO (solar observations) - launch scheduled for 1995 and ISO (infra-red space observatory) with launch due in 1994, and there will be full-scale mock-ups of both craft.

Computer image decoding systems, such as the Timestep PROsatll and PC GOES/WEFAX system (and others - see elsewhere in this column) can use the synchronising tones associated with WXSAT images to produce a nicely framed image on the screen.

Sometimes, as with PROsatll, there is a facility to delay image capture if you are not going to be present when the satellite passes by. This can result in image capture occurring during a noisy patch while the satellite is still at a low elevation. Noise can fool the software into causing a slight mis-synchronisation of the picture, even if only by a few pixels.

On selecting temperature slice, the software looks for the calibration markers on the side of the image. If these are slightly out, it may not find them, hence the message "temperature calibration not available".

The answer is to either record the image on a suitably adjusted cassette recorder for later playback - this allowing complete control over synchronisation, or try setting a longer delay before image capture starts.

In routine, professional satellite operations, it is normal practice to start commanding only after the satellite has risen by several degrees; this minimises the risk of corrupt signals reaching the satellite's decoders.

'Temperature slices' convert specific bands of temperature into different colours on the monitor. This shows areas of similar temperature in a very dramatic manner, otherwise just slightly different shades of grey. PROsatll lets you define your temperature slice boundaries, and so seasonal changes can be monitored.

Dr Tony Batchelor of Truro used his PC GOES/WEFAX system running on an ALT-386SX computer to capture a picture of the record breaking storm last January, as seen by METEOR 3-3 - Fig. 2. Tony saved the image as a high-resolution GIF file, exported it to Corel Draw on a second computer and had a slide made by a bureau! Two hours after the pass, the storm blew down his turnstile antenna.

Tony is using a narrow band GaAsf.e.t. amplifier at the aerial and a Videolabs wideband amplifier, the combination giving him virtually horizon to horizon cover without having reflectors fitted to his crossed dipoles.

Tony asks about the availability of technical details about

ESA has a major interest in telecommunications, represented by a mock-up of ARTEMIS, a pre-operational geostationary communication satellite, scheduled for launch on the second ARIANE-5 flight, in spring 1996.

Lastly, there will also be some examples of virtual reality computer interactive simulations for public use.

Image Temperatures

Paul Gage of Ashbourne recently asked about circumstances that might stop him producing a 'temperature slice' on his Timestep NOAA images. Any system that captures the whole of a NOAA image for later analysis, will be able to show both the infra-red (thermal) image and the visible light image.

METEOSAT and other WXSATS. Probably the best source for METEOSAT information would be the European Space Agency (ESA). I am currently enquiring about NOAA satellite specifications to assist in article writing; I'll list sources as soon as they are identified.

GMS Primary Data

Steve Rawdon of the Meteorological Office at Wellington Airport, New Zealand, has sent me some high resolution pictures from NOAA WXSATS. He also sent some images received from the geostationary GMS WXSAT, of the south west Pacific ocean - see Fig. 3. This is positioned at about longitude 140°, over New Guinea. I had to check this with my tracking program, never having seen any GMS pictures before! The picture shows the eastern coast of Australia, New Zealand and temperature profile calibrations at the top left.

GMS transmits 28 sets of images per 24-hour cycle. Of those, 24 are hourly observations and the other 4 are half-hourly observations made for the purpose of getting accurate wind-speed readings. Each image set consists of two pictures: one IR and one VIS. The IR images have a resolution of 5km while the VIS images have a resolution of 1.25km. Because of the large size of the VIS images, they are sampled down to a resolution of 5km; i.e., made to match that of the IR resolution.

Shuttle Transmissions

Some months ago I listed the RSGB as providing a re-broadcast transmission from the American shuttle for British listeners. A reader has kindly pointed out to me that this item was in error because the RSGB do not re-broadcast shuttle transmissions. I must apologise for this, but point out that the information was obtained from an American Bulletin Board that is usually reliable.

New Products

A number of readers have requested reviews of WXSAT products. **Michael Smith** of Sherbourne has helpfully suggested a number of points that he would like to see included in such reviews. I am more than ready to provide these. Could I suggest that those wanting to see more

reviews should write to the Editor, who decides what is going to appear in *SWM*? I am happy to receive requests from readers and I will do my best to influence him!

I've spent a pleasant week or two trying out a WXSAT decoding board and software from TH2 Imaging, a Margate company. The system includes hardware on an expansion card which slots into an IBM compatible computer and decodes the signal from your WXSAT receiver. The software caters for all types of WXSAT and I shall be submitting a review shortly. Briefly, the product includes a comprehensive, well written manual, software which is able to collect images either live or in your absence, and show pictures at full satellite resolution. Quick details from TH2 Imaging on (0843)-223831, or watch this space!

Kepler Elements

Hugh R of Great Missenden noticed an error in a batch of elements from me, in which the decay rate of METEOR 3-5 was wrongly printed at 0.00000759 - a high value. In fact the data is extracted from a BBS which regularly includes NASA Kepler data, but occasionally a mistake slips through. I correct these when I notice them.

Ron Harvey of Weston-super-Mare asks how Kepler elements are actually obtained. The usual method of measuring the exact position of a satellite and its direction of motion, is to transmit a radar signal towards it and detect the reflection.

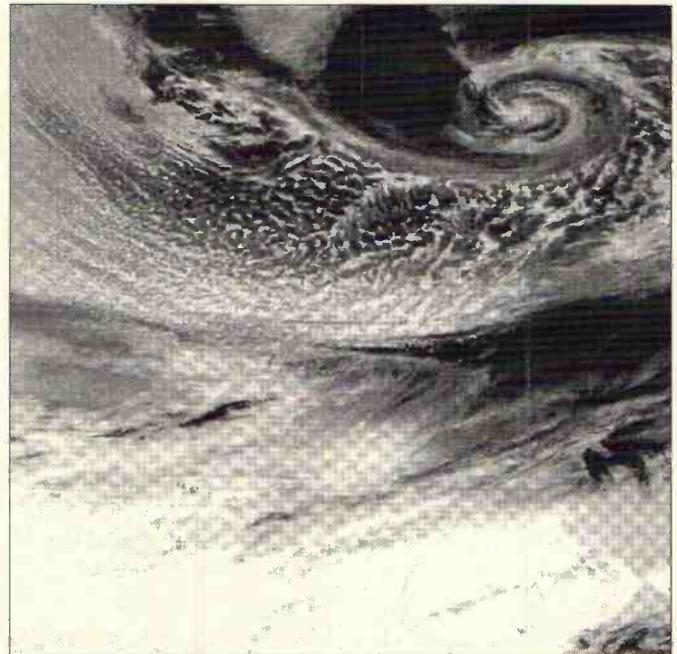


Fig. 2: January's storm; METEOR 3-3 i.r. image from Dr Tony Batchelor

By analysing this, the exact distance of the satellite can be calculated to high precision, and the spread of frequencies that are returned allow its motion to be determined.

Complications arise because of other influences that might be temporarily acting on the satellite. The most common influences are those of the sun and moon. solar activity can dramatically affect the upper atmosphere, near to where many satellites orbit.

Higher orbiting satellites such as

the METEORS and the geostationary craft can also be temporarily affected; if radar measurements are made during this short term change, the resultant Keplers may be slightly different than otherwise. We may then see unusual values for physical parameters such as drag - which is normally caused by the effect of the upper atmosphere on lower altitude satellites. The drag on lower-orbiting OKEAN is much higher than the drag on a METEOR!

If your satellite predictions program seems to be producing large errors, first check the Epoch - the date of the Kepler measurements. If they are more than perhaps five or six weeks old, they could be updated. If recent, check the values carefully.

In the days when I had to type all the elements in by hand, I occasionally made a mistake. Now I extract them from the BBS kindly sent to me by correspondent Paul Wilson of Macclesfield.

I will send a print-out of the latest elements upon receiving an s.a.e. and separate stamp. All known weather satellites are included, together with their transmission frequencies if operating.

Frequencies

NOAAs 9, 11 a.p.t. on 137.62MHz; NOAAs 10, 12 on 137.50MHz; METEORS on 137.30, 137.40 or 137.85MHz; FENGYUN 1-3 monitor 137.06 and 137.80MHz.



Fig. 3: GMS infra-red image of Pacific ocean from Steve Rawdon

Timestep

PROsat II is used by most leading Weather Satellite enthusiasts. Lawrence Harris, Mark Pepper, Roger Ray and Brian Dudman are just a few who have come to rely on the vastly superior features of **PROsat II**. Features such as 1,000 frame full screen full colour animate, 3D, direct temperature readout and Windows export make Timestep products preferred by most users. All satellites are catered for including the awkward Japanese GMS and the very infrequent Soviet Okean series. All current SVGA cards are supported. NOAA images contain full resolution visible and infrared data in a stunning 2.4Mb file!

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Decode

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

Mr E. Dickson of Glasgow writes with a very good question concerning receiver frequency displays. He currently uses a Roberts RC-818 that only shows the frequency with a resolution of 1kHz. However, he notes that stations are often listed with a resolution of 100Hz. He asks if this really makes any difference. The answer really depends on the tuning display resolution of your receiver. If your receiver can only show the frequency to a resolution of 1kHz, then clearly the 100Hz figure becomes largely irrelevant. If, on the other hand, you have a display that shows 100Hz or less, the extra digit can be very useful.

The real value comes if you operate your receiver under some form of computer control. Here you can program the precise frequency and so avoid the need to tune around. This comes into it's own for the advanced listener who does a lot of unattended operation. A typical example would be the FAX enthusiast who wants to catch those late night charts. By combining computer control and precise frequency information you can sleep while your system grabs those rare charts. It's also useful to be able to store the precise frequency in the receiver's own memories.

Next, I have two letters from Amiga users asking for help. **Mr A Cooke** from Grimsby and **Mr G Rowlands** from Colwyn Bay have Amiga A600 and A500 computers respectively. Both would like to be able to decode a range of utility signals, but have been unable to find any suitable software. Unfortunately, I have little to offer as this computer is not well supported. The best I can offer is to suggest they look at using one of the intelligent decoders such as the PK-232, Kantronics KAM, etc. For a cheaper option, the ERA Microreader is a very popular choice. With all of these units, the computer is used mainly as a dumb terminal to display the recovered text. If anyone out there does know of a source of utility software for the Amiga range, please drop me a line with the details.

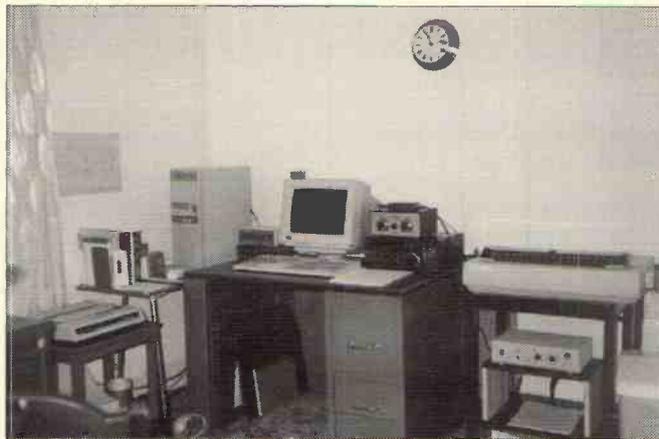
Another plea for help comes from **Mr I. Smith** of Rotherham. He has an Atari 520STE and wants to receive AMTOR, c.w., RTTY and FAX. Fortunately, I can offer some help here. For AMTOR, c.w. and RTTY reception, Grosvenor Software should be able to help. For more information the contact details are: 2 Beacon Close, Seaford, East Sussex BN25 2JZ, Tel: (0323) 893378. For FAX reception the only software I'm

aware of is that produced by Decode reader **Rob Margrave** of Leamington Spa. The only snag being that a Kantronics KPC-2 terminal is required to handle the decoding. As with the Amiga problem, if anyone has any better ideas I'd be pleased to hear from you.

Roger Rowthorn of Southampton is a member of a postal computer club and has written asking for help with decoding hardware and software. As a newly licensed amateur, he is keen to encourage the use of computers with radio. Whilst the Beeb is quite well supported with commercial decoding software such as the excellent Technical Software range, I'm not so sure of the position with public domain material. There used to be an abundance of PD software available but I don't have any up-to-date contacts or product lists. Now I'm sure that there are many listeners using Beeb's that could drop me a line and point me in the right direction. I'd be particularly interested to hear from anyone running a Beeb user group.

Just to finish off the letters section I'd like to mention the World Radio and Television Handbook Equipment Buyers Guide. The title's a bit of a mouthful but the content is excellent. I receive many letters from newcomers asking me to advise them on the building of complete stations. The Equipment Buyers Guide goes a long way to answering many of the new listeners questions. In addition to excellent coverage of all the main receivers, the book deals with a good range of peripheral equipment. This includes such areas as antennas (active and passive), splitters, pre-amplifiers and pre-selectors. There's even a comprehensive section dealing with radio related software.

For most people the main section of interest is receiver reviews. A



The 'radio' side of Bill Clark's shack in Cumbria, the met gear is behind the camera.

wide range of receiver types are covered and the reviews are written in simple language. The accent is always on the points that are directly relevant to the listener rather than a lot of technical hot air!

I would strongly recommend that anyone contemplating buying a new receiver should make sure they read this before parting with their money - it's a sound investment of £15.95. If you would like a copy, it's currently available from the SWM Book Service.

Featured Station

The photo for this month comes from **Bill Clark** of Aspatria in Cumbria. Those who follow the column closely will recall that Bill is an amateur meteorologist and frequently provides answers to readers meteo related questions. As you can see from the photo, Bill runs a very neat station, which is clearly split into radio and meteorological sections. The equipment shown gives Bill access to both h.f. FAX and satellite images and provides much of the raw data for his meteorological activities.

