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DXing Civil Aircraft

A Link With The Past

Lightweight UHF Airband Antenna

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SWM SERVICES

Subscriptions
Subscriptions are available at £21 per annum to UK addresses, £23 in Europe and £25 overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both Short Wave Magazine and Practical Wireless are available at £36 (UK) £39 (Europe) and £41 (rest of world).

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

Back Numbers and Binders
Limited stocks of most issues of SWM for the past five years are available at £1.00 each including P&P to addresses at home and overseas (by surface mail).

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

Orders for p.c.b.s, back numbers, binders and items from our Book Service should be sent to: PW Publishing Ltd., FREEPOST, Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling.

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

Picketts Lock
Following the very successful SWM SSB Utilities Clinic at the Leicester Show, Mike Richards has agreed to run a SWM Decode Clinic on our stand at the London Amateur Radio Show at Picketts Lock.

RadioLine
Now that the new-style RadioLine is up and running, are you listening in regularly? If you are not bothering to dial the RadioLine number you will not only be missing out on useful information, but you will be losing the opportunity to enter the competitions and win valuable prizes. If you are a subscriber then it is even more important that you listen in - nobody claimed the reward in January so it was still up for grabs as I was writing this. What was it? Oh, nothing exciting - just a £100 voucher to spend with SWM!

Dick Ganderton G8VFH

letters

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

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

Those Tapes
Dear Sir
The 'true' story of those tapes you're hearing about!

It was a dark winter's night in '89 when Tarquin was on watch at GCHO, still smarting from that DX scoop young Smith in Morse Section had got with one of those new-fangled scanners.

"Hell, Penguin Island was a one and my Eddystone 840 hadn't even whistled on that frequency, even though we both used the same antenna. Hate Scanners! Hate Scanners! and Scanner Operators!" thought Tarquin. "It's not DX, no dial tuning, no knob twirling, no guess-work!"

Then an idea hit Tarquin. GCHO, The Home Office, DTI as well as the RIS all have a headache over both the media and scanner operators.

"A chance to get even, do the country a service, maybe a gong, or better - Sir Tarquin sounds OK".

Slowly the plan took shape. Why not broadcast a tape of 'Sir' - Tarquin hated him, too - talking to that sexy Sam from the escort agency. Hopefully, if broadcast on successive nights it would be picked up and passed on to the tabloids. Off he went to the 'ears only monitoring bunker', down in the basement, to get the cassette.

"Hell, so many to choose from, Number 2 from Middlesex will do", thought Tarquin. "How easy, just re-broadcast over the cellular frequencies"?

Too late! It's not 'Sir', but 'Him' talking to the bar-maid at the Hounds' Breath. "Even better, hope some-one hears this," thought Tarquin. Some 3 months later, young Smith mentioned a 'phone conversation he'd taped one night. Tarquin, mentioned that perhaps Smith should let the media know, might be some 'big bucks' in it. Nothing happened for 18 months, then all hell broke loose. MI5 investigated and Smith was cleared. The law stated it was over 6 months old and no use under Section 42.

The DTI and the Home Office banned the sale of scanners, except those on h.f. and w.b.f.m. 88-110MHz. All short wave listeners were exposed as traitors by a spokesman for the RSGB in a Telegraph article. Smith received a knighthood and Tarquin was given a new job on £100k and a CBE. Finally, the BBC World Service was defunct as no-one was left to send in for QSL cards!

D.A. McKenzie, London

Short Wave Magazine, March 1993
**Scanners to be Banned?**

**Dear Sir**

With reference to the item in the Sunday Mirror 24/1/93 headed "Squidgy bugs are banned".

The Home Secretary, Kenneth Clarke, states he will outlaw scanners before the end of the year.

This must be the most blatant display of face saving cover-up ever. Why should we be singled out as law-breakers when it is apparent to anyone that understands our hobby that the so-called 'Squidgy' recordings were not recorded by a short wave listener. Do not let this ill-informed man put a stop to our fascinating hobby and force the collapse of Short Wave Magazine, as without scanners we will not want to read SWM.

So, please let us all stand fast together and not let this happen, let every reader put pen to paper and let all of our wishes be heard.

**Peter Reeves**

**Kent**

---

**Dear Sir**

Following the 'Squidgy bugs are banned' clip from a Sunday paper with Kenneth Clarke about to ban scanners. This is just a face saving move by him after the recent publicity, although he admits that scanners were not involved.

Will owners who bought them legally be compensated? How will this affect amateur radio users? What will the impact be on the industry?

Lastly what of the future of the magazine?

It is up to SWM as a national magazine to unify all the users in the country in a petition. Could you format an open letter, stating our objections and the facts - I am sure that you could word this better than any of us - and publish in the magazine with spaces for names and addresses. Then all your readers would be encouraged to send a copy to Kenneth Clarke and also their own MP.

This type of protest has worked in the motorcycle world when the government tried to impose unrealistic restrictions the national motorcycle papers organised it to the surprise of some MPs, who had more letters than votes in their last election!

Please help us save our hobby.

**R.L Warren**

**Kent**

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**Ed:** See page 12, SWM is banned?

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**What was it?**

**Dear Sir**

Re the letter from John Redmond, in the January edition, I think I know what the piece of equipment is.

I was a Royal Signals wireless operator in the late 1940s, and, if memory serves me correctly, it is the top of a military Telephone D Mk V. The box of 'electrical equipment' is actually a Mk 1 Buzzer Unit, which serves as a speech transformer, and Minus, Mic and Receiver. It is centre-tapped for anti-sidetone. I have still got the notes I took during training so many years ago.

**Ted Wickett**

**Birmingham**

**Dear Sir**

In reply to John Redmond's letter, the board is in fact part of a field telephone, field telephone set D, which came in a metal box complete with a single earphone headset and a microphone handset to call the exchange and/or other users, the Morse key was either depressed which either jerked the eyeball or made an appropriate buzzing noise in both the earphone and earpiece on both the called and sender's telephones. The buzzer tone could be adjusted by turning the two knobs on the box to the right of the drawing. The field telephone could also receive conventional calling signals via the magneto bell, seen to the left of the drawing. Line connection was via the two terminals L1 and L2 or E seen to the left of the drawing. Single line could be used using earth return to complete the circuit, via the L2 or E terminal.

I hope this information will be helpful. Incidentally, I am missing the handset, together with connecting cord and 4-prong plug, from my telephone and would like to purchase same from any reader who may have one in his junk box.

**R M Templeman**

**Rickmansworth**

---

**Dear Sir**

Under the heading "It wasn’t us. It was them," The Daily Telegraph for January 16 dealt with the misuse of scanners in an interview with Peter Kirby, General Manager of the Radio Society of Great Britain. Among other things, we were told that radio hams build their own equipment, something that I think used to apply to most Russians. I wonder who buys the wide variety of rigs advertised in the magazines! From time to time one does hear about some ‘home-brew’, but it is more often about the purchase of a better ready-made rig. It would be interesting to collect some facts about the above.

Peter Kirby also states that hams greet one another by using a christian name in conjunction with the callsign.

There are usually valid reasons for us not obtaining the licence.

I would like to know the opinion of other readers regarding Peter Kirby's attitude and for myself think it is typical of my experience in the past. Having joined the Society by sponsor I found them rather unhelpful with a wrangle about subs and no representation regionally and later left, directing my problems to the magazines with better response.

Finally, I would like to express my thanks for the welcoming attitude of the majority of 'real hams' when I have contacted them by post or 'phone. One prized contact was with Andy on the Rothera Base in Antarctica when he followed up by bringing along a slide show after he had failed to reply to my letter.

**Bill Solley, Bristol**

Short Wave Magazine, March 1993

---

**Oops!**

**Deak Sik**

I enjoy youk magazine, and find the content useful and practical. In the January issue, I especially lired, and found the article about decoding Mokse interesting, but noted one small ekkok. It was only a small one, I mow, but it could, in certain circumstances, become quite noticeable, and indeed could even on occasions cause confusion!

Otherwise, please keep up the good work.

**Geoff Crowley**

**Iceland**

---

**SWLs, what are they?**

**Dear Sir**

Following the 'Squidgy bugs are banned' clip from a Sunday paper with Kenneth Clarke about to ban scanners. This is just a face saving move by him after the recent publicity, although he admits that scanners were not involved.

There are usually valid reasons for us not obtaining the licence.

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**Bill Solley, Bristol**

Short Wave Magazine, March 1993
Co. Antrim
Lagan Valley ARS: 2nd Wednesdays, 7.30pm. Harmony Hill Arts Centre, Harmony Hill, Larneg, Lisburn. G16DF. QTHR.

Avon
*RSGB City of Bristol Group: last Mondays, 7pm. The Small Lecture Theatre, Queen's Building, University of Bristol, University Walk, Bristol. March 29 - Radio Servicing by Castle Electronics. Dave Bailey. 0773. 07124.


CORNWALL

DERBYSHIRE

DEVON

EAST SUSSEX
Hastings E&RC: 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. Fridays, 6.30pm. Ashdown Forest Community, Downley Close, Hastings. March 17 AGM, Req. Kemp. 7th Foreword Rise, Crowhurst.

GREATER LONDON


Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. March 12 - SWR Measurements, 29th - Secret Listeners by G8DUO. Chris Frost. 081-397 0427.

HAMPshire
Hordene & DARC: 1st Thursdays, 7.30pm. Hordene Community School, Barton Cross, Hordene. March 4 - Control & Communications/First Action First Aid by the Hampshire Ambulance Service. S.W. Swain. (0705) 472846.

HEREFORD & WORCESTER

HERTFORDSHIRE

HORSEFORD
Oxfordshire AR: 2nd & 4th Tuesdays, 7.30pm. Conservative Club, Rye Road, Oxford. (0295) 262180.

KENT

*Sevensoaks & DARS: Sevenoaks DC, Council Offices, Argyle Road, Sevenoaks.
West Kent ARS: 3rd Fridays, 8pm. The School Annex, Albion Road, Tunbridge Wells, Kent. March 5 -

Informal Meeting, 19th - The History of Amateur Communications for the Kenya Safari Rally by G3GW. John Taylor G3HIV. (0892) 864960.

DERHAM AR: 8pm. St John's Ambulance Hall, Yaxham Road, Dereham. March 11 - Strange Noise on HF Explained by Mark Taylor G6JZG. (0262) 891926.

NORFOLK

*March 11/12: The London Amateur Radio & Computer Show will be held at Picketts Lock Centre, Picketts Lock Lane, Edmonton, London. There will be a large trade presence, free parking, lectures, disabled facilities, Bring & Buy and Special Interest Groups. Tel: (0232) 677170.

March 13: Lagan Valley ARS will be holding their annual Hamfest at 13th Floor, Recreational Hall, Lagan Valley Hospital, Lisburn.

March 14: Wythall Radio Club will be holding their annual radio rally at Wythall Park, Shit Street, Wythall. Doors open from 11am to 5pm. The usual traders in three halls, and a bar and refreshment facilities will be available. In addition there will be a Bring & Buy. Tel. in S22. Admission 50p. GOEY. Tel: 021-430 7267.

March 28: Pentectact & DARS 13th Annual Components Fair & Springtime Rally will be held at the Carleton Centre, Hares Lane. Doors open 11am to 4pm. Admission by prize programme, 3 prizes plus free prize draw for lady visitors. Traders, Bring & Buy, Bookstall, licensed bar, hot or cold snacks. Free car parking, 2m talk-in. Car boot spaces will be available. GINOE. Tel: (0937) 670068.

April 18: Marke-v-the-Sea Radio Rally will be held in the Marksie Leisures Centre, High Street, Marke-v-the-Sea near Saltburn. Doors open at 11am. There will be the usual traders, a Bring & Buy and refreshments. Talk-in will be on S22. Mic G7ON. Tel: (0287) 8101030.

May 3: The Dartmore Radio Club Rally will be held in the Marke Leisures Centre, High Street, Marke-v-the-Sea near Saltburn. Doors open at 11am. There will be the usual traders, a Bring & Buy and refreshments. Talk-in will be on S22. Mic G7ON. Tel: (0287) 8101030.

June 5: The Spalding & DARS are holding their Jubilee Mobile Rally at Springfield Showground, T Kettlewell. Tel: (0775) 722940.

June 27: The 38th Longleat Amateur Radio, Longleat House, near Warmington, Witshire. Shaun. Tel: (0225) 873809.

If you're travelling long distances to rallies, it would be worth phoning the contact number before setting off to check all is well.
As I have said before, probably the most difficult decision ever made by a radio listener is which radio to buy. I'm sure that most of you have heard of the World Radio TV Handbook, well they have brought out a book to help you make that decision. The yearly edition of WRTH only publishes reviews of sets that have appeared in the previous 12 months, but this new book has collated the reviews since 1987 and, in some case, re-tested upgraded models.

The chapters cover, amongst other things, such subjects as:

- Where to Buy a Receiver
- Steps to Picking the Right Receiver
- Sorting Out Reader Specifications
- Antenna Reviews
- Receiver Test Results
- Radio Related Computer Software
- Contact Addresses

Just to finish the book off, there is a prize competition, you could win a digital portable receiver to the value of $300, or cash equivalent. You just have to answer the five questions at the back of the book and send your name, address and answers to WRTH. Nothing simpler. Oh yes, you have to do this by August 15.

You'll see an advert for the book elsewhere in this issue as I have been reliably informed that SWM will be stocking the book in the SWM Book Service.

Radio Habana Cuba

Just a quick note to let you know Radio Habana Cuba are running two competitions. One is related to Cuban Health Tourism and the other to the islands most important tourist sites. The deadline is September 30 and the winners will be awarded all expenses paid trips to Cuba - not a bad prize really. To find out what you need to do, you have to write to Radio Habana Cuba, PO Box, 6240, La Habana, Cuba.

Novice Licence Changes

The Radiocommunications Agency have completed their review of the novice licence scheme for radio amateurs. A number of improvements, especially to the examination questions, have already taken place. The other changes are to the frequency allocation, there's still no 144MHz or 2m allocation - that's the bad news. But the good news is that some allocations have been increased. The 3.5MHz and 28MHz allocations have been increased so that Novices can use the accepted low power frequencies. The, the 50MHz allocation has been increased so that Novices can use Morse and 'phone as well as data. Finally, the 430MHz band, or 70cm, has been increased to allow Novices to use s.s.b., slow scan TV and fast scan TV.

Keith Goodwin 2MOACT is the first recipient of the G-QRP Club Novice Award. He's used 3 watts to make 50 contacts, which include 7 with North America (W) and Canada (VE), two with Indonesia (YC) and a total of 12 DXCC countries.

Keith can usually be found, most evenings, on 3.565-3.570MHz between 2000-2100. He invariably works a minimum of one contact a night and his logbook confirms he is quite adept at recognising/reading signals in some most frustrating band conditions. He now has over 300 contacts to his credit and continues to chase awards.

Keith is just 12 years old, yet passed his Novice City & Guilds at 11 and then his c.w. exam at 12 w.p.m. in June last year.

The photograph shows Keith borrowing his dad's Ten Tec whilst his own rig is away for repair.

Have we got any other novice licensees out there achieving great things? If so let's hear from you.

Radio 1 FM

I'm sure that many junior listeners are Radio 1 FM listeners too. Well, if you live in Sheffield you can now receive the stereo f.m. transmission. You have to tune into 99.5MHz. The transmitter is at Tapton Hill, not far from Sheffield city centre.

DX Tips for Free

The English language service of KNLS recently began airing a series of articles for those who are new to DXing. DX Tips for Beginners is written and recorded by Carl Mann, he's a veteran news reporter and has been DXing for more than 20 years.

Now a new printed version of DX Tips for Beginners is available. It's a 32-page book, containing twelve of Carl Mann's radio articles and has been printed for KNLS by Universal Radio Incorporated.

This book is free, but write quickly as they only have a limited number of copies. Failing that, if you'd like to write to me and tell me about your best DX, the first letter to arrives gets the copy I have here - and a very interesting read it is too! KNLS, Anchor Point, Alaska.
**news**

**Frequency Guide**

The UK Pocket Frequency Guide, 3rd edition is a small (just 90 x 153mm!) booklet containing coverage for both v.h.f. and u.h.f. civil and military airfields and frequencies. The first half of the book is an alphabetical list of airfields with their appropriate tower, ground, approach, etc., frequencies. The second half of the book contains UK ATTCC airways frequencies.

The guide costs £3.50 plus 24p for P&P.

The Aviation Hobby Centre, 1st Floor, Main Terminal, Birmingham International Airport B26 3QJ.

**London ARS Lectures**

**Saturday March 13**

1200-1400: DXpeditioning Pacific & Africa by Roger Western G3SXW.

Recalling two of his many DXpeditions, Roger Western gives an insight into operating from faraway and rarely activated countries. The talk includes a multimedia display and will give those who are considering mounting a DXpedition much to think about in terms of planning, operating techniques, managing pile-ups, log-keeping and QSLing.

1400-1600: Computer Logging by John Linford G3WGV.

Covering everything from the legal requirements of computerised logging through to the principles of operation, this talk will also touch upon the statistical and database functions that can be obtained from modern, computer logging software.

**Sunday March 14**

1200-0200: The Colour TV Repeater for London by Adrian Hurt GOOJV.

Following an introduction to ATV, the speaker will cover the development of an actual ATV repeater, including siting and technical considerations, but with particular emphasis on equipment building. The talk will also cover the conversion of satellite TV receivers to ATV, with a view to demonstrating how easy it is to get going on ATV.

1400-1600: Morse Clinic by Ron Ray G3NCL and Jim Lycett GOMSZ

This multi-faceted talk will start with the design theory behind Morse keys. The relative merits of different types of Morse keys will be discussed, as well the setting-up of them. This will be backed-up with hand-outs. Ideas about learning the code will be followed by a practice QSO, so bring your key!

**International Marconi Day**

The arrangements for the 1993 International Marconi Day, April 24, are now well in hand. Twenty-one stations are taking part this year. To claim the Marconi Day Certificate, stations must work 12 of the special stations. Any claims should be made to PO Box 100, Truro TR1 1RX, who will also act as a clearing centre for QSL cards. An s.w.l. award is available for hearing and logging 12 special stations. The cost of the award is £8, £3.50 or 12 IRCs and for the s.w.l. section, $5, £2.50 or 8 IRCs.

**GB4IMD** - Truro, Cornwall
**GM0IMD** - Poldhu Marconi Site, Cornwall
**GB0IMD** - Isle of Wight Marconi Centre
**GB2ID** - Rathlin Island Marconi Site, N. Ireland
**GB2MD** - Marconi Site on Salisbury Plain
**GB2MID** - Sandbanks Marconi Site, Poole
**GB0SFL** - South Foreland Lighthouse Marconi Centre
**CT1ITM** - Tertulia Radiomadoristica Gutieiro Marconi, Coimbra
**E12IMD** - Crookhaven Marconi Site, Eire
**E14IMD** - Galway Marconi Site, Eire
**E18IMD** - Sligo Marconi Site, Eire
**DA0IMD** - Borkum Island Marconi Site
**I0TCD** - Civitavecchia
**I1TTF** - Sestri Levante
**IY4FG** - Villa Grifone, Pontecchio
**IY6GA** - Golfo Aranci, Sardinia
**ZS6IMD** - Johannesberg
**V011MD** - St Johns, Newfoundland
**VE11MD** - Glae Bay, Nova Scotia
**K1VVM** - Cape Cod Marconi Site, Mass
**ZL2FCZ** - Babylon Marconi Memorial Site, New York
**K1SH** - Marshall Marconi Park, California

**Archimedes Programs**

Steve Hunt G3TXQ has a selection of amateur radio software available for the Archimedes. A Morse tutor, an antenna designer, frequency prediction and filter design programs are available on a compilation disk priced £9.95 inc VAT and P&P. For further details, send a s.a.e. to 21 Green Street, Milton Malsor, Northampton NN7 3AT.

**New Shop**

January saw the official opening of Norcall's new retail showroom in central Northampton. Specialising in all forms of wireless communications systems, Norcall are offering sales and service facilities for CB, amateur and business users alike.

Both new and used transceivers, receivers and associated items are available. The shop is open Monday to Saturday, 9am to 5.30pm and can be found at Victoria Chambers, 1 Victoria Road, Northampton. Tel: (0604) 26283 - 24hr answerphone.
N.E. Systems

On Thursday January 28, Mr T. Cooper of N.E. Systems was charged with various offences including obtaining property and money by deception and impersonating a police officer. He was remanded on bail to appear at Highbury Magistrates Court.

We recently carried a series of advertisements for this company and would appreciate hearing from anyone who responded to them. Please write to the SWM Advertisement Manager, Roger Hall, at PO Box 948, London SW6 2DS with full details and we’ll keep you informed of any further developments.

VA1S Certificates

From 1 December through 31 December 1992, the Marconi Amateur Wireless Society operated a special event station VA1S. Operation was on all bands s.s.b. and c.w. Approximately 10 000 QSOs were made to all parts of the world.

The event commemorated the 90th anniversary of the first successful transatlantic west to east transmission made by Marconi from Glace Bay, Nova Scotia to Cornwall Bay, Nova Scotia to Cornwall. VA1S was the call sign of the original Marconi Wireless Station at Glace Bay. The callsign VA1S is similar to the callsign VAS which was issued to Marconi for his station at Glace Bay.

The cost for the certificate, which is different to 1991’s, is $4 or BIRC's. Applications may be made to Marconi Amateur Wireless Society, 846 George Street, Sydney, NS B1P 1LP, Canada.

Certificate request need not include a return envelope. QSL requests should include a minimum of return postage and a self-addresses envelope.

New Airband Book

AIR-Waves - The Aviation Monitor's Handbook is a new American guide to tuning the aviation bands and understanding what's being heard. The book discusses the whole field of v.h.f./u.h.f. aero communications, from airport identifiers to runway numbering. Chapters cover airspace, the airport, air traffic control services, air navigation radio aids, radar transponder terminology, airport emergency communications, aviation weather, other frequency types, air to ground telephones, aviation charts amongst others.

The books costs $17.95 plus $3 postage (Access and Visa are welcome) from Tiare Publications, PO Box 493, Lake Geneva, WI 53147, USA.

Royal Air Force 75th Anniversary

The Royal Air Force celebrates its 75th birthday on April 1!

To commemorate this momentous occasion a Royal Review will take place at Royal Air Force Marham on April 1, where the Queen and other members of the Royal Family will be shown the past, present and future of the Royal Air Force.

There will be 850 personnel on parade, including members of the Air Training Corps and the Royal Air Forces Association, and there will be a spectacular flypast involving 148 aircraft including a Red Arrows flypast with the aircraft vertically stacked in a ‘75’ formation.

In addition, the Royal Air Force North Luffenham Amateur Radio Club (GBRAF/G3TCQ) will be on air for 24 hours and April 1 from 0001 hours to 2359 hours using an appropriate Special Event Callsign (hopefully GB75RAF) and QSL cards will be available.

It is hoped that the station will participate in all RAFARS nets on the day with as many other Royal Air Force Amateur Radio Clubs as possible.

Help will be needed on and around the day and it is intended to invite all serving amateurs to Royal Air Force North Luffenham to aid in operating and/or setting up the Special Event Station. Visitors will, of course, be welcome on the day but, as space is fairly restricted in the club house, prior notice would be appreciated.

Rob Luckham. Tel: (0780) 720041 ext 7283 or Mark Havard G6UYT ext 7455.

Flying High

BBC World Service Television has added a new high-flying audience to its millions of viewers on the ground. Now, passengers on all international Lufthansa flights will be able to keep up-to-date with the latest world events with BBC World Service Television. The news will be recorded live off-air and dubbed into German. Translations will be monitored by BBC World Service’s German Service.

