

FOR THE
RADIO LISTENER

shortwave magazine

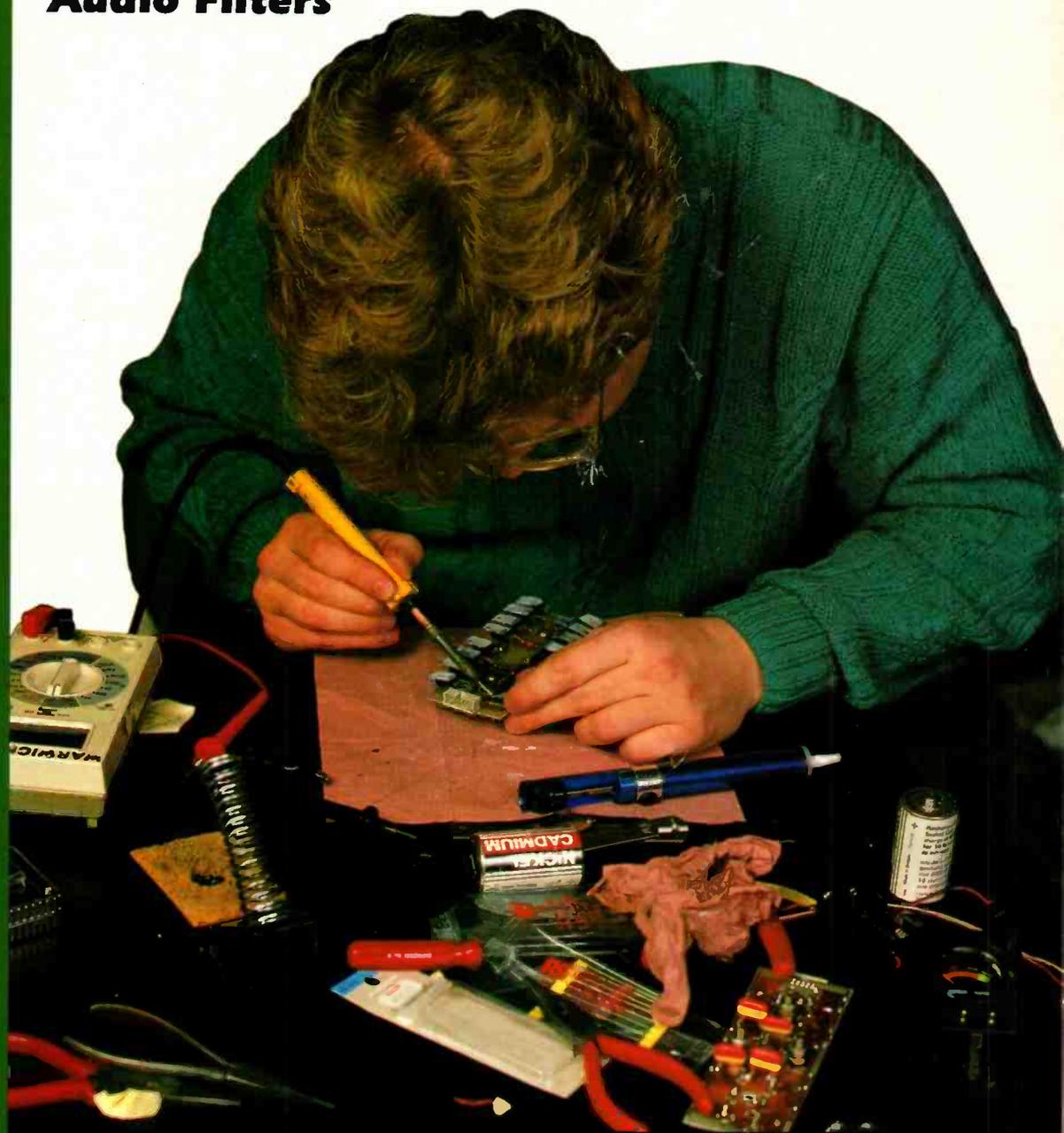
August 1992 £1.75 ISSN 0037 - 4261

MODS

Manual AM/FM Switching For The PRO-32

Extra Selectivity For The FRG-8800

**Broaden The Bandwidth Of The Datong
Audio Filters**



**PLUS...The Cormorant's Paper Bag -
A Lightning Story**



Regular Features Include

Airband, Scanning, Junior Listeners,
SSB Utility Listening, Propagation,
Amateur Bands, Long, Medium &
Short Waves, Satellite TV Reports,
Weather Satellites and More!