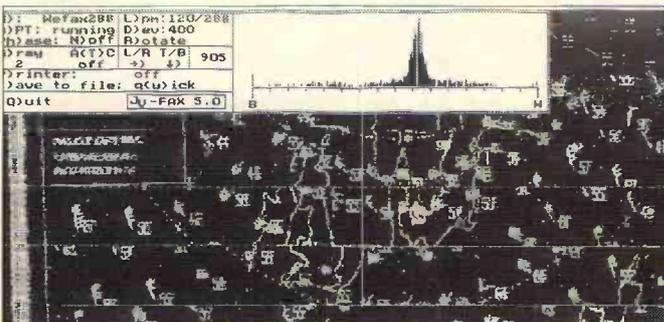
JVFAX

The general computer theme of this month's column is continued with some details of a very effective FAX

package. It's neither shareware or freeware, but is distributed at zero cost via a number of international bulletin board systems. The program has been written for IBM PC compatibles running DOS 3.0 or higher and the review copy was at version 5.0. Like many free distribution products, JVFX is supplied in compressed form using the popular PKZIP format. When uncompressed, the package comprises the program plus configuration file, English and German manuals and a sample 'date file' for unattended reception. The manuals were extremely comprehensive with the English version being some forty-six A4 pages long.

Once the program had been installed on my hard disk, the next stage was sort out the type of interface to be used. There were a number of options ranging from a simple comparator on the serial port to a sophisticated external unit supporting sixty-four grey levels. For most operators, the simple comparator is the first choice. A diagram for this easy to build unit is included with the manual. The circuit used a 741 op-amp and a few resistors and capacitors to make a simple comparator. To keep the connections simple the unit takes its power from the serial port and the whole unit could be housed inside a standard D connector. I would add a word of caution for those that use the simple interface on a slow computer. You may well find that the program hangs on the higher resolution modes. This should only occur on 4.77MHz 8088 and 8MHz 8086 based machines.

The next stage was to set up the configuration file to match your computer's hardware. This was made very easy thanks to the menu driven set-up screen. I was very impressed with the support provided by the program. A wide range of printers and video systems were supported including HP Laserjet printers and the latest local bus



A JVFX-Receive screen, this is an inverted, or negative, image making it look different to the usual charts.

(VESA) SVGA cards. To confirm that all was set correctly, you could run printer and video test routines from within the program.

The reception modes provided by JVFAX were very comprehensive with line rates of 48, 60, 90, 120, 180 and 240 and IOCs from 255 to 576. In addition to conventional h.f. FAX signals, this program could also handle the a.m. polar orbiting satellites. Full Automatic Picture Transmission (APT) facilities were also included so unattended operation could be used. For the licensed amateur, there was even a transmit facility that could be used to send GIF format files.

Once the FAX receive mode has been started you are presented with a blank screen except for a small status box. This indicated all the key receive parameters plus a very effective spectrum analyser display. This showed the dispersion of the signal between full black and pure white. In addition to displaying the received image on the screen or printer, you could also store images on disk. The format used for this was the popular GIF system. Once the image had been stored you could also carry out a wide range of image processing. Included within this was a zoom facility that enabled sections of an image to be enlarged and stored, displayed or printed.

As if all this wasn't enough there was even a SSTV receive only option included.

It's not really possible to do this program justice in the space available here but I hope I've given you a useful insight. Having been impressed with the program I've written to the author asking if I can distribute copies via the column - I'll print an update later. In the meantime my thanks to Ian Maciver for supplying my copy.

XLATE

Something a little different for you this month! **Jack Birse** has been a contributor to the column since its early days and has recently sent me an interesting computer program. Although the program is based around the IBM PC, the programming idea could easily be applied to many other computers. The program has been written for Jack by **Don Ward G0MDO** to help him with the interpretation of foreign language RTTY transmissions.

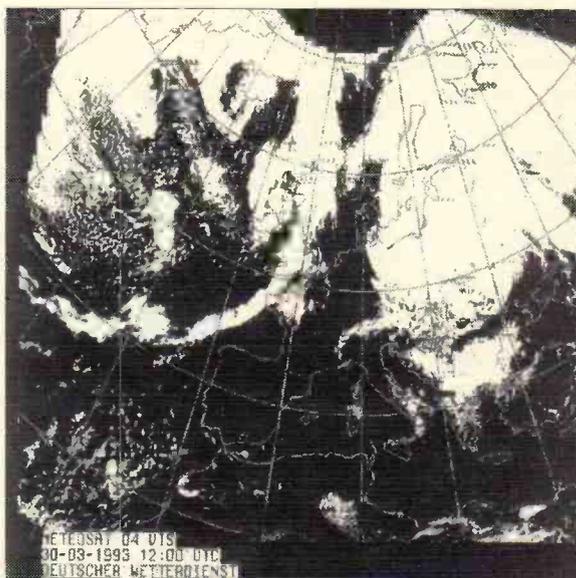
The original intention was to help translate Russian RTTY messages from the Baudot Cyrillic equivalent. For those that are new to foreign language reception, I ought to add a short explanation of the

problem. The standard International Alphabet No 2 (ITA2) provides the look-up table for converting the standard alphabet into RTTY five unit codes. However, if you want to send a message in the Russian language, using the Cyrillic alphabet, there are insufficient codes available. The solution is to increase the number of available codes by adding a third shift character. You will remember that the standard alphabet uses two shifts - letter and figure. When we add the extra shift, the codes become known as the third shift Cyrillic code.

Whilst this is fine as a coding system, it does present a few problems for the vast majority of us who have systems set up to receive the ITA2. In practice, when you tune into a station using a non-standard alphabet such as Third Shift Cyrillic, you get what appears to be garbage printed on the screen. In fact, all the information is there but incorrectly decoded. If you have the patience you can go a long way to decoding the signal manually. To do this you need a form of look-up table that will convert your 'jibberish' into the appropriate Russian word. However, this can be taken a step further and convert direct into the English equivalent of the Russian word. If you want to try your hand at this there are some excellent Arabic examples in the Klingenfuss *Radioteletype Code Manual*.

Having explained (I hope!) the problem I'm sure you can see that this is a situation that's crying out for a computer based solution. That is precisely what Don has done. In his program, a file of received text is compared with a dictionary of translations to produce a translated output file. Anyone who has dabbled in translation will be aware that life is never that simple and words often have multiple meanings depending on the context in which the word is used. This program makes no attempt to tackle this or to correct grammar. However, in practice the program forms a very useful tool that adds another dimension to RTTY listening. One of the great benefits of the program is its flexibility as it can work with any number of translation dictionaries. In fact, Don has written a support program called CYRIL that enables the operator to create and amend dictionary entries.

At present the program is still in the development phase but I'm sure Don would be only too pleased to hear comments from readers. If you would like to comment to Don please direct your letters via me with the appropriate postage. My thanks



Another I.f. FAX picture from George Newport.

to both Jack and Don for this information.

Frequency List

This month's list (below) has been compiled from the following readers logs: **Day Watson, Geoff Crowley** and **Patrick McKeever**. If you would like a copy of either my Decode list or the Day Watson Beginners list, please send three first or second class stamps to the address at the head of the column. It would also be helpful if you could include a return address label and mark your letter BEGINNERS or DECODE.

User Groups

You will no doubt have noticed from the earlier sections of Decode

that I'm frequently asked for sources of radio-related software for a wide range of computer systems. The only problem is I don't have an up-to-date listing of the various user groups and suppliers of public domain software. I think the time is right to correct that situation and put together a new list. Once it's complete, I can then publish it through the column for all to use. So what I need from you is details of any software or hardware systems that may fall into this category. Don't worry if the information seems a little dated as I'll check out the suppliers before they get included in the list. If you can help in any way, please write to the address at the head of the column.

| Frequency | Mode | Speed | Shift | Callsign | Time | Notes |
|-----------|--------|-------|-------|----------|------|----------------------|
| 5.285MHz | FAX | 120 | 576 | RBX71 | 1821 | Tashkent |
| 5.785MHz | FAX | 120 | 576 | - | 2143 | Rota Spain |
| 6.918MHz | AFX | 120 | 576 | ECA7 | 2225 | Madrid Spain |
| 7.497MHz | FAX | 60 | 576 | RDK23 | 2236 | Tbilisi |
| 7.592MHz | RTTY | 50 | 400 | - | 1915 | TANJUG press |
| 7.842MHz | RTTY | 50 | 400 | CNM20X | 1640 | MAP Rabat press |
| 8.146MHz | FAX | 120 | 576 | IMB55 | 2017 | ANSA Rome wx |
| 8.192MHz | RTTY | 75 | 400 | SOI219 | 1950 | PAP Warsaw press |
| 9.382MHz | FAX | 120 | 576 | - | 2058 | Rota Spain |
| 9.395MHz | RTTY | 50 | 400 | HMF84 | 1750 | Pyongyang press |
| 10.199MHz | RTTY | 50 | 400 | HSW62 | 1930 | Bangkok Meteo |
| 10.257MHz | FAX | 120 | 576 | NPM | 1511 | USN Guam |
| 10.278MHz | RTTY | 50 | 400 | YZA9 | 1825 | Belgrad press |
| 10.408MHz | RTTY | 50 | 400 | 9VF63 | 1835 | ANSA Singapore press |
| 10.416MHz | RTTY | 50 | 400 | - | 2045 | MAP Rabat press |
| 11.039MHz | RTTY | 50 | 400 | DDH9 | 1920 | Hamburg met |
| 13.457MHz | RTTY | 75 | - | 4UZ | 1950 | UN Geneva |
| 14.481MHz | ARQ-E3 | 48 | 400 | RFTJ | 0923 | FF Dakar |
| 14.497MHz | RTTY | 50 | 1500 | CSY | 0816 | Santa Maria air |
| 14.578MHz | ARQ-E | 72 | 400 | RFTJ | 0655 | FF Beirut |
| 14.76MHz | RTTY | 50 | 400 | CNM61 | 1400 | MAP Rabat press |
| 14.764MHz | RTTY | 75 | 330 | A9M90 | 1500 | GNA Bahrain |
| 15.705MHz | RTTY | 50 | 400 | YZJ6 | 1700 | TANJUG Press |
| 18.055MHz | RTTY | 75 | - | - | 1555 | Yugoslav Emb. |
| 20.372MHz | RTTY | 50 | 400 | IRS | 1515 | ANSA Rome |

Long Medium & Short

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

Medium Wave Chart

| Freq kHz | Station | Country | Power kW | Listener |
|----------|-----------------------|-------------|----------|--------------------|
| 520 | Hof-Saale | Germany | 0.2 | B* |
| 531 | Ain Beida | Algeria | 600 | B*,N*,P*,U* |
| 531 | Torshavn | Faroe Is. | 5 | F,J |
| 531 | Leipzig | Germany | 100 | B,O*,O* |
| 531 | Djeddo | Spain | 10 | N*,O*,P* |
| 540 | Wavre | Belgium | 150/50 | B,K,O*,P,Q |
| 540 | Solt | Hungary | 2000 | D* |
| 540 | Sidi Bennour | Morocco | 600 | P* |
| 549 | Les Trembles | Algeria | 600 | N*,P*,U* |
| 549 | Bayreuth (DLF) | Germany | 200 | B,D*,K,O*,P,Q |
| 549 | Thurmu | Germany | 200 | I |
| 549 | St. Petersburg | Russia | 1000 | O* |
| 558 | Espoo | Finland | 100 | O* |
| 558 | Rostock | Germany | 20 | N* |
| 558 | Valencia | Spain | 10 | H*,N*,O*,P* |
| 567 | Berlin | Germany | 100 | H*,O* |
| 567 | Tullamore (RTE1) | Ireland (S) | 500 | B,D,H*,K,N,P,Q,S,U |
| 567 | Marbella (RNES) | Spain | 10 | N* |
| 576 | Muhlacker (SDR) | Germany | 50 | B,K,N*,O*,P |
| 576 | Barcelona (RNES) | Spain | 20 | N*,P* |
| 585 | Orf Wien | Austria | 600 | B,I,P* |
| 585 | Paris (FIP) | France | 8 | B,K,O*,P |
| 585 | Madrid (RNE1) | Spain | 200 | B,N*,O*,P*,O*,U* |
| 594 | Frankfurt | Germany | 1000/400 | B,N*,O*,P |
| 594 | Oujda-1 | Morocco | 100 | B*,P* |
| 603 | Lyon | France | 300 | O*,U |
| 603 | Sevilla | Spain | 20 | I*,N* |
| 603 | Newcastle (BBC4) | UK | 2 | O*,S |
| 612 | Kiel | Germany | 10 | B,K |
| 612 | Athlone (RTE2) | Ireland (S) | 100 | B,H*,K,N*,P*,Q,S,U |
| 621 | Lerida | Spain | 10 | N* |
| 621 | Wavre | Belgium | 80 | B,K,N*,O*,P*,Q* |
| 621 | Batra | Egypt | 2000 | B* |
| 621 | Barcelona | Spain | 10 | N*,O* |
| 630 | Vigra | Norway | 100 | I*,O*,P* |
| 630 | Tunis-Djedeida | Tunisia | 600 | N*,O* |
| 639 | Praha (Libice) | Czech Rep | 1500 | U* |
| 639 | La Coruna | Spain | 100 | H*,N*,O*,P* |
| 648 | Palma de Mallorca | Spain | 10 | N*,O* |
| 648 | Orfordness | UK | 500 | H*,K,N,O*,P,Q,S |
| 657 | Burg | Germany | 250 | O*,P* |
| 657 | Madrid (RCE2) | Spain | 20 | N*,O*,P* |
| 657 | Wrexham | UK | 2 | N*,O*,Q*,S |
| 666 | Bodenseesenden | Germany | 300/180 | N*,O*,U |
| 666 | Lisboa | Portugal | 135 | O* |
| 666 | R.Vilnius | Lithuania | 500 | D* |
| 675 | Marseille | France | 600 | N*,O*,P* |
| 684 | Sevilla (RNE1) | Spain | 250 | N*,O*,P*,U* |
| 684 | Beograd | Yugoslavia | 2000 | P* |
| 693 | Berlin | Germany | 250 | O* |
| 693 | Oroitwich (BBC5) | UK | 150 | F*,H,Q,S,U |
| 702 | Aachen/Flensburg | Germany | 5 | B,O*,P* |
| 702 | Zamora | Spain | 5 | N*,P* |
| 711 | Rennes 1 | France | 300 | B,H,P,Q* |
| 711 | Heidelberg | Germany | 5 | O* |
| 711 | Laayoune | Morocco | 600 | B* |
| 711 | Murcia (COPE) | Spain | 5 | P* |
| 720 | Lisnagarvey (BBC4) | Ireland (N) | 10 | I,P* |
| 720 | Norte | Portugal | 100 | O* |
| 720 | Lots Rd London (BBC4) | UK | 0.5 | H,P,S,U |
| 729 | Leipzig | Germany | 5 | O* |
| 729 | Cork (RTE1) | Ireland (S) | 10 | O*,O*,P,W,U |
| 729 | Oviedo | Spain | 50 | H*,N*,O*,P* |
| 738 | Paris | France | 4 | O*,P |
| 738 | Poznan | Poland | 300 | P* |
| 738 | Barcelona (RNE1) | Spain | 250 | N*,O* |
| 747 | Flevo (Hiv2) | Holland | 400 | B,D*,H,N,O*,P,Q* |
| 747 | Cadiz (R.Cadena) | Spain | 10 | O* |
| 756 | Brunswick | Germany | 800/200 | B,D*,P* |
| 756 | Redruth (BBC4) | UK | 2 | O*,P* |
| 765 | Sottens | Switzerland | 500 | N*,O*,P* |
| 774 | Enniskillen (BBC4) | Ireland (N) | 1 | O*,U |
| 774 | San Sebastian | Spain | 60 | N*,O*,P* |
| 783 | Burg | Germany | 1000 | I,O*,P,Q* |
| 783 | Miramar (R.Porto) | Portugal | 100 | O* |
| 792 | Limoges | France | 300 | O*,P |
| 792 | Sevilla | Spain | 20 | I*,P* |
| 792 | Londonderry (BBC) | UK | 1 | D |
| 801 | Munchen-Ismaning | Germany | 300 | O* |
| 801 | RNE-1 | Spain | 20 | N*,P* |
| 810 | Madrid (SER) | Spain | 20 | N*,O*,P* |
| 810 | Burghead | UK | 100 | F* |
| 810 | Westerglen | UK | 100 | N*,O*,P*,Q,S |
| 819 | Batra | Egypt | 450 | P* |
| 819 | Toulouse | France | 50 | O* |
| 819 | Trieste | Italy | 25 | P* |
| 819 | Warsaw | Poland | 300 | O* |
| 828 | Barcelona (SER) | Spain | 20 | P* |
| 837 | Nancy | France | 200 | O*,P,U |
| 837 | Sevilla (R. Popular) | Spain | 10 | O*,P* |
| 846 | Rome | Italy | 540 | N*,O*,P*,Q* |
| 855 | Berlin | Germany | 100 | O*,P*,O* |
| 855 | Murcia | Spain | 125 | N*,O*,P*,U* |
| 864 | Paris | France | 300 | B,O*,P |
| 873 | Frankfurt (AFN) | Germany | 150 | O*,Q* |
| 873 | Zaragoza | Spain | 10 | O*,P* |
| 873 | Enniskillen UK | UK | 1 | I,O*,U |
| 882 | Malaga (COPE) | Spain | 5 | O* |
| 882 | Washford | UK | 100 | F,H,K,N,Q,P,Q,S,U |
| 891 | Algiers | Algeria | 600/300 | B,O*,P*,O* |
| 900 | Milan | Italy | 600 | O*,P* |
| 900 | Bilbao (COPE) | Spain | 10 | N*,O* |
| 909 | Brookmans Pk | UK | 140 | F*,H,N,Q,S,U |
| 918 | Madrid (R. Intercont) | Spain | 20 | F*,O*,P* |
| 918 | R.Ljubljana | Slovenia | 600/100 | O*,P* |
| 927 | Wolvertem | Belgium | 300 | B,N*,O*,Q,U* |
| 927 | Evora (RRE) | Portugal | 1 | O* |
| 936 | Izmir | Turkey | 200 | B* |
| 936 | Bremen | Germany | 100 | B,O* |
| 936 | Venezia | Italy | 20 | P* |

