

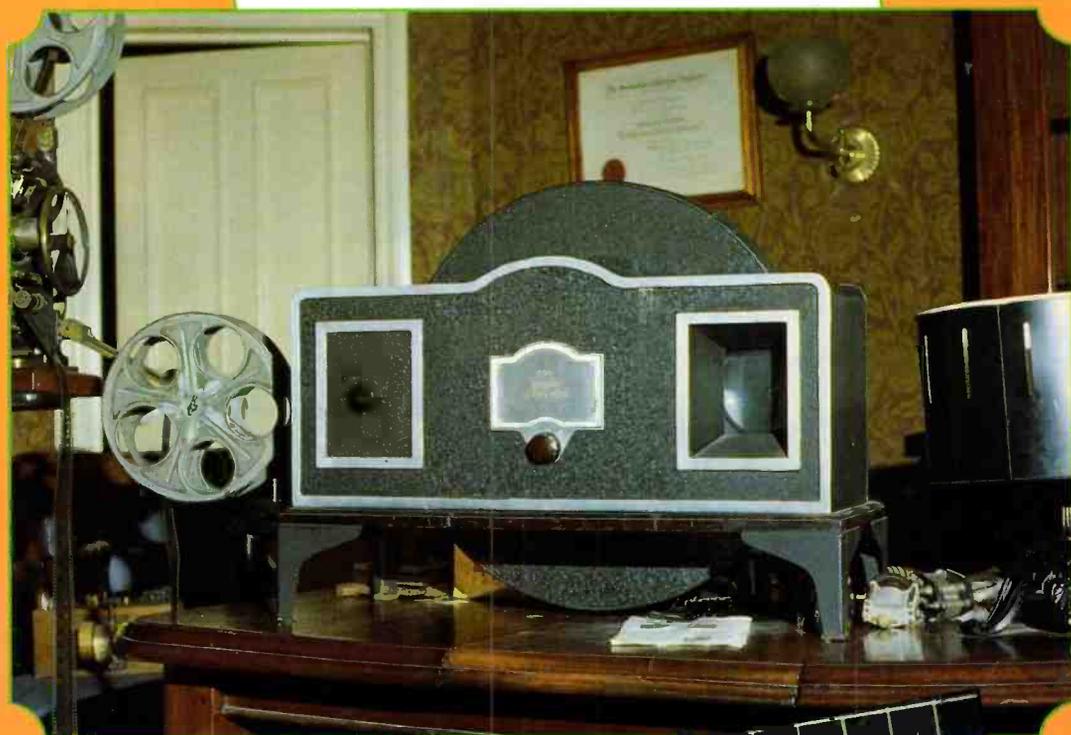
FOR THE RADIO LISTENER

shortwave magazine

June 1992 £1.75 ISSN 0037 - 4261

THE BAIRD TELEVISOR, A LOOK AT HOW IT ALL BEGAN

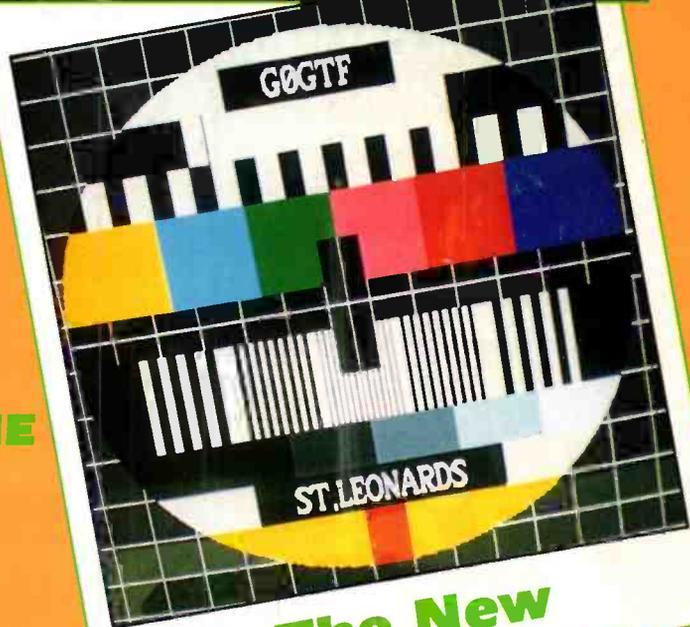
From The Old...



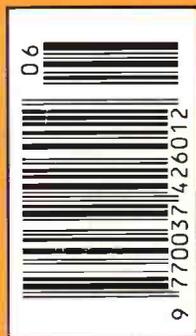
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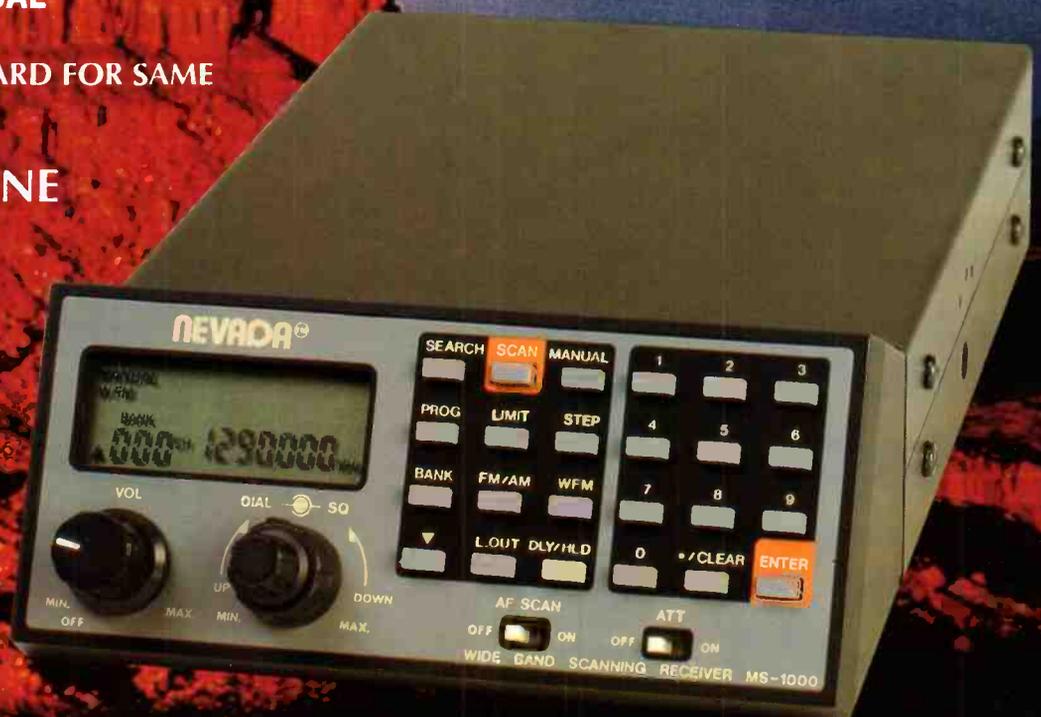
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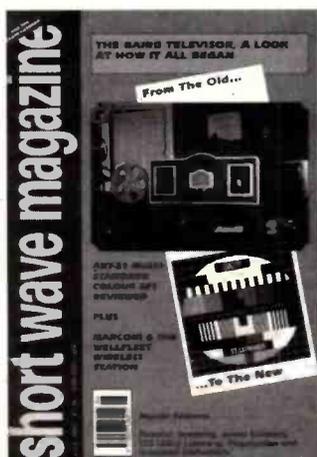
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TELEVISION
OLD & NEW

REGULARS

Cover:

The theme of this issue is television old and new and the main picture on the cover shows an original Baird Televisor. The colour slide was kindly loaned by the Independent Television Commission. The lower picture shows a test card created by Tim Anderson on an Amiga 500 computer and displayed on the ART-21 reviewed in this issue.



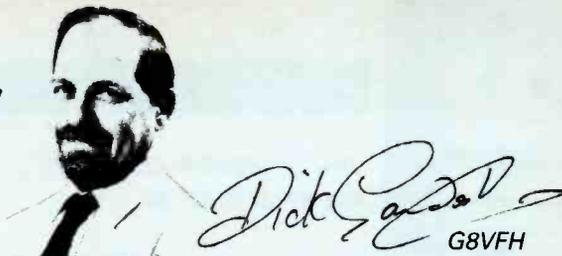
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...GOOD LISTENING

BOOK SPECIAL OFFER
COUPON SWM JUNE 1992

TRADING POST
COUPON SWM JUNE 1992

editorial



SWM SERVICES

Subscriptions

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

Components for SWM Projects

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

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

Back Numbers and Binders

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

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

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The theme for this issue is television old and new and was sparked off by a couple of short articles submitted, independently, describing Baird Televisors. The new aspect is covered by a couple of reviews of modern, multi-standard, colour sets of interest to the DXTV enthusiast. I hope that you find it interesting.

It is always sad to have to write an obituary, particularly for someone who has contributed so much to the technical understanding of the hobby of radio. Fred Judd G2BCX was such a person and he will be greatly missed by everyone, even by those who disagreed with him and his views. An appreciation of his contribution to the hobby and *Short Wave Magazine* in particular, appears on page 12 of this issue.

No one is indispensable or irreplaceable and doubtless others will appear to help fill the vacuum left by his death, but there will never be another G2BCX.

letters

Dear Sir

The letter in the February magazine from Mr John Alton brought back some memories, for I too joined a Bomber Squadron in late 1939 following apprentice training. This was No. 104 and we were equipped with Blenheims, in which I spent some time operating the wireless which was awkwardly situated behind the rear gun turret. However, first for the record, the TR9 mentioned by Mr Alton was the h.f./RT set operated by the pilot, with a Bowden cable remote control arrangement. It was indeed a t.r.f. receiver but had a crystal controlled transmitter and a single h.f. channel, which was set up on the ground and could not be re-tuned in the air. This was standard equipment in Fighter Command as well and was used exclusively in the Battle of Britain - v.h.f. was in the future!

The box of plug-in coils mentioned by Mr Alton would have been for the R1082, which was the standard W/T equipment, along with the T1083 and used by the wireless operation. The R1082 was also a 5-valve t.r.f. set and powered by (would you believe!) a 2V accumulator and a 120V h.t. battery.

The trailing antenna had to be unwound manually. If you first let it go, despite the brake on the reel, the weights flew off the end. There were eleven bead weights incidentally and it was used for m.f. The fixed antenna was used for h.f. and, as Mr Alton says, if you forgot to wind it in on landing, it was quite lethal underneath. The wireless op was made to pay for the replacement, 15 shillings in those days, quite a tidy sum!

Dennis Terry, Kent

Dear Sir

I read both letters in the April issue with interest, but in the interest of accuracy can I add my comments as an ex-RAF Signals bod (1098595).

The TR9 was originally conceived in 1935 but not put into production until 1938/39. Originally a low power m.o./p.a. single h.f. channel TX/RX in the 5MHz band, it was eventually converted to Xtal osc/p.a. Although designated for fighter aircraft, it found its way into nearly all aircraft requiring a low power single channel R/T. The reason for this was that the TR11 designated for medium and heavy bombers, and working on a slightly higher frequency ran into production difficulties (all were hand-built) and was abandoned to concentrate on the TR9. Two frequencies, 6.44 and 5.68MHz, were

the main air/ground frequencies. The equipment was out-dated even in 1935 when conceived, but fortunately the 1133 and 1143 came along, although TR9 production continued, and many of the heavies were fitted with TR9s.

The TR2 and TR4 were also in service with the RAF up to 1940, but these fascinating equipments would need another two pages to discuss them fully, and in any case did not belong to the TR9/11 family.

Both Mr Speed and Mr Olway have the 1082/1083 installation correct as described. I still have my 1938 Notes for Radio Mechanics on file should anyone require precise details.

Harry Cain
Alnwick

Dear Sir

An interesting situation that may be thought provoking for others.

Every amateur I have met who uses h.f. has the normal rig/a.t.u./antenna set up; not one does without an a.t.u. Yet any one who uses v.h.f. just slaps an antenna onto the rig and away he goes, although one or two might trim the antenna for lower s.w.r.

I used a mobile 144MHz whip on a biscuit tin, which gave an s.w.r. of 1.7 to 1 while a home-made Slim Jim gave about 1.9 to 1. To safeguard my v.h.f. p.a. stage I ordered a 144MHz Transmatch from SEM (on the Isle of Man) and happily tune up on my Slim Jim and get 1 to 1.

Has any one else considered using an a.t.u. for v.h.f.? Or do v.h.f. manufacturers expect us to just slap on any old antenna? Food for thought!!

R. Bradshaw G4DTD
Milton Keynes

Dear Sir

I found G. Chance's letter (SWM March '92) worth offering comment on.

Since the mid '70s, 'the powers that be' have had grandstand seats for an electronic battle of wits in Northern Ireland; in recent years scanning receivers have played an important part in this battle - on both sides. Surely any desire to ban scanners would have manifested itself here?

Secondly, any authorised organisation now has access to relatively cheap frequency agile equipment with the option of encryption modules. It seems quite possible that only the most mundane users will remain 'in clear' within a few years!

Ian Wye, London

letters

Dear Sir

I was most interested in John Alton's letter in *SWM* for February about the TR9 of wartime vintage. I was a meteorologist in Bengal in 1943 and all our data came from a similar radio - I can't now remember its number. It certainly was a 'TR' and battery powered. It was housed in a grey wooden sort of 'suitcase' with the receiver in the lid and the base holding a 150V h.t. battery and l.t. battery - plus a rack of coils. These were of resin coated cardboard, about 75mm long and with coloured Bakelite knobs at one end. The red coils were for tuning and the green ones for the reaction circuits. The WOP simply plugged in the required pair to change the wavelength. The whole thing could be closed up like a suitcase for carrying - as we knew it - into an aircraft as a complete working unit.

It served us well until 1945 when a passing benevolent American 'met man' donated his AR88. The change was so immense it left our WOPs dazzled and delighted. What quality engineering went into these glorious receiver - of brass, Bakelite and glowing bottles'...

Incidentally, I am now into RTTY met and work a Creed 7B teleprinter from - guess? - an AR88.

M.H.O. Hoddinott
Chester

Dear Sir

During much of WWII, I was working at the Royal Aircraft Establishment at Farnborough, initially on Radio Communications and later an airborne radar and IFF. Based on my experiences at RAE, I would like to add a point of correction to the letters of Messrs Speed and Olway in your issue for April.

There was, in fact, a very much more up-to-date (for those times) replacement for the TR9 (which had as its p.a. a PEN220A l.f. output pentode). This was the TR1196, which was just coming into squadron service when it was replaced by the TR1133/TR1143. It consisted of three units on a single chassis: the receiver and the transmitter facing each other, and linked by a push-button 'pecking motor' (as in the TR1133) - and the motor generator set, at right-angles to the TX/RX. There were from crystal controlled channels: the superhet receiver was a neat job, using 'E' series valves, and the transmitter (with which I was primarily involved) had a tetrode p.a. rather similar to a small 807, which had the same characteristics as half an 832 - a double tetrode in a single glass envelope with pins instead of a normal base. I do not remember now the power output or the actual frequency range (in the h.f. band), but I do recollect that it was reported as a very good set for relatively 'local' exchanges between fighters and their bases. Some twenty years or so ago, a production model was exhibited in the Science Museum, but it later disappeared - doubtless owing to the constant demand for exhibition space.

May I add one comment on the T1154/R1155. This was originally a commercial set, designed and manufactured by Marconi: while I was not involved with it, one of my colleagues who was described it as about the most inefficient machines he had ever come across; only about 30% of the power input ever appeared as r.f. at the antenna! I understand, however, that after numerous and extensive modifications by RAE, it turned out to be a very serviceable and popular set for Bomber Command.

Stuart Rison, Switzerland

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

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

Dear Sir

Two letters to you about the BBC and radio policy brings me to mention the worst sin, which is putting several transmitters on one frequency. This happens on the BBC service on 693, 909 and 1215kHz but it is the last mentioned of these that is the worst offender.

Radio 3 on 1215kHz is often a diabolical noise, caused, not by the choice of music, but by my radio picking up signals from at least 3 transmitters - probably Droitwich, Washford and Brookmans Park who give me similar field strengths. The phase relationship of the incoming signals seem to change gradually, even by day-time. perhaps due to small changes in path length. Even by the BBC's own admission only 40% of the population is served after dark and 70% by day.

If I am driving, life is even more 'fun' because I hear a roller-coaster of distortion as I pass through crests and troughs of distortion. Would this be more use as a 'Loran' navigation system?

If the cry is 'go for v.h.f.', I ask myself who would want to take over the present 1215kHz network? No self-respecting independent station.

During the last 2 or 3 years a strange new effect has appeared in 1215kHz, namely a whirring sound. Perhaps new microwave links are causing phase problems.

Before 22 November 1978 (a black day in UK radio) there was a single transmitter at Daventry that gave nice smooth copy any time of day or night, on 647kHz. After that, the UK authorities seemed to throw the 'O' level radio manuals out of the window.

Taking Radio 2 off long wave was also a bad move back in 1978 as it left no musical voice of the UK to compete with the various powerful French stations. Contemporary music is a good selling point for this country: do young French people listen to Radio 4?

Perhaps the DTI/Home Office should nip in and bid for the slot where Stimme der DDR used to be in 177kHz, for a new light entertainment station in post-Maastricht Europe?

Richard Gosnell
Swindon

Dear Sir

I was pleased to see a good selection of letters once again in your much improved magazine and agree with Mr E Barrett, there does appear to be a need for a 'Senior Citizens' page to compliment the Junior Listener.

This could become a 'minefield', however, and extremely difficult to provide the sort of information most readers would wish to see in print.

For example, the reliability and performance as experienced by ordinary users of equipment they personally own would, I am sure, provide an almost unending subject source, but how difficult it would be to obtain a totally unbiased and objective report! It would be about as useful as some of the reviews that appear from time to time on equipment provided by the makers or distributors in order to promote their particular product!

Fortunately, most people I'm sure do such research as they feel necessary before purchasing and

are subsequently pleased with their choice.

It would be interesting to hear from anyone who has, however, been disappointed with their eventual purchase despite of their researches or assurances of the dealer. Most manufacturers, it seems, produce almost identical specifications and it really boils down to what pleases one's eye! Cosmetic changes usually mean a cheaper 'cost effective' way of production allied to a price rise 'in line with inflation'. I note with interest the appearance of 'basic' radio equipment devoid of all the unnecessary gimmicks (with only a slight price reduction unfortunately) so there is just a hope of even lower prices to come when product development costs are excluded!

For many years now I have concluded that the Electronics Industry have taken us all for a ride and it really is about time the consumer got a better deal!

D.J. Gombo, Crewkerne

Dear Sir

In the August 1990 issue, you printed a short BASIC program, by Ian Wraith, for Commodore 64 computers to decode the five-digit numbers as transmitted by the various meteorological stations.

I did enquire by letter in September, if anyone could rewrite this for the Atari computer, to which I received limited response.

Nearly two years later and a bit wiser, I have discovered that the program will type straight in on the Atari, with slight modifications, using MicroSoft I/II BASIC. If any one would like a copy or details, please contact me.

Nick Ashby, Middlesex

grassroots

rallies

* Short Wave Magazine & Practical Wireless in attendance *

***May 30/31:** RSGB National Rally at NEC Birmingham. Yes, in spite of *RadCom* omitting to mention our stand in their exhibition guide, we have stand A12 - the same as last year. This is the RSGB's showpiece and follows the same lines as in previous years. The car parking is free with a courtesy bus service from the car parks to the hall.

June 7: The Northampton Radio Club will again be holding their Radio Computer & Electronics Rally at the rear of the Red Lion public house (500 yards from Junction 16 of the M1). Doors open 10am. Pub and cafe open all day. **Paul Young. Tel: (0327) 41267.**

***June 14:** The 23rd Elveston Castle Radio Rally will be held, as usual, at the showground of the Elavaston Castle Country Park, some 8km south east of Derby. All the usual attractions with nerally 200 traders make this one of the country's top rallies.

***June 14:** The Royal Naval ARS will be holding their annual rally at HMS Mercury, near Petersfield, Hants. Gates open from 10am to 5pm. Admission £1.50 adults, children free, no dogs except guide dogs please. **Cliff Harper G4UJR. Tel: (0703) 557469.**

June 21: The Norfolk RAYNET will be holding their rally and car boot sale at Barford, Norfolk. It all starts at 10am and it will cost £5 for car boot pitch. **Pat Bates. Tel: (0692) 404593 evenings only.**

June 21: Denby Dale & District ARS will be holding their rally at Salendine Nook High School, Huddersfield. Easy access from M62, junction 23 eastbound, junction 24 westbound. Doors open 11am. Usual traders, craft stalls, etc., bar, catering, car boot sale, Bring & Buy, ample parking. **Philip. Tel: (0484) 644827.**

***June 26/28:** Ham Radio '92, Friedrichshafen, Germany. The largest amateur radio show in Europe and well worth a visit. The Flea Market alone is worth the journey and Friedrichshafen, situated on the Bodensee - Lake Constance to the English - and within easy reach of Austria and Switzerland, is a fantastic area for a holiday.

June 27: The Brentwood International Amateur Radio and Computer Rally will be held at the Brentwood International Centre, Doddinghurst Road, Brentwood, Essex. Doors open from 10.30am to 6pm. Bar & Cafe serving hot meals and drinks all day, Bring & Buy area, massive car park. **CLPK, 18 Litchfield Close, Clacton-on-Sea, Essex CO15 3SZ.**

***June 28:** The 35th Longleat Amateur Radio Rally will be held, as usual, in the grounds of Longleat House. There will be over 140 companies this year, as well as a large craft fair. Free car parking and on site camping available and there will be a beer tent and plenty of on-site catering. **Shaun G8VPG. Tel: (0225) 873098.**

June 28: The Bromsgrove ARS will be holding their second Mobile Radio Ham Rally & Car Boot Sale at the Lower Wick Country Fair, the location being on the Worcester to Malvern Road, rear of Bennetts' Dairy. Doors open 9am to 6pm. Tables for Boot Sale are £4. Entry to fair and rally is £1. **Dave Edwards. Tel: (0527) 546075.**

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. June 16 - ERA Morse Decoder by G3IGM. Paul Truitt G4WQO. 071-938 2561.

Aylesbury Vale RS: Wednesdays. The Village Hall, Hardwick. Martin G4XZJ. (0296) 81097.

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. June 16 - Introduction to Family History by Gill Valentine. Geoffrey Milne. 081-462 2689.

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

Dronfield & DARC: 1st & 4th Mondays, 7.30pm. Room 3, Gladys Buxton School, Oakhill Road, Dronfield. Other Mondays, socials at the Fleur-de-Lys, Main Road, Unstone. June 1 - The Magnetic Loop Aerial - Construction & Operation by G0LUM. Piers Oldham. Tel: (0246) 290444.

Edgware & DRS: 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. May 28 - Constructors Contest & NFD Briefing, June 11 - Informal, 25th - Audiometry by G4GKA. Hank Kay G0FAB. (081-205 1023).

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

Hoddesdon RC: 1st & 3rd Thursdays, 8pm. Conservative Club (side entrance), Rye Road, Hoddesdon. May 28 - EMC by G3ZKE, June 11 - Natter Night, 16th - Visit to RSGB HQ, 25th - My Visit to Morokulien by G0KLU. Roy G4UNL. 081-804 5643.

Horndean & DARC: 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. June 4 - Brains Trust. S.W. Swain. (0705) 472846).

Lincoln SWC: Wednesdays, 8pm. City Engineers Club, Waterside South, Lincoln. June 6 - Cherry Willingham Gala/HF Night, 10th - Junk Sale, 14th - Washington Gala, 17th - Activity Night. Patrick G0SO, QTHR.

Mansfield ARS: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. June 4 - Junk Sale. Mary G0NZA. (0623) 755288.

Midland ARS: 3rd Tuesdays, 7.30pm. Headquarters Unit 22, 60 Regent Place, Birmingham B1 3NJ. May 29 & June 26 - Atari Night, June 16 - Treasure Hunt, 29th - Computer Night. John Crane G0LAI. 021-628 7632 (evenings).

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. May 27 - Final HF NFD Briefing, June 3 - The American Radio Scene by G3JQI, 10th - NARC Rally Briefing, 17th - Development of the Receiver by G4UUB, 24th - Do We Need the RSGB Debate. Jack Simpson G3NJQ. (0603) 747992.

North Ferriby United ARS: Fridays, 8pm. North Ferriby United Football Social Club, Church Road, North Ferriby. May 29 - Surplus Equipment Sale. Frank Lee. (0482) 650410.

ARC of Nottingham: Thursdays, 7.30pm. Sherwood Community Centre, Mansfield Road, Nottingham. May 28 - RAYNET by G3YUT, June 4 - Forum, 11th - Balance, Impedance and SWR by G0REX, 18th - 2m Foxhunt, 25th - Contest Techniques by G0FGG. Rex Beastall. (0602) 733740.

Oxford & DARS: 2nd & 4th Thursdays, 7.45pm. British Legion Club, Haddow Road, Crotch Crescent, Marston Road, Oxford. May 28 - Those Other Electromagnetic Waves by G3NNG, June 25th Deep Heat in Nepal by Frec Wondre. Terry Hastings. (0865) 863526.

Preston ARS: Alternate Thursdays. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood. May 28 - Prep Night for HF NFD, June 11 - Vanoise National Park by Mr Ruthven, 25th - Whitebread's Brewery Outing. Eric Eastwood G1WCQ. (0772) 686708.

Reading & DARC: 2nd & 4th Thursdays, 8pm. The Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading. May 28 - Alignment Evening, June 11 - NFD Planning, 25th - G5RV & Other Antennas by G3WFM. Nick Challacombe. (0734) 722489.

RSGB City of Bristol Group: 1st Mondays, 7pm. The Small Lecture Theatre, Queens Building, University of Bristol, University Walk, Bristol. May 25 - Picnic at Ashton Court at 2pm. Dave Coxon G0GHM. (0275) 855123.

Sevenoaks & DARS: Sevenoaks DC, Council Offices, Argyle Road, Sevenoaks. June 15 - Practical Wireless - History & Future by Rob Mannion.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc, Bridge

Farm House, East Dundry Rd, Whitchurch. May 27 - Signwriting for the Rally, June 3 - Oscilloscope Evening, 10th - Astro Photography, 17th - Bullseye Contest with NBARC, 24th - Briefing for Longleat Rally and Fox Hunt, How to Make the Aerial. Len Baker. Whitchurch 832222.

Southgate ARC: 2nd & 4th Thursdays. Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. May 28 - 'Youth' Meeting Night, June 11 - Surface Mount Technology by G8TAU, 25th - Club Our-door Activity & Barbecue. Brian Shelton G0MEE. 081-360 2453.

South Notts ARC: Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. May 29 - On Air. Ray G7ENK. (0602) 841940.

Stockport RS: 2nd & 4th Wednesdays, 7.45pm. Room 14, Dialstone Centre, Lisburne Lane, Offerton, Stockport. May 27 - Photographic Tips by G4RLD. John Verity G4ECI. 061-439 3831.

Stratford upon Avon & DARS: 7.30pm. The Home Guard Club, Main Road, Tiddington, Stratford-upon-Avon. June 8 - Cables & Feeders by G8MWR, 22nd - Electronic Warfare by G3RZP A. Beasley G0CXJ. 060-882 495.

Three Counties RC: Alternate Wednesdays, 7.30pm. The Railway Hotel, Liphook, Hants. June 3 - Falkland Islands & the British Antarctic Survey by Richard Fletcher-Cook, 17th - Construction Night & Competition. Kevin G8GOS. (0420) 83091.

West Kent ARS: 3rd Fridays, 8pm. The School Annex, Albion Road, Tunbridge Wells, Kent. June 19 - Junk Sale. John Taylor G3OHV. (0892) 664960.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. May 29 - Cable TV by G3DPW, June 12 - General Activity Evening, 26th - DX Chasing on Top Band by G4AKY. Chris Frost. 081-397 0427.

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

Club Secretaries:

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

junior listener

Free Information

It's not often that you can get anything for free, but the Radiocommunications Agency has produced a range of Information Sheets, General Publications, Licence Application Forms and Guidance Notes, concerning the use of radio spectrum. You can get them free (**but don't ask for more than one copy of any Information Sheet**) from: The Information & Library Service, Radiocommunications Agency, Room 605, Waterloo Bridge House, Waterloo Road, London SE1 8UA 24 hour Answerphone Ordering Service: 071-215 2072.

There were quite a few I thought Junior Listener readers would find interesting and I've listed them here, but if you would like to see the full list you should request RA81 which is the Current List of Agency Publications.

RA174 - CB Information Sheet A: Licensing
RA175 - CB Information Sheet B: Equipment
RA176 - CB Information Sheet C: Interference & Abuse
RA177 - CB Information Sheet D: Emergency Monitoring & Channel 9
RA78 - General Role of the Radio Investigation Service
RA97 - Guide to Class of Emissions
RA 82 - Radio Amateur Information Sheet No 1: Licensing
RA69 - Radio Amateur Information Sheet No 2: Amateur Service Allocation in the 50MHz and 70MHz Bands
RA41 - Radio Amateur Information Sheet No 3: Morse
RA70 - Radio Amateur Information Sheet No 4: Amateur Radio Call Signs
RA83 - Radio Amateur Information Sheet No 5: Amateur Radio Clubs and Societies
RA84 - Radio Amateur Information Sheet No 6: Radio Amateur's Examination
RA80 - Radio Amateur Information Sheet No 7: New Amateur Radio Licences
RA100 - Radio Amateur Information Sheet No 8: RIS District Offices
RA105 - Radio Amateur Information Sheet No 9: CEPT Amateurs (UK Licensees)
RA117 - Radio Amateur Information Sheet No 10: CEPT Amateur (Visiting Licensees)
RA166 - Radio Amateur Novice Licence Information Sheet
RA139 - Radiocommunications Agency - its Role
RA169 - Receive Only - Scanners, etc.
RA79 - How to become a Radio Amateur
RA67 - Radio Users Guide to the Law
I'll be discussing the information in some of these sheets over the next few months. They also produce a multi-coloured wall chart which displays the frequency allocations in the UK, this is called *The United Kingdom Radio Frequency Allocations Chart*.

Prize-winning Books

The Science Book Prizes were started in 1987 by the Science Museum and COPUS as part of a programme of activities to raise the public awareness of science and technology and their implications. Whilst not necessarily anything to do with radio, science books can be very interesting and the ready of such books by 'junior listeners' should be encouraged. These titles should be available in your local library - if not in the school library too as they are aimed at the under 14s.

This year's short listed finalists are:

The Amazing Voyage of the Cucumber Sandwich by Peter Rowan

Black Holes and Uncle Albert by Russell Stannard

Dinosaur! by David Norman

How Nature Works by David Burnie

Ian and Fred's Big Green Book by Fred Pearce and Ian Winton

Tomorrow's Earth by David Bellamy

Just to choose one of them,

Black Holes and Uncle Albert, its about Uncle Albert and his niece Gedanken who discover the exploding universe, wonky jelly space, black holes that swallow everything and how you are made of stardust. It's the friendly way to find out about Einstein's Theory of Relativity. Anything that can make that readable has got to be worth looking for in the library!

Interesting Letter

I received a most interesting letter from **Mr Banfield** following my description of Baudot. In the early 1930s, he earned his living operating RTTY and Morse. The sketch shown gives you an example of the type of manual keyboard that he used.

They used to open the lid of the little 'piano', which would make it start to click at about 100 clicks a minute. The Baudot was a magnificent machine, built of heavy brass and polished steel. Everything, the main bank of brushes and each operator's machine (they have 1 + 4) was motivated by a.c. of about 50 or 60Hz. This was produced from the 200V d.c. mains by a vibrating reed about 460mm in length. He thinks an electric bell type of circuit kept it vibrating and additional contacts chopped the d.c. to make it look like a.c. to the 'phonic wheels' it drove. These wheels were some 150mm in diameter and resembled the non self-starting type of mains electric clock. It was all very reliable, as far as Mr Banfield remembers it never went wrong other than the reed used to speed up sometimes, but a small twist of a screw soon made it behave again.

Jamboree on the Air

Often called JOTA, Jamboree on the Air takes place every year, this time over the weekend of October 17/18. It's now in its 35th year, not a bad achievement at all. It gives Guides and Scouts the chance to meet without having to leave their own towns and also learn about amateur radio.

In 1991, radio amateurs working with local Scout and Guide Groups operated nearly 400 stations throughout the UK. So you should check with your leader to see if your Troop is doing something this year. If you are a licensed amateur and would like to get involved with JOTA, you should approach your local Scout Group and ask the Leaders to send for the new fact-sheet on how to take part in JOTA.

If you are in the Scouting organisation, why not have a go at designing the 1992 JOTA logo? The logo has to be eye-catching and interesting, yet easy to print and reproduce on items as diverse as posters and QSL cards to cloth



Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

badges and stickers. All designs should be sent to Paul Bateman, National Adviser for Amateur Radio, c/o Programme and Training Department, The Scout Association, Gilwell Park, Chingford, London E4 7QW.

Still on the subject of Scouts, they now have 'Scout Frequencies' in the amateur bands:

80m - 3.74MHz; 40m - 7.09MHz; 20m - 14.29MHz; 17m - 18.14MHz; 15m - 21.36MHz; 10m - 28.99MHz; 2m f.m. - 145.325MHz; 2m s.s.b. - 144.32MHz. So if you're licensed why not use them? If you're an s.w.l. Scout have a listen and see what you can log. Either way let me know what you find.

More Power

Radio amateurs will have access to greater power after a revision to the Amateur Radio Licence on April 1, the Radiocommunications Agency announced recently.

From April 1, 1.83 to 1.85MHz will be available on a primary basis to amateurs in the UK, with a new maximum power level of 26dBW p.e.p.

This is part of the 1.81 to 2MHz frequency band which amateurs can at present use on the basis of non-interference to other services, with a maximum p.e.p. of 15dBW.

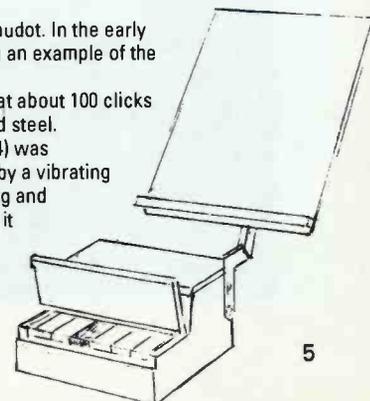
This is all part of the modifications made by the World Administrative Radio Conference Geneva 1979, to the allocation of frequency bands between 1.6065 and 2.85MHz.

HCJB Programmes

Ham Radio Today is a programme aired by John Beck on Wednesdays. At the moment he is running a feature called 'Computer Corner'. In it he explains the processes that go on behind the screen and helps you become a better informed consumer. Other features during his 30 minute programme are items on propagation and antennas plus a report from the world of electronics and amateur radio.

Another interesting programme is *DX Partyline* on Saturdays. This is in the company of Rich McVicar when you can discover what you can hear on the short wave bands.

You can get a copy of their latest schedule by writing to HCJB, Casilla 691, Quito, Ecuador. This will give you the latest frequencies and times for their programmes.



Special Event Stations

June 20/21: **GB8GC**. This station will be on the air from Glamis Castle, Angus, which has been a Royal Residence since 1372 and is the family home of the Earls of Strathmore and Kinghorne.

July 18/19: **GB2SMC**. This station is on the air from the Scottish Museum of Communication in Bo'ness.

August 1: **GB8PP**. On the air from Pollok Park, Glasgow, which is the home of the Burrell Collection and Pollock House - the birthplace of the National Trust for Scotland in 1931.

August 22/23: **GB6SM**. This goes on the air from the 3rd Annual West of Scotland Steam Fair, Summerlee Museum, Coatbridge.

September 19/20: **GB2NTS**. During this special event ten different stations will be on the air in the UK and Ireland from National Trust properties. This station will be on the air from Culzean Castle, Maybole, Ayrshire. Other stations to keep a listen for are: GB2NTU, EI7M/P, EI4DCD, GB2NTW, GB2NTC, GB2NTE, GJ3DVC and GT3FLH.

November 30: **GB6SA**. To celebrate St. Andrew's Day.

These special event stations in Scotland could enable you to obtain an award.

Scottish Thistle Award. This is issued for contacting or hearing **four** separate Scottish Tourist Board special event stations operating in Scotland. To claim, forward log extracts only (QSL cards are not required) to the **Awards Manager, PO Box 59, Hamilton, Scotland ML3 6QB** enclosing £2.00 or \$6 or equivalent (cheques/postal orders payable to STB(RA)EG).

The Supreme Tartan Banner Award. This is issued for contacting or hearing a total of six Scottish Tourist Board special event stations (this can include the four previously heard for the Thistle Award). Claim as before enclosing £2.50 or \$8 or equivalent and don't forget to quote the number of your Thistle Award.



Hands Free

A new safety orientated, 'hands-free' unit that can be used in conjunction with most vehicle-mounted radios, is now being made by Technotrend Ltd.

It is designed so that the driver can use the normal fist microphone with the push-to-talk facility, as well as the hands free operation. This is necessary when driving conditions inhibit the lifting and holding of the microphone. Communication is

carried out by the activation of a switch which starts a timed period when the radio operation is triggered by the operator's voice. It can be reset by simply re-pressing the switch that is positioned nearby.

For more information, contact **Technotrend Ltd., Unit B5, Armstrong Mall, Southwood Summit Centre, Farnborough, Hants GU14 0NR. Tel: (0252) 373242.**

Mini World Receiver

The AE3905 from Philips is a mini world receiver designed for travelling listeners. It has 13 s.w. bands as well as f.m., m.w. and l.w. as well as direct frequency key-in tuning. Other facilities include Autostore tuning which automatically stores the nine strongest station ready for direct recall. dual conversion, f.m. stereo via headphones and a local/distance key for sensitive reception of all signals. The multi-function l.c.d. has a 5-digit frequency readout and shows selected band indication, selected preset indication, stereo and preset flags.

The AE3905 is available from your local Philips dealer, priced £000.00.

Stolen

As a result of a break-in on Wednesday March 18 at the Icom Showroom in Herne Bay, the following equipment was stolen.

Icom IC-R1 S/N 890013168
Icom IC-W2E S/N
951001697

Icom IC-X2E S/N 93500007
Icom IC-2SET S/N
835001106

If you can help Icom trace the goods, please contact

**Dennis Goodwin,
Icom (UK) Ltd.,
Sea Street,
Herne Bay,
Kent CT6 8LD.
Tel: (0227) 741741.**

QTI TNA

Quotations of Technical Interest or *QTI* is a tape magazine that is produced for the visually impaired radio enthusiast by QTI Talking Newspaper Association.

Each issue of *QTI* is a compilation of technical articles selected from current radio magazines and recorded on tape by a team of readers from all parts of the UK. *QTI* is recorded on two C90 cassettes and is sent out to more than 140 members every three weeks. Most of these are in the UK, but there are also members in Norway, West Germany, Eire, India, Canada, USA and Australia. The cassettes are returned for erasure followed by recording of the next issue.

The service is available to all handicapped persons for an annual subscription of £5. In order not to deter those with financial hardship, the subscription is voluntary. There is a 'Sponsor a Member' scheme to help such members. The cassettes are sent post free to blind or partially sighted persons under the Articles for the Blind service of the Post Office. In other cases there is postage to pay.

As a registered charity, QTI Talking Newspaper Association is always in need of funds to cover running costs and to purchase materials and equipment. So donations, large or small are always gratefully received. As the Association is run by volunteers, there are no salaries or perks to fund so any donations are fully used.

For further information, contact

**Harry Longley,
QTI Talking Newspaper Association,
7 Anderson Close, Lancaster LA1 3JE.
Tel: (0524) 33207.**



Purpose Built

Homelodge is a timber-framed structure, free-standing, fully insulated and double glazed that could possibly be used as a shack if the house no longer has the space for you and your radio gear. A simple intercom provides communication with the house, mains wiring and telephone cables as well as a separate earth can be installed. The price for a Homelodge includes delivery and building, internal decoration, external decoration, double glazing, carpet, lights, power points, electric heating, blinds for the window and door and all the guttering, etc. The smallest size available is 3.6 x 3.6m and the cost is £8450.

If you would like details of the Homelodge range, contact: **Homelodge Buildings Ltd., Kingswell Point, Crawley, Winchester, Hants SO21 2PU. Tel: (0962) 881480.**



World Service Back in New Zealand

BBC World Service has restarted its 'round the clock' radio broadcasts in New Zealand. The new BBC Service can be heard in Auckland on 1.386MHz a.m. and in Wellington on 1.233MHz a.m. twenty-four hours a day.

The BBC has always had a small band of devoted short wave listeners in New Zealand. However, in January 1991 during the Gulf War, local test transmissions on f.m. started up in New Zealand. But they had to be abandoned eight months later when long term access to frequencies could not be guaranteed.

Programmes travel the 12 000 miles from BBC HQ in Bush House to Auckland by digital satellite circuit. The BBC Service for New Zealand radio listeners will be basically identical to that which can be heard anywhere else on the globe. But for weekday breakfast and drive time audiences, the schedule is going to be reinforced with additional news and current affairs material plus a special headline service of New Zealand news.

The BBC and WS New Zealand Ltd expect the service to have a third transmitter in Christchurch within six months. There are plans to expand to other parts of the country too.

Parish History

Michael O'Reagan is helping set up an Interpretive Centre in the Parish of Goleen, West Cork - formerly the Parish of Kilmoe. One of the aims is the research of the past history of the Parish. As their main project, they hope to research into Marconi as Marconi's base was at Bron Head near Crookhaven.