The arrangement - made with Clintec Airline News, based in Frankfurt - marks the fourth major in-flight entertainment deal for BBC World Service Television. Currently, Cathay Pacific, British Airways and Royal Brunei also carry the service.

Stolen

Back in October, an expensive (and very desirable) receiver was stolen from the Edinburgh area. It was an Icom IC-R9000 receiver, serial No. 01060. Any information should be sent to Lothian & Borders police, Tel: (0506) 31200, PC M Forsyth PC3467 is dealing with it. It’s the big radio with spectrum display and 30kHz - 2GHz coverage, worth over £4000.
WORLD BEATING SHORTWAVE RECEIVERS

LOWE HF225
Everybody loves a winner! It probably came as no surprise to owners of the HF225 when our receiver won yet another award. After all, they are already appreciating the excellent sensitivity, superb IF filtering and the remarkable ease of operation. Add a keypad for direct frequency entry, an active whip antenna, synchronous detection and FM unit and you have one of the most versatile receivers on the market today – significantly less expensive than some of its far eastern competitors!

HF225 ........................................ £479.00
HF225 EUROPA .............................. £699.00
(A very special limited edition – telephone for details)

LOWE HF150
Small, but perfectly formed, the HF150 is really establishing itself as a premier receiver for serious listening. It’s complete with selectable sideband synchronous detection, three AM bandwidths and SSB filtering optimised for DXing utility stations. But we don’t just stop there. We’ve just made it a lot more useful by launching a quick release mobile mounting bracket, and now we’ve added computer control for complete versatility. Call at any of our branches for full details.
HF150 ........................................ £359

THE BEST OF THE REST...
KENWOOD R5000
Despite its age, still proving a tough, reliable HF receiver. IF Shift and Notch controls allow you to process the incoming signal and narrower CW and SSB filters are available for those who need them. Now the only shortwave set with provision for installing a VHF converter. (And our unique two year warranty!)
From ......................................... £949

ICOM R72E
An ideal choice for those who need lots of memory channels and scanning facilities. FM can be added as an option as can narrower CW filters. DDS technology ensures smooth tuning. Direct frequency entry from the keypad, clocks and timers enhance the operation.
R72E ......................................... £759.00

JRC NRD535
Probably the finest receiver available today. Designed to give you total control of the incoming signal, its many features include pass band tuning, notch filters, noise blankers, dedicated data modes including FAX and built in RS232 interface for computer control via our Multiscan software.
From ......................................... £1395

Short Wave Magazine, March 1993
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Here to help you are:
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Beryl G7LME, Julie
Tom G6PZZ, Richard G3OQT
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Derbyshire DE4 5LE
Tel: 0629 580800
Fax: 0629 580020

Steve G6URJ
KENT
Chatham Road,
Sandling,
Maidstone
Kent ME14 3AY
Tel: 0622 692773

Steve G1WSY at
HEATHROW
6 Cherwell Close,
Langley,
Slough, Berks
SL3 8XB
Tel: 0753 545255

Tom G4LAR

NEXT?

NEW!
YAESU
FRG100

A new receiver from Yaesu has
been a long time coming and the FRG100 sets a new standard from this manufacturer. Broadcast listeners may like the 6 and 4kHz bandwidths and the fifty memory channels will store both frequency and mode. Seems good value at £499

LOWE NEWS!

Seems we forgot to tell SWM readers about our new branch! A few months ago, we formally adopted KW Communications of Maidstone into our branch network, bringing Lowe sales and service to the south east for the first time. Now under control of our latest recruit, Steve Jelly, G6URJ we look forward to meeting readers old and new there. Steve is currently upgrading the computer system there so we can demonstrate the full range of datacomms products. As part of our expansion plans, our Bristol branch has also relocated to offer customers a larger demonstration area. The new address is shown opposite and a quick call to Tony, our manager there, will provide you with directions if you need them.

MULTISCAN

Computer control of receivers is a growing interest with many SWL’s and as a result, Lowe Electronics have commissioned the Multiscan program for IBM PCs and compatibles. This is quite a sophisticated and versatile program offering a high level of control of functions depending on the receiver in use. It supports the current range of receivers from Kenwood, Yaesu, AOR, JRC and Icom’s R7000 and R7100. Multiscan features 2000 memory channels with dual VFOs and space for a fifty character “comment”. Manual tuning can be accomplished with keyboard entry, up/down controls or by mouse control, together with mode change, filter selection, BFO control, passband tuning, noise blankers etc., depending on your receiver.

A spectrum analyser display is also incorporated, together with a comprehensive logbook and precompiled database of over 1000 entries. The database is fully editable, allowing you to create a number of files. A datasheet is available but a demonstration at one of our branches allow you to see the full potential of this excellent software.

MULTISCAN………………………….£75.00

RF SYSTEMS

This small company from the Netherlands has really turned on the world of shortwave listeners. Their products are highly innovative, extremely well made and offer great value for money – and what’s more they work!

Comprehensive datasheets are available on all their products and we’ll be happy to supply these on request.

Magnetic Longwire Balun…………£39.95
MLB Antenna Kit 1 (12.5m long)…………………………………… £66.95
MLB Antenna Kit 2 (20m long) £76.95
MLB Marine (special MLB for maritime use)……………… £54.95
DXONE the ultimate active antenna………………………………… £289.00
DX7 Active antenna………………. £179.00
T2FD Low noise antenna………… £169.95
DListener………………. £249.00

NEW! FROM RF SYSTEMS

THE MAGNETIC TRANSFER ANTENNA

Developed primarily for marine applications, the MTA is a passive antenna. Comprising of a 2m long, UV resistant, plastic pipe with stainless steel fittings, the MTA can be mounted in a variety of locations. It has a specially wound helical element designed for omnidirectional reception and is elliptically polarised to make the most out of transmissions vertically or horizontally polarised. Two versions are available: one covering 100kHz – 25MHz and the other 500kHz – 30MHz. We expect the price to be around £159.00. Full details on request.

Short Wave Magazine, March 1993
In the penultimate part of this series Kevin Fox explains the relationship between sunspots activity and radio propagation.

**Radio signals can and do travel over great distance along the path of the greyline, but obviously the receiving and transmitting stations must both be within the borders of the greyline to achieve maximum success (Fig. 5.1).**

**Geographical**

During winter in the northern hemisphere both F layers recombine at a reduced altitude of around 160 - 240km. During the summer, as the sun crosses the equator and the northern part of the globe receives sunlight more directly and for longer periods, earth's atmosphere swells outwards re-forming separate F1 and F2 layers again. The altitude of the F1/F2 layers (or the recombined F layer) is a vital component in the calculation used to ascertain the maximum usable frequency (m.u.f.) - see later; and as u.v. irradiation of earth's atmosphere varies seasonally this has to be included in any m.u.f. calculations.

**Cyclic Changes**

The ionisation effects discussed so far are variations on the amount of ionisation arriving at earth - where and when it is strongest, and why this is so. From now on we will be dealing with the actual driving force of ionisation itself which is responsible for the greatest changes in radio wave propagation. Cyclic changes on the sun have a profound effect on earth's atmosphere, and we've already discussed the most important ones, such as prominences and flares which cause the daily ebb and flow of the solar wind. Apart from changes on the surface of the sun, alterations in earth's magnetosphere also modify the solar wind, deflecting some of it away from the planet whilst entrapping other particles (see aurora etc.). Just as we use the height of the F layer in m.u.f. calculations, we must also add to this the actual number of observed sunspots so that we have a another figure to add to the equation. Don't worry what all these terms mean just yet. I'll be bringing them all together in a short while.

**Counting the Spots**

Sunspots have been under observation for a few hundred years. Indeed, Galilaeo was himself blinded by continuously looking at the sun through his telescopes (See my warning in Part 1). During the early days sunspot observers simply looked at the...
sun's globe and counted how many spots they could actually see. This was (and still is) a very hit and miss affair because such observations depend on the visibility at the viewing site, the eyesight and experience of the observer and the geographical position of the observatory. New observation methods, whilst still having their basic roots in physically counting the number of spots, neatly sidestep these problems.

**Spotting the Counts**

An astronomer named Rudolph Wolf, who was for a time director of the Zurich Solar Observatory, realised the importance of accurately counting the number of spots during each eleven-year cycle for his work on solar mechanics. It's purely by accident that his method became the accepted way of counting the number of sunspots for use in radio propagation prediction. Wolf was very dissatisfied with the accuracy of the reports coming into the Zurich Observatory from around the world. Therefore he invented a new way of counting sunspots which would present him with the needed data in a standard format and also got rid of a lot of observational errors, improving enormously the accuracy of the spot counts. Even to this day, some sunspot data is often prefixed by the words Wolf Count in his honour.

Basically, Wolf's method took into account the experience of the observer(s), the sophistication of their observatory equipment, (for which he applied the 'k' constant); but most importantly of all made the absolutely vital distinction between single sunspots and groups of spots. Wolf's method was reduced to a formula which I've shown as

\[ DSN = k \times (10 \times sg + ts) \]

Where 'DSN' is the Daily Sunspot Number (also known as the Wolf number), 'sg' is the observed number of sunspot groups, 'ts' is the total number of sunspots seen (groups plus individual spots) and 'k' is the constant assigned to remove differences between observers and observatories.

Wolf was the first person to realise that solar activity and the 'strength' of the solar wind depended much more on groups of spots rather than individual sunspots. That's why he applied a weighting factor of ten to the number of observed spots groups to reflect their importance. As you may now deduce Wolf's method was more of a daily index to solar activity rather than an actual count of the number of spots seen. Because the Zurich Spot Count was 80, it doesn't mean that if you looked at the sun you'd be able to see 80 actual sunspots. In 1981 responsibility for the daily sunspot count was moved from the Zurich Observatory to the Sunspot Index Data Centre at Brussels in Belgium.

**Counting the Counts**

Wolf's method of reducing all incoming sunspot data, whilst leading to greater accuracy, still left quite a lot of noise in the system. Although short-term predictions were pretty accurate, longer term predictions and trends were covered with 'system noise'. Another formula was introduced which smoothed Wolf's index over a twelve-month period. This long and rather boring formula (the details of which I won't burden you with) removed this 'system noise' and showed up much longer trends. We're all more familiar with this second formula as it is the one used by Radio Communication magazine each month. For example. "The predicted SIDC sunspot count for July, August & September is....."
An Open Letter to The Home Secretary

The Right Honourable Kenneth Clarke QC MP
Home Secretary
The Home Office
Queen Anne Gate
SW1H 9AT

Dear Home Secretary
I am becoming increasingly worried by reports in the press that you are seriously considering banning all
types of scanning receivers. I sincerely hope that this is not your intention.

The readers of *Short Wave Magazine* all have one thing in common - they are interested, often
passionately so, in radio. They might listen to short wave broadcast stations around the world - they could
tune in to aircraft. On the other hand their passion might be for utility stations, satellites, amateurs, or even
beacons to study propagation. In all cases it is not the programme content that draws them like moths to
the flame, but rather the challenge of trying to pull in that elusive station under difficult conditions.

Scanning receivers offer the enthusiast the means to search for and store stations in the bands in which
he, or she, is interested. The vast majority of scanner owners keep their hobby strictly to themselves and
would not dream of divulging details of what they had heard to anyone.

The taped telephone conversations, which have received so much bad publicity and are probably the
reason behind your thoughts on banning scanners, were recorded and passed on to the press by people
with whom the real listening enthusiast would not wish to be associated. To make matters worse, the
media insists on referring to these people as ‘radio hams’ - thus inferring that they are licensed radio
amateurs. As far as can be ascertained, none of them hold amateur radio licences.

Enough legislation already exists to enable you to control the illegal use of any form of receiver without
resorting to a blanket ban on one type. Would you be able to enforce such a ban? What about car radios?
Most of these now have the ability to search, store and scan. What about the thousands of scanners
already in use? As these were acquired quite legitimately, and in the vast majority of cases are causing no
one any harm, would their owners be compensated by the Government if you were to impose a ban on
scanners?

I do hope that you will not be rushed into making hasty and ill-founded decisions on this matter.

Yours sincerely

Dick Ganderton G8VFH
Editor, *Short Wave Magazine*
AWARD WINNER

‘BEST COMMUNICATIONS RECEIVER 1992’

FRG-100

As awarded by the World Radio TV Handbook in their 1993 Radio Industry Awards. This is what they have to say about the new FRG-100...

“Yaesu has succeeded in bringing improved technology and features within the price range of a much wider group of shortwave broadcast listeners. It has been a long time since Yaesu revamped their broadcast receiver but for many listeners it will be worth the wait!
A good package at an affordable price.”

WHAT MORE NEED WE SAY!

TRY ONE TODAY, YOU’LL NOT BE DISAPPOINTED

The widest range of receivers in the UK.

Yaesu • AOR • Sony • Icom • Yupiteru • Kenwood • Lowe • JRC
Le Havre To Gatwick

Airband columnist Godfrey Manning G4GLM tells the story of his cockpit trip from Le Havre to Gatwick.

Radio check complete - Le Havre Tower/Approach (119.15MHz) is readability 5 (maximum clarity). The Captain of our twin turbo-prop runs through the pre-start checklist, with only a momentary delay whilst the cargo hold door is made secure by the ground engineer. Even from my cramped jumpseat I can see the engineer walking round to the front of the aircraft to be in good view of the pilots. I'm just behind the central control pedestal, behind the crew, and if I'm not careful my knees bang the pilots' elbows as they reach back to adjust the trimmers. Very cosy!

"Whiskey Mike request start and taxi." We're cleared to start. The ground engineer holds a finger of one hand in the air (signifying No. 1 engine) and waves a finger on the other hand in a horizontal circle - the signal that it looks clear to start. The First Officer (F/O) engages the automatic start sequence from the roof-mounted switch. As the engine r.p.m. increases to 40% of maximum, F/O puts No. 1 throttle half-way forwards which opens the fuel cock. The exhaust gas temperature kicks up and then falls back a little to a stable position. The propeller speed has started to rise and the engine r.p.m. has steadied. "Light-up" calls F/O. No. 2 [right-hand] engine is on the opposite side to the passenger doors. It has been kept running whilst on the ground but the propeller is braked and doesn't turn. Although this consumes extra engine hours, it enables the aircraft to power itself whilst on the ground: they call this 'hôtel mode'. There's no need for an auxiliary power unit, so weight is saved.

Both props are now turning and the after-start checklist ensures that all systems are set as required. The c.r.t. 'glass cockpit' displays are switched on, cabin pressurisation is fed automatically from the engines, No. 1 generator is taking its share of the load, fuel booster pumps are all on and let us not forget details like 'No Smoking - Fasten Seat Belt' captions illuminated. Boing! A loud chime sounds. It's the cabin attendant on the interphone, reporting that all is secure for takeoff. Checks complete!

Airways Clearance

The Captain is scribbling hurriedly, then repeats something back to the Controller. I'm handed the note of the airways clearance that has just been copied, so that I too may know what the Captain and controller have just discussed. Our initial clearance, after take-off from runway 05, is to a compulsory reporting point called ETRAT on the coast to the north and east of the airport. We're to set a 'squawk' of 7620 on the aircraft's secondary surveillance radar transponder. This means that our flight can easily be identified on controllers' radar screens as this number will appear next to our target image. Our cleared flight level is 60, which means that the altimeter will show 6000ft when set to the standard pressure (always 1013.25mB).

After entering the runway (with clearance, of course) the aircraft backtracks - that is to say, taxies along the runway towards the take-off end where it will then turn through 180° in order to face the correct direction. On receiving take-off clearance, the propeller pitch is set for maximum performance (rather than best fuel economy), the throttles are opened to take-off power and the brakes are released. We're off!

Accelerate

F/O and I have our eyes glued to the airspeed indicator (a.s.i.) and engine instruments. Both engines must give similar indications for r.p.m., propeller torque (amount of power being developed), temperature and fuel-flow. Oil pressure matters too! The airspeed, meanwhile, is starting to rise as we accelerate down the runway. "80 knots" calls F/O and the Captain's hand is lifted from the nosewheel steering tiller and placed on the control column itself. F/O has been holding the column central and forwards and now releases it to the Captain. The Captain's
right hand never leaves the throttles, ready to cut back power if something goes wrong and correctly placed to maintain power in the initial climb. Steering at speed is now done by the Captain's feet which are on the rudder pedals. Heels on the floor, they say - this ensures that the toe-operated brakes aren't applied by mistake. "VI" shouts F/O. Speed is 100kt and this is the moment of truth. No matter what goes wrong now, we take-off. There simply isn't enough runway left in which to stop.

**Gear Up**

"Rotate!" At 110kt the Captain pulls back on the control column and then, as the nose rises off the runway, checks forwards a little so as to set the best pitch angle for the climb. I start my stopwatch, and will quote all times from now as minutes airborne. "Positive climb" calls F/O, the needle on the vertical speed indicator (v.s.i.) rising from the 0 mark into the 'Up' segment. The Captain calls for gear up, F/O raises the handle and the three green lights go out. Three reds come on instead: as the gear locks up, each red light extinguishes in sequence - nose, left, then right. V2 has been reached - a safe enough handling speed even if an engine fails. At 125kt the flaps come up.

Where are we now? Ahead in the takeoff direction lies an n.d.b. (LHO, 346kHz) and on passing overhead the a.d.f. needle swings round in a circle. The Captain now turns us left towards the ETRAT reporting point. We're at 600ft and 2min airborne, and already control is being passed to Paris Airways (a radar service) on 129.35MHz. The transition altitude is 3000ft at which point today's ONH, 1013mb, is granted. We're climbing through FL80 and the Captain now has further cause to grumble. We've been told to make the top of climb at FL110 but the Captain prefers FL90. With the relatively warm outside air temperature of 4°C, engine performance is degraded and the climb will be heavy on fuel. By 14min, we've made it to FL110 with Seaford at 25nm. As a cross-check, Mayfield (MAY 117.9MHz) is tuned in on No. 2 navigation receiver - it shows 40nm.

**Weather**

Having copied the weather on the a.t.i.s. (126.45MHz) the crew write down the details on a card that they clip to the window-frame. Wind is 215° at 6kt (light breeze), CAVOK (no low cloud or fog), with a temperature of 25°C and dew-point of 18°C. The ONH is 1015, OME 1008mb. Gatwick elevation of 202ft explains the 7mb difference (at about 30ft per mb). Vref, the speed for the final approach, is calculated at 113kts when the expected landing weight is allowed for. During the flight, fuel burn-off has reduced the aircraft's total weight.

The south coast of England is crossed at 18min and the next London frequency of 126.45MHz is contacted. At 21min we're overhead Seaford; the radio-magnetic indicator's pointer turns round to face the opposite direction and the distance starts to increase. We are also descending with a new target of FL70 set on the altitude alerter, and we're tracking Mayfield's 313° radial. Coming down quite fast now, at 1000ft/min on the v.s.i., a right turn is made onto a heading of 030° to take us over the Eastwood reporting point. Gatwick is now a mere 20nm away in our 10 o'clock but we can't see it yet because of the high-level clouds.

**Progress**

At last, progress! 22min airborne, and Gatwick Approach is...
Radio Communication Products

When you own the miniature AR210 Packet TNC, you have to open the case just to marvel at the beauty!

* Extremely compact
* High reliability multi-layer PCB
* SMD built using SMT 'no wires'
* Optional internal NiCad!
* RS232C support from 300 - 19200 baud plus ABAUD
* Lithium backed BBS with mail indicator
* CWID & 3rd party commands
* Standard DE9 connector
* Two sets of transceiver connection
* Ideal for portable operation

The New AR210 Packet TNC has an extremely small case size of only 100 x 60 x 22mm approx. and ultra light weight of 90g (without NiCad battery fitted). However, nothing is compromised, the AR210 features five status LED indicators (CON STA PTT DCD PWR), a standard DE9 RS232C connector, power socket, power switch, plus two sets of radio connectors and externally accessible hard reset switch. TAPR TNC-2 Upper compatible using a Z80A software compatible ASIC TMPZ84C015BF-6 CPU running at 4.9152 MHz allowing RS232C baud rate up to 19200. High performance LSI/TCM3105NL modem chip. 1200 baud AFSK AX.25Level2 Version 1.14TE with extended command set. Lithium backed BBS with 3rd party & mail indicator, real time clock, CWID, KISS etc. plus Diagnostic, Calibration, Special monitor command and more...

Operation from an external power source 10 - 13.8V DC @ 200mA or from an optional internal NiCad pack (120mAH) 4.8V DC @ 55mA.

Size and cost to suit your pocket RRP £149.00 including VAT.

UK Carriage free

Receivers: ‘All Mode’ ~ ‘All the time’

With the AR3000A your listening horizons are truly extended providing receive coverage from 100 kHz all the way up to 2036 MHz without any gaps in the range. The AR3000A offers the widest coverage on the market today with a high level of performance and versatility from long wave through shortwave, VHF and onward to the upper limits of UHF and SHF.

Not only will the AR3000A cover this extremely wide range it will allow listening on any mode: NFM, WFM, AM, USB, LSB AND CW. 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 form intermodulation effects.

The receiver features comprehensive search & scan facilities providing speeds of up to 50 increments per second. An RS232 port is provided enabling full remote control via most computers. A rear panel switch changes control between the keypad and RS232 port.

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. RRP £875.00 including VAT.

Enhanced model - AR1500EX - the World’s first true compact hand-held wide range receiver offering SSB as standard has been made even better. Coverage is from 500 kHz all the way to 1300 MHz without any gaps in the range. Channel steps are programmable in multiples of 5 kHz and 12.5 kHz up to 995 kHz, the BFO will allow tuning between these steps for SSB operation. All popular modes are provided NFM, WFM, AM and SSB (USB, LSB and CW) with the BFO switched on.

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, SW aerial wire terminated in a BNC connector for shortwave reception and Operating manual.

Versatility is excellent. The AR1500EX may be powered from it’s 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). RRP £299.00 including VAT.

If you are unable to obtain supplies of AOR products from your local dealer, you may order directly - we have a fast mail order service. We usually have ‘nearly new’ stock available at attractive prices too! Please send a large S.A.E. (34p) for full details.

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A subsidiary of AOR Ltd Japan E&OE
contacted (125.87MHz). We don't need to go to Eastwood after all, the Captain is turning us left onto a more direct track under radar control. Heading is now 350° and both crew set the ONH on their altimeters, with 4000ft the target on the altitude alerter. It's 24min, and to speed things up the throttles come back to give 2000ft/min descent on the v.s.i. Selecting 110.9MHz on both navigation receivers enables the Morse identification (IWW) of the i.l.s. to be checked.

In rapid succession, Director (118.6MHz) is our next contact. With 14nm still to run, we've passed 5000ft and are now re-cleared to 3000ft. Airspeed is indicated as 240kt and it's time for the descent checks. The Vref speed is marked on the airspeed indicator with a movable pointer called a bug. Anti-icing is selected off, since it consumes engine power and we won't need it in the warm air. Landing lights are on - scares away the birds as much as other aircraft!

As we're still to the left of the runway centreline, we now turn left to head 290° and at 27min the localiser is captured. Its indicator bar moves to the centre of the directional display on each pilot's lower c.r.t.

While talking to the Tower now (124.22MHz) the crew set the OFE on their altimeters and, as the glide-slope pointer moves down the c.r.t. screen to take up its central position, the descent is controlled to follow it. At 28min the runway is in sight and F/O pulls the gear handle down -

three red lights come on immediately and then each is replaced in turn by the corresponding green light as the gear locks down. A Speedbird 737 can be seen holding at point A North, awaiting its clearance to line up for takeoff after we've landed.