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

| Freq kHz | Station | Country | Power kW | Listener |
|----------|----------------------|--------------|----------|--------------------|
| 936 | Lerida (SER) | Spain | 2 | O* |
| 945 | Toulouse | France | 300 | O*,P* |
| 954 | Brno (Dobrochov) | Czech | 200 | O* |
| 954 | Madrid (RCE) | Spain | 20 | N*,O*,P* |
| 963 | Sofia | Bulgaria | 150 | O* |
| 963 | Pori | Finland | 600 | B,O*,P*,O*,U* |
| 963 | Paris | France | 8 | P |
| 963 | Tir Chonaill | Ireland (S) | 10 | I,P* |
| 972 | Hamburg | Germany | 300 | B,F*,N,O*,P* |
| 981 | Algier | Algeria | 600/300 | B,H*,N*,O*,P* |
| 981 | Megara | Greece | 200 | B* |
| 990 | Berlin | Germany | 300 | O* |
| 990 | Redmoss | UK | 1 | O* |
| 999 | Moyerswerda | Germany | 20 | O* |
| 999 | Torino | Italy | 20 | U* |
| 999 | Madrid (R. Popular) | Spain | 20 | N*,O* |
| 1008 | Flevo (Hiv-5) | Holland | 400 | B,F*,N,O*,P |
| 1017 | Rheinsender | Germany | 600 | B,N*,O*,P*,Q* |
| 1017 | Burgos (RNES) | Spain | 5 | P* |
| 1026 | Graz-Dobl | Austria | 100 | O* |
| 1026 | Reus (SER) | Spain | 10 | I*,N* |
| 1035 | Lisbon (Prog3) | Portugal | 120 | O*,P* |
| 1044 | Dresden | Germany | 250 | B,O* |
| 1044 | Sebaa-Aioun | Morocco | 300 | I* |
| 1044 | San Sebastian | Spain | 10 | O*,P* |
| 1053 | Zaragoza (COPE) | Spain | 10 | N* |
| 1053 | Droitwich (BBC1) | UK | 150 | H,N,Q,S,U |
| 1062 | Kalundborg | Denmark | 250 | B,D,O*,P*,U* |
| 1071 | Brest | France | 20 | N,P |
| 1071 | Lille | France | 40 | B,O* |
| 1071 | Bilbao | Spain | 5 | O* |
| 1080 | Katowice | Poland | 1500 | N*,P* |
| 1080 | Grenada (SER) | Spain | 5 | I*,O*,P* |
| 1089 | Brookmans Pk | UK | 150 | F,H,N,Q,S,U |
| 1098 | Nitra (Jarok) | Slovakia | 1500 | F*,O*,P* |
| 1098 | RNE 5 | Spain | 10 | I*,N* |
| 1098 | Lugo (RNES) | Spain | 10 | O* |
| 1107 | Munich (AFN) | Germany | 40 | O* |
| 1107 | Barcelona (RNES) | Spain | 20 | N*,O* |
| 1116 | Bari | Italy | 150 | P* |
| 1116 | Portavendra (SER) | Spain | 2 | O*,U |
| 1125 | La Louviere | Belgium | 20 | B,K,O*,P |
| 1125 | Castellon, Spain | Spain | 10 | N*,P* |
| 1125 | Vitoria (RNES) | Spain | 10 | O* |
| 1125 | Llandindod Wells | UK | 1 | I |
| 1134 | Zadar | Yugoslavia | 1200 | O*,P*,Q* |
| 1143 | Stuttgart (AFN) | Germany | 10 | I,M*,O*,P*,S |
| 1143 | Messina | Italy | 6 | O*,P* |
| 1152 | Lerida (RNES) | Spain | 10 | I*,N*,O* |
| 1161 | Strasbourg (Fr. Int) | France | 200 | H*,O*,U* |
| 1170 | Krasnodar | Russia | 500 | N*,O* |
| 1170 | Vila Real | Portugal | 10 | O* |
| 1179 | Santiago | Spain | 10 | N*,O* |
| 1179 | Solivesborg | Sweden | 600 | B,H*,O*,P*,Q*,T,U* |
| 1188 | Kuurne | Belgium | 5 | B,O*,P |
| 1188 | Szolnok | Hungary | 135 | O* |
| 1197 | Munich (VOA) | Germany | 300 | O*,O* |
| 1206 | Bordeaux | France | 100 | O* |
| 1206 | Wroclaw | Poland | 200 | P* |
| 1215 | Castellon | Spain | 2 | N*,O* |
| 1215 | Brookmans Pk UK | UK | 125 | J,K |
| 1215 | Droitwich (Virgin) | UK | 105 | R |
| 1215 | Moorside Ed | UK | 250 | A,C*,D,G,S |
| 1215 | Washford (Virgin) | UK | 100 | I |
| 1215 | Westerglen | UK | 100 | V |
| 1224 | Vidin | Bulgaria | 300 | N*,O*,P* |
| 1233 | Liege | Belgium | 5 | O*,P* |
| 1233 | Nitra | Slovakia | 40 | O* |
| 1242 | Marseille | France | 150 | F,N*,O* |
| 1251 | Marcali | Hungary | 500 | O* |
| 1251 | Huisberg | Netherlands | 10 | O*,P |
| 1260 | Valencia | Spain | 20 | N*,O*,P* |
| 1269 | Neuminster | Germany | 600 | B,D*,N*,O*,P*,Q* |
| 1278 | Dublin/Cork (RTE2) | Ireland (S) | 10 | I*,N*,O*,Q,S,U |
| 1287 | Melnik (RFE) | Czech Rep. | 400 | B,N*,O*,P* |
| 1296 | San Sebastian | Spain | 5 | N*,O* |
| 1296 | Orfordness | UK | 500 | O* |
| 1305 | Rzeszow | Poland | 100 | O* |
| 1305 | Drense (RNES) | Spain | 5 | O* |
| 1314 | Kvitsoy | Norway | 1200 | B,F*,N*,O*,P*,Q* |
| 1323 | Leipzig | Germany | 150 | B,O* |
| 1323 | Wachenbrunn | Germany | 1000/150 | U* |
| 1332 | Rome | Italy | 300 | P* |
| 1332 | Elvas | Portugal | 10 | I* |
| 1341 | Lisnagarvey | Ireland (N) | 100 | F*,I,N*,O*,Q,S,U |
| 1350 | Nancy/Nice | France | 100 | N*,O*,P*,Q* |
| 1359 | Berlin | Germany | 250/100 | O* |
| 1359 | Melilla | Morocco | 5 | P* |
| 1368 | Foxdale (Marx R) | IOM | 20 | O*,P,U |
| 1377 | Lille | France | 300 | B,O*,P |
| 1386 | Athens | Greece | 50 | B* |
| 1386 | Kaliningrad | Russia | 500 | N*,O*,P*,Q* |
| 1395 | Lushnje (R.Tirana) | Albania | 1000 | O*,Q* |
| 1404 | Brest | France | 20 | B,N*,O*,P* |
| 1413 | Zaragoza (RCE) | Spain | 20 | I*,N*,O*,P* |
| 1413 | Pristina | Yugoslavia | 1000 | B*,P*,Q* |
| 1422 | Heusweiler | Germany | 1200/600 | B,F*,N*,O*,P*,Q* |
| 1431 | Dresden | Germany | 250 | O* |
| 1440 | Marmach (RTL) | Luxembourg | 1200 | B,F*,N*,O*,P,Q,U |
| 1440 | Damman | Saudi Arabia | 1600 | E*,O*,R* |
| 1448 | Berlin | Germany | 5 | E*,I*,O*,P* |
| 1449 | Redmoss (BBC4) | UK | 2 | E* |
| 1458 | Lushnje (R.Tirana) | Albania | 500 | F*,N* |
| 1458 | Brookmans Pk | UK | 50 | F*,N* |
| 1467 | Esfahan | Iran | 200 | F*,P* |
| 1467 | Monte Carlo | Monaco | 1000/400 | F*,K*,O*,P*,Q* |
| 1476 | Wien-Bisamberg | Austria | 600 | N*,O*,P* |
| 1485 | Augsburg (AFN) | Germany | 1 | E* |
| 1485 | Bournemouth | UK | 2 | N*,P |
| 1494 | Clermont-Ferrand | France | 20 | B,O* |
| 1503 | Stargard | Poland | 300 | K*,O*,P*,U* |
| 1503 | Pamplona | Spain | 2 | I* |

| | | | | |
|------|-------------------|--------------|---------|------------------|
| 1512 | Wolvertem | Belgium | 600 | A*,B,K*,O*,P*,U |
| 1512 | Tallin | Estonia | 300 | I* |
| 1512 | Jeddah | Saudi Arabia | 1000 | B*,I* |
| 1521 | Kosice (Citatica) | Slovakia | 600 | N*,O*,P* |
| 1521 | Duba | Saudi Arabia | 2000 | B*,R* |
| 1530 | Vatican R | Italy | 150/450 | K*,L*,N*,O*,P* |
| 1539 | Mainflingen | Germany | 700 | N*,O*,P*,O*,U* |
| 1539 | Valladolid | Spain | 5 | I*,N*,P* |
| 1557 | Nice | France | 300 | N*,O* |
| 1566 | Sarnen | Switzerland | 300 | L*,O*,P*,U* |
| 1575 | Burg | Germany | 250 | B,N*,O*,P |
| 1575 | Genova | Italy | 50 | P* |
| 1575 | Cordoba | Spain | 5 | P* |
| 1584 | Drense SER | Spain | 5 | B,O*,P* |
| 1593 | Langenberg | Germany | 400/800 | B,F*,N*,O*,P*,Q* |
| 1602 | Vitoria | Spain | 10 | N*,P*,U* |
| 1611 | Vatican R | Italy | 5 | B*,O* |

- Listeners:
A: Tim Allison, Middlesbrough.
B: Ted Barry, N.London
C: Leo Barr, Sunderland.
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, Telgarth, Powys.
J: Francis Heame, Bristol.
K: Sheila Hughes, Morden.
L: Rhoderick Illman, Oxted.
M: Ronald Kilgore, Co.Londonderry
N: T.King, Swindon.
O: Eddie McKeown, Newry.
P: George Millmore, Wootton I.O.W.
Q: Sid Morris, Rowley Regis.
R: Roy Patrick, Derby.
S: Paul Pybus, Hull.
T: Steve Smith, Cwmbran.
U: Tom Smyth, Co.Fermanagh
V: John Stevens, Largs.

To allow for seasonal propagation changes, many international broadcasters altered their transmission times and/or operating frequencies on March 28. Some changed the order of the languages used during their daily broadcasts. Many of them are reflected in the s.w. data herein, but further changes can be expected in May, soon after this issue arrives on the bookstalls.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless stated, logs compiled in the four weeks ending April 3.