They would be glad of any information readers could give them, no matter how little. Contact **Michael O'Regan, Corelacka, Goleen, Co. Cork.**

Station Name Tuning

Listeners using the new Sony ICF SW55 compact short wave radio can get the station of their choice by simply recalling the station name. The 25 Station Name memory feature is incorporated in this new travel-sized radio allowing consumers to tune into the station of their choice more easily.

The memory holds up to 125 different frequencies, with 50 stations pre-programmed and the facility to store 25 station names. The ICF SW55 offers f.m. stereo, l.w., m.w., s.w. and s.s.b. reception, with continuous a.m. frequency coverage and 100Hz step tuning and a four-way tuning option including presets, manual tuning, auto-scan and 10-key direct tuning. A digital World Time clock/alarm, sleep function and world map display feature are also included.

The new easy-to-use tuning feature, compact size, full wave band reception and a wealth of features make this a radio suitable for holidays and travel abroad. The SW55 should be available from your local Sony dealer for £249.99

North Yorkshire Moors Railway

The Scarborough Special Events Group commence their summer season on June 27/28 when they will be on the air as **GBOYMR** during the Silver Jubilee Gala weekend celebrations to mark the 25th Anniversary of the North Yorkshire Moors Railway.

Operation will be around 3.725 and 7.055MHz in the h.f. bands plus 144MHz s/s/b/ and f.m. The usual full colour QSL cards will be available to commemorate the occasion and further details can be obtained from **G4SSH. 9 Green Island, Irton, Scarborough, North Yorkshire YO12 4RN.**

Scanner Aid

Scanner radio enthusiasts who monitor anything more than a few local channels can soon find they have difficulty managing all the frequency and related information, especially if they don't own a computer.

Scanner Forms is a set of ten 'master' forms designed to help manage all this information and make scanner monitoring more efficient and effective. The masters can be photocopied or reprinted in quantity. The package includes:

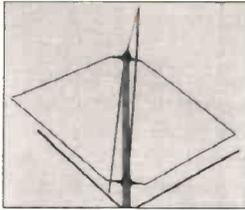
- Memory Channels Record** - enter the channel number, frequency and user of each channel in the scanner.
- Memory Channels/Bank PL Form** - record bank number, channel number, frequency PL tone and user information for each channel programmed into the scanner.
- PL Tone Check-Off Sheet** - helps locate the tone of a PL user on a specific frequency.
- PL Tone User ID Sheet** - record the names of the user of a specific frequency and PL tone.
- Travellers' Form for Local Frequencies** - record frequencies for local utilities.
- Travellers' Form for County/State Frequencies** - similar to the local frequency form only for county/state use.
- Emergency Services Form** - Over 20 categories that might be involved in an emergency, with room for up to eight frequencies for each.
- Railroad Radio Frequency List** - lets user record frequencies for some 23 different types of railroad communications - up to three each.
- Airport Radio Frequency List** - Use to record the many frequencies used at airports, according to user type.
- Marine Radio Frequency List** - Use to record marine radio frequencies of various user in coastal and waterway areas.

All forms are on white card stock and are ready to take to a printer or copying service.

Scanner Forms is \$10 plus \$3 overseas post and packing and can be ordered using Visa or Mastercard. **Tiare Publications, PO Box 493, Lake Geneva, WI 53147, USA.**



Aerial Systems for serious listeners Look to Lowe



DX-One Electronic Antenna

£249 inc VAT

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



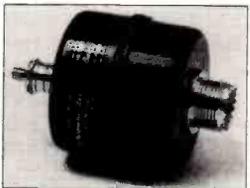
SP-2 Antenna Splitter

£152 inc VAT

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

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

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



Magnetic Longwire Balun

£36 inc VAT

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

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

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



MLB Antenna: Mark I

£56 inc VAT

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

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

MLB Antenna: Mark II

£67 inc VAT

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



THE LISTENERS' BOOK OF THE YEAR GETS EVEN BETTER

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

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

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



LOWE ELECTRONICS LIMITED

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

For the very best in Communications Receivers Look to Lowe

Communications Receivers from KENWOOD

R-2000

- 150kHz - 30MHz
- 118MHz - 174MHz (optional)
- LSB, USB, CW, AM, FM
- Digital VFO with excellent stability
- Dual 24hr quartz clocks
- 10 memories (tunable by VFO)
- Memory/band scans
- 3 built-in IF filters
- Quality audio with 4in. speaker
- 375mm(W) x 115mm(H) x 210mm(D)
- Optional accessories
- On demonstration at all Lowe Regional Centres

R-2000 £549 inc VAT



R-5000

- 100kHz - 30MHz
- 108MHz - 174MHz (optional)
- USB, LSB, CW, AM, FM & FSK
- 10Hz step Dual Digital VFOs
- Superb Interference Reduction
- 100 memories with full data storage
- Dual 24-hour quartz clocks
- Keyboard frequency selection
- RS-232C interface for use with 'CONTROL' software

R-5000 . . . £925.00 inc VAT

The NRD-535 General Coverage Receiver

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

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

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

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

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



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

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

- NRD-535 HF Receiver £1,195 inc VAT
- CMF-78 ECSS option £229 inc VAT
- CFL-243 BWC option £359 inc VAT

FREE

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



Personal Number: 100000

BOURNEMOUTH: 27 Gillam Road, Northbourne Tel: 0202 577760

BRISTOL: 6 Ferry Steps Ind Estate Tel: 0272 771770 CAMBRIDGE: 162 High St, Chesterton Tel: 0223 311230 CUMBERNAULD:

Cumbernauld Airport Foyer Tel: 0236 721004 LONDON (HEATHROW): 6 Cherwell Close, Langley Tel: 0753 545255

LONDON (MIDDXX): 223/225 Field End Rd, Eastcote Tel: 081-429 3256 NEWCASTLE: Newcastle Intn'l Airport Tel: 0661 860418

Marconi and the South Wellfleet Wireless

Little has been published in the UK about the Marconi wireless station located at South Wellfleet, Cape Cod, Massachusetts in the USA, which became fully operational in 1903. In this article F.C. Judd G2BCX, outlines the history of the birthplace of United States transatlantic wireless.

Practical Wireless published my article 'The Early Work of Marconi', in the May and June '84 issues. This covered the period from the time of Marconi's first experiments, in about 1885, to the installation of wireless stations in the UK and at Glace Bay in Nova Scotia for 'transatlantic' wireless service in 1902. The article includes details of his major achievement, the first wireless signals across the Atlantic in 1901. Marconi's next venture was to set up a station in the USA. A suitable site was found on Cape Cod, but shortly after the station had been installed gale force winds completely demolished the antenna. An alternative site, South Wellfleet, was chosen and here the whole station was rebuilt.

South Wellfleet - The First Transmission

On 18 January 1903 the official communiqués of the American President Theodore Roosevelt and King Edward VII were exchanged between South Wellfleet and Poldhu in England. Using the American call sign 'CC', this was also the first transmission from the United States of America and Great Britain and another Marconi achievement. Within a few months this new wireless station was regularly sending American news, through Poldhu, to *The Times* newspaper in London and news from Europe, via a telegraph link from South Wellfleet direct to the *New York Times*.

Technical Details - The Antenna

Following the disaster that destroyed Marconi's original circular antenna system a four tower arrangement was erected as illustrated in Fig. 1. This was similar to that used at Glace Bay (Nova Scotia) and Poldhu in Cornwall (UK). Each tower was 64m high, 7.3m square at the base and 2.4m square at the top. The towers were set in a square each 61m apart.

The antenna itself was made up of large gauge stranded copper wire (the top was square section) with 200 lead down wires to form the inverted pyramid shape. These were all connected together at the base to a large

ring from which the main lead-in was taken, through the roof of the building beneath, to the transmitter. A counterpoise was used for r.f. earthing as the sandy soil on which the station was built made an unsatisfactory 'ground'.

The Transmitter

This was powered by a generator delivering 2.5kV stepped up by a transformer to the 25kV required by the rotary spark system. The

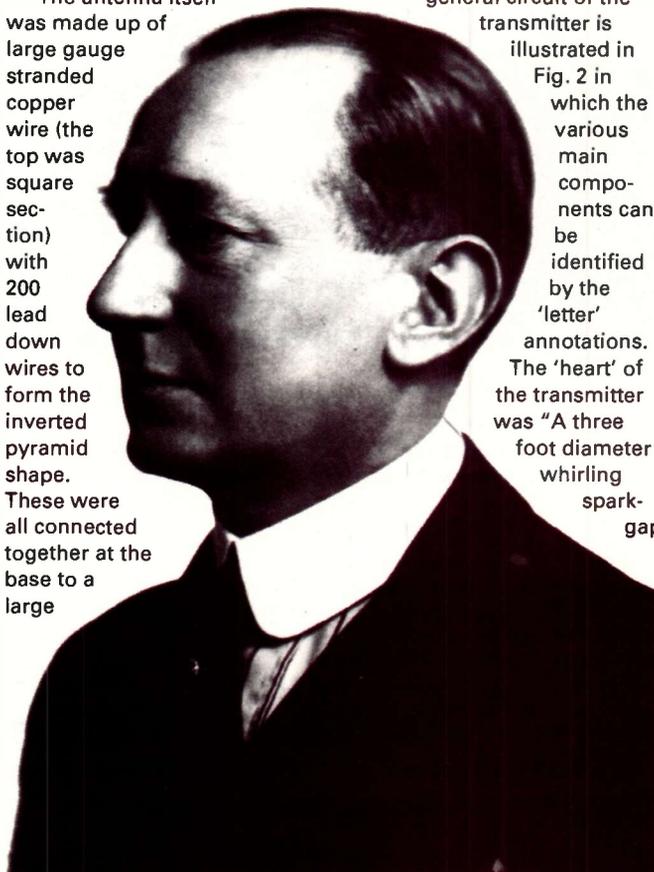
general circuit of the transmitter is illustrated in Fig. 2 in which the various main components can be identified by the 'letter' annotations. The 'heart' of the transmitter was "A three foot diameter whirling spark-gap

rotor. The spark-gap was not 'muffled' and with 30000 watts of power the crashing spark could be heard four miles downwind!". To prevent destructive arcing and secure a clean break at the spark-gap, compressed air jets 'blew out the arc' as the circuit opened. Although the operational 'wavelength' was estimated as about 1800 metres, the bandwidth probably extended over the whole of today's long wave broadcast band!

Not surprisingly there were problems with interference. "The tuner was not too efficient and had to be improved because of its tendency to interfere with other transmitters". This presumably meant that the 'transmitter' was interfering with reception by other stations!

The Operators Room

This room had a sound-proof door leading directly to the transmitter building and which was fitted with a glass port so that the operator could 'see' the spark-gap. "It was rarely, if ever, that anyone entered the transmitter building while the spark rotor was spinning. Such a move would have proved dangerous. The operator had to sit on an insulated wooden stool to work the telegraph key using a 'pump handle' which required much effort!". The pump handle (?) was later replaced by automatic Wheatstone keying and perforated tape equipment. Pre-punched tapes of news items, etc., taken from



overland telegraph lines, could be used to key the transmitter directly. A change no doubt welcomed by the operators. The news service operated from 2200 to 0100 hours local time, found to be the most reliable period for transmission to England, but private messages could be sent at other times for 50 cents per word. (You paid your money and hoped that propagation conditions held good!).

The Receiver

The basic receiver circuit, illustrated in Fig. 3 employed a 'coherer' detector. According to the original explanation of the circuit this had to be consistently shaken by means of a mechanical 'tapper' to maintain sensitivity. The received Morse dots and dashes could be heard by means of a headphone and/or recorded by a paper tape 'printer'. The receiver was presumably 'tuned' to the same wavelength (1800 metres) as the transmitter and used the same antenna

Conclusion

For 15 years the South Wellfleet station continued with 'commercial' operations but its end was inevitable. The sea cliff where the station was located was eroding away at a rate of 3 feet a year and by 1916 the eastern towers were threatened with collapse. The station was closed the following year by the US Navy to ensure security and news censorship during World War I. The station was never reopened and in 1920 was scrapped altogether. In 1919 the RCA company of America had bought out what was the American Marconi Co. and later built a new wireless station at Chatham, on Cape Cod. With the callsign 'WCC' it eventually became the most used of all the ship-to-shore stations on the East Coast of the USA.

The author is indebted to Dr L.P. Todd, a leading American historian and radio amateur WA1STP, of Cape Cod, Mass, USA, for much of the information concerned with The Marconi South Wellfleet Wireless Station.

Short Wave Magazine, June 1992

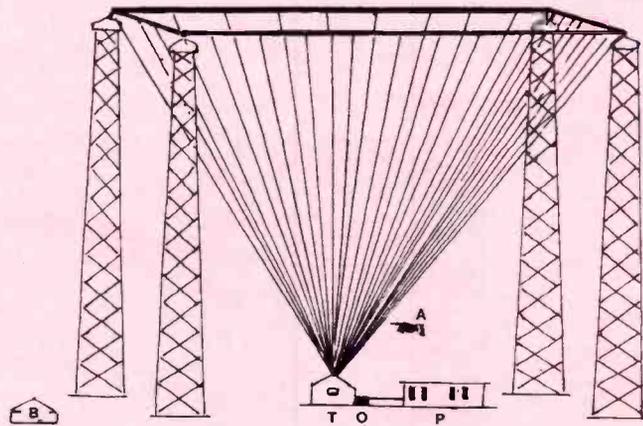


Fig. 1: The South Wellfleet transmitter site. (A) The main antenna assembly; (B) Personnel living quarters; (T) The transmitter house; (O) Wireless operator's hut; (P) Transmitter power house.

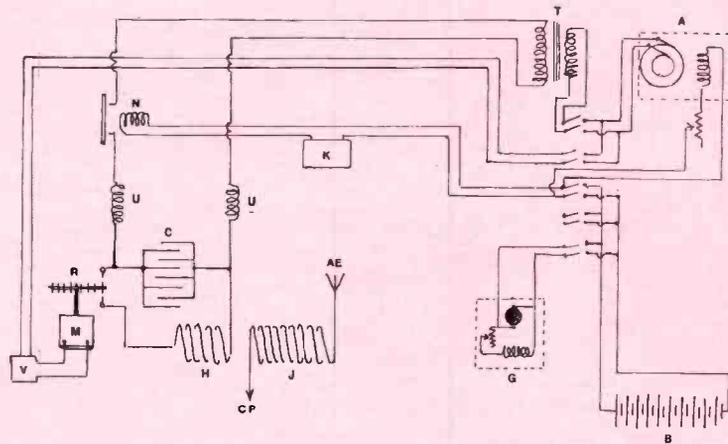


Fig. 2: The transmitter circuit. (A) 60Hz Alternator. (B) 110V storage battery, (C) High tension condenser, (G) 110V battery charging generator, (H) Oscillating circuit inductance, (J) Antenna coupling inductance, (K) Morse key, (M) Rotary spark-gap motor, (N) Main high voltage keying relay, (R) Rotary spark-gap, (T) Main high voltage transformer, (U) Radio frequency chokes.

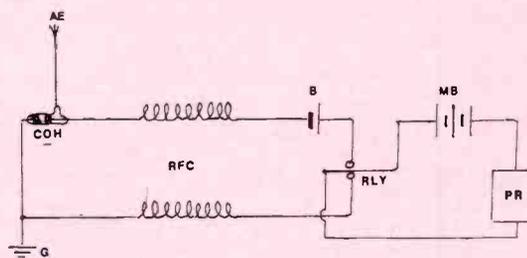
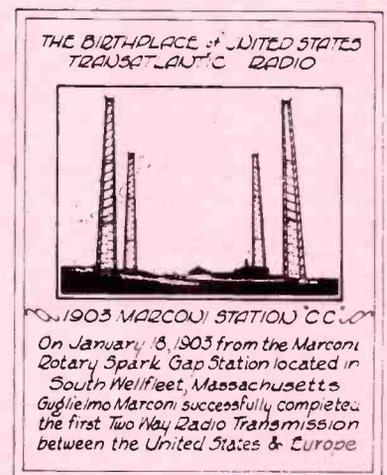


Fig. 3: The receiver circuit. (AE) Connection to main antenna, (B) Coherer battery, (COH) Coherer detector, (MB) Receiver battery, (PR) Morse printer, (RFC) RF chokes, (RLY) Relay.

Fig. 4: South Wellfleet (Marconi) station 'CC' 75th Anniversary postal sticker.



1903 MARCONI 1978 75th ANNIVERSARY

Fred Judd G2BCX

An era in amateur radio ended with the passing of Fred Judd G2BCX on 10 April 1992.



F.C. Judd A Inst E, G2BCX demonstrates his working replica of the apparatus used by Heinrich Hertz for the 'discovery of wireless waves' experiment in 1880. The demonstration took place at the University of East Anglia, School of Physics and Fred later presented the replica apparatus to the School.

Fred Judd G2BCX was well known throughout the world of amateur radio, hi-fi and science. Although Fred would have been 78 years old in June, he was still keeping himself busy by writing articles for *Short Wave Magazine* and *Practical Wireless*. One of his articles about Marconi, thoroughly researched in Fred's inimitable manner, appears in this issue. Fred would ring me up in the office with suggestions for future articles, either about some historical event or something to do with his involvement in the hobby.

Although Fred was the subject of the 'Other Man's Station' in the August 1947 issue - everything in the shack was built by Fred, even the microphone - his first article in *Short Wave Magazine*, as far as I can ascertain, appeared in the January 1950 issue and was titled 'Experiments with Scale Model Aerials'. He later had a major disagreement with Austen Forsyth and refused to write for the magazine, only returning as a result of my repeated overtures.

Probably best known for his antenna designs, in particular

the Slim Jim and ZL Specials, he was very active in almost every sphere of radio. Radio control of models interested him and I remember a series of articles by Fred in *Model Engineer* in the fifties, later turned into a classic book on the subject.

He constructed several interesting replicas of historic electrical machines including a Wimshurst machine and Heinrich Hertz's spark transmitter, which he wrote about in great detail for the pilot issue of *Vintage Radio*. The replica Hertz apparatus was later presented by Fred to the University of East Anglia School of Physics.

A visit to Fred's shack at Cantley, near Norwich, was always interesting. Fred would enthuse about the experiments he was continuing to perform with what was probably the only amateur built and operated ionospheric sounder in the UK. This interesting experimental equipment was built by Fred and operated in the 49m band using one of the last remaining G9 Test & Development licences. Then

there would be the latest ideas on antennas and how he was modelling them using his own u.h.f. scale-model aerial performance testing system, described in detail by Fred in *Out of Thin Air*.

Artificial Aerial Licence

Fred's interest in radio started at the age of twelve when he built a crystal set. By the age of 15 he

had constructed valved receivers for the reception of short wave broadcasts and by 1934, just five years later, he had obtained an Artificial Aerial transmitting licence with the callsign 2BCX - latter to incorporated into his amateur callsign - G2BCX. Most of Fred's working life

was entwined with radio - as a Maintenance Engineer with the Metropolitan Police and during the War with the RAF,

August 1947 saw Fred's shack featured in 'The other man's station'. Everything seen was built by Fred.



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The new NRD535 epitomises the very best in communications receiver design. This high technology product is based on the abundant technical experience gained by JRC in the professional communications receivers field. This means that the NRD535 is arguably one of the best receivers available to meet the discerning listeners needs. Brief specifications are as follows. Frequency coverage: 0.1-30MHz; Operating modes: CW, SSB (LSB & USB), AM, FM, FSK & RTTY. Supply voltage: 240V A.C. or 13.8V D.C. ECSS, BWC & RTTY units available as options.

JRC
NRD535



DRAKE
R8E

DRAKE R8E

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



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

broadcast, and some models cover other bands as well. The very latest model available from SONY is the ICF-SW77. This receiver covers LW, MW, SW and FM stereo broadcast bands and has SSB reception on the SW bands. A comprehensive keypad and LCD display give easy control over the massive array of features available.

Other SONY products available include the minuscule ICF-SW1, the versatile ICF-SW7600, the popular ICF-2001D and for airband enthusiasts the AIR7 and ICF-PRO80



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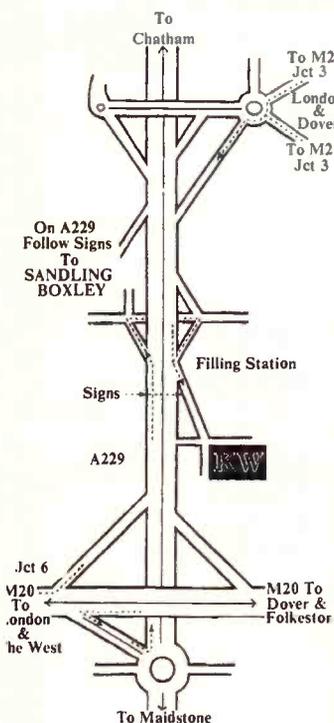
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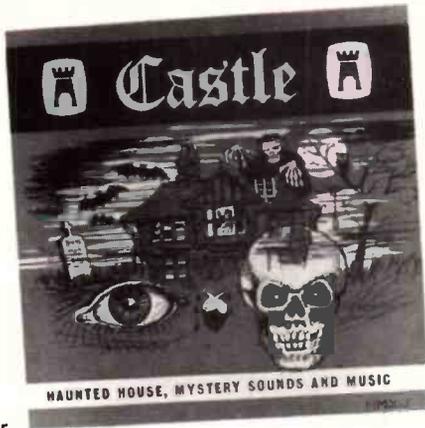
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Fred Judd G2BCX

followed by R & D on tape recorders and marine radar and then running his own recording studio creating special sound effects for film and television. Fred enjoyed writing technical articles and ended his 'working' life as Technical Editor of *Hi-Fi & Audio News* with IPC Magazines before 'retiring' to Norfolk.

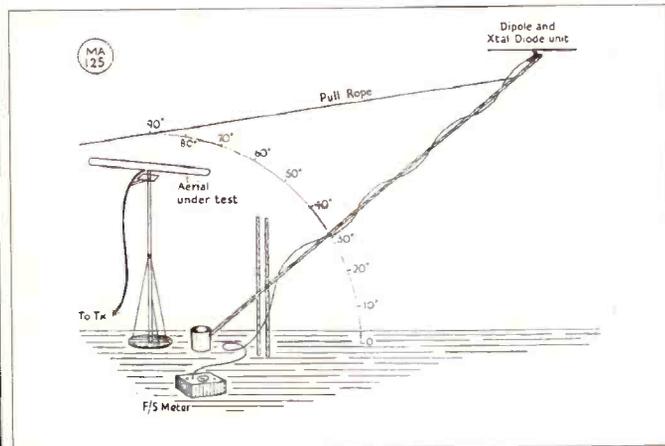
The funeral, attended by many friends, former colleagues and the Editors of *Short Wave Magazine* and *Practical Wireless*, took place at the Norwich Crematorium on Thursday April 16. The staff



Fred ran his own recording studio creating special sound effects, one of the covers is shown here.

of *Short Wave Magazine* and its readers, extend their deepest sympathies to his wife Freda and his family.

Dick Ganderton G8VHF



**Arrangement devised by G2BCX to plot vertical patterns.
Taken from SWM January 1950.**

First Aid

As a newcomer to this fascinating hobby, I have just acquired a second-hand communications receiver - namely a SMC-73, mainly for u.s.b. listening particularly to aircraft.

Having hastily connected a temporary makeshift antenna, a 7m wire hanging from the bedroom window to a tree, I can receive good quality signals of conversations between aircraft and ground controllers on New York Oceanic at around 8.95MHz.

I wonder if anyone could enlighten me with regards to the origin and age of this receiver.

Richard Foster, 25 Bodmin Close, Scunthorpe, South Humberside DN17 1TW.

I own a Realistic PRO 2021 scanner. I would be grateful if anyone knows of a way of having 'switchable a.m.'. Now you only have a.m. for the airband, this can be tiresome.

G.P. Jones, 74 Joseph Luckman Road, Bedworth, Warwickshire CV12 8BQ.

I am looking for a manual for the Prinzsound R999 solid-state 26 8-band radio. I will pay any costs, etc.

I.N. Solly, 32 The Centre, Newington, Ramsgate, Kent CT12 6LE. Tel: (0843) 595574.

Recently I have acquired the working 'head' of a Collins SWR/PWR meter. Research shows its part number is 302C-1 and it was fitted into the Collins speaker console, part number 312B-4. Can anyone help with a circuit diagram of this 'head' wiring to its meter and the switching circuitry involved? All costs paid.

Bob Leask, The Birches, 80 Mill Road, Sharnbrook, Beds MK44 1NP.

I would like to know if anyone could give me some information about aircraft flying the North Atlantic Tracks. Does anyone know if American aircraft have company high frequencies to inform their companies of their arrival times back to the USA or Canada?

I know that American and Delta flights use Rainbow Radio on 13.285MHz, but what frequencies on h.f. would Air Canada or Canadian aircraft use. What company frequency does Aer Lingus use or does it use Portishead?

Darren Heaney, 14 Ashgrove Avenue, Lurgan, Co. Armagh, N. Ireland BT67 9EA.

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An external active antenna with built-in pre-amp, covers 150kHz - 30MHz. Fully portable with easy to mount fixing brackets. **£57.95**

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A Replica Televisor

The feature on John Logie Baird, the television pioneer in the January 1991 issue of Short Wave Magazine, written by R. J. Harry, mirrored J. A. Pearson's association with television during the period between 1926 and 1934. Like many other wireless bods, he became interested again and has now built a replica Televisor.

I was born in Kingston upon Hull in April 1915. My father, who was an electrical engineer, died in 1926. The General Strike ruined him and the difficulties that arose forced my mother to return to her parents in Stafford with my sister and I. In short, my grandparents came to the rescue. My grandfather and his two sons worked for the English Electric Co. of Stafford, formerly Siemens.

Grandfather leaned towards the old Victorian ways of bringing up children and after being with the family for a few months, I was instructed to take part in a hobby of some sort. Grandfather was interested in wireless and it became obvious that I was going to be enlisted to help him to build a wireless set. His crystal set was in no way satisfactory, so we started to build a one-valve set. There was only gas in the house, no electricity, so battery power had to be used. Wet, low tension battery, 9V grid bias and umpteen 4.5V torch batteries connected in series to provide the 120V h.t. supply. Oh, the number of times I had to uncouple them, check the batteries, take out the duds and recouple was no one's business.

My two uncles were both very clever electrical engineers in the factory, but had no interest in wireless. Both were football and sport mad. So, being younger and in no way able to rebel, I continued with the exercise forced on me. However, I must say that both of the uncles did yeoman service for the Company. One was sent to Poland on installation work and the other

to Russia to work on the Danepier Dam project.

Having made a good job of the wireless set and not being allowed to be untidy, or careless, seeing by wireless came about with the statement "we will build a Televisor." And so we did! Lots of bits and pieces were obtained as scrap from the factory and other parts were bought from the usual sources, Telsen, Cossor, Peto Scott, etc. With the exception of the Nipkow disc, which was cut from an insulation material not unlike Tufnol. What the name of it was, though, I cannot remember.

Problems

From now on the problems started. The production of the disc was a laborious and time consuming project. All sorts of methods were employed,

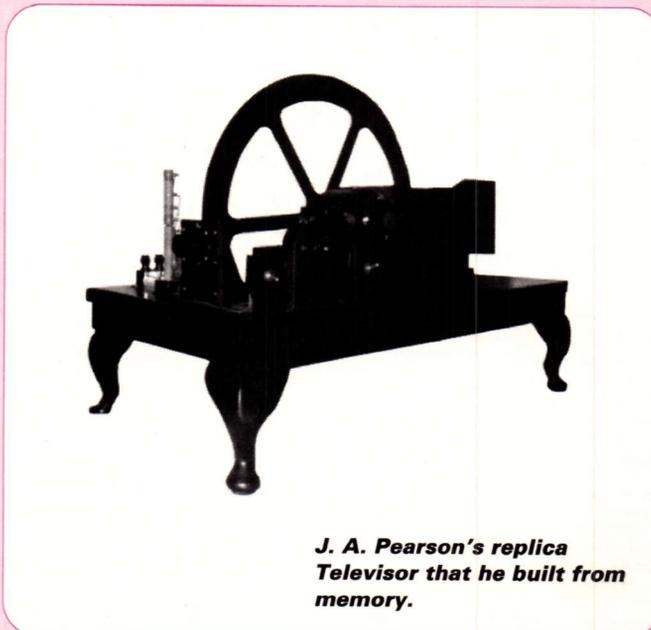
ords, tangents, lines accurately drawn on white paper by my uncle. How accurate R. J. Harry was in his article - from now on his story is my story! We did run our Televisor for test purposes in London and I think we imagined that we got a picture! I cannot remember any exciting moments, having taken it, very laboriously, to a pub in Shooters Hill, London, where other builders were using the test transmissions from Alexandra Palace at predetermined times. My grandfather and I returned to Stafford a little disheartened, having seen a female singer on a professional CoS set. The project was shelved and later sold to a local wireless enthusiast, who also had no success with it.

However, I entered engineering as a precision gauge maker and after a

lifetime of accurate work I retired. Having the feeling that if I sat down I might get corns on my backside just waiting for my 'box', I made up my mind to do something interesting. Yes, you have guessed it! Why not make a Televisor from memory? So I have, as well as an early wireless set and my own loudspeaker.

Let's get back to the Televisor. This time the disc, with its spiral track of 30 holes, $\frac{1}{32}$ in diameter, was the easy job. The Director of the company I worked for before I retired invited me to supply the $\frac{1}{16}$ in thick aluminium blank, which he would then get machined and jig bored to my dimensions. I jumped at the offer and now have a replica Televisor to show for my efforts. The motor is not correct and has to be stepped down by means of synchronising gear to 750r.p.m. So far I have had no luck as the original motors are no longer in existence and I don't think I could make a copy of the original motor, either from memory or an illustration. My set provides for either a Telelux beehive type neon bulb or a flat-electrode neon tube. I have both, but the flat-electrode tube needs repairing as the sealing tit has been broken off.

Most of the rest of the set has been constructed by myself, having gained much experience in making what you can't buy - the main table, lens housing, motor mounting, Zenite resistance, etc.,. The only thing I have not attempted is the metal casing. One reason for this omission is that one day both the



J. A. Pearson's replica Televisor that he built from memory.

TELEVISION



J. A. Pearson has also built a replica vintage wireless set and loudspeaker.

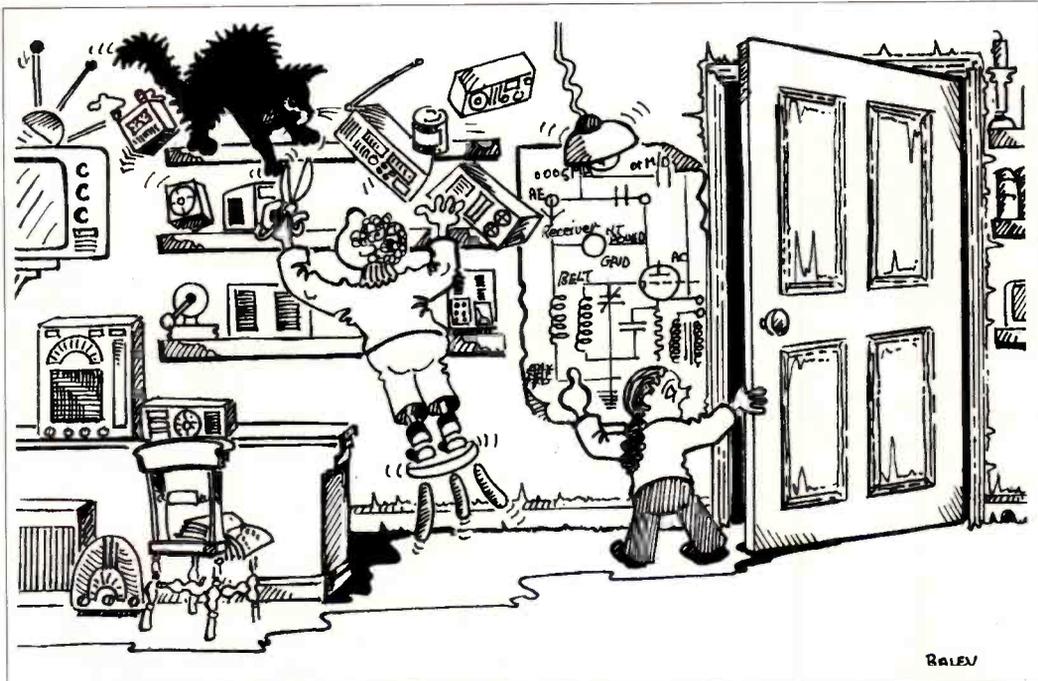
Televisor and wireless will end up in a museum and the metal casing would prevent the insides being seen.

Luck

I must add that in more than one way luck helped in my lost projects. When I took the

aluminium for jig boring, a mill operator said "Oh, my Dad made a Televisor and still has some books. I will get some copies that may help." He was as good as his word. Another disc was made for me by Truform, Walsall and given to an enthusiast in Croydon.

Listen With Grandad *By Leon Balen and David Leverett*



Enjoy the antics of our newest addition to the Short Wave Magazine staff. 'Grandad' and his family will be appearing regularly from now on.

Do you relate to any of the situations the old chap gets into? If so then why don't you let the Editor know, there must be loads of strange and funny experiences you could share with our readers. £5 SWM Gift Vouchers for any published.

Grandad! Come quickly! Alex thinks he's found a cat's whisker for your crystal set.

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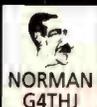
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TELEVISION

Loewe ART 21 Multi-standard, Stereo, Colour Television

Many TVDXers will have started their hobby with a small black and white set or perhaps an external tuner like the DX100 connected to the domestic TV. Myself, I started with a Plustron TVR5D. Like our fellow s.w.l.s, who perhaps start with an old ex-MOD valved receiver, we soon hanker for something bigger and better as we wonder what all those test cards from Sweden and Russia would look like in colour. We wonder if we could identify more stations if we could receive Teletext. The s.w.l. might look at dream receivers such as Icom's R9000 or the NRD-535 from JRC, the TVDXer would be hankering after a larger screened multi-standard set. One such set I considered was the ART 21 made by Loewe, after much thought and a quick check at the bank, I purchased one to add to the TVDX system.

General Description

The ART 21 is a 20in FST, stereo, multi-standard set in the modern, black, monitor style. There are speakers either side of the screen and the only visible control on the front is the on/off switch, all other set controls are on a small, horizontal slide-out panel under the bottom right of the screen. These controls are station search, standards selection, fine tuning, memory store, volume, stereo sound balance, bass, treble, picture definition, hue (for NTSC), contrast, programme selection and service mode enable. A small panel above the control panel, but behind the anti-glare front glass, has a range of green l.e.d.s that indicate channel/memory number, the selected system, cable channels, stereo sound, base width extension, right or left channel (dual language broadcasts) and satellite receiver (if added to the set). Just below this panel is a stereo headphone jack. On the rear of the set are two SCART sockets and 2 DIN sockets for

There is a plethora of portable v.h.f. mono TV sets, some even equipped for the French system L, on the market suitable for the reception of foreign TV stations. There are also many types of colour set for the TVDX enthusiast from 2in l.c.d. pocket sets through to giant 36in NICAM sound, multi-standard sets. Tim Anderson G0GTF looks at the Loewe ART 21 set in this review.

external speakers and, of course, the v.h.f./u.h.f. antenna socket.

Virtually all controls are duplicated on the remote control which also includes controls for Loewe video recorders. The set measures 26 (w) x 14 (h) x 16in (d) which is fairly large but not as big as some other 20in screen sets. Overall the set has a tidy, modern, no fuss look.

Facilities

The set is capable of resolving all colour systems, PAL, SECAM, NTSC and all sound systems, including the stereo systems used by the Netherlands and Germany. The set has 34 memories, the first 27 can be allocated to any channel and/or system. A

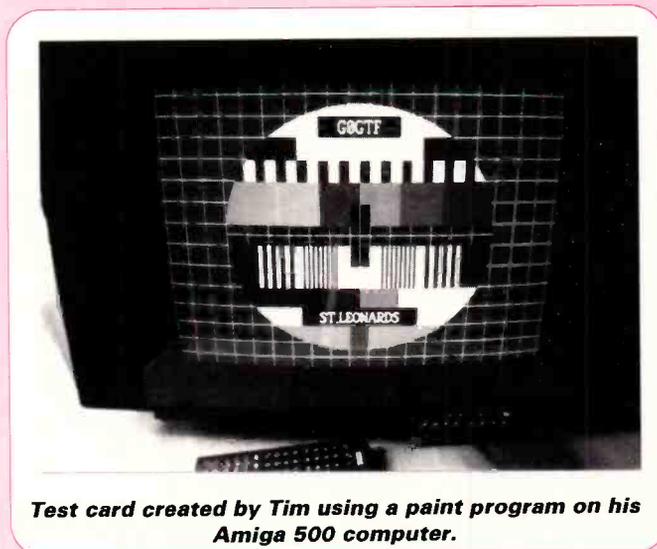
comprehensive channel chart in the well laid out instruction manual makes the loading of all your favourite DX channels into memories very easy. Several of the more unusual channels, such as the Italian and Albanian IC, are already programmed into the set. Other channels such as the East European R3, 4 and 5 can be reached by fine tuning from some of the cable channels. Although the chances of receiving Australian or New Zealand TV are diminishing as the sun spot cycle peak is past, these channels can be resolved by fine tuning up or down from the lowest Irish channel which is already in the set.

NTSC reception is only possible on pre-programmed channels (E-channels) when

you buy the set, not too good if you want to receive American Forces Network TV from Rotterdam, which is on the American channel A80, well above our own channel 69. However, I was lucky enough to receive the service sheet with the set. On the service sheet is a comprehensive chart listing all the parameters of the set that can be changed when the set is switched to 'Service Mode'. One part of the list leapt out at me, 'NTSC channels enable/disable'. with my heart in my mouth in case I lost some other facility on the set, I followed the instructions to enable NTSC channels. In fact the instructions are very easy to follow, if you are not sure of what you are doing just don't press 'memorise' and the set will revert to its default settings when you turn it off. So, a few moments later I tried programming A80 into the set, it worked. Doing this also allows you to programme any American channel into a memory, useful for finding channels A3, 4, 5, & 6 during the occasional Transatlantic Sporadic-E opening. Making this alteration to the set does not lose you any of the other reception facilities.

The correct sound for each system is selected when you select the colour system on the main control panel, however the Art 21 will still tune automatically in some instances. If, for the sake of argument, you have selected the British system I and then decide to tune across u.h.f. and find a signal from, say, Belgium the set will automatically select the Belgium sound if there is no system I signal on that channel!

The stereo sound is excellent, I have received stereo from the Netherlands and Germany for long periods during tropo and it certainly adds another dimension to DX viewing. During the day Dutch TV transmitters radiate dual channel sound on test transmissions, two Dutch radio services I believe, and either channel can be selected



Test card created by Tim using a paint program on his Amiga 500 computer.

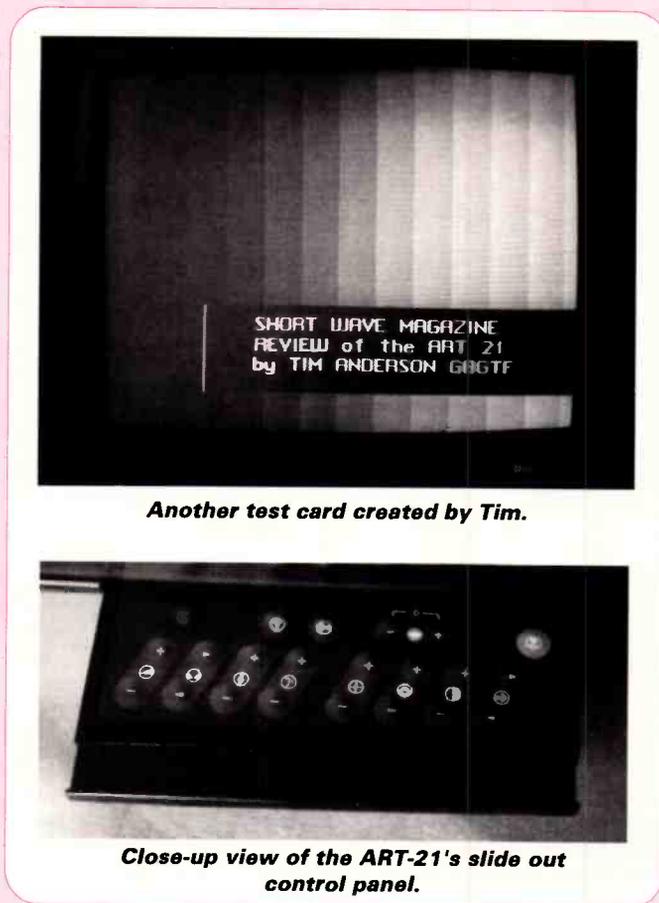
TELEVISION

from the remote control. Tone can be set for 'speech' or 'music' from the handset but bass and treble can be altered independently on the set controls. Stereo balance is adjustable only on the set.

The picture definition control has quite a wide range, working in the same way as enhancers to sharpen up pictures when doing video tape copying, varying the picture from soft and blurry to very sharp. Personally, I did not find this control of much benefit when watching off-air signals, it is useful for (apparently) sharpening up detail when watching poorer quality video tapes.

Moving round to the back of the set brings us to the two SCART sockets which between then allow you to connect just about any form of v.c.r., video disk player, camera/camcorder, computer, etc., to the set. Outputs from audio/visual devices, to use the trendy term, can be fed into the SCART sockets at video or RGB with or without blanking/synchronising pulses and the voltages that some v.c.r.s, etc., output to switch a TV into monitor mode, such as v.c.r.s that have a SCART plug on the back too. What does all this mean on the ART 21? It means the set will cope with PAL, SECAM or NTSC being fed into the SCART. By selecting the appropriate memory you can replay North American system video tapes (providing you have the right sort of v.c.r.). Memory 33 is for applying 60Hz Teletext signals to SCART socket 2, does anybody use 60Hz text generators in this country? Sound inputs and outputs can be stereo or mono. RGB inputs from computers can be fed into SCART socket 2 and you then select either memory 29 or 31 depending on whether your computer supplies the breaking voltage or not. I have connected my Amiga 500 computer to the TV at both video and RGB, the results at video are mediocre but at RGB extremely good. Having stereo sound on the TV helps with the Amiga as that has stereo sound too.