Touch Down

At 30min we touch down: full reverse brings the aircraft to a smart stop - propellers score better than pure jets in this respect. Ground Movements Control on 121.8MHz allows us to taxi along the parallel 08L runway, then we take taxiways 7 and 4 to the General Aviation Terminal where a friendly marshaller waves his arms around until we stop in the allocated parking space. Ground power is quickly connected up and both throttles can be pulled right back to the fuel shut-off position. There's silence at last as the engines die away. Flying has not itself been a problem: you will have noticed that the pressure on the crew was mainly caused by the constraints of the way in which congested airspace has to be controlled.

As I write this, several Northolt arrivals have flown low past the window, glinting clear and bright in the late winter sunlight. It makes me wish I was back up there, flying again.

If you want to follow the flight on radio-navigation charts you will need the following (Aerad reference numbers in parenthesis). Le Havre Northerly Departures Let-down Plate (LFOH Le Havre G1). European Low Altitude Chart Northern France & Southern England (EUR/1). Gatwick ILS/DME 26L Let-down Plate (EGKK Gatwick M2). Gatwick Taxiway (or waiting positions for delayed flights) Let-down Plate (EGKK Gatwick F4). Send a reply envelope to the Editorial Offices for your copy of Airband Factsheet, which lists suppliers of charts (including Aerad).

**Abbreviations**

- a.d.f. automatic direction finder
- a.t.i.s. automatic terminal information service
- c.r.t. cathode ray tube
- d.m.e. distance measuring equipment
- FL flight level
- ft feet
- i.l.s. instrument landing system
- kHz kilohertz
- kt knots
- L left
- mB millibars
- MHz megahertz
- min minutes
- n.d.b. non-directional beacon
- nm nautical miles
- OFE altimeter pressure setting, reads zero when on aerodrome
- ONH altimeter pressure setting, reads height above sea level
- r.p.m. revolutions per minute
- v.o.r. very high frequency omni-directional radio range
- °C degrees Celsius
Short Wave Magazine, March 1993

**NEVADA**

**YUPITERU**

NOW IN STOCK

THE NEW MVT 7100

Set to be the handheld scanner of 1993 this model has to be heard to be believed!

Now with SSB reception and some of the more advanced features:
- Covers 300kHz-1500MHz
- Modes NFM/WFM/AM/LSB/USB
- Memories 100 channels
- Frequency steps 1/1.5/5/10/20kHz
- Scan Speed 30 Ch. per second

The set is supplied with a full complement of accessories including: Telescopic Antenna, Car Connector, NICad Batteries, Carrying Strap, Belt Clip, Earphone, Original Manufactures English Manual, UK Soc. Charger, First Supplies will be limited — reserve your set now!

**EVENLY**

MYT 7000 HANDHELD

- Receives 8 to 1300MHz (at reduced sensitivity)
- 200 Memory channels
- AM/FM/Wide FM
- Rotary or keypad freq control
- Large display with signal strength
- Frequency steps 0.05/0.1/1/5/6.25/9kHz

SUPPLIED COMPLETE WITH:
- Full set of high power NICads, AC charger, DC power lead and carry strap

**AUR SCANNER**

NOW IN STOCK

THE NEW AR1500 EX

ENHANCED MODEL FOR THE USER with a new circuit board and many improvements this set is better than ever. Covers 500kHz to 13000MHz, receiving NFM, WFM, AM and SSB.

SUPPLIED COMPLETE WITH:
- Dry cell battery case
- Ear piece
- 5.8mm antenna
- Soft case

NOW IN STOCK

AR2800 BASE/MOBILE

- Receives 500kHz - 600MHz - 800 - 13000MHz AM, FM, WFM, SSB capable with BFO.
- 1000 Memory

**AR3000A**

NEW MULTIMODE SCANNER

- Receives 100kHz - 2030MHz
- Modes: USB, LSB, CW, AM, FM, WFM.
- Acceptor: 2 software packages available, for use with IBM PCs and clones

**FREIT THIS MONTH**

WITH EVERY HANDHELD SCANNER PURCHASED

A PSU 101 MK IV

Combined desk stand and power supply changer, War £29.50

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Super low loss cable — essential for optimum performance with wide-band UHF scanners and receivers. Tough weather resistant and very flexible. The cable is good for frequencies up to 3GHz.

Model SD [8.1mm] £249
Model 800 [11.1mm] £249 per metre
Model 1000 (13.1mm) £299 per metre

**NEW**

**NEVADA**

**SONY**

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

**ICF2000D**

A full coverage shortwave, VHF and airband radio (150kHz to 1300MHz). Receives AM, FM, and SSB

£299

**SW77**

One of the new additions to the Sony range, the SW77 covers 150kHz to 30MHz. With a rotary tuning dial, 125 scan memories, reception of AM, FM, USB, LSB, CW, tape record facility, this is a superb all rounder

£349

**SW7600**

One of Sony's most popular VHF and Shortwave radios, 76-110MHz, 150kHz-30MHz Shortwave receivers AM, FM, SSB. Well Rated

£149

**SW753**

A new multi-band radio from Sony with dual conversion receiver that gives outstanding results.

- 150kHz-30MHz, 76-110MHz
- All models including SSB
- 125 multi-function memories
- Plus lots more facilities

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**AN1**

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Stainless steel wrapped wideband disccone. Ideal for either high power or low power beam antennas. £12.00 + £4.75 R&P

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SKYBAND (25-1300MHz)
Stainless steel economy wideband discone recommended - bargain price only. £12.00 + £4.75 R&P

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20element w/b boom - transmits on VHF/UHF amateur bands. (120 lb. lead gain) £135.00 + £4.75 R&P

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A base unit with 20dB preamp 3.5ft long fibreglass. Requires 12V DC supply. £99.00 + £4.75 R&P

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High gain wideband active mobile scanning antenna. Priced. Suitable for use with magnetic or quartz mount. £69.95 + £4.75 R&P

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

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Receive 20MHz - 30MHz Optional extras inc £100 AM receiver, digital encoder, keyer, and CW decoder. £249.00 + £4.75 R&P

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Receiver Economy model but with an excellent S/ SARC, IC-Display, Portable on Mains Power. £199.00

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SAVE 28

Directory of Military Aviation Communications.
Space Shuttle operations, War games, in-flight refueling, interception of Soviet BEAR Bear bombers, Military Airshows, security transmissions, these are only a taste of the military hobby in this publication. Frequency, Locations & some maps for Europe & North Africa are included for reference .

£17.95

19

Short Wave Magazine, March 1993
SANGEAN ATS 803A

**Specifications and features**
- 150-2999 MHz continuous tuning with no gaps. Phase locked loop-double conversion Superheterodyne
- Full shortwave/AM/SB/S 150-2999 kHz no gaps = FM/87.5-108 MHz monostereo
- Five tuning functions: Direct press button frequency input, auto scanning, manual scanning memory recall and manual tuning knob
  - **Built-in clock and alarm.** Radio turns on automatically at preset time and frequency. **Large digital frequency display.**
  - **Fourteen memory channels.** Use these for your favourite stations. Last setting of mode and waveband stored in five memories. **Direct press button access to all 12 shortwave broadcast bands.** **Two power sources.** - Battery or AC mains adapter.

**Price:** £14.99 + £3.00 p&p

**SKY SCAN Desk Top Antenna Model Desk 1300**

Built and designed for use with scanners. **Coverage:** 25 to 1300 MHz. Total height - 36 inches. **Ideal indoor** - high performance antenna and can also be used as a car antenna when your car is static. **DIMENSIONS:** 29.2cm x 16.0cm (11.5in x 6.3in x 2.36in).

**Price:** £94.00 + £3.00 p&p

**SANGEAN ANT 60 Portable SW Antenna**

- Greatly improve reception power of portable shortwave receiver.
- Easy to use; snap on to telescoping rod antenna or plug into radio’s external AM antenna jack.
- Extends to 7 metres (23 feet).
- **Suitable for all kinds of shortwave radios.**

**Price:** £14.99 + £3.00 p&p with every purchase of Sangean ATS 803A

**YUPITERU MVT 7000 HANDHELD CIVIL/MILITARY AIRBAND RECEIVER, THE VT225.**

A powerful pocket scanner that leaves the competition standing. - A super sensitive set designed for optimum performance in the Civil/Military Airbands. **Receives:** 108-142 MHz Civil Airband 222 - 446 MHz Army Band 144-510 MHz Marine Band. **Large digital signal strength indicator.**

**Price:** £249

**FAIRMATE HP2000 STILL ONE OF THE MOST POPULAR HANDHELD SCANNERS ON THE MARKET.**

Over the last year the HP2000 has outsold almost all other models. **Continuous coverage:** from 500MHz to 1300MHz. **1000 channels of memory:** **Keypad or rotary control:** **AM/FM and WIDE FM modes:** **Search steps from 5 to 995 MHz.**

**Price:** £249

**SKY SCAN Desk Top Antenna Model Desk 1300**

Built and designed for use with scanners. **Coverage:** 25 to 1300 MHz. Total height - 36 inches - 9 inches at widest point. **Complete with** 4 metres of RG58 coax cable and BNC connector.

**Price:** £109.95 + £5 check, test and p&p.

**SKY SCAN Desk Top Antenna Model Desk 1300**

Built and designed for use with scanners. **Coverage:** 25 to 1300 MHz. Total height - 36 inches. **Ideal indoor** - high performance antenna and can also be used as a car antenna when your car is static. **DIMENSIONS:** 29.2cm x 16.0cm (11.5in x 6.3in x 2.36in).

**Price:** £94.00 + £3.00 p&p

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**Price:** £249
A Link with the Past

Flying training was a hazardous business and many embryo pilots were lost due to their inability to carry out instrument flying, until in 1929 an American engineer, Edward Albert Link, invented the Link trainer. Flying Officer J.V. Moorhouse RAFVR(T) Retd., recounts the story of a Link that's still 'flying'.

The year was 1929 and the aviation era was beginning to get into its stride. Advances, accelerated during WWI, had brought flying from a dangerous amateur sport to a practical form of transport that could be achieved by the average person. This had been proved by the training of many thousands of aircrew during WWI.

Flying training was still a hazardous business, however, and many embryo pilots were still being lost due to their inability to carry out instrument flying. Aircraft were increasingly being fitted with specialised instruments to assist 'blind' flying, e.g. flying at night and in cloud, which was hitherto impossible without instruments.

Bright Idea

During 1929 an American engineer by the name of Edward Albert Link had a bright idea, which, like all successful bright ideas, was simple in concept. Why not, he thought, have an aeroplane - sorry, he was American so it would have been an 'airplane' - in which pilots could practice their flying skills on the ground. This would save a great deal of money for the trainees, the up and coming airlines and military schools, in addition to the insurance companies, who hated paying out policies on crashed pilots

This Link Trainer, originally built in 1942, is still with 195 Grimsby Air Training Corps and is in full 'flying' condition.

adopted by the US Navy and in 1934 the US Army for training and during WWII was extensively used by the RAF for training purposes. So it was that on 13 September 1942 Link Trainer ANT.18 Serial No.11771 was delivered from America to Air Trainers Company based at Aylesbury, England and subsequently from 32 Maintenance Unit to 23 RFS at Usworth. This was in 1949.

During October 1952, the Link was issued to 195 Grimsby Air Training Corps, where it has remained to this day.

National Service

During the days of National Service there was a much bigger demand for aircrew than today and much useful experience was gained by cadets prior to joining the RAF. At that time most of the officers had useful wartime experience to pass on, but as time passed we older officers retired, and the old technology used by the Link became

The cockpit of Link Trainer ANT.18. Thousands of airman have probably handled these controls in the fifty one years since it was built.
Communications Centre (Photo Acoustics Ltd.)

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- Supere Sensitivity
- 4 x AA Ni-cads Supplied
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- Telescopic Whip
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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.

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- High Sensitivity
- Advanced DDS System
- 100dB dynamic range
- 24-hour system clock with timer
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- 99 memory channels
- 241(W)x94(H)x239(D)mm

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"Professional Grade" Scanner
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"A Scanner of Unrivalled Performance"
Specification:
Modes: AM/Narrow FM/Wide FM
Steps: 5, 10, 12.5, 20, 25, 30, 50, 100KHz
Antenna: 100 MHz
Supply: 5-15V DC (external 9V AA) 24mA (Battery save.)
Dimensions: 115 x 53 x 37mm
Weight: 370g
Configuration: AMFM Triple conversion
Sensitivity: NBFM -8d3 (12dB SINAD) AM -2dB (10dB S/N)
Memories: 100 in banks.
NEW £269 carriage free
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forgotten, so they were scrapped. In any case, modern electronics and hydraulics took over, by necessity, as aircraft became more sophisticated.

However, the old and now defunct Link at the Grimsby Headquarters remained silent for some time, but nobody wanted to sling it out, because it was rare, there were very few left and, who knows, we might get it going one day!

That 'one day' was the day that I visited my old Squadron, from which I had retired as Adjutant some thirty years earlier. The intervening years prior to attaining Senior Citizen status being taken up in different parts of the country on 'something to do with flying'.

The present CO, who was one of my cadets all those years ago, introduced me to my old friend and, sometimes, enemy - The Link, and asked if I could get it going again. It must have been during a weak moment as I said yes and along with another of my old cadets and his NCO son, we had a go.

To cut a long story short, we have now brought it back to life and are using it for basic instrument flying and, in due course, navigational exercises. It would be interesting to know how many 'Links' are still around, perhaps in 'flying trim', like ours. Of course, we never loop the old girl!

Very primitive when compared to the modern flight simulator with their computer generated displays. This is the Link Trainer chart associated with GY195.

Ringing Up a Plane

The entire British fleet of airliners in regular use between London and Paris is now equipped with wireless telephones, and during their aerial journeys the machines are in constant communication with the ground stations.

It is no uncommon thing to hear while "listening in" at a ground station the pilot of an incoming air express speaking to the pilot of an outgoing machine and advising him of peculiarities of the weather along the route.


Balloon Makes Canoes for Canadian Indians

*Popular Mechanics* publishes an articles which is probably the last word on the ill-fated expedition of United States balloonists last winter.

"Those who live on the border of civilisation are always on the lookout for some product of civilised government that they may appropriate for their uses. Recently a group of very fine light-weight canoes appeared in the James Bay region in Canada. The source of these was quite a mystery. No such canoes had been seen there before. And they were in the hands of a group of outlaw Indians who lived in a small village over sixty miles from Moose Factory and hundreds of miles from any place where they could get material suitable for making such canoes.

"But finally someone solved the mystery. The great balloon that the United States naval balloonists had abandoned when it fell near Moose Factory had been destroyed. Orders had been issued from Moose Factory that it should not be touched, but the outlaw Indians were out of the jurisdiction of Moose Factory and the temptation to use it for canoes was too strong."

"Aviation & Wireless News, December 1921."
The plane spotter needs to have an insatiable appetite for aircraft. Alan Williams offers his thoughts on what the fascination really is for listening in to airband transmissions.

An unusual aircraft is arriving at Heathrow and a score or more of the UK’s hard-core plane spotters are all jostling for position, eager to get a glimpse of this new arrival. The plane, a mere dot on the horizon, sways back and forth, winking its powerful landing lights across the sky. It’s too far away to be identified by sight, or even with a powerful telephoto lens as the angle of the plane’s body is all wrong. Within moments however, the aeroplane’s signal has been identified, noted and speculated upon. It’s rumoured to be the surviving plane from a hijack/bombing incident that took place a couple of years ago - but the aircraft number needs to be seen for confirmation. Some of the more proficient spotters have already confirmed, from the pilot’s accent, his terminology and other hidden clues, the ownership of the airliner; and it only remains for the formal identification to take place. After a while an audible acknowledgement ripples down the compressed line of spotters, heads nod, raised binoculars are lowered onto neck straps, cameras are fired and more pencilled notations are jotted into notebooks, Kuwait Airlines 9k ABD has arrived over London, England and been duly recorded by a number of enthusiastic spotters. Before the plane has even landed most of the men have returned to their portable airband receivers, tuning in for the next arrival.

Heathrow airport, as airports go, is quite hospitable to plane spotters. It costs a mere 75p to enter the viewing enclosure and for that you can stay practically all day. There’s a heated, glassed-in viewing area for food and rainy days, an ice cream kiosk for heat waves and an airport souvenir shop where you can buy British Airways hats, scarves and model planes. There’s even a self-service rooftop cafe. Not that the regular spotters avail themselves too often of the pricey sandwiches and snacks that the cafe try to sell to the tourists. No, most of the spotters at Heathrow bring their own food and drink, made in kitchens as far north as Edinburgh and as far south as Penzance, all wrapped up, workmanlike, ready for a long day of observation.

Typical

It’s hard to define a typical plane spotter, except to say that they are predominantly male, come from all over the world, are all quite shifty looking, especially when they’re keeping one ear cocked for the radio and constantly glancing nervously from left to right along the invisible, but very active, inbound and outbound flight paths. Apart from that distinction there’s little else to distinguish them from your average football fan out on an Away Day to support his local side. Of course, the sophisticated, miniaturised receiving equipment used by the spotters, the s.l.r. cameras and the jargon that they trade in is unique to themselves. It’s this complicated form of codes and abbreviations used by flight crews and air traffic controllers that makes the modern form of plane spotting so interesting and compelling. The spotters constantly mix bouts of this curious ‘aircraft speak’ with regular English, and then throw in a few slang words for good measure. It’s really like listening to another language, except for the fact that unlike most other conversations, these exchanges

Steve works at Manchester Airport. He drove down to Heathrow for a day on airband. Heathrow’s main air traffic control tower is in the background.
refer to the manoeuvring and safety of giant, multi-million pound aircraft, along with the lives of hundreds of passengers.

Up in the air the flight crews, inbound, say after a long haul flight from the Middle East, are concentrating hard on getting down safely and their dialogues are kept short and to the point. There's no time for gossip. The air traffic controllers, in their turn, dole out precise landing instructions in a dry, concise manner. The spotters with the best equipment can pick up every word of these two-way transmissions, but they themselves cannot transmit as they are limited to 'receive only' apparatus.

Final Adjustments

The pilot continues his landing countdown and makes final adjustments to his aircraft trim, confirms his position to the tower and reduces power and glides in to a landing at around 150mph. Reverse thrust is applied to slow the planes progress further. The scream of the engines drift across the airport and reaches the viewing enclosure, cancelling out most other sounds. At this stage the aircraft starts conversing with the ground crew and it is then given taxiing directions and allocated a berth or a slot on the apron. All these transmissions, and more, are picked up by even the most basic airband receiver, the plane spotting is still a relatively simple and inexpensive hobby that allows a person to note registration numbers, log them and perhaps collate additional information on the plane, the addition of a pair of high-powered binoculars, camera and portable scanner. Similarly with binoculars, the sky's the limit as to what you can pay for the super-duper telescopic and wide angled models. Most cameras in use remain as manually focused s.l.r.s with a single zoom in the 100-200mm range.

Inexpensive Hobby

Years ago plane spotting was all about collecting plane registration numbers. While plane spotting is still a relatively simple and inexpensive hobby that allows a person to note numbers, log them and perhaps collate additional information on the plane, the addition of a pair of high-powered binoculars, camera and portable scanner, airband receiver, the plane spotter is now not only able to identify planes in the sky at an earlier stage - and at Heathrow, one of the world's busiest airports, it's important to be able to sort the common British Airways Boeings from the rare Russian Tupolev TV 134s - but also pick up large volumes of information by listening in to the pilots and air traffic controller's conversations. Today a manually controlled airband receiver can be purchased for as little as £20 and prices can go up to around £200 or more for a portable, miniaturised, automatic scanner. Similarly with binoculars, the sky's the limit as to what you can pay for the super-duper telescopic and wide angled models. Most cameras in use remain as manually focused s.l.r.s with a single zoom in the 100-200mm range.

Focal Point

Plane spotting invariably takes place at or around airports and while it doesn't really matter what size the airports are or whether or not they're civilian or military, by far the most popular airports are near the major cities. Heathrow has to be the focal point of a lot of spotting activity, but many airports like Gatwick, Luton, Stansted, Manchester and Edinburgh attract their fair share of enthusiasts. Some enthusiasts are so involved with the activity that they arrange holidays and week-end trips to airports around the country, and even around the world. Some spotters travel to Dallas or even Dakar to catch a glimpse of some exotic planes. At this level of commitment an S.I.R. camera is essential. Travelling around the world just to view aircraft may not be everyone's idea of fun, but if the thrill of logging the registration number of a two-seater Chinese Chipmunk trainer turns you on then, naturally, evidence of such an accomplishment must be gained for visual proof at a later stage. Plane spotting is a hobby that is self-regulatory, to the extent that a spotter would only be deceiving himself if he was to log an unseen plane. That is why cameras are vital documentary tools, especially on foreign trips. Unfortunately foreign airports and governments are not always sympathetic to having their aircraft and airports photographed. Many foreign powers have military and civilian aircraft berthed at the same airport and are reluctant to have their weapons of war captured on celluloid. This makes the game of capturing images of these planes all the more exciting, at least to some of the younger members of the practice. In reality, though, there are few spotters who would be willing to put their freedom at risk just to photograph a Libyan MiG, though many would be very content to log one in their notebook!

Essential

Another essential part of a plane spotters tool kit is the Civil Aircraft Markings Directory. This book, written by Alan Wright and available at most bookshops and some airports, gives an...
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Includes free AC supply aerial and case!
The classic portable for those on the move who
want to keep in touch with the world
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Includes free universal AC adaptor
If you want a truly portable communications
receiver that performs as well as
base station
models yet fits
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further. At £399 it would
be good value. At £289 it’s an
absolute bargain.

SONY ICF SW55

150kHz-30MHz + stereo FM AM/SSB/CW
The SW-55 is the latest short wave portable from
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programmable
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The World’s Favourite Scanners!
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Imported by us, these are the latest factory
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Size only 127 x 35 x 58mm

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- Memory Lockout
- Steps 25 - 50 - 100kHz
- Superb Weak Signal Reception
- Illuminated Display
- Power from 3 x Ni-cads
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BNC Helical Antenna & Strap
Size only 57 x 127 x 35mm

VT-150

- Dedicated Marine Monitor
- 142 - 170MHz
- 30 Memories
- Crip FM Reception
- Scanning and Search Mode
- Priority Channel
- Memory Lockout
- Steps 10 - 12.5 - 25kHz
- Superb Weak Signal Reception
- Illuminated Display
- Power from 3 x Ni-cads
- 12V Cigar charger/Supply lead
BNC Helical Antenna & Strap
Size only 57 x 127 x 35mm

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is constantly referred to as well
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the aircraft they have spotted!

So, if the idea of sitting
around airport lounges this
summer, waiting for your
inevitably delayed aircraft to
arrive doesn't appeal to you,
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planes? All it takes is a good pair
of eyes, a decent s.l.r. camera
and an appetite for aircraft, their
fuel, noise and radio
collection.

Plane Spotting. This is the equipment needed: Airband scanner, Civil Aircraft Markings by Alan J.
Wright; binoculars and a holdall for food, drink, etc.

Jumping from the Sky

The real designer of the parachute was Leonardo de Vinci, in 1500, although at the coronation of the Emperor Fo
Kein, as early as 1306, Chinese acrobats were seen to jump from a high scaffolding with huge parachute umbrellas.

Major Orde Lee, who has made more parachute descents from aeroplanes than any other man, considers that all
passenger aeroplanes should carry life-saving parachutes, just as ships carry lifebelts and boats. In a recent lecture he
referred to a scheme of lowering a whole cabinful of passengers by one great parachute.