**VOL. 50 ISSUE 8 AUGUST 1992
ON SALE JULY 23**

(Next Issue on sale AUGUST 27)

EDITOR: Dick Ganderton, C. Eng., MIEE, G8VFH

ART EDITOR: Steve Hunt

NEWS & FEATURES: Elaine Richards G4LFM

EDITORIAL

Enefco House, The Quay,

Poole, Dorset BH15 1PP

TEL: (0202) 678558

FAX: (0202) 666244

CREDIT CARD ORDERS: (0202) 665524

(Out of hours service by answering machine)

ADVERTISEMENT DEPARTMENT

ADVERTISEMENT MANAGER

Roger Hall G4TNT

TEL: 071-731 6222 Cellphone: 0850 382666

FAX: 071-384 1031

ADVERTISEMENT PRODUCTION (Poole)

Marcia Brogan

TEL: (0202) 676033

FAX: (0202) 666244

© PW PUBLISHING LTD. 1992.

Copyright in all drawings, photographs and articles published in *Short Wave Magazine* is fully protected and reproduction or imitation in whole or in part is expressly forbidden. All reasonable precautions are taken by *Short Wave Magazine* to ensure that the advice and data given to our readers is reliable. We cannot however guarantee it and we cannot accept legal responsibility for it. Prices are those current as we go to press. *Short Wave Magazine* is published monthly for \$45 per year by PW Publishing Ltd., Enefco House, The Quay, Poole Dorset BH15 1PP. Second class postage paid at Middlesex, NJ. Postmaster: send address changes to *Short Wave Magazine*, c/o C & C Mailers International Inc., 900 Lincoln Boulevard, PO Box 177, Middlesex, New Jersey, 08846, USA. The USPS (United States Postal Service) number for *Short Wave Magazine* is: 006696.


pw publishing ltd.

contents

15 NOAA Satellite Predictor Program
Version 2.0
Peter Rouse GU1DKD

16 Have You a Cormorant's Paper Bag?
P.E.W. Alleyley GW3KJW

23 MODS SPECIAL

23 A Battery Problem Solved
George Millmore

24 Manual AM/FM for the
Realistic PRO-32
A.D. Ayres

29 Broadening the
Bandwidth of the Datong
FL2 & FL3 Audio Filters
Don Phillips M.Sc

31 An Extra Selectivity Option
for the Yaesu FRG-8800
Don Phillips M.Sc

35 Novel 3.5MHz Receiver Follow-up

36 New Marine Beacon Frequencies in
the British Isles
Godfrey Manning G4GLM

REGULARS

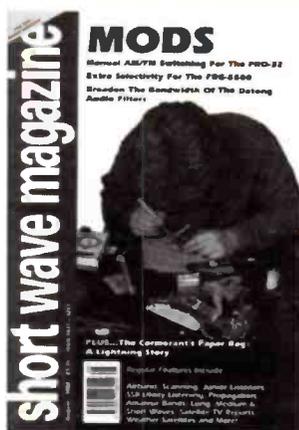
- | | | | |
|------|------------------------|----|-----------------------|
| 47 | Airband | 59 | Long, Medium & Short |
| 42 | Amateur Bands Round-up | 6 | News |
| 40 | Bandscan USA | 21 | PCB Service |
| 70 | Book Service | 38 | Propagation |
| 56 | Decode | 39 | RadioLine |
| 45 | DXTV Round-up | 11 | Rallies |
| 3 | Editorial | 41 | Satellite TV News |
| 11 | Grassroots | 50 | Scanning |
| 53 | Info in Orbit | 3 | Services |
| 72 | Index to Advertisers | 39 | SSB Utility Listening |
| 5 | Junior Listener | 12 | SWM Subscribers' Club |
| 3,21 | Letters | 73 | Trading Post |
| 21 | Listen With Grandad | 64 | Watching Brief |

...GOOD LISTENING

TRADING POST
COUPON SWM AUG 1992

Cover:
Soldering might be part of carrying out modifications to your short wave radio, but can you guess what this chap is doing? I will tell you that he's not working on his scanner. Send in your ideas, funny or serious, to the Editor and you could win a prize!

Photo credit:
Adam Hart-Davis/
Science Photo Library.



uniden **Beacat** **Scanners**

by

PRESIDENT

ELECTRONICS EUROPE

S.A. 20.000.000 FF

ALIVE AND KICKING !



PRESIDENT

● **Your reasoning**

Quality, reliability, solidity, from a wide-worldly known brand:

uniden.

A proven value for Scanners and Citizen Band radios.

PRESIDENT

● **Your partner**

Present all over the U.K. thanks to exclusive distribution.

Complete range available as from July 1992 onwards.