External speakers can be connected to this TV via the DIN sockets on the back and the manual quotes 4Ω for the speakers and a 20W per channel output.



Another test card created by Tim.

Close-up view of the ART-21's slide out control panel.

One other facility mentioned above that is extremely useful is the Service Mode. There are no external or internal controls for vertical and horizontal hold. In fact, the only thing you can 'twiddle' inside the set is the focus, all the usual service functions can be altered electronically from the remote control with the set in service mode. Virtually all TVDXers like to photograph their DX reception and if you have gone to the expense of a large multi-standard set it is a shame to have you viewing and photographs marred by non-linear, pear-shaped test cards! Switch the set into the service mode whilst watching a test card and you can put everything exactly right. It doesn't say much for Loewe's quality control, when lining up the set is so easy, that I had to alter the linearity and height to get a perfectly shaped test card.

Teletext

Teletext was fitted to the set when I purchased it. All the usual functions are included in the Teletext controls. There is no Fastext facility, however, there are eight memories for

each channel which can all be reviewed on a 'contents' page. Four of the memories are user programmable and the other four are always the page previous to the last page viewed, present page and two pages for 'turning' forward.

Operation

Operation of the ART 21 is fairly straightforward and made even easier by the clear, easy-to-read operator's manual. When I first got the set home I wanted to programme all the memories and this didn't take too long, about half an hour to allocate the first 9 memories to various Band 1 channels, 10-13 for local TV, 14-19 to the six French stations and 19-27 for various Dutch and Belgian services, including AFN, that quite often appear here in even the slightest lift. It would have taken even less time if I had remembered to press 'store' each time I loaded a memory channel! Anything can be memorised for any channel, so you can even have different volume, colour and contrast settings for PAL and SECAM channels.

Once you have programmed all the memories it's

time to sit back and wait for the DX to roll in!

In Use

The ART 21 works well as a domestic and a DX set, gain is quite reasonable and vertical and horizontal hold cope fairly well with unstable DX signals. Having said that I have found from past experience that all larger colour sets seem to have less gain and poorer sync locking than black and white sets and the ART 21 copes better than some makes of colour set I could mention!

Sporadic-E picture locking depends very much on the signal, weak stable pictures lock quickly, after that it depends very much how many signals are on one channel and what conditions are like. On the whole sync locking in Sporadic-E is good and colour pictures were received from many parts of Europe and Morocco this summer.

I did have a chance to try out the set during a couple of F2 openings and the set coped fairly well - it's a wonder any unmodified set can cope with F2 pictures with their attendant multiple images, smearing, phase reversals and sometimes, due to differential propagation over the bandwidth of the picture, disappearance of syncs and low frequency information whilst the colour sub-carrier is still there! Suffice it to say, F2 pictures did lock when strong enough. One could be forgiven for thinking that colour reception is impossible during F2, I must admit it has not happened much, but I did have the odd burst of colour on test cards from Iran.

Colour reception is good on tropo signals. From Germany the colour usually came on at about a P3 picture, sometimes even P2. Pictures locked easily in tropo, the only real problem during tropo, as with any set, were when two or more signals were present on one channel at similar signal strength - but even this can be overcome to a large extent on this set, explained later.

Colour reception on the 'local' French signals here is very good. Noise on the chroma signal is more noticeable on SECAM signals, but this is due to the SECAM transmission system rather

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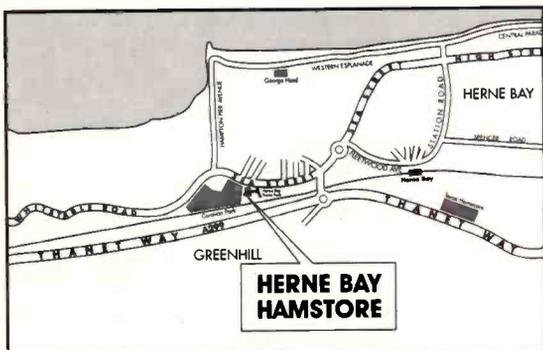


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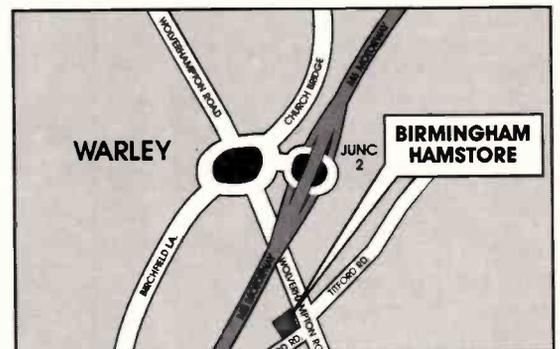
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TELEVISION

than the set itself. PAL reception from British and European signals is good. Unfortunately, since I have had the ART set reception of AFN has never been strong enough colour, but I would guess from the standard of the set it would be very good, at least I do know that 525 line, system M pictures can be resolved very well.

Stereo reception from both the Netherlands and Germany has been excellent in tropo. The stereo indicator usually switches on at about a P4 picture and makes listening to some of the classical and pop concerts on Dutch TV rather special. The ART 21 has a control labelled 'basewidth' which is supposed to make the stereo sound seem as if it is coming from speakers several feet either side of the set. I was rather sceptical when I read about this in the manual but having tried it during reception of stereo signals was very impressed.

Teletext reception can be a real boon for TVDXers and as this was my first Teletext set for DX reception I was very keen to see how useful it would be. Having read in several technical books how

strong, and more importantly how ghost and distortion free, a TV signal has to be to give good text reception without dropouts. I couldn't wait to try out the Teletext. Teletext reception on the local BBC1, 2, TVS & C4 is, of course, faultless. The French station Antenne 2 transmits Teletext, rather than the French Antiope system, and Teletext reception on A2 from Boulogne is also faultless at about 72km.

Many TVDXers are all too aware that test cards, and therefore easy identification of signals, are becoming a thing of the past. If you are watching a strong Sporadic-E signal on programme switching to Teletext can help. Given the variable signal strengths and distortion of Sporadic-E pictures, hoping to receive a whole page of Teletext with no corruptions is asking a lot, however the header (title line) can often be resolved very quickly and most Teletext headers contain the station identification. If you keep the Teletext on you will see more and more of the details on the page as it is updated every few seconds and with a little patience most of the page can be resolved! This worked well

on the ART 21.

Teletext reception during tropospheric openings was extremely good on this set with many pages resolved from the Netherlands, Belgium and Germany with hardly a drop out!

As mentioned several times in this piece much DX reception is marred by weak signals being too unstable to lock - this is where a Teletext set can really come into its own - tune in a weak P1-2 picture or those difficult tropo signals mentioned earlier and switch the Teletext on (if doesn't matter whether the service you are trying to watch has Teletext or not, then switch on the 'mix' (mix picture and Teletext), so you only have the page number showing over the picture and, lo and behold, you have a fully locked picture, making identification of weak signals much easier! This works very well on the ART 21, occasionally very weak pictures 'float' slightly but the syncs are stable making it much easier to read any test cards or logos on even a P1/2 picture. I don't know enough about the technicalities of Teletext sets but I think this amazing facility

is due to the fact that when you switch Teletext on the set re-inserts its own syncs, giving you your own built-in sync-processor!

Conclusions

All in all a very nice set with the good quality pictures you expect from an FST. set. The various sound facilities make this an almost 'hi-fi' set for domestic and strong tropospheric reception. As the set includes all TV systems it is also an almost ideal colour TVDX set. The facilities that would make this an absolutely perfect TVDX set can not be found on **any** TC set on the market, i.e. variable i.f. bandwidth down to 0.5MHz. So, run this set alongside a good, modified i.f. bandwidth variable monochrome set and you would have a TVDX station capable of coping with all forms of TVDX reception.

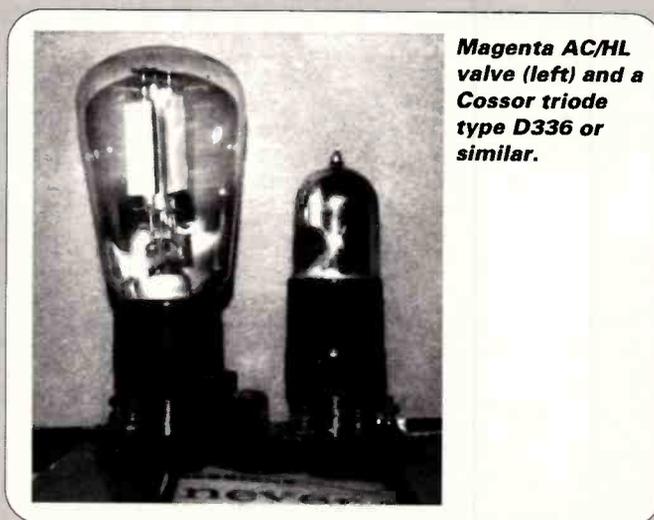
My own set was purchased from a small company in Eastbourne, Sussex and cost £529. There are many Loewe dealers around the country and I have heard of Comets and Dixons stocking some of the Loewe sets, so finding one shouldn't be too hard.

Baird Television Remembered

Arthur Bishop's father was a television experimenter for a few years prior to the closing down of the Baird television transmissions at the end of March 1934. Although quite young when the transmissions were discontinued, he still has a fairly clear recollection of his father's **Televisor** and the pictures it produced.

The **Televisor** built by my father was very similar to a design published by Camm¹ and created considerable interest among friends and neighbours, some of whom were occasionally present during the transmission periods.

Television signals were, I think, transmitted twice weekly at about tea-time on Saturday afternoons and late on Wednesday evenings. The London Regional Transmitter at Brookmans Park radiated the vision signals and the Midland Regional Station, then near Bromsgrove, transmitted the accompanying



Magenta AC/HL valve (left) and a Cossor triode type D336 or similar.

sound. A separate receiver was, of course, necessary for the reception of the sound channel. Both stations gave good reception at our home in Rotherham.

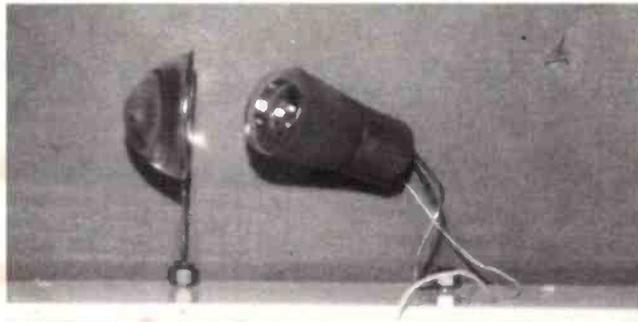
Prominent Part

The scanning disc was the most prominent part of the **Televisor**. This was made from thick paper and was about 450mm (18in) in diameter. It had six broad, radial spokes supporting the rim. The rim, about 60mm (2.5in) wide and painted matt black was perforated with 30 square holes arranged in a spiral. The

TELEVISION



The 'TI' mercury discharge projection lamp.



The neon indicator light source in the typical bullseye lens.

angular and radial position of each hole would have been located using an engineer's dividing head and a lead screw. The holes were cut with a square punch similar in design to that shown by Camm². The upper and lower sides were parallel with its respective radius line.

The accurate shaping and positioning of the holes in the spiral were vital for good picture quality. If their angular positions had been incorrect, laterally adjacent picture elements would have been misplaced resulting in blurring of the picture detail. If the holes' radial positioning had been incorrect, either or both of two other types of picture defect would have been apparent. The overlapping of the circles traced by adjacent holes would have produced bright vertical lines in the picture. Conversely, if spaces had existed between adjacent circles, dark vertical lines would have been seen.

The central boss of the disc was clamped in a large metal bush carried on the motor shaft, which also carried an eight-toothed phonic wheel.

The phonic wheel revolved between the poles of an electromagnetic yoke carried on the motor body. The pole pieces of the yoke were tapered to match the width of the phonic wheel teeth. Magnetising coils on the poles were energised with alternating current derived from the 50Hz mains supply. This combination of phonic wheel and yoke formed the synchronising gear; framing of the picture was achieved by adjusting the angular position of the yoke on the motor body.

The series-wound motor operated from a low voltage

50Hz supply, a rheostat being used to set its speed to the required 750 r.p.m. prior to synchronisation.

Light Source

The light source was a small Philips neon indicator lamp with a probable rating of about 2W from which the current limiting resistor normally contained within its cap had been removed. The electrode system of the lamp consisted of a metal disc about 18mm (0.75in) in diameter surrounded by a ring-shaped metal electrode. Viewed end-on and with the disc connected to the negative of a suitable d.c. supply, this electrode was seen to be surrounded by the pink glow of the neon discharge. Contemporary circuits shown by Camm³ show that the lamp would have replaced the loudspeaker in the receiver used in conjunction with the Televisor to supply the vision signal.

Variations in the lamp current when the receiver was reproducing either sound or vision signals caused changes in the brightness of the neon discharge. The lamp was enclosed in a light-tight housing carrying a large, frontal bullseye lens which produced a circular area of light about 38mm (1.75in) in diameter. The lamp housing was positioned behind the right limb of the disc.

Small Picture

The picture was viewed by looking through the rotating disc directly at the light from the bullseye lens and was roughly the size of a large postage stamp. The picture

height was greater than its width and its sides were slightly curved to the left. Because of the small picture size, viewing was through a 'viewing hood' which carried a lens giving a magnification of perhaps three or four times. My father also attempted to project his Televisor pictures on to a screen, using a special mercury vapour discharge lamp supplied by Television Instruments Ltd., in which a pigtail shaped section, internally coated with a phosphor, emitted white light. The accompanying data sheet describes it as a Type 480/30 and shows an operating voltage range from 200 to 480V; at the higher voltage the current is stated to be 30mA. I found in some later tests that the light output increases steeply with increases in current; at voltages above about 350V the lamp's light output is too intense for direct viewing.

Because of its voltage requirements the lamp would not operate successfully in conjunction with a receiver in which the internal high voltage supply was about 250V. The Baird transmissions were abandoned before a power supply could be constructed which would have enabled the lamp to operate correctly.

A small, rather battered photograph remains to show what 'our' Televisor looked like. Some of its parts, however, still survive. The motor, which saw wartime service pumping water from our air-raid shelter now drives a model maker's lathe. A single Philips neon indicator, which may have been used in the Televisor, is

in my collection of radio valves. The Television Instruments Ltd. lamp survives as a relic of exciting times.

Fiftieth Anniversary

At the end of 1984 I was a guest at the *Conversazione*, held at Pebble Mill by the Royal Television Society, to mark the 50th anniversary of the abandonment of the Baird television service. Many guests were present, all of whom had been associated in some way with Baird television. Several Televisors were exhibited with at least one operating from a tape recording of Baird television signals. These signals must have been copied from one or more of the 78 r.p.m. disc records made at the time of Baird's experiments. No doubt if any reader were interested in constructing and operating a Televisor, the Royal Television Society might be persuaded to supply a copy of the tape recording.

References

- 1: Camm, F. J. *Newnes Television & Short Wave Handbook 1934* Pages 60, 61 and facing 68
- 2: As above page 63
- 3: As above page 79 - 83

Further Reading

- 1: von Ardenne, M. *Die Kathoderstrahlrohre (The Cathode Ray Tube)* c 1934

MARTIN L

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that you deserve. No doubt in some of the most recent events in amateur retailing, those who continued to heavily discount finally screwed themselves so hard it all caught up with them. I don't agree however, that you should be dictated to on price, so much so that whether you are spending £5 or £5000, you will not get a penny off. I have never thought that way, neither has my mentor (?). I am always prepared to "talk turkey", provided the deal is

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On the subject of who's kidding who, when you next spend your cash on a new rig, make sure you know who you are buying from. The name on the the door

or indeed the adverts does not always give you the answer. As an independent retailer I will always be able to offer objective advice on all products sold. I won't be biased towards one particular brand, because I don't have to. Watch out for the ever growing "supermarket" chains - they may offer you good deals at present, but what would happen if all the independents disappeared? Food for thought. **Martin G4HKS**

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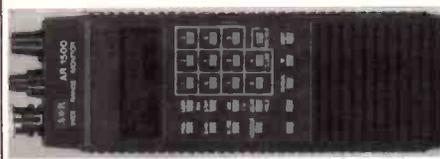
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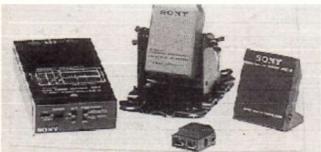
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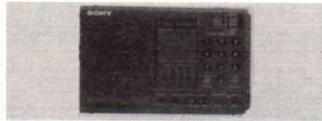
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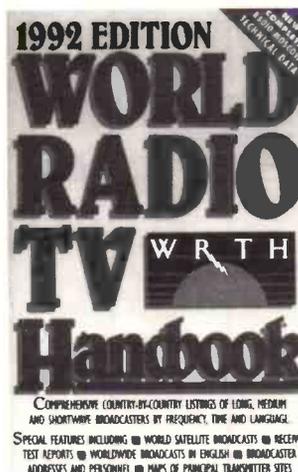
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TELEVISION

The Nordmende Galaxy 25 Multi-band Colour Television Receiver

Nordmende is a name well-known in Europe for quality and this specific example maintains this tradition. The Galaxy features a 10in screen in an attractive housing (either black or white) and other than the front panel on/off push-button is completely devoid of main user controls, functions via the remote control handset, used in conjunction with pre-set buttons behind a concealed flap are set into memory and thereafter the receiver operates completely as a stand-apart remote system.

Indicative of the quality, the chassis weighs in at 10kg - a good solid TV! For the traveller, the marine user for example, it operates on d.c. from 10-30V, or 220-230V a.c. Power connection is via a twin access sockets are a standard Bulgin 0.25in audio jack for headphones and a further socket for an external speaker. Adjacent is the SKART/Peritel baseband video/audio in-out socket (21-pin), video/audio control at baseband is via another button on the remote handset.

The cabinet, in either matt plastic black or white, features a sturdy concealed carrying handle. The receiver kit includes a smoke tinted filter screen that clips over the picture tube face. Essential dimensions are 255 (h) x 265 (w) x 330mm (d) and weight at 10kg.

The illustration shows a series of front panel push buttons which operate in parallel with the remote handset, normal operation is via the handset, the adjacent large 2-digit l.e.d. readout indicates standard (initially) and then the programme channel/memory. Up to 39 channels can be stored and the receiver will include changes in colour/sound standards within this storage profile. Options in fact are available for PAL or SECAM colour standards via push-button selection and sound spacings at 5.5, 6 or 6.5MHz

Short Wave Magazine, June 1992

The Galaxy 25 colour TV by Nordmende offers much scope to TVDXers and the foreign traveller/yachtsman with its very full complement of dual-standard colour (PAL/SECAM), operation over several transmission standards and a very wide-band coverage v.h.f./u.h.f. tuner.

Here is a receiver that will work anywhere in Western Europe, the Mediterranean and Middle East and Roger Bunney has tested it for us.



(the latter for system L French only - not OIRT East European 'R' channels) - thus the Galaxy 25 will resolve full sound and colour vision on Systems B/G/I/L and pictures on the OIRT channels (no sound). Its versatility indicates almost a world-wide use for much of Africa, the Middle East, India, the Far East and Australasia. Frequency coverage is, perhaps, one of the Galaxy's main assets. Featuring a cable standard tuner it will tune from 45MHz through ALL Band I, II and III upwards to 300MHz. This means, to the DXer, that all Sporadic-E channels are included (the difficult channels such as R3, 4, 5, Italian Ch. IC and - if you're in Australia - the channels below Band III). Coverage at u.h.f. is the standard 450-860MHz Channels 20 - 69. As mentioned before, the two large l.e.d. red

digit readout will indicate the operator what and where he is going in both setting up (memory) and tuning. Handset control remains in all modes - the latter powered by two AAA cells.

Two antennas come with the receiver package, an integral 7-section 'whip' extending from a closed 165 to 838mm extended, and a clip-on or stand-apart u.h.f. bow tie. Both feed into a Belling Lee antenna input socket. For sensible DXing one would expect to use an external wideband Band I antenna, etc. The weak signal performance is truly excellent with no problems of overload adjacent to high powered, local TV channels, thanks to the m.o.s.f.e.t. tuner design.

If you're used to scanner programming, then you'll enjoy the programming of the TV channels, if like me,

weaned on the joys of EF80s, turret tuners and 405 lines then setting-up needs thought. Reading the instruction slowly and carefully a couple of times, a little experiment and memory setting becomes easy. Once set, DXing really does become armchair copy! I find it best to set the receiver up on Band I/II Sporadic-E channels e.g. Ch. E2, R1, IA, E3, R2, etc., in ascending frequency order - this is the beauty of direct channel access.

The Galaxy 25 is a very well-made, quality TV receiver capable of Continental reception in either a DXing or travelling capacity, easy to use and giving an excellent picture on both colour standard. At £329 including VAT, it's an expensive receiver, but the price reflects the quality and versatility. The review set was supplied by

**Aerial Techniques,
11 Kent Road,
Parkstone, Poole,
Dorset BH12 2EH.
Tel: (0202) 738232.**

Footnote

Just when you think that you've found the ideal set the manufacturers decide to cease production! However, Dave Martin at Aerial Techniques has found a replacement for the Galaxy 25 in the shape of the Swiss made Stag CTV 9400 Multi-standard. This is an almost identical set offering the same features as the Galaxy 25 at, would you believe it, exactly the same price - £329!



Waters & Stanton Electronics

UK's largest stockist of specialist receivers



MVT-5000 scanner £199
25-550MHz & 800-1300MHz AM/FM

The MVT-5000 is a superb budget priced scanner with amazing sensitivity added to which it is very simple to use. The only gap in its range is the TV broadcast band and if you can live with 100 memories it offers incredible value! Hundreds are in use, many by professional users and like all Yupiteru equipment it has proved to have unsurpassed reliability. Available from stock with our 12 month parts and labour warranty.

SONY SW-7600 £149

200kHz-30MHz + FM BROADCAST SSB/CW/AM Includes free AC supply aerial and case!

The classic portable for those on the move who want to keep in touch with the world broadcasts. In addition it gives good reception of SSB and is a travellers joy! All our stocks are genuine UK Sony.



Low HF-150 £329

USB/LSB/CW/AM (sync) 30kHz-30MHz 12vDC/230V AC

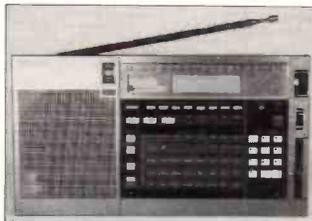


The HF-150 receiver is a high performance short wave receiver that we can recommend for those on a budget. Make no mistake, this receiver really does perform. Give us a call for more information.

SONY ICF-2001D £289

150kHz-30MHz + FM + airband USB/LSB/CW/AM (sync)

Includes free universal AC adaptor If you want a truly portable communications receiver that performs as well as base station models yet fits into the domestic scene, look no further. At £399 it would be good value. At £289 it's an absolute bargain.



SONY ICF SW77 £349

150kHz-30MHz + stereo FM AM/SSB/CW

The SW-77 is the latest short wave portable from Sony. It integrates computer technology to provide a programmable data base of station names in its memory bank. Also included are 5 different timers and 162 preset stations. Fabulous!



"It's Fantastic!"

Optoelectronics 2300

1MHz - 2.4GHz
Can read a 2W signal frequency at over 100ft!
With 25 Watts
.. WOW!

Simply switch on and connect an aerial to read



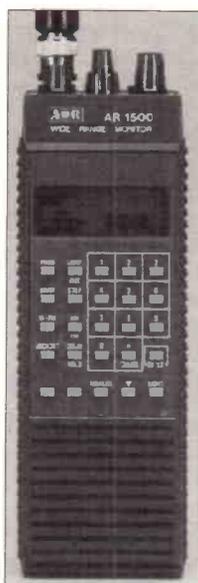
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frequencies from local transmitters. This is like no other unit you have ever seen. It's absolute magic!

- HIGHLY ACCURATE COUNTER
- BNC AERIAL SOCKET • INTERNAL NI-CADS • AC CHARGER • VARIABLE GATE TIME • HOLD FUNCTION
- AMAZINGLY SENSITIVE!

YUPITERU VT-225 £229
Military & Civil Airband Monitor

The VT-225 is the new exciting monitor from Yupiteru. It covers the full VHF and UHF airbands with a sensitivity that leaves its competitors standing! This dedicated receiver is surely going to become the reference from which all others will be judged. Our stocks are direct from the factory with English handbooks and of course an officially backed factory warranty. Phone or write today for the full information on the new "industry standard" receiver.



NEW!

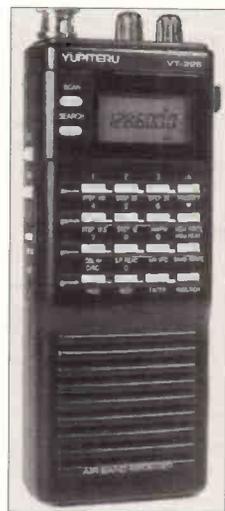
VT-225
VHF/UHF airband monitor AM/FM 108-142/

222-291MHz. Superb sensitivity, 100 memories - Phone! (see above)

AR-1500 £299

2MHz-1300MHz FM/AM/SSB/CW

Yes it's true, a hand held scanner that gives you SSB and CW reception. We are hoping to have supplies available by March of this self contained all mode receiver. New from AOR, this promises to be the most comprehensive scanner yet. If you want full details, phone or write for the full specification. And remember as the UK's largest stockist of receivers, we can offer you the kind of back-up service that such an advanced product needs.



YUPITERU MVT-7000 £289

1MHz-1300MHz FM/AM/WBPM

Includes ni-cad pack and charger

The Yupiteru MVT-7000 is the very latest scanning receiver to leave the factory, being a complete update of the MVT-5000. Its sensitivity is unsurpassed and its logical controls and beautiful design make it one of the smartest and slimmest scanners around. Our professional customers love it and you will too when you try it. Fully featured it has 200 memories, extensive scanning features, is fully programmable and even has an adjustable contrast control on the LCD. To try it is to buy it, so be warned!

Retail and Mail Order: 22 Main Road, Hockley, Essex SS5 4QS. Tel: (0702) 206835/204965 Fax: (0702) 205843
Retail Only: 12 North Street, Hornchurch, Essex. Tel: (04024) 44765
VISA & ACCESS MAIL ORDER. 24 Hour Answerphone. Open 6 Days a Week 9am-5.30pm
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ALINCO's

"Professional Grade" Scanner DJ-X1. 500kHz-1.3GHz

"A Scanner of Unrivalled Performance"

Specification:

Modes: AM/Narrow FM/Wide FM
Steps: 5, 9, 10, 12.5, 20, 25, 30, 50, 100kHz
Antenna: 50Ω BNC
Supply: 6-15V DC (Internal 9V AA)
24mA (Battery save.)
Dimensions: 110 x 53 x 37mm
Weight: 370g
Configuration: AM/FM Triple conversion
Sensitivity: NBFM -8dB (12dB SINAD)
AM -2dB (10dB S/N)
Memories: 100 in banks.

UK "Gold Seal" Warranty
Now With Every Unit
Look for the sign on the box!

Up until now most handheld scanners have been large and cumbersome with low grade plastic cases using technology that has been around for several years. The arrival of the ALINCO DJ-X1 has changed all that. This brand new receiver is ruggedly built, compact, and above all, ultra sensitive. ALINCO are the first major manufacturer of communications equipment to produce a new generation of scanning receiver. All of a sudden its competitors seem drab, old fashioned and lacking in sparkle and performance.

The new exciting DJ-X1 should be available now at your local dealer. Try it out for yourself, experience the superior design and performance. Compare it with "yesterday's" models and find out just how far advanced the new ALINCO scanner is! But just to whet your appetite, here's a few of its features:

★ 3 scanning speeds ★ 3 scanning modes ★ 100 memories in 3 banks ★ Auto memory loading ★ Priority channel ★ Dual rate battery saver ★ Large battery pack ★ Rotary frequency control ★ Illuminated key pad ★ Auto illumination mode ★ Dual antennas ★ 5 programmable bands ★ Widest range of frequency steps ★ Super front end sensitivity ★ Memory lockout ★ Mode scanning ★ Auto power off ★ Wide range of battery packs ★ Wide range of accessories ★ Intelligent mode programme ★ Rapid tuning rates of 1MHz/10MHz.

*Each unit now comes with the UK Gold Seal Warranty. Look for the sign on the box!

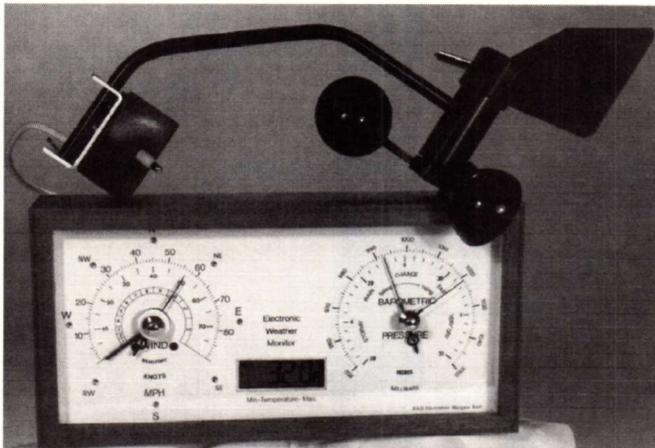


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YORKSHIRE: Air Supply (0532) 50981.

£249.95

UK Distributors: Waters & Stanton Electronics
22 Main Road, Hockley, Essex Tel: (0702) 206835



R&D Electronics Electronic Weather Monitor

Radio propagation is inextricably tied up with the weather, so even a simple study of meteorology could make chasing that DX easier. Dick Ganderton has installed an electronic weather monitoring station and reports on what he has found.

Ron Ham's 'Propagation' column is deservedly popular with readers, offering useful hints which Ron has gleaned from a lifetime of the study of the weather and how it affects radio propagation. While we probably cannot aspire to equipment such as Ron's recording chart barometer, modern electronics makes a weather station easy to install.

I have long admired R&D Electronics range of electronic weather stations and have been trying to get one for review since they first appeared at rallies. They prove to be so popular, however, that it is only recently that they have been able to provide one. The model that I have recently installed is their WM-BDST which offers wind speed - in m.p.h., knots and Beaufort - and direction, external temperature - Celsius or Fahrenheit at the push of a button - and barometric pressure in inches and millibars. The unit also stores in its memory the maximum and minimum temperature and the maximum wind speed is also recorded.

Pleasantly Styled

The Indicating Unit is well designed with the rectangular dial unit housed in a pleasantly styled mahogany case - you can have either light or dark, which should satisfy the domestic authorities if you want to install it on the lounge wall! The unit has two keyholes in the backplate to locate it on two screws in the wall and the six-way cable from the Measuring Head can either be buried in the plaster to make a nice clean installation or passed into the unit through a couple of small holes which you need to drill in the side of the box. Power is supplied from a small mains adapter with the cable fitted in the same manner as the six-way cable. I must admit that I have not yet decided on the unit's final position and at present it is sitting on the top of an ex-GPO regulator that

was restored by Ron Ham. This needs a mains unit to keep the battery topped up and it would be convenient to take power from a specially made dual supply fitted inside the regulator.

Measuring Head

The measuring head needs to be mounted, according to the instruction leaflet, 'on an aerial mast of 25 - 50mm diameter as high and as far away as possible from chimneys, roof peaks, buildings, trees and transmitter aeriels which may cause local wind turbulence.' This appeared to leave nowhere at as far as my house is concerned. The cable attached to the sensing head is long - very long - so this was not going to place restrictions on just where it was to be positioned. In the end I bought a wall bracket and 25mm diameter aluminium pole with a suitable bend to clear the barge boards. The ladder was manoeuvred from its hiding place and two suitable holes drilled in the end wall as near to the apex as I could reach. The bracket was screwed to the wall and the measuring head mounted on the pole. The head 'must be secured to point to the NORTH' directed the instructions, so I arranged the arm carrying the weather vane and speed sensor on what would be the northern side of the pole, climbed the

ladder and tried to clamp the pole to the bracket. Unfortunately the pole proved to be about 25mm too short and the cups of the speed sensor fouled the ridge of the house. Down the ladder for a rethink and put the lot back in its box until I could get either a longer pole or an extension. Remembering that the instructions mentioned avoiding roof peaks I decided to extend the pole by about a metre and bought a suitable extension piece to plug into the original pole. Up the ladder again with the extended pole and measuring head assembly - this time success. The cable from the head was taped to the pole and clipped to the wall using suitable plastics cable clips.

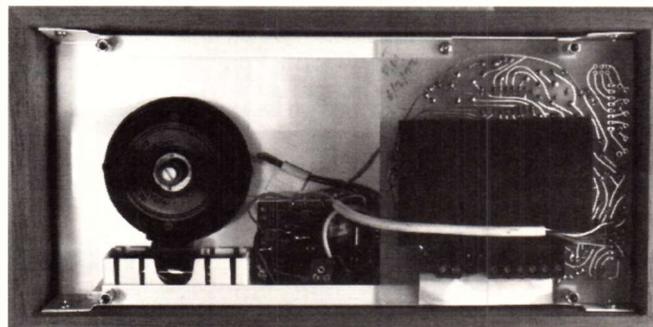
Holes

But how to get the cable into the house? The unit lounge is the favoured room for the indicating unit and the regulator is right alongside the patio doors so I decided to drill a hole for the cable through the patio door frame. The patio doors are upvc and the frame is about twice as thick as a drill bit is long! Attempts to drill from measured positions inside and out met with failure to meet - the construction of the frame is very complex and no way did the two holes want to even get close to meeting. To think that tunnellers can dig from both

ends of a tunnel tens of kilometres long and meet in the middle with an error of only a few millimetres and I couldn't get two drill holes to meet over a distance of a few millimetres! The answer lay in a session in the workshop to make up an extended drill to enable me to drill the hole in one go from the outside.

Connecting Up

The cable was fed through the patio door frame and into the lounge. Now, I thought, I'm home and dry - just connect up the cable, plug in the mains adapter and start to record the weather. Not quite! The noise and activity surrounding the drilling of the hole through the patio door frame had alerted Brown Owl to the fact I was knocking holes in the house to do something related to radio and I had not yet done anything about the half-a-dozen photographs that she claimed I had promised to hang on the dining room wall for her! After struggling to hammer some picture hooks into walls that seem to be made from solid rock I was finally able to connect the cables to the Indicating Unit. The instructions are quite explicit regarding connecting the 6-core cable - except that the WM-BDST unit only has four marked terminals, plus the two for the 12V d.c. supply. There were another pair of unmarked terminals so I utilised these to take care of the two wires left over. Next came the power supply. As I needed to temporarily extend the wires from the adapter I looked for the marking on the cable to indicate polarity. Oh dear! The adapter was marked 12V a.c. on the top and 9V 300mA ~ on the bottom. Out came the trusty bench power supply - made some twenty years ago to a *Practical Wireless* design of course - and 12V d.c. applied to the unit. Success! I had even got the weather vane pointing in the correct direction.



The Indicating Unit with the back removed. The battery is in the bottom left.

Battery

I telephoned R&D Electronics to get clarification on the mains adapter and the spare pair of wires. The unit will run happily on 12V a.c. and as the current drawn is so small the mains adapter actually produces 12V. As for the spare pair of wires, these don't matter and can simply be cut off or just tucked out of the way. I also discovered that there is a battery lurking around inside the unit. The instructions make no mention of this so I asked how long it should last before replace-

ment is needed. Apparently it provides back-up for the temperature module and as this only draws microamps and the battery is only needed when the mains supply is off the life of the battery should be years. However, it will need replacing during the lifetime of the unit and I think that it should be mentioned in the instructions.

The unit is well made, looks good and should be a useful addition to any shack. The only problems that I had were as a result of the rather inadequate instruction leaflet. I think that this could be greatly

improved upon, particularly in the installation department. R&D Electronics offer a one year guarantee from the date of purchase. The WM-BDST Electronic Weather Monitor costs £229 inc VAT plus £10 carriage from **R&D Electronics, Unit 19, St. John Workshops, Margate, Kent CT9 1TE. Tel: (0843) 221622**, who I would like to thank for the review unit.



SECRET SIGNALS - THE EURONUMBERS MYSTERY

by Simon Mason
published by Tiare Publications,
PO Box 493,
Lake Geneva, WI 53147,
USA.

Tel: 010 414 248 4845.

Price \$9.95 plus \$3 postage.

Visa/Mastercard welcome.

ISBN 0-936653-28-0

The ending of the Cold War hasn't brought a corresponding end to those mystery stations sending out coded numbers night and day, all over the short wave radio bands!

Here's a fascinating look at the numbers stations of Europe from a man who has studied them for years, monitoring thousands of transmissions in the process. Learn about 'Bulgarian Betty', 'Papa November', 'The Lincolnshire Poacher', 'Swedish Rhapsody', 'The Russian Man' and many more. The book includes numerous traffic excerpts, identifiers, schedules and clues turned up by hearing mistakes in transmissions. Includes a full, by-frequency log with over 300 entries, complete with notes on formats and schedules.

THE SATELLITE BOOK A Complete Guide to Satellite TV Theory and Practice 2nd Edition

John Breeds

published by Swift Television Publications

Available from SWM Book Service

282 pages, A4, £26.95 plus £1 P&P

ISBN 1 872567 02 9

This is the 2nd edition of the John Breeds work that rapidly sold out in its first edition perhaps a year or so ago. Unlike the few UK produced books on the general theory and practice of satellite TV, John's book differs in that it's a compilation of 29 chapters each written by a specialist - each orientated to the West European market and aimed for the professional system installer or very keen enthusiast. John's background is in the professional satellite world previously employed at Salora (UK) and now runs his own publication house specially aimed at the satellite/TV market.

The book is written entirely on the practical side and covers all necessary information on how satellites are launched, slotted into orbit, transmission standards (including MAC and encryption), how to use an installation ladder, methods of dish support and mounting, cables, a detailed description of each part of the receiving chain from the dish, feed assembly through to the receiver and how to calculate noise and path loss. Even the flat plate antenna, Polyrod lens and the design of a small distribution system is discussed. Footprint maps, elevation and pointing instructions are given for the dish installation and tracking (when used with an actuator arm) complete with elevation detail for towns across the UK and Western Europe. There are many photographs, maps, drawings and illustrations.

EASY SHORTWAVE ANTENNAS

by Frank P. Hughes VE3DQB

published by Tiare Publications, PO Box 493, Lake Geneva, WI 53147, USA. Tel: 010 414 248 4845.

\$9.95 plus \$3 postage overseas - Vias & Mastercard welcome

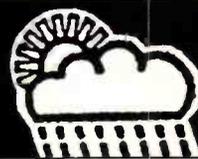
Short wave listeners who aren't satisfied with the 'skywire' they're now using and those who like to experiment with antennas will find a wealth of possibilities in this book.

Hughes discusses more than 50 antennas and variations for short wave listening use including longwires, balanced and unbalanced, slopers, verticals, grounded, beams, 8JKs, squares, cubical quads, apartment antennas, magnetic loops and indoor antennas.

The book also contains a wealth of practical information on antenna patterns, interference, the nuts and bolts of putting up an antenna, the ionosphere, etc. Includes diagrams on each antenna showing layout or construction points.

Book Reviews

WEATHER MONITORING at a glance with the R&D WEATHER STATION



FEATURES (depending on mode)

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- ▶ WIND SPEED
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- ▶ GUST SPEED
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SEE REVIEW PAGE 34

SWM SUBSCRIBERS' CLUB

If you have a subscription then you will know all about the *Short Wave Magazine* Subscribers' Club. If you don't then read on. Membership is free and automatic for all subscribers to this magazine and is our way of saying thank you to all those who have had faith to pay for it 'up front'. Each month there are Special Offers and occasional competitions with some really useful prizes to be won.

This month we are offering SWM Subscribers' Club Members the chance to buy a Sangean ATS 803A world band receiver.

SPECIFICATIONS



Frequency coverage: 150kHz - 29.999MHz (a.m.)
87.5 - 108MHz (f.m.)
Filters: Wide 6kHz
Narrow 2.7kHz
Modes: s.s.b.; u.s.b.; l.s.b.;
c.w.; a.m.; f.m.
Memories: 14
Clock : Digital with alarm and
sleep function.
Power: Battery or mains adapter
Dimensions: 292 x 160 x 60mm
Weight: 1.7kg

The Sangean ATS 803A world band radio is deservedly popular, offering respectable performance at a reasonable price. We are offering it to Subscribers' Club members at a very favourable price.

As a member of the SWM Subscribers' Club, you can buy your Sangean ATS 803A for £94.95 inc. P&P, You would expect to pay around £115 for this radio.

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PCGOES/WEFAX 3.3 Weather Satellite Software

This latest version of PCGOES is designed to decode both satellite a.p.t. telemetry and FAX signals (the latter can be in true colour) when connected to suitable receivers. The package includes hardware to connect the audio signal from either receiver to the computer, and comes in a small interface 'dongle', together with an excellent book written by John E Hoot of Software Systems Consulting (USA), which describes the software and its installation. Also included is a sample cassette tape of FAX data with commentary, and either 3.5 or 5.25 inch disk containing the software. The hardware is a 25-way 'D' type female connector which plugs into the serial port of your PC - so you need to check that yours is connected. Some decoding systems require the computer casing to be removed and a board to be fitted into an expansion slot. Although that is not difficult to do, it is nice to be able to quickly connect this hardware to an external port.