The prevailing idea that parachutes frequently fail to open is a fallacy. In 600 parachute descents from
observation balloons during the war, only three failures occurred.

Many inventors do not realise that if a parachute is much less than 2ft in diameter the speed of descent is fatal. In
1914 an Austrian tailor jumped from the Eiffel Tower in Paris with a combined parachute-overcoat. The apparatus
worked perfectly, but as it was only one-sixth the size of a standard life-saving parachute, it descended too quickly
and its inventor was killed.

The real danger of parachuting is in landing. You never know where you are going to land. Major Lee has
described how in July 1920, a rival parachutist in Sweden challenged him to land on a given spot, and how he
dropped from only 400ft and scored an "inner". His rival ascended to 3000ft and landed a third of a mile away.

Aviation & Wireless News, December 1921
A Light-weight UHF Dipole

Although this project does call for some means of turning down and cutting a screw thread on aluminium rod, this should not deter readers from making this simple antenna for their airband scanning receiver. The author, A.A. Jarvis, thinks that the end certainly justifies the effort.

The recent acquisition of a particularly sensitive hand-held v.h.f./u.h.f. airband receiver prompted me to investigate the possibility of making a knock-down u.h.f. dipole antenna in an attempt to push the signal capture potential of the receiver to its limits whilst maintaining its portability and scope for hill-top use. Experiments had already shown that a quarter-wave telescopic antenna, critically adjusted for the u.h.f. airband frequency sought, was a lot more sensitive than the supplied 'rubber duck'.

I decided to go for a design based on the use of BNC plugs and adaptors. Attaching a BNC Tee adaptor to a right-angle adaptor immediately gave me two BNC sockets pointing upwards and downwards, easily connected to the receiver, with vertical alignment being maintained by movement of the joints. The next task was to find a means of attaching elements to the inner connection on the 'up' Tee socket and the outer connection on the 'down':

Lucky Find

A lucky find at a local rally was a male BNC to banana socket-cum-screw terminal adaptor. This curious item was the critical component that gave access to the inner connection and made the rest of the job comparatively easy. The downwards connection was made with a 'solderless' BNC plug.

A length of 0.25in diameter aluminium rod formed the upper element, 190mm being the length calculated to resonate at around 376MHz, the frequency I was chasing. The lower rod was made 20mm shorter than the upper to take account of the differing shielding in the BNC plugs, as shown in the photographs. I turned down about 15mm of one end of the longer rod to a sliding fit in the banana socket, then carefully split it down the centre with a fine saw and opened it out slightly with a screwdriver to give a firm push-fit.

Solderless BNC plugs have a threaded hole into which it is intended the turned-back braid of RG58 or UR67 coaxial cable should be screwed. Investigation showed, rather surprisingly, that the thread on my chosen plug was 0.25in Whitworth, so it was not difficult to run the appropriate die down the other rod for about 10mm. Not all makes of solderless plugs have this particular thread.

Encouraged

The job was done. Taking the assembly to my favourite local high spot overlooking the Bristol Channel, I quickly discovered that, although of an electrically questionable design, my new antenna had the edge over the 0.25in telescopic in pulling in distant ground transmissions. Thus encouraged I subsequently made some longer elements to enable me to match lower frequencies in the band.

I was then able to capture u.h.f. ground transmissions from an airfield at a distance of nearly 130km and never heard before. The only direct expense incurred in the construction of the dipole was the purchase of a BNC to banana socket.
As mentioned we also stock AEA, AKD, Alinco, AOR, Barenco, Comet, Cushcraft, Davis, Dee Comm, Diamond, Icom, JRC, Kenwood, Lowe, Micraset, MFJ, RSGB Publications, Toyo, Yaesu, Yupiteru etc. plus second-hand & ex-demo equipment.

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Small, compact and easy to operate, this is an ideal receiver for civil airband. 30 memories, direct frequency entry and scanning make this a firm favourite with all our customers. Order as VT125UK... £169.00

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The big brother of the ‘125 this model also covers the military airband (and throws in marine band for good measure). With 100 memories and fast scanning at 20 channels per second, you won’t miss out on the action! Order as VT225... £249.00

MVT7000
The daddy of them all! Coverage from 500kHz to 1300MHz, 200 memories, 10 search bands. Very easy to operate, it also features keypad entry and a rotary tuning control to make frequency entry simple. The design makes it very sensitive across the whole VHF/UHF range and it offers useful performance across the short wave broadcast bands. We like it a lot and we’re sure you will too! Order as MVT7000... £319.00

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LOWE SRX50

The best digital shortwave receiver you can buy at the price.

It also covers medium wave and long wave and will give full stereo on the VHF broadcast band through the supplied earphones. A digital clock with alarm facilities built in will help you keep track of time and the twenty memories will help you keep track of your favourite frequencies. All this for only £39.95!

See our main ad for full details.
was 65p for the BNC/banana adaptor. Regrettably, I have not been able to find any more of these, nor the name of the manufacturer or importer.

I have since acquired two small telescopic antennas with short hinged bottom sections made of solid brass. When time permits I shall treat these in the same way as the aluminium rods, which will enable me to easily adjust each arm for maximum sensitivity at a given frequency. When using the single quarter wave telescopic I have found that adjustment is critical to within about 12mm either way when trying to pull in a distant transmitter.

I have found that v.h.f. transmissions from my three local civil airfields also come in well. But a v.h.f. antenna to a similar design would, of course, be rather heavy and unwieldy.

I suggest that those readers who do not have access to a lathe should contact their local model engineering society for help. Ed.

This picture shows how the various BNC plugs are assembled to form the central section of the dipole. The aluminium rods are threaded as described in the text and screwed into the adaptors.

---

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1993 EDITION

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Short Wave Magazine, March 1993
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Get the 'Low' down on the ugly bug. + sensitive front-end!!!
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DXing Civil Aircraft on Short Wave

The short wave civil aviation bands are alive with radio traffic all day long, providing an easy target for the novice short wave listener, as well as a challenge to the more experienced. Matthew Probert offers some advice on when, where and how to listen to them.

Each year over 130000 aircraft fly over the Atlantic Ocean. That's fifteen aircraft every hour or one aircraft every four minutes! With the rest of the world similarly busy with aircraft flying, it is of little wonder that the short wave civil aviation bands are alive with radio traffic twenty four hours a day! This provides not only an easy target for novice short wave listeners to receive interesting, and impressive stations, but also, as a result of the multitude of ground stations broadcasting, a haven for the more experienced DXer to find a challenge in searching out new stations and listening out for the rarely heard super DX!

With so many aircraft flying each day, a vast network of air traffic control (ATC) stations are required to prevent the congestion becoming a catastrophe. For aviation purposes, the world is divided into ten geographical areas: the North Atlantic; NAT; the South Atlantic; SAT; Europe, EUR; The Middle East, MID; Africa, AFR; the Indian Ocean, INO; South East Asia, SEA; South America, SAM; the Caribbean, CAR; and the Pacific, P. Geographical areas which have a large volume of aircraft flying through them are further sub divided into groups called 'families'. The NAT area is divided into five families NAT A, covering the southern routes west of 30° west between Europe and the USA/Caribbean; NAT B, covering the central/northern routes west of 30° west between Europe and Canada; NAT C, covering the central/northern routes east of 30° west between Europe and Canada; NAT D, which covers the northern routes across the North Pole, between Scandinavia and Canada; NAT E which covers the central southern routes between southern Europe and the USA.

The Southern America area, SAM, is similarly sub-divided into five families: C SAM, covering the northern part of the South American continent between Recife in Brazil, and Bogota in colombia; NE SAM covering the north eastern slice of South America that encompasses French Guiana, Bolivia, Surinam and the island of Trinidad; NW SAM covering that area of South America encompassing Paraguay, Uruguay, Argentina and south eastern Brazil; SW SAM B, which covers the area around Easter Island, some distance off the west coast of the South American continent.

Civil aircraft over the African continent is handled by five families: AFI 1, covering the north western part of Africa and southern Spain/Portugal, ranging from as far north as Lisbon, to as far east as the ivory Coast and west to the Canary Islands in the Atlantic Ocean; AFI 2, covering the north central part of Africa encompassing Libya, Nigeria, Niger and Tchad; AFI 3, covering the vast area of north east Africa, the Middle East, and the Indian Ocean as far as Southern India, in doing so AFI 3 takes in Egypt, Sudan, Kenya, Saudi Arabi, Yemen, Ethiopia and the Seychelles Islands; AFI 4, covering central and southern Africa, encompassing Nigeria, Cameroon, Zaire, Angola, Zambia, Namibia and South Africa; AFI 5, which covers the south eastern part of Africa and the routes from there to India, encompassing Mozambique, Madagascar, Tanzania and the Seychelles islands.

The Middle East area is divided into just two families: MID 1 which may be thought of as the Middle East proper, i.e. encompassing Iran, Iraq, Yemen,
Air France Airbus A-300 F-BVGA takes off.

Table 1: NAT A ATC

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<th>Frequency (MHz)</th>
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<th>5.598</th>
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Table 3: NAT C ATC

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</tbody>
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Jordan, Syria, Kuwait and Saudi Arabia; MID 2 covers routes between the Middle East and the Indian sub continent, covering the area from Iran, Iraq and Kuwait out through Pakistan to Northern India.

South East Asia, SEA, is divided into three families: SEA 1, which encompasses the north west part of the area, from India east through Burma to Thailand and south Thailand through Borneo and north to Hong Kong; SEA 3 covers the remainder of the SEA area which is primarily Australia, and north to Indonesia and southern Thailand, and west to the Cocos Islands.

The Pacific is the largest of the geographical areas, and accordingly is divided into the most families: 7: CWP 1, covers the western part of the Pacific from Papua New Guinea north to Japan; CWP 2 overlaps most of CWP 1, covering from Papua New Guinea north to Japan; and east to Hawaii; NP3, covers the northern Pacific routes between Japan and Alaska; NP 4 similarly covers eastern Pacific area between Hawaii and California in the USA; SP 6 is a small south Pacific area around south eastern Australia and New Zealand taking in Fijian Islands SP 7 covers the remainder of the South Pacific from Easter Island in the south east, west to Fiji and north to Hawaii.

The three remaining geographical areas; EUR which covers Germany, Switzerland, Italy and as far south east as Cyprus; CAR, which covers the Caribbean islands and central America between New York in the north, French Guiana in the south east and Panama in the west; INO, which covers the Indian Ocean from Perth in Australia, west to Johannesburg in South Africa and North to Madras in India; are not sub divided into families.
Alternative Working Frequencies

The International Telecommunications Union (ITU) has allocated a large expanse of the short wave band for aircraft communications, split into a multitude of frequency ranges. Within these frequency ranges, or 'bands', the International Civil Aviation Organisation (ICAO) has allocated set frequencies for communications between families so as to minimise interference and to provide alternative working frequencies to take changing propagation conditions and noise into account. These frequencies are scattered amongst 10 bands: 2, 3, 4, 5, 6, 8, 10, 11, 13 and 17MHz. Other frequencies within the ITU allocated bands are used for weather stations (Volmet), area control centres (ACC), flight information centre (FIC) stations, company stations, and search and rescue (SAR) operations. There are far too many frequencies in use to list here, and the reader is advised to consult the works listed under further reading, at the end of the article, for complete details of specific frequencies.

Within each family are a number of ATCs which broadcast on set frequencies. Some frequencies are used 24 hours a day, others are only used during specific periods, such as the hours of daylight or darkness. Tables 1 through 6 provide, as an example, details of the distribution of communications frequencies for the North Atlantic and also the Caribbean families. Where an ATC uses a frequency 24 hours a day, '24hr' appears in the relevant column of the table. If the ATC only makes use of a frequency during the hours of daylight, the word 'Day' appears in the relevant column. Similarly, if that frequency is only used by an ATC during the hours of darkness word 'Night' appears in the relevant column. It will be seen that 'Shanwick' ATC, a sharing of responsibilities between Shannon and Prestwick stations, provide communications on some frequencies only when required, indicated by 'As Req.' appearing in the relevant column.

Jargon

Listening to the civil aviation transmissions, one cannot help but notice the vast amount of jargon in use, and also the occasional burst of four musical tones of varying pitches. The musical tones are a system of calling a particular aircraft called 'selective calling', SELCAL for short. It works like this; each aircraft is equipped with a radio transceiver which is normally muted when not required. Each aircraft also has a SELCAL receiver which may be programmed with a unique access code. When a ground station wishes to contact a particular aircraft they may transmit the relevant SELCAL access code, a pattern of four musical notes. If this transmission is received by the target aircraft's SELCAL unit, a visual or audible warning is generated for the benefit of the aircraft navigator who may then switch on the aircraft transceiver and transmit the SELCAL message has been received. The navigator then waits for the ground station to pass its message to the aircraft.

The call signs used by aircraft operators can be a little confusing at first. For example; you will never hear a British
Airways aircraft identify itself as British Airways, but rather it will use the call sign 'Speedbird', Air Holland uses the callsign 'Orange', South African Airways use the call sign 'Springbok', Trans Mediterranean use the sinister sounding call sign 'Tango Lima', finally, Titan Airways use the rather strange call sign, 'ZAP'. Other airlines use their own name, often in an abbreviated form, as a call sign which makes identifying them quite straightforward.

Exotic

The newcomer to civil aviation DXing will find that at most times of the day and night 5.598MHz is active with traffic across the Atlantic Ocean. For something a little more exotic try 11.300MHz during the hours of darkness or in the early morning. It is usually quite busy with African traffic, Nairobi, Seychelles, Tripoli, and Cairo ATCs are all easily and regularly heard. More challenging is 5.658MHz. This frequency is regularly used by African stations, and offers the potential for a catch of the rare Kigali ATC in Rwanda. More difficult still is 8.855MHz, which is alive with South American stations. There are a number of problems with this frequency, firstly it is only readily receivable during the night; secondly the equipment of many of the South American (and African) ATCs is of fairly poor quality, with the result that their modulation is often very difficult to understand; thirdly, they often speak in Spanish or such a broad accent that coupled with the poor modulation, making a positive ID is very challenging.

Further Reading


Air Band Radio Handbook, by David J. Smith, published by Patrick Stephens Ltd has comprehensive details of aircraft radio procedures, call signs and v.h.f./u.h.f. frequencies used in the UK.

Short Wave Listener's Confidential Frequency List, by Bill Laver, published by SPA Publishing Ltd details frequencies used by aircraft and others throughout the short wave bands.

See SWM Book Service on page 78 for details of price and availability.

Actual Weather Broadcasts

Following on from previous descriptions of aeronautical broadcasts, here is a more detailed look at weather reporting as heard on VOLMET and a.t.i.s.

First comes the aerodrome name and the time (24-hour u.t.c.) of the report. On a.t.i.s. each successive report has an identity letter as well as a time, the first one is A for Alpha and the alphabet continues up to Z for Zulu before re-cycling back to A. So VOLMET says "Heathrow at 1815" (each digit being spoken separately, "One Eight One Five" being quarter past six in the evening). ATIS would say "Heathrow information Bravo, the 1815 hours weather."

Special Mention

Next comes the wind as direction and speed. The direction is the true heading from which the wind is coming and all three digits are always given (in the range 001 to 360 degrees, of course). Speed is in knots, two digits being given. Sometimes gusty or variable wind requires special mention. Example: "260 degrees 96 knots" or perhaps "230 degrees 12 knots, variable between 180 and 250 degrees."

Horizontal visibility is in metres or, under better circumstances, kilometres. It might be "3 kilometres or more" (but not less). Seriously reduced visibility is reason for quoting the (instrumented) runway visual range or (i.r.v.r). The instrument that measures this looks like two yellow torpedoes, mounted on poles, and facing each other; one transmits light and the other measures it by a photo-electric cell. You'll see these at each end of the runway and often in the middle as well. The report might be "RVR 500 metres, threshold" meaning a reading taken at the touch-down end of the runway. Significant weather is also reported (such as rain, drizzle, haze, mist, fog or smoke).

Cloud is measured by counting how many eighths of the sky are covered. Each eighth is an octa; the height of the cloud base (the lowest part of the cloud layer) is given as feet above ground. Example: "2 octa 600 feet, 7 octa 5000 feet" (note: 600 = "six hundred" and 5000 = "five thousand feet").

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Temperature is simple enough, plus or minus two digits in degrees celsius. Dew point is the temperature to which the air must fall before the water it contains could appear as fog.

Barometric pressures are in millibars (one bar = one atmosphere under standard conditions) and will not change, other than in name, when hectopascals take over from millibars. OFE is the reading on a barometer at airfield level, and when set on an altimeter results in the latter reading zero on touchdown. If OFH is instead set, then the altimeter reads height above sea level at all times.

Thunderstorms

A trend forecast may follow. Examples are "Tempo: thunderstorms" where a storm will temporarily pass through. Unlike VOLMET, the a.t.i.s. also tells you the active runway and other information - such as unserviceable radio beacons. It also ends with, typically, "Please report your aircraft type and that information Bravo is received, on first contact with Heathrow Approach."

Short Wave Magazine, March 1993
Yupiteru VT-150

For the enthusiast who combines an interest in aviation with both amateur and marine band listening, the Yupiteru VT-150 is an ideal compliment to the VT-125 civil, and VT-225 civil/military airband monitors. Like its predecessors, it is destined to become a big seller here in the UK, says Chris Yates, who has been trying it out.

The latest receiver from Yupiteru is small, perfectly formed and a powerful little performer. The VT-150 is all this and more, providing full f.m. coverage of the v.h.f. high band from 142.000 to 170.000MHz in 10, 12.5 and 25kHz steps with a sensitivity that quite simply beggars belief.

It has to be said that my own QTH is not the best of locations for v.h.f. reception. Living in the low Pennines and almost completely surrounded by hills, there is little that gets in here without the aid of a loft-mounted or outside antenna and mast-head pre-amplifier. Therefore, it came as a surprise that after unpacking and initial switch-on, the East Lancashire repeater GB3RS, 145.775MHz came booming whilst I was sat at the kitchen table and using just the supplied helical antenna.

With a clean signal and very respectable S4 reading on the in-built signal strength meter - far better than I had previously achieved with similar specified equipment - this receiver was obviously going to surpass expectations, and with its quoted less than 0.5µV (10dB S/N) sensitivity I was not going to be disappointed.

Knobs and Buttons

In styling, size and layout, the VT-150 is identical to the VT-125 airband monitor. It is also as easy to drive with just sixteen front panel keys - twelve of which are dual function - to get used to, and no need for a PhD in advanced programming methods to switch on, input the first frequency and get a signal out of the box.

Tuning is accomplished by direct input through the numbered keys using the up/down keys to step through the band, by commanding the VT-150 to search, or by scanning up to thirty frequencies committed to memory. It is also possible to monitor a predefined frequency while listening to something else with the aid of a priority function.

One annoying snag here is that in search mode the VT-150 will only step through the entire 142.000 to 170.000MHz, there being no provision to define upper and lower search limits. While it could be argued that this type of refinement is unnecessary on a receiver with such limited coverage, if your interest lies in just one part of the v.h.f. High Band then you will be missing much of the action while the VT-150 is looking the other way!

Being an inveterate twiddler, I normally foresee scanning for the much more rewarding frequency search operation, However, the particular band is littered with high power carrier only signals and I found myself having to prod the up key every few seconds to move onward. The second order pass function would have been useful here, but sadly this facility was limited only to scan mode.

Although most text books consider that it is impossible to monitor full duplex without a secondary receiver a neat trick that works quite well given a little patience and perseverance, is to load both frequencies into memory and scan between the two. Although this doesn't work all the time it is worth giving it a try, you never know your luck.

In checking out the Yupiteru VT-150's capabilities on the air my first port of call was the 144MHz amateur band. As already mentioned I was pleasantly surprised when on switch-on the East Lancashire repeater came through stronger than it ever had done before and with a very strong signal indeed, but my greatest shock came with the revelation that all users could be heard working the input frequency on 145.75MHz, including one high up on the North Yorkshire Moors, adding up to a very creditable premier performance for this latest allocation where 25kHz is used. Selection is accomplished by first pressing the Function key and then making your choice accordingly.

On The Air

On the air, two problems immediately arise. First the VT-150 is an f.m. only hand-held and whilst that is OK for much of the rest of the world where this is the preferred method of modulation, here in the UK amplitude modulated signals are much in evidence throughout the band. That said, a.m. is used predominantly by the emergency services and given that it is illegal to listen to their transmission I suppose it is just as well this receiver is incapable of resolving them.

Secondly, while trying to find something to listen to, you are likely to come across a considerable number of signals where only one side of a conversation can be heard. This is known as duplex operation and allows for simultaneous two-way communication with the aid of separate transmitter/receiver combinations spaced a few megahertz apart.

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offering from the Yupiteru stable.

But the VT-150 is not marketed as an amateur band receiver, rather it is aimed squarely at the growing hobby of marine band monitoring. Given the difficult terrain and the fact that my own QTH is some 80km from anything remotely resembling coastline, it was obvious that drastic measures, particularly in my case, were necessary if I was to make at least a valiant attempt at hearing anything within the confines of the international marine allocation 156.000 to 1622.025MHz.

Thus, purely in the interest of science, one cold windswept Saturday night in November I was to be found a top Winter Hill, a 1458 foot beauty spot, site of the main television transmitter for the north-west, and an area popular with what are politely termed 'courting couples', reasoning that from here with a clear line of site to the coast I should at least hear a trawler or two working in the Irish Sea. The marine band is divided into 90 channels spaced 25kHz apart and given that they are referred to by number rather than frequency, I had to avoiding yourself a headache doing the mental arithmetic to find the right spot on the dial, a marine bandplan is not only useful, but vital.

Switching on and tuning to the marine calling and distress channel on 156800MHz, my interest was immediately arroused with a voice in the very back of the box. However, my hopes were dashed when it became clear this was coming from an emergency services repeater located just a few hundred yards away with a true frequency precisely 1MHz lower.

Not being deterred, a few minutes spent carefully repositioning the VT-150 yielded results when the fishing vessel Colleen was heard calling Morecambe Bay Radio to initiate a link call. Signals on both the calling and working channels were clean and strong, despite the fact she was still some considerable distance from port.

Given the lateness of the hour, the calling channel was deathly quiet, but armed with the knowledge that many of the marine band channels are assigned to particular operators I decided to tune about and see what else was happening. Channel 0 on 156.000MHz is given over permanently to emergency maritime services, and it was here that considerable activity was heard with Liverpool Coastguard attempting to raise a fishing vessel somewhere out at sea and in deep conversation with the Walney Island lifeboat station at Barrow-in-Furness.

Elsewhere a couple of in-ballast oil tankers were heard talking to Liverpool Radio whilst heading up the Mersey to the terminals at Elsene Port and Queensferry. Out in the estuary, in an area that is littered with wrecks, two trawlers were discussing the best places to fish in language that could best be described as 'rip'.

All of this made for interesting listening, but I had yet to determine the maximum useable range of the VT-150. Liverpool was some 72km from my location and the Merchant Trader, a cargo vessel heading into Fleetwood, was some 88km away, but I couldn't help thinking this sensitive little receiver was capable of much more.

Therefore, I decided to sit it out on the 156800MHz calling channel in the hope that some far distant signal would eventually come my way. It had gone midnight, I was getting colder by the second, and occasional voices masked by noise were proving very elusive when, suddenly, Fishguard Radio popped up above the mush with a call to the Merchant Venturer! A quick look at the map revealed Fishguard to be some 330km distant by road. No, it couldn't be, I told myself but still the voice persisted..."Merchant Venturer, Merchant Venturer, Fishguard Radio calling the Merchant Venturer...but how and why, particularly at v.h.f.