In some locations it is not possible to hear the signals from the distant stations that share a particular channel because they are masked by a local transmission. However, unusual circumstances can alter that. A temporary breakdown of the BBC Droitwich 500kHz transmitter on 198kHz enabled Eddie McKeown (Newry) to receive BBC-R4 via Westerglen™, SINPO 55355 at 1825. He also took the opportunity to monitor 252kHz when Atlantic 252 (500/100kW) was 'off the air' for

Long Medium & Short

Local Radio Chart

| Freq kHz | Station | ILR | e.m.r.p (kW) | Listener | Freq kHz | Station | ILR | e.m.r.p (kW) | Listener |
|----------|---------------------|-----|--------------|----------------------|----------|---------------------|-----|--------------|-------------------|
| 558 | Spectrum R | B | 7.50 | E,F,J,L,M,N,Q | 1161 | Viking R(Gt.Yks) | I | 0.35 | N,O |
| 585 | R.Solway | B | 2.00 | F,K,D | 1170 | GNR Teeside | I | 0.32 | O |
| 603 | Invicta SG (Coast) | I | 0.10 | E,G,K*,L,M*,D,Q,Z | 1170 | Portsmouth (SCR) | I | 0.12 | E,L,Q |
| 603 | R.Gloucester | B | 0.10 | F,L | 1170 | R.Orwell (SGR) | I | 0.28 | E,K*,Q |
| 630 | R.Bedfordshire | B | 0.20 | D,E,F,G,J,M,N,O,Q | 1170 | Signal R. | I | 0.20 | C,E,F,J,M |
| 630 | R.Cornwall | B | 2.00 | E,F,L | 1170 | Swansea Sound | I | 0.58 | F,K* |
| 657 | R.Clywd | B | 2.00 | E,F,I,J,K*,L,M,O,P,Q | 1242 | Invicta Snd(Coast) | I | 0.32 | E,F,G,J,K*,Q |
| 657 | R.Cornwall | B | 0.50 | E,L | 1242 | Isle of Wight R. | I | 0.50 | E,F,J,K*,L,P*,Q,Z |
| 666 | DevonAir R | I | 0.34 | E,F,G,J,L,Q,Z | 1251 | Saxon R. (SGR) | I | 0.76 | E,F,J,K*,N,Q |
| 666 | R.York | B | 0.80 | B,E,F,G,J,N,O,Q | 1260 | Brunel R (Cl. Gold) | I | 1.60 | E,F,G,J,K*,L,Q,Z |
| 729 | BBC Essex | B | 0.20 | E,F,G,L,M,N,O,P,Q,Z | 1260 | R.York | B | 0.50 | N,O |
| 738 | Hereford/Worcester | B | 0.037 | E,F,J,L,M,N,Q,Z | 1260 | Sunrise R | I | 0.29 | E,G,J,M,Q |
| 756 | R.Cumbria | B | 1.00 | E,F,I,K | 1260 | Marcher Snd (Gold) | I | 0.64 | E,F |
| 765 | BBC Essex | B | 0.50 | B,E,F,G,J,M*,N,O,Q,Z | 1278 | Bradford (Gt.Yks) | I | 0.43 | E,J,K*,N,O |
| 774 | R.Kent | B | 0.70 | E,G,L,Q | 1305 | Bamsley (Gt.Yks) | I | 0.15 | B,E,F,N,O |
| 774 | R.Leeds | B | 0.50 | N,O | 1305 | Red Dragon (Touch) | I | 0.20 | E,F,K*,L,Q,Z |
| 774 | Gloucester (3CSG) | I | 0.14 | E,F,J,L,M,Z | 1323 | R.Bristol (Som.Snd) | B | 0.63 | E,F,J,Q,Z |
| 792 | Chiltem (S.Gold) | I | 0.27 | E,F,J,L,N,O,Q,Z | 1323 | Brighton (SCR) | I | 0.50 | A,E,F,K*,L,Q |
| 801 | R.Devon | B | 2.00 | E,F,G,J,K,L,Q | 1332 | Hereward R.(W.GMS) | I | 0.60 | B,E,F,J*,K*,N,O,Q |
| 828 | Chiltem (S.Gold) | I | 0.20 | E,F,Q,Z | 1332 | Wiltshire Sound | B | 0.30 | E,F,J,K*,L,Q,Z |
| 828 | R.Aire (Magic828) | I | 0.12 | N,O* | 1359 | Essex R.(BreezeAM) | I | 0.28 | E,Q |
| 828 | R.WM | B | 0.20 | J,M | 1359 | Mercia Snd(Xtra-AM) | I | 0.27 | F,J,M,Q |
| 828 | 2CR (Classic Gold) | I | 0.27 | L,Q | 1359 | Red Dragon (Touch) | I | 0.20 | F |
| 837 | R.Furness | B | 1.00 | F,K* | 1359 | R.Solent | B | 0.85 | F,L |
| 837 | R.Leicester | B | 0.45 | E,F,G,J,L,M,N,O,Q,Z | 1368 | R.Lincolnshire | B | 2.00 | E,N,D,Q |
| 855 | R.Devon | B | 1.00 | L,Q | 1368 | R.Sussex | B | 0.50 | E,G,K*,L,Q |
| 855 | R.Lancashire | B | 1.50 | K | 1368 | Wiltshire Sound | B | 0.10 | E,F,J,K*,L,Z |
| 855 | R.Norfolk | B | 1.50 | E,L,N,D,Q,Z | 1413 | Sunrise R. | I | 0.125 | F,K*,P*,Q |
| 855 | Sunshine R | I | 0.15 | E,F,J,M,Q | 1431 | Essex R.(BreezeAM) | I | 0.35 | E,F,G,I,L,Q |
| 873 | R.Norfolk | B | 0.30 | B,E,F,G,J,L,N,O,Q | 1431 | R.210 (Cl.Gold) | I | 0.14 | E,F,G,L,Q,Z |
| 936 | Brunel R (Cl.Gold) | I | 0.18 | E,F,J,L,M,P*,Q,Z | 1449 | R.Peterboro/Cambs | B | 0.15 | K*,L,N,O,P*,Q |
| 945 | R.Trent (Gem AM) | I | 0.20 | E,F,G,J,K*,L,M,N,O,Q | 1458 | GLR | B | 50.00 | E,F*,L,O,P*,Q |
| 954 | DevonAir (Cl.Gd) | I | 0.32 | E,G,L,Q | 1458 | R.Cumbria | B | 0.50 | I,K |
| 954 | R.Wyvern (WYVN) | I | 0.16 | E,F,J,M,N,Q,Z | 1458 | R.Devon | B | 2.00 | I,L,Q |
| 990 | WABC (Nice & Easy) | I | 0.09 | E,F,J,M,Q,Z | 1458 | R.Newcastle | B | 2.00 | N |
| 990 | R.Devon | B | 1.00 | F,G,L,Q,Z | 1476 | County Sound | I | 0.50 | D,E,F,L,Q |
| 990 | Hallam R.(Gt.Yks) | I | 0.25 | E,N,D,Q | 1485 | R.Humberside | B | 1.00 | N,O |
| 999 | R.Solent | B | 1.00 | E,F,G,L,Q,Z | 1485 | R.Merseyside | B | 1.20 | F,I,J,K,M,P |
| 999 | R.Trent (Gem AM) | I | 0.25 | E,F,J,N,D,Q | 1485 | R.Sussex | B | 1.00 | E*,G,I,L,Q |
| 999 | Red Rose (Gold) | I | 0.30 | F,* | 1503 | R.Stoke-on-Trent | B | 1.00 | E*,F,J,K*,M,N,O,Z |
| 1017 | Beacon R (WABC) | I | 0.70 | E,F,J,L,M,N,O,Q,Z | 1521 | Reigate (Cty Snd) | I | 0.84 | E*,F*,J*,K*,L,Q |
| 1026 | Downtown R | I | 1.70 | F,P | 1530 | Sheffield (Gt.Yks) | I | 0.74 | K*,N,D |
| 1026 | R.Cambridgeshire | B | 0.50 | B,E,F,G,J,N,O,Q,Z | 1530 | R.Essex | B | 0.15 | E,Q |
| 1026 | R.Jersey | B | 1.00 | E,F,G,L,Q,Z | 1530 | R.Wyvern (WYVN) | I | 0.52 | E,F*,J,L,M,Z |
| 1035 | NorthSound R | I | 0.78 | E,N | 1546 | Capital R (Cap G) | I | 97.50 | D,E,F*,L,Q |
| 1035 | R.Kent | B | 0.50 | E,F,G,L,Q,Z | 1548 | R.Bristol | B | 5.00 | F*,K*,L,P,Q |
| 1035 | R.Sheffield | B | 1.00 | N,O | 1548 | R.Forth (Max AM) | I | 2.20 | I,K* |
| 1035 | WestSound R | I | 0.32 | F*,K | 1548 | R.Hallam (Gt.Yks) | I | 0.74 | N,O |
| 1107 | Moray Firth R | I | 1.50 | E,F,K | 1557 | Chiltem R.(Gold) | I | 0.76 | E,F*,J,N,Q,Z |
| 1116 | R.Derby | B | 1.20 | E,F,G,J,K*,M,N,O,Q,Z | 1557 | Southampton (SCR) | I | 0.50 | H*,J*,K*,L |
| 1116 | R.Guernsey | B | 0.50 | E,F,G,L,Q,Z | 1557 | R.Lancashire | B | 0.25 | F,K*,P |
| 1152 | BRMB (Xtra-AM) | I | 3.00 | F,J,M | 1557 | Tendring (Mellow) | I | ? | Q |
| 1152 | Great North (IGNR) | I | 1.80 | O | 1584 | Kettering (KCBC) | I | 0.04 | E,G,Q |
| 1152 | LBC (L.Talkback R) | I | 23.50 | D*,E,G,L,Q | 1584 | R.Nottingham | B | 1.00 | F*,G,K*,N,O,Q |
| 1152 | Piccadilly R(Gold) | I | 1.50 | C | 1584 | R.Shropshire | B | 0.50 | F,J,M |
| 1152 | R.Broadland | I | 0.83 | K*,Q | 1584 | R.Tay | I | 0.21 | F,I,K |
| 1161 | Brunel R (Cl. Gold) | I | 0.16 | E,F,J,L,Q,Z | 1602 | R.Kent | B | 0.25 | E,F*,K*,L,Q |
| 1161 | R.Bedfordshire | B | 1.10 | E,Q | | | | | |
| 1161 | R.Sussex | B | 1.00 | G,L,Q | | | | | |
| 1161 | R.Tay | I | 1.40 | F,I,K | | | | | |

Listeners:

- A: Ted Bardy, N.London.
- B: Vera Brindley, Woodhall Spa.
- C: Martin Dale, Stockport.
- D: John Eaton, Woking.
- E: Gerry Haynes, Bushey Heath.
- F: Gerry Hayes, while in Talgarth, Powys.
- G: Sheila Hughes, Morden.
- H: Rhoderick Illman, Dxted.
- I: Ross Lockley, Stirling.
- J: Patrick McKeever, Birmingham.
- K: Eddie McKeown, Newry.
- L: George Millmore, Wootton, I.O.W.
- M: Sid Morris, Rowley Regis.
- N: Paul Pybus, Hull.
- O: Harry Richards, Barton-on-Humber.
- P: Tom Smyth, Co.Fermanagh.
- Q: John Wells, East Grinstead.
- Z: T.King, Swindon.

Long Wave Chart

| Freq kHz | Station | Country | Power (kW) | Listener |
|----------|----------------|-------------|------------|---------------------------------|
| 153 | Donebach | Germany | 500 | A,B,C,E*,G,H,I,J*,K,L*,M*,N |
| 153 | Brasov | Romania | 1200 | A,C,F*,H*,I |
| 162 | Allouis | France | 2000 | A,B,C,D,E*,F*,G,H,I,J*,K,L*,M,N |
| 171 | Kaliningrad | Russia | 1000 | A,C,F*,G,H,I,J*,K,L*,M*,N |
| 171 | Medi 1-Nador | Morocco | 2000 | E* |
| 177 | Oranienburg | Germany | 750 | A,B,C,F*,H,I,J*,K,L*,N |
| 183 | Saarouis | Germany | 2000 | A,C,D,E*,F*,G,H,I,J*,K,L*,N |
| 198 | BBC Droitwich | UK | 500 | A,D,E,F,G*,H,I,J*,M,N |
| 198 | BBC Westerglen | UK | 50 | C,H |
| 207 | Munich | Germany | 500 | A,C,F*,G,H,I,L*,N |
| 207 | Azilal | Morocco | 800 | E* |
| 216 | RMC Roumoules | S.France | 1400 | A,C,F,H,I,J*,K,L*,N |
| 216 | Oslo | Norway | 200 | C,F*,G,H*,I |
| 225 | Raszyn Resv TX | Poland | ? | A,F*,H*,I,J*,K,L*,N |
| 234 | Beidweiler | Luxembourg | 2000 | A,B*,C*,E*,F*,G,H,I,J*,K,L*,M,N |
| 234 | St.Petersburg | Russia | 1000 | C,H*,L* |
| 243 | Kalundborg | Denmark | 300 | C,F,H*,I,J*,K,L*,N |
| 243 | Erzurum | Turkey | 200 | A |
| 252 | Tipaza | Algeria | 1500 | F*,H*,I,K |
| 252 | Atlantic 252 | S.Ireland | 500 | A,B,C,D,E*,F*,G,H,I,J*,K,L*,M,N |
| 261 | Burg | Germany | 200 | A,B,C,I,K,L*,N |
| 261 | Moscow | Russia | 2000 | C,H*,J*,K*,L* |
| 270 | Topolna | Slovak Rep. | 1500 | A,C,F*,G,H,I,J*,K,L*,N |
| 270 | Orenburg | Russia | 40 | H*,K |
| 279 | Minsk | Belarus | 500 | A,C,H*,J*,K*,L* |

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: Kenneth Buck, Edinburgh.
- D: Martin Dale, Stockport.
- E: John Eaton, Woking.
- F: Sheila Hughes, Morden.
- G: Patrick McKeever, Birmingham.
- H: Eddie McKeown, Newry.
- I: George Millmore, Wootton, IOW.
- J: Sid Morris, Rowley Regis.
- K: Fred Pallant, Storrington.
- L: Harry Richards, Barton-on-Humber.
- M: Tom Smyth, Co.Fermanagh.
- N: Phil Townsend, E.London.

maintenance, but co-channel Tipaza, Algeria (1500/750kW) proved to be barely audible, rating only 15211 at 0057.