WHOLESALERS ONLY

PRESIDENT ELECTRONICS EUROPE, Head office
Route de Sète - BP 100 - 34540 BALARUC - France

For more information please contact:
PRESIDENT ELECTRONICS BENELUX
Woluweaan, 141 B
1831 DIEGEM Belgium
Tel : +32 2 725 48 90
Fax : +32 2 725 58 38

editorial

SWM SERVICES

Subscriptions

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

Components for SWM Projects

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

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

Back Numbers and Binders

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

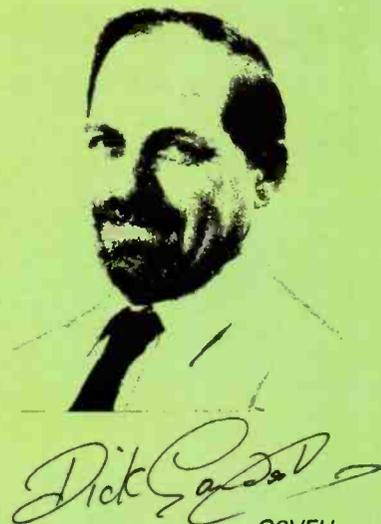
Binders, each taking one volume of the new style *SWM*, are available price £5.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

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

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

The Letters pages in the July issue certainly generated a lot of replies on several of the topics raised. Because of the way in which the magazine is prepared - with this Editorial being the last piece to be prepared - it is not possible to include them in this issue. However, this means that next

month's Letters will have to be larger than usual to accommodate them all. I have always maintained that a lively Letters section indicates a healthy magazine - if the present maibag is anything to go by *Short Wave Magazine* certainly falls into that category!



G8V FH

letters

Dear Sir

Since 1985 I have been a regular, but rather casual, short wave listener using various simple receiver, but more latterly a Sony ICF-7600DS.

However, in the last 12 months or so I have been greatly encourage by your excellent magazine and have spent more time and effort (and money too!) on this hobby. First of all I built John Tweeker's m.w. loop (Jan 1991 *SWM*), which gave excellent results with the ICF-7600DX. I then progressed to the even better Hex loop (April 1989) and made an a.t.u. which also was very worthwhile.

With the addition of the excellent C.M. Howes ASL5 s.s.b. and c.w. filter (which really cleans up noisy s.s.b. signals very effectively) and the Maplin DXer's Audio Processor I had quite a good set up.

I would like to take this opportunity to say that, whatever anyone else may advise, the a.t.u. (antenna tuning unit) is an absolutely essential part of almost any s.w.l.s set-up.

Not only can it help peak up the strength of a weak or modest and mismatched signal, but even if it cannot help much there it has the even more important function of acting as a filter, allowing through the required station at the expense of many others in the s.w., m.w., and l.w. bands,

This is the VITAL point, the a.t.u. helps prevent overload at the front end of the receiver, which causes many spurious and unwanted signals to be

generated, especially if the receiver has a limited dynamic range.

I would like to thank two BRITISH companies for their extremely helpful, friendly and efficient service: Lowe Electronics in Matlock from where I recently purchase their new and absolutely superb HF-150 - what a gem! - nothing was too much for them.

Secondly, ERA in Warrington for their excellent little Microreader, which I have just upgraded with the new 4.1 EPROM, this really improves its performance vastly and also provides the facility to decode SITOR/NAVTEX and AMTOR in addition to the previously available standard RTTY and c.w. Anyone who has a Microreader really should upgrade from the old 3.2 to the 4.1 firmware.

**Mike Smith
Warwickshire**

Dear Sir

Very recently I had the misfortune to suffer a problem with my AOR1000 scanner. The programming became corrupted and I lost the front end of the u.h.f. airband.

The scanner was three months out of warranty. I contacted the supplying dealer who quoted me a minimum of one month to repair and return. This was doubly upsetting because with the Boscombe Down airshow only two weeks away I was looking to beg, steal or borrow a scanner.

A 'phone call to Richard Hillier at AOR (UK) gave me some hope. The scanner was dispatched at lunchtime on Monday, by lunchtime Friday my scanner was back, repaired, checked and a key pad was even replaced (for which I was not charged), and the total cost, including insured postage was very reasonable.

I am not one who would normally put pen to paper such as this, but I felt in this instance that credit should be given where credit is due.

Mike Bassan, Sutton

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

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

letters

Dear Sir

I just would like to tell you how pleased I am with *SWM*. Regarding its content of information it surpasses, for example, any German magazine by far and proves to be very useful for an exciting hobby.

My favourite fields are military networks in s.s.b. and c.w. - the latter being reduced very much since the disentanglement of Warsaw Pact. Using a PC database and a set of forms for each net including one 'External Infos' I can make full use of *SWM* data to be filed there.