On reflection, two factors played into my hands that night. First, at 44m above sea level, the clear line of sight almost certainly helped but more than that a short period of lift conditions, as discussed by several amateurs on 144MHz the following evening, far in excess of the distances that can normally be achieved at the frequencies.

Still it proved to be a remarkable achievement on a hand-held with just the supplied helical antenna, and one that I will certainly remember for a long time to come.

Beginners Advice

For the newcomer to v.h.f. marine band listening, it is worth pointing out a few basics. First, it is pointless sitting on a working channel for hours in the hope that you will hear something, because shore stations switch and change frequencies dependant upon a ship's geographic location. It makes more sense to monitor 156800MHz, the designated calling channel and where contact is first made.

On receipt of a call the shore station will instruct the ship's radio operator to move to a working channel. Here duplex operation becomes the norm with the ship transmitting 5.6MHz lower in frequency than the coastal station. The exception to the duplex rule is for intership and in-port communications where both operate simplex on the same frequency.

Elsewhere it is well worth keeping 156000MHz in the priority channel. This is designated Coastguard/Lifeboat channel and can be very active, particularly during periods of bad weather when rescues ranging from the crew of small pleasure craft to major incidents such as that involving the Herald of Free Enterprise can be heard. During such events it is normal to hear rescue helicopters on this frequency as well.

Programming

Of the many scanning receivers I have looked at over the years the Yupiteru hand-holds, including the VT-150, are perhaps the easiest to use and program. Manually loading frequencies is fairly universal on most receivers, but entering them into or retrieving them from memory is often not as easy as first appears.

On this score the VT-150 wins hands down. For example, when it is decided to save a frequency, all one needs to do is select a memory bank, press Function and then Memory Write. Recall is just as simple with a prod of Function and Memory Read followed by the Up/Down key to step through the possible thirty stored frequencies.

There is only one departure from the norm and that is in saving priority frequencies. Here it is necessary to use the Function, Priority, Enter keys despite the fact these are held in memory 0. To monitor the priority channel automatically press Function and Priority and the receiver will check this frequency every few seconds.

One final and extremely useful feature is the M-VFO button. As the name implies this allows frequencies stored in memory to be re-tuned to the v.f.o. allowing you to tune up or down or alter the stored parameters. A final control worth mentioning is the C/AC function that allows for correction of manually input frequencies with either a single or double pad.
Ron Ham has always had an interest in weather watching, so he jumped at the chance to review the Weather Monitor II from ICS Electronics Ltd.

The prevailing weather is usually the first topic of conversation whenever people meet or casually greet each other. I noted a few such remarks, during the last two weeks in December, while I had this weather instrument under review. My daily walk to the village and back is about 2.5km and among the replies to my 'Good Mornings', were, 'nice day', 'bit of a frost', 'won't last', 'windy night', 'too much rain' and 'they've got it wrong again'. Apart from these casual comments, more people seem to have a real interest in the weather which, I feel sure, is due to the friendly and informative way that the television presenters explain the complexities of our climate in their reports and forecasts.

Many folk have weather instruments in their home, but few have a co-ordinated plan of using them. The hall barometer gets a regular tap to see if 'the glass' is beginning to rise or fall, the gardener frequently checks the inside/outside thermometer for upward or downward trends and many places have a rain-gauge in the garden and a 'weather cock' on the roof. But, what about having your own weather-station and adding the wind-speed, inside and outside humidity, wind-chill and dew point to your observations and, what's more, being able to get the information at the touch of a button. I am not dreaming readers, thanks to ICS Electronics of Arundel, Sussex, I had the chance to try out the Davis Weather Monitor II and couple its output, via the associated Weatherlink Software, to my Amstrad PC2286 computer.

**The Main Station**

Weather Monitor II is attractively presented, Fig. 1, both inside and outside of its box. The package contains the station, the combined wind-speed and direction indicator, Fig. 2, with its support arm, mounting bracket and 12.2m of fitted cable, an outside temperature sensor with 7.6m of cable, a junction box, a mains power unit, a 2.4m terminated lead to connect the junction box to the rear of the station, a packet of hardware and a comprehensive owner's manual, Fig. 3. From first sight onwards the equipment looks stylish, feels good and is obviously well thought out and finished. In addition, the station itself contains a barometer, clock and date, the inside temperature and humidity sensors, alarm and scan facilities and the computing arrangements for optional extras like a rain collector and outside humidity detector.

The owner's manual is adequately illustrated with easy to follow instructions. The vane and the anemometer cups slide on to their respective spindles and are secured by alien screws, each gently tightened with the supplied key. The stand-off arm and bracket for outside use are fixed to the pole by two 'U' clamps. Special attention must be paid to the fitting of the vane to ensure that its direction agrees with the compass rose points on the station screen. I tested this indoors by moving the (upper) spindle, with my fingers until North was indicated on the screen, then fitted the vane so that the 'sharp' end faced North in line with the support arm. When I installed the wind unit outside, I made sure the arm was pointing North by rotating the pole. From inside the loft I tucked the outside temperature sensor under a roof tile which enabled it to do its work while being protected from the rain. The leads from the latter and the wind detectors plug into the sockets indicated on the left side of the junction box. Finally, before clipping the rear cover on the station, a PP3 type back-up battery is needed under the oblong cover just below the cable inputs. The manual shows that a lot of thought has been given to this rear cover/come mounting bracket. One way round it lets the station sit on your desk and the other way it can stand upright on a shelf, or be fixed on the wall.

**Preparing The Station**

The front casework of the station, measures approximately 140 x 130mm with a depth ranging between 40 and 70mm. The data on the oblong, liquid crystal, viewing screen, measuring Short Wave Magazine, March 1993
The wind direction and speed (right-centre of the rose) indicators remain on the left, as in Fig. 3. Touch the 'TEMP' key again and the outside temperature is given. This dual roll also applies to humidity, 'HUM' (if the outside humidity detector has been added) 'TIME' switches to date and 'WIND', changes speed to direction in degrees.

Instructions can be given from the station’s keyboard to 'SCAN' through the various modes and to set 'ALARMS' for unexpected changes and or extreme conditions. In fact a customised scan and alarm system can be set.

**Weather Station To Computer**

If you have an "IBM or 100% IBM compatible computer (PC, XT, AT or PS/2) with at least one high density floppy drive, or a low density floppy drive and a hard drive...Hercules Monochrome, CGA, EGA, or VGA display...640K of conventional memory installed... and one serial port", says the manual, then you can run the Weatherlink software and load the program. This is easy, I placed the 3.5in floppy disc into the 'A' drive on my Amstrad, typed INSTALL, at the 'A' prompt, pressed ENTER and it quickly transferred the files to the hard-drive 'C' creating its own directory 'PCLINK2'. When required I typed CD\PCLINK2 at the 'C' Prompt, then ENTER and the directory appears. Follow this with PCLINK - ENTER, the program loads and you are presented with a panel containing 13 oblong labels in groups of 3, 3, 3 and 2. The day, date and time are working at the top ends of the menu panel and the instructions 'TAB to choose', 'ENTER to make selection' and 'Press F1 if you need help' are written along the bottom. A menu panel and the instructions 'TAB to choose', 'ENTER to make selection' and 'Press F1 if you need help' are written along the bottom.

From this commands menu, 'Setup', 'Commands' and 'Plots', the second 'Bulletin', 'Download' and 'Quick plots', the third, 'Browse', 'Backup', 'Delete', 'Restore' and 'Print' and finally, 'Help' and 'Exit'. The set up menu consists of 'Station', 'Serial Port', 'Printer' and 'Units'. These enable you to select, 1, the model of the station you have purchased (in this case Weather Monitor II), extra accessories like the outside humidity detector and/or rain collector and the name to your database. 2, the serial port (COM1, 2, 3 or 4) that you intend to use and, if required, the setting up of a modem to use Weather Monitor II as a remote station. This also includes a "TEST" operation to be sure that your PC and the station are "talking" to each other. 3, offers a list of printer types from which yours is selected and 4, gives you the choice of display readings, Fahrenheit or Celsius, etc. All the station 'setups' including the following 'Commands' can be done, via this program on the PC.

**Commands**

Having arranged the program to your liking the next step is to command the setting of the barometer (I took my current barograph reading), time and 'Archive Interval'. The latter asks the station to provide information at 1, 5, 15, 30, 60 or 120 minute intervals (I chose 15m, see dots in Fig. 5.). From this commands menu, highs and lows and rain records can be cleared.

From the Plots menu your weather-information selection can be titled or the plot settings cleared. On the 'X' axis it offers plot-periods of one day (my choice), a week at 1, 5, 15, 30, 60 or 24 hour intervals or a month or a year. Further options are a dual plot between two dates and horizontal grid lines on the graph. The optional left or right hand "Y" axis gives a choice of plotting 11 weather...
happenings and to select a line graph or a bar chart. The on-screen trace can be printed out by pressing ALT and ‘P’ on your computer. The chart in Fig. 6 is a typical example which shows that the system is ideal for detailed study. What about using something like this to compare the prevailing atmospheric pressure, temperature and humidity with tropospheric openings?

**Fascinating**

Having requested a current weather bulletin, the program asks for a Yes or No to ‘Download high’s and low’s’. Yes, means that the bulletin display will include marks showing the latest extremes. A slight delay follows before your computer screen shows the prevailing barometer trace for the previous 6 hours inside and outside temperatures and humidity and the dew point. Two dials in the top centre boxes, above the barometer trace, show the wind speed and direction, all working and, while the indicators are moving, the prevailing wind direction, highest wind-speed and wind-chill factor is being calculated and shown on the screen below the two dials. This must be both fascinating and educational to watch while a storm is in progress.

The weather station is continually storing blocks of information in its archives and by pressing ‘DOWN LOAD’ the number of stored blocks are counted and you have the option ‘Yes’ or ‘No’ to transfer these to your PC. Select ‘Yes’ and they are transferred. You are then asked if you want this information written to your database. Say ‘Yes’, the data is moved and the archive memory cleared. This memory now continues to gather weather data until it is cleared again. Having downloaded several days data, you can show the prevailing weather trends with ‘quick-plots’ and go through all the recorded weather information by using the cursor keys. Left and right for backwards and forwards in time and up and down to select temperature, wind speed, barometer, etc.

**Browse**

In addition there is a ‘Browse’ chart, like a spread sheet, listing the stored data and giving the recorded readings of all functions at 15 minute intervals (my choice of archive-period). Browse is updated after each download of archive blocks. From the backup menu, information in your database can be recorded onto a floppy disc in the ‘A’ drive and from here all or some records can be reloaded by using the ‘Restore’ key. A choice of items can be removed from the database using the ‘Delete’ menu and the ‘Print’ key asks what records you want printed and enables the creation of ASCII and export files from the database. I found it difficult to stop playing with this fascinating program and select ‘EXIT’ from the panel to return to DOS and the ‘C’ prompt.

I also tried the external temperature/ humidity sensor which is supplied with about 12m of lead ready to plug into the station junction box in place of the supplied outside sensor. This unit, measuring approximately 80 x 80 x 32mm, has four fixing screws and should be mounted outside, but sheltered from the rain. As it was temporary, I fixed it under a roof tile in my loft. One advantage of having this unit is the capability of having the ‘DEW’ point already provided for on the station’s keyboard.

**Observations**

I kept the station running continually for several days and the mains power unit hardly got warm. At one time, when the mains failed, the back-up battery took over and part of the display kept flashing to warn of the supply problem. While in use the station-screen constantly displayed the wind speed and direction in addition to the request for a barometer reading. Also, in this mode, an on-screen arrow indicates the current barometric trend. A display of information from the other functions is obtained by pressing the appropriate button on the station-keyboard.

**A Practical Test**

Around 0730 on December 23, I met a neighbour tending her horses and we commented about the frost and how cold it was. I saw her again about 60% of the way down the road, and should have been mounted in my loft, thus giving higher readings than they were in the garden. Now was my chance to see the advantage of having the Weatherlink software. Although the ‘outside’ sensor was in my loft, thus giving higher readings than they were in the garden, the trend should be the same. However, at 1145, I downloaded the archives from the Weather Station to my Amstrad PC and then asked for a ‘Low Outside Temperature’ plot, which it produced, Fig. 5 and the lady was right, the temperature fell dramatically, as the print-out confirms, between 0800 and 1000. This one example proves how easy it is to make graphs and comparisons for any period that you have stored data and then analyse the results.

**The Cost**

In my view this weather station is not expensive when you see all that you are getting for your money and compare it to the price of individual good quality weather instruments. Weather Monitor II is £39.95, Weatherlink Computer Module for IBM-PC - £119.95, the Rain Collector - £59.95 and the External Temperature/Humidity Sensor - £65.95, all inclusive of UK VAT at 17.5%. With all its hi-tech and observational advantages, the whole lot will cost you £615.80. You could pay that much for a new barograph alone. For more information I suggest that you ask ICS Electronics Ltd, at Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 OBD, for their catalogue of Davis Instruments and accessories.
The 'New-look' RadioLine

Are you listening each week to the 'new-look' RadioLine from Short Wave Magazine

Professionally produced, it includes News, Views, Station Idents and Signature Tunes, Big Prize Write-in Competitions and a monthly Technical Feature on various aspects of short wave listening.

Updated every Saturday - and that's guaranteed!

Subscribers - listen-in for the Prize Subscriber number - if it's your's, let us know and a prize will be on its way to you.

The prizes for the February Competition will range from a radio to the 1993 Passport To Worldband Radio.

Make a note of the RadioLine number

0891 654676

Calls charged at 36p per minute cheap rate, 48p per minute at all other times.

Short Wave Magazine, March 1993
If your communications interests lie within that part of the frequency spectrum known as v.h.f./u.h.f. i.e. 50 - 1000MHz or so, then *The VHF/ UHF DX Book* will come as a welcome source of reference and inspiration for both the s.w.l. and radio amateur. Within its 450 pages you will find 12 chapters dealing comprehensively with virtually all relevant aspects of today’s amateur band v.h.f./u.h.f. communications, written by well known radio amateurs who are well versed in their particular fields.

The specific object of this book is to promote your ability to work DX, making contacts at the limits of propagation and system performance. The ways and means of doing this effectively take a long time to master - reading this book will provide a means to speed up the process and if it leads to more activity, I am sure it will have fulfilled the authors’ objectives.

Fundamental to all radio operations, the chapter on Propagation mechanisms is given a comprehensive review by Geoff Grayer G3NAQ. The style is such that the reader is introduced to the subject at atomic level and progresses through propagation mediums, to path losses and enhanced modes. All tropospheric and solar influenced modes are covered to a level consistent with current knowledge.

Operating techniques may appear at first glance to be a dry subject but under the guidance of David Butler G4ASR a solid basis to maximise your station’s effectiveness is given. Topics covered include weak signal DX, listening to determine what is going on before you put your foot in and how to handle pile-ups. One of David’s classic lecture comments comes up viz: “a little c.w. can go a long way - a lot of c.w. can go even further!”. Meteor scatter, e.m.e. (moonbounce) and how to increase the available intelligence flow are also well covered. Early April seems to be the only regular part of the annual cycle available to repair the antenna system, at least according to the DXer’s Year Planner Chart.

Ian White G3SEK is the overall editor of this book as well as a regular and well-respected author on subjects from receiver design to microwave amplifiers, so who better to cover the subject of assembling your station. Ian explains how to determine the optimum requirements for all available modes and why, for instance, trading noise figures for dynamic range is worthwhile for terrestrial communications where ground noise rules. Station improvements and record keeping to constantly evaluate your performance are also regarded as imperative. Receivers and local oscillators are covered in depth with regard to overall system performance allowing evaluation of current ‘black box’ technology and providing you with the knowledge to specify your ‘best case’ system.

The theory given is put into practice by Sam Jewell G4DDK, Dave Powis G4HUP, Dave Robinson G4FRE and John Wickerson G4HGT to present designs for ‘state of the art’ transverters for 50, 70, 144 and 432MHz.

Driving from 28MHz using the best of todays h.f. rigs is still seen to be the most effective combination, certainly for strong signal handling capability such as contesting. Power amplifiers and power supplies can take many forms, but if you want the best in terms of reliability, clean signals and raw power, John Nelson GW4FRX, has always been a firm advocate of tetrode valves, preferably those made by EIMAC. In the chapter covering transmitters, power amplifiers, and e.m.c. John gives full vent to his long-time love of r.f. power devices, quoting the good and bad points of most available valves. Not surprisingly the valve approach comes out well ahead of all contenders in terms of reliability, clean signals and raw power, but if you want the best valve approach comes out well ahead of all contenders for the station p.a. and detailed information is given on the design, construction and commissioning of amplifiers, including mods to tame most known amateur designs. No one could fail to acknowledge the comprehensive protection systems designed into GW4FRX power supplies - belts, braces, you name it, it’s all in here and at the end of the day, as John says, nobody wants to stop working the DX to repair a duff p.a. - even in GW it can be quite rare. For the sake of local spectral purity it would have been nice to see details of a single valve amplifier of, say 150W, but I suppose this does represent less than ultimate station capability in John’s eyes.

Antennas are covered by Gunter Hoch DL6WU from theory to practical realisation. After reading previous works by Gunter on double optimised long Yagis I can do little more than say that the material presented here is both comprehensive and invaluable if your intention is to build antenna systems capable of predictable and efficient performance. Specific long Yagi designs for all the v.h.f./u.h.f. bands covered are presented in table form together with stacking and matching techniques.

To round off the book Roger Blackwell G4PMK discusses the requirements for test equipment and station accessories to make measurements of r.f. power, voltage, frequency, etc. Practical details of impedance and v.s.w.r. measurement, receiving and transmitting, test gear and filter designs also feature. Each chapter contains references in text which are given at the end and are for the most part available to the reader. Some may well present difficulties in obtaining but will be worth the effort.

As an all round source of reference and inspiration I thoroughly recommend adding *The VHF/UHF DX Book* to your armoury of DX chasing equipment - see you on the bands.

*The VHF/UHF DX Book* DI Progress Publishing Ltd. ISBN O 9520468 0 6. Price £18.00 plus £1.00 p&p. Available from SWM Book Service, FREEPOST, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Tel: (0202) 659930
It is surprising just how many sunspots have been turning up at this late stage of the solar cycle. At his observatory in Bristol, Ted Waring counted 8 sunspots on November 16 and, while observing the sun's disc with his spectrohelioscope, Cmdr Henry Hatfield (Sevenoaks) located 4 sunspot groups, one slightly active, 9 filaments and 8 small quiescent prominences at 1213 on the 17th and 3gps and a medium sized 'hedgerow' prominence, on the East-limb, at 1155 on the 26th. In December, he found 2fs, 8 small gps and a "very faint thin 'pillar' prominence on the south-west limb" at 1120 on the 5th, 3fs, 8 small gps and a small plage and prominence on the West-limb at 1103 on the 7th, 4gps, 2fs and 8 small gps at 1222 on the 12th, 2gps "a nice medium prom. on SE-limb and a medium pillar prom. (quiescent) on the NW-limb at 1115 on the 21st, 4gps, 5fs and 4 small gps at 1224 on the 27th and 2gps, 5fs, a large 'U' shaped filament near SW-limb and 3 qps, 5fs, a large plage and prominence on the south-west limb" on the 28th and 1830 on the 29th. The various types of magnetometers used by Tony Hopwood, Karl Lewis (Saltash), Ron Livesey (Edinburgh) and Tom Rackham (Goostrey), between them recorded magnet 'storm' conditions on November 1, 9, 16, 22 & 23. Tony also recorded disturbed conditions on December 1, 2, 4, 10, 14, 15, 18-20, 23 & 28-31.

Propagation Beacons

As usual, my thanks are due to Gordon Foote (Didcot), Simon Griggs (Chelmsford), Henry Hatfield, Ted Owen (Maldon), Ted Waring and Ford White (Portland) for their 28MHz beacon logs. These enabled me to compile the chart, Fig. 4, of beacon signals heard in the UK from November 26 to December 25. Thanks also to Costas Krallis (Athens) for his letter telling me that the new beacon in Greece, SV3AQR, sends about 4W to 5W antenna on 28.294MHz, and that it is not surprising with the number of sunspots throughout December that Tony Hopwood (Upton-on-Severn) detected auroral reflected radio signals at 1350 on the 1st, 2115 on the 15th, 2200 on the 19th, 2000 on the 20th and 21st, 2100 on the 28th and 1830 on the 29th. The quality of auroral reflected c.w. signals is so poor, like a low pitched rasp, that they are simply described as tone 'A'.

Fig. 3.

Short Wave Wave Magazine, March 1993
Satellite TV News

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

It's an ill wind... as the saying goes and the January gales produced considerable satellite activity resulting from the grounding of the good ship Drainer on the Shetland coast and the spread of oil pollution from the ruptured tanker. Eutelsat II F1 at 13°E seemed the most active with numerous SNG (satellite news gathering) feeds uplinking from Shetland via 13°E using Telecom band (12.5-12.7GHz). Several were live injects into main news services both the UK and overseas. SNG links included CNN, ITN, BBC, SVT Sophie and Reuters.

One rather hassled reporter attempting to complete a news item on an obvious gale on a local housing estate came rather punctuated when the uplink dish repeatedly moved from the main beam axis in the strong wind gusts, pictures dissolving into severe sparkles and loud audio shash. The BBC were feeding ex-Shetland via their BBSNS unit with 'BBC UK12 BBC FEED' caption over 13°E - and a few days later another SNG caption 'UKI 17 BBC feed for ITN ex Bosnia' from a further trouble spot. The seriousness of the above events, not forgetting the mini Gulf interventions in mid January portrayed a harsh reality compared with the 11.07GHz vertical beam/dish footprint of Intelsat 60327°W from the Oxford Greyhound dog track on New Years Day.

Vatican News

Since early December the TV station 'Telepace' has been producing a regular (daily) news programme on the day by day happenings in the Vatican, the Pope meeting visiting priests, church masses and blessing the population gathered beneath the Vatican's balconies. Interesting to see the familiar Philips PM5544 test card, much of it lost with an inlaid computer graphic shape of a peace dove carrying an olive branch in its beak. Check out Eutelsat II F5 at 13°E viewing both in the mornings and afternoons over Eutelsat II F3 16°East - 10.986GHz horizontal.

Readers' Reports

Exiled Bob Black out in the deserts near Riyadh is hard at work constructing a 2nd dish for C Band following the demise of his first 3.4m assembly, a heavy sandstorm caused the bending of several aluminium ribs in his first dish, the new 2.8m version is using welded rather than stressed beams. Using a 25" K C Band LNB Bob has received AsiaSat, ArabSat, Horizont and several Intelsats. Next on the list is a Ku band special based around a glass fibre dish. Further to the East, Alan E. Smith in Si Racha, Thailand 100 miles south of Bangkok is also using a similar size dish and LNB to Bob with a locally manufactured 'Salmart Starfinder' receiver. Alan says that a Russian Horizont satellite is now down-linking the Asian Television Network (ATN) from 101°E. The Indonesian Palapa series satellites carry a large variety of stations, recently TPI Television Pendidikan Indonesia and SCTV Surya Citra TV appeared together with 3 encrypted channels, so far unidentified. Odd that sat in deepest Asia, Alan has been able to watch ITN Screensport channels into a single box. An amalgamation of the Eurosport and Screensport channels into a single Eurosport (The European Sports Network) was announced early January with the new operational base likely to be in Paris (rather than London). Astra will still carry the new Eurosport in English, Dutch and German, a French language version will be carried over the Telecom 2e satellite. Another new channel for Astra will be a UK version of the US Nickelodean Channel. UK Nickelodean will open October 1993 on Astra 1C running a 12 hour day, rather a set-back for The Children's Channel (TCC) that has just signed a programme package deal with BSkyB for subscription funded financing. Nickelodean are also involved with BSkyB which will be based at the Sky HQ in Osterley Park, West London, within which the Nickelodean programmes will be made and presented.