Medium Wave Reports

The most often heard transatlantic signals during March came from CJYQ in St.John's, NF on 930; VOAR Mount Pearl, NF on 1210 and R.Globo in Rio, Brazil on 1220, but several others were logged, see chart.

Some signals from stations in N.Africa and the M.East also reached the UK after dark. In Congleton, **Tim Bucknall** heard Islamic type music with singing on 1402kHz at 0114. No ident was obtained, but it may have originated from Iran via Rasht (800kW) on 1404kHz. **Roy Patrick** (Derby) found the signals from Saudi Arabia via Dammam (1600kW) became audible on 1440 when RTL switched off at 2205, rated 24222. At 2300 he logged Duba, Saudi Arabia on 1521 (2000kW). Several stations in N.Africa were heard by **George Millmore** in Wootton, IOW. The reception was good, but some heard previously were inaudible.

Virgin Radio, the first national commercial m.w. station in Britain, carried out engineering tests prior to the launch of the service on April 30. Six high power transmitters at Brookmans Park* (125kW), Droitwich* (105kW), Lisnagarvey (16kW), Moorside Edge* (250kW) Washford (100kW) and Westerglen* (100kW) share 1215kHz. In addition, twenty one low power 'fill-in' transmitters are employed. Those at Brighton (1.1kW), Dartford Tunnel (0.004kW), Fareham (1.3kW), Hull (0.3kW), Plymouth (1.1kW), Postwick (1.2kW), Redmoss (2.3kW), and Wreketon (2.2kW) also share 1215kHz. Those at Cheltenham (1kW), Chesterton Fen (0.2kW), Fern Barrow (0.5kW), Hoo (2kW#), Kings Heath (0.5kW), Oxford (0.5kW), Torbay (1kW), Trowell (1kW) and Wallasey (2kW#) are on 1197kHz. Those at Dundee (1kW), Sheffield (1kW#) and Stockton (1kW) use 1242, but Manningtree (0.5kW#) is on 1224kHz. (* Directional antenna. # Power may be increased)

The introduction of this 24 hour service may pose problems for DXers who search for m.w. transatlantic signals at night, also for those who enjoy logging local radio stations. No doubt Virgin will welcome reports on their transmissions. Send them to Virgin Radio, No.1 Golden Square, London W1R 4DJ.

Whilst checking the local radio scene in E.Grinstead, **John Wells** heard test tones on 756 and 819kHz. A fluttery fade was evident on the latter, similar to that noted on the signal from the late Hereford & Worcester transmitter, so he is wondering if it is being tested for R.Maldwyn or Head of Valleys. The bearing and signal strength were also similar. On 603kHz he heard the station ident 'CD 603'. Any information about them would be welcome.

Short Wave Reports

Although conditions in the 25MHz (11m) band have varied from day to day, R.Australia's early morning broadcast to NE.Africa via Darwin on 25.750 (Eng 0800-0855) has usually been heard here. Under favourable conditions it rated 35333 at 0800 by **Chris Haigh** in Huddersfield.

A deterioration in the reception of UAE R, Abu Dhabi on 25.690 (Ar to Far East 0900-1100) has been observed here. A 24542 rating at 0915 was noted by **David Edwardson** in Wallsend. Still taking advantage of the band are DW via Julich 25.740 (Ger to E.Asia 1100-1355), logged as 15332 at 1115 by **Eric Shaw** in Chester; also RFI via Issoudun 25.820 (Fr to Africa 0900-1540?) as 24222 at 1200 by **Rhoderick Illman** in Dxted.

R.Australia has also been reaching here in the 21MHz (13m) band. The Darwin broadcast to SE.Asia 21.525 (Eng 0200-0800) was logged as 45333 at 0754 in Huddersfield and to S.Asia on 21.725 (Eng 0800-1300) as 54434 at 1035 by **Ronald Kilgore** in Co.Londonderry; Carnarvon to Pacific areas on 21.595 (Eng 0100-0900) as SIO333 at 0830 by **Cyril Kellam** in Sheffield.

Long Medium & Short

Tropical Bands

| Freq MHz | Station | Country | UTC | DXer |
|----------|-----------------------|--------------|------|-------------------------|
| 2.310 | ABC Alice Springs | Australia | 1830 | J,K,M,S |
| 2.325 | ABC Tennant Creek | Australia | 1829 | M |
| 2.485 | ABC Katherine | Australia | 2016 | M,S |
| 3.205 | AIR Lucknow | India | 1544 | K,M |
| 3.220 | R.HCJB Quito | Ecuador | 0430 | D |
| 3.220 | R.Togo, Lome | Togo | 1831 | K,M |
| 3.223 | AIR Simla | India | 1636 | M |
| 3.230 | R.Sol de Los Andes | Peru | 0350 | D |
| 3.240 | TWR | Swaziland | 1808 | K,Q |
| 3.245 | AIR Itangar | India | 1773 | K |
| 3.255 | BBC via Maseru | Lesotho | 2002 | D,K,M |
| 3.265 | RTV Brazzaville | Congo | 2214 | E |
| 3.270 | SWABC 1, Namibia | S.W.Africa | 1902 | D,K,M,S |
| 3.277 | AIR Srinagar | India | 1533 | K |
| 3.280 | R.Beira | Mozambique | 2330 | V |
| 3.300 | R.Cultural | Guatemala | 0913 | D,M,Q |
| 3.315 | AIR Bhopal | India | 1621 | D,K,M,V |
| 3.316 | SLBS Goderich | Sierra Leone | 2045 | K,M,U |
| 3.320 | R.Drion | S.Africa | 1755 | K |
| 3.325 | FRCN Lagos | Nigeria | 1933 | K,M,Q,U |
| 3.330 | R.Kigali | Rwanda | 1801 | K |
| 3.355 | R.Botsswana | Gabaronne | 1828 | D,K,M |
| 3.355 | AIR Kurseong | India | 1528 | K,M |
| 3.365 | R.Rebelle, La Julia | Cuba | 0115 | D,J |
| 3.365 | AIR New Delhi | India | 1640 | K,M |
| 3.365 | GBC R-2 | Ghana | 2100 | F,K,M,P,Q,R,S,U,V |
| 3.380 | R.Malawi | Malawi | 1810 | K |
| 3.385 | RFD Cayenne | Guiana | 0415 | D |
| 3.905 | AIR Delhi | India | 1544 | K,M |
| 3.905 | RRI Merak | Indonesia | 2310 | K |
| 3.915 | BBC Krangi | Singapore | 1600 | K,M,R,U |
| 3.940 | PBS Hubei Wuhan | China | 2153 | K,M |
| 3.945 | AIR Gorakhpur | India | 1532 | K |
| 3.945 | NSB Tokyo | Japan | 1646 | M |
| 3.950 | Qinghai PBS, Xining | China | 2331 | K |
| 3.955 | BBC Skelton | England | 2005 | D,E,M,Q,R,U,V,Y |
| 3.960 | Xinjiang PBS, Urumqi | China | 0055 | D |
| 3.960 | RFE/RL Munich | N.Germany | 2245 | D,M,V |
| 3.965 | RRI Paris | France | 1710 | D,J,M,N,Q,R,U,V,Y |
| 3.970 | RFE Munich | Germany | 1915 | M,Q,Q,V |
| 3.975 | BBC Skelton | England | 1925 | D,M,Q,V |
| 3.980 | VOA Munich | Germany | 1930 | D,G,J,M,N,Q,R,V,Y |
| 3.985 | China R via SRI Berne | Switzerland | 2200 | M,N,R,U |
| 3.985 | SRI Beromunster | Switzerland | 1840 | J,M,N,Q,U,V,Y |
| 3.990 | Xinjiang BS, Urumqi | China | 2156 | M,U |
| 3.995 | DW via Julich | Germany | 2010 | D,E,G,M,Q,R,U,V |
| 4.005 | RRI Padang | Indonesia | 2337 | K |
| 4.081 | Ulan Bator 1 | Mongolia | 2358 | K |
| 4.130 | V of the Strait 1 | China | 1615 | M |
| 4.190 | CPBS Minority Soc | China | 2212 | M |
| 4.220 | Xinjiang PBS, Urumqi | China | 2351 | K,M |
| 4.500 | Xinjiang BS, Urumqi | China | 1801 | G,I,M,R |
| 4.600 | R.Baghdad | Iraq | 2200 | Q,T |
| 4.735 | Xinjiang | China | 2320 | D,M,Q,R |
| 4.740 | R.Afghanistan, Kabul | Afghanistan | 1851 | M |
| 4.755 | R.Educ CP Grande | Brazil | 0110 | D,H |
| 4.755 | R.Maranhao | Brazil | 0118 | M |
| 4.755 | RRI Ujungpandang | Indonesia | 2110 | K |
| 4.760 | Yunnan PBS, Kunming | China | 2214 | M,V |
| 4.780 | AIR Port Blair | India | 1612 | M |
| 4.785 | Brazzaville | Congo | 2020 | R,V |
| 4.770 | FRCN Kaduna | Nigeria | 1909 | D,F,J,K,M,N,Q,S,V,W |
| 4.775 | R.Gabon, Libreville | Gabon | 1843 | M |
| 4.780 | RTD | Djibouti | 1839 | M,S |
| 4.785 | RTM Bamako | Mali | 2326 | K |
| 4.785 | R.Tanzania | Tanzania | 1942 | M |
| 4.790 | AIR Shillong | India | 1606 | D,M |
| 4.790 | Azad Kashmir R. | Pakistan | 1544 | K,M,S |
| 4.790 | TWR Manziri | Swaziland | 1802 | S |
| 4.795 | R.Douala | Cameroon | 1335 | Q |
| 4.800 | PBS Xinjiang | China | 1805 | M |
| 4.800 | R.Buenas Nuevas | Guatemala | 0300 | L |
| 4.800 | AIR Hyderabad | India | 1604 | K,M |
| 4.800 | LNBS Lesotho | Maseru | 1756 | M,S |
| 4.805 | R.Nac Amazonas | Brazil | 0135 | D,H,M,Q,U,V |
| 4.810 | R.San Martin Tara | Peru | 0300 | M |
| 4.810 | R.Sud-Africa | So Africa | 2337 | C,H,K,M |
| 4.815 | China R, Beijing | China | 1550 | M |
| 4.815 | R.diff TV Burkina | Duagadougou | 2012 | M,S |
| 4.820 | La Voz Evangelica | Honduras | 0450 | D |
| 4.830 | Baborone | Botswana | 1937 | D,E,K,M,Q,S |
| 4.830 | R.Tachira | Venezuela | 2300 | D,G,H,M,R,T,U |
| 4.832 | R.Relo | Costa Rica | 0500 | I,J,L |
| 4.835 | ABC-Alice Springs | Australia | 2137 | K |
| 4.835 | R.Tezulutlan, Coban | Guatemala | 0028 | L,M,Q |
| 4.835 | RTM Bamako | Mali | 2020 | B,E,J,K,M,N,P,Q,R,S,U,V |
| 4.845 | R.Cabocla, Manaus | Brazil | 0257 | M |
| 4.885 | R.Kek'chi, Fray Bme | Guatemala | 0235 | L |
| 4.885 | ORTM Nouakchott | Mauritania | 2026 | A,D,E,H,J,K,M,P,Q,R,S,V |
| 4.850 | R.Yaounde | Cameroon | 2051 | D,K,M,Q,R,V |
| 4.850 | AIR Kohima | India | 2108 | M |
| 4.860 | AIR New Delhi | India | 1603 | K,M,S |
| 4.865 | PBS Lanzhou | China | 2317 | G,Q |
| 4.865 | Caracol | Colombia | 0615 | N |
| 4.865 | L.V. del Cinaruco | Colombia | 0024 | D,G,H,I,J,M,Q,R |
| 4.870 | R.Cotonou | Benin | 1950 | E,F,K,M,Q,R,S,V |
| 4.885 | R.Clube do Para | Brazil | 0100 | D,H,M |
| 4.885 | R.Difusora Acreana | Brazil | 0245 | Q |
| 4.885 | China R, Beijing | China | 1648 | N |
| 4.885 | Voice of Kenya | Kenya | 1809 | S |
| 4.890 | RRI Paris | via Gabon | 0404 | D,Q,Q |
| 4.895 | R.Bara, Manaus | Brazil | 0252 | M |
| 4.895 | Voz del Rio Arauca | Colombia | 0033 | D,M,Q |
| 4.895 | AIR Kurseong | India | 1600 | M |
| 4.900 | V. of the Strait 2 | China | 2201 | E,K,M,R |
| 4.905 | R.Nat.N'djamena | Chad | 2025 | D,J,K,M,Q,R,S |
| 4.905 | CPBS 1, Beijing | China | 2300 | K |
| 4.910 | V. de la Mosquitia | Honduras | 2322 | Q |
| 4.910 | AIR Delhi | India | 0100 | H,M |