Concerning your remarks about SAC: This net has ceased to be used for its original purpose by 30 September 1991 officially.

Presently I use a R2000, two NRD 535 branched to recorders, spectrum analyser

and RTTY: Wavecom 4010, Pocom and Code-3. A small box allows recording of the relative field-strength or times of traffic by using a selective a.f. filter to choose the pitch of a specific transmission and feeding a signal to the recorder in case this condition is fulfilled. A FRG-9600 for v.h.f./u.h.f. and a nearly historical 'Nuova Elettronica 551' Meteorat receiver with 1m dish completes the shack.

I would appreciate very much reading more in *SWM* about the analysis of complex RTTY transmissions as offered by Wavecom and Code-3 software as I still have some problems in understanding how to proceed exactly. Your article about ARQ/FEC was a very good start in this direction.

**Fritz Nusser
Switzerland**

Dear Sir

I have been an s.w.l. and *SWM* reader for a relatively short time, but am, as is Sheila Hughes of Morden, an active listener to both Polish Radio Warsaw and Radio Vilnius Lithuania.

In your May issue of *SWM* the Polish Radio schedule is out of date (*That's the trouble with long lead times - Ed*) The following is now their schedule:

1200-1300 - 11.815, 9.525, 6.135, 7.145 & 1.503MHz

1500-1600 - 11.840, 9.525 & 7.285MHz

1700-1800 - 9.525 & 7.270MHz

1930-2030 - 6.135, 9.525, 7.270, 7.145, 6.095 & 1.503MHz

They have made many changes recently but this looks like changing little for a while!

The following is Radio Vilnius schedule from May.

2130-2200 - 666kHz, 9.710, 9.675 & 1.557 (not announced)

2300-2330 - 11.780, 13.645, 15.580 and knowing them possibly 9.710 but this too is not announced.

**Michael Ker
Gwent**

Dear Sir

Just a short letter which your readers might find useful.

English programs of Radio Kuwait have returned to short wave daily, 1800-2100UTC on 13.620MHz. I don't know when they started again, but I first heard them on April 24.

I will welcome their return to the airwaves. I used to listen most evenings to their broadcasts. I have waited for information on their broadcasts for a long time, but found this frequency by chance; I haven't seen anything published yet.

**Andy Goodwin
Shropshire**

Dear Sir

In the lore of telegraphy, I would like to relate a story about Lord Louis Mountbatten when he was Signals Officer in the Navy. He had a fleet on exercises in the Mediterranean. All seaways in or near the equatorial zone suffer from virulent static on the m.f. band. He went into the radio room of the command vessel and switching on a transmitter touched the key for an 'e'. He subsequently called in every W/T log from every vessel to look for the significant 'e'. I would say that successful operators would have been issued an extra noggin of rum.

**Peter Robinson
Warwickshire**

Dear Sir

Are there any expatriates, holiday-makers or local inhabitants of other European countries who might be 'scanning the UK'?

It would be interesting to know how widespread the scanning hobby is abroad. Apart from those who monitor only amateur or CB, there must be considerable scope caused by differing frequency band allocations to listen to the UK from afar, using Sporadic-E or F-layer propagation. Some possibilities that spring to mind include the following.

Imagine someone based in Eastern Europe. As the east use 65-73MHz rather than 88-108MHz for their f.m. broadcast, the latter band would be free of local stations. During Sporadic-E, there would be chances of hearing UK f.m. stations as well as various other countries placed in an arc around the listener's position.

Another possibility would be of people in any part of Europe listening to p.m.r. output from the UK via Sporadic-E. Someone might be hooked on the Fire Brigade for instance, and have 'Heard all Counties' (a new award?).

The distant listener would get a total view, a sort of aerial view, compared to what we expect by line-of-sight listening. From his armchair he would, over a period, be able to explore the whole country.

While writing this, the 1992 *WRTH* landed on my doormat, and talking of East

Europe f.m. broadcast stations, there are interesting changes since the previous edition that I possess (1989). The Baltic states (Estonia, Latvia and Lithuania) now give transmitter details for the various radio and TV bands. The rest of the former USSR is still lumped together, with much more l.w., m.w. and f.m. station detail, but still no TV to speak of. All these states use the CIRT band 65-73MHz and are the right distance from the UK for Sporadic-E reception. Ron Ham has mentioned the number of 65-73MHz stations he has heard, but detailed DXing might be a tough problem to crack compared to s.w. or m.w. (has anyone specialised in this?).

For one thing, there are few English segments in such purely domestic services. Secondly, the channel spacing is only 30kHz, yet a wide-band f.m. transmission occupies about 200kHz of