Below: A selection of test cards from reader Andrew Sykes, West Yorkshire using his 800mm tracking dish.
A breakthrough in computer based decoders from the designers of the ‘EASYREADER DM1000’

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All the DM Reader range incorporate the ‘SMARTLOCK’ system to demodulate signals. This means for the beginner quick results without fully understanding the transmission mode. For the experienced user a flexible, expandable system with many sophisticated features.

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**OFFICIAL:** Now everyone's heard of us!

**A QSL from outer space**

**JUPITER**

To Station: COULON
RST: 59
Mode: FM
Date: 13-3-93
Time: 10:00 am
Rig: ICOM
Antenna: VERY LONG WIRE
Power: LOTS

PSE QSL VIA MOON
OP: Error Edoc

*Bring your QSL card. It could win you a prize in our FREE DRAW.*

**DON’T FORGET!**

Picketts Lock Centre,
Picketts Lock Lane,
With a late start this southern summer has finally warmed up and where I live, the sun is finally reminding us what can do. Even with the growing worry of the ozone hole extending over this area, for most people sun still means going outdoors to enjoy it. I seem to be one of the very few who prefer to stop indoors when the sun is out which, of course, gives me more time to drive everyone near me crazy with sixteen hours a day radio.

As well as that I have finally been connected into the local bushfire radio network with a grubby old Philips FM 828 high band v.h.f. transceiver now installed in the car.

Stereo Broadcasts

David Hunt from Brighton in East Essex has written asking me about the advent of stereo television in this country. Stereo sound television broadcasts were announced in December 1983 after a series of tests by the then Department of Communication (DoC) in collaboration with television stations operating at the time. The German dual carrier system was chosen as the carrier 242.1875kHz above the primary sound carrier. The f.m broadcast band transmissions run stereo here too, of course, and so too do many a.m. broadcast band stations. This latter came about as the a.m. broadcast station response to the growing popularity of stereo f.m. broadcasts. This approach was not wildly successful however. I've no idea who or how many people actually listen to stereo a.m. and I have yet to find anyone who does know. As an indication though I've been unable to find any widely available or reasonably priced radio receivers with this as a feature. The system used broadcast band stations to service Australia's large and growing ethnic communities. These two stations - 2EA in Sydney and 3EA in Melbourne - are to be joined by a network of stations in the next few years. They say that some ethnic communities currently can only listen to thirty minutes every fortnight in their own language. The expanded network will give listeners throughout Australia access to broadcasts in 64 languages. Prime Minister Keating in announcing the expanded network said that 'ethnic radio programming is an important vehicle for accommodating the information and communication needs of people from non-English speaking backgrounds'. And with an eye on the ethnic communities vote at the election due in the first half of this year he took great glee in commenting that the current opposition had promised to cut $46 million (about £2.5 million) from the SBS annual budget.

According to a report in Australia's CB Action magazine M16 is closing its monitoring station at Kuvandi which is 30km north of Darwin. The station began operations as a joint Australian Security Intelligence Service - M16 relay in 1968. By 1984 Kuvandi was operating on 32 frequencies with a call sign of VJW. Among other defence related tasks Kuvandi was used to relay information to London from diplomatic stations in this area and was the last British relay station in the world for this type of work.

Other News

Radio Australia started a thirty minute a day Khmer language broadcast service in early December 1992.

A new Radio Australia schedule is due out this month. Copies can be obtained from Radio Australia, PO Box 755, Glen Waverley, Victoria 3150, Australia.

The Intelsat 18th Assembly of Parties took place in Sydney last November. Intelsat carries 60% of Australia's international voice, data and video communications traffic. Intelsat shareholding is held by the 124 member countries in proportion to their usage of the system and Australia is Intelsat's sixth largest shareholder behind the United States, the United Kingdom, Japan, France and Germany. The Assembly decided among other things to relax barriers to separate satellite systems competing with Intelsat.

The Australian government has decided to permanently restrict the now vacant sixth television channel in each transmitting centre to non-commercial purposes.

The proliferation of telecommunications agencies continues apace. I reported the formation of the National Transmission Agency and also the coming overhaul of spectrum policy in SWM for December 1992. Since I wrote that column the Australian Broadcasting Authority (ABA) has commenced operations and a Spectrum Management Agency (SMA) has been announced. According to the Department of Transport and Communications the ABA will provide an integrated approach to broadcasting regulation, dealing with planning, licensing & programme standards. The SMA is the outcome of the spectrum management overhaul and is the agency designed to implement the introduction of a market based system for spectrum management. The SMA will be in place by July this year.

I welcome any news and comments. In particular I am interested in any s.w.i. 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, NSW 2622, Australia. For personal replies please send 2 IRCs.
Ron Ham, Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

This month pride of place goes to the several tropospheric openings that took place in December and early January. In my view, the reason for these events was the complex patterns of predominantly high atmospheric pressure and the frequently changing temperature. My readings for December ranged from 18°F, one night, to around 50°F on some days. In addition, there were periods of thick fog, sometimes freezing, with the relative humidity often between 80 and 84%.

Super DX

After a poor showing in October and November, TV DXers were looking forward to something like this happening and, as the logs revealed, many of them received pictures on the v.h.f. (Band Ill) and u.h.f. (Bands IV & V) bands from Ireland to Poland and France to Scandinavia. Apart from the enjoyment readers get from DXTV, their logs also show the extent of the complex weather systems by the path and distance of the signals they received.

For instance, in Birkenhead, Andrew Jackson saw a number of test-cards and/or watched a variety of programmes in the v.h.f. band from Belgium (RTBF) on Ch. E10 on the 17th, 29th & 30th. Belgium's RTBF1, Ch. E8, on the 28th, 29th & 30th. Between the 28th & 30th he logged signals in the u.h.f. bands from Anglia TV, Border TV, France (TF1 & France 2), Germany (ZDF), Holland (NED1, 2 & 3) and Ireland (RTE1 & network2).

Andrew found good conditions on the 30th when he reported seeing some English programmes, like On The Buses and London's Burning, on Dutch TV and noted a strong signal from RTE1, on a trip to Phoenix Park, with a letter 'E' in the top right hand corner.

"December certainly made up for the lack of tropo DX in October and the poor November," wrote David Ashley (Norwich), who, like other readers he found u.h.f. DX on days 10, 13 & 14 and daily from the 24th to the 30th. Between those days he logged pictures from Denmark (TV3 & TV2), Germany (ARD, West & ZDF) and Holland (NED1, 2 & 3) and, in the UK, from BBC1 (Wales), Central, HTV (West), Tyne Tees and Yorkshire TV. During the daylight hours on the 14th David reports that "NED-1 and 2 were visible, although they were rather weak and Denmark's TV2 and NED-3 were giving strong signals, pointing to a northerly tropo disturbance. However, as soon as it started to get dark, NED-1 and 2 and TV2 disappeared in a matter of seconds and NED-3 was reduced to a pale ghost of what it had been during the day. Then the German stations disappeared together with RTL-Lux which lasted all of ten minutes."

In Neath, Simon Hamer received pictures in Band Ill from Spain (RTVE1), on Ch. E7, during the opening on December 10, Germany (ARD1) on at least 7 channels on the 14th, Denmark (DR) on 5 channels, possibly the Faroe islands on Ch. E8, Finland (YLE-1) on Ch. E6, Norway on 6 channels, Poland (TVP) on Ch. R8 and Sweden (SVT1) on the 21st and Austria (ORF1) and Czechoslovakia (CTST/F1) on Ch. R10 on the 28th. In addition, the u.h.f. bands produced Spain (RTVE2), on the 10th, Belgium (RTBF1 & TELE21), Germany (ARD1, BR3, Hessn3, MDR3, NS3, SDR3, SWF3 & ZDF) on the 14th, Denmark (N3, SDR3, SWF3 & ZDF) on the 21st and Austria (ORF2), Czechoslovakia (CTST/2CN) and Poland (TVP), on the 28th.

In Melton Mowbray on the 29th, Richard Bell logged pictures from Anglia TV, BBC1 (East) from Sandy Heath, (North) from Bilsdale, (South) from Crystal Palace and (West Midlands) from Sutton Coldfield plus Holland (NED3) from the transmitter at Goes.

Falling pressure on December 14 sent Carl Baragraph (Streatham) to his set where, from 1830, he received VHF pictures from Belgium (BRT1, Canal+ Belgium, RTBF1 & Tele21), Denmark (DR & TV2), France (TF1, TO5, TF1, France 2 & 3), Germany (ARD1, ND3, SAT1, WDR3, & ZDF), Holland (NED1, 2 & 3), Norway (NRK), Sweden (Kanal1) and the UK (Crystal Palace & Dover). He saw a regional caption 'AF pb tv' from Denmark on Ch. E53 and a Scandinavian subtitled programme on Ch. E50 on the 28th.

Good Start To 1993

On January 2, Andrew Jackson received 'very strong pictures' from the transmitters of Anglia TV (Sandy Heath and Sudbury), Ch4 (Crystal Palace, Hanington and Midhurst), LWT (Crystal Palace) and TVS -now Meridian (Dover and Rowridge). Incidentally Andrew, I can just see the Midhurst transmitter mast from my window, that's why I only need a loft dipole for the domestic TV set and VCR.

Tim Bucknall (Congleton) caught the tropo-opening on January 5 and logged BBC1 and 2 and ITV Border, Central, Granada, CH4 and S4C from their respective transmitters at Calebeck, Fenton, Glenridding, Leek, Macclesfield, Moel-Y-Parc, Overbiddulph, The Wrekin and Winter Hill in the u.h.f. band. Tim is equipped with a Goodmans 2600 VCR and a Vega 402 receiver. David Glenday received pictures from Denmark (DR) on both the v.h.f. and u.h.f. bands on the 3rd and Germany and Holland on the u.h.f. band only on the 2nd and 3rd. David told me that this opening ended when
This month: STATION ACCESSORIES

There are lots of useful station accessories for you to build in the HOWES KITS range. Our active antennas are very popular for those requiring compact, unobtrusive aerials, and being produced by a professional RF design company, they have the right level of cost effective performance for the SWL.

Another popular accessory is the DDF4 Digital Frequency Display. This enables you to add modern standards of frequency accuracy to older analogue sets - just the job to update an FGM, or even a WWV valve set!

The ASL5 dual bandwidth filter enables you to sharpen up the filtering on even up-market sets, and the reduction in whistle and interference it provides on almost any radio, makes it well worth the modest outlay. If you fancy having a go at building something for your station, we hope we can help to get your project under way!

ADD-ON DIGITAL READ-OUT

Adding the HOWES DDF4 to your receiver makes it tune as accurately to those interesting frequencies listed in this magazine! If you are tuned "spot on" to the right frequency, you are much more likely to catch the action than if you have to tune around hopefully. The DDF4 suits standard receivers and transceivers, and can be set for use with any IF offset frequency (up to 6 IFs with the optional PM94). It displays the tuned frequency with a 100Hz resolution. For a top class finish we give optional C49M "hardware pack". This contains a custom made case with pre-converted anodised aluminium front panel, display filter, switch, knobs, socket, nuts and bolts etc. Give us a ring to discuss adding digital accuracy to your radio!

DDF4 Kit: £39.90
DDF4 Assembled PCBs: £59.90
PM94 Kit: £9.90
C49M Hardware: £19.90

ASL5 DUAL BANDWIDTH FILTER

The ASL5 provides extra sharp filtering for SSB and CW bandwidths. The CW filter is 300Hz wide, and the speech filter is at least 50dB down at 3.3kHz - sharper roll-off than standard crystal filters provide. The result is less interference. Listening on noisy bands becomes much more pleasant! The ASL5 connects between the radio and the external 'speaker or headphones', so no mods to the set are needed.

ASL5 Kit: £15.90

ACTIVE VHF AIR-BAND ANTENNA

The HOWES AB118 has been designed for the VHF air-band listener who is looking for a good performance omnidirectional antenna. Covering 118 to 137MHz, the AB118 has a band-pass filter to reduce out of band signals, a turned halfwave end-fed antenna element for good low angle (long distance) reception, a low noise pre-amplifier and switched 10dBi attenuator. The antenna will fit in standard 1.5inch plastic water pipe for easy weather-proof installation. Interesting to build, and should transform your reception if you are still using that whip on the back of the scanner!

AB118 Kit: £17.70
Assembled PCB Modules: £24.70

AA2 150kHz to 30MHz ACTIVE ANTENNA

You only need 6 to 8 feet of wire as the antenna element to use on the AA2. This gives broad-band performance right across the long, medium and shortwave bands without a tail off in performance at the top end. You can scan over the full frequency range without any antenna tuning. There are two gain settings, and the strong signal performance is designed to be compatible with the popular SWL sets (FT3 + 386Bn typical). Don't settle for less! AA2 Kit: £8.50

Assembled PCB Module: £12.90

AA4 25 to 1300MHz ACTIVE ANTENNA

Designed as the neat, compact, unobtrusive alternative to the diore, the AA4 is deservedly popular with those who want broad-band performance without having to have a scanner that shouts "scanner" at every passer by! Fits in standard 1.5 inch water pipe for outdoor use, or use uncased indoors.

AA4 Kit: £19.90
Assembled PCB Modules: £26.80

PLEASE ADD £1.50 P&P for kits, or £4.00 if ordering hardware.

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 and specific product data sheets. We have lots more kits in the range (receivers, transmitters etc.). Delivery is normally within seven days.

73 from Dave G4KQH, Technical Manager.
Night time temperatures barometer had been below freezing until the 26th when the pressure was established at 30.3in and 30.9in.

From Arbroath, David Glenday said that "miss out on most of the thick fog," and added, "we managed to have 12 days in succession of 80% cloud cover plus a lot of other cloudy weather," wrote Ron Livesey (Edinburgh) in his November auroral report to the British Astronomical Association. "They want to live in Scotland to know what cloud is like," quipped Ron.

David Ashley tells me that the December weather in Norwich was "very variable, with daytime temperatures as high as the mid-fifties Fahrenheit and as low as minus six Celsius. Somehow, we managed to have 12 days in succession of 80% cloud cover plus a lot of other cloudy weather," wrote Ron Livesey (Edinburgh) in his November auroral report to the British Astronomical Association. 

"They want to live in Scotland to know what cloud is like," quipped Ron.

"at 1300, a cold front passed over and by 1400 conditions were flat."

Weather

Apart from being an interesting subject, the prevailing weather conditions can, sometimes suddenly, make or break a tropospheric opening. Because of this, more of your weather reports are included this time along with a few of my own examples. For instance, "J. Brausch reports the cloudiest period in North Dakota since 42 years ago. The locals have been complaining for they had 12 days in succession of 80% daytime cloud cover plus a lot of other cloudy weather," wrote Ron Livesey (Edinburgh) in his November auroral report to the British Astronomical Association. "They want to live in Scotland to know what cloud is like," quipped Ron.

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Reviewing the Davis Weather Monitor II station and the Weatherlink software. The latter enabled me to use the station in conjunction with my Amstrad PC2286 computer. Briefly, I asked it to plot information every 15 minutes and when Andrew Jackson told me that he logged most stations on December 30, I decided to print-out the results I had for the morning of the that day. The barometer kept falling, Fig. 3, except for that steady period between 0415 and 0700, the outside temperature did a rapid change around 0600, Fig. 4, as did the outside humidity, Fig. 5, some 30 minutes earlier. Obviously there was a sudden change in the early hours.

"Band I"

As expected signals in Band I were sparse in December, however, Andrew Jackson saw a test-card from Czechoslovakia (CST1 (Bratislava) ISR-P) on Ch. R2 (59.25MHz) on the 22nd and I found some "F2" activity around Chs. E2/R1 (48.25/49.75MHz) at 0930 on the 29th.

"Meteor Scatter"

Although Andrew Jackson found the reflected "pings" of pictures "weak", in Band I, during the Quadrantids meteor shower on January 4, Simon Hamer had better luck in December when he managed to identify bursts of signals originating from stations in Denmark, Norway and Sweden on the 10th and from a Commonwealth Of Independent States (CIS, formerly USSR) station, on Ch. R2, on the 24th. Both Andrew and Simon must have a lot of patience, because this is the only way that you can hope to catch television signals bouncing off the decaying ionised gas left in the atmosphere by a burning meteor particle. While talking about the heavens, Peter de Jong (Leiden, Holland) observed comet Swift-Tuttle, with binoculars, during a short bright spell on November 19.

"Satellite TV"

On December 18, Peter de Jong, using an Amstrad receiver, logged the Euronews test-card, Fig. 6, an ad, Fig. 7 and a programme with logo, Fig. 8, from the Egyptian Satellite Channel and the Class international cattle auction by satellite, Fig. 9, from Eutelsat1. "It's a matter of catching them before they start scrambling," said Peter. Simon Hamer found a new German news channel (NTV) on Astra transponder 28 and Lt.Col Rana Roy (Meerut, India) sent a photograph, Fig.10, of a programme from Pakistan TV that he received via Asia Sat.

"Stop TV"

Toward the end of 1992, John Scott (Glasgow), using an upgraded Robot 1200c decoding system, copied slow-scan television pictures between the 14 (around 14.230MHz) and 21MHz (around 21.340MHz) bands from stations in Germany, Fig. 11 and Sweden, Figs. 12 and 13 and CC captions from Holland, Fig. 14 and Russia, Fig. 15. "It is just a case of setting my Robot to AUTO-RX and sit back, wait and watch," said John.
My thanks to many of you who replied with details of Rainbow Radio heard by Christopher Frank Beavers, John Fenton, Mike Ellard and Chris Haigh supplied more details than most ad say Rainbow Radio is a Canadian message handler that operates like Portishead, Berne and similar stations. Their frequencies are: 3.458, 5.604, 8.219, 13.339, 13.876, 17.910 and 21.765MHz. The Delta 72 that was heard will be a short flight, usually a Tri-Star Paul Hilton adds that the station uses a 14 acre site at St John’s equipped with omni-directional and log periodic antennas. Chops also copied Portishead, British military traffic on 11.787MHz. The frequency falls slap between two well-used USAF channels, but I have no idea why they popped up here or who they may have been. Chris also mentions that he is now the proud owner of a Drake R8E, so I will expect his logs to reflect this - real exotica from now on.

Portishead

I recently listed to the marine band frequencies used by Portishead and Bruce Sutherland of Bristol has sent in the current list of their air to ground frequencies. These are 4.807, 5.610, 8.170, 10.291, 11.306, 14.945, 16.003, 16.273, 20.065, 22.871 and 23.142MHz. Bruce also mentions that British military personnel in Yugoslavia are currently ‘phone patching back to the UK and annoying! I have recently acquired a Codar pre-selector PR-40 and have no information at all. If anyone knows the company’s address or has any information on it at all, I would be grateful. Postage will, of course, be refunded.

Lee Williams asks if it is possible to QSL with ATC or Volmet stations around the world, and that the answer is yes and you can usually get away with stabbing an intelligent guess at a name and address. For instance, The Chief Radio Officer, Air Traffic Control Services, Sydney Airport, Sydney, New South Wales, Australia, would get right to the very person you need and I just made that one up.

Several readers have asked where they can get the USAF’s Flight Information Handbook. The answer is with great difficulty as it is no longer available int he UK. It is only available from source, must be paid for in US dollars and it takes anything up to five months to be delivered! For what it contains it really is not worth the bother and all worthwhile information is available in the book Shortwave Communications with updates in this column.

Leslie Bliss uses an R600 fed from a trapped dipole in his roof space and is plagued by TV timebase harmonics. He asks if television set makers are aware of the problem and the answer is yes and they care not one jot. It’s all down to what is known as cost shaving - you can get rid of one component than its cost multiplied by the number of sets made adds up to a considerable sum. The result is that many TV sets have their chopper circuit strapped right across the mains sending a juicy dirty signal along miles of antenna live and neutral. Your dipole sits next to that r.f. pollution in the loft so see if you can get it out in the garden and as far away from mains cables as possible. An overwhelming number of letters lately. I have kept the more generalised questions and comments over until next month.

First Aid

Several years ago, SWM carried an article by Hugh G3XSE, which described how to carry out a particularly difficult ‘service’ on the Trio TS-700 to ‘clean’ a contact on the v.f.o. unit that carries current to the receiver oscillator. With the fault on, the receiver will randomly switch on/off as the v.f.o. is ‘tuned’ due to a build-up of silicone grease and hence is particularly inconvenient and annoying.

I have tried unsuccessfully to trace this article, can anyone help?

Jim Sleight, ‘Orchard House’ School Hill, Napton-on-the-Hill, Rugby, Warks CV23 8NN.

Please, could anyone help with details on an Eagle International transistor checker model T7145.

T. J. Clark, ‘Bali-har’, 2 Moonview End, Marldon, Paignton, Devon TQ7 1PJ.

I have recently acquired a Codar pre-selector PR-40, and have no information at all. If anyone knows the company’s address or has any information on it at all, I would be grateful. Postage will, of course, be refunded.

Also I do my listening on a Sony ICF-201D with one problem, the internal oscillator generates spurious signals on 6275kHz. Is there any way to get round this and listen to weak signals on 6275kHz if they are almost always masked.

Tim Bucknall, 33 Churchill Close, West Heath, Congleton, Cheshire CW12 4QJ.

Short Wave Magazine, March 1993
HOKA ELECTRONICS HAVE THE ANSWER! There are some well-known CW/RTTY decoders with limited facilities and high prices, complete with expensive PROMs for upgrading etc., but then there is CODE3 from Hoka Electronics! It's up to you to make the choice – but it will be easy once you know more about Code3. Code3 works on any IBM-compatible computer with MS-DOS 2.0 or later and has at least 64kB of RAM. The Code3 hardware includes a digital FSK Converter unit with built-in 230V AC power supply and RS232 cable, ready to use. You'll also get the best software ever made to decode all kinds of data transmissions. Code3 is the most sophisticated decoder available and the best news of all is that it only costs £329!

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Amateur Bands

Round-up

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

To have a running check on the state of the ionosphere and band conditions, one handy way is to tune to beacons such as DK0WCU on 10,144MHz and listen to the data output on slow Morse. While the sunspot count or solar flux number are worth noting and should be as high as possible for good conditions, it's the number of extra 200 kHz on the beacon that is the key. You are looking, then, for either the A or K numbers as your guide, and these should be as low as possible. For example K of 3 is acceptable, K of 5 or higher requires some expense to distant DX. (A or K) implies between 100 and 10 things are good, but major storm levels can go as high as 100! For K look for a number below 3.

The A indices, mentioned on the RG8 News Bulletins, are given in nano-Teslas, and again should be low for preference - 0-20nT is good, rising to 70nT for unsual, or as high as 500nT in a severe storm. All these indices seem to correlate quite well, so the ideal case is a highest possible sunspot number or solar flux number, and lowest possible for the A, K, or Ak numbers. The forecast in the RSGB News Bulletin gives the outlook for the coming week, but if you monitor the beacons you are getting nearer to real-time information.

Personally, I use the DK0WCU beacon on 10.144MHz most of the time since it is S9 plus here - it sends its callsign, the word 'beacon' and a long dash for every 200kHz. The beacon says conditions are superb, so get in touch again at the new address above, as he now has all the equipment he needs to keep in contact with the amateur bands.