| Freq MHz | Station | Country | UTC | DXer |
|----------|-----------------------|-----------|------|-------------------------|
| 4.910 | R.Zambia, Lusaka | Zambia | 2130 | M,S |
| 4.915 | R.Anhanguera | Brazil | 0040 | P |
| 4.915 | R.Nac.Macapa | Brazil | 2310 | H |
| 4.915 | Armonias del Caqueta | Colombia | 0257 | Q |
| 4.915 | GBC-1, Accra | Ghana | 2132 | C,E,J,K,M,N,Q,R,S,T,V |
| 4.915 | Voice of Kenya | Kenya | 1805 | M,S |
| 4.920 | ABC Brisbane | Australia | 2006 | M,S |
| 4.920 | AIR Madras | India | 1555 | K |
| 4.925 | R.Nacional, Bata | Eq Guinea | 1953 | M |
| 4.935 | R.Capixaba | Brazil | 0258 | Q |
| 4.935 | Voice of Kenya | Kenya | 2033 | K,M,Q,R,S |
| 4.955 | R.Marajara, Belem | Brazil | 0100 | D,K,M,Q,S |
| 4.960 | AIR New Delhi | India | 0155 | D,M |
| 4.960 | R. La Merced | Peru | 0245 | D,M |
| 4.970 | PBS Xinjiang | China | 1553 | M |
| 4.970 | R.Rumbos, Caracas | Venezuela | 0100 | D,L,M,T |
| 4.975 | R.Uganda, Kampala | Uganda | 2031 | K,M,Q,S |
| 4.980 | PBS Xinjiang | China | 0015 | D |
| 4.980 | Ecos del Torbes | Venezuela | 2315 | A,D,E,H,L,M,P,Q |
| 4.985 | R.Brazil Central | Brazil | 2320 | D,H,M |
| 4.990 | AIR via Madras | India | 0000 | G,Q,T |
| 4.990 | FRCN Lagos | Nigeria | 2105 | D,K,M,Q,R,S |
| 4.990 | R.Ancash, Huaraz | Peru | 0027 | G |
| 5.005 | R.Nepal, Kathmandu | Nepal | 1550 | K,M |
| 5.010 | R.Garoua | Cameroon | 2050 | D,E,K,M,Q,R,S |
| 5.010 | SBC Singapore | Singapore | 2330 | H,K |
| 5.015 | R.Brazil Tropical | Brazil | 0241 | M |
| 5.020 | PBS-Jiangxi Nanchang | China | 2336 | K |
| 5.020 | ORTN Niamey | Niger | 2012 | K,Q |
| 5.020 | R.Nacional, Caracas | Venezuela | 0237 | M |
| 5.025 | R.Parakou | Benin | 2103 | K,M,N,Q,R,S |
| 5.025 | R.Rebelle, Habana | Cuba | 0010 | D,H,L,M |
| 5.025 | R.Uganda, Kampala | Uganda | 1907 | K,M |
| 5.030 | R.Catolica, Quito | Ecuador | 0155 | D,M |
| 5.035 | R.Aparecida | Brazil | 0273 | M |
| 5.035 | R.Bangui | C.Africa | 2123 | K,M,S |
| 5.045 | R.Cultura do Para | Brazil | 0039 | D,G,M |
| 5.047 | R.Togo, Lome | Togo | 2037 | B,E,G,J,K,M,P,S,V |
| 5.050 | Voz de Yopal, Yopal | Colombia | 0200 | D,M |
| 5.050 | AIR Alizawal | India | 1547 | M |
| 5.050 | SBC Singapore | Singapore | 2055 | K,S |
| 5.050 | R.Tanzania | Tanzania | 1840 | K,M,S |
| 5.052 | SBC R-1 | Singapore | 1533 | M |
| 5.055 | RFD Cayenne(Matoury) | Fr Guiana | 2339 | A,D,J,K,Q |
| 5.060 | PBS Xinjiang | China | 0043 | D,M,Q |
| 5.065 | R.Candip, Bunia | Zaire | 1740 | S |
| 5.075 | Caracol Bogota | Colombia | 2330 | A,D,H,J,M,N,P,Q,R,T,V,X |
| 5.090 | Taiwan 2 Soc, Beijing | China | 1605 | M |
| 5.420 | PBS Minority Soc | China | 2205 | M |
| 5.440 | Xinjiang PBS, Urumqi | China | 1533 | M |
| 5.800 | Xinjiang BS, Urumqi | China | 1540 | M |

- DXers:
A: Charles Beanland, Gibraltar.
B: Vera Brindley, Woodhall Spa.
C: Bill Clark, Rotherham.
D: Robert Connolly, Kilkeel.
E: Geoff Crowley, Iceland.
F: Ron Damp, Worthing.
G: John Eaton, Woking.
H: Chris Edwards, Inverurie.
I: David Edwardson, WallSEND.
J: Ron Galliers, N.London.
K: P. Gordon Smith, Kingston, Moray.
L: Bill Griffin, while in Texas, USA.
M: Gerry Haynes, Bushey Heath.
N: Sheila Hughes, Morden.
O: T. King, Swindon.
P: Ross Lockley, Stirling.
Q: Eddie McKeown, Newry.
R: Sid Morris, Rowley Regis.
S: Fred Patton, Storrington.
T: Roy Patrick, Derby.
U: Peter Pollard, Rugby.
V: Harry Richards, Barton-on-Humber.
W: Eric Shaw, Chester.
X: Chris Shorten, Norwich.
Y: Phil Townsend, E.London.

1600-1640) 33333 at 1605 by **Peter Pollard** in Rugby; R.Kuwait via Kabd 21.675 (Ar 1315-1800) SIO434 at 1620 by **Cliff Stapleton** in Torquay.

Later, WYFR via Okeechobee 21.500 (Eng to Eu, Africa 1700-1900) was 45544 at 1801 by **Geoff Crowley** in Hafnarfjordur, Iceland and SIO444 at 1825 by **John Coulter** in Winchester; R.Nederland via Bonaire 21.590 (Eng to Africa 1730-2025) SIO554 at 1815 by **Sid Morris** in Rowley Regis; WCSN, Scotts Corner 21.640 (Eng to N/E.Africa 1600-1955) 44333 at 1850 by **Gerry Haynes** in Bushey Heath; HCJB Quito 21.480 (Eng to Eu 1900-2000) 44544 at 1900 by **Ross Lockley** in Stirling; WYFR via Okeechobee 21.615 (Eng to Eu, Africa 1900-2000) SIO333 at 1930 by **Bill Clark** in Rotherham; also 21.525 (Eng to Eu, Africa 2000-2300) 45554 at 2040 by **John Parry** in Northwich.

Some of the **17MHz (16m)** signals in the morning stem from the BBC via Masirah Is 17.790 (Eng to Asia 0600-0815) 43333 at 0722 by **Ron Galliers** in Islington; R.Moscow Int 17.880 (Eng WS 0800?-0900) SIO444 at 0830 by **Francis Hearne** in N.Bristol; VOA via Wertachtal? 17.770 (Eng to M.East, N.Africa 0800-1000) SIO455 at 0835 in Edinburgh; KHBI, N.Mariana Is 17.555 (Eng to NE.Asia 0800-1155) 24222 at 1000 by **Sheila Hughes** in Morden; R.Moscow Int 17.645 (Eng WS 1000-1200?) 23222 at 1020 by **Leo Barr** in Sunderland; SRI via Schwarzenburg? 17.670 (Eng, Fr, Ger, It to Australia, SE.Asia, Far East 1100-1245) 24242 at 1100 in Middlesbrough; RTV Tunisia via Sfax 17.500 (Ar[Home Service]0700-1600?) 33333 at 1110 in Kilkeel; R.Pakistan, Islamabad 17.900 (Eng to Eu 1100-1120) 33223 at 1115 by **Garry Currahin** Peterborough; Voice of Israel, Jerusalem 17.545 (Eng, Fr, Heb to USA, W.Eu 1000-1255) 45434 at 1120 in Woking; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) 35534 at 1130 by **Ron Damp** in Worthing; HCJB Quito 17.490 (u.s.b. + p.c.) SIO444 at 1156 in Winchester; R.Portugal Int, Lisbon 17.900 (Port to Africa 1000?-1203) SIO545 at 1158 in Macclesfield.

In the afternoon, R.Nederland via Flevo 17.610 (Eng to S.Asia 1330-1630?) 55444 at 1440 in Norwich; WCSN, Scotts Corner 17.510 (Eng to Eu 1400-1555) SIO322 at 1500 by **Tom Smyth** in Co.Fermanagh; RTM via Tangier 17.595 (Fr, Eng to N.Africa, M.East 1400-1700) 53433 at 1503 in Bushey Heath; Vatican R, Italy 17.865 (In to India 1445-1600 [Musical ident 1545]) 32233 at 1548 in Woodhall Spa; also 17.730 (Et, Fr to E.Africa 1600-1730) SIO434 at 1635 in Torquay.

In the evening, Channel Africa, Johannesburg 17.710 (Eng to Africa 1600-1800?) was 43433 at 1723 in WallSEND; R.Japan via Ekala 17.775 (Eng to Eu, M.East, N.Africa 1700-1800) 43433 at 1737 in Newry; HCJB Quito 17.790 (Eng to Eu 1900-2000) SIO411 at 1900 by **Michael Griffin** in Ross-on-

Also noted in the morning were R.Japan via Moyabi 21.575 (Eng, Jap to Eu, M.East, Africa 0700-0900) 34343 at 0700 by **Chris Shorten** in Norwich; also 21.640 (Jap to Eu, M.East, Africa 0800-0900) 35553 at 0815 in WallSEND; BBC via Ascension Is 21.660 (Eng to Africa 0730-1745) 23343 at 1015 in Chester; UAE R.Dubai 21.605 (Eng to Eu 1030-1055) SIO444 at 1040 by **Philip Rambaut** in Macclesfield; SRI via Schwarzenburg? 21.820 (Eng, Fr, Ger, It to Australia, SE.Asia, Far East 1100-1245) 35343 at 1100 by **Tim Allison** in Middlesbrough.

After mid-day, HCJB, Ecuador 21.455 (world-wide u.s.b. + p.c.) was SIO344 at 1240 by **Kenneth Buck** in Edinburgh; BSKSA, Saudi Arabia 21.505 (Ar [Home Service] 1100-1702) 44444 at 1250 by **Robert Connolly** in Kilkeel; UAE R.Dubai 21.605 (Eng to Eu 1330-1400) 54554 at 1350 by **Darren Beasley** in Bridgwater; R.Portugal Int via Sines 21.515 (Eng to M.East 1430-1500) 31422 at 1437 in Newry; RFI via Issoudun 21.685 (Fr to Africa 1000-1500) SIO222 at 1445 by **Phil Townsend** in E.London; RCI via Sackville 21.545 (Russ to Eu 1500-1800?) 44344 at 1516 by **Vera Brindley** in Woodhall Spa; SRI via Schwarzenburg 21.820 (Eng to C/SE.Asia 1500-1530) 45334 at 1513 by **John Eaton** in Woking; UAE R.Dubai 21.605 (Eng to Eu

Long Medium & Short

Wye; R.Netherlands via Bonaire 17.605 (Eng to W.Africa [u.s.b.+ p.c.] 1930-2025?) SIO434 at 1940 in Rowley Regis; DW via Antigua 17.810 (Ger to Africa 2000-2200) 25343 at 2135 in Chester; R.New Zealand via Rangataiki 17.770 (Eng to Pacific areas 2138-0658) was 35543 at 2139 in Stirling and 23333 at 2152 in Hafnarfjordur.

The **15MHz (19m)** band has much to offer throughout the day. In the morning AIR via Aligarh 15.050 (Eng to Australia, NZ 1000-1100) was SIO212 at 1030 in Macclesfield; Voice of Greece, Athens 15.650 (Gr, Eng to Japan 1000-1050) 44444 at 1040 in Morden; R.Australia via Darwin 15.170 (Eng, Chin to Asia 0900-1400) 22322 at 1130 in Newry; SRI via Sottens? 15.505 (Eng to Australia, SE.Asia, Far East 1100-1245) 44444 at 1120 by **Peter Polson** in St.Andrews.

In the afternoon, R.Romania Int, Bucharest 15.365 (Eng to Europe 1300-1400) 34433 at 1345 in Peterborough; R.Finland via Pori 15.400 (Fin, Eng, Sw to USA 1100-1355) 44333 at 1347 in Oxted; Voice of Vietnam, Hanoi 15.010 (Eng to Far East 1330-1400) 35534 at 1339 by **Darran Taplin** in Brenchley; BBC via Masirah Is 15.310 (Eng to M.East, Asia 0900-1515) 35553 at 1400 in Northwich; Voice of Israel, Jerusalem 15.640 (Yem, Russ, Eng E.Europe, USA 1330-?) SIO444 at 1400 in Co.Fermanagh; China R.Int 15.165 (Eng to S.Asia 1400-1557) 53343 at 1405 in Norwich; BBC via Limassol 15.575 (Eng to M.East, N.Africa 0900-1500) 25332 at 1445 in Chester; VOIRI via Kamalabad 15.084 (Per to Asia 1430-1630) SIO434 at 1515 in Torquay; Voice of Greece via Kavala? 15.630 (Gr, Eng to USA, N.Europe 1500-1550) 44344 at 1533 in Woodhall Spa; DW via Cyclops 15.105 (Eng to S.Asia 1600-1650) 44444 at 1635 in Huddersfield; SRI via Schwarzenburg 15.430 (Eng to C.Asia, M.East, E.Africa 1700-1730) 32333 at 1700 in Worthing; BBC via Meyerton 15.420 (Eng to E.Africa 1700-1900) SIO455 at 1730 in Edinburgh.

Later, RNB Brasilia, Brazil 15.265 (Eng, Ger to Eu 1800-2100) was SIO434 at 1800 in Sheffield; VOA via Tangier 15.205 (Eng to Europe, N.Africa, M.East 1700-2200) 33423 at 1809 in Sunderland; RFI via Issoudun 15.300 (Fr to Africa 0600-2200) 33433 at 1815 in Woking; WSHB, Cypress Creek 15.665 (Eng to E.U.S.A, Eu 1800-1955) SIO343 at 1820 in Rowley Regis; Voice of Vietnam, Hanoi 15.010 (Eng to Eu 1800-1830, 1900-1930) 34443 at 1900 in Stirling; BBC via Woodferton 15.070 (Eng to Africa 0700-2030) 43444 at 1913 by **Charles Beanland**, Gibraltar; WWCR, Nashville 15.685 (Eng to Eu, USA 1000-0000) 45433 at 1945 in Bridgwater; BBC via Ascension Is 15.260 (Eng to S.Am 2000-0330) 33333 at 2002 by **Ken Milne** in Basingstoke; WINB, Red Lion 15.295 (Eng to Eu, N.Africa 1900-2100) 32232 at 2040 in

Islington; R.Havana, Cuba 15.165 (Eng to Eu, N.Africa 2100-2200?) SIO343 at 2100 in Ross-on-Wye; RAE, Argentina 15.345 (Ar, Eng, It, Fr, Ger, Sp to Eu 1700-0100) 24542 at 2305 in Wallsend; KTBN, Salt Lake City 15.590 (Eng to E.U.S.A 1600-0200) 44444 at 2315 in Hafnarfjordur.

Two of R.Australia's **13MHz (22m)** Carnarvon broadcasts have been heard here: 13.605 to SE.Asia (Eng, Chin 1100-1430) was SIO323 at 1130 in Macclesfield; 13.775 to Asia (Eng 1430-1800) was 54444 at 1510 by **Harry Richards** in Barton-on-Humber. Both were logged in Hafnarfjordur as 55555 at 1231 and 44434 at 1544 respectively.