Minimum Hardware

The program requires 640Kb RAM in which to run, but it can also use up to 1Mb of EMS memory (expanded memory which can be added to a PC's RAM), and all of the usual monitor displays are catered for (CGA, Hercules to SVGA). For this review I used an 80286 SOTA (IBM clone) computer with a 40Mb hard drive and Tystar SVGA monitor running DOS 4.01, but the program will run on DOS 2.1 or above. With a VGA monitor but no EMS you will obtain an image resolution of 640x800 pixels with 16 grey levels. Using the extra memory (and an SVGA monitor) you can increase resolution to 1280 x 800 with 64 greys. Several printers are supported including Epson 9- and 24-pin, and colour, to provide hard copy. In fact one can print colour images of 350x460mm with suitable printers. PCGOES will run on floppy disk but it is much easier to use when installed on a hard drive. The installation program does this automatically and the procedure is well documented in the book.

Program Contents

PCGOES/WEFAX is menu driven and includes image

Our 'Info in Orbit' columnist, Lawrence Harris has been looking at the latest version of PCGOES/WEFAX 3.3 weather satellite software written for IBM compatible computers.

collection (called data capture), image enhancement facilities, a satellite predictions and world map section, printing, animation and comprehensive FAX software. After installing the software on a suitable disk, running the program produces the Main Menu from where all options are selected. This Menu is divided into four sections: Capture options - used to capture images; an automatic scheduler is included. Display options - used to configure the display, and also to view, zoom and print; an orbital calculator for predicting satellite passes is included. File options - used to select or save an image, and to mark files. Control options - used to configure the hardware before using the program for day-to-day running.

Configuring the Program

Before jumping into the nice bits like image capture and display, you must configure your system using the Hardware configuration option. This tells the program what graphics card, monitor and serial port you are using. The name of your port is important - mine is COM2. If you don't do this, the program may not work. If you are not sure, check your computer manual, or you can try using the alternatives suggested.

Sample Pictures

Now for the fun! To have a look at the capabilities of the system some sample pictures have been included - there were three on my disk. Using the File management option (you need only press 'f') you jump to another menu from where you can pick a picture to load. The screen instructions are adequate and the date and file size are also shown. On-screen instructions help you to perform some operations but the manual must be studied carefully to

get the best results. When viewing an image, several keys are programmed to provide instant facilities. For example f2 (function key 2) produces hard copy on your printer, so have it switched on and loaded with paper before pressing f2. Contrast adjustment can be changed with f8 and ALT+f8; f3 flips the image over, and other active keys are described in the manual. Some keys are mainly for use with FAX pictures.

Back to Configuring

After sampling the facilities available for image enhancement the book returns to program configuration, in which you provide more details about your display and printer. Finally, to check that your answers are correct, there is a test tape which includes recorded FAX signals. The software has a 'tuning oscilloscope' facility to allow the optimum adjustment of the input signal. This is used for both h.f. and satellites and really does allow you to see what is going on. If nothing appears here, then you have probably given the wrong number to the serial port. The manual explains how to proceed when problems occur. You will need to spend some time setting up your system carefully in order to get the best possible quality images - it will be time well spent.

Antennas

After explaining about the various types of polar and geostationary weather satellites (there is no mention of the OKEAN series of Russian satellites) details are given for the construction of suitable antennae. Surprisingly no mention is made of antenna phasing (the connecting together of the upper dipoles to the lower reflectors) - a wrong connection and you may not hear a signal, or at best it may be poor. The

section on preamplifiers may be applicable to the USA but I would recommend caution before fitting one in Britain. Pre-amps may amplify the near-band paging frequencies which can swamp the relatively small satellite signal.

Capturing the Image

As mentioned, the system caters for both satellite a.p.t. and FAX and there are separate cables for each signal - a black lead for FAX and grey for a.p.t. I used my roof mounted crossed-dipole, feeding a Dartcom receiver for the polar orbiters, and a dish with a Microwave Modules down-converter feeding an old Timestep Weather Systems 137.50MHz receiver for the geostationary satellites. From the Main Menu you select the required Mode ie which satellite, or HF FAX utility broadcast you are receiving, and the line rate and other parameters are then automatically set for you. Version 3.3 has two new modes, HF Press and Satellite Press. The tuning scope can automatically analyse the incoming signal for its black to white dynamic range and ideally you would use this on each occasion. In practice, repeated use is not necessary.

North or Southbound?

One important facility absent is the option to select the direction of the satellite's pass - or scan - whether north-bound or southbound. I did not like seeing all scans start from the top. Watching a mid-day NOAA 11 pass move from the top of the screen to the bottom gave me a feeling of disbelief that such an elementary facility was not included. I have been able to pass this query to John Hoot who comments that to allow a choice of scan direction would have considerably increased the program's size. METEOSAT images are also presented upside down, though in automatic capture mode they are then reversed before saving. Image reversal can also be done separately. When the screen has filled with the image it scrolls, but when the RAM buffer holding this image has filled, the screen simply freezes without warning. I would prefer to see the entire pass scroll by, rather than have to either save the data or restart the program. If you wish to save the pass, you

must watch carefully and save it as soon as the picture stops. I understand that this may be modified by the author. When the image first appears it may not be correctly synchronised. Pressing the 's' key will slide the phasing bars on the polar orbiters and this can be repeated until the image is suitably positioned. Strictly speaking, if you are going to save the image for later viewing this adjustment is not necessary, because in the view mode one can actually slide the picture sideways - a useful innovation! In METEOSAT mode there is an automatic synchronise option. Because the software (in the basic configuration) only stores 16 grey levels per pixel, the total amount of data is about one-quarter that of an equivalent 64 grey level picture and so saving is much faster.

Picture Quality

The ultimate test of any weather satellite system must be the quality of the pictures that it can produce. Facilities to enhance or otherwise change the basic picture should, in my view, be considered to be of secondary importance. I feel that there is a marked difference between these pictures (which on a VGA system have 16 greys) and software that produces 64 greys. You can add some EMS memory to obtain 64 levels, which may add some £50 to the cost. It is worth doing this if possible. The use of the zoom mode will instantly show the pixels that make up the picture.

Animation

The software includes an option to produce animated sequences from METEOSAT. You can select the area required from each image - but it cannot be set in advance. This version (3.3) has new facilities to aid alignment but it is time consuming. I found that the best results were from whole images.

Tape Recordings

The use of cassette recorders to store a.p.t. data is fairly common. I often leave mine on for recording data overnight, eg., when looking for OKEAN passes, and so I like to have software which can cope with tape speed variations. This software cannot, but this may not be of importance to everyone. It is possible to adjust the clocks per pixel (using the hardware configuration option) in order to obtain a partially synchronised picture, but all of the

tape speed fluctuations will show.

Synchronisation

Satellite decoding software can be written to use reference information from the signal itself, which has the advantage of giving perfect synchronisation from both live data or from a tape recorder. The disadvantage is that you may lose synchronisation if the signal fades or if the transmission format changes. PCGOES/WEFAX uses the computer's own clock, and includes a facility to set the scanning rate for any live satellite signal. The advantage is obvious - you are guaranteed a synchronised picture. The disadvantage is that Doppler changes caused by the satellite's motion may cause the picture to tilt during the pass. However, I did not find this to be a problem. I was impressed with the way in which the pictures stayed locked even during temporary signal loss which occurs near AOS and LOS.

Tracking Software

As well as decoding all satellite picture formats, the software includes a comprehensive selection of programs to predict satellite tracks and update the orbital elements. After selecting the Orbital calculator from the Main Menu, you should then set your own station parameters in the Station data option. You can then see where all the satellites are, using the Realtime display. This section is more than adequate to enable you to identify which satellites are in current use. There is a map display as well so if you hear an unexpected transmission, then, assuming that your Kepler elements file is up-to-date (and if it isn't then send me an s.a.e. for the latest list) you can check which known satellites are above your horizon. By comparing the decoded picture with information from this program you should be able to identify the source. The Kepler elements can be updated to produce a NASA 2-line element file. If this file is edited every six weeks or so using the latest elements then the Import satellite option can be used. You can also edit the data for each satellite - the choice is yours. The database can hold the elements for several satellites, but it should be edited carefully. Add too many satellites and you will overload the software.

FAX

All FAX modes seem to be catered for and the appendices in the book include FAX schedules listed by frequency,

station, and geography. My computer does emit some r.f. interference but the real limit to good reception was my lack of a proper site for my HF antenna. I use a simple dipole which is not ideally situated, but I was still able to use several FAX stations in the 100kHz to 5MHz region. I set up a schedule to collect all transmissions from Offenbach during an afternoon while I was away, and I was delighted with the result, finding 12 images properly titled and stored on the disk. I loaded each one, adjusted the framing and saved them, and then printed a couple for inclusion in this review. If you keep a record of individual settings for your favourite stations then the system is easy-to-use. I could have spent days just using the FAX section to see what was being transmitted around the world. The only problem seemed to be that, as with the satellite section, if you want to simply watch images, you still have to save them. There doesn't appear to be a method of just leaving images to come and go.

Advanced Image Enhancement

There are often occasions when the image will not show all the detail present, and so there are enhancement options. Pressing CTRL+F1 takes you to the Pixel histogram screen on which there are three graphs displaying the contrast and brightness statistics for that image. The book explains how to change the dynamic range of the pixels to improve the display. Again, time used for learning these procedures is well spent, but if you don't want to learn the technicalities of image enhancement - don't worry! You can see the effect of using the programmed function keys and never actually use the histogram screen.

Adding Colour

While in the View mode key F6 allows preset colours to be added to the picture. On all monitors there are four palettes, with an extra one for EGA and VGA, which can be manually set to your own preference. The new version (3.3) can display press images in true colour! When you

receive the three images - cyan, magenta and yellow - they can be converted to positive images corresponding to red, green and blue, and by using the correct function key sequence a true colour image is obtained!

Printing

The advantage of being able to use your dot matrix printer with a program is the production of instant hard copy. Photography of the monitor can be enhanced by the use of artificial colour, but you will appreciate the printing facilities included with this program. You can print by pressing the F2 key, and by using the Zoom facility you can print to a good resolution. I re-inked an old ribbon and produced some very acceptable printouts from my Epson 9-pin printer. I also borrowed my son Tim's 24-pin printer and got an improved image showing detail in the bright clouds.

Desk Top Publishing

Many satellite enthusiasts will have access to DTP programs and this software includes a conversion section which changes the data file into PCX and GIF file formats. I used this option to export an image that could be loaded into Timeworks DTP program or Word Perfect for use in a publication. There are other facilities that are worthy of mention, eg., temperature identification (which requires one known temperature to be input) and latitude/longitude grids.

The Manual

The book is well-written and contains useful background information. Apart from covering the use of the software, it gives the current GOES transmission schedule and some historical information, plus a comprehensive listing of the parameters for most video display cards. About half of the book is devoted to listing FAX schedules on a very detailed basis, so the beginner would not need to purchase another book for this information. There is some duplication but overall this is an excellent book which tells all you need to know.

Conclusions

This software will run on any PC with 640Kb RAM and a serial port and provides a good selection of facilities - enough to allow you to identify satellites using the predictions section, provide basic animation sequences from METEOSAT, a good FAX section, image enhancement and good quality printouts. I feel that it is a little highly priced but it is comprehensive. My thanks to Andy Hancock of **PC Maritime Ltd, The Computer Complex, Somerset Place, Stoke, Plymouth PL3 4BB** for supplying me with this latest review copy. I was sorry to have to return it! Price £250.00 inc VAT from PC Maritime Ltd and also from Comar Electronics, Unit 10, Samuel Whites Estate, Medina Road, Cowes, Isle of White PO31 7LF.

A Novel 3.5MHz Receiver with Reaction

Part 2

This month Ian Hickman continues with the final circuit design for this novel receiver.



The Final Circuit

The full circuit diagram of the receiver is shown in **Figs. 2.1 & 2.2**. S1 couples the antenna input either direct or via a 22pF capacitor C1 to the one-turn coupling coil associated with the receiver's one and only tuned circuit, L1 and C2 - C7. C4 is the main tuning capacitor whilst C7 provides a band-spread or fine tune facility, which is almost essential when tuning s.s.b. signals. The r.f. amplifier consists of the long-tailed pair Tr1 and Tr2, which is linearised by the 1.2kΩ resistor R4 coupling the emitters. This also has the effect of raising the input impedance of the stage to such a high value that it can be connected directly to the hot end of the tuned circuit without adding any significant damping. The amount of reaction applied via the three-turn feedback winding is adjustable by means of R1; the amount of feedback is limited by R3 and the shunting effect of C11.

The most difficult design problem in developing the receiver was finding a suitable way of coupling a detector to the r.f. stage. With most detectors, the loading on the previous stage is heaviest at very small signal amplitudes, resulting in the loop gain actually rising slightly with increasing signal amplitude. This has the effect of converting the desired **Fig. 1.5 (e)** characteristic of the r.f. stage into a flattened version of **Fig. 1.5 (c)**, giving reaction 'backlash' - on increasing the

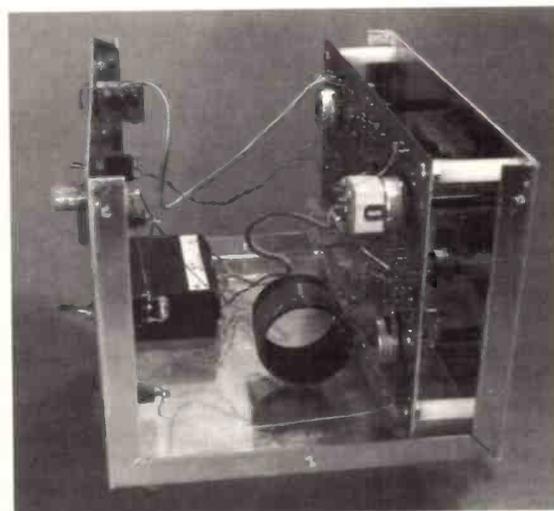
reaction the circuit suddenly plops into oscillation and won't stop again until the reaction has been wound back to the point where it no longer provides much benefit. In the end the problem was solved using a once popular circuit, the 'infinite impedance detector', Tr3. R8 and C13 form the one-pole, low pass filter and IC1d is the first 35dB amplifier stage; R8 and C14 provide a 6dB per octave roll-off below 300Hz. The meter M1 is entirely optional, but can be quite useful. On the onset of oscillation as the reaction is advanced, the d.c. level at the emitter of the detector Tr3 shifts negative, and this shift appears unchanged at the output of IC1d, which has a gain of unity at d.c. The meter thus provides an indication of whether the circuit is

oscillating and if so, how hard. Unlike the case with a.m. signals, to receive s.s.b. or c.w. signals, the r.f. stage must actually be oscillating, though sensitivity is at its greatest when only just oscillating. M1 makes it simple to judge the degree of oscillation, though due to the linearisation employed in the r.f. stage, the gain does not decrease again nearly so drastically with increasing oscillation level as is the case in many receivers with reaction. Any small meter or tuning indicator is suitable, and RX should be chosen accordingly. I used a little 200µA f.s.d. indicator labelled STEREO 0 - 5, bought for £1, with a 5.6kΩ resistor. IC1c & a are both two-pole filter circuits, forming the 5-pole elliptic lowpass filter with R8, C13. IC1b is the 35dB gain

output amplifier, R23 and C21 providing a further 6dB per octave 1f roll-off. The 680Ω series resistor buffers off excessive loading when using low impedance headphones. Thanks to the heavy 1.f. roll-off I found a modestly priced pair of mono/stereo headphones from a high street store (switched to mono) entirely satisfactory. R23 is a volume control, the signal from the wiper of which normally passes to IC1b via R24; it is also applied via R29 to the state-variable bandpass filter IC2a & b. Tuning of this is by means of R27 and when S3 is closed the output from IC2a pin 8 is routed directly to the output amplifier, the output via R24 then has no effect, being over-ridden by the low output impedance of IC1a's output buffer. Resistor R34 sets the Q or selectivity of the c.w. filter and you can experiment with its value. This can be increased to raise the selectivity; it can even be omitted entirely, but then the Q of the filter is so high that the dots and dashes of a c.w. signal are smeared into one another.

Performance

The selectivity of the 5-pole low pass filter and of the tunable c.w. filter have already been mentioned. The effective sensitivity and selectivity of the set as a whole are what really matter though, and these were measured using a Marconi 2018 signal



The prototype receiver with the case top removed.

Project

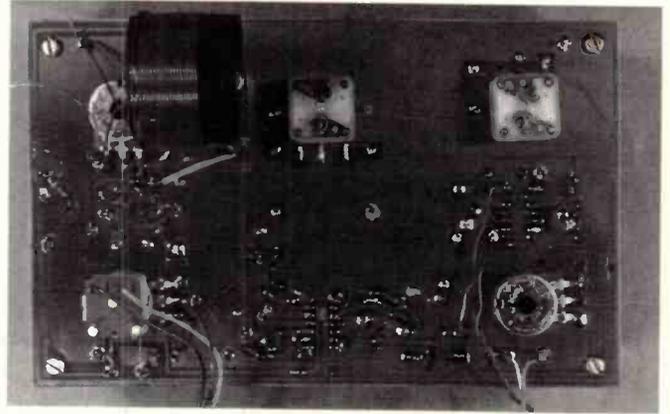
generator. In particular, selectivity will be limited by the 'crystal set effect'. Throw a large enough signal at the circuit and even if off tune, its limited linear signal handling range will result in some rectification of the signal in the r.f. stage itself.

With S1 at position B (direct) and the reaction suitably adjusted for c.w. reception, a 4.0MHz signal of 0.25µV gave a 10dB signal to noise ratio: this corresponds to a 10dB noise figure, about typical of a professional communications receiver. With the same receiver setting, the generator was then set to 30% a.m. and off-tuned. To give a receiver output 3dB above noise, the

signal generator output had to be increased by 55dB at 30kHz off tune, and by 65dB at 90kHz off tune. The selectivity is thus poor compared with a professional communications receiver, but nevertheless very creditable for a set with but one tuned circuit.

Construction

We will start the construction with the case rather than the printed circuit board. The case used for the prototype receiver is from the Miniford Engineering range of equipment cases. This is a low-cost, yet pleasing solution to the perennial problem facing the home constructor of how to make a project look



Track side of the prototype printed circuit board.

reasonably professional, yet not need a second mortgage.

The case chosen is coded J24 and measures 204(w) x 153(d) x 127mm (h) and a

suggested layout for the front panel is shown in Fig. 2.3.

In Part 3 we will deal with the printed circuit board and finish off with operating the set.

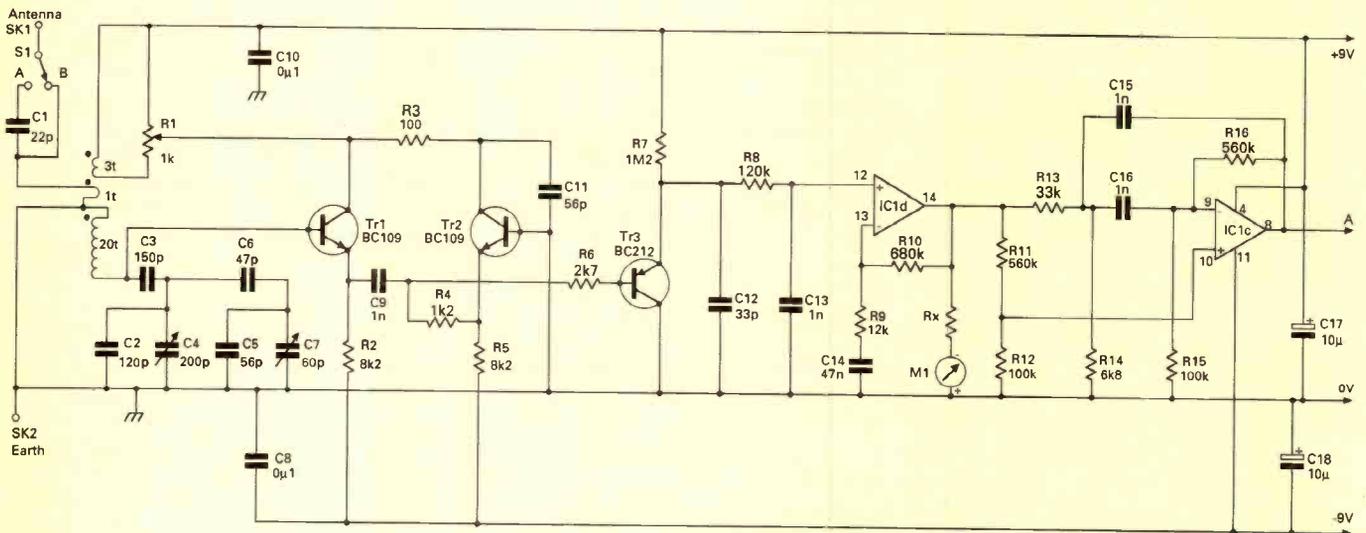


Fig. 2.1.

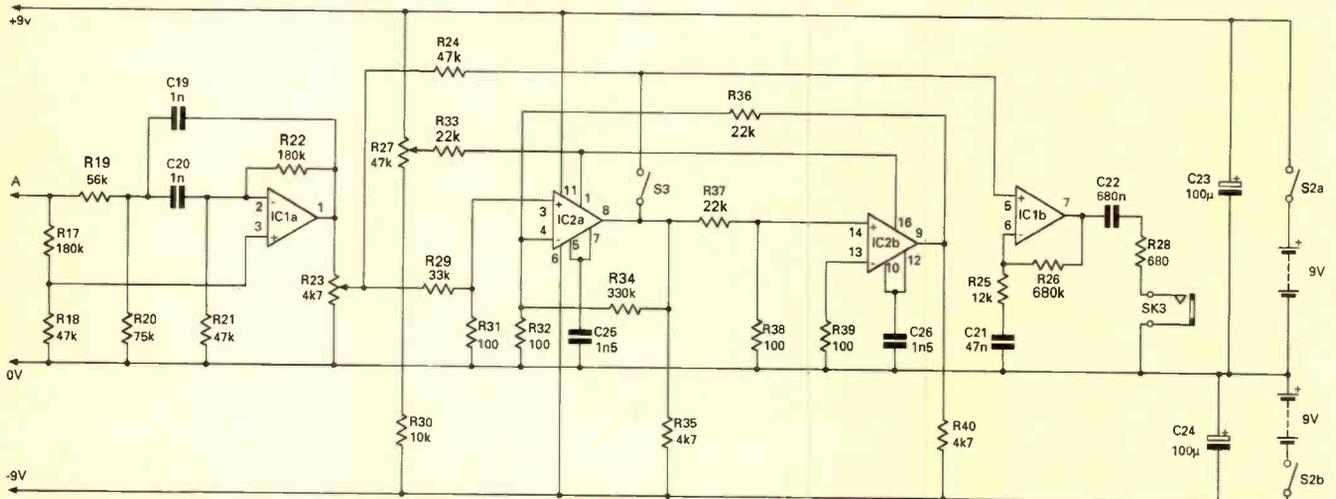


Fig. 2.2.

Project

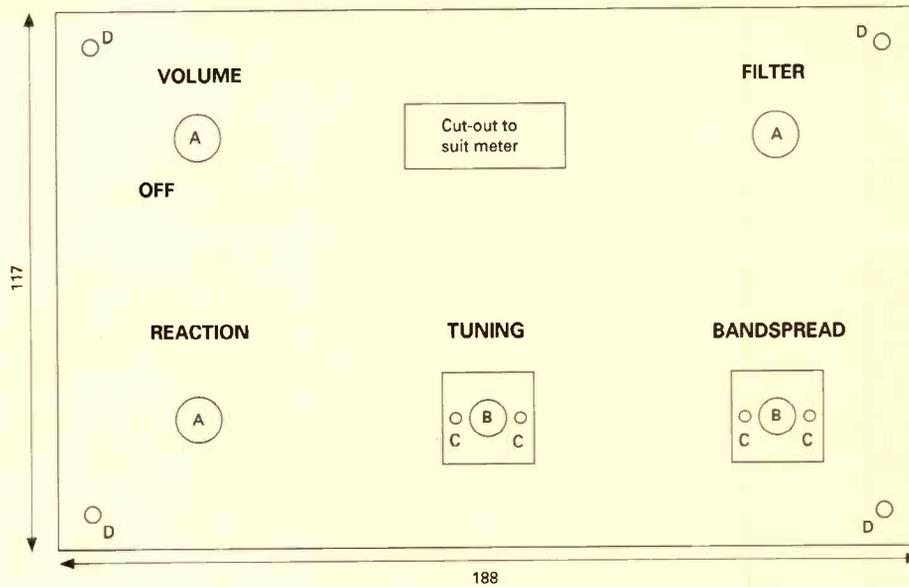


Fig. 2.3: Front panel layout of the receiver.

Hole sizes.
A=10mm; B=8mm;
C=2.5mm on 14mm
centres; D=3.5mm.

You Will Need

Resistors

0.25W 5% Carbon Film

100Ω	1	R3, 31, 32, 38, 39
680Ω	1	R28
1.2kΩ	1	R4
2.7kΩ	1	R6
4.7kΩ	2	R35, 40
6.8kΩ	1	R14
8.2kΩ	2	R2, 5
10kΩ	1	R30
12kΩ	1	R9, 25
22kΩ	3	R33, 36, 37
33kΩ	2	R13, 29
47kΩ	3	R18, 21, 24
56kΩ	1	R19
75kΩ	1	R20
100kΩ	2	R12, 15
120kΩ	1	R8
180kΩ	2	R17, 22
330kΩ	1	R34
560kΩ	2	R11, 16
680kΩ	2	R10, 26
1.2MΩ	1	R7

Potentiometers

1kΩ lin	1	R1
4.7kΩ log	1	R23 (with S2)
47kΩ lin	1	R27

Capacitors

Sub-miniature Plate Ceramic

22pF	1	C1
33pF	1	C12
47pF	1	C6
56pF	2	C5, 11
120pF	1	C2
150pF	1	C3

Polyester Film

1nF	6	C9, 13, 15, 16, 19, 20
1.5nF	2	C25, 26
47nF	2	C14, 21
680nF	1	C22

Disc Ceramic

0.1μF	2	C8, 10
-------	---	--------

Tantalum Bead

10μF 16V	2	C17, 18
----------	---	---------

Miniature Electrolytic

100μF 16V	2	C23, 24
-----------	---	---------

Variable

60pF	1	C7 (see text)
202pF	1	C4 (see text)

Semiconductors

Transistors

BC109	2	Tr1, 2
BC212	1	Tr3

Integrated Circuits

LM13600	1	IC1
TL 084	1	IC2

Switches

Min. Toggle		
s.p.d.t.	2	S1, 3

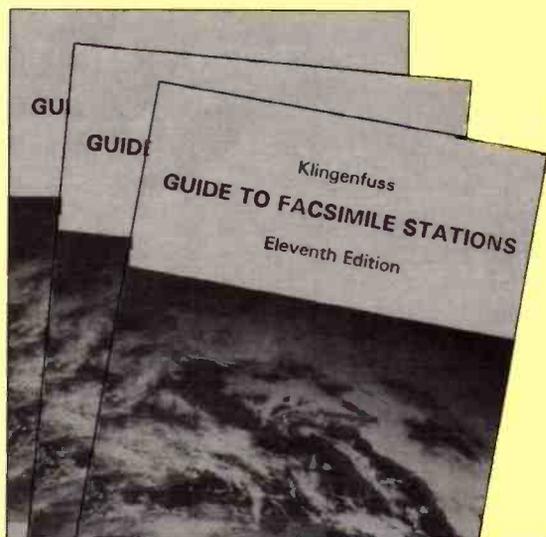
Miscellaneous

Case (see text); Printed circuit board; Knobs (4); Slow motion vernier dial drive; Meter (see text);

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propagation

by Ron Ham

Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

During February, **Ron Livesey** (Edinburgh), with his 2.5in refractor telescope and 4.0in projection screen, identified 4 active areas on the sun's disc on days 5, 6, 13, 20 & 21; 5 on the 10th, 11th & 22nd, 6 on the 3rd and 7 on the 23rd, 26th & 28th.

Despite often cloudy skies, **Cmdr Henry Hatfield** (Sevenoaks), using his spectrohelioscope, located 1 sunspot group, 14 filaments, 9 quiescent prominences and an active plage close to the east-limb at 1220 on March 6, 1grp, 15fs and 6 very small qps at 1420 on the 18th, 2grps, both slightly active, 16fs and 5qps at 1237 on the 19th and 4grps, one very active, 17fs and 2 minute prominences at 1448 on the 31st. **Ted Waring** (Bristol) counted 10 sunspots on the 23rd and **Patrick Moore** (Selsey) sent me a drawing of the sunspot groups that he projected through his telescope at 1505 on the 27th, **Fig. 1**. There is little doubt in my mind that activity associated with one or more of these groups were responsible for the atmospheric disturbances around that time. Further evidence of activity came when Henry's radio telescopes recorded individual bursts of solar noise, at 136MHz, on the 26th and a medium continuous noise storm on the 31st. In addition, **Fred Pallant** (Storrington) reports a high noise level, on 28MHz, on days 11, 13, 15, 18 and 23.

Auroral

In February, Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received visual reports of 'glows' during the overnight period on the 1st, 3rd, 7th, 9th, 11th,

Beacon	February										March																		
	26	27	28	29	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
DFOAAB	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
DLOIGI	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
IY4M	X	X			X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KB90JA																													
KC4DPC	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
KD4EC	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
KF4MS	X				X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KG5YB																													
KJ4X	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
KW7Y					X					X						X	X												
LASTEN																X	X	X	X	X	X	X	X	X	X	X	X	X	X
NX20	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
N2JNT																													
N4MW	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
OHZTEN	X	X	X																										
PT7BCN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PT8AA	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
PY2AMI	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SK5TEN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
VE1MUF																													
VE2HOT	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
VE3TEN	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
VK2RSY					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
VK5WI																													
VK6RWA	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
VK8VF	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
WA4DJS	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
WA6APQ	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
WB4JHS																													
WC8E	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
W3VD	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
W7JPI																													
WBUR																													
WSUXO																													
YQ2X	X	X	X																										
ZS1LA	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ZS5VHF	X	X																											
ZS6PW	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ZZ1ANB	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5B4CY	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Fig. 2.

25th, 27th & 29th, 'ray bundles' on the 1st, 2nd, 3rd, 9th, 26th & 27th, 'active moving storm' on the 20th & 26th, 'corona' on the 20th & 26th and 'all sky' on the 2nd & 26th, at various times from observers mainly in Northern England and Scotland. However on the 1st & 2nd reports also came in from Chicago, Ottawa and North Dakota. Ron receives regular reports from meteorologists at airports, the weather ship *Cumulus*, Fishery Protection vessels and officers and men of the British Volunteer Observer Fleet and, don't forget readers, he is also pleased to have details of both optical and radio

auroral observations from non-BAA sources at Flat 1/2, East Parkside, Edinburgh EH16 5XJ.

Tony Hopwood (Upton-on-Severn) and **Doug Smillie** (Wishaw) between them heard auroral reflected radio signals on February 1-4, 8-10 & 24-28 inclusive. **Gordon Foote** (Didcot) heard the German beacon DK0WCY (10.144MHz) give weak auroral warnings at 1624 on February 26 & 27, 0919 on March 1, 1315 on the 21st and 1620 on the 24th.

Magnetic

The variety of magnetometers used by **Tony Hopwood**, **Karl Lewis** (Saltash), **Ron Livesey**, **David Pettitt** (Carlisle) and **Doug Smillie** recorded some form of magnetic disturbance, almost daily, throughout February with very active and/or storm conditions on days 2, 3, 4, 8, 9 and, apart from the 23rd, daily from the 20th to 29th. These 'storm' figures fit well with the radio-aurora days mentioned earlier. "A peculiar month [March] with no real magnetic storm," wrote Tony Hopwood, having logged disturbed conditions on days 1, 4, 5, 23, 29, 30 & 31. "The outstanding magnetic feature was the predominant westerly deviation throughout the month," said Tony, adding, "especially the last 3 days when diurnal deviation reached about 30min 'W' about 1400 on the 30th and 31st."

Propagation Beacons

First, my thanks to Gordon Foote, Henry Hatfield, **Ted Owen** (Maldon), Fred Pallant, **Ern Warwick** (Plymouth), Ted Waring and **Ford White** (Portland) for their 28MHz beacons logs which, as usual, their combined efforts enabled me to produce the monthly chart seen in **Fig. 2**. Ern Warwick copied the 10W signal from LU2HDX/Beacon on 28.283MHz at 1050 on March 12 asking for reports to be sent to CC 266, 5152, Villa Carlos Paz, Argentina. Ted Owen, Fred Pallant and Ted Waring added N4MW/B to this months list and on the 5th, Fred Pallant logged all 3 PT/PY beacons before 0900 and then again at 1700. However, he found the band sparse of the 'DX' beacons on the 18th.

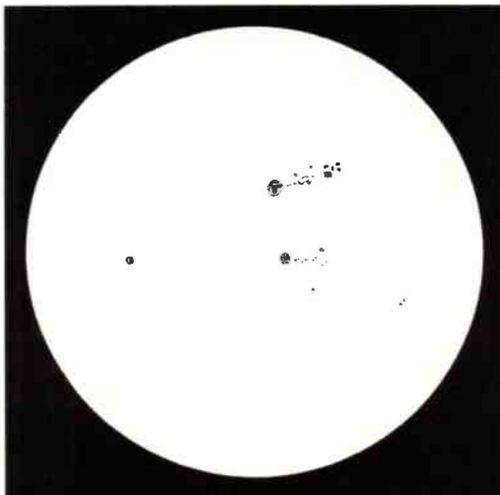
Tropospheric

The atmospheric pressure readings, recorded at my home in Sussex, for the period February 26 to March 25 can be seen in my television column elsewhere in this issue. Reports about those February

tropos are still coming in, **P.R. Guruprasad** (Boputhatswana), using a Sony ICF-7600DA with its own rod antenna, received signals on various spots in Band II from stations in the Republic of South Africa on the 12th and 15th. **Michael Larsson** (Cheadle Hulme) listened to programmes from France on the 5th, France and Germany on the 6th, Wales on the 7th, Belgium, France and Holland on the 8th and Germany and Ireland on the 18th. Michael also heard stations in Holland (NOS2) on March 7.

Simon Hamer (New Radnor) logged Lincs FM, on 102.2MHz, on the 12th and on the 15th. **George Garden** (Edinburgh) was DXing with his car radio high on Garvoch Hill, near Laurencekirk and heard a new station, from Scotland, Heartland Radio, on 97.5MHz. Many years ago a colleague from north of the border told me that there were parts of the highlands where the reception of radio and TV signals was almost impossible. I was reminded of this when **David Glenday** (Arbroath) sent me a local press cutting which reports that 'Scotland's smallest group of broadcasters took to the airwaves...when Heartland Radio began transmitting from a curling club in Pitlochry'. The station is designed to serve "a potential audience of just 5500 in a 30 square mile area of Highland Perthshire...a notorious TV and radio blackspot".

Fig. 1.



ssb utility listening

Graham Tanner, 42 David Close, Harlington, Middlesex UB3 5EA.

During late March I was on holiday in the USA. I came back with several interesting books and leaflets about various receivers that may appear over here quite soon. When I returned I found a pile of letters waiting to be answered, and this column waiting to be written. I have started to reply to some of the letters, please excuse the delay in answering.

NASA

You are probably aware that the Space Shuttle was in orbit during late March. For the first time I actually managed to hear some of the Shuttle communications which were relayed by WA3NAN from Maryland in the USA. The Shuttle audio is relayed by a number of amateur stations on h.f. frequencies; I listened on 21.395 MHz USB, although several other frequencies are used (see below). WA3NAN is the Radio Amateur Club of NASA at the Goddard Space Flight Centre (PO Box 86, Greenbelt, Maryland, 20768, USA). The Shuttle audio is relayed on (or near) the frequencies shown in Table 1.

You will note that all these frequencies are within the defined 'Amateur band' portions of the h.f. spectrum, so the actual frequencies used will vary depending on availability. Some are I.s.b., some are u.s.b.

NASA also use various high frequencies themselves for terrestrial communications. Soon after launch the Shuttle drops its two solid rocket boosters (SRBs) which land in the Atlantic Ocean. These are recovered by ships that have been heard on 6.708 and 19.149MHz during the past few launches. Also, NASA has large tracking station on Ascension Island in the South Atlantic and Antigua, which sometimes use h.f. to contact other NASA stations; in the past they have been heard on 5.190, 5.810, 9.043, 10.780 and 13.600MHz (all u.s.b.).

Various other high frequencies are used by NASA and supporting agencies, including the US Air Force and US Navy. Most of the radio activity is on 'NASA frequencies', including: 5.246, 20.186, 20.192 and 20.198MHz.

WA3NAN, (Goddard Space flight Control, Maryland)
3.860, 7.185, 14.295, 21.395 & 28.650MHz

W5RRR, (Johnson Space Centre, Texas)
3.850, 7.227, 14.280, 21.350 & 28.495MHz

W6VIO, (JPL, Pasadena, California)
3.840 & 21.280MHz

Table 1.

Shuttle audio has also been heard on these last three. There are thought to be nearly 200 high frequencies used by NASA, not all are used during every launch. If anyone hears any NASA frequencies in use, either during exercises or during missions, please write in.

If the above interests you, there should be a Shuttle launch during during mid June (planned for June 16). These dates are likely to change (i.e., launch later than planned) due to problems near launch time. Several NASA centres have recorded telephone messages which give updated information on Shuttle flights; pre-launch information is available from the Kennedy Space Centre on (407)-867-2525 (don't forget to add the '010-1' international dialling code when phoning from the UK).

New Equipment

On my recent trip to America I saw several advertisements for a new receiver from Sony. Their new SW-55 model is the 'little brother' to their SW-77 model, and they both have several common design features.

The new SW-55 covers 0.15-30MHz in a.m. and s.s.b. and 88-108MHz in stereo f.m. There are 125 memories, and the ability to store a station name with the frequency in 25 of the memories. There are five 'soft function' buttons that are used to control many of the functions of the radio, their action depends upon another key press which changes the l.c.d. above the keys to show what each key-press will do. It looks and sounds quite complicated, but after only 5 minutes I was able to

quickly tune to radio.

Tuning can be accomplished using direct entry push-buttons, scanning, manual tuning, or by using the memories. There are two tuning speeds available when tuning manually, and to prevent unexpected frequency changes all the keys can be locked.

One 'novel' feature of the SW-55 is its internal speaker. This is in the form of a long narrow recess above the l.c.d. display. For such a small speaker, it is surprisingly effective. There is also a headphone socket for more private listening. A telescopic antenna slides neatly into the top of the set, and there is an external antenna socket on the side of the set which connects neatly with the usual Sony connector block. Another innovative idea is a world-map which can be changed to show various time-zones, or the day and night portions of the globe. This allows you to determine if the station that you are listening to is in darkness, or if a part of darkness exists between you and the transmitting station.

The receiver comes with a Sony frequency guide, mains adaptor, stereo earphones and carrying belt, all in a stylish grey case.

Several US radio magazines have recently reported that Sony (USA) have had to recall some SW-77 models to fix minor problems with receiver overload and internal micro-processor noise. The most noticeable problem was a distinct audio 'chugging'. The problems have been overcome, and 'new' models are on sale again with better sensitivity, reduced noise and a longer telescopic whip. As yet, there are no indications that the UK models are suffering from the same problems.

'A MARS a day..' or 'GI Phone Home'

In the USA and Canada radio amateurs are allowed to take and pass third-party messages, so several networks have been established to allow military personnel deployed away from North America to contact their family and friends using amateur radio-like systems. For American Services personnel there is MARS - the Military Affiliated Radio System, and the Canadians have CFARS - Canadian Forces Amateur Radio System. The networks use either standard amateur equipment or military radios on frequencies that are just outside the recognised amateur band allocations. One particular busy set of frequencies is 14.440 - 14.485MHz u.s.b. Most evenings have several nets operating within this range. There are other frequencies used in the ranges 4.000 - 4.050MHz and 7.340 - 7.400MHz.

The United States is divided into regions. Each US MARS station covers particular states within the region, and operates on a certain set of frequencies. Military personnel must contact the US MARS station on the relevant frequency for the area that they wish to contact in the USA.

To avoid revealing the location of military forces, military ships and bases are allocated a callsign. The US Navy and US Marines ships callsigns all begin 'NNNOC' or 'NNNON' and are followed by a three-letter code to identify the ship: for example 'NNNOCVG' is the nuclear powered aircraft carrier USS *Dwight D. Eisenhower*. US Air Force callsigns all start with 'AGA' and are followed by a single-digit region code '0' to '9', and then a two-letter code for the location: for example 'AGA1AD' is Andrews AFB. Once a contact is taking place, the prefix is usually dropped by the operators. CFARS callsigns generally start with either 'CIS' or 'CIW', and are followed by a number: for example 'CIW91' is Lahr in Germany. The radio discipline is extremely good in these nets, many amateurs would learn a thing or two!

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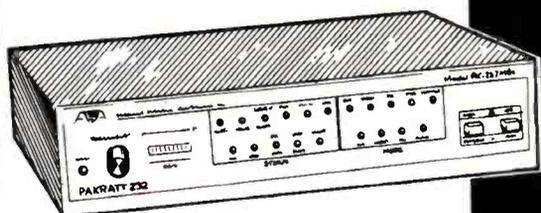


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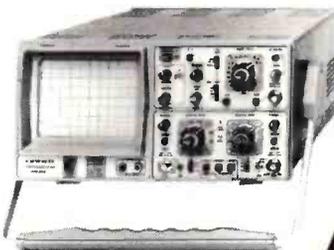
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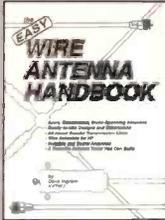
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AUSTRALIA
Greg Baker

Summer has given way to autumn and winter here and the predicted bad fire season did not eventuate. I've been training people in the use of our bushfire brigade base radio station and working on an operators' manual. My own listening has been curtailed too by a few solid months on a book for science teachers to use in their class during International Space Year. But communications news doesn't stop for all that.