One of the joys in writing this piece comes when one can see two listeners at the same time. Adrian still runs his FR5OB and AR88 receiver, each has an antenna tuner, and a recent addition is a phasing system to reduce local O/RM which he has found valuable on the low frequency bands. In the move, and asks now that he should get in touch again at the new address above, as he now has all the equipment he needs to keep in contact with the amateur bands.

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Next we go to Iceland, where Geoff Crowley lives at Hafnarfjordur. Geoff uses three nested dipolesticks, to a Datong match-comp. The dipoles are slung, like a washing-line, from a pole, and surrounded on five sides of a cube by concrete, the open bit being to the south. Surprisingly enough Geoff does quite well, even to the north. In fact acrop of wire hanging from the living-room window. On Top Band c.w. Gerald copied GW4AT, GB5CW, GW3DXY, 3P3RC, SM6CMC, G0iOSK, G3JHNI, GDPVNP, SP52IM, PRCW, G3XRF, E1F2Z, GW3JYSV, L1YA, UA1NDY, UW2F, LY4WF, plus a crop of side-banders too. On 3.5MHz, sideband W, VE in QSO 39 were booked in, plus ROOF, U8FS, ULTX, a large assortment of Europeans including Z62U and Z6F, plus rare ones such as AE1HZ, AE1HS, Y65C, Y5CNCK, 9K2WA, 9K2MJ, VP2EY, 9M8PV.

Top Band and went on from there. This time round, 7MHz offered him PT2FX, F5YEJ, JV35E, VR/WX3N, 4KB4B, RA2PDR, RA0DRN, QJ4AVE, KPA47/MM, N7V5/7/MM in mid-Atlantic, UA0XAD, TMC4, FGE4UR, DM010W, NL7G, F5A7B, UL8/WB, UX3C, 8PK2, VP5T, KP4DV, KT1K9F, BPAU, HK1AKM, VB8/K3PK, JA, LY3BSW/UA0B, BV2TA, BV4CT, 7Z0K, 4J6GDA, 4K6WQ, by long path. Even 28MHz yielded WP8I, 8JXRI, 4J6GW, 4J6VU, 4J6UW, 8PK2, VP5T, KA76E, 9V1XQ, YV5FAL, 7X2BK, T14CF, YV5IVB, KA76E, 9V1XQ, YV5FAL, 7X2BK, T14CF, YV5IVB.
The way we were: Westland Whirlwind 8662 M in RAF colours at the Museum of Army Flying, Middle Wallop.

Christine Mlynek.

CONTINUED ON PAGE 60
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Short Wave Magazine, March 1993
I owe a lot to the readers who write to me with questions and information relating to various aspects of the hobby. One problem I have found during the past year is that I have not been able to respond to events and news stories as quickly as I would wish. It often takes two months before any information I receive by post can be included in the column. To try and speed up the process I have installed a combined answerphone and FAX machine to allow me to receive information, comments and questions more directly. I imagine that at least a machine operator needs to spend a day to automatically receive your calls. I regret however that I will not be able to reply to calls other than via this column. The whole idea is a bit of an experiment, but I hope that it will encourage readers who perhaps don't feel like writing to me to call or FAX items they think may be of interest to other enthusiasts. The new number is (0703) 622246.

The Royal Tapes

The scandal relating to the intercepted Royal telephone calls continues to rumble on. At the time of writing the first Camillagate transcripts have just been published. There is also a rumour of another similar tape in existence and a recording of what is alleged to be a conversation between Prince Andrew and Fergie. The Cellular telephone operators are beginning to address the issue of easy machine operator access and the newspapers and Government are continuing to argue in public about the freedom of the press and the need to expose corruption. Because of this debate it is likely that new laws relating to the use of electronic eavesdropping equipment will be introduced.

This could have serious implications for scanning enthusiasts as one target for such legislation may be a ban on the sale of certain types of receiver.

Scanners can, of course, be misused, as can cellular phones, pagers, FAX machines, computers and many other items sold in the high street. The difference is that the average person only knows about scanners from reading newspaper reports relating to their use in connection with various criminal activities. Under these circumstances it is very difficult for people to believe that there is a legitimate use for such equipment. I know that the vast majority of scanner owners reading this column use their receivers for perfectly innocent activities. These include monitoring Amateur Radio stations, Aircraft and Marine Communications, receiving weather satellites, etc. To the outsider however it may appear that such activities can only be considered to be in the realm of 'Train Spotting' in that there is no obvious gain to society other than the individual's satisfaction in knowing that a particularly scarce item of rolling stock or unusual transmission has been logged. From the public's point of view there is little harm in 'Train Spotting', it is a different story when scanning hesitant headlines, as the reader only sees a very negative aspect of such activities.

With similar hobbies such as Amateur Radio justification can be made by the 'Self Training' aspect of the hobby, but this cannot easily be applied to Scanning. I would be interested to hear your views on this subject, especially if you have any suggestions how the hobby can progress beyond the current phase of bad press.

New Models from Bearcat

My thanks to Ron from East Lothian who sent me details of a new range of products from Bearcat. After a relatively quiet period they have now announced nine new models for 1993. Two of these are likely to be upgraded versions of existing designs but the most interesting models as far as I am concerned are the BC-8500XL base station and the BC-2400XL portable. These will be similar to each other except the portable model may have slightly fewer features. The most important of which are likely to include continuous frequency coverage from 28MHz to 1.3GHz, 500 channels in 20 banks, 10 priority channels, scan speed of 100 channels per second, automatic storage of new active frequencies, automatic tape activation on specified frequencies and finally a counter that will log the number of times a frequency becomes active.

The base station is also likely to accept optional boards for CTCSS/Subaudible tone squelch decoding. The prices in America have been provisionally set at $650 for the BC8500 base station and $700 for the portable model, but these may be significantly different by the time the models become available in this country, with the constantly varying exchange rate affecting the UK price.

Frequency Counter Modifications

Several readers have expressed an interest in the frequency counter automatic display 'Hold' modification I mentioned briefly in the January column. The model experimented with was an Optoelectronics HC1300 handheld counter, but I would imagine that the HC3200 is very similar - which should please A.J. Harding of Herts. Fortunately for us the manufacturers are good enough to provide a circuit diagram with the counter which makes life a lot easier.

The main frequency counter functions are provided by a special IC (7215D) counter and display chip made by Intersil. This has several extra features that have not been used in this design. One of these is a 'Hold' facility which can be selected by means of Pin 27 on the chip. This is permanently wired to 0V and has the effect of continuously enabling the clock and display. The modification adds an additional circuit that enables the counter and sounds a warning ('bleep') when a sufficiently large input signal is present. When the signal ceases, the frequency display is frozen and the warning 'bleep' stops. This is achieved by detecting the r.f. signal present at the output of the pre-scaler i.e. and using it to switch the 'Hold' Pin to 0V.

The new circuit operates by detecting r.f. at the output of the pre-scaler i.e. by means of a diode pump circuit. This feeds the base of a switching transistor which pulls Pin 27 low when r.f. is present. With the counter switched to the 'normal' sensitivity position the pre-scaler i.e. is biased so that it doesn't produce an output unless an input signal is present. However when it is switched to the 'high' sensitivity position the bias is changed and the pre-scaler produces a random output signal which is sufficient to switch the new circuit on. This means that the counter operates normally in the 'high' sensitivity position and automatically 'normal' position.

Although the modification is simple it is not for the faint-hearted as a fair amount of surgery is required, so if you are not sure of your own ability or are worried about invalidating any guarantees don't attempt it.

The first step is to isolate the counter and remove the 'guts'. Desolder the two sets of NiCad batteries and put them in a safe place. This step can save a lot of heartache if you accidentally short out the supply rail while working on the circuit. Remove all the plug-in integrated circuits after first noting their location and pin orientation. Observe the rules for dealing with static sensitive devices especially with the pre-scaler i.e. as this can easily be damaged.

The next stage is to isolate Pin 27 - this is not easy as it is used to provide an earth connection between the two sides of the board. Cut the track on the display side and then carefully desolder the 28 way i.e. socket on the other side of the sensitive devices and solder a new wire to this orientation. Cut the track going to Pin 27 near the i.e. and trace the track back to its opposite end. This is on the reverse side of the i.e.d. frequency display, solder a piece of 28 gauge wire between this point and the negative end of the large electrolytic capacitor (470µF 16V) that lies alongside the i.e.c. socket. Once this has been completed carefully re-solder the i.c. socket back into place.

Looking at the i.e.d. display side of the board again, build the small circuit shown in Fig. 1. This is constructed by soldering the components together in free space between the i.c. Pins. Follow good r.f. construction techniques and keep all interconnecting leads as short as possible. Pin 18 has +5V on it and provides the supply for the new circuit. Pin 7 is at 0V and the track between it and C6 provides a convenient earth point.

Before you refit the i.c.s and batteries you need to build an audio 'bleeper' circuit. This is used to give an audible indication whenever the input signal is present and is achieved by connecting the circuit across the 'gates' i.e. and current limiting resistor. The only piezo buzzer I could find at the time small enough to fit inside the
counter casing was sold by Tandy (part no. 273-064). This is very small but has
the disadvantage of requiring an 
external drive circuit, however there 
may be other types available from 
different suppliers. The circuit for the 
drive circuit is given on the back of the 
Tandy 'Blister' pack so I won't include 
it in the column. As before the circuit 
was built-in free space and mounted on 
the i.e.d. side of the p.c.b. on the 
underside of IC2, and coated in epoxy 
resin to help protect it against 
mechanical strain. The 'bleep' volume 
can be adjusted by placing some 
insulation tape across mouth of the 
sounder.

Check the circuit for obvious errors 
before refitting the i.c.s, and test the 
counter with an external current 
limited supply before refitting the 
NiCads. Make sure the metal case will 
not short against any part of the new 
circuitry.

The counter should now be a lot 
more useful in tracking down those 
evasive frequencies as it is no longer 
necessary to keep your eyes glued to 
the display awaiting a transmission. 
By listening to the 'bleeps' from the 
sounder you can tell if a signal is 
consistent enough to get a good 
reading. If you find the signal is only 
just strong enough, switch to the high 
sensitivity position for a few seconds 
which should give a good reading.

Other modifications I have tried 
include altering the gate timing to be 
able to capture very short 
transmissions. This involves rewiring 
the 'Gate' switch and a lot of track 
cutting but provides a much faster (X 
10) gate period at the expense of one 
decimal place of accuracy. You will 
definitely need a copy of the i.c. data 
sheet if you want to try this but I find 
that I don't need to use it that much in 
practice.

If you want to extend the battery 
life you can blank the display by 
connecting a diode such as a 1N4148 
between IC1 Pin 4 and IC1 Pin 20 
(Cathode to Pin 4). You will need to 
connect a switch in series with the 
diode to display a stored frequency 
reading. This is because the display 
will only be illuminated if the 'Hold' Pin 
is held at 0V when an input signal is 
present.

One final modification is to solder a 
couple of back-to-back diodes across 
the BNC input socket as a safeguard 
against overloading/static damage. 
This can happen when you least expect 
it. In my case the pre-scaler i.c. blew 
up when a horse tried to eat the 
antenna it was connected to. My car 
was parked at the roadside and the 
horse was in an adjacent field. At some 
point it started licking the antenna, 
which provided a static discharge path 
for the car body via the antenna and 
frequency counter - in this situation a 
couple of diodes could have prevented 
damage occurring.

And Finally

Has anyone managed to provide a.m. 
reception outside the aircraft band on 
a Tandy PRO-35? A modification was 
included in the May 92 column but 
some readers suggested that it didn't 
work on the 89-88MHz range. Any mods 
for the PRO-37, 38 & 41 and Bearcat 
50XL & 100XL would also be 
appreciated. Remember you can now 
write, phone or FAX information to me. 
Until next month - Good listening.

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**Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AAIB</td>
<td>Air Accidents Investigation Branch</td>
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<tr>
<td>AIC</td>
<td>Aeronautical Information Circular</td>
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<tr>
<td>a.t.i.s</td>
<td>automatic terminal information service</td>
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<td>B</td>
<td>Boeing</td>
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<td>CAA</td>
<td>Civil Aviation Authority</td>
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<td>ft</td>
<td>feet</td>
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<td>i.Ls</td>
<td>instrument landing system</td>
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<td>kt</td>
<td>knots</td>
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<tr>
<td>LATTC</td>
<td>London Air Traffic Control Centre</td>
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<tr>
<td>MD-</td>
<td>McDonnell-Douglas</td>
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<tr>
<td>MHz</td>
<td>megahertz</td>
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<td>N</td>
<td>north</td>
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<tr>
<td>nm</td>
<td>nautical miles</td>
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<tr>
<td>NOTAM</td>
<td>NOTice to AirMen</td>
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<tr>
<td>u.h.f.</td>
<td>ultra high frequency</td>
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<tr>
<td>u.t.c.</td>
<td>universal time coordinated</td>
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<tr>
<td>v.h.f</td>
<td>very high frequency</td>
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<tr>
<td>VOLMET</td>
<td>VOLume METeorological report</td>
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<td>W</td>
<td>west</td>
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**Frequency & Operational News**

AIC 135/1992 withdraws runway 09/27 
at Cardiff and adds helicopter runway 
01/19 at St. Mary's, Scilly Isles. AIC 
137/1992 introduces a Danger Area 
Activity Information Service, callsign 
Pembrey Range, for EGD118 on 
122.75MHz.

The next three deadlines for topical 
information are April 8, May 7 and 
June 4. Replies always appear in this 
column and it is regretted that no direct 
correspondence is possible. All letters 
to 'Airband,' c/o The Godfrey Manning 
Aircraft Museum, 63 The Drive, 
Edgware, Middlesex HA8 8PS. 
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The majority of letters received during the weeks around Christmas were from beginners, and some worthwhile questions were posed. Some involved other imaging satellites, so extra details are included this month.

Pictures from Space

During the last 30 years, various types of satellite have been used to transmit pictures of the earth in varying degrees of detail. There are interplanetary craft that collect pictures, one of which is called IAEELAN and has spent several months collecting images from the surface of the planet Venus. These radar images are reconstructed back on earth after the signals are received and processed.

The frequencies used are very high, in order to allow the largest amount of data to be transmitted in the shortest time. The signals are extremely weak when they arrive back here, and can only be received by large dishes with extremely sensitive amplifiers. Several of these images have been released by NASA and are available through various BBS. Paul White of Macclesfield has sent me some on disk, for which I am grateful.

Military Imaging

The military authorities want the highest resolution pictures possible, so they use imaging satellites fitted with state-of-the-art hardware. These satellites use special telemetry formats (the signal beamed down to ground operators) that cannot normally be decoded by amateurs. Neither can professionals easily decode this telemetry without having details of the formats used. The CIS (Russians) sometimes use photographic methods onboard a satellite, and then recover the satellite and process the film when the mission is completed.

This column doesn't carry regular data, on my cassette tape seems to be good, so I can collect some overnight data, on my cassette tape.

Amateur Satellites

Over the years, radio hams and others have financed the building of satellites carrying equipment for use by amateur radio enthusiasts. Some of these include imaging hardware, a good example of which is UoSAT-5, pictures from which we published, courtesy of the University of Surrey team, some months back. I believe that this field is covered by our sister magazine Practical Wireless, so I don't normally include regular updates in this column, although it is of interest to me.

Current WXSATS

In early December the only CIS WXSAT operating was METEROR 3-4 on 137.30MHz. Around December 9, METEROR 3-3 came back on, using 137.85MHz, and then 3-4 was switched off a few days later. METEROR 3-3 has continued to transmit continuously, visible pictures during the daylight part of its orbit, and, when it reaches the terminator (day-night boundary), it switches over to thermal infra-red pictures. The change-over is slow but not graceful operation!

At the point of change, the picture becomes black, with a few phasing bars to mark the edge of the frame. Sometimes there are hiccups and a line or two are missed before transmissions resume. The bars only format continues for about four minutes and can be clearly heard on a scanner. Then there is a minute of white-only picture lines, and finally the proper picture commences. Quality seems to be good, so I collected some overnight data, on my cassette tape.

Fig. 1: NOAA 10 recording from Mark Pepper.

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Fig. 2: NOAA picture from Roger Ray.

The CIS satellite operators tend to avoid leaving the METEORS transmitting when they approach the terminator, probably due to the low sun angle which illuminates the solar cells on the satellite. Each METEROR goes through this low-illumination cycle for a couple of weeks, and that is when they are usually taken out of operation. The American NOAA WXSATS have continued normally during December and January, but some changes are scheduled to occur later this year.

The Next NOAA

For the last couple of years we have had up to four NOAA WXSATS operating at any one time. The launch program for replacement satellites slipped some years ago, but the launch date for the new NOAA-I WXSAT has now been announced as 1 June 1993. NOAA-11 (to be called NOAA-13 after launch) will be put into an afternoon ascending orbit, that is, one which crosses the equator during the afternoon while travelling northwards (ascending). This is a similar orbit to that of NOAA 11 which is nearing the end of its operational life, so NOAA 13 can replace NOAA 11.

Once NOAA 13 is operational, one of the 'back-up' satellites will be switched off. The reason is not simply the use of similar transmitting frequencies (see the frequency list included in this column), but rather the availability of ground station operations. Every working satellite, whether WXSAT or not, requires ground station housekeeping activities.

For example, when I was involved in daily operations with the British scientific research satellite programme, it was necessary to command the satellites every day, and preferably every few hours, in order to monitor the health of the on-board

Lawrence Harris
5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5OB
systems, and to regularly ‘dump’ (i.e., cause the satellite to transmit) all of the collected scientific measurements. One cannot just leave the WXSATS to transmit a.p.t. all day without intervening! The numerous sub-systems require regular checks to ensure that no faults occur. Although we can all see good a.p.t. most of the time, in the case of the NOAAs this data is derived from the high resolution scanners on the WXSATS, and those few amateurs now receiving h.r.p.t. (the high resolution data) will be aware that all is not well on-board some of the satellites.

**Orbit Precession**

Even the orbits themselves are changing! NOAA 9 was launched into a nominally sun-synchronous, mid-afternoon, ascending orbit. If you mentioned it now, you can hear (or see from its pictures) it pass overhead during the evening. Its orbit continues to precess about four minutes per month. NOAA 10 has drifted (processed) into a descending equator crossing at about 0645UTC. So we see NOAA 10 travelling southbound every morning, with its highest pass around 0730UTC. Presumably that will happen around 0730UTC but the precess slowly moves this time earlier by nearly two minutes per month. Consequently, we will see NOAA 10 morning passes receiving less and less sunlight, so that some degrading of satellite data will occur. NOAA 12 was launched in May 1991 and is the primary morning satellite, descending around 0845UTC. Its main equipment packages - TOVS, AVHRR and ARGOS (more about these another month) - are operating well. It is being moved slowly, starting in late January, to the coast of America, it has served the Americans (and us) well. It is being constructed of a WXSAT receiving system. One cannot just leave the WXSATS to receive it.

**Letters**

A lady from Fife in Scotland rang during the holiday period to enquire about satellite prediction times that were calculated by her program. She and her husband use the PC GOES/WEFAX program running on a 386SX computer which runs at 25MHz. They were finding that satellites were not apparently keeping pace with the program. During our conversation it became apparent that one or more of the programs that they were using, caused the computer’s system clock to run inconsistently.

I have noticed this problem myself when running my usual word processing program. After changing over to one of my satellite tracking programs, the system clock can be up to one minute slow. This means that satellites don’t appear to be keeping good time. The cure is obviously to change the computer’s clock. If you haven’t done this before, it is an easy process. From the DOS prompt (usually c: or similar), type in “time 12:23:30” or whatever GMT time is appropriate. Press the RETURN key at the correct time and this will reset the clock.

This fault only affects real-time satellite displays; calculated times for future satellite passes are obviously not dependent on the time that the program is run. I keep my computers on GMT rather than re-setting by one hour every few months. To be fair, satellite tracking programs may cater for summer, and other time zones.

My thanks to Matt Taylor of Woking who points out that the captions for the two photographs published in the January edition of Info were out of line. Tim Metcalfe of the WXSAT market’. I hope to give details of as many products as suppliers and distributors inform me. They should see my wish to keep readers up-to-date as an opportunity for one-off free advertising! An upgrade to the METEOSAT Primary Data System software has been issued by Timestep Weather Systems Ltd, following requests for specific modifications. The system can now record selected pictures from specific times, and can now display temperatures from the calibrated sensors. This brings it in line with the corresponding advanced WEFAX systems, but Primary Data is perhaps the ultimate in regular high resolution imagery. Brian Taylor of Woking has asked me for clarification following rumours about the possibility of METEOSAT primary data being encrypted soon. I am making enquiries about this and will give the answer as soon as possible.

**Forthcoming Launches**

A note from Geoffrey Falworth of Preston tells me that the ERS-1 (European Russian) GOEMTS WXSAT is re-scheduled for imminent launch. I believe it will be similar to METEOSAT, so if we point a METEOSAT dish along the Clarke belt occasionally, we might be lucky and hear some test transmissions. The satellite is way overdue, but then so is the next GOES. Stay tuned to 1691.5MHz for WEFAX images. The next METEOR launch (presumably 3-6) is re-scheduled for early February, so keep listening on your scanner. I will be happy to publish the name of who-ever hears it first and rings me, if they wish. February 23 should see the launch of shuttle Columbus STS-55, and March 23 is the scheduled date for STS-56. My thanks to Geoffery and NASA sources for this information.

---

**GOES Satellites**

As of mid-December 1992, the GOES constellation includes GOES 2 now positioned at 130° west; GOES 3 at 175° west, GOES 6 at 108 west°, and GOES 7 at 120 west°. Broadcasts from these WXSATS include WEFAX from

---

**New Products**

Despite reports of people having been heard from GOES 2, there has been no report of GOES 7, which was launched in December. GOES 2 is operating very well and may be one of the best performing GOES satellite. This is in keeping with the increased GOES 2 pictures from GOES 2 in the eastern position. From Britain we cannot receive any WEFAX (or PDUS) data from these satellites.

**MEDEOSAT 3**

The Atlantic Data Coverage satellite (ADC) METEOSAT 3 should be on the move when this appears. From its position at 50° west, over the eastern coast of America, it has served the Americans (and us) well. It is being moved slowly, starting in late January, to longitude 75° west where we in Britain and Europe will not be able to receive it.

**More Letters**

Mark Peppen of Camberley sent me a batch of splendid pictures, including one reproduced from a tape recorder - see Fig. 1. The picture provides a useful demonstration of the effect of tape recorder circuitry on a p.t. image. I hope that the horizontal white lines show clearly. They follow immediately after the black minute markers, and this isn’t coincidence! The tape recorder’s electronics have an automatic gain control (a.g.c.) circuit, and when a strong (in this case black) signal is received, the a.g.c. forcibly reduces it before recording. Consequently, the part of the signal immediately following, is heavily attenuated until the circuit recovers, so you see the white line gradually recover. Ideally, the tape recorder input signal should be reduced enough to avoid triggering the a.g.c. My thanks to Mark for this helpful illustration.

Peter Finn of Milford Haven asked whether a ‘hi-fi’ tape recorder is better for recording a.p.t. signals. In my experience the cheaper ones are actually better because they don’t affect the recorded signal so much. Some expensive ones have other signal conditioning circuits (apart from the a.g.c.) that can be difficult to disconnect or avoid. Peter also asks for some details on the edge markings of NOAA pictures so I shall prepare a diagram for next month. Another regular picture supplier for this column is Roger Ray who produced a set of NOAA pictures, including Fig. 2. Brian Dudman sent the picture of hurricane Andrew, see Fig. 3.
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Peter G4KKN
With so many computers being used for decoding data signals it's not surprising to learn that I receive many letters asking for help with interference problems. By way of a change, I thought it might be useful to publish a case history. This should help to illustrate that the final solution is often a combination of cures. For this exercise, I've selected a particularly useful letter from Geoff Crowley in Iceland. Geoff's station comprises the following:

Datong AD-370 antenna with modified dipole.