Other occupants of this band are WSHB, Cypress Creek 13.615 (Eng to Oceania 0800-0955) 45344 at 0900 in Bridgwater; UAE R.Dubai 13.675 (Eng to Eu 1030-1100) 22332 at 1040 in Worthing; SRI via Sottens? 13.635 (Eng, Fr, Ger, It to Aust 1100-1245, also to SE.Asia, Far East 1100-1445) 35443 at 1100 in Middlesbrough and 45454 at 1300 in Chester; R.Austria Int via Moosbrunn 13.730 (Ger, Eng, Fr, Sp to Eu 0400-1800) 44433 at 1230 in Basingstoke; Croatian R via Deanovec 13.830 (Eng to Eu 1303-1313) SIO333 at 1303 in Rotherham; R.Pyongyang, Korea 9.345 (Eng to Eu 1300-1350) 15441 at 1330 in Chester; WYFR via Okeechobee 13.695 (Eng to USA 1300-1400) 33332 at 1359 in Oxted; DW via Julich? 13.610 (Eng to E/C.Africa 1500-1550) 55555 at 1500 in Norwich; SRI via Sottens 13.635 (Eng to C/SE.Asia 1500-1530) SIO333 at 1500 in Co.Fermanagh; VOA via Selebi-Phikwe 13.710 (Eng to Africa 1600-2200) 23222 at 1542 in Peterborough; WHRI, South Bend 13.760 (Eng to Eu 1700-0000) 54333 at 1822 in Bushey Heath; R.Kuwait via Kabd 13.620 (Eng to Eu, USA 1800-2100) 33333 at 1929 in Woodhall Spa; SRI via Sottens? 13.635 (Eng to Africa 2000-2030) 22222 at 2005 in Rugby.

In the **11MHz (25m)** band R.Netherlands via Bonaire 11.895 (Eng to Pacific areas, Far East 0730-1025) rated SIO444 at 0830 in N.Bristol; R.Australia via Shepparton 11.855 (Eng to SE.Asia 1300-1630) 32433 at 1340 in Bridgwater; Wings of Hope, Lebanon 11.530 (Ar, Eng, Russ 0500-2200) SIO333 at 1350 in Rotherham; R.Romania Int, Bucharest 11.940 (Eng to Eu 1300-1400) 44444 at 1355 in Brenchley; Voice of the Mediterranean, Malta 11.925 (Eng, Ar to N.Africa 1400-1600) 33333 at 1430 in Chester and 33443 at 1450 in Hafnarfjordur; R.Romania Int, Bucharest 11.810 (Eng to Asia 1430-1530) SIO322 at 1435 by **T. King** in Swindon; FEBC, Philippines 11.995 (Eng to India, SE.Asia 1400?-1600) 33333 at 1545 in St.Andrews; AIR via Bangalore? 11.620 (Eng, Hi to Eu 1745-2230) 53433 at 1632 in Bushey Heath.

Later, the BBC via Kranji 11.955 (Eng to SE.Asia, Aust, NZ 1800-0015) was 32333 at 1906 in Islington;

R.Damascus, Syria 12.085 (Eng to Eu/ USA 2008-2108) SIO222 at 2008 in Co.Fermanagh; R.Sofia, Bulgaria 11.710 (Eng to Europe, USA 2200-?) 43333 at 2224 by **Robin Harvey** in Bourne; SRI via Moyabi, Gabon 12.035 (Eng to S.Am 2200-2230) SIO233 at 2229 by **Michael Williams** in Redhill; R.Anhanguera, Brazil 11.830 (Port 0800-0300) 34443 at 2253 in Woking; Voice of Turkey, Ankara 11.895 (Eng, Tur to Eu 2300-0300) 32333 at 2305 in Rugby; R.Australia via Carnarvon 11.855 (Eng to Indonesia 2100-0000) SIO343 at 2340 in Ross-on-Wye; BBC via Ascension Is 11.750 (Eng to S.Am 2200-0330) SIO222 at 0132 by **Julian Wood** in Elgin.

R.New Zealand's **9MHz (31m)** broadcast to Pacific areas from Rangataiki, N.Island on 9.700 (Eng 0700-1200) was logged as SIO434 at 0830 in Sheffield and SIO322 at 1050 in Rotherham. In contrast, R.Australia's signals to Pacific areas on 9.580 via Shepparton (Eng 0800-2200) was only SIO111 at 0835 in Macclesfield. Later, their broadcast to Asia via Carnarvon on 9.560 (Eng 1430-1800) was 42333 at 1609 in Oxted and 44334 at 1700 in Woking. In Hafnarfjordur it peaked 23433 at 1457.

Some of the 31m broadcasts to areas outside Europe stem from WSHB, Cypress Creek 9.840 (Eng to N/C/S.Am 0600-0800) rated 22232 at 0738 in Islington; R.Netherlands via Bonaire 9.630 (Eng to Pacific areas 0730-0825) SIO433 at 0815 in N.Bristol; AIR via Delhi? 9.950 (Eng to N.Africa 1745-1945) 44322 at 1820 in Bushey Heath; KHB1, N.Mariana Is 9.455 (Eng to NE.Asia 2000-2155) SIO222 at 2024 in Elgin; BBC via Skelton 9.915 (Eng to S.Am 2200-0230) 44444 at 2339 in Gibraltar; R.Nac del Paraguay 9.735 (Sp 0800-0400) 35553 at 0007 in Wallsend.

Whilst beaming to Europe, Polish R, Warsaw 9.525 (Eng 1500-1555) was 43333 at 1500 in Morden; R.Norway Int, Oslo 9.655 (Norw* 1700-1730, *Eng Sat/Sun) 44344 at 1700 in Basingstoke; SRI via Lenk? 9.535 (Eng, Fr, Ger, It 0400-1945) SIO444 at 1715 in Rowley Regis; R.Romania Int, Bucharest 9.690 (Eng 1900-2000) 42332 at 1915 in

Co.Londonderry; Voice of Turkey, Ankara 9.445 (Eng 2000-2100) 33222 at 2000 in Newry; VOIRI Tehran 9.022 (Eng 1930-2030) SIO434 at 2004 in Winchester; R.Budapest, R.Ungary 9.835 (Eng 2100-2200) 32232 at 2110 in Bourne.

In the **7MHz (41m)** band R.Australia via Carnarvon 7.260 (Eng to Asia 1800-2100) was SIO333 at 2022 in Elgin; AIR via Aligarh 7.412 (Eng, Hi to Eu 1730-2230) 33333 at 2119 in Gibraltar and 54444 at 2215 in Norwich; R.Ukraine Int, Kiev 7.240 (Eng to Eu 2100-2200) 55455 at 2200 in Bourne.

Two of R.Australia's **6MHz (49m)** broadcasts were logged here: 5.995 to Pacific areas via Shepparton (Eng 0800-2130), rated SIO212 at 0830 in Macclesfield; 5.880 to Asia via Carnarvon (Eng 1800-2100) 43333 at 2012 in St.Andrews.

Also noted were SRI via Lenk? 6.165 (Eng, Fr, Ger, It to Eu 0400-1945) 55555 at 0710 in Woking; R.Japan via Skelton 6.050 (Eng, Ger to Eu, M.East 0700-0830) SIO434 at 0740 in Sheffield; HCJB Quito 6.205 (Eng to Eu 0700-0830) 55555 at 0815 in Bridgwater; RTL via Junglinster 6.090 (Fr to Eu) 55544 at 1015 in Barton-on-Humber; R.Netherlands via Flevo 5.955 (Eng to Eu 1230-1325) 55544 at 1235 in Brenchley; DW via Wertachtal 6.130 (Mace, Serb, Slov to SE.Eu 1400-1550) 35553 at 1400 in Northwich; R.Yugoslavia, Belgrade 6.100 (Ger to W.Eu 1930-2000) 54434 at 1945 in Co.Londonderry; R.Pyongyang, Korea 6.576 (Eng, Fr to Eu, M.East, Africa 2000-2150) 54344 at 2030 in Norwich; R.Prague, Czech Rep 6.055 (Eng to Eu 2100-2127) 43444 at 2101 in Bourne; R.Moscow Int 6.010 (WS Eng 2100-2200) 54555 at 2135 by **Martin Dale** in Stockport; R.Nac da Amazonia, Brazil 6.180 (Port 0900-0200) 35553 at 2255 in Wallsend; R.Netherlands via Flevo 6.020 (Eng to USA 2330-0125) SIO333 at 2330 in N.Bristol; BBC via Antigua 5.975 (Eng to C/S.Am 2000-0430) 44334 at 0025 in Gibraltar; R.Japan via Sackville 5.960 (Eng to USA 0300-0400) SIO422 at 0330 in Swindon.

Transatlantic DX Chart

| Freq kHz | Station | Location | Time (UTC) | DXer |
|----------------------------------|-----------------|----------------------|------------|-----------|
| USA | | | | |
| 1010 | WINS | New York, NY | 0110 | A |
| 1050 | WEVD | New York, NY | 01050 | A |
| 1130 | WNEW | New York, NY | 0107 | A |
| 1210 | WOGL | Philadelphia, PA | 0145 | A |
| 1500 | WTOP | Washington, D.C. | 0153A | |
| Canada | | | | |
| 590 | VOCM | St.John's, NF | 0037 | A,B |
| 710 | CKVO | Clareville, NF | 0200 | A |
| 820 | CHAM | Hamilton, ON | 0225 | C |
| 930 | CJYQ | St.John's, NF | 0130 | A,B,D,E,F |
| 950 | CHER | Sydney, NS | 0043 | A |
| 1210 | MOAR | Mount Pearl | 0057 | A,E |
| C America & Caribbean | | | | |
| 1375 | RFO | St.Pierre/Miquelon | 0130 | A |
| 1610 | Caribbean B'con | The Valley, Anguilla | 0103 | A,B |
| South America | | | | |
| 1220 | R.Globo | Rio, Brazil | 0100 | A,E |

DXers:
 A: Ted Barty, N.London.
 B: Tim Bucknall, Congleton.
 C: Robert Connolly, Kilkalee.
 D: Ron Damp, Worthing.
 E: Chris Edwards, Inverurie.
 F: Gerry Haynes, Bushey Heath.

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Maritime Beacons

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Fairly stable propagation conditions were observed during daylight by Darren Beasley in Bridgwater. He added the Punta Estaca Bares beacon (BA) on 309.5 to his growing list. Checks were also made during daylight by John Wells in E.Grinstead. Although he heard the Pt de Combrit beacon (CT) on 288.5 for the first time the total number of beacons logged was less than hitherto.

Rather weaker signals than usual were noted by Viv Doidge in Gunnislake, nevertheless he compiled an extensive log by day and at night. Jim Edwards (Wigan) added many beacons to his original list. The Morse decoder used with his NRD-535 receiver would not resolve the weaker signals, so he used a Morse table instead, but he can now recognise some letters without reference to it!

Despite the high level of electrical interference in Birmingham, Patrick McKeever logged a remarkable number of beacons in the evenings between 1900 and 2200UTC. When searching for the weaker signals he now uses a pair of inexpensive stereo headphones with his Lowe HF-225 receiver. He intends to add an audio filter in the near future.

When checking the band in E.London, Phil Townsend has found it advantageous to use a home-built loop and audio filter with his HF-225. Because the filter bandwidth is only 30Hz it is necessary to tune the receiver and adjust the loop very precisely for the best reception of a particular beacon. Once the settings have been optimised Phil enters the frequency into the receiver memory bank. Upon recalling a beacon all that is required is to adjust the loop. This technique works well with the known beacons and allows him more time to search for unknown ones.

Up in Huddersfield, Chris Haigh used his new Drake R8E receiver to check the band - it helped considerably! He selected the u.s.b. mode, set the bandwidth to 1.8kHz, the noise blanker at narrow and the notch filter on. Using the beacon chart in the March '93 SWM as a guide, he compiled an interesting log.

Following the publication of that chart Kenneth Buck (Edinburgh) kindly sent to me some detailed information about the beacons operating around the southern coastline of Iceland. Apparently they all radiate a keyed modulated carrier (m.c.w.), which was the system in general use prior to April last year. Two letter call signs are allocated to the marine and aeronautical beacons, so DXers may well have difficulty in establishing their role. The following are maritime radiobeacons:

| Freq kHz | Call sign | Station Name | Location | DXer |
|----------|-----------|--------------------|--------------|----------------------------|
| 284.5 | LZ | Lizard Lt | S Cornwall | A.C.D.H.J.I.*M.P.R |
| 284.5 | ND | Cabo Machichaco | N Spain | C.D.*I.J |
| 285.0 | MA | Cabo de la Nan Lt | S Spain | D.*H.*J.R |
| 285.0 | MP | Nieuport W.Pier | Belgium | D.*K.*R |
| 286.0 | TR | Tuskar Rock Lt | S.Ireland | A.C.D.H.J.*K.*L.M.P.R |
| 286.5 | AL | Almagrundet Lt | Sweden | I* |
| 286.5 | BY# | Baily Lt | S.Ireland | D.K.*I |
| 286.5 | FE | Cap Ferret Lt | France | H.*J.M.R |
| 286.5 | FT | Cap Ferret Lt | W.France | D.*H.*I.*J.*R* |
| 286.5 | NK | Inchkeith Lt | F of Forth | C |
| 287.5 | NO | Rosella Lt | France | H* |
| 287.5 | FR | Faerder Lt | Norway | D.*J.*I.*R |
| 288.0 | HM | Hoek van Holland | Holland | D.*Q.R |
| 288.0 | KL | Sklinna Lt | Norway | C.J |
| 288.0 | OH | Old Hd of Kinsale | S.Ireland | H.*K.*I |
| 288.5 | CT | Pt de Combrit Lt | France | R |
| 288.5 | FI | Cabo Finisterre Lt | N.W.Spain | C.D.*H.*J.*J* |
| 288.5 | YM | Umuuden Front Lt | Holland | D.*J.*I.*R |
| 289.0 | BL | Burt of Lewis Lt | Is of Lewis | C.J.I |
| 289.0 | BY | Baily Lt | S.Ireland | C.H.I.M.P.R |
| 289.5 | LD | Landsort S Lt | Sweden | C.J |
| 289.5 | MN | Hammerode Lt | Denmark | C.D.*I.J* |
| 289.5 | SN | Île de Sein NW Lt | France | D.*H.*M.R |
| 290.0 | BS | Port en Bessin Lt | France | J.*R |
| 290.0 | FD | Fidra Lt | F of Forth | C.K.*O |
| 290.5 | SB | S.Bishop Lt | Pembroke | A.C.D.H.I.*M.O.P.R |
| 290.5 | VI | Cabo Villano Lt | N Spain | C.J.*J.M.R |
| 291.0 | TG | Torsvag Lt, Koja | Norway | I |
| 291.5 | OR | Orskär Lt | Sweden | C.J |
| 291.5 | SU | South Rock Lt | Co.Dun | A.C.D.H.*J.*K.*L.M.P.R |
| 291.9 | MH | Montedor Lt | Portugal | D* |
| 292.0 | MR | Melhor, Minorca | Baleares Is | D* |
| 292.0 | SJ | Sauter Lt | Sunderland | C.D.*I.J.L.P.R |
| 292.0 | TD | Torungen Lt | Norway | C.*I |
| 292.5 | SM | Pt St.Mathieu Lt | France | A.D.*H.*J.L.M.R |
| 293.0 | CP | St.Catherine's Lt | IOW | A.E.G.H.*J.*M.N.Q.R |
| 293.0 | RN | Rhims of Islay Lt | Is of Islay | C.D.I.*J.*K.*P |
| 293.0 | SY | Svinoy Lt | Norway | C.J |
| 293.5 | RO | Cabo Silleiro Lt | N Spain | D.*H* |
| 294.0 | KU | Kullen High Lt | Sweden | C.D.*I |
| 294.0 | PH | Cap d'Alpreeh | France | A.C.D.*E.G.H.*J.*L.M.N.Q.R |
| 294.5 | BA# | Black Hd Lt | N.Ireland | D.*P |
| 294.5 | BM | Brighton Marina | E.Sussex | D* |
| 294.5 | KA | Kayulowo Lt | Estonia | I |
| 294.5 | KC# | Old Hd of Kinsale | S.Ireland | D.*H* |
| 294.5 | MH | Mohini Lt | Estonia | I |
| 294.5 | NG | Pikasaree Ots | Estonia | D.*J |
| 294.5 | PA | Pakrieme Lt | Estonia | I |
| 294.5 | PS# | Pt.Lynas Lt | Anglesey | D.*J.*K.*O |
| 294.5 | PT# | Sauter Lt | Durham | C.J.K* |
| 294.5 | UK | Sunk Lt V | Off Essex | D.*Q.R |
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| 295.5 | RE | La Rochelle | France | D* |
| 296.0 | BH | Blawendshuk Lt | Denmark | C.D.*I.*J.*R |
| 296.0 | GR | Geirone Lt | Holland | J.M.R |
| 296.0 | KN | Knrova Lt | Norway | I |
| 297.0 | FG | Pt de Barfleur Lt | France | A.D.*G.H.*I.*J.M.N.Q.R |
| 297.5 | PS | Cabo Penas Lt | N Spain | D.*J* |
| 298.0 | GX | Île de Groix | France | C.D.*H.*J.*R |
| 298.5 | RR | Round Is Lt | Is of Scilly | A.C.D.G.H.*J.*L.M.P.Q.R |
| 298.5 | SW | Skagen | Denmark | C.D.*I.J |
| 298.8 | DV | Djupivogur | Iceland | I |
| 298.8 | HO | Hornbjarg | Iceland | I* |
| 299.0 | AD | Ameland Lt | Holland | C.J.J.R |
| 299.0 | HB | Hals Bjarne Lt | Denmark | I |
| 299.5 | BN | Les Baleines | France | D.*J.*R |
| 299.5 | NP | Nash Pt Lt | S.Wales | A.D.E.G.H.*K.*L.M.O.P.Q.R |
| 299.5 | SK | Skomvaer Lt, Rost | Norway | D.*J* |

DXers:
A: Darren Beasley, Bridgwater.
B: Leslie Biss, Knaresborough.
C: Kenneth Buck, Edinburgh.
D: Robert Connolly, Kilkree.
E: John Coulter, Winchester.
F: Geoff Crowley, Hafnarfjordur, Iceland.
G: Ron Damp, Worthing.
H: Viv Doidge, Gunnislake.
I: Chris Edwards, Inverurie.

J: Jim Edwards, Wigan.
K: Chris Haigh, Huddersfield.
L: Patrick McKeever, Birmingham.
M: George Millmore, Wootton, IOW.
N: Fred Pallant, Storrington.
O: Peter Pollard, Rugby.
P: Victor Robb, Belfast.
Q: Philip Townsend, E.London.
R: John Wells, E.Grinstead.

| Freq kHz | Call sign | Station Name | Location | DXer |
|----------|-----------|--------------------|--------------|-----------------------------------|
| 299.5 | VR | Uvaer Lt | Norway | C.D.*I.R |
| 300.0 | MZ | Mizen Head | S.Ireland | A.D.*H.J |
| 300.0 | TI | Cap d'Antifer Lt | N France | A.J.L.M.N.R |
| 300.5 | DU | Dungeness Lt | Kent | C.G.H.*J.L.M.N.Q.R |
| 300.5 | LA | Lista | Norway | C.D.*I.*J.*M |
| 301.0 | CA | Pt de Creach | France | A.C.D.*H.*J.*M.P.*R |
| 301.0 | ER | Eierland Lt | Holland | C.D.*I.J.M |
| 301.1 | RE | Raufarhoefn | Iceland | I* |
| 301.5 | KD | Knarvands Hd Lt | N.E.Scotland | C.D.*I.J |
| 301.5 | L | Torre de Hercules | N Spain | D* |
| 301.5 | OB | Orburg | Sweden | D.*H.*I.*J.*R |
| 302.0 | RE | Cherbourg Pt W Lt | France | D.*G.H.*J.L.M.N.Q.R |
| 302.5 | FB | Falmborough Hd Lt | Yorkshire | A.B.C.D.*E.G.H.*J.*K.*L.M.O.P.Q.R |
| 303.0 | FV | Falsterboev Lt | Sweden | C.D.*I.J* |
| 303.0 | YE | Île d'You Main Lt | France | A.C.D.*H.*J.M.R |
| 303.4 | MA | Malariff Lt | Iceland | F |
| 303.5 | BJ | Bjornssund Lt | Norway | C.D.*F.J.K* |
| 303.5 | FN | Fenstein Lt | Norway | C.I.K* |
| 303.5 | IA | Ilanes Lt | N Spain | D.*H.*J.M |
| 303.5 | VI | Vieiland Lt | Holland | D.*J.R |
| 304.0 | PS | Pt.Lynas Lt | Anglesey | C.D.*H.*K.*L.P.R |
| 304.0 | SB | Sumburgh Hd Lt | Shetland Is | C.I.K* |
| 304.5 | MY | Cabo Meyer Lt | N Spain | D.*R |
| 304.5 | ?? | Stubbenkammer | N.E.Germany | D* |
| 305.0 | C | Cabo Priomo Lt | N Spain | D* |
| 305.0 | FP | Fife Ness Lt | S.E.Scotland | C.I.J.P |
| 305.5 | AL | Pt d'Ailly Lt | France | A.C.D.*E.G.H.*J.L.M.O.Q.R |
| 305.7 | DA | Dalatangi Lt | Iceland | I* |
| 306.0 | EC | Elizabeth Castle | Jersey | C.I.M.R |
| 306.0 | FN | Walney Is Lt | Off Lancs | B.C.D.K.*L.P.R |
| 306.0 | TM | Thylboron | Denmark | C.J |
| 306.5 | GJ | Le Grand Jardin Lt | France | H* |
| 306.5 | MV | Morzhovskiy | Arctic | R |
| 306.5 | NA | Nakkkehoved | Denmark | I* |
| 306.5 | UT | Utsira | Norway | C.D.*I.J.R |
| 307.0 | GL | Eagle Is Lt | Ireland | C.D.*H.*I.*J.*K.*P |
| 308.0 | DB | Deutsch Bucht Lt | N.Germany | M |
| 308.0 | RD | Roches Douvres Lt | France | A.C.D.*E.H.J.L.M.N.O.Q.R |
| 308.5 | NZ | St Nazaire | France | H.*J.*R |
| 309.0 | WW | Ventspils Lt | Latvia | D.*J |
| 309.5 | BA | Punta Estaca Bares | N Spain | A.D.*H.*J.M.N.R |
| 309.5 | PH | Frutofmen Lt | Norway | J |
| 309.5 | MA | Malariff Lt | Iceland | C.D.*I.J* |
| 310.0 | ER | Pt de Ver Lt | N France | A.D.*H.*J.L.M.N.Q.R |
| 310.5 | SG | Sjælland N Lt | Denmark | C.D.*I* |
| 311.0 | GD | Girdle Ness Lt | N.E.Scotland | C.D.*I.K.*P |
| 311.0 | NF | N.Foreland Lt | Kent | E.H.*J.L.M.N.R |
| 311.5 | LP | Loop Hd Lt | S.Ireland | A.D.*H.*J.*K.*R* |
| 312.0 | HO | Tornholm Lt | Norway | D* |
| 312.0 | OE | Oostende | Belgium | C.D.*J.L.M.P.Q.R |
| 312.0 | UH | Eckmuth Lt | France | D* |
| 312.5 | AK | Almenrags | Latvia | I |
| 312.5 | BK | Baltijsk | Latvia | I |
| 312.5 | BT | Mys Taran Lt | Latvia | I |
| 312.5 | CS | Calais Marin Lt | France | H.*R |
| 312.5 | KA | Klaipeda Rear Lt | Lithuania | I |
| 312.5 | LB | Liepaja | Latvia | D.*J.J |
| 313.0 | HA | Halten Lt | Norway | I* |
| 313.0 | PB | Portland Bill Lt | Dorset | A.E.H.*J.L.M.N.R |
| 313.0 | TY | Tony Is Lt | N.Ireland | C.D.*I.*P |
| 313.5 | CM | Cromer Lt | Norfolk | C.I.L.O.Q.R |
| 313.5 | OG | Olands Sotra Grd | Sweden | C.*I* |
| 314.0 | HK | Hekkingen Lt | Norway | D.*I.*J* |
| 314.0 | PD | Pontquerries Lt | S France | D.*I |
| 314.0 | VG | Île Vierge Lt | France | A.C.D.*E.H.J.L.M.N.O.P.*R |
| 315.0 | SL | Sletstjerne | Denmark | C.D.*H.*J.*R* |
| 316.0 | IN | Ingolfshofdi Lt | Iceland | I* |
| 319.0 | LEC | Stavanger | Norway | C.D.H.*I.*K.*L.M.N.O.P.Q.R |

Note: Entries marked # are calibration stations. Entries marked * were logged during darkness. All other entries were logged during daylight.

| | | |
|-------|-----------------|----|
| 291.9 | Reykjanes | RN |
| 298.8 | Djupivogur | DV |
| 303.4 | Malariff Lt | MA |
| 305.7 | Dalatangi Lt | DA |
| 312.6 | Skardhsfjara Lt | SR |
| 316.0 | Ingolfshofdi Lt | IN |

When searching for these beacons it is necessary to set the receiver to the a.m. mode. Kenneth has found that this results in so much interference from local beacons on very close frequencies that he is unable to receive any of them. Whilst his Lowe HF-225 receiver was set to the c.w. mode he compiled an extensive list of other beacons for the chart.

Several Icelandic beacons were received in Inverurie by Chris Edwards, see chart. Although Hornbjarg (HO) on 298.8 and Raufarhoefn (RG) on 301.1 have been included I am unable

to confirm their status. Quite regularly Chris hears a beacon (HN) on 287.3, which was included in the March '93 chart along with (RK) on 355.0, but both are now known to be aeronautical beacons. He has noticed that Duncansby Head (DY) on 290.5 has been inaudible since mid-January.

A beacon signal (MA) on 298.0 was noted in several reports, but it does not originate from the Malariff Lt, Iceland which radiates the same ident (MA) on 303.4. The latter was logged by Geoff Crowley in Hafnarfjordur as a potent S10555 at 1350.

Having studied the 'Morse Decoding Chart' in the January '93 SWM and the corrections in the February issue, Peter Pollard (Rugby) decided to explore this band. Eleven beacons were heard and successfully

decoded! He can now recognise some letters without referring to that chart, so beacon DXing may well become a regular part of his listening activities!

Being interested in sailing, Victor Robb (Belfast) has used the maritime beacons in the past to good effect! After reading the beacon article in the December issue he decided to tune across the band at home. He used a Sony ICF-SW7600 portable with a home built m.w. hexagon loop (April '89 SWM), modified with a switched capacitor so that it will tune from 285-330kHz or 400-1600kHz. He was quite surprised by the number of beacons he could receive, see chart. Victor says the location of the Black Head Lt (BA) (noted in previous charts as ?) is on the north entrance to Belfast Lough, near Whitehead, Co.Antrim.

Trading Post

Fill in the order form on page 84 in **BLOCK CAPITALS** - up to a maximum of 30 words plus 12 words for your address - and send it, together with your payment of £2.35, to Trading Post, *Short Wave Magazine*, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. If you do not wish to cut your copy of *SWM*, or do not wish to use the order form provided, you must still send the cornerflash from page 76 of this issue, or your subscription number, as proof of purchase of the magazine. Advertisements from traders, or for equipment which it is illegal to possess, use or which cannot be licensed in the UK will not be accepted.

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AOR AR-3000 scanner, v.g.c., boxed, manuals, mains adaptor, etc., workshop manual, £500. Also recorder leads by AOR for above. Steve. Tel: 031-331 5336.

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DX7 active antenna from RF Systems in The Netherlands, new, unused, £125 no offers, cost £179 wife's money. Peter. Tel: (0425) 620413 anytime, New Milton, Hants.

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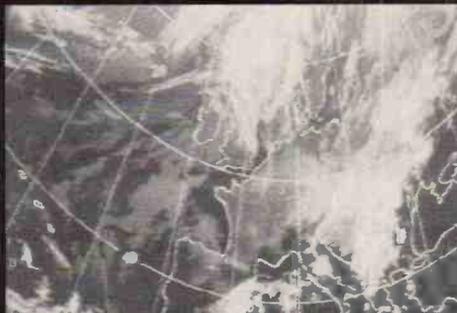
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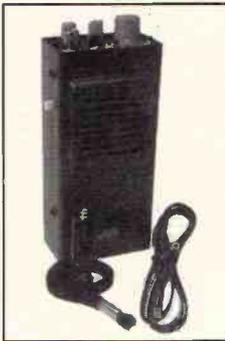


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