Time Zones

A network radio scheduler's nightmare developed here in March when we were treated to five time zones for a period of a fortnight.

Australia's constitution leaves the control of time firmly in the hands of the various state governments. According to my contact in the Australian Survey and Land Information Group (AUSLIG) in Canberra, legally time is defined by colonial legislation and is framed in terms of mean solar time at the standard meridian of the appropriate time zone. Thus the New South Wales time zone is defined on 150° east and is usually 10 hours ahead of UTC.

The upshot of this is that over summer, the states are the authorities that decide on whether to have daylight saving or summer time and the period it will operate for. The states try to negotiate the dates for the start and finish of daylight saving time so that they coincide with other states. However, political considerations mean that these negotiations are not always successful in yielding the same start and finish dates. For a fortnight in March, for example, Australia had five time zones: New South Wales, Victoria, Queensland and the Australian Capital Territory were on Eastern Standard time (Zone K or UTC + 10) their daylight saving times having finished. South Australia and Tasmania were still on daylight saving time and thus were at UTC + 10.5 and UTC + 11 respectively. Northern Territory and Western Australia were not on daylight saving time at all and are on UTC + 9.5 and UTC + 8 respectively.

Time zones in the Australian Antarctic Territories add a few more zones. Macquarie Island is on Tasmanian time, Casey station is on UTC + 8, Davis station on UTC + 7 and Mawson station on UTC + 6. I make that a grand total of seven time zones in Australia and territories during that fortnight.

For most of the year Australia has three time zones. Thus radio and television networks like the Australian Broadcasting Corporation (ABC) have arrangements in place for networking programmes originating in the different time zones. During the two week period when there are five time zones, however, the schedulers' task becomes more difficult particularly when



it comes to scheduling sporting broadcasts from interstate. There has been some push to get Australian government control over time zones but realistically the schedulers' difficulties are likely to continue. Recent referendums in Queensland and Western Australia firmly rejected daylight saving for future years meaning that those states are unlikely to relinquish control of time and also meaning at least four time zones during our summer.

Aboriginal Radio and Television

I promised last time to bring a few details of Australia's Aboriginal radio and television networks. The radio network is operated by the Central Australian Aboriginal Media Association (CAAMA), which was established in 1980. In 1980, CAAMA went to air in Alice Springs for half an hour each week on the commercial a.m. station 8HA and also on ABC radio. In 1981, CAAMA went to an hour and a half daily on Alice Springs f.m. radio station 8CCC and by 1983 this had built up to six hours a day. In 1984, CAAMA was granted its own public broadcasting licence and constructed a small network of four transmitters for its 8KIN f.m. radio station. Later, in 1984, the ABC granted CAAMA access to its short wave transmitters and today CAAMA radio can be heard across a large part of the continent.

The Aboriginal owned television company Imparja Television started broadcasting in January 1988. Since then it has grown so its footprint extends via satellite into four states and territories over one third of the Australian continent. Across these states there are over 100 facilities that retransmit the Imparja signal. Though Imparja is responsible for some of these sites, most are the responsibility of community groups where they are located. To date, Imparja has not been able to broadcast a lot of Aboriginal programmes not only because of the expense of production but also because of the need to put English subtitles to match the audio on the Aboriginal programmes.

The CAAMA radio schedule is 2130 - 0830UTC 4.835MHz and 4.910MHz and 0830 - 2130UTC 2.310MHz and

2.325MHz. **NE Suffolk G1ZYN** tells me he has been listening but has so far had no luck with these frequencies. I would be interested to hear from anyone else, successful or otherwise.

QSL to CAAMA, PO Box 2924, Alice Springs, Northern Territory 0871, Australia.

Radio Australia

G1ZYN also wanted to know whether the Radio Australia transmission that he hears on 13.755MHz from around 1500 to 2030UTC is a relay. The answer is that it is not. Radio Australia does not relay any of its programmes, but operates from four transmitting sites on the Australian mainland. They are at Shepparton in Victoria, Carnarvon in Western Australia, Darwin in the Northern Territory and Brandon in Queensland.

Bougainville

Since 17 May 1990, when the Bougainville Republic declared itself independent of Papua New Guinea, the Papua New Guinea government has been maintaining a communications blockade on rebel held parts of the island. To help overcome this blockade the International Amateur Radio Network has recently set up on the island a radio station called Radio Free Bougainville.

Spokesman Sam Voron VK2BVS will not comment on the equipment being used but Australia's commercial amateur radio magazine *Amateur Radio Action* says that "it is obvious that the equipment used is a converted amateur rig". Because the target area is Papua New Guinea, Australia, New Zealand and the Pacific the antenna system is omnidirectional.

From 0800 to 1100 or 1200UTC Radio Free Bougainville operates on 3.88MHz with programming in Pidgin and English. English language news is at 1000 and 1100UTC. Targetted on Europe the frequency 21.49MHz has been in use after 1300UTC according to *Amateur Radio Action* but Sam Voron says that 21.49MHz is not currently in operation. Nonetheless it may be worth an ear from time to time.

If you hear anything on either frequency, QSL with \$5.00 to Sam Voron

VK2BVS Roseville N.S.W. 2069 Australia. Sam will send a QSL, a copy of what he says is the radio licence and a certificate.

Radio New Zealand

Radio New Zealand has replaced its 15.120MHz channel with 11.735MHz from 4 May 1992. This makes their current schedule:

Times (UTC)	MHz
2138-0758	17.770
0758-1206	9.700
1650-1850	9.675
1850-2138	11.735

The station is closed between 1206 and 1650UTC. In addition to the above frequencies, 9.510MHz is occasionally used for sports broadcasts. According to their programme guide and frequency schedule Radio New Zealand broadcasts a mix of Radio New Zealand International (RNZI) programming and relays of Radio New Zealand's domestic National Radio network. RNZI is principally for Pacific listeners 1700-2140UTC and 0400-1000UTC weekdays and the National Radio network can be heard during the remainder of weekdays and at weekends. News bulletins are on the hour in English. Sports news is on the half hours from 1830 to 2130UTC weekdays while full coverage of major sports events is carried at weekends.

Programmes of wider interest are *Mailbox* with Tony King and *Travel Pacific* with Susan Buckland. These programmes alternate and are on Mondays at 0430UTC, Thursdays at 0830UTC and Fridays at 1930UTC.

QSL to Radio New Zealand International, PO Box 2092, Wellington, New Zealand. For a prompt response RNZI suggests sending 3 IRCs.

Your Input

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 2 IRCs.

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

Correction in last month's column a new Sri Lankan based satellite channel was mentioned, we now learn that the proposed channel will in fact start August '92 but operate terrestrially and with high powers intending to cover parts of South India, more on the project in the TVDX news section!

Another letter from **Bindu Padaki** in Bangalore, India who writes of a TVRO (TV receive only) boom in the sales of satellite equipment, now that Star TV from AsiaSat 1 is operational - so much so that the government has been unable to legislate for the dish growth and has opted to licence all receiving terminals. Interesting to see that the prices of C Band equipment are relatively cheap, a complete C Band package with an 2.4m diameter dish, LNB, feeds, receiver, etc. costing 25 000 Rupees (about £500 UK) - cheaper than you'd buy it in the UK! INSAT-2 should launch by end June '92 according to the Times of India March 6, '92.

Odd the discussion about Star TV since nearby **Maurice Hillier** (Romsey) has just returned from a Hong Kong trip (the home of the Hutchvision Star TV) armed with various satellite leaflets. Comparing prices a 2.1m mesh dish, feed-horn, 27k Gardiner LNB, stereo receiver, cable as a complete package costs \$25 000 HK including installation on your prepared concrete base. Many blocks of flats now sport large mesh antenna for the Star TV service which comprises 5 services - Star Plus, English language general entertainment; BBC World Television Service; Prime Sports; MTV Music Television; a Mandarin language general entertainment channel. The Asian media rumour that a 6th channel in the Hindu language is now under consideration.

Jean-Louis Dubler (Montreux, Switzerland) mentions that RTL+ may opt for transponder facilities on Intelsat VI F2 (60°E) to downlink a Swiss orientated commercial TV service. RTL+ have offered cable operators a bonus system for each subscriber taking the channel plus 15 000 S Fr. as an installation payment. Both MBC and RTL4 are cable carried in Switzerland though very unpopular, TRT International is however popular amongst the large Turkish community living there.

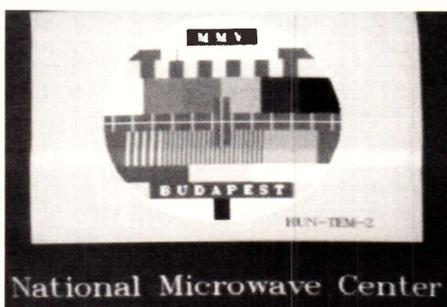
Moving South into Botswana and satellite enthusiast **Ken Kirkloy** has seen the newly established 'Brightside World TV' service ceased transmissions during March and still off-air end March when he wrote to us. Ken hears that the 'M NET' service now carried scrambled over Intelsat V F5 66°E may move to Intelsat VI F1 27°W, an easier downlink less subject to weather variation.

Arabsat 1c is now in service at 31°E carrying right-hand circular CNN, Saudi TV 1 & 2, Indian TV and left-hand

Caption for the Hungarian Broadcasting Company seen on Eutelsat II F3 16 East.



Another caption seen on the same downlink.



circular a further 3 Indian services + Omani TV, Ian Waller (Lincoln Satellite) reports. Whereas most European services in the Ku band operate with linear polarisation (i.e. vertical or horizontal), most C Band telecomms birds operate in circular, the main exception being the TV programme satellites for North America that operate linear polarisation. A rare catch for Ian was on pre-election night April 8 with a Sky News SNG circuit (Satellite News Gathering) with ident 'Sky 2 Barry 1' at 11.60GHz over the aged and highly inclined Intelsat V F2 18°W (being replaced with Intelsat K once launched).

My own orbital sightings up to mid April have been varied. The new French Telecom 2a bird, now run in from her Winter Olympics coverage duties at 3°E has now shuffled back along the orbital arc and was testing at 8°W from early April. The last week of March brought the real space drama of the marooned Russian cosmonauts on-board the Mire space lab, Olympus 19°W 12.56GHz carried prolonged news feeds over this period with detailed pictures of the 'rescue' and with control room action.

Orbital News

Piles of press releases this month and a quick summary of the main points - the French language entertainment channel - TV5 Europe carried over Eutelsat II F1 13 has now gone to an 18 hour a day schedule through from 0700 hours. Poland has now been formally accepted as the 28th member of the

Eutelsat organisation, and another Eastern Bloc country Rumania is now operating her new Earth station at CHEIA, some 60km North of Bucharest, keep a look out her test pattern. Other states applying for Eutelsat membership have been received from Hungary, Czech + Slovak, Armenian and Azerbaijan republics.

Intelsat meanwhile have been offering discount facilities for broadcaster using digital audio distribution (DAB) for a 1 year period. With digital compression techniques a radio marketing group can reduce its space segment costs up to 4 times, whilst maintaining CD quality on the radio circuit - or 4 complete CD quality stereo radio circuits can be fitted into the bandwidth used for a conventional transmitted channel. Use of digital techniques also allows for a much more compact receiving dish package again reducing costs.

Intelsat have also confirmed orders for 3 extra rockets to launch their series VII/VIIA satellites over the 1995/6 period, one being via the Chinese Long March rocket from the China Great Wall Industry Corporation. The rapid expansion of communications across the Pacific basin has caused Intelsat to seek approval for additional orbital slots at 91 and 95°E. The latest series VI F1 bird has now been slotted at 27°W - the incumbent VI F4 has now been moved into an Indian Ocean venue at 60°E for operation early June. Meanwhile late starter VI F3 at the time of writing is low orbiting pending the arrival of NASA's Shuttle Endeav-

our to move her into a correct orbit - this happening early May.

Interesting to note that CNN International is now providing pan European coverage from Astra 1B (in the clear) and will drop her European footprint ex Intelsat VI F1 27°W from early Autumn '92 when her Intelsat contract expires - this relates to CNN's Ku Band coverage only, C Band circuits will continue unaltered.

Interesting developments with SNG (satellite news gathering) linking possibilities - the London Starbird communications company have recently successfully transmitted Kuwait - London news material (1st anniversary of the Gulf War) but using Ka band (30GHz) via the Olympus satellite at 19°W, one problem experienced was rain fade. This particular high powered bird will allow access via only 1.2m dishes suggesting even smaller SNG a possibility in the future - and access also being possible from the Gulf directly into the Eastern States.

Another new European satellite channel is planned - Thames TV in conjunction with BBC Enterprises will launch an entertainment channel (subscription and commercial though initially free to air) via Astra during 1993 and depending on EC funding will double illuminate in 16/9 D2MAC. And earlier this year the Egyptian International Satellite Space Channel transferred onto Arabsat 2 from A'sat 1, the latter having developed a serious fuel leak preventing the stabilising of her operating slot - this resulted in it moving from its 19°E slot over Eastward.

Exploit

With the news that New Zealand is planning her own satellite born TV service across the West Pacific/East Asia, other satellite operators are lining up to exploit the region. Alpha Lyracom (PanAmSat) are preparing for their OrbX-2 bird that will have up to 14 individual beams with transponder cross switching with both C and Ku band trdrs covering the Pacific rim - launching late '94; TRW is diversifying from US defence into commercial satellite operation with their PacificCom-1 craft using a lighter C Band only payload - launching 1995; Unicom /Matra Espace hope to launch their satellite into 1 of 2 Tonga registered slots Spring 1994 with another bird locating over the Indian Ocean. Pacstar (Pacific Satellite Inc.) after early problems in raising financial backers hopes to launch Pacstar 1 into a 167.5°E slot Autumn 1994 and will cover between the US West Coast, Pacific Islands and East Asia.

And the final word, following the increase of satellite lease time and the expansion of her TV transmitter network, Tibetan TV, Lhasa has now extended its TV hours to 14 hours daily.

amateur bands round-up

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

Hello again! During the past month, I received a letter from a potential listener who is seriously disabled, wondering how to get started.

First, get in touch with the **Radio Amateur Invalid & Blind Club at 78 Durlay Avenue, Pinner, Middlesex HA5 1JH**. Secondly get to know at least some of the locals. Thirdly, if this doesn't provide a complete answer to your difficulties, try contacting your local REMAP group. There are around 100 of these, covering almost all the UK. Each comprises a mixture of engineers and paramedical people such as occupational therapists, etc. The aim of the Panels is to find a solution to problems created by disability, by designing and making special-purpose aids. The cost to a client is zero. The National Organiser will tell you how your nearest Panel can be reached: **Mr J. J. Wright, Hazeldene, Ightham, Sevenoaks, Kent TN15 9AD**. Do please enclose an s.a.e. with your letter; it helps keep REMAP's costs down. Knowing RAIBC and local amateurs helps REMAP 'get it right'. Incidentally, any readers who are themselves engineers might like to get involved in their local REMAP group.

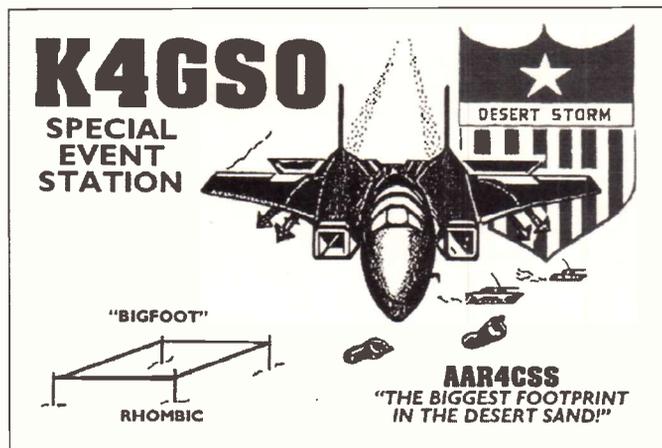
Letters

Matt Spencer of Redhill asked about protecting an antenna from lightning. Using insulated wire in the part that is outside is no help. What matters is that when thunder is about the static build-up is prevented by having a good earth connected to the whole system. My own practice is to ensure that every antenna has a direct current path to ground designed into the normal operating state. Then, if one is away, there still is some protection. For a dipole, one can use a high resistance (say, about a 1M Ω) across the feeder either at top or bottom; while a folded dipole of course has a d.c. connection between the legs of the feeder anyway.

If you use an end-fed wire, an old-fashioned knife switch can connect it to earth if you do it early - leave it to the last moment and you might get a nasty surprise!

Changing Tack

All this having been said, nothing at all can cope with a direct hit, or even a very near miss. Changing tack, Matt's list shows a new Sangean ATS 803A, giving Top Band and DL8NBE, HG73DX, LX1GQ, LY1BK, OK1DOT, OY9JD, OZ3SK & Y32HE. On 80m before the new box came Matt heard EA8AMT & UF7FXC, while the Sangean picked up OY1HJ (QSL via the Club station OY6FRA), TA4A, UA00GN (Box 2229, 670040, Ulan Ude), VK6RO, YA5MM (via LZ1HA), 4U1UN, 7X2BK, 7X5AB, 9K2HF, 9K2WR, N6AR, Eastern Ws & VE1-2. 7MHz yielded EA9UK, FF6KFV, PY3OC, PY7AZN, PY7ZK, TK5A, UV6ASK,



QSL card from US Army MARS station AAR4CSS. The station operated in the Persian Gulf during Desert Shield and Desert Storm handling over 16000 calls.

UB5FFC & K3ZD. 14MHz was used for CE3DNP, HZ1AB, J8/W8KKS, L8H, LU2F, PY2APQ, RW9C, TX4B, VQ9IO, ZV5A, 5Z4BI (via W4FRU) & 7Z2AB (for whom cards via AA0BC). Turning on 21MHz it was FM5CD, KG4DD, T11C, V2/G6QQ & ZP0Y; with 28MHz band giving AZ9F, IU9A, LU1H00, PU4B (via PY4BA), UF6VM, ZW5B, 8R1JV (via PO Box 10867, Georgetown, Guyana), K6KS, W6PU, KA2KPA/P7 and most of the rest of USA, not forgetting of course the Europeans.

Phone And CW

Gerald Bramwell lives at Swinton, and on Top Band, the c.w. notched up YL2DX, RA4NBS, DL7UCW, LA4RJS, DK2PWJ, G0ETV, G0EBW, GM0RMM/P, while s.s.b. managed RA3DFI, LY1BYK, RA9FNN, UC2AJV, RT5UO, UC2IP, OK1DOT, ED2BFM, PA0TUK, DL7UDG, Y42MK, PA0IJM, GM3DXU, DL7UCW, OK1KQJ, OZ8ABE, FE6FAI and a gaggle of G stations. On 3.5MHz the c.w. included G14BBE, OZ3FI, G0AUQ, HA7LD, F1LGE, SM5BOK, G3MCK, s.s.b. gave AA2DU, NF2L, NR1R, W1FC, N1QC, VE3RM, UF6FAL, SU1DT, T77C, EA8BTA, YA5MM, ON4AVO/5N0, VK6OK & 9V1XQ & Europeans. Next 7MHz where he found K1PCA on c.w., XJ1XX, YA5MM, EA8YG, HL2IUL, JA4MWZ, HL11UA & a mass of phone and c.w. Europeans. Gerald went straight to 14MHz and found JA4DZ, WA4WKY & Europeans on c.w., plus s.s.b. from EA8BXQ, EA8TE, EP2MHB, 9K2CS, TJ9JN, 9L1TH, ZV1Z, VK4WIE, JY3ZH, LU7HJM, YV5EVI, VE3FGL, VE2NB, VE2AFU, VE3RFA, VE3NOS, VE3EE/M, VE1VCT, VO1MP, VO1XC, VE3PLC, NT9U, K3WW, WY9V, NZ9R, N2KJP, N2MEA, AK1N, W3KH, W5XQ, KZ4C, KR2R, K8MBH & W2ELT & Europeans. On 18MHz, Gerald found VE7IM, K6SMF, W7RDE/P, W1-5, VE1-3, RW9FW, JR1SHE, YV5ENI & 9K2MU. 21MHz accounted for all parts of W other than

Six-land, VE1-3, ZF1HJ, G3TEK/P/ZL2, ZL1UFP, ZS6EZ, 5B4YX, 7X2WCK, C08MA, J37XC, VP8CEH, ZP0Y, PY5BUL, ZZ9A, EA9UK, I KP4KY, 4X6YY, 8R1UN, PY3BD, LU1VZ, PJ9Y, plus A47RS, PR7BNS & W8BKP both on c.w. On 24MHz, s.s.b. produced 12 N. Americans, plus CE3LEI, KP2J, ZD7CW, 7X2VXK, PJ8AD & KP4DAL. That leaves 28MHz, where N1KWR was using n.b.f.m., G3KAF was keying, & W1QUW, VO1WD, KM4BW, KA5W, N8ATR, K8CX, KS1L, KS9Z, VE3CUE, KA3S2R, K0TT, VE3HBF, W3GG, K2TR, W9RE, WF2W, K8OCL & W9RE were all booked in on s.s.b..

Site Problems

Simon Griggs in Chelmsford answers Frank Herrmann by suggesting that location has considerable bearing on the problem; in general, I agree, but it is also true to say that the site problem is usually one that can be overcome - unless it includes a factor called 'other peoples computers, fruit machines or domestic apparatus'! Simon logged PZ1AP in c.w. contact with G10PCU, J88BW, KA1EFO, ZA1TAJ, then reverting to s.s.b. for EP2MHB, HZ1MM, CT1BOP/CT3, 9K2VV, ZV5A, YV5AZR, AL7AF, J37K, 7X2BK, 7X2WCK, JY3ZH, YV1JV, JY9ZK, 9K2HF, VE1KC, all on 14MHz, plus VY2TD on 3.5MHz & 7X2BK on 21.

Llandyssul, Dyfed is home to **Don Martin** who wonders where to find a list of prefixes, countries, etc. The best thing is to drop a line to Geoff Watts, 62 Belmore Road, Norwich NR7 0PU. Geoff does various lists, covering countries and prefixes, plus an up-to-date list of the former USSR callsign structure.

Dear John

Next to **John Scott** in Glasgow 44. John uses a Kenwood R2000 receiver, 30m wire, and a G5RV, all switched and fed

via an antenna coupler. Some FAX pictures, taken with a Kantronics allmode TNC and a program called Autofax that runs on a PC using MS-DOS, came with John's letter. On 14MHz s.s.b. John noted VK7VV, KC4DWI, 8P9CT, WB9SBD (a weather station, this, via a weather balloon), KB3KP, 5H3RH, VU2DK, ES10V, WB9VCH, VC1PBM (a 'special' for Canada), EA6AAD, KE4KC, VE1AQA, KA4ROK, KA2DRH & Europeans; on 28MHz John netted KA2KAU, W2RO, A92BE, 9K2ZC, OY2VO and of course Europeans. John is looking to expand his range of visual modes, by acquiring a Robot or other SSTV converter - anyone out there able to help, get in touch with John direct, at 70 Montford Avenue, Kingspark, Glasgow G44 4PA.

Chinese Activity

G. R. Cawthra lives in N. Mundham and notes the signs of increased individual - as against club station - activity in China, with as many as three stations, BZ4RBX, BZ4RBD, BZ4RBC all from Nanjing. Of course, most activity in China comes via the club stations, with their BY prefixes. He reckons that the best times for Chinese stations seem to be 10-1200UTC, and around 28.47 to 28.5 or 21.24MHz. Other interesting ones noted were assorted ZAs, FH8CB for Mayotte, 7Q7LA in Malawi, YA5MM in Afghanistan, the VP8SSI effort on South Sandwich and WZ6C/S2 in Bangladesh, albeit I wouldn't waste a report on this one until the dust clears, as if Jim Smith could have a licence there but yet be refused permission to use the station, I doubt whether this one will be any good. Of 'proper' countries the only one still needed is Hawaii, KH6 - finding this one would also complete the tally of USA states.

Another first letter comes from **Adrian Rees** who runs AR88D and FR50B receivers, and notes that he is searching for a service manual for the latter, and for an Apricot F1 computer some software and a manual too. Anyone who can help, please get in touch with: Adrian Rees, 60 Eldon Grove, Liverpool, Merseyside L3 6HF. Turning to the list, 3.5MHz s.s.b. from Europeans, WB2D, W3BGN, W4JJ, T7, WA1APR, VK5X1, VK3SPV, VK5VC, 9K2HF, WX8S, KD2CI, ZL1AVB, 3A2HB, VK3AXJ, VK5WP, KB4RDH, N2AK, 9K2WR, ZL1BDS, ZL0CGT, ZL3BTJ, ES1WWW & VK7RM. On 28MHz, KD4AF was noted using f.m. and on 21MHz I note KA1LQE, OX3KM/F6FNU and an assortment of Europeans.

Report Dates

So - there it is for another month; space has run out! For next time, the dates look like May 6, June 7 and July 10. That is for your letters to arrive with me, at the address at the top.

dxtv round-up

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

Like many of the new readers of this column, **John Sitton** (Stevenage) finds the references to 'E', 'R' and 'I' channels a bit confusing, especially as the tuning dial on his receiver is scribed in channel numbers, 2-4, 5-12 & 21-69. This type of marking is quite common on imported multi-band receivers, however, I did see one in a shop with the two lower ranges marked with letters instead of the figures 2-4 and 5-12. This set was most likely intended for sale in Ireland where 'A', 'B', 'C', etc., is used to identify their channels. A prospective TVDXer need not really bother about dial markings because the important thing is to find a set that has the required 'overseas' frequency ranges built in.

First, John, do keep in mind that television is world-wide and requires a lot of space in the limited radio frequency spectrum. Second, all these channels must be shared nationally and internationally to enable millions of viewers around the globe to receive good quality colour pictures. Third, take a look at the television section of the *World Radio TV Handbook* and you will see the extent of this problem. You should find a copy in the reference section of your public library or the 1992 edition can be purchased from the *SWM Book Service* at the Editorial Offices in Poole, price £18.95 plus £1 P&P.

Band I

Now, with the aid of Fig. 1, I will try to clarify this understandable confusion with a few positive statements.

A: The television Bands I, III, IV & V, are names given to specific ranges of frequency just like the wave-bands on a short wave set. There are four lines of letters and numbers under the heading of 'Channel Idents.' in Fig. 1 to show the international character of this Band for television broadcasting. For example, line 1, Ireland has Chs. 'A' (45.75MHz), 'B' (53.75MHz) & 'C' (61.75MHz); Australia has Chs. A0 (46.25MHz), A1 (57.25MHz) & A2 (64.25MHz); parts of Europe and Scandinavia use Chs. E2 (48.25MHz), E3 (55.25MHz) & E4 (62.25MHz); Eastern European countries and Russia have Chs. R1 (49.75MHz) & R2 (59.25MHz) and Chs. Ia (53.75MHz) & Ib (62.25MHz) are used in Italy. The spots indicated in line 2 are for New Zealand 1 (45.25MHz), 2 (55.25MHz) & 3 (62.25MHz). Allocations for the USA are shown in line 3, Ch. A-2 (55.25MHz), A-3 (61.25MHz) & A-4 (67.25MHz) and line 4 has the Chinese channels C1 (49.75MHz), C2 (57.75MHz) & C3 (65.75MHz).

DXing

Over the years readers have proved that it is possible to receive smeary and distorted pictures from Australia,

China, New Zealand & the USA, in the UK, on the frequencies shown, at times when the upper ('F2') region of the ionosphere is disturbed. Also very strong pictures from Europe, Italy, Ireland, Scandinavia and Russia can be received while sporadic disturbances are taking place within the 'E' region of the ionosphere. This is known as Sporadic-E, which can occur at anytime during the period of May to September with peak activity in June and July.

These events often begin and end suddenly and usually last for several hours. The most vulnerable frequency subject to Sporadic-E is around 50MHz. Therefore it is worth keeping a watch around the figure 2 on your dial because, at this point, Chs. E2 and R1 are so close together (48.25/49.75MHz) that you should see the start of an event and quickly know whether the pictures are coming from the direction of Scandinavia or Russia, or both. When it's both you have some very careful tuning to do!

Higher in the spectrum, Bands III (175 to 230MHz), IV (471 to 608MHz) & V (615 to 856MHz) are also, like Fig. 1, divided into channels, however, for precise details it is best to refer to the latest edition of a publication like the *WRTH*. Under normal atmospheric conditions signals in the v.h.f. Bands I and III travel further than those in the u.h.f. Bands IV and V. Note, I said 'normal' but, when a region is disturbed, signals behave very differently and are often seen at 10 times more than their intended range. That's where the DXer comes in, but do remember, the paths of signals transmitted in Band I are influenced by the 'F2' and 'E' regions of the ionosphere while those in Bands III, IV & V are subject to variations in the troposphere and that means the weather. Please keep all this in mind while you read the following reports from other television enthusiasts.

Band I Reports

Between 1735 and 1835 on January 12 **Lt. Col. Rana Roy** (Meerut, India) received pictures from Russia, on Ch. R1, via a Sporadic-E opening. In this hour he saw dancing and pop-music, a marine film, interviews with a Bishop and Boris Yeltsin Fig. 2 and a news reader with a new ident on the top left Fig. 3. With some difficulty, during an 'F2' opening, **Simon Hamer** (New Radnor) identified pictures from Dubai and Iran on Ch. E2, at 1230 on March 12 and **John Woodcock** (Basingstoke) received pictures from Holland (NED1), on Ch. E4, for several hours on the 4th.

Picture Archives

To give new readers an idea of what to expect during Sporadic-E and tropospheric openings, **Bob Brooks** (Great Sutton) and **David Glenday** (Arbroath)

RANGE of FREQUENCIES known as BAND I

42..44..46..48..50..52..54..56..58..60..62..64..66..68

Channel Idents.

1.	A, A0, E2, R1,	B, Ia, E3, A1, R2,	C, E4, Ib, A2
2.	NZ 1	NZ 2	NZ 3
3.		A-2	A-3 A-4
4.	C1	C2	C5

Fig. 1.

sent photographs of a station ident from Spain (TVE) Fig. 4 and a test-card from Germany Fig. 5.

Weather

"The weather is pleasant now and in a month's time we should be having warm weather. The temperatures here are between 26°C in the day and 12°C at night," wrote Rana Roy on March 12. The slightly rounded atmospheric pressure readings for the period February 26 to March 25, Fig. 16, were taken daily, at noon and midnight from the barograph that sits on my office mantelpiece at my home in Sussex. During March, I recorded 2.55in of welcome rain with over 1.0in falling in the last three days. This compares with 0.19in and 4.14in respectively for the same periods in 1990 and 1991.

Tropospheric

The main tropospheric opening was on March 4 & 5 which **Richard Gosnell** (Swindon) reports was about 24 hours long. "There had been an anticyclone of about 1030mb [approx. 30.4in] for 2 or 3 days," said Richard, adding, "This event had surprisingly warm air at the surface around 9°C over S. England at 1200 on the 4th". **David Glenday** (Arbroath) received test-cards and station idents from Denmark (TV2) and Germany (ZDF) on several spots in the u.h.f. band on the 5th.

On the same evening, **Simon Hamer**, received pictures from Belgium, Eire, France and Holland on the v.h.f. and u.h.f. bands. On the 4th, **David Ashley** (Norwich) by patiently tuning his PYE 2040 portable, coupled to a high-gain distribution amplifier and a fixed antenna directed toward the Tacolneston transmitter, logged pictures from Belgium (BRT TV1 & TV2), Denmark (TV2), Germany (West3 & ZDF), Holland (NED1, 2 & 3) plus Central, on Ch. 61, from Waltham, mixing it with HTV from Mendip. Next morning, before the opening faded out he logged Denmark, Holland and Wales (HTV).

Richard Gosnell received weak signals, in Band III, from Ireland at 2254 on the 3rd and from France and Ireland during the evening of the 4th. **John Sitton**, using a Philips ART20 with an indoor antenna, added Norway to his u.h.f. score at 1900 on the 7th.

While tropospheric openings were



Fig. 2: Russia.



Fig. 3: Russia.



Fig. 4: Spain.



Fig. 5: Germany.



Fig. 6: Pakistan.

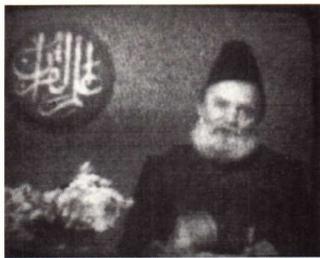


Fig. 7: Baluchistan.



Fig. 13: English SSTV.



Fig. 14: Hungary.



Fig. 15: Sweden.



Fig. 8: Via Eutelsat II F1.



Fig. 9: Via Eutelsat II F1.



Fig. 10: Via Eutelsat II F1.

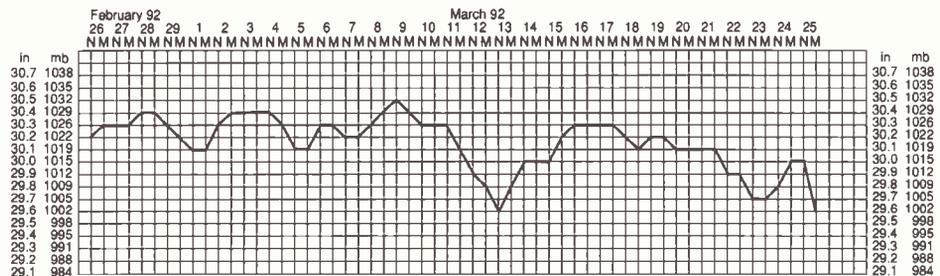


Fig. 11: Swiss SSTV.



Fig. 12: Austrian SSTV.

Fig. 16.



in progress, Rana Roy logged a caption (PTN) Fig. 6, from Pakistan TV on Ch. E11, at 0730 on January 3, a test-card from an unidentified Pakistan transmitter on Ch. E7 at 1635 on February 2 and saw a religious programme Fig. 7, from Mari (Baluchistan) on Ch. E8 at 1700 on the 26th. During the morning of March 6, Rana received pictures from Bhatinda (Ch. E12), Bhawalpur (Ch. E10), Delhi (Ch. E5), Faisalabad (Ch. E6), Kasauli (Ch. E6) and Jalandhar, with overlapping signals from Agra on Ch. E9. Breakfast TV and live cricket were among the programmes he watched.

"With the return of much drier and settled weather today and a high ridge west of Ireland building up to a maximum this afternoon, I decided to try a bit of DXing," wrote **George Garden** (Edinburgh) on April 4. He approached the foot of his usual spot, high on Cairn O' Mounth and found a sign saying that the road was blocked by snow. So, he headed for the coast and parked in an old road, not widely used, which gave him plenty of freedom to experiment with antennas and equipment from his pick-up truck. George was very keen to see the St. Helens/Warrington live rugby match which he knew was a Granada production for ITV and was going out on 3 channels, 23, 49 & 59. By changing around the vertical and horizontal mode of his antenna, he received, often 'as good as a local', Borders TV and Tyne Tees TV and logged signals from Chatton, Eyemouth & Selkirk. However, his greatest surprise came at 1610 when he found that a fading black and white BBC2 picture, 'coming in waves' with sound at times, on Ch. 34, originated from the Caldbeck transmitter near Carlisle.

Satellite TV

"It's a treat to see some stations we get during trips, duplicated to Astra", wrote **Simon Hamer** who, having installed an Astra satellite system has seen the Dutch RTL4 and the German ARD1 PLUS, NDR3, RTL PLUS and SAT1. Over in Holland, **Peter de Jong** (Leiden) received, in good colour, a test-card, Fig. 8 and a couple of captions, Figs. 9 and 10 from Deutsche Welle, via Eutelsat II F1 on April 1.

SSTV

During March, **David Glenday** received several slow scan signals from stations in Germany around 14.230MHz. One transmitted the face of a tiger and another a photograph of the operator. **Peter de Jong** received a 'CO' caption from a Swiss station, Fig. 11, during the late afternoon of the German contest on March 21. Among the slow-scan pictures copied by **John Scott** (Glasgow) during the month prior to April 5, around 14.230MHz, were various captions from stations in Austria, Fig. 12, England, Fig. 13 and France and a variety of 'CO' captions from competitors in Czechoslovakia, Germany, Hungary, Fig. 14, Spain and Sweden, Fig. 15, received during the IVCA SSTV contest.

Early Transmitter

I have a request from **Brian Head**, a researcher for The Royal Navy Submarine Museum, at Gosport, for a photograph of a Poulsen Arc unit and/or a transmitter using that type of signal generator. Any help that you can give will be much appreciated by Brian, at 2 Winchester Drive, Pinner, Middlesex HA5 1DB.

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

Yet another aerodrome is threatened. I am saddened by how often I need to mention such short-sighted plans in this column. There are plenty of other good places to build houses and factories (though not much demand for the finished product) but, once gone, an airfield can not be brought back again.

This time it's the turn of Hawkinge, near Folkestone in Kent. In fact, this aerodrome is no longer active but, owing to its heavy involvement in the last War, it is of important historical significance. The plan is for 500 houses plus the inevitable industrial units, along with the necessary access roads. An outstanding feature of Hawkinge is a Battle of Britain Museum which is on the site, and the development would encroach right up to this and spoil its amenity.

Do you feel strongly enough to support a campaign to stop the development? If so, please write to Brenda Brooks (Seymour Place, 28 High Street, Wingham, Kent CT3 1AB). While you're at it, ask for a list of the aviation books that she sells.

Museum Piece

Another Museum is to be found at Brooklands. Once the birthplace of British motor-sport, and later aviation, Brooklands at one time had an active aerodrome and was the site of a British Aerospace factory. Now, only the Museum remains although this includes aircraft ranging up to VC-10 in size. This latter was actually flown in.

Non-flyable, at least not in the true sense, is the Link Trainer Type AN-T-18 that dates from about 1942. **Julian C. Temple** (Brooklands Road, Weybridge, Surrey KT13 0QN. Tel: (0932) 857381) is the Curator of Aviation and Industrial History. If you can supply technical data and/or a source of spares for the Trainer then please contact him.

Information Sources

Let me help **Leighton Smart GWOLBI/GW20049** (Trelewis) who wrote to the 'Letters' page in April. Where can he buy a list of n.d.b.s that will enable location to be found when only the call sign is known? I recommend the *RAF Flight Information Publication* and in particular the *En Route Supplement British Isles and North Atlantic*. There is also a *Northern Europe* volume. Both have a 'Navigational Aids by Identification' section. These are sold to the public by 1 AIDU, RAF Northolt, West End Road, Ruislip, Middlesex HA4 6NG (Tel: 081-845 2300 ext 209).

For airways charts and information on individual aerodromes, Aerad Customer Services are as good as any. Order from Building 254, PO Box 10, London (Heathrow) Airport, Hounslow, Middlesex TW6 2JA (Tel: 081-562 0795). When you place your first order, ask



Fokker Triplane replica.

Photo Christine Mlynek.

for the *Legend Booklet* which explains the chart symbols. If you're lucky, you might be able to persuade them to send you samples of the company's other products.

To complete the list of main aeronautical information suppliers, there is also Jeppesen. Although this American company's European office is in Germany you can order via Oxford Airport Shop, Oxford Airport, Kidlington, Oxfordshire OX5 7RA (Tel: (0865) 841234, it answers as 'CSE Aviation').

Whereas the CAA also produce charts, they mainly seem to find application in producing the information listed above. Rarely are they found on the flight deck itself and I think they tend to be a little expensive for non-professional purposes. You might, though, avail yourself of four free charts: RAC 3-0-1; RAC 5-0-1; RAC 5-0-1.1 and RAC 5-0-2. These cover the various allocations of UK airspace types and show hazardous areas, etc. Why not obtain, study and see what you can learn from them? A self-addressed reply label saves time and is appreciated when you write off for your charts to: Chart Room, CAA House, 45-59 Kingsway, London WC2B 6TE (Tel: 071-832 5569). CAA publish or distribute other aeronautical documents, so write to Printing and Publication Services, Greville House, 37 Gratton Road, Cheltenham, Gloucestershire GL50 2BN (Tel: (0242) 235151) and enclose a reply envelope (with postage paid for 100g) asking for their *Publications Catalogue*.

More About NDBs

This issue has become an impromptu n.d.b. special! **Dave Logan G4EZF** (Hyde, Cheshire) would also benefit from the RAF publication mentioned previously. He had difficulty locating various beacons, so here they are by identity, along with location. The frequencies I give (in parenthesis, all kHz) are the official 'precise' allocations, and may be slightly different if read off a receiver due to various small tuning errors. BAE (325) Manchester (Barton); HAW (340) Hawarden (locator); LPL (349.5) Liverpool; MCR (388) Manchester (locator); ME (396) Manchester; OLD (344) Oldham; WFD (380) Woodford and WHI (368.5) Whitegate.

Locators are low-powered n.d.b.s along an approach path, often at the i.l.s. outer marker. Being short range, they are not recommended for *en-route* navigation. OLD is at N53°33.3' W02°03.0' which puts it on the north-eastern fringe of the Manchester conurbation.

RAF Finningley, near Doncaster, has FY (408.5) which is located on the aerodrome. There's no difference between civil and military use of n.d.b.s. Finally, LEC (319) isn't an n.d.b. at all! This historical curiosity is the Consol station at Stavanger, Norway, and was fully described in the July 1991 issue.

Frequency and Operational News

The CAA A/C 28/1992 lists widespread changes to coastal n.d.b.s. Although primarily intended for marine use, those listed in the A/C have sufficient range to be suitable for aeronautical navigation. The new plan affects much of Europe and is too detailed to list here but, if you have difficulty with any particular identification then do please write in and I'll try to print the details here. Importantly, each beacon now has its own frequency and all radiate unmodulated c.w. call signs (so a b.f.o. is now needed).

GAS/L (3/92), also from the CAA, announces 124.675MHz, a new approach frequency at Humberside.

Frequency-collector **Tim Christian** (North Walsham) sends local news about Norwich. The approach frequency is now 118.475MHz, after which the arriving traffic is handed off to the tower. Aircraft transiting the zone but not landing are controlled by radar on 119.35MHz. Tim, who makes a point of keeping up to date with changes in frequency assignments, expects company operations (flight regularity) channels to appear above 136MHz eventually.

Did you know that all aeronautical radio transmissions falls into one of six categories? They are: Distress (i.e. 'Mayday'), Urgency (i.e. 'Pan Pan Pan'), safety (which is ordinary air-traffic control), Flight Regularity (company operations), Direction Finding and Meteorological.

Tim has been reading *Unfriendly Skies (Revelations of a Deregulated*

Airline Pilot) by Capt. 'X' and Reynolds Dodson, ISBN 0 7474 0671 5 (Sphere Books). Tim doesn't say if this has put him off flying!

Low-flying helicopters make prison staff nervous! In Northern Ireland there previously were prohibited areas at Bessbrook, Crossmaglen, Forkhill and Newtownhamilton. These areas prevent helicopters from flying low over the associated prisons. Now these four areas have been replaced by one all-encompassing larger area, called EG P436 South Armagh. It extends from the surface to 2500ft altitude (QNH) and is fully described in AIC 23/1992. Mainland prisons are listed in AIC 30/1992 but in this case there is no prohibited area - just a 'request' to avoid operating helicopters below 2000ft altitude when within 0.5nm of the prison.

Scottish Airways

Local knowledge from **Tom Wylie GM4FDM** (Strathclyde) was held over from last issue. I am now able to summarise this, and I'm sure that all h.f. enthusiasts will be interested. Many North Atlantic tracks require that traffic overflies Scotland when going between the Oceanic entry/exit point and the London terminal. Typically, aircraft call Shanwick on 5.616MHz if registered west of 30°W, otherwise they call on 5.649. For routes too far north to be on the organised track system, 4.675MHz is likely. Inbound flights than call Scottish 135.85MHz at 10°W; the route is normally via Dean Cross and Pole Hill, with control handed off to LATCC on 131.05MHz at Dean Cross.

Glasgow and Prestwick arrivals remain with Scottish, changing to 127.275MHz on passing FL240. Note that 'QSY' is no longer used on the air - the correct phrase for calling up a new frequency is now 'Changing to'. Edinburgh arrivals often call 128.5MHz. Eventually, the flights are handed off to their respective destination terminals.

CONTINUED ON PAGE 56 ➤

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The receiver is supplied with a comprehensive selection of accessories: DA900 wide band flexible aerial, NiCad pack, Dry battery case (for use with 4 x AAA alkaline cells), Charger, DC lead fitted with cigar lighter plug, Earphone, Soft case, Belt hook, 5 metres (approx.) of aerial wire terminated in a BNC connector for shortwave reception and Operating manual.



Versatility is excellent. The AR1500 may be powered from its internal NiCad pack, spare dry batteries may be carried for extended operation and used with the dry battery case, the set may also be plugged directly into the cigar lighter socket of a motor vehicle (external input range 11 - 18V DC).

Although offering a long list of facilities and operating modes, the receiver remains easy to operate. Many facilities have been carried across for the well proven AR2000 receiver. The AR1500 has a new 'automatic memory' feature which automatically stores busy channels from search bank 9 into the 100 memory channels of scan bank 9.

There are 1000 memories in total arranged in 100 memories x 10 banks, there are also 10 additional programmable search banks. Each memory will store frequency and mode (NFM, WFM or AM - not SSB) the search banks will also store the step increment. There is a massive EEPROM memory store for all memories and search banks so that no backup battery is required. The memories may be over-written time and time again.

The display often provides 'prompts' for selected operations such as a flashing "CH" to invite the user to key in a new memory channel number. All information such as frequency, mode (except SSB), channel etcetera is presented via an easy to see Liquid Crystal Display (LCD). The display is fitted with a switchable light to increase visibility in areas of low level lighting.

The AR1500 can meet a number of requirements to satisfy Airband or Marine enthusiasts, Professional off air monitoring and of course casual listening too. The World's shortwave and Amateur bands can be monitored, even the longer range Oceanic Airband and ship to shore. Of course the performance of this compact hand-held receiver can not be directly compared to that of the AR3000A or dedicated General Coverage Receiver.

Amazing value, all for an extremely attractive.

Recommended Retail Price of £279.00 including VAT.

The popular AR2000 receiver continues. It has not been replaced by the new AR1500 receiver, the AR2000 remains a firm favourite with listeners and enthusiasts. Features include coverage from 500kHz - 1300MHz and reception of AM, NFM & WFM.

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The AR3000A base/mobile receiver is an evolutionary step forward from the highly acclaimed AR3000, many major improvements have been implemented at the requests of enthusiastic listeners and commercial organisations. Search and scan speed has been increased to an unprecedented maximum of 50 increments per second.

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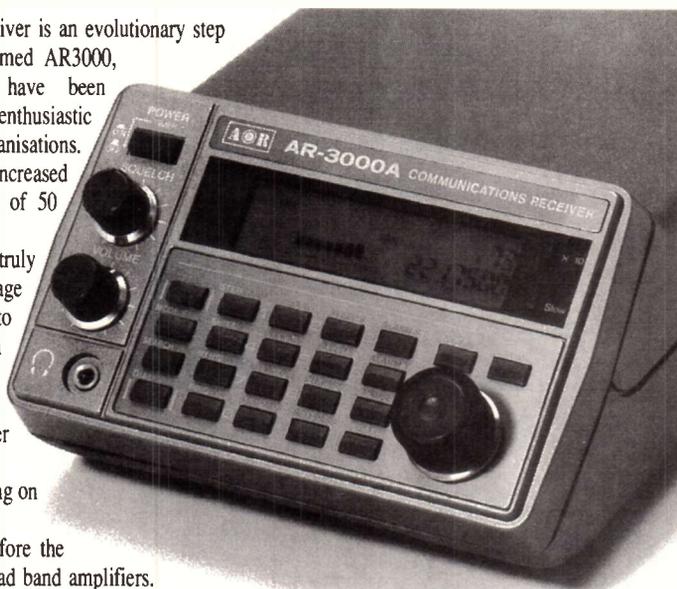
The high level of performance is achieved by using 15 band pass filters before the GaAsFET RF amplifiers unlike other receivers which may rely largely on broad band amplifiers.

This ensures high sensitivity through the entire coverage with outstanding dynamic range and freedom from intermodulation effects.

An RS232 port is provided enabling full remote control via most computers. A rear panel switch changes control between the keypad and RS232 port. Two commercial IBM compatible software packages are available... ACEPAC3A & AOR Spectrum Coordinator.

The AR3000A is powered from 13.8V DC, a suitable mains power supply is provided with the receiver. Other accessories include a telescopic whip, DC lead and comprehensive operating manual.

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E&OE

scanning

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

I recently had the opportunity to try out the latest version of AOR's top of the range scanner, the AR3000A. I don't want to describe all the facilities that are available, as I would guess that many of you have already seen, tried or purchased an AR3000. Instead, I will concentrate on the improvements that AOR have made.

At first glance the 3000A looks very much like its predecessor, the only outward sign of any major difference is the new liquid crystal display. This now occupies most of the upper portion of the front panel and replaces the l.e.d. memory bank and alarm mode indicators on the 3000. The right hand side of the display has two small press buttons which are used to select the dial tuning rate. On the rear panel a new switch has been added to enable the remote operation via the RS232 port. This is a vast improvement on the original method of selection which involved connecting one of the RS232 pins to ground. All the remaining controls are in the same position as before.

The next surprise is the rotary tuning knob, this no longer has mechanical 'click stops' and is therefore much smoother to use whilst tuning across the short wave bands. The tuning rate can be altered with push buttons to either tune at increments of 10 times the selected step size, or by pressing a 'slow' button the knob tuning rate is reduced by a factor of 5. The buttons operate independently so you can optimise the tuning rate for the reception mode in use. I must say that I found the 'smooth' action made tuning across the short wave bands much more enjoyable, but it does become rather tricky when tuning across the v.h.f. and u.h.f. bands which tend to be channelised so, I would suggest using the 'slow' rate during this type of operation.

One minor point is that if the x10 tuning rate is selected before a change of mode or memory bank is attempted with the tuning knob, the speed is so great that it is practically impossible to make select the correct option. As an alternative the up and down buttons can be used, but there is still a tendency to catch the knob with your finger. I would like to have seen the x10 facility automatically disabled and the 'slow' facility enabled whilst the knob is required to select options.

Looking at the scanning functions the receiver still has 4 banks of 100 memories and 4 separate search banks, however it now has the ability to lock-out up to 100 separate frequencies in each search bank. The lock-out frequency being stored with only two button presses. This is much better than the original 3000 which only has the provision to lock out 48 frequencies in total, and requires a large number of button presses to enter each one. The contents of all the memories can now be cleared, and

the microprocessor control system reset from the front panel by holding down 3 and 6 on the key pad whilst switching the power on.

The scanning rate has also been increased to a very rapid maximum speed of 50 channels per second, this really does eat up the MHz when used in the search mode, and what's more it still manages to stop on active frequencies. In addition it is now possible to programme in a 'Priority' channel sampling rate of up to 19 seconds, 'Delay' period of up to 9 seconds and finally a 'Pause' time of up to 60 seconds, all of which make it a joy to operate.

The rear panel still sports the 25-way 'D' connector for remote operation, and the ASCII command set has been modified to make it easier to use. The S-meter readings now have to be requested instead of being sent continuously, this is an improvement as it simplifies the software requirements enormously, opening the way for more users to experiment with automated control and logging programs. New commands also permit the selection of specified memory banks, input of pass frequencies, output of pass frequencies, current dial setting and finally control of the external tape recorder socket.

The technical performance and circuitry of the receiver is practically the same as its predecessor. The sensitivity, adjacent channel selectivity, blocking and intermodulation performance was practically the same as that of my own AR3000, however the signal to noise ratio when used for s.s.b. reception was slightly worse. This is probably due to modifications to the p.l.l. circuits which have been made in order to speed up the scan rate. The drawback being that it appears to have worsened the 1st oscillator phase noise performance slightly. This manifests itself when monitoring c.w. as a slight 'harshness' on the received signal, but in most cases this would not be noticeable under average short wave reception conditions.

I was very pleased with the overall performance of the new AR3000A. It is nice to see a manufacturer taking note of users comments and incorporating them into designs, no doubt many of these suggestions were made by professional bodies who will probably be purchasing the new model in vast quantities. My thanks to AOR (UK) Ltd for the loan of the review model, which will, unfortunately, have to be returned.

UK Frequency List

This item should appeal to all of those readers who have requested frequency lists. It is a 74-page, A4 sized book called *The UK Scanning Directory* which contains hundreds of individual UK frequency allocations. The price is a little steep at £14.95, espe-



Fig. 1.

cially when you consider that 15 pages just contain cellular telephone frequencies and channel numbers. However the bulk of the information is very enlightening. Although most of it has been circulating for several years in various 'private' photocopied lists this is the first time to my knowledge that such information has actually been published and sold openly. The law seems a little vague in respect of the publication of frequency lists, and it would seem that any prosecution would have to be brought privately, however I don't intend this column to become involved in a legal test case!

Although some of the information in the book is incorrect or rather dated the vast majority of it is accurate, with entries including the majority of British Police, Customs, Fire and Ambulance service allocations along with duplex splits, call signs and channel numbers as well as UKAEA, BNFL, GCHQ, MOD, USAF, Army, Navy and RAF base security channels. In fact enough information to finally convince most of the services concerned to switch to encrypted equipment.

I strongly recommend buying this publication before it becomes unobtainable (for one reason or another). For further information contact: Interproducts, 8, Abbot Street, Perth, Scotland PH2 0EB.

Resonant or Wideband Antennas?

Returning to the theme of antennas once again, John Bidgood of Southampton asks if an antenna cut for a specific frequency more efficient than a wideband antenna?

Generally speaking I would say yes, especially if it consists of more than one half wave element. Examples of which would be omni-directional collinear or directional Yagi arrays. If it is a choice between a simple antenna such as a dipole and discone there is probably very little difference between the two, however the discone will give more consistent results over a much larger frequency range. At u.h.f., where

you really need additional gain and the size of an antenna is not so much of a problem, I would suggest using a resonant antenna. Ideally this would be tuned to the centre of the band you monitor most frequently. This has the advantage of more gain than a discone or dipole at its resonant frequency and provides comparable results over much of the remaining band. If you monitor a wide range of frequencies the only wideband antenna with a reasonable amount of gain is a directional log-periodic beam. Although this should ideally be mounted on a rotator to get the best results, you can save some money by just leaving it fixed in the one direction. My log-periodic tends to remain pointing the same way most of the time, as I find that signals are often just as strong off the side of the beam as those received with an wideband omni-directional antenna.

Improving Reception

Along similar lines, Philip Murphy of Co. Louth in Eire writes to ask if a pre-amp would improve reception of the ground controller at Dublin airport which is approximately 50 miles away from his location. Unfortunately Philip doesn't say what antenna he is currently using but he does mention his receiver, which is an AR3000. As I have said previously, the first line of attack is to use an antenna with more gain. In many cases this means changing from a discone to some form of Yagi or directional antenna. This usually makes a large difference in received signal strengths and gives a new lease of life to many receivers. Having improved the antenna the next step is to change the coaxial cable to the best you can afford, Westflex 103, Pope H100 or their Japanese equivalents being amongst the most popular. Only when you have the best antenna and coaxial cable should you consider using a pre-amp.

This works by amplifying or boosting signals which are fed through it. Unfortunately this also includes any noise generated within the amplifier circuit itself, so for it to make any im-

provement the signal to noise performance of the pre-amp has to be substantially better than that of the receiver it is feeding. This is more usual with older models of scanner, or where there is a long cable run between the pre-amp and the receiver. However with most modern designs the only way to improve the performance any further is to have an excessive amount of gain in the pre-amp, which usually causes problems with receiver overload, especially if it is used in an urban area.

In Philip's case the sensitivity of his AR3000 is likely to be just about the best he could obtain, and adding a pre-amp may not make much of an improvement.

Space Shuttle Communications

He also asks about the NASA space Shuttle frequencies which are frequently listed as being 259.7, 296.8 and 279.0MHz (the latter is used for EVA), and wonders if any special antenna is needed to receive them.

No special antenna is required, just a large amount of luck. It is several years since I last heard the Space Shuttle. The u.h.f. allocations are only a back-up for the satellite based main communications system, which would now seem to fully operational. If the u.h.f. channels are in use, the Shuttle is in a suitable orbit and the u.h.f. antenna is facing towards the earth you will be able to hear it. I can remember one particular week, around eight years ago, when I could hear the Shuttle nearly every morning as I drove to work. The signal was very strong and it

was possible to hear the whine of the Shuttle ventilation system in the background. These days it is more likely you will hear transmissions from licensed crew members in the 144MHz amateur band rather than on any of the u.h.f. channels. However I still live in hope, and keep all three channels programmed into the scanner memory bank reserved for 'specials'. One day I am sure it will prove worthwhile.

Short Range Communications

The 49MHz band seems to be becoming increasingly active as more short range radio devices become available. The equipment is relatively low powered and being type approved it doesn't need a licence. A typical use of this band is for cordless baby monitors. These can be found in many High Street stores and usually operate on one of two channels at frequencies around 49.9MHz using n.b.f.m. The range is usually limited to around 100m with the supplied receiver but a lot greater range (over 1km in some instances) can be achieved with a better one - such as a scanner. A lot depends on the number of monitors in use in a particular area, and the degree to which they interfere with each other.

What most monitor owners don't realise is that the transmitter has very sensitive audio stages and can relay almost any conversation or noise in the house. In addition, most owners tend to just turn the receiver off when the monitor is not required, which leaves the transmitter running 24 hours a day. I suspect most owners would be more than slightly concerned if they

thought that their house was being bugged, but this is exactly what is happening when they leave the baby monitor transmitter switched on. You don't even need a scanning receiver to receive these transmissions, any other baby monitor will do, providing the transmitter part is switched off and there are other baby monitors operating on the same channel in the vicinity.

I seem to remember reading that in America 'monitor' monitoring has become something of a hobby in its own right. This seemed to start when a newspaper published a story about the Police arresting a couple for drug dealing from their home after transactions were heard via their baby monitor on a neighbour's baby monitor receiver. I have yet to see any newspaper reports of similar happenings in this country - but I'm sure it's only a matter of time.

49MHz Transceivers

In addition to baby monitors a number of low power transceivers are also available from companies such as Tandy or Nevada. As well as the very cheap models with super-regenerative receivers which are mainly sold to children there are several more sophisticated models available. These are often used by motorcyclists as passenger/bike-to-bike intercoms or on building sites for co-ordinating activities. Most models only operate on a single channel using n.b.f.m. with a transmitter power of around 100mW, but new versions are becoming available with up to five channels fitted as standard. These are ideal if you need

short range radio communications, or as one reader suggested, for nearby scanner owners to chat to each other. The most popular channels are A - 49.830, B - 49.845, C - 49.860, D - 49.875 and finally E - 49.890MHz. Channels C to E are extensively used by baby monitors so A and B are probably the best choice if you want to try it. Why not leave the channels programmed into your scanner if you want to check out activity in your area.

Long Range Cordless Phones

Whilst tuning across the 49MHz band you may occasionally encounter an illegal, long range, cordless telephone, particularly in the region of 49.29 to 49.8MHz, which lies just above the on-site paging allocation of 49.0 to 49.4875MHz. These phones have been imported in large quantities in the past and proved to be very popular in rural areas amongst the farming community. However, their numbers are now declining as the DTI gradually manage to track them down or restrict their sale. David Hibberd of Staffordshire wonders if any companies have produced legal versions of these phones since the DTI allocated two UK exclusive channels for this purpose last year. As far as I am aware none have been offered for sale so far. This is probably because with a market limited to just the UK the type approval procedure is likely to eat up any profit remaining after the development costs have been recovered. But I may be wrong - does anyone out there know of one?

That's all folks! Until next month - Good Listening.

Airband 52

Outbounds from the south are often in contact with Scottish on 135.85MHz when passing Pole Hill. At the same time, oceanic clearance must be obtained from Shanwick on 123.95 (aircraft registered west of 30°W) or else 127.65MHz. At the Dean Cross v.o.r or, on UB4, the MARGO reporting point, many flights are allowed to track direct to their oceanic entry points and, on passing 10°W, will of course transfer to h.f.

Access to the Scottish terminals from the south is usually by the route Pole Hill, Dean Cross and Talla (all v.o.r.s) with a call to Scottish on 128.5MHz before hand-off to the arrival terminal. Southbound departures from Scotland again call 128.5MHz, but 126.25MHz is available for flights to Northern Ireland.

The next three deadlines (for topical information) are June 5, July 9 and August 7. Replies always appear in this column and it is regretted that no direct correspondence is possible. Genuinely urgent information/enquiries: 081-958 5113.



Folland Gnat XR991.

Photo Christine Mlynek.

Abbreviations

AIC	Aeronautical Information Circular	LATCC	London Air Traffic Control Centre
b.f.o.	beat frequency oscillator	MHz	megahertz
CAA	Civil Aviation Authority	N	north
c.w.	continuous wave (Morse)	n.d.b.	non-directional beacon
FL	flight level	nm	nautical miles
ft	feet	QNH	altimeter pressure setting, reads height above sea level
g	grams	RAF	Royal Air Force
GASIL	General Aviation Safety Information Leaflet	v.h.f.	very high frequency
h.f.	high frequency	v.o.r.	v.h.f. omni-directional radio range
i.l.s.	instrument landing system	W	west
kHz	kilohertz		

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

While still waiting for the launch of a new METEOR weather satellite I was surprised to receive a picture on 137.40MHz during the evening of March 23. This frequency has previously been used predominantly by the Russian oceanographic satellites (the OKEAN series), and yet the picture was a normal METEOR infra-red image, typical of a class three craft (such as a new METEOR 3-6). The picture was from a north-bound satellite and so after noting the details and recording the a.p.t. (picture) signal I had a look at the current positions of all the recent Russian meteorological satellites.

METEOR 3-5 was quickly identified, and it was also transmitting on the same frequency during the next pass. **Brian Dudman** is one of a number of SWM readers who keep a close watch on the WXSATs, and he rang just after that pass to check METEOR operations with me. This confirmed my thoughts that there are probably several people who hear each new operation. **John Henry** of Nottingham also reported the 1345UTC pass of METEOR 3-5 on 23 March, as did a letter with an unidentifiable signature which asked about the satellite and mentioned hearing it during this earlier pass.

On that occasion METEOR 3-5 was only operating for about 24 hours, but on the morning of 9 April, I had another call from Brian announcing that METEOR 3-5 had been heard again during the early hours and should be on for the 0826UTC pass. And so it was, still on 137.40MHz. METEOR 3-4 has remained on 137.30MHz and so there was no interference. By April 10 METEOR 3-5 had again stopped transmissions.

Before this event, the last occasion when METEOR a.p.t. was received on this frequency was when METEOR 2-16 was operating a few years ago. **Peter de Jong** of Leiden in Holland sends me regular reports and often includes pictures as well. A METEOR picture of Denmark and on the side can be seen the on-board scanner's aperture and phasing bars which are shown well in Fig. 3. The aperture bars are six columns representing binary numbers which indicate the illumination level below the satellite.

Ice Around Greenland

For those readers who don't have any equipment for decoding WXSAT pictures but who take an interest in what is going on, the seasonal melting of the south-east coast of Greenland is now visible. METEOR 3-4 has been providing dramatic pictures of the layers of ice as they break-up and melt with the start of spring. I have kept some pictures to help monitor the different melting rates of the various parts of Greenland but at 512Kb per picture, I haven't saved very many! The other

well monitored area is the Gulf of Bothnia which almost always grows a thick layer of ice during the winter months. Several weeks of cloud have stopped me seeing this region until a few days ago when large areas of ice became visible.

Mount Etna Erupts

In recent months I have mentioned letters reporting plumes of emissions from Mount Etna, and this was vividly confirmed when, during mid-April, the lava flow started to threaten local villages. It has been possible to see the plumes above Mount Etna, using all of the NOAA's and the METEORS. NOAA infra-red has provided dramatic 'heat' views during the night, and METEOSAT pictures also provide regular coverage of the island of Sicily in the C03 format pictures.

METEOSAT 3

Transmissions have been unusually irregular from METEOSAT 3 which is still located at longitude 50°W, over the continent of south America. It is due to be drifted further west in due course so get your pictures now!

Kepler Elements

In response to many questions about these elements, a month or two back I started explaining about the different parameters used in these sets. A letter from **John Spencer** of Cocklake in Somerset asks for further clarification of the Epoch. The example that I gave was 9212.2206774. In fact, it might have appeared slightly ambiguous because the important space didn't show up properly. It should have been printed as 92012.2206774 i.e., the 12th day of the year 1992. In normal English date form this is written as 12/01/92, but Kepler elements may use the American form where the month is given first, so the epoch becomes 01/12/92 as I showed in the example. More on these

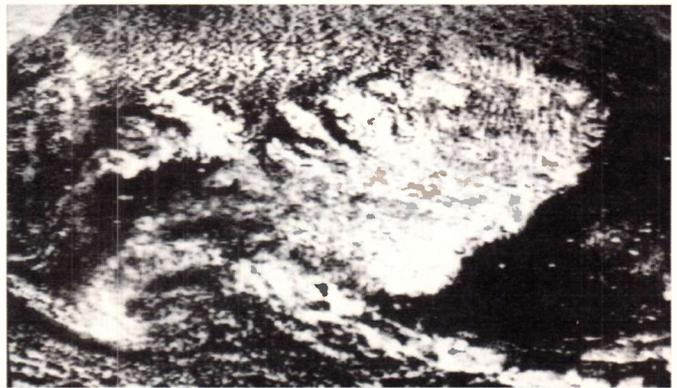


Fig. 1: Iceland, METEOR 3-4 from Roger Ray.

elements next month.

If you want some recent Kepler elements - particularly the WXSATs - please write and enclose an s.a.e. If you are desperate for other Keplers do mention which ones - I sometimes have updated elements for other satellites. I'm sorry, but those not enclosing an s.a.e. cannot be helped.

BBS Correction

The number of the RIG/Timestep BBS for Kepler elements was wrongly printed recently. The correct number is (0440) 820002. My apologies for the error.

New Shuttle Elements

There will be a new Shuttle manifest shortly, following a change to the published launch dates. When I receive a copy it will replace the previous one and will be available to readers of this column if you send an s.a.e. The previous one can still be used if the elements are slightly modified.

Letters

The decoding of pictures from the satellites is often used as a project by university and college students, and over the years I have received letters giving details of such projects from a number of colleges. Currently in his final year at University College, Dublin is **Sean Hopkins**, who is doing an electronic engineering course. Their system has recently been upgraded to

decode METEOSAT data with Timestep's dish and receiver system, with output feeding a Maplin decoder and then into a '386' PC with SVGA monitor. Sean is writing the software, and asks about distinguishing the two side-by-side pictures from the NOAA satellites - which is which?

NOAA Channels

Several other correspondents have also asked about the different pictures that the NOAA satellites transmit. Anyone who has seen a NOAA picture, whether day-time or night-time, knows that there are two different pictures (channels) side-by-side. During certain months of the year (February and November) one of the channels can be seen to change during a pass. In fact one picture permanently displays an infra-red image (channel 4), but the other channel may change from visible (during the satellite's day) into another channel during the night-time part of its orbit.

There is a further complication of course - NOAA 9 is different! At the present time it continuously transmits visible light pictures from channel 2 and infra-red from channel 4. This means that during the darker days of winter and late autumn one of the pictures is virtually blank.

The remaining NOAA satellites (numbers 10 to 12) transmit channel 4 infra-red continuously, and channel 3 (the water vapour section of infra-red) during the night, switching to channel 2 (visible) during the day.

If you have seen a picture of the electromagnetic spectrum (often used to illustrate the allocation of radio frequencies) you may be interested to know the actual frequency bands used by the sensors on these satellites.

Sensor Wavelengths

Channel 1 (visible) 0.55 to 0.68 micrometres (microns)

Channel 2 (visible) 0.725 to 1.0 microns

Channel 3 (water vapour) 3.55 to 3.93 microns

Channel 4 (infra-red) 10.5 to 11.5 microns

Channel 5 (infra-red) 11.5 to 12.4 microns

Transmission Frequencies

I usually give these each month so that

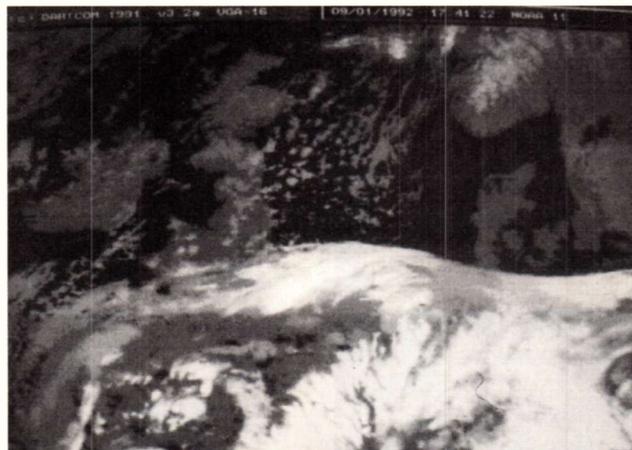
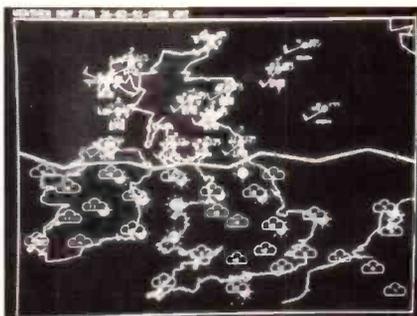


Fig. 2: Northern Europe, NOAA 11 from Matt Taylor.

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newcomers can quickly identify the WXSATS. This time I will also list the beacon and h.r.p.t. frequencies. The beacons actually contain a considerable amount of information but not in an easily decodable form. They can normally be heard whenever the satellite is passing over your QTH. The high resolution pictures (h.r.p.t.) require a dish of about 1.2m diameter which has to track the satellite, and of course, special decoding hardware and software.

NOAA 9

a.p.t. on 137.62MHz
beacon on 137.77MHz
h.r.p.t. on 1707.0MHz

NOAA 10

a.p.t. on 137.50MHz
beacon on 136.77MHz
h.r.p.t. on 1698.0MHz

NOAA 11

a.p.t. on 137.62MHz
beacon on 137.77MHz
h.r.p.t. on 1707.0MHz

NOAA 12

a.p.t. on 137.50MHz
beacon on 136.77MHz
h.r.p.t. on 1698.0MHz

More Letters

Peter Burgess of Gloucester wrote to me about a problem that he has using tape recorded METEOR signals. I'm not sure how Peter decodes the signals but the METEORS are notorious for not having a stable sub-carrier frequency. For perfect synchronisation of a tape recorded METEOR signal you need to lock onto the phasing bars, rather than the varying sub-carrier. Class two METEORS such as METEOR 2-20 will not give a stable picture from a recording, unless the software uses the correct techniques. Class three METEORS, such as 3-4 have a stable sub-carrier (2.4kHz) and so are as good as the NOAA's.

Mike Keeley of Bolton uses the Timestep PROsat receiver, pre-amp

and crossed dipole, and tells me that he is getting good results, but the lack of a manual with Track2, the new satellite tracking program surprised Mike, though there is on-line help. As with all such programs, UTC (GMT) should always be used. I leave my DOS clock set to GMT permanently. Mike also asks me whether I have had any problems with PCSAT3 from Timestep. I haven't reviewed this program though I have had several requests for comments on it. I haven't had any significant problems with PCSAT3 but, as with all software, if a problem occurs the manufacturer will want to know about it. I would always suggest ringing them, since a quick response can usually be given.

PC Noise

Brian Dudman has recently bought a new PC, a '386DX' running at 33MHz. Sadly, Brian reports that the interference from his new computer is quite excessive, and stops him decoding live signals. That should not happen! I would recommend that Brian takes up the problem with the supplier because there are British Standards that specify maximum r.f. emissions. In environments where radio receivers are being used it is essential to check that a computer being considered for purchase, has a properly constructed metal casing, and ideally, ensure that the supplier will accept the return of the computer if it proves unsuitable for its intended purpose. Finally, Brian has sent me some excellent pictures from his new PROsatII software system, of which Fig. 4 is an example, though his original print is in colour. More will be included in future months.

Dish or Yagi?

Mr Connor of Harrow uses an ICS Met2 system with a PC running PROsatII software. He asks whether it is worth

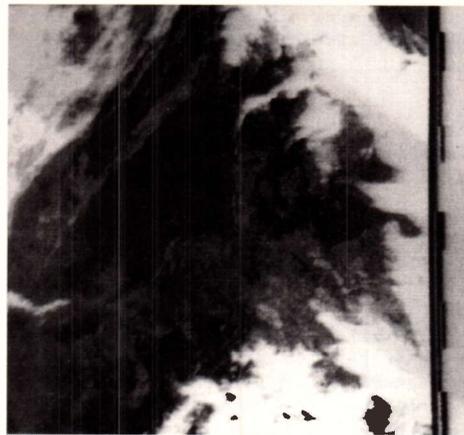


Fig. 3: METEOR, Scandinavia from Peter de Jong.

swapping his METEOSAT dish for a Yagi. In general, dishes usually give only a slight increase in signal, so if a Yagi is currently producing a good image (that is, one with minimal noise) then there may be no need to swap. In fact Yagis can be rather easier to use than a dish. If possible, I would suggest that a good low-noise pre-amp could be a better purchase than a dish.

Some more good photographs have been received from 'Info' readers. **Matt Taylor** of Woking used his (or father's?) Dartcom system to produce three photographs, of which one is included here. Matt also collected the weather map for that day for comparison purposes. **Ron Harvey** of Weston-super-Mare wrote to me with some more details of the BMK Multi decode software from Grosvenor Software. I hadn't heard of this software before so Ron has kindly sent me some notes. The program decodes utility signals such as RTTY, AMTOR, FAX etc., and so rather than invade my fellow columnist Mike Richards' territory I will just mention that Ron says that the program is very good but his comments and suggestions to Grosvenor Software remain unresponded.

Bev Marks of Battle in East Sussex has been shortwave listening for some 36 years and currently uses an AOR1000 receiver which can tune into the WXSAT band of 137MHz. He is proposing to obtain some PC software to decode the pictures, so may I briefly remind anyone starting in this way that although the satellites can be heard quite easily, if you want to decode the picture data it is essential to have a suitable receiver, i.e., one with a specially optimised i.f. bandwidth tailored for the WXSATs. It is possible to spend much money on good software etc., only to find that picture quality is poor because of unsuitable receiver design.

METEOSAT Primary Data

METEOSAT (and the other geostationary weather satellites) transmit digital data which has a much higher resolution than our usual WEFAX pictures. WEFAX originates from the digital pictures after they have been degraded sufficiently to allow the transmission of a specific format to take place in a period of just a few minutes.

The first time that I saw METEOSAT primary data (as this digital data stream is called) was some years ago at Plymouth Polytechnic, when I was shown around by Dr Graham Wade of their communications engineering depart-

ment. They were developing equipment to decode this primary data and I was very impressed with their work.

Out of interest, I made various enquiries around the country to see how much these systems cost, and found the typical range to be between £30000 and £90000. Then last autumn I was able to visit Timestep Weather Systems to see their various projects including the reception of digital data from METEOSAT. In early April I took delivery of their first PDUS system to be released, and a 1.8m dish. Until now, there were mostly professional Polytechnics and Universities operating PDUS systems, though some electronic experts, such as **Peter Hayes**, have built working systems.

The pictures that I am receiving, using the new dish, a P-HEMT pre-amp, METEOSAT receiver, card and software running in my new '386' computer are quite exceptional. I shall provide some pictures for this column shortly and I hope to produce a review of the equipment at some time.

As I have mentioned before, I welcome all information from WXSAT hardware/software suppliers about their new products.

Frequencies

NOAAs 9, 10, 11 and 12 given above.
METEOR 2-19 or 2-20 on 137.85MHz
METEOR 3-4 on 137.30MHz
METEOR 3-5 may use 137.40MHz.
OKEAN 3 on 137.40MHz rarely on

Reviews

My thanks to those correspondents who commented on the recent review of the PROSAT II software. I believe that a review of Track 2 will be published later. Do let me know of any areas that you particularly want to see covered, though some requests are better aimed at the Editor!

Many readers have sent in useful WXSAT and similar information. I retain the data in case other SWM readers request help, though it may not always be published here because of space limitations.

Finally

PROSAT II upgrades are now available for (i) old Timestep equipment, (ii) ALL ICS MET2 systems and (iii) PC GOES users. Contact Dave Cawley of Timestep Weather Systems Ltd. Tel: (0440) 820040 for full details.

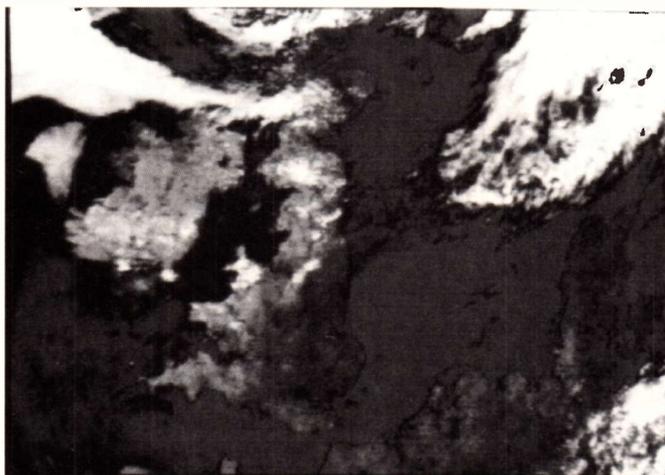


Fig. 4: NOAA 11, a sunny UK from Brian Dudman.

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

Philip Mitchell of Newbury writes giving a tip for readers with an interest in i.f. reception. He has been experimenting with his antenna connection and discovered that reversing the coaxial centre and screen gives a much cleaner signal on i.f. The antenna is a 25m wire with a coaxial feed to the shack. Some of you may, quite rightly, be wondering about the validity of this type of experimentation.

The reason why Philip's experiment has worked is related to the length of his antenna. A 25m antenna, although a good length for h.f. reception is well short of that required for i.f. signals. As an example, a half wavelength antenna for 130kHz would be 1.15km long! This needs to be considered with the requirement for the antenna to ideally be at least 500m above ground! This is clearly difficult even for the commercial operator. If, like most of us, you're using a comparatively short antenna it's well worth taking a leaf out of Philip's book and experimenting. Obviously it's important to keep safety in mind so I would recommend you leave the earth connection well alone unless you're very confident. I'd be very interested to hear from other readers who've experimented with i.f. antennas.

A request for help next from Eric Simpson of Penrith. He owns a GX-2 FAX/SSTV unit that he runs with a BBC computer. Unfortunately, he's having a few problems getting the unit working. At the moment the best he can offer is a screen full of coloured dots! Is there anyone out there who can offer a helping hand? If so, please drop me a line.

David Thorndike of Reading has been left a Siemens Level Meter that's been converted to a receiver. David has asked what the meter would have originally been used for. Fortunately this is familiar ground for me as I've used one of these meters on many occasions in the past as part of my day-to-day work. The main application of these high quality meters is the measurement of signal levels on land line and radio link based f.d.m (Frequency Division Multiplex) systems. The basic building block of these systems was a 4kHz speech channel. These were multiplexed in to groups of twelve channels occupying the frequency range of 60kHz to 108kHz. Five of these groups were subsequently multiplexed to make a Super-Group.

The final translation was made by combining sixteen of these Super-Groups into what was called a Hyper-Group. This Hyper-Group then contained nine hundred and sixty 4kHz channels requiring a total bandwidth of approximately 4MHz. This multiplexed signal was then transmitted over coaxial land lines between repeater stations or telephone exchanges. The basic 4MHz system survived for quite some time until it

became economic to combine three of these systems to make a 12MHz line system. It was for use these 12MHz systems that the Siemens 17MHz selective level meter was designed.

By using the Siemens meter maintenance and provision engineers could tune-in to any of the 960 or 2880 channels and take a precise measurement of the signal level. Because all the telephony channels were transmitted as s.s.b. signals, the Level Meter was simply a very accurate calibrated receiver. From this you can see that they have the potential to make a very good receiver. The main modification needed is to add a tuned front end to limit high power out-of-band signals from entering the first mixer. The only other addition is an audio amplifier to bring to low level audio signal up to a level that can be applied to a loudspeaker.

If you've converted one of these measuring sets, I'd be very interested to hear of your experiences. Probably the best place to find these units is at radio rallies or government surplus stores. I would however, offer a word of warning before you part with your money. Spares for these units, if available at all, are likely to be very expensive. Because of this, second-hand measuring sets should be very cheap.

In his letter Dave also asks if any of the v.h.f. weather satellite images are re-transmitted on h.f. As far as I'm aware it's only the geostationary satellites such as Meteosat and NOAA that are re-broadcast. Probably the most reliable source of Meteosat images is Offenbach Meteo on 134.2kHz. However, if anyone out there knows different, please drop me a line.

Jack Baker of Bridlington is relatively new to short wave listening and is just starting out with utilities. He is

running a Lowe HF-125 receiver with a 30m wire antenna and the popular ERA Microreader. He also has an interest in v.h.f. monitoring where he uses a Realistic PRO-2005. In addition to all this he has an Atari 520 STFM computer. To overcome the problems of the small display on the Microreader he'd like to feed the output of the ERA direct to the Atari. It's at this point that he's hit a problem - he can't find any suitable terminal software for the Atari. Can anyone help? If so, drop me a line and I'll pass on the details.

Another plea for help comes from Bill Wilson of Cramlington. He owns an Amstrad PCW8256 fitted with a serial interface and would like to use it for RTTY and SSTV reception. Unfortunately neither he or I know of any software for this computer. Once again, can anyone help? If you can, please drop me a line.

Bulletin Boards

Over the past few months I've received several enquiries from readers asking about RTTY transmissions on 14.08MHz. These readers have stumbled across some of the many amateur bulletin boards that exist in the RTTY sections of the popular h.f. amateur bands. To the listener these services may seem rather odd, but they are generally well used by amateurs.

So what is a bulletin board, I hear you ask? In simple terms it's an electronic system for storing and recalling messages. A typical amateur system would comprise a computer that is left connected up to a RTTY terminal and transceiver. The bulletin board software will then automatically monitor the output of the RTTY terminal looking for a station sending the appropriate callsign. Once the callsign has been recognised the bulletin board software

takes over and runs through an automatic response. In much the same way as a cash dispenser, the information is exchanged by the user going through a set of structured questions and answers. In addition to simple mailbox facilities the bulletin board also offers the facility to download computer programs in text form.

Free Software

I have to admit I made a real blunder in the April 'Decode'. I listed a whole range of programs that Bill Nicoll of Aberdeen was offering free to readers. What I failed to do was give details of the system Bill was using. So to put the record straight, the programs Bill has to offer are for the BBC Master Compact running a PK-232 terminal. The only disk format available is 3.5in. My apologies to all those readers who have been disappointed and especially to Bill for the inconvenience caused. Looking on the bright side, Bill has now had proof of the popularity of SWM!

Swedish ARQ

This is not going to be an in-depth study, just an outline for those who've heard the term and wonder what it is! Well, as its name suggests it's yet another variant of the basic ARQ or Automatic Repeat reQuest system. This particular variant has been developed for use by the Swedish diplomatic service. Being a synchronous Simplex ARQ system it's very like a simple SITOR system. The system operates between two stations one acting as Information Sending Station (ISS) the other as Information Receiving Station (IRS). I've used these two, slightly clumsy, terms solely because they've become the standard used in most documentation.

Instead of using the familiar SITOR alphabet (CCIR476-4) Swedish ARQ employs the ITA3 system. Another important difference comes with the repetition cycles employed. Whereas the SITOR system sends the message in three character chunks, Swedish ARQ has a number of options. The three prime repetition cycles are 3, 9 and 22 characters. This breaks down to give the following basic message timings:

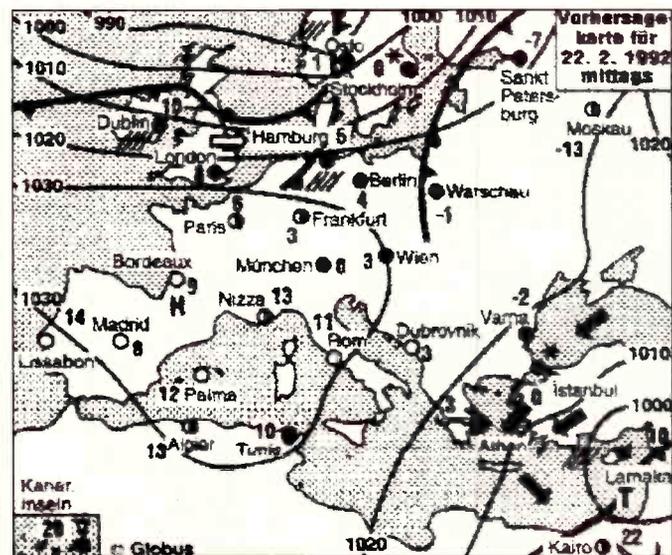
CRC Time	Character Total	Time (ms)	Pause (ms)
3	210	210	450
9	630	270	900
22	1540	260	1800

By the way, CRC is the acronym for Character Repetition Cycle.

For those who'd like to try their hand at receiving these transmissions here are a few active frequencies:

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These transmissions all use 100



DPA weather chart.

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baud with a shift between 370Hz and 425Hz. According to the logs I've received, the best times to listen are between 1000 and 1600UTC. My thanks to Robert Hall, Klingenfuss *Radioteletype Code Manual* and the Code 3 help files! If you'd like me to give a brief description of any other modes, just drop me a line.

DPA Press Transmissions

Does anyone know what's happened to the 139kHz DPA transmission? The DCF39 FAX transmissions are probably the most monitored of all the I.f. stations. The prime reason for this is the consistent signal strength combined with the interesting images. **Ken Michaelson** of Golders Green and **John Igglesden** of Horsham have both sent in charts received at the end of March. You should find an example of a DPA image in this column. Incidentally regular readers may have noticed my mistake in the April issue where I quoted the IOC as 288. It is in fact 352 - sorry!

However, since April 1, the station has been conspicuously silent. The fact that transmissions stopped at the beginning of the month tends to indicate that the closure was planned and may well be permanent. Perhaps this is another example of a service migrating to the higher quality satellite system. If this is true, it's very bad news for **Noel Richins** of Derby. He was about to go out and buy a new FAX system primarily to receive DPA images.

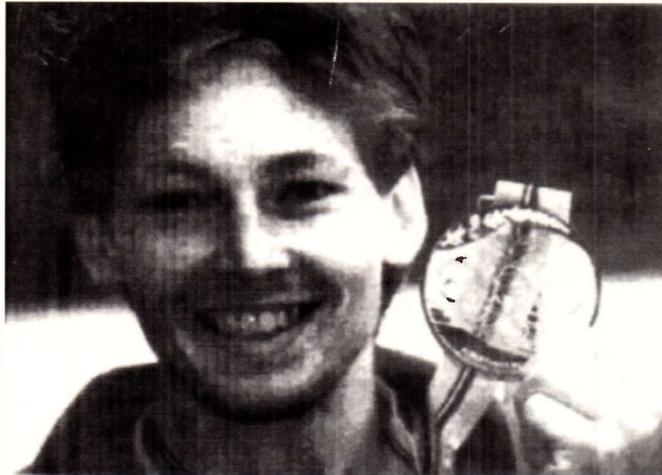
If anyone out there has any details of the closure, I'd be very interested to hear so I can pass it on to other readers.

Confidential Frequency List

Another new product for this month is the latest edition of *Ferrell's Confidential Frequency List*. This popular listing is now in its eighth edition and has adopted a new presentation style. The main change is that the book is now spiral bound with a generous metal spiral. This may seem a minor change but it makes the book a real pleasure to use.

One of my main criticisms of many reference books is that it's so difficult to keep them open at a particular page. The spiral binding completely overcomes that problem. The provision of such a generously proportioned binding means that you can even fold the book back on itself with no problems. It's this simple change that's completely transformed the convenience of this frequency list.

The content of the list has also been completely revised in response to requests from readers. The frequency coverage has been extended from the previous 4MHz down to 1.605MHz. This provides full coverage



Press photograph from DPA.

of the h.f. bands. The list also covers all modes except broadcast and amateur so provides a useful reference for all forms of utility listening.

The frequency list takes up the lion's share of the book and covers 387 pages. The listing is extremely comprehensive giving full international coverage. Although this makes the book an excellent reference it can cause degree of confusion for the newcomer trying to find something to listen to.

The next largest section comprised a callsign index. Against each callsign was listed the location, type and mode along with a list of all the active frequencies.

In addition to these two core sections there were many other smaller sections with a wealth of useful information i.e. Frequency allocations, classified services, maritime service, callsign allocations, naval message indicators and a variety of useful charts.

So overall this new and much improved Ferrell's is well worth a look. It's available from the *Short Wave Magazine Book Service*, if you're quick you may even be able to catch last month's special offer.

AOR FAX Decoder

I'm sure many of you will have noticed the recent adverts for a new FAX decoder from AOR. Although perhaps best known for their scanning receivers, the WX-2000 looks to be a very capable unit. Having got my hands on a review model I thought I'd give you a sneak preview. The full review will follow later.

One of the first points to note is that the WX-2000 is a self contained decoder. All you need is a receiver and 12V power supply. This level of convenience means that the unit will have an obvious appeal for the commercial user as well as the keen amateur.

To further enhance its convenience the WX-2000 features fully automatic image reception. This means that it recognises all the standard start and stop tone. The result is that, once tuned

into a suitable station, it can be left unattended to get on with the business of FAX reception. For this to work successfully you need to have a receiver with very good frequency stability. The tuning of a FAX signal is critical if the best image quality is to be obtained. To simplify this operation the WX-2000 employs an I.e.d. bargraph tuning display. All you have to do is centre the signal on this display.

As I mentioned earlier the WX-2000 has a built-in printer to display the received images. The printer used was a thermal type and could be set to give either a sixteen-level gray scale or two-level black and white. For the reception of FAX charts the two-level option was by far the best. The sixteen-level option came into its own when receiving photographs.

One big difference between the WX-2000 and many other decoders is its ability to decode a.m. satellite images. You still need a satellite receiver, but the audio output can be fed to the WX-2000 for decoding. This opens up a whole new world of polar orbiting satellite pictures to impress your friends with!

Your next question I'm sure is what do I think? Well, from what I've seen so far the WX-2000 seems to be very good indeed. The automatic reception has worked very reliably and the image quality when receiving charts is very good indeed. The resolution is good enough to allow all the important detail to be read. Photographs are ok but obviously limited by the sixteen-level grey scale. For more details and some examples look out for the full review. If I've already whetted your appetite you can contact AOR at: AOR (UK) Ltd at Room 2, Adam Bede High Tech Centre, Derby Road, Wirksworth, Derby. The phone number is (0629) 825926. My thanks to AOR for the loan of the review model.

Frequency List

Here we go with this month's list which has been compiled thanks to contributions from: **Robert Hall**, **Day Watson**, **Andre Baertschi** and **Ted Rickett**.

As a point of interest, Day Watson has recently sent me a draft frequency list that's specially designed for newcomers. Rather than being compiled in frequency order, Day has listed the stations in operating time order. One of the most common complaints I hear from new listeners is the difficulty they have in finding active stations when using conventional frequency lists. This new list from Day should help to overcome that problem. In its present form, the list is restricted to RTTY and FEC stations but this could easily be expanded to include a few c.w. stations. In addition to the basic listing, Day has provided a few notes to explain some of the operating practices used.

Comments Please

If you've any comments on this proposed list, I'd be very pleased to hear from you.

Getting back to this month's list, I've used the usual format, i.e. Frequency, Mode, Speed, Shift, Callsign, Time and Notes. If you'd like a copy of my standard frequency list then just send three first or second class stamps to the address at the head of the column.

4.212MHz, ARQ, 100, 170, -, 1938, CR
Marseille
5.7745MHz, FAX, 60, 352, LRO26, 2351,
AP Buenos Aires - press
6.446MHz, FAX, 120, 576, GYA, 1500,
RN London
8.000MHz, FAX, 120, 576, GXH, 1507,
USN Thurso
8.4285MHz, ARQ, 100, 170, ZSC62,
0620, Cape Town Radio
8.503MHz, c.w., -, -, SY1Z, 1841, SS
Asphalt Leader
9.983MHz, FAX, 120, 576, ?, 2329,
Possibly Delhi Met
11.479MHz, FAX, 60, 288, HMF52,
0011, KCNA Pyongyang press
12.874MHz, c.w., -, -, VCS, 2341,
Halifax Radio
12.8985MHz, c.w., -, -, DAN, 0013,
Nordeich Radio
13.397MHz, RTTY, 75, 400, DFZG,
0703, MFA Belgrade - press
16.34MHz, FAX, 120, 576, ZKLF, 0624,
Auckland Met
18.1736MHz, RTTY, 50, 400, STK, 0601,
Khartoum Airphotos
18.4884MHz, FAX, 120, 576, -, 1200,
SAAM Molodezhnaya Antarctic
18.5537MHz, ARQ-E3, 100, 300, RFTJ,
0620, FF Dakar
19.592MHz, RTTY, 50, 400, -, 0653,
ANSA Rome - press weather
20.734MHz, ARQ, 100, 170, -, 0709,
UNID
22.6195MHz, c.w., -, -, VCS, 1543,
Halifax Radio Antarctica
23.0218MHz, Twinplex, 100, -, -, 1520,
MFA Islamabad
24.4584MHz, ARQ-E3, 96, 400, FJY3,
1000, Dumont d'Urville

long medium & short

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

Long days and short nights may be ideal for those who enjoy the outdoor life, but they are not welcomed by long and medium wave DXers!

Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless stated, logs compiled in the four week period ending April 1.

Some of the broadcasts received in Czechoslovakia during the evening (1750-2348UTC) were noted by **David Hertl** in Lenesice. Amongst his entries are the BBC on 198kHz, shared by Droitwich (500kW), Burghhead (50kW) and Westerglen (50kW); also Atlantic 252 in Clarkstown, S.Ireland (500kW). David informs me that the performance of their Topolna transmitter is being considered and a reduction in power from 1500kW to 1000kW may be implemented.

Since the closure of Montala, Sweden on 189kHz, **Kenneth Buck** (Edinburgh) has noticed that a Russian station, possibly Tbilisi (500kW), can be heard on that frequency. By using a screened loop ahead of his receiver he has confirmed that the signal comes from the expected direction.

The signals from CJYQ in St. John's, NF on 930kHz are regarded by many transatlantic DXers as the pointer to propagation conditions. For several years now, **Eric Duncan** (St. Andrews, Fife) has monitored 930 each night from November 1 to March 31 until 0000UTC or later and his records show that this season has been one of the poorest he has experienced. The number of nights per month that he received CJYQ before 0000UTC was 1 in November, 20 in December, 16 in January, 1 in February, 25 in March. He says, "It is surprising that March proved so good. The outstanding feature of the season was the long periods when absolutely nothing was heard. Very few nights were good nights when a significant number of different stations could be heard".

Encouraged by his reception of CJYQ last month, **Tim Bucknall** (Congleton) has been searching the band. At 0130 he logged CJYQ as 33353, but he was disappointed by the lack of other DX signals. The key to success for **Ron Damp** in Worthing has proved to be the construction of the 'MW Hexagon Loop' designed by the late John Ratcliffe, see April 1989 SWM. Whilst testing the loop he heard CJYQ for the first time, logging it as 32232 at 0400. He also heard another Canadian station on 960, but it faded out before he could identify it and it didn't return.

Some nights, **Jim Willett** (Grimsby) found his DXing activities impaired by interference from a TV set owned by new neighbours. He used a giant 4m square fixed loop ahead of his receiver and logged CJYQ as SIO333 at 0020. At that time VOXM on 590, also in St. John's, was peaking SIO222. Later, CFRA Ottawa, ON became audible on 580, SIO222 at 0135. Two of New York's broadcasters were heard around 0150 - WINS on 1010 and WWRL* on 1600. Both were SIO222. Although the Caribbean Beacon, Anguilla 1610 was SIO222 at 0135, signals from S.America were noticeably absent. (*Subject to confirmation by QSLs).

Some of the sky wave signals from stations in N.Africa have also been reaching the UK after dark - see chart.

Further to the closure of some local radio m.w. outlets, you may have spotted my error in the April issue - it was, of course, the Trowell outlet of BBC R. Nottingham on 1521 that closed. R.Northampton are closing King Heath 1107. **John Wells** (East Grinstead) informs me that ILR R.Orwell and Saxon R. have amalgamated. It seems odd that their m.w. service via Foxhall Heath 1170 and Great Barton 1251 is now called 'SGR-FM'. **Cyril Kellam** (Sheffield) tells me that ILR

Medium Wave Chart

Freq kHz	Station	Country	Power kW	Listener
520	Hof-Saale	Germany	0.2	D*, F*, J*, K*
526	Vatican City	Italy	5	F*
531	Ain Beida	Algeria	600	K*
531	Leipzig	Germany	100	C, F, J*, K, M*
531	Oviedo	Spain	10	J*, K*
540	BRT-2 Wavre	Belgium	150/50	C, J*, K, L, M*, P*
540	Solt	Hungary	2000	F*
540	Sidi Bennour	Morocco	600	J*, M*
549	Les Trembles	Algeria	600	K, M*
549	DLF Dayreuth	Germany	200	C, J*, K, L
549	Thurnau	Germany	200	F*
558	Valencia	Spain	20	J*
567	Berlin	Germany	100	F*, J*
567	RTE-1 Tullamore	Ireland (S)	500	B*, C, K, L
576	Vidin	Bulgaria	100	J*
576	Muhlacker	Germany	500	F*
576	Stuttgart	Germany	500	C, J*, K*, L*
585	Orf Wien	Austria	600	F*
585	FIP Paris	France	8	K*
585	RNE-1 Madrid	Spain	200	F*, J*, K*, L*, M*
585	Gafsa	Tunisia	350	K*
585	BBC- Dumfries	UK	2	C, J*
594	Frankfurt	Germany	1kW/400	C, F, J*, K, L*, M*
594	Oujda-1	Morocco	100	K*
594	Muge	Portugal	100	B*
603	Lyon	France	300	K*
603	Koenigswhausen	Germany	20	J*
603	Sevilla	Spain	20	K*
603	BBC- Newcastle	UK	2	C, J*
612	RTE-2 Athlone	Ireland (S)	100	C, K, L
612	Lerida	Spain	10	F*
612	Tallinn	Estonia	100	K*
621	RTE-1 Wavre	Belgium	80	C*, J*, K, L*, P*
621	Barcelona	Spain	10	K*
630	Dannenberg	Germany	100	F*
630	Vigra	Norway	100	C, F*, J*, M*
630	Tunis-Djedeida	Tunisia	600	F*, K*
639	Praha	Czechoslovakia	1500	C, F, J*
639	La Coruna	Spain	100	J*, K*, L*, M*
648	P de Mallorca	Spain	10	J*, K*, M*
648	BBC Orfordness	UK	500	B*, C, F*, J*, K, L, M, P*
657	Burg	Germany	250	F*, J*
657	Napoli	Italy	120	M*
657	RCE-2 Madrid	Spain	20	J*, K*, M*
657	BBC-Wrexham	UK	2	J*, L*, M*
666	Bodenseesender	Germany	300/180	F, J*, K*, L*, M*
666	R.Vilnius	Lithuania	500	J*
675	Marseille	France	600	F*, J*, L
675	Hilversum-3 Lopik	Holland	120	C, H*, J*, K, P*
684	Hof-Saale	Germany	100	F*
684	RNE-1 Sevilla	Spain	250	D*, J*, K*, M*
684	Beograd	Yugoslavia	2000	F*, K*, P*
693	Berlin	Germany	250	D*, F*, J*
693	BBC-R5 Droitwich	UK	150	C, F*, L, M
702	Banska Bystrica	Czechoslovakia	400	F*
702	Aachen/Flensburg	Germany	5	C
702	Monte Carlo	Monaco	300	J*
711	Rennes 1	France	300	C*, J*, K, P*
711	Heidelberg	Germany	5	D*, J*
720	Langenberg	Germany	200	F*, M*
720	BBC-Lisnagarvey	Ireland (N)	10	C, M
720	Norte	Portugal	100	J*
720	BBC-R4 London	UK	0.5	K*
729	Leipzig	Germany	5	J*
729	RTE-1 Cork	Ireland (S)	10	C, J*, K*, L, M
729	Oviado	Spain	50	J*, K*, M*
738	Paris	France	300	F*, J*, P*
738	Poznan	Poland	300	F*, J*, P*
738	RNE-1 Barcelona	Spain	250	K*
747	Hilversum-2 Flevo	Holland	400	B*, C, F*, H*, J*, K, L, M*, P*
756	Brunswick	Germany	800/200	J*, K*, M*, P*
756	BBC-R4 Redruth	UK	2	K*
765	Sottens	Switzerland	500	C*, F*, J*, K*, L, M*
774	Hradec Králové	Czech	20	F*
774	Abis	Egypt	500	F*
774	BBC-Enniskillen	Ireland (N)	1	J*, M
774	San Sebastian	Spain	60	K*, M*
783	Burg	Germany	1000	C*, F*, J*, K*, L*, M*
783	R.Porto, Miramar	Portugal	100	J*
792	Praha	Czech	40	F*
792	Limoges	France	300	J*, K*
792	Sevilla	Spain	20	K*, M*
801	M'hen-Ismaning	Germany	300	F*, J*, K*, L*
801	Burgos	Spain	10	J*
810	RNE-1 Lugo	Spain	20	H*
810	SER Madrid	Spain	20	F*
810	BBC-Burghhead	UK	100	J*
810	BBC-Westerglen	UK	100	C, G*, H*, J*, K*, M, N, P*
819	Toulouse	France	50	F*, M*
819	Warsaw	Poland	300	F*, K*
819	San Sebastian	Spain	5	K*
837	Nancy	France	200	C*, J*, M*
837	R.Popular, Seville	Spain	10	J*, K*
846	Rome	Italy	540	B*, C*, F*, J*, K*, L*, P*
855	Berlin	Germany	100	F*
855	Murcia	Spain	125	F*, K*, L*, M*
864	Usti nad Labem	Czech	10	F*
864	Santah	Egypt	500	M*
864	Paris	France	300	C, K, L*, M*
873	AFN via Frankfurt	Germany	150	C, J*, K, L*, M*, P*
873	Enniskillen	UK	1	J, M
882	Wachenbrunn	Germany	5	F*
882	COPE Malaga	Spain	5	J*
882	BBC-Tywyn	UK	5	M
882	BBC-Washford	UK	5	C, J*, K, L, P*
891	Algiers	Algeria	600/300	F*, J*, K*, M*
891	Huisberg	Holland	20	F*, K*
900	Pilsen	Czech	40	F*
900	Milan	Italy	600	F*, J*, K*, M*

Listeners

- A. Jana Arunachalam, Thumrait, Oman.
- B. Vera Brindley, Woodhall Spa.
- C. Kenneth Buck, Edinburgh.
- D. Tim Bucknall, Congleton.
- E. Ron Damp, Worthing.
- F. David Hertl, Lenesice, Czechoslovakia.

Freq kHz	Station	Country	Power kW	Listener
909	P. de Mallorca	Spain	10	D*
909	BBC-Lisnagarvey	N.Ireland	10	M
909	-Moorside Edge	UK	200	F*, L, M*
909	BBC-Westerglen	UK	50	C
918	R. InterT Madrid	Spain	20	J*, M*
918	R.Ljubljana	Yugoslavia	600/100	F*
927	BRT-1 Wolvertem	Belgium	300	C, F*, H*, J*, K, L, M*
927	Velke Kostolany	Czech	40	J*
936	Bremen	Germany	100	C, F*, J*, K*, M*, P*
945	Liberac	Czech	6	F*
945	Toulouse	France	300	C, F*, J*, K*, M*
954	Brno	Czech	200	F*
954	Al Arish	Qatar	1500	J*
954	RCE Madrid	Spain	20	J*, K*, M*
963	Pori	Finland	600	B*, C, H*, J*, L*, M*, P*
963	Paris	France	8	K*
963	Tir Chonail	Ireland (S)	10	D, M
972	Hamburg	Germany	300	C, F*, J*, K*, L*, M*
972	M. de Lemos	Spain	2	B*
981	Algier	Algeria	600/300	B*, F*, H*, K*
990	Berlin	Germany	300	B*, J*, M*
990	BBC-Redross	UK	1	C
990	BBC- Droitwich	UK	150	C*, F*, J*, K*, M*, P*
1062	Kalundborg	Denmark	250	C*, F*, J*, K*, M*, P*
1071	Praha	Czech	60	F, J*
1071	Presov	Czech	40	F*
1071	Brest	France	20	J*, K, M*
1071	Lille	France	40	B*, F*, M*
1071	Raikot	India	1000	A
1080	Katowice	Poland	1500	F*, J*, P*
1089	Brookmans Pk	UK	150	F*, L, M
1089	BBC-Westerglen	UK	50	C
1089	Krasnodar	USSR	300	J*
1098	Nitra	Czechoslovakia	1500	F, M*
1098	RNE-5	Spain	10	J*, M*
1107	AFN via Munich	Germany	40	F*, J*, M*
1116	Ban	Italy	150	J*, M*
1125	La Louviere	Belgium	20	J*, K
1125	Stara Zagora	Bulgaria	500	C*
1125	Llandrindod Wells	UK	1	M
1125	Tovarnik	Yugoslavia	300/100	F*, J*
1134	Zadar	Yugoslavia	1200	F*, J*, K*, L*, P*
1143	AFN via Stuttgart	Germany	10	F*, J*, M*
1152	RNE-5	Spain	10	J*
1161	Strasbourg (F.int)	France	200	F, M*
1242	Marseille	France	150	J*, L*, M*
1251	Marcali	Hungary	500	F*
1251	Huisberg	Netherlands	10	J*, M*
1260	VDA via Rhodes	Greece	500	J*
1260	Szczecin	Poland	160	F*
1260	Valencia	Spain	20	K*, M*
1269	Neumünster	Germany	600	C, F*, J*, K*, L, P*
1278	Strasbourg	France	300	F*, J*
1278	Dublin/Cork	Ireland (S)	10	C, E*, K, L
1287	Litomys/Liblice	Czech	300/200	J*, M*
1287	Melnik	Czech	400	F*, P*
1296	Kardzali	Bulgaria	150	M*
1296	San Sebastian	Spain	5	J*
1296	BBC Orfordness	UK	500	F*
1305	Rzeszow	Poland	100	F*
1305	Orsen (RNE5)	Spain	5	J*
1314	Kvitsoy	Norway	1200	B*, C, F*, J*, K*, L, M, P*
1323	BBC Zyi	Cyprus	50	A
1323	R.Mos w Leipzig	Germany	150	F, J, M*, P*
1332	Brno (Domaniil)	Czech	50/25	F*
1332	Rome	Italy	300	F*, M*, P*
1341	Lakhegy	Hungary	20	H*
1422	Heusweiler	Germany	1200/600	C, F*, H*, J*, K*, L, M*, P
1431	Dresden	Germany	250	J*
1431	Nikolayev	Ukraine	400	F*
1449	Squinaco	Italy	50	J*, M*
1449	BBC-R4 Redross	UK	2	C, M
1467	TWR Monte Carlo	Monaco	1000/400	C, F*, H*, J*, K*, L, M*, P*
1476	Wien-Bisamberg	Austria	600	B*, C, F*, J*, K*, L, M*, P*
1485	AFN	Germany	1	F*
1485	San Sebastian	Spain	2	M*
1485	BBC-R4 Carlisle	UK	1	C
1494	Clermont-Ferrand	France	20	J*, K*, M*
1494	St.Petersburg	Russia	1000	C*, P*
1503	Stargard	Poland	300	C*, F*, H*, J*, K*, M*
1512	BRT Wolvertem	Belgium	600	C*, F*, H*, K, L, P*
1521	Kosice	Czech	600	J*, M*
1521	M. Hradiste	Czech	50/25	F*
1530	Vatican R. Rome	Italy	150/450	F*, H*, J*, K*, M*, P*
1539	Mainflingen	Germany	700	C, F*, J*, K*, M*
1548	Trin'leat(DW)	Sri Lanka	600	A
1557	Nice	France	300	J*, M*
1566	Nagpur	India	1000	F*
1566	Samen	Switzerland	300	C*, J*, M*
1575	Burg	Germany	250	C, F*, J*, M*
1584	Tachov	Czech	2	J*
1584	SER R.Gandia	Spain	2	F*
1593	Langenberg	Germany	400/800	B*, C, F*, H*, J*, K*, L, M*, P*
1602	Zielona Gora	Poland	2	F*
1602	SER R.Cartagena	Spain	2	D*
1602	Vitoria	Spain	10	D*, P*
1611	Vatican R.	Italy	5	F*, J*, O*
1620	Verona	Italy	5	F*

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

long medium & short

Local Radio Chart

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

Listeners

- A: Vera Brindley, Woodhall Spa.
- B: Kenneth Buck, Edinburgh.
- C: Tim Bucknall, Congleton.
- D: Bernard Curtis, Stalbridge.
- E: Ron Damp, Worthing.
- F: David Henti, Lenesece, Czechoslovakia.
- G: S. Hockenhill, E.Bristol.
- H: Sheila Hughes, Morden.
- I: Rhoderick Illman, Oxted.
- J: Eddie McKeown, Co.Down.
- K: George Millmore, Wootton, IOW.
- L: Sid Morris, Rowley Regis.
- M: Hugh Quinn, Co.Kildare.
- N: Tom Smyth, Co.Fermanagh.
- O: Phil Townsend, E.London.
- P: John Wells, East Grinstead.

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

R.Hallam now call their m.w. outlets on 1305 and 1548 'Great Yorkshire Radio'. No doubt many people were surprised when Airport Information Radio ceased broadcasting on 1584. Despite co-channel interference in some areas it seemed to provide a much needed service for Heathrow and Gatwick.

Many short wave broadcasters altered their schedules at the end of March to allow for seasonal variations in propagation. The decision by R.Norway Int. and R.Denmark to cease operations in the 25MHz (11m) band was unexpected, because reports indicated that the transmissions were being clearly received in some areas. The remaining occupants include the Voice of the UAE in Abu Dhabi 25.690 (Ar to F.East 0900-1100) 44444 at 1010 by **Chris Shorten** in Norwich; DW via Julich on 25.740 (Ger to Japan, E/SE.Asia, M.East, Europe 1100-1355) 33323 at 1108 by **Ron Galliers** in N.London; RFI via Issoudun 25.820 (Fr to E.Africa 0700-1550) 43444 at 1000 by **Jana Arunachalam** in Thumrait, Oman; R.Nederlands via Flevo 25.940 (Du 1030-1125, Sun Only) SIO355 at 1100 in Edinburgh.

It seems likely that European broadcasters could provide a good 11m service for listeners in Canada and the USA because **Alan Roberts** (Quebec) logged DW as 42443 at 1340 & RFI as 45444 at 1530. He tells me that R.Havana Cuba intend to make a one hour long s.s.b. test transmission (5kW) on 25.800 over one weekend. No doubt they will welcome your report!

Conditions in the 21MHz (13m) band have enabled three of R.Australia's broadcasts to reach the UK: Darwin 21.525 to C/SE Asia (Eng 0100-0800) 24532 at 0115 by **David Edwardson** in Wallsend; Carnarvon 21.775 to Asia (Eng 0100-0900) SIO344 at 0815 in Edinburgh; 21.720 to S.Asia, M.East (Eng 1000-1430) 33433 at 1120 by **S. Hockenhill** in E.Bristol.

Good reception from other areas has been noted. In the morning, R.Japan via Moyabi 21.575 (Eng, Jap to Europe, M.East 0700-0830) was SIO433 at 0740 in Sheffield; BSKSA Riyadh, Saudi Arabia 21.670 (Ar [Holy Quran] to SE.Asia 0800-1000) 45555 at 0925 by **Chris Haigh** in Huddersfield; VoA via Kavala 21.455 (Eng to M.East, N.Africa 0800-1100) SIO444 at 1015 by **Bryan Kimber** in Hereford; AIR via Aligarh 21.735 (Eng to NE.Asia 1000-1100, Th to Thailand 1115-1200) 54333 at 1017 in Norwich; BSKSA Riyadh 21.505 (Ar [Home Service] to N.Africa 1030-1700) SIO444 at 1033 by **John Coulter** in Winchester; BBC via Ascension Is 21.660 (Eng to Africa 0700-1745) 32322 at 1053 in N.London; R.Pakistan, Islamabad 21.520 (Eng to Europe 1100-1120) 44444 at 1105 by **Peter Polson** in St.Andrews; HCJB, Ecuador 21.455 (world-wide u.s.b. + p.c.) SIO333 at 1156 by **John Stevens** in Largs.

Later, R.Denmark via RNI 21.705

(Da to S.Asia, Australia 1230-1255) was 54554 at 1230 by **Darren Beasley** in Bridgwater; BBC via Limassol 21.470 (Eng to E.Africa 0430-1615) SIO333 at 1307 by **Julian Wood** in Elgin; UAE R.Dubai 21.605 (Eng to Europe 1300-

1400) 34233 at 1332 by **Eddie McKeown** in Co. Down; R.Austria Int via Moosbrunn 21.490 (Ger, Eng, Fr to SW.Europe, W.Africa 1400-1700) 44433 at 1358 by **Rhoderick Illman** in Oxted; VoA via Tinang 21.585 (Chin to E.Asia

1100-1600) SIO333 at 1532 by **Philip Rambaut** in Macclesfield; R.Sweden 21.500 (Sw, Fr, Sp, Eng to USA 1330-1600) SIO444 at 1545 by **Sid Morris** in Rowley Regis; WHRI Noblesville 21.840 (Eng to Europe, Canada 1500-1700) SIO333 at 1600 by **Ted Walden-Vincent** in Gt.Yarmouth; WCSN MN 21.545 (Eng to Africa, M.East 1800-2000) SIO333 by **Phil Townsend** in E.London; WYFR, FL 21.525 (Eng to Africa 2000-2200) 34333 at 2030 by **Sheila Hughes** in Morden; R.Pilipinas via Tinang 21.580 (Eng 0230-0330) 32332 at 0245 in Thumrait.

There is plenty to interest listeners in the 17MHz (16m) band! In the early morning R.New Zealand's broadcasts to Pacific areas have been audible in the UK. In Basingstoke, **Ken Milne** rated their 100kW Rangataiki signal on 17.770 (Eng 2130-0800) as 32332 at 0747. After midnight R.Australia's Darwin transmission to SE.Asia on 17.750 (Eng 0000-0400) has been heard here, rated 24432 at 0025 in Worthing.

In the morning R.Romania, Bucharest 17.805 (Eng to Pacific areas 0645-0715) was SIO333 at 0700 by **Francis Hearne** in N. Bristol; R.Pakistan, Islamabad 17.902 (Eng, Ur to W. Europe 0800-1100) 54444 at 0840 in Norwich; R.Beijing, China 17.710 (Eng to S.Pacific area 0900-1100) SIO434 at 0900 by **Michael Osborn** in Chelms-

Long Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
153	Donebach	Germany	500	A,B,C,D,G*,H,I*,J,K*,M*,N
153	Brasov	Romania	1200	B,C*,D,G*,J,N
162	Allouis	France	2000	A,B,C,D,F,G,H,I,J,K,M*,N
171	Kaliningrad	Russia	1000	B,C,G*,H,I*,J,M*,N
171	Medi 1-Nador	Morocco	2000	F*
171	L'vov	USSR	500	D
171	Moscow	Russia	500	C*,F*
177	Oranienburg	Germany	750	B,C,D,G*,J*,K*,M*,N
183	SaarLouis	Germany	2000	A*,B,C,D,G*,H,I*,J,K*,M*,N
189	Tbilisi	USSR	500	B
198	BBC Droitwich	UK	500	A*,C,D,F,G*,H,I,K,L,M,N*
198	BBC Westerglen	UK	50	B,N
207	Munich	Germany	500	A,B,C,D,G*,H,I*,J,K*,N
207	Kiev	Ukraine	500	D*,N*
216	RMC Roumoules	S.France	1400	A,B,C,D,G*,H,I,J,K*,M*,N
216	Oslo	Norway	200	B,C*,F*,G*,N
216	Baku	Azerbaijdzhan	500	N*
225	Konstantinow	Poland	2000	B,C*,D,G*,J*,K*,M*,N
234	Junglinster	Luxembourg	2000	A*,B,C,D,G*,H,I,J,M*,N
234	St.Petersburg	Russia	1000	B,C*,G*
243	Kalundborg	Denmark	300	A*,B,C,D,F,H,I,J,M*,N*
252	Tipaza	Algeria	1500	C*,D*,F*,M*,N
252	Atlantic 252	S.Ireland	500	A*,B,C,D,E*,F*,G*,H,I,J,L,M*,N
261	Burg	Germany	200	D,H,J,N
261	Moscow	Russia	2000	B,C,F*,G*,I*,J,M*,N
270	Topolna	Czechoslovakia	150	B,C,D,F*,G*,H,I*,J,K*,N
270	Orenburg	USSR	15	C*
279	Minsk	Byeloussia	500	B,C*,D*,G*,I*,J,K*,M

Listeners:

- A: Vera Brindley, Woodhall Spa.
- B: Kenneth Buck, Edinburgh.
- C: Tim Bucknall, Congleton.
- D: David Henti, Lenesece, Czechoslovakia.
- E: S. Hockenhill, E.Bristol.
- F: Sheila Hughes, Morden.
- G: Eddie McKeown, Co.Down.
- H: George Millmore, Wootton, IOW.
- I: Sid Morris, Rowley Regis.
- J: Fred Pallant, Strorrington.
- K: Hugh Quinn, Co.Kildare.
- L: Tom Smyth, Co.Fermanagh.
- M: Phil Townsend, E.London.
- N: John Wells, East Grinstead.

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

long medium & short

Tropical Bands

ford; AIR via Delhi 17.387 (Eng to Australia, NZ 1000-1100) SIO333 at 1000 in Sheffield; SRI via Schwarzenburg 17.670 (Eng, Fr, Ger to F.East 0900-1245) 42333 at 1004 in Co.Down; R.Tunis via Sfax 17.500 (Ar 0700-1800) SIO444 at 1110 in Winchester.

After mid-day, the Voice of Greece, Athens 17.515 (Gr, Eng to USA 1200-1250) was SIO444 in Hereford; R.Moscow 17.840 (Eng to Europe 1200-1600) SIO333 at 1315 in Elgin; BBC via Skelton 17.640 (Eng to M.East, E.Africa 0800-1500) SIO333 at 1415 in Rowley Regis; Voice of Israel, Jerusalem 17.545 (Heb to C/N.Am, W.Europe 1105-2200) SIO434 at 1430 by **Cliff Stapleton** in Torquay; Africa No. 1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) 45444 at 1455 in Brighton; R.Cairo, Abis 17.595 (Fr to W.Africa 7-1700) SIO233 at 1535 in Gt.Yarmouth; RCI via Sackville 17.820 (Eng to Europe 1600-1629) 33333 at 1611 in Oxted; RFI via Issoudun 17.620 (Eng to Africa 1600-1700) 44444 at 1627 in Thumrait; R.Algiers via Bouchaoui 17.745 (Eng to Europe, M.East) SIO334 at 1700 by **Michael Williams** in Redhill; BBC via Ascension Is 17.860 (Eng to C.Africa 1600-1745) SIO333 at 1700 by **Bill Clark** in Rotherham.

Later, R.Havana, Cuba 17.770 (So to E.Europe, N.Africa 7-2100) 35444 at 2042 in Huddersfield; WWCN, Nashville 17.525 (Eng to Europe 1600-2000) 43333 at 1947 in N.London; HCJB, Ecuador 17.790 (Eng to Europe 1900-2000) SIO344 at 1955 in Edinburgh; Voice of Israel, Jerusalem 17.575 (Eng to S.Am 2130-2200) 34222 at 2157 in Bridgwater; VOFC via Okeechobee 17.750 (Eng to Europe 2200-2300?) 34333 at 2200 in Morden; AIR via New Delhi 17.830 (Eng to SE.Asia 2315-0115) 53433 at 2315 by **Richard Radford-Reynolds** in Guildford.

Judging by the reports, the 15MHz (19m) band is still the hub of activity for many listeners. R.New Zealand's broadcasts on 15.120 (Eng to Pacific areas 1845-2130) have reached the UK quite well during the first hour - typically 32323, as noted by **Vera Brindley** in Woodhall Spa at 1930, but reception has been marred by co-channel interference from 2000. RNZI therefore decided to transfer them to the 25m band on May 4 - 11.735 (same times). Potent signals have reached the UK from R.Australia during their Shepparton broadcast to Pacific areas on 15.240 (Eng 0000-0930) often 54444 as noted in Norwich at 0650. Their Darwin transmission to C.Asia 15.170 (Chin, Eng 0900-1400) was 44333 at 1100 in Co.Down; Shepparton to Papua New Guinea 15.320 (Eng 0100-0730) 33333 at 2205 by **Robin Harvey** in Bourne.

Programmes for listeners in Europe abound in this band. Those noted came from VoA via Munich 15.195 (Eng 0800-1100) 4433 at 1000 by **Bernard Curtis** in Stalbridge; WWCN 15.690 (Eng 1200-0000) SIO433 at 1530 in Rotherham; Voice of Vietnam, Hanoi 15.010 (Eng

Freq MHz	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	2051	O
2.560	Xinjiang	China	0010	T
3.200	TWR	Swaziland	1805	O
3.210	R.Mozambique	Mozambique	1820	O
3.215	R.Orange	S.Africa	1820	O
3.290	TWR	Swaziland	1825	J,O
3.245	R.Clube Varginha	Brazil	1953	P
3.255	BBC via Maseru	Lesotho	1810	O
3.270	SWABC 1, Namibia	S.W.Africa	1830	O
3.295	Reykjavik	Iceland	2000	J,K,P,T
3.315	AIR Bhopal	India	0048	O
3.315	SLBS Freetown	Sierra Leone	0625	O
3.320	Pyongyang	N.Korea	1530	T
3.325	FRNC Lagos	Nigeria	2300	O
3.330	R.Kigali	Rwanda	1820	O
3.355	R.Botswana	Gabaron	1829	O
3.355	AIR Kurseong	India	1500	K,L
3.365	R.Rebelle, La Julia	Cuba	0606	J,T
3.365	AIR New Delhi	India	1455	L
3.385	GBC Radio 2	Ghana	2015	J,K,M,O,Q
3.380	R.Malawi	Malawi	1730	O
3.905	AIR Delhi	India	1630	K,O
3.915	BBC Kranji	Singapore	1740	O
3.940	PBS Hubei Wuhan	China	2200	T
3.950	PBS Qinghai Xining	China	2350	T
3.950	Xinjiang	China	2306	O
3.955	BBC Skelton	England	2005	D,J
3.960	Xinjiang, Urumqi	China	2311	O
3.960	RFE/RL Munich	W.Germany	2010	D,J
3.965	RFI Paris	France	2010	D,J
3.970	RFE Munich	W.Germany	2247	J
3.975	BBC Skelton	England	0538	J
3.980	VOA Munich	W.Germany	2010	B,D,I,J
3.985	R.Beijing, China	via SRI Bern	2210	R,U
3.985	SRI Bern	Switzerland	2005	D,I,K
3.985	DW (Julich)	W.Germany	2015	B,D,G,I,J
4.010	R.Frunze 1	Kirghizia	1820	O
4.055	R.M'kva 1 (Kalinin)	Russia	2205	I,J
4.220	PBS Xinjiang	China	1510	L
4.485	R.Moskva (Ufa)	Russia	1630	T
4.500	Xinjiang	China	2329	G,L,O
4.520	R.Moskva 2 USSR	USSR	1930	Q
4.545	Alma Ata	USSR	1935	Q
4.600	R.Baghdad	Iraq	2020	G,Q,O,Q
4.635	R.Dushanbe	Tadzhikistan	1745	Q,Q
4.735	Xinjiang	China	2334	G,H,O
4.740	R.Afghanistan	via Russia	1757	J
4.750	PBS Xizang, Lhasa	China	2330	T
4.760	Yunnan Kuming	China	1800	J,O
4.760	AIR Port Blair	India	1630	T
4.765	Brazzaville	PR Congo	1900	H,I,J,K,L,M,O,P,Q
4.770	FRNC Kaduna	Nigeria	1700	J,K,L,N,O,P,Q,S
4.775	Kabul City Service	Afghanistan	2135	M
4.775	RRI Jakarta	Indonesia	1830	O,Q
4.780	RTD	Djibouti	1900	G,M,O
4.785	R.Baku	Azerbaijan	1920	H,O
4.790	Azad Kashmir R.	Pakistan	0100	O
4.790	TWR Manzini	Swaziand	1822	M
4.795	R.Douala	Cameroon	2005	H,J,M,O,P
4.795	AIR Shillong	India	2130	M
4.795	R.Moscow (Kharkov)	Ukraine	1730	J,K
4.796	R.Nueva America	Bolivia	0300	O
4.800	AIR Hyderabad	India	2142	P
4.800	LNBS Lesotho	Maseru	1800	M
4.800	R.Moscow Yakutsk	Siberia	1935	O,Q
4.810	R.Orion, Jo'burg	S.Africa	0012	H,O,P
4.810	R.M'kva 1 (Yerevan)	Armenia	1855	M,O
4.810	R.Yerevan	Armenia	1910	H,J,P,S
4.815	R.diff TV Burkina	Ouagad'gou	2131	C,M
4.820	R.Moskva 4 USSR	USSR	1956	H,P
4.825	R.Moscow (Yakutsk)	Siberia	2009	C,I,J,K,M,P
4.825	Ashkhabad	Turkmenia	1814	H,J,M,T
4.825	R.Kiev	Ukraine	0155	H
4.830	R.Tachira	Venezuela	2300	G,H,J,K,O
4.835	R.Tezulutan, Cobari	Guatemala	0133	O
4.835	RTM Bamako	Mali	1905	B,C,E,H,I,J,K,M,O,P,Q
4.840	AIR Bombay	India	2017	P
4.485	R.Kek'chi, Fray Bme	Guatemala	0200	T

1800-1830) SIO444 at 1800 in E.London; RCI via Sackville 15.325 (Uk, Fr, Eng 1715-2159) 55555 at 1805 in Bridgwater; R.Korea, Seoul 15.575 (Ger, Fr, Russ, Eng, Sp, Port, It 1800-2330?) 44433 at 1840 by **Darran Taplin** in Brenchley; RNB Brasilia, Brazil 15.265 (Eng, Ger 1800-2020) 23333 at 1928 in N.London; Vatican R, Italy 15.090 (Eng, Fr to Africa 2000-2100) SIO4343 at 2040 in Torquay; RAE Buenos Aires, Argentina 15.345 (Ar, Eng, It, Fr, Ger 1700-2200) 33444 at 2100 in Huddersfield; WYFR via Okeechobee 15.566 (Eng 2100-2200?, also to Africa) 54444 at 2105 in Worthing; R.Kuwait 15.505 (Ar 1800-2300, also to N.Africa), heard at 2130 by **Roy Patrick** in Derby; R.Damascus, Syria 15.095 (Eng 2110-2210, also to USA)

Freq MHz	Station	Country	UTC	DXer
4.845	RTM Kuala Lumpur	Malaysia	1345	A
4.845	ORTM Nouakchott	Mauritania	1940	B,C,F,G,H,J,K,M,O,P,Q
4.850	R.Yaounde	Cameroon	2002	C,H,I,J,K,M,O
4.850	AIR Kohima	India	2112	M
4.850	R.Tashkent 2	Uzbekistan	2256	D,P
4.855	R.Sana Yemem	Yemen	0115	F
4.860	AIR New Delhi	India	1645	J,O
4.860	R.Moskva 2 (Chita)	Russia	1815	J
4.860	R.Moscow	Russia	2112	C,K,M
4.865	PBS Lanzhou	China	2100	C,H,I,J,K,P
4.870	R.Cotonou	Benin	2004	C,H,I,J,K,L,M,O,Q
4.875	R.Tbilisi	Georgia	1705	O
4.885	R.Clube do Para	Brazil	1100	F,G,T
4.885	Voice of Kenya	Kenya	1730	M,O
4.895	R.Bars, Manaus	Brazil	0140	F
4.895	Voz del Rio Arauca	Colombia	0137	F,H,O,T
4.895	R.Moscow (Kalinin)	Russia	1952	C,I,M
4.900	V. of the Strait 2	China	2205	C,H,K
4.900	SLBC Colombo	Sri Lanka	0033	O
4.905	R.Nat. N'djamena	Chad	1807	C,H,J,K,L,M,O,Q
4.910	R.Zambia, Lusaka	Zambia	2002	M,O
4.915	R.Ghana, Accra	Ghana	1749	C,E,J,K,M,Q,S
4.920	ABC Brisbane	Australia	1945	M,O
4.920	AIR Madras	India	1900	J,O
4.930	R.Moscow	Russia	2010	C,H,I,J,M,P
4.935	Voice of Kenya	Kenya	1800	C,K,M,O,P
4.940	R.Afghanistan	via Russia	2105	P
4.940	R.Kiev 2	Ukraine	1910	C,I,J,K,M,O
4.940	R.M'kva 2 (Yakutsk)	Russia	0025	F,H
4.950	R.Nac Luanda	Angola	1950	M
4.950	RTM Kuching	Malaysia	1405	A
4.958	R.Baku	A'bayd'zhan	1945	J,L,M,O,Q
4.960	AIR New Delhi	India	2353	F,G,H,J
4.960	R.Baku 2	Russia	2105	I
4.975	R.Uganda, Kampala	Uganda	1915	K,O,S
4.975	R.Dushanbe	Tadzhikistan	0025	H,O
4.980	PBS Xinjiang	China	0035	I
4.980	Ecos del Torbes	Venezuela	1225	F,G,H,J,K
4.985	R.Brazil Central	Brazil	2120	F
4.990	FRNC Lagos	Nigeria	1930	K
4.990	R.Ancash, Huaraz	Peru	0230	T
5.000	YVTO Caracas	Venezuela	0450	N,T
5.005	R.Nacional, Bata	Eq. Guinea	0500	T
5.010	R.Garoua	Cameroon	1936	B,C,H,J,L,M,O,P
5.010	R.Madagascar	Madagascar	2157	P
5.015	R.Moskva 2 Arkh'sk	Russia??	0003	J
5.025	R.Parakou	Benin	2043	O,T
5.025	R.Rebelle, Habana	Cuba	0215	F
5.025	R.Uganda, Kampala	Uganda	2045	O
5.035	R.Bangui	C.Africa	2055	C
5.035	R.Alma Ata	Kazakhstan	1938	H,O
5.040	V. del Upano, Macas	Ecuador	2206	P
5.040	R.Tbilisi 1	Georgia	1940	C,H,M,O,P
5.045	R.Cultura do Para	Brazil	0007	K,O
5.047	R.Togo, Lome	Togo	1911	C,J,L,M,P
5.050	R.Tanzania	Tanzania	2009	M,O
5.052	SBC R-1	Singapore	1600	T
5.055	Faro del Caribe	Costa Rica	0130	F,H
5.055	Cayenne(Matoury)	Fr. Guiana	0510	J
5.060	PBS Ximiana	China	2322	O
5.065	R.Candip, Bunia	Zaire	1911	J,M
5.090	R.Pakistan Isl'bad	Pakistan	0145	F
5.260	R.Alma Ata 2	Kazakhstan	2000	L,T
5.800	PBS Xinjiang	China	2300	T

DXers:

- A: Jana Arunachalam, Thumrait, Oman.
- B: Charles Beanland, Gibraltar.
- C: Darren Deasley, Bridgwater.
- D: Kenneth Buck, Edinburgh.
- E: Bill Clark, Rotherham.
- F: Antonio De Abreu-Teixeira, Evesham.
- G: David Edwardson, Wallsend.
- H: Ron Galliers, N. London.
- I: heila Hughes, Morden.
- J: Eddie McKeown, Co. Down.
- K: Sid Morris, Rowley Regis.
- L: John Nash, Brighton.

- M: Fred Pallant, Storrington.
- N: Roy Patrick, Derby.
- O: Peter Perkins, Hemel Hempstead.
- P: Hugh Quinn, Co. Kildare.
- Q: John Sargeant, Bolton.
- R: Chris Shorten, Norwich.
- S: Darren Taplin, Brenchley.
- T: Jim Willett, Grimsby.
- U: Michael Williams, Redhill.

SIO333 at 2145 in Sheffield. Some for other areas stem from R.Romania Int, Bucharest 15.380 (Eng to Pacific areas 0645-0715) SIO333 at 0645 in Gt.Yarmouth; BBC via Limassol 15.575 (Eng to E.Africa 0300-1500) 35543 at 0735 in Wallsend; RFPI Costa Rica 15.030 (Eng 1800-1200) SIO344 at 0923 in Chelmsford; R.Tashkent, Uzbek 15.470 (Eng, Ur, Hit to S.Asia 1200-1500) 32222 at 1200 in Morden; R.Moscow 15.465 (Eng to Africa 1400-1500) 55555 at 1445 in Brighton; R.Pakistan, Islamabad 15.555 (Eng to M.East 1600-1630) SIO212 at 1612 in Macclesfield; DW via Julich 15.105 (Eng to S.Asia 1600-1650) 44333 at 1644 in Oxted; BBC via Woofferton 15.070 (Eng to E.Africa 0700-2315) SIO434 at 1750 in Rowley

Regis; FEBA Mahe, Seychelles 15.120 (Fa to Iran 1800-1830) 31342 at 1800 in Guildford; R.Yugoslavia, Belgrade 15.140 (Eng to S.Africa 1930-2000) 54544 at 1932 in St.Andrews; VoA via Tinang 15.185 (Eng to S.Asia 2100-0000) SIO222 at 2124 in Elgin; TWR Bonaire, Ned.Antilles 15.355 (Ger to Congo, Surinam 2325-0000) SIO433 at 2330 in Hereford; RFI via Montsinery 15.200 (Sp to C.Am 0100-0200) SIO322 at 0145 by **Antonio De Abreu-Teixeira** in Evesham; VoA via Greenville 15.205 (Eng to Caribbean 0000-0230) 43444 at 0145 in Thumrait.

Good 13MHz (22m) DX reception has been noted. Writing from Hemel Hempstead, **Peter Perkins** says, "Radio Australia's broadcasts on 13.755*

long medium & short

seem to be almost predictably good - 44434 at 1500". (* Via Carnarvon - Eng to S.Asia 1430-2100). Three others via Carnarvon were also logged: 13.605 (Eng to N.Asia 0900-1000) 33333 at 0912 in N.London; 13.605 (Chin to C.Asia 1000-1100) 45343 at 1030 in Bridgewater; 13.705 (Eng to SE.Asia 2100-2300) SIO343 at 2150 in Torquay.

The occupants now include R.Kuwait 13.620 (Eng 7-2100) 45444 at 2000 in Derby. Also noted were WCSN 13.615 (Eng 7-1000) SIO4444 at 0950 in Winchester; ISBS Reykjavik 13.830 (Ic to Europe 1215-1245) SIO444 at 1235 in Macclesfield, also 13.855 (Ic to Europe 1855-1930) 55555 at 1900 in Norwich; DW via Julich 13.610 (Eng to S/E.Africa 1500-1550) 44444 at 1515 in Thumrait and 54544 at 1523 in Brighton; UAE R. Dubai 13.675 (Ar, Eng to Europe 0615-1640) 44444 at 1630 in Brenchley; KHBI Saipan 13.625 (Eng to SE Asia) SIO 322 at 1710 in Rotherham; KSDA Agat, Guam 13.720 (Eng to S.Asia, E.Africa 1700-1900) 33222 at 1815 in Morden; WHRI Red Lion 13.760 (Eng to Europe, Canada 1700-0000) 33443 at 1905 in Worthing; WCSN 13.770 (Eng to Europe, M.East, Africa 2000-0000) SIO333 at 2108 in Redhill; R.Austria Int via Moosbrunn 13.730 (Eng to Europe 1130-1200) 44444 at 1130 in Co.Down; also 13.730 (Eng to S. Africa 1830-1900) SIO434 at 1835 in Rowley Regis; R.Nederlands 13.700 (Du to S. America?) 3333 at 2242 in Bourne.

Target

Many of the **11MHz (25m)** broadcasts to Europe reach their target well: RFI via Allouis 11.670 (Fr, Eng 0600-1400) was 44444 at 1302 in Woodhall Spa; R.Romania Int, Bucharest 11.940 (Eng 1300-1400) 43333 at 1350 in N.London; Voice of Greece, Athens 11.645 (Gr, Eng 1500-1550) 44433 at 1536 in St.Andrews; R.Pakistan, Islamabad 11.570 (Eng, Ur 1700-1900) 55544 at 1703 in Brenchley; ISBS Reykjavik 11.402 (Ic 1855-1930) 54344 at 1900 in Norwich; AIR via Aligarh 11.620 (Hi, Eng 1845-2230) 44334 at 1935 in Basingstoke; R.Finland via Pori 11.755 (Eng 1930-2000) SIO434 at 1950 in Redhill; R.Portugal via S.Gabriel 11.740 (Eng 2000-2030) SIO434 at 2000 by **Tom Smyth** in Co. Fermanagh; R.Damascus, Syria 12.085 (Eng 2003-2105) 35233 at 2022 in Co.Down; VOA via Tangier 11.710 (Eng 2100-2200) SIO333 at 2145 in N.Bristol; Voice of Israel, Jerusalem 11.603 (Eng 2130-2200) 54544 at 2150 in Bridgewater; R.Japan via Moyabi, Gabon 11.735 (Jap, Eng 2200-0000) SIO444 at 2300 in Hereford.

Also logged were the BBC via Masirah Is 11.760 (Eng to M.East 0900-1400) 44445 at 1100 in Thumrait; Voice of the Mediterranean, Malta 11.925 (Eng, Arto N.Africa 1400-1600) 33333 at 1400 in Morden; KSDA AWR Agat, Guam 11.980 (Eng to C/E.Asia 1500-?) SIO333 at 1500 in Rotherham; R.Beijing,

Transatlantic DX Chart

Freq kHz	Station	Location	Time (UTC)	DXer
		USA		
1010	WINS	New York, NY	0140	D
1600	WWRL	New York, NY	0155	D
		Canada		
580	CFRA	Ottawa, ON	0135	D
590	VOCM	St.John's, NF	0020	D
930	CJYQ	St.John's, NF	0020	A,B,C,D
		C.America & Caribbean		
1610	Caribbean Beacon	Anguilla	0135	D

DXers:

A: Tim Bucknall, Congleton.
B: Ron Damp, Worthing.
C: Eric Duncan, St.Andrews.
D: Jim Willett, Grimsby.

China 11.575 (Eng to E/S.Africa? 1600-1700) SIO433 at 1600 in Sheffield; KHBI Saipan 11.580 (Eng to N/SE Asia, India, Russia 1600-1800) 33343 at 1600 in Oxted; BBC via Kranji 11.750 (Eng to S/SE.Asia 0900-1700) SIO333 at 1625 in Rowley Regis; R.Kuwait 11.990 (Ar to M.East, N.Africa 1315-1750) 32542 at 1640 in Brighton; Vatican R, Italy 11.625 (Eng to Africa 1700-1800) 43333 at 1756 by **Gordon Milton** in Emsworth; Wings of Hope, Lebanon 11.530 (Eng to M.East 2000-2200) SIO333 at 2020 in Edinburgh;

AIR via Aligarh 11.715 (Eng to Pacific areas 2045-2230) 55555 at 2206 in Wallsend; R.Sofia, Bulgaria 11.720 (Port to S.Am 2200-2245) 55555 at 2200 in Bourne; R.Havana 11.930 (Eng to C.Am 2200-2300) 52444 at 2203 in Huddersfield; R.Veritas, Asia 11.790 (Chin 2100-2255) 44444 at 2211 in Guildford; R.Diff Nac, Bogata 11.822 (Sp 0930-0500) SIO322 at 2326 in Evesham.

Good reception from distant places has been noted in the **9MHz (31m)** band. R.New Zealand Int via Rangitaiki 9.700 (Eng to Pacific areas 0800-1205) rated 34323 at 0800 in Hemel Hempstead; R.Australia via Shepparton 9.580 (Eng to Pacific areas 0800-2100) was 33333 at 0943 in Co.Down; also via Carnarvon 9.860 (Eng to S.Asia 1400-2100) 44323 at 1431 in Basingstoke; Voice of Vietnam, Hanoi 9.840 (Eng to Europe 1900-1930) 43333 at 1912 in St.Andrews; R.Beijing, China 9.920 (Eng to Europe 2000-2200) 43444 at 2110 in Woodhall Spa; AIR Delhi 9.950 (Hi, Eng to Europe 1945-2230) 45554 at 2209 in Wallsend; R.Rumbos, Venezuela 9.660 (Sp 0855-0600) SIO322 at 2255 in Rotherham;

R.Nac. del Paraguay 9.735 (Sp 0800-0400) SIO333 at 0040 in Evesham.

Some of the **7MHz (41m)** broadcasts to Europe are in English: Polish R, Warsaw 7.285 (1500-1555) 44344 at 1500 in Morden; RAI Rome 7.275 (1935-1955) 43444 at 1950 in Woodhall Spa; Voice of Israel, Jerusalem 7.465 (2000-2030) SIO323 at 2020 in Co.Fermanagh; R.Czechoslovakia, Prague 7.345 (2100-2225) SIO434 at 2119 in at 0830 in Hereford; RFP Costa Rica 7.375 (u.s.b.) SIO243 at 0835 in Chelmsford; ELBC Liberia 7.275 (Eng 0800-1000) SIO322 at 0930 in Evesham; VOA via Bethany, USA 7.405 (Sp to C.America 0930-1130) SIO212 at 1025 in Macclesfield; WSHB Cypress Creek, USA 7.395 (Eng to USA, Caribbean 0000-0200) 54444 at 0030 in Worthing.

49m Band

Amongst the **6MHz (49m)** logs were FRCN Ibadan, Nigeria 6.050 (Eng 0430-2305) SIO222 at 0700 in Hereford and R.Nac Amazonia, Brazil 6.180 (Port 0800-?) SIO333 at 2340 in Evesham.

Equipment Used

Jana Arunachalam, Thumrait, Oman: Panasonic RF B45 or Sony ICF-7600DS + 6m wire.
Darren Beasley, Bridgewater: Philips D2935 + a.t.u. + 10m wire.
Vera Brindley, Woodhall Spa: Sangean ATS803A + whip or r.w.
Kenneth Buck, Edinburgh: Lowe HF-225 + r.w. in loft or screened loop.
Tim Bucknall, Congleton: Sony ICF-2001D + AN-1.
Bill Clark, Rotherham: Sony ICF-2001D + built-in whip.
John Coulter, Winchester: Yaesu FRG-7 + r.w.
Bernard Curtis, Stalbridge: Grundig Satellit 2100 + r.w.
Ron Damp, Worthing: Racial RA17 + Hexagonal Loop or Sangean ATS803A + 30m inverted V dipole.
Antonio De Abreu-Teixeira, Evesham: Sony ICF-2001D + 9.5m wire.
Eric Duncan, St.Andrews: Icom IC-R71E + a.t.u. + 30m wire.
David Edwardson, Wallsend: Trio R600 + inverted V trap dipole.
Ron Galliers, London: Philips D2935 + a.t.u. + 30m wire.
Chris Heigh, Huddersfield: Lowe HF-225 + Lowe W-225 or 20m wire.
Robin Harvey, Bourne: Matsui MR4099 + s.w. loop.
Francis Hearne, N.Bristol: Sharp WQT370 + r.w.
S. M. Hockenhill, Bristol: HMV 1124 + 2m wire or Philips D2345
Sheila Hughes, Morden: Sony ICF7600DS + loop or Panasonic DR48 + 15m wire.
Roderick Illman, Oxted: Kenwood R5000 + 17m wire.
Cyril Kellam, Sheffield: Sony ICF-7600DS + AN-1 or 25m wire.
Bryan Kimber, Hereford: Zenith R7000 or Realistic SX190 + 25m wire.
Eddie McKeown, Co.Down: Tatung TMR7602
George Millmore, Wootton, IOW: Tatung TMR7602 + loop or Racial RA 17L + v.l.f. converter + loop.
Ken Milne, Basingstoke: Matsui MR4099 + 6m wire.
Gordon Milton, Emsworth: Sony ICF-2001D + r.w.
Sid Morris, Rowley Regis: Kenwood R5000 + 31m wire.
John Nash, Brighton: Kenwood R5000 + Datong AD370 or Lowe Balun + r.w.
Michael Osborn, Chelmsford: Yaesu FRG-8800 + r.w.
Fred Pallant, Storrington: Trio R2000 + r.w. in loft.
Roy Patrick, Derby: Lowe HF-125 + 22m wire.
Peter Perkins, Hemel Hempstead: Icom R-72E + a.t.u. + 17m wire.
Peter Pollard, Rugby: Sony ICF-2001D + AN-1.
Peter Polson, St.Andrews: Lowe HF-225 + indoor Joystick.
Hugh Quinn, Co.Kildare: Lowe HF-225 + FRT-7700 + 25m wire in loft.
Richard Radford-Reynolds, Guildford: Sangean ATS803A + 6m wire.
Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.
Alan Roberts, Quebec, Canada: Lowe HF-225 + 31m, 19m or 11m dipole, or r.w.
John Sargeant, Bolton: Lowe HF-225 + 20m wire.
Chris Shorten, Norwich: Matsui MR4099 + 10m wire.
Tom Smyth, Co.Fermanagh: Morphy Richards R191 or Vega Selena + whip.
Cliff Stapleton, Torquay: Trio R1000 + dipoles or 25m wire.
John Stevens, Largs: Hammarlund HQ 180 or Icom R-70 + loop or r.w.
Darran Taplin, Brenchley: Yaesu FRG-7700 + FRA-7700 or FRT-7700 + 30m wire.
Phil Townsend, London: Codar CR 70A + PR40 + a.t.u. + r.w. or Pye Venturer portable.
Ted Walden-Vincent, Gt.Yarmouth: Grundig Satellit 1400L + r.w.
John Wells, E.Grinstead: RCA AR88D + loop, also l.w. converter.
Jim Willett, Grimsby: RCA AR77 + 4m loop or Trio 9R-590S + a.t.u. + dipole.
Michael Williams, Redhill: Realistic OX-400 + built-in whip.
Julian Wood, Elgin: Kenwood R2000 + Yaesu FRT-7700 a.t.u. + 6m whip.

Station Addresses

BBC Greater Manchester Radio (GMR),
PO Box 90,
New Broadcasting House,
Oxford Road, Manchester
M60 1SJ.

ILR London Talkback/
Newstalk (LBC),
Crown House, 72
Hammersmith Road,
London W14 8YE.

Radio Rumbos,
Ap. 2618,
Caracas 1010A,
Venezuela.

Worldwide Christian Radio (WWCR),
1300 WWCR Avenue,
Nashville, TN 37218, USA.

Radio CIGO,
Box 1410,
Port Hawkesbury,
NS B0E 2V0,
Canada.

Radio WWRL,
Woodside,
New York,
NY 11377, USA.

Maritime Beacons

Long Wave Maritime Beacon Listening

Brian Oddy G3FEX

Three Corners, Merryfield Way, Storrington, West Sussex RH20 4NS

Major changes to the operation of the l.w. maritime radiobeacons around our shores and those of many other countries were introduced on April 1. By comparing the original system with the new, beacon DXers will be able to appreciate how these changes will affect their listening activities.

Until that date the radiobeacons operated either within a group (maximum of 6) or as a single beacon. Their transmissions were therefore either sequential or continuous. The carrier of each beacon was amplitude modulated (a.m.) with a tone, thereby producing a double sideband (d.s.b.) signal. It was keyed in Morse code (m.c.w.), so that the beacon could be identified by its two or three letter callsign. The duration of each beacon signal was one minute. It consisted of the callsign keyed three to six times (22secs), a long dash (25secs), the callsign keyed once or twice (8secs) and a silent period (5secs).

New Frequencies

Since April 1 the use of the modulating tone (m.c.w.) has ceased and only the carrier of each beacon is radiated. The beacons now operate individually and continuously. Each carrier is keyed in Morse code (c.w.) so that it can be identified by its callsign. The callsign is sent at least twice (13secs), followed by a long dash (47secs). To limit mutual interference, most of the beacons have been moved to new operating frequencies, but their callsigns remain unchanged.

The maritime radiobeacon band has been widened slightly and is now 283.5 to 315.0kHz. However, the long range Consul radiobeacon (LEC) at Stavanger is still operating on 319.0. Formerly the channel spacing was 2.3kHz, but it has now been reduced to only 0.5kHz. Quite a few of the original beacons have been closed down, but in order to accommodate the remainder it has been necessary to allocate shared frequencies to some beacons which are geographically well apart. So how then will these changes affect DXers?

Boat Frequency Oscillator

Perhaps the most significant effect is that the beacon signals can no longer be received with a simple a.m. portable. An unmodulated keyed carrier (c.w.) will simply produce a change in the level of the receiver background noise. In order to decode a c.w. signal it is necessary to heterodyne the signal with the output from an oscillator prior to detection, so that an audible beat note is heard via the loudspeaker. In a superhet this is usually accomplished by coupling the output from a beat frequency oscillator (b.f.o) operating close to the receiver intermediate

frequency (i.f.) into, or just ahead of, the detector stage.

The b.f.o. can be operated above or below the receiver i.f. and still produce the same beat note - for example if the last i.f. is 455kHz, then the b.f.o. could operate at 456kHz or 454kHz to produce a 1kHz beat note. This infers that an unwanted beacon signal on the high side of a wanted one could be avoided by simply moving the b.f.o. to the low side of the i.f. - this is especially true if the tuning of the b.f.o. and/or the main receiver is adjusted slightly so as to zero beat the unwanted signal.

It may be quite a simple matter to add a b.f.o. to an existing a.m. portable so that the radiobeacon signals can be received. The level of the signal from the b.f.o. should only be sufficient to provide a good beat note with an average beacon signal, otherwise an excessive amount of hiss will be evident, which will mask the weaker signals.

Because a c.w. signal has no sidebands it is possible to increase the selectivity of the receiver. This will enable the signals to be separated more easily, but an added advantage is that a marked improvement in signal to noise ratio will occur. A simple way to increase the selectivity of a superhet is to install a very narrow filter in the i.f. chain. Modern c.w. filters often consist of a number of quartz crystals connected in a lattice network so as to produce a response which has a narrow peak and very steep sides - filters with a bandwidth of 500Hz at -6dB and 1.5kHz at -60dB are frequently used.

Audio Filter

An alternative approach is to employ an audio filter between the receiver headphone jack and the headphones. A number of filters are available on the market - some of them include a notch filter for removing an unwanted beat note and a peak filter to enhance a desired signal.

In view of the numerous frequency changes, deletions and additions it became necessary to prepare a completely new chart for this issue. My thanks to **Kenneth Buck** (Edinburgh), **R. Connelly** (Co. Down), **Geoff Halligey** (Bridgend), **John Henry** (Nottingham), **Alan Jarvis** (Cardiff) and **A. Kent** (Harwich) for sending along information which helped to make this possible. Also my thanks to the twenty-five DXers who sent along their logs for the chart. When searching the band please remember that the chart only shows the beacons logged by DXers - there are many more awaiting your attention!

Freq kHz	Call sign	Station Name	Location	DXer
284.5	LZ	Lizard Lt	S. Cornwall	B,D,E,F,Q,Y
285.0	NO	Cabo de la Nao Lt	S. Spain	D,U
285.0	NP	Nieuport W. Pier	Belgium	P
286.0	TR	Tuskar Rock Lt	S. Ireland	B,D,F,Q,S
286.5	NK	Inchkeith Lt	F. of Firth	B
287.5	DO	Rosedo Lt	France	Y
288.0	HH	Hoek van Holland	Holland	Y
288.5	FI	Cabo Finisterre Lt	NW. Spain	D
288.5	YM	Ijmuiden Front Lt	Holland	Q,Y
289.0	BL	Butt of Lewis Lt	Is. of Lewis	B,Q
289.5	LO	Landsort S. Lt	Sweden	D,U
289.5	SN	Ile de Sein NW Lt	France	Y
290.0	FD	Fidra Lt	F. of Forth	H,K,O
290.5	DY	Duncansby Hd Lt	NE. Scotland	B
290.5	SB	S. Bishop Lt	Pembrok	A,B,D,E,J,K,P,Q,S,T,U,Y
290.5	VI	Cabo Villano Lt	N. Spain	D,S
291.5	SU	South Rock LV	Co. Down	B,J,K,S,U,Y
291.9	FG	Pt de Barfleur Lt	N. France	A,D,E,G,H,J,P,R*,S,T,U,X,Y
291.9	TI	Cap d'Antifer Lt	N. France	D,J,P,R*,Y
292.0	SJ	Souter Lt	Sunderland	B,I,K,M,U,Y
292.5	SM	Pt St Mathieu Lt	France	A,D,J,P,X,Y
293.0	CP	St. Catherine's Lt	I.O.W.	A,D,E,F,G,J,P,R*,T,V*,X,Y
293.0	RN	Rhinos of Islay Lt	Is. of Islay	B,W
293.5	RO	Cabo Silleiro Lt	N. Spain	D,O
294.0	PH	Cap d'Alprech	France	B,D,E,G*,J,K,M,P,Q,R*,S,T,U,V*,X,Y
294.5	BM	Brighton Marina	E. Sussex	L,X
294.5	PS	#Pt. Lynas Lt	Anglesey	K,Q
294.5	PT	#Souter Lt	Durham	B,J*
295.5	CB	La Corbiere Lt	Jersey C.I.	A,B,D,E,F,V*,Y
296.0	BH	Blavandshuk Lt	Denmark	B,H,U,Y
296.0	GR	Georee Lt	Holland	Y
298.0	GX	Ile de Groix	France	D,Y
298.5	RR	Round Is Lt	Is. of Scilly	A,B,D,G,P,Q,S,Y
299.0	AD	Ameland Lt	Holland	H,Y
299.5	NP	Nash Pt. Lt	S. Wales	A,D,E,F,G,J,T,U,V*,Y
299.5	VH	Utvær Lt	Norway	B,U
300.0	MZ	Mizen Head	S. Ireland	B,D,E,F,Q,Y
300.5	DU	Dungeness Lt	Kent	B,D,E,I*,J,L,M,P,R*,S,T,U,V*,X,Y
300.5	LA	Lista	Norway	I,X
301.0	CA	Pt de Creach	France	D,P,Q,V*,Y*
301.1	CN	Cregneish	I.O.M.	C,K,M,W
301.1	WK	Wicklow Hd Lt	S. Ireland	K,M
301.5	KD	Kinnards Hd Lt	N.E. Scotland	B,D,K
301.5	OB	Hoburg	Sweden	U
302.0	RB	Cherbourg Ft W Lt	France	A,D,E,F,G,J,P,Q,R*,T,U,V,X,Y
302.5	FB	Hamborough Hd Lt	Yorkshire	B,D,E,H,I,J,M,S,T,U,Y
303.0	YE	Ile d'Yeu Main Lt	France	B,J,P,V,Y
303.0	FV	Falsterborev Lt	Sweden	B,U
303.5	BJ	Bjornund Lt	Norway	D,U
303.5	FN	Feistein Lt	Norway	K,M
303.5	IA	Llanes Lt	N. Spain	N*
304.0	PS	Pt. Lynas Lt	Anglesey	B,M,S,U,Y
304.0	SB	Sumburgh Hd Lt	Shetland Is	B,K
304.5	GY	Castle Breakwater	Guernsey C.I.	Y
304.5	MY	Cabo Mayer Lt	N. Spain	D
305.0	C	Cabo Pricino Lt	N. Spain	Q
305.0	FP	Fife Ness Lt	S.E. Scotland	B,H,I,W
305.5	AL	Pt d'Ailly Lt	France	A,D,E,F,J,M,P,R*,S,T,U,V*,Y
306.0	EC	Elizabeth Castle	Jersey C.I.	Y
306.0	FN	Walney Is Lt	Off Lancs	B,E,I,K,M,S,U,Y
306.5	UT	Utsira	Norway	B
306.5	MV	Morzhovskiy	SSR Artic	D,Y
307.0	GL	Eagle Is Lt	Ireland	B,W
308.0	RD	Roches Douvres Lt	France	J,P,R
308.5	NZ	St Nazaire	France	D
309.0	WW	Ventspils Lt	Latvia	S
309.5	MA	Marstein Lt	Norway	B,J
310.0	ER	Pt de Ver Lt	N. France	D,F,J,P,R*,T,X,Y
311.0	GD	Girdle Ness Lt	N.E. Scotland	B,H,K
311.0	NF	N. Foreland Lt	Kent	C,D,G,J,R*,S,T,U,X,Y*
311.5	LP	Loop Hd Lt	S. Ireland	D
312.0	OE	Oostende	Belgium	B,D,J,P,S,T,U,X,Y
312.5	CS	Calais Main Lt	France	B,D,J,R*,S,T,U,Y
312.5	VS	Cabo Estay Lt	N. Spain	R,Y
312.5	LB	Liepaja	Latvia	O
313.0	PB	Portland Bill Lt	Dorset	D,E,F,G,J,P,R*,V*,Y*
313.0	TY	Tory Is Lt	N. Ireland	B
313.5	CM	Cromer Lt	Norfolk	B,J,S,T,U,Y
314.0	VG	Ile Vierge Lt	France	D,G,P,Y
319.0	LEC	Stavanger	Norway	A,B,C,D,H,I,J,K,M,R,T,X,Y

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

DXers:

- | | | |
|---------------------------------|-------------------------------------|----------------------------------|
| A: Darren Beasley, Bridgewater. | J: Ron Galliers, N. London. | S: Philip Rambaut, Macclesfield. |
| B: Kenneth Buck, Edinburgh. | K: Chris Haigh, Huddersfield. | T: Taff Rees, Worcester Park. |
| C: Tim Bucknall, Congleton. | L: Colin Jermy, Ruislip. | U: John Sargeant, Bolton. |
| D: Steve Cann, Southampton. | M: Cyril Kellam, Sheffield. | V: Cliff Stapleton, Torquay. |
| E: John Coulter, Winchester. | N: Pat Manning, Torpoint. | W: John Stevens, Largs. |
| F: Bernard Curtis, Stalbridge. | O: John Macdonald, Thurso. | X: Philip Townsend, E. London. |
| G: Ron Damp, Worthing. | P: George Millmore, Wootton, I.O.W. | Y: John Wells, E. Grinstead. |
| H: Chris Edwards, Inverurie. | Q: Ron Newsome, St. Just. | |
| I: David Edwardson, Wallsend. | R: Fred Pallant, Storrington. | |



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AIR-7

ICF-SW1E

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List price: £172 Low price: £149

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List price: £172 Low price: £149

ICF-2001D

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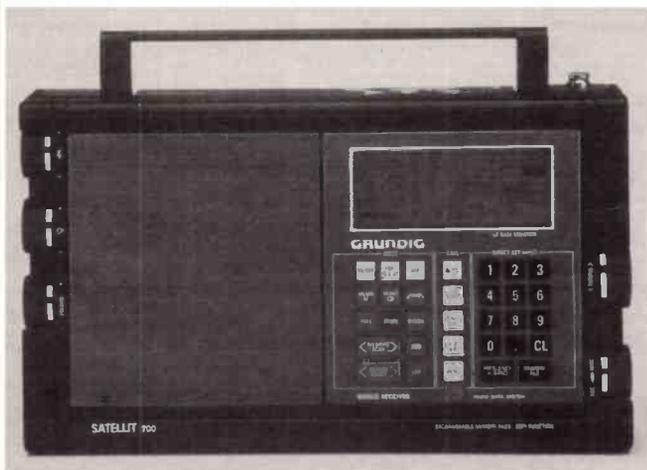
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- ARO6-90/98 – 200 Baud Simplex ARQ
- SI-ARQ/ARQ-S – ARQ1000 simplex
- SWED-ARQ/ARQ-SWE – CCIR 518 variant
- ARQ-E/ARQ1000 Duplex
- ARQ-N – ARQ1000 Duplex variant
- ARQ-E3 – CCIR 519 variant
- POL-ARQ – 100 baud Duplex ARQ
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- TDM342/ARQ-M2/4 CCIR 342-2 with 1/2/4 channels
- FEC-A – FEC100A/FEC101
- FEC-S – FEC1000 Simplex
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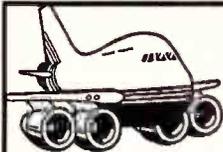
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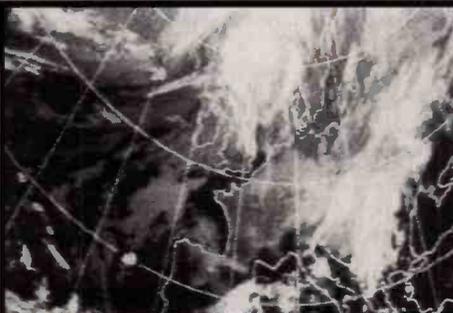
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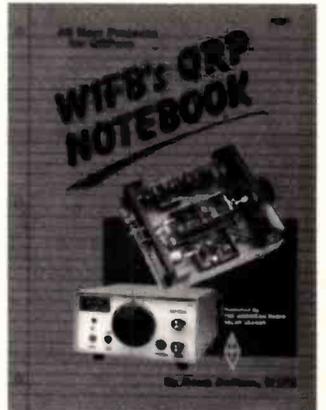
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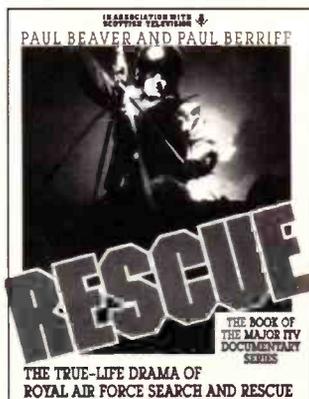
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Add extra selectivity to your receiver with the HOWES ASL5. The dual filters provide a narrow (300Hz) CW filter and sharper roll-off than crystal filters on SSB or other speech modes. A great addition to reduce noise and interference with all the popular general coverage receivers. No mods are required to the set, the ASL5 connects in-line with the external speaker or headphone socket.

ASL5 Kit: £15-90

Assembled PCB Module: £24-60

DXR10 10, 12 & 15M SSB/CW RECEIVER

The HOWES DXR10 is a super little receiver. It can receive signals from amateurs on three DX (long distance) bands, and makes an ideal receiver for those who would like to take up amateur radio with the new Novice Licence. Matching transmitter kits are available to convert it into a transceiver for 10 and 15M to give World-wide SSB and CW contacts.

DXR10 Kit: £26-60

Assembled PCB module: £39-90

SOME OTHER ACCESSORY KITS

	Kit	Assembled
AA2	HF Active Antenna 150kHz to 30MHz.	£8-50 £12-90
AA4	25-1300MHz Active Antenna for scanners	£19-80 £26-80
CBA2	Buffer to connect DFD5 to our receivers	£5-90 £9-50
CSL4	Additional SSB/CW filtering for our receivers	£10-50 £17-40
CTU30	HF Bands ATU for RX or 30W on TX	£31-50 £38-40
CV100	HF Converter for VHF Scanners	£26-50 £37-90
DCS2	"S Meter" for our receiver kits	£9-20 £13-80
DFD5	Digital Readout for use with our receivers	£41-50 £64-50
SPA4	Wide-band Receiver Pre-amp 4-1300MHz	£14-90 £20-90
ST2	Morse Practice/Side-tone Oscillator	£8-90 £14-30
SWB30	SWR/Power Indicator & load	£12-90 £18-50

PLEASE ADD £1-20 P&P for kits or £3-00 for hardware.

ANTENNA INTERFACE

CA30M Hardware Pack plus
CTU30, SWB30 & ST2 Kits.
CA30M: £28-90



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

72 & 73 from Dave G4KQH, Technical Manager.

dressler

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practical Wireless

M · O · R · S · E - W · E · E · K · E · N · D

Worried about the Morse test? Are you all 'keyed up' about Morse? Does the prospect of getting an 'A' licence 'bug' you? Do you want to put that final 'polish' on your 'keying'? And do you then want to have the opportunity to take your test, while you're enjoying a 'short break' weekend holiday?

If so, why don't you put your name down for the *Practical Wireless Morse Weekend*? For around the £160 mark, we're planning to provide meals and accommodation in a good quality, comfortable Hotel. The weekend will start on the Friday evening, and finish after lunch on the Sunday. You will have the opportunity to have some Morse tuition, before you take the Morse test itself. You'll also have the chance to see and try all the latest aids for c.w. working in amateur radio, meet the experts, other 'key' enthusiasts and have fun at the same time.

OTHER ATTRACTIONS

Originally planned for the late spring, we're now

looking at a weekend in September. There will be other attractions for friends and family members not joining in with the amateur radio events. Don't forget that we're very close to the delights of the New Forest, the Hampshire and Dorset sea-side resorts and some delightful 'Stately Home' attractions. With that in mind, we plan to organise some coach trips so that the weekend will have something for everyone.

EXCELLENT COMMUNICATIONS

Communications to this part of the UK are excellent. We've got superb train services from the north and Scotland and even abroad if need be! If you're interested, please send a fully refundable deposit of £25 per person to:

PW Morse Weekend, Enefco House, The Quay, Poole, Dorset BH15 1PP. Tel: (0202) 678558.

Alternatively, if you want to hear more about the Morse Weekend, why not call Rob Mannion G3XFD to talk about it? (Between 3 and 4pm please!)

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1.



2.



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3.



4.



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ICOM

HF-150

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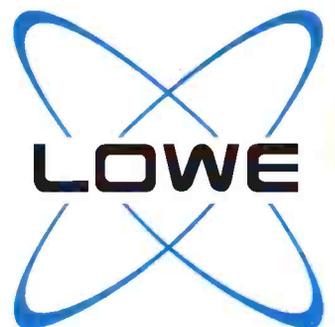
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