Yaesu FPG-7100 receiver.

PC-HF-FAX and PC-SW1 from Comar Electronics.

IBM PS1 computer and NEC PC24 pin printer.

When Geoff completed this station he was greeted with horrific computer noise that peaked at 59 every kHz. This was despite using coaxial cable for all the signal leads! Needless to say, Geoff was a little disappointed. He tried all manner of cures, but the following actions added together to virtually eliminate the interference. The first move was to try the computer connecting lead suggested by Mark Pepper in the October 'Decode'. This gave a useful improvement, but the noise was still a problem.

Next, Geoff took a look at the video monitor. As is common practice, the case was plastics and Geoff decided to line it with an earthed aluminium foil screen. Although this can be effective PLEASE don't do this unless you are experienced with work on this type of high voltage equipment. Not only is there a risk of severe electric shock but you can also proceed to destroy the monitor by restricting the ventilation. If you are competent to work on a monitor, you may like to try screening with one of the conductive sprays that are available from specialist computer suppliers. These often provide effective noise reduction without impairing airflow. Getting back to the case, it was while screening the monitor that Geoff noticed the earth lead for the computer had been left unconnected. That was quickly rectified and the noise dropped a little more.

Encouraged by the progress, Geoff decided that it might be wise to move the computer away from the receiver. He increased the spacing to about a metre, with another drop in the noise level. The next move was to try a separate power outlet - this gave another improvement. By now the noise had been reduced to a level where it was barely audible and the project was declared a success. As you can see, there was no single action that solved the problem. You just need to apply patience and logic to hit all the likely problem areas one by one. If you've managed to cure a difficult noise problem, please let me know the details so I can pass them on to other readers via the column.

Klingenfuss Releases

As promised last month, here's my report on the new Guide to Utility Stations and Radioteletype Code Manual 11th edition with the Radioteletype Code Manual. This annually updated guide is probably my most used reference book with it's comprehensive frequency listings covering all utility services from 9kHz through to 300kHz. One of the secrets of the guide's success is the annual update. This ensures that new stations are captured and obsolete ones removed. It is particularly appropriate with the volatile political climate that appears to prevail in our troubled world.

As an example, the new, eleventh edition shows the utility stations of Yugoslavia apportioned to Slovenia, Bosnia Herzegovina and Serbia respectively. In addition to the comprehensive frequency list, the guide is packed with a host of useful information. One that is often missed is the chronological list of press stations. This really makes the location of popular press stations extremely easy. If you do look-up the time of day in the listing and you are presented with a list of all the press stations that could be on air. The system is based on the fact that all press stations operate to pre-set schedules. For those that like to QSL with utilities there's a comprehensive station address list indexed by country. Other particularly useful sections are callsign list, meteorological FAX schedules, NAVTEX, Q and Z codes, plus many more. If you'd like a copy of this vital reference they are available from the SWM Book Service price £11. My thanks to Joerg Klingenfuss for the supply of the review copies.

Code Zero Explained

Back in January I published a request from Neil Peppe of Chippenden for an explanation of the term Code Zero. As I suspected, there is always a reader out there somewhere with the answer. In this case, Bill Clark of Aspatria has come up with the goods. Apparently, the term Code Zero is an unofficial abbreviation used in upper airweather reports. When reporting turbulence a scale running from zero to seven is used with zero used to represent smooth. It is for this condition that Code Zero is used - simple when you know the answer! My thanks to Bill for providing the explanation. Don't forget, if you have any queries such as this, please send them in and I'll do my best to answer through the column.

Signal Analysis

With many of the advanced decoding systems featuring complex analysis modes, I thought I'd better tackle the subject in 'Decode'. Rather than try and cover the subject in one article, I'll include the odd feature over the next few months. Let's start with a look at the spectrum analyser type display that provides speed and shift information. For those that have never experienced this type of display, I've shown an example of the Hoka Code-3 version in the column.

As you can see, the display gives a comprehensive view of the received signal. The popularity of this type of analysis has come about through the extensive use of computer based decoding systems. With a modern computer, such as the IBM PC, there is more than enough processing power
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to handle the decoding. Also, once a signal has been converted into a form that the computer can work with, it’s comparatively simple to add a wide range of supplementary processes.

Now let’s take a more detailed look at the Hoka system. The signal I’ve shown in the example is a weather RTTY signal from Blacknall Met on 4.488MHz. The horizontal base line is used to indicate the audio frequency of the received signal, while the vertical scale shows the amplitude or signal level. Rather than showing the absolute frequency of the signal, the base line shows the off-set from the centre frequency. Just below the display you will see the centre frequency displayed. From this you could work out the actual frequency but, in practice, it’s the offset that’s important.

In this example, you will see that the two frequencies displayed are approximately 200Hz above and below the centre frequency. These represent the mark and space frequencies of the RTTY signal. As you alter the receiver tuning the two frequency displays move across the display. To use this as a tuning aid, you simply adjust the receiver tuning so that the displayed signal straddles the centre point. With the Code-3 system in the form of an off-set display, this gives an accurate measure of the degree of tuning offset. In addition to acting as a tuning indicator, this type of display gives useful information when trying to eliminate interference. By carefully studying the display you can adjust the receiver and external filter controls to give you the best compromise between interference reduction and signal quality. The Code-3 speed-shift screen also contains other valuable information to aid signal decoding. The most obvious of these is the shift measurement. This is important information for the decoder, especially when receiving difficult signals. As well as helping to find the correct settings for the decoder, the shift gives a useful clue as to the type of signal being analysed. However, I’ll cover that in more detail later.

The other key area of this part of the Code-3 is the baud rate measurement. You will see that this is shown at the top of the screen. The two readings representing synchronous and asynchronous signals. These have to be shown differently due to the lack elements that occur in many RTTY signals. An extra feature is a high precision baud rate measurement that can work to 0.001 baud. For this to have any real meaning the decoding package has to be accurately calibrated against the clock of the internal clock. By combining the speed and shift characteristics of a signal you can usually determine the type of transmission you’re about to decode.

Typical examples of this are shown in several publications including the Radioteletype Code manual described in this month’s column.

The second decoding aid for this month is commonly called an oscilloscope display. This is due to its similarity to a conventional oscilloscope. You will see I’ve included an example of this in the column. In this example there are two displays one stacked above the other. In both cases the vertical axis shows the frequency shift of the received signal and the horizontal represents time. Two displays are provided to show different aspects of the signal. The top trace is rather like a storage scope in that the display is built-up by continually reading and displaying the signal without clearing the screen. The bottom trace on the other hand, is a single sample of the signal. Other than the differing densities, the two traces show significant features of the signal. This type of display is most commonly used as a tuning aid for FAX signals, but I’ll concentrate on an oscilloscope and then entering the oscilloscope and pressing B. This brings the measured baud rate into the oscilloscope.

**USCG Boston**

Day Watson has sent me the latest details on this station which I’m sure many of you will find interesting. Although you’re unlikely to receive NAVTEX from this station they do transmit data on 519kHz at 0945, 0945, 1245, 1454 and 1845UTC Regular weather bulletins are sent on the following frequencies: 014UTC: 6,314, 8,416 and 12.579MHz.

There are also regular ice bulletins transmitted between March and July on the following frequencies:

- 030UTC: 8,416, 12.579 and 16.8065MHz
- 1830UTC: 8,416, 12.579 and 16.8065MHz
- 1218UTC: 8,416, 12.579 and 16.8065MHz
- 1218UTC: 8,416, 12.579 and 16.8065MHz

If you want to QSL with this station the latest address is:

**Commanding Officer, USCG Communication Station Boston-NMF, PO Box 938, Marshfield MA 02050, USA.**

**MFA Lagos**

For those of you who enjoy a little detective work, here’s a riddle for you to work on. There are many MFA (Ministry of Foreign Affairs) stations around and most have been identified. However, there seems to be a couple of new stations that are proving difficult to positively identify. The frequencies in question are: 7.8217, 10.2317, 11.1889MHz. The transmission modes seem to be 96 baud FEC-A but some reports suggest that 100 baud SITOR A may also be used. The mark for these stations sends LVN/K followed by tuning burst. The best suggestions to date show this as a link between the capital, Lagos and Abuja which is located in central Nigeria. Although the traffic on the link is off-line encrypted, you may find the odd header is sent in plain text. If you have any further information on either of these stations, please write to the address at the head of the column with details.

**Frequency List**

This month’s selected frequencies have been supplied by Day Watson, Geoff Crowley and Robert Hall. The format follows the usual standard, i.e. frequency, mode, speed, shift, callsign, time and notes. If you would like a copy of either of my Decode List or Day Watson’s beginners list, just drop me a line with three first or second class stamps. To help me achieve a fast turn round, I’d be grateful if you could mark your letter Beginner or Decode and include an adhesive label with the return address.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Mode</th>
<th>Speed</th>
<th>Callsign</th>
<th>Time</th>
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Short Wave Magazine, March 1993

from 2000 and on Sundays from 1600. Michael Williams (Redhill) tells me that the latest, but R.Derby still carries R-2".

some of the Spanish stations heard from WNEW in New York. Anguilla on 1610 were clearly heard on Ted Bardy heard CJVC1 at 0337 rated 33333. During daylight were swamped by local radio signals he can normally hear during daylight or at dawn/dusk.

He found Saarlouis, Germany on 183 kHz. Encouraged by these results he logged them soon after midnight on December 22 by Tim Bucknall in Congleton. Roberts heard clear signals from CJYG 930 & VOAR 1210 were also in reverse seemed to apply after dark and interference from Continentals.

R.MC via Roumoules loEg, identified it was RMC.

more BBC local stations now relay the reverse seemed to apply after dark and interference from Continentals. The local radio signals he can normally hear during daylight or at dawn/dusk. He also logged CHER in Sydney, Australia on 1600 kHz.

R.Tay 1.40
R.Bedfordshire 0.25
BRMB (Xtra-AM) 1.20
1152 LBC (L.Talkback RI
1026 R. Cambridgeshire0.50
990R.Devon
990
954
954
945
936
855
837
828
792
774
765
756R.Cumbria
729
657
657
R.Comwall
657
Spectrum R.
500
CIS
CIS
Czech
Russia
Ukraine
Slovakia
Hungary
Romania
Bulgaria
Rumania
Vietnam
India
Pakistan
South Africa
Brazil
Cuba
Chile
New Zealand
Russia
Canada
US

Listeners:
A: Leo Barr, Sunderland.
B: Vera Brindley, Woodhall Spa.
C: Geoff Crowley, Mirfield/Leeds.
D: Vera Brindley, Woodhall Spa.
E: Tim Bucknall, Congleton.
F: Geoff Crowley, Mirfield/Leeds.
G: Alan Roberts, Quebec, Canada.
H: Simon Hockenhull, E.Bristol.
I: Sheila Hughes, Maidenhead.
J: Eddie McKeeown, Newry.
K: Ross Lockley, Stirling.
L: Eddie McKeeown, Newry.
M: Sid Morris, Rowley Regis.
N: Tim Smyth, Caernarfon.
O: Phil Townsend, E.London.
P: John Wells, East Grinstead.
Q: John Wells, East Grinstead.

Short Wave Reports

Conditions in the 25MHz (11m) band varied from day to day, but the signals from R.Australia via Darwin on 25.750 (Eng to Japan, China, N.Eu 0800-0855) could usually be heard in the UK. Considerable variations in signal rating were noted. In E.Bristol Simon Hockenhull logged them as 24332 at 0950.

Other broadcasters used this band to reach areas outside their UK licence areas but their signals can often be heard here via back scatter and other modes. They include UAE R. Abu Dhabi 25.690 (Ar to 0900-1300) S10333 at 1230 by John Coulter in Winchester; R.Norway Int. Oslo 25.730 (Nor to Asia, Aust 0800-0830 & 0900-0930, Norw to Va. Africa 0830-1500). *Eng Sat/Sun 53333 at 1315 by Peter Pollard in Rugby; Radio Denmark via RNI 25.730 (Di to W.Africa 1300-1355) S10333 by Ted Walden-Vincent in Gr.Yarmouth; DW via Julia 25.740 (Ger to M.East, E.Asia 1100-1355) 54444 at 1210 by John Eaton in Woking; RFI via Lisbondon 25.820 (Fr to E.Africa 0700-1500) 45233 at 1243 by Darren Beasley in Bridgwater; R.Nederland via Revo 25.970 (Du to W.Africa 1030-1155, Sun Only) S10335 at 1045 by Kenneth Buck in Edinburgh.

The broadcasts from RNI, DW & RFI have also reached Iceland and E Canada. Geoff Crowley, Mirfield/Leeds, rated them 44343, 55555 & 45555 respectively at 1328. Alan Roberts (Quebec) noted them as "fair". Weak signals from UAER, Abu Dhabi (25.690) were logged by him some days ago.

In the 21MHz (13m) band good reception of R.Australia’s signals has been noted by listeners here: Darwin on 21.525 (Eng to SE Asia 0200-0800) rated S10333 at 0740 by Cyril Kellam in Sheffield & 21.725 (Eng to E.Africa) 44344 at 1130 by Vera Brindley in Woodhall Spa. 21.590 from Garmnay (Eng to Pacific areas 0100-0900) 53554 at 0720 by David Edwardson in Wallisend.

In the morning, R.Pakistan, Islamabad 21.520 (Eng to Eu 0800-0845) was 44243 at 0831 by Eddie McKeeown in Newry; R.Finland via Pori 21.550 (Eng. to SE.Asia 0900-
### Tropical Bands

<table>
<thead>
<tr>
<th>Freq</th>
<th>Station</th>
<th>Country</th>
<th>UTC</th>
<th>Dixtr</th>
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<tr>
<td>5.295</td>
<td>Voice of Kenya</td>
<td>Kangay</td>
<td>183a</td>
<td>C.P.A.U.</td>
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<tr>
<td>5.265</td>
<td>RR Radio</td>
<td>China</td>
<td>2027</td>
<td>W</td>
</tr>
<tr>
<td>5.265</td>
<td>RR Radio</td>
<td>New Guinea</td>
<td>1200</td>
<td>V</td>
</tr>
<tr>
<td>5.075</td>
<td>VCO de la Radio America</td>
<td>Venezuela</td>
<td>2217</td>
<td>C.P.A.U.</td>
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<td>4.995</td>
<td>VOR del Golfo</td>
<td>Mexico</td>
<td>1310</td>
<td>B.C.C., M.D.U.</td>
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<tr>
<td>4.995</td>
<td>VOR del Golfo</td>
<td>Mexico</td>
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<tr>
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<td>F.R.C.</td>
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</table>

### Dixtr
- A: Fred Pallant, Storrington.
- B: Eddie McKeown, Newry.
- D: John Eaton, Woking.
- F: Robert Connolly, Kilkeel.
- E: Bill Clark, Rotherham.
- I: Tim Allison, Middlesborough.
- P: Peter Poison, St. Andrews.
- T: Tim Allison, Middlesborough.
- V: Chris Shorten, Norwich.

**Short Wave Magazine, March 1993**
R. New Zealand's 15MHz (13m) signals to Pacific areas have reached the UK some evenings. Their 100W signals from Rangataik 15230 (Eng 0730-1820) 23523 at 1900 by Chris Haigh in Huddersfield. Also to Pacific areas, R.Australia's broadcasts via Sheperton on 15240 (Eng 0300-0900) have been very clearly heard here most mornings. They often peaked SI044 at 0800 in Sheffield. In contrast, their signals to Asia via Darwin on 15170 (Eng 0900-1400) 14333 at 1900 by Gerry Haynes in Bushby Heath.

In the day there are many 19m signals to Europe. Some stem from R.Africa, Nigeria 13455 at 0715 (Eng to Asia via Darwin on 15170) signals to Europe. Some stem from signals to Asia via Darwin on 15170 signals to Pacific areas have reached Taplin in Brenchley; China R.Int via Russia 15465 (Eng to N/W.Africa 0300-0325) at 1900 in Stirling; WYFR, Okeechobee Stalbridge; WSHB, Cypress Creek 15665 (Eng to N/Africa) S10444 at 1615 in Stirling; Wawel, Krakow 15520 (Eng to S.Europe 0600-2145) S10444 at 2200 in Middlesbrough; FEBC via bocaue 12055 (Sh, Chin, Ca, Ha) to N/S.Africa 1300-1530) S10322 at 1318 in Rowley Woofferton 12095 (Eng 0700-2030, also to UK) 14311 at 0957 in Sunderland; R.Vilnius, Lithuania 9500 (Eng to Lithu-1300-1330,*Eng Sat/Sun) 23323 at 2346 in Wallsend.

Long Medium & Short

**Transatlantic DX Chart**

<table>
<thead>
<tr>
<th>Frq Station</th>
<th>Location</th>
<th>Time (UTC)</th>
<th>DXer</th>
</tr>
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<tbody>
<tr>
<td>1120 W3WV</td>
<td>New York, N.Y.</td>
<td>0740</td>
<td>E</td>
</tr>
<tr>
<td>1210 WBNO</td>
<td>Philadelphia, Philadelphia</td>
<td>0900</td>
<td>C</td>
</tr>
<tr>
<td>1210 W3H</td>
<td>Cleveland, Ohio</td>
<td>0910</td>
<td>C</td>
</tr>
<tr>
<td>590 RGIW</td>
<td>St. John's, NF</td>
<td>0010</td>
<td>C.E.</td>
</tr>
<tr>
<td>930 CHYD</td>
<td>Norfolk, VA</td>
<td>0000</td>
<td>A.C.O.F.</td>
</tr>
<tr>
<td>1210 W2ZI</td>
<td>Mount Pearl</td>
<td>0015</td>
<td>D.J.</td>
</tr>
<tr>
<td>1720 CIQZ</td>
<td>Moncton, NB</td>
<td>0000</td>
<td>O.</td>
</tr>
<tr>
<td>1120 W3CO</td>
<td>Argentine Beacon, Argentina</td>
<td>2215</td>
<td>B</td>
</tr>
<tr>
<td>590 YVNO</td>
<td>Rio de Janeiro, Brazil</td>
<td>0000</td>
<td>South America</td>
</tr>
<tr>
<td>590 YVNO</td>
<td>Rio de Janeiro, Brazil</td>
<td>0000</td>
<td>South America</td>
</tr>
<tr>
<td>590 YVNO</td>
<td>Rio de Janeiro, Brazil</td>
<td>0000</td>
<td>South America</td>
</tr>
</tbody>
</table>

S1044 at 2000 in Co-Farmanagh; AIR via Algnag 7.412 (Eng to 1730-2244) 44444 at 2045 in Morden; WGN, Scotts Corner 7.510 (Eng to USA 2000-0000) 33333 at 2200 in Derby.

**The 6MHz Band**


Some beamed to other areas come from KHH, N.Marina 15.665 (Eng to Ghana 0800-0950) 34323 at 0915 in Norwich; VIA by Algnag 15.020 (Sin to Sri Lanka 1300-1500) 33333 at 1300 by Tony Singh in Hitchin; R.Moscow, Russia 15.465 (Eng to N/Africa 0300-0730) 43333 at 0715 by Ron Dimpin in Worthing; WHV, Dayton 15.265 (Eng 0800-2000) also to USA) S12222 at 2015 in Stirling; WBN, Red Lion 15.295 (Eng 0730-2030, also to USA) S10444 at 2000 in Norwich.

**DXers:**

- Eric Duncan, St.Andrews.
- John Parry, Northwich.
- Roy Patrick. Derby.
- 

**Short Wave Magazine, March 1993**
Daily checks by John Wells in E. Grinstead revealed that beacons heard on one day were often missing the next, which suggested variations in propagation, but he could not account for the fact that some beacons received at good strength previously, e.g. Ijmuiden Ft Lt, Holland (YM) 288.5, Falsterborev Lt, Sweden (FV) 303.0 and Le Grand Jardin Lt, France (EJ) 306.5 were inaudible during November and December. He added several new ones to his list, but some proved to be erroneous at radio beacons, which are outside the scope of this series.

A check on the band was made most mornings by Darren Beasley in Bridgewater and he also found that some of the beacons he could normally receive at good strength were missing. The latest report from Kenneth Buck (Edinburgh) helped to clarify the situation. He says, "Whilst the beacons in the UK have settled down, changes in the power of some of the Scandinavian beacons have taken place, possibly due to interference problems during these short days". He has observed that the signals from Falsterborev, Sweden (MV) 303.0 and Feistein, Norway (FNI) 303.5 are now quite weak, whereas the signal from Bjonsund, Norway (BJ) 303.5 are now very strong. Kenneth also mentioned that the callsign of the Kullen High beacon on 294.0 has been changed from KUL to KUJ.

Amongst the entries compiled by John Macdonald (Thurs) were some beacons around the coastline of Iceland. They were still operating on the frequencies used prior to the changes last April. Up in Iceland Geoff Crowley (Hafnarfjordur) heard several beacon signals much higher up the band, see chart. He listed them as maritime, but I am unable to confirm their status because I have no information on the Icelandic beacons.

An extensive report was compiled by Robert Connolly in Kilkeel. Like several other DXers he logged Porquerolles, S. France (PO) on 314.5, but he informs me that it is likely to be closed down. Patrick McKeever (Birmingham) has been able to receive some of the more distant beacons since he erected an antenna as far as possible from his house. It consists of a 14m wire suspended between two 7m poles. A magnetic balun couples one end of the wire to 25m of 50c coaxial cable, which runs along a fence to his Lowe HF-225 receiver. He has resulted in a considerable reduction in the level of received electrical interference, which masked the weaker signals.

Encouraged by previous results, George Millmore (Wootton, IOW) has checked the band around midnight and added several beacons to his growing list.

In Torquay, Cliff Stapleton found the signals from Round Island (RI) 298.5, La Corbiere, Jersey (CB) 295.5 and several beacons along the coastlines of the English Channel could be heard by day or night, but more distant ones, such as Hborg, Sweden (DB) 301.5 or Cabo Mayor Lt, N. Spain (304.5) could only be heard after dark.

Up in Largs, John Stevens logged several beacons for the first time. He can hear others, but in common with many DXers he finds it difficult to read the Morse idents when two or maybe three beacons of different intensity share a frequency. It is well known that the human ear and brain can detect very small changes in pitch, so it may be possible to resolve them if they produce a slightly different beat note, but this requires a good deal of practice in Morse code reproduction. A simpler solution is to install a sharply tuned audio filter between the receiver audio output jack and a pair of headphones.

Some of the beacons that Philip Townsend heard after dark in E. London could only be resolved by using an active audio filter with his Lowe HF-225 receiver. He constructed a very narrow filter based on a design by Kenneth Buck (page 60, SWM December '92). A further improvement can often be obtained by using a good loop ahead of the receiver to reduce or 'null out' completely an unwanted co-channel beacon signal.

With regard to learning the Morse code, Leslie Biss (Knaresborough) has pointed out that the RSGB has a good tape: Morse Code Stage 1-5WPM (RSGB). It is available to non-members at £4.50 + £1 p&p. Also available is a booklet entitled Morse Code Far Radio Amateurs (RSGB) at £3.51 + £1 p&p.

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Short Wave Magazine, March 1993

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Short Wave Magazine, March 1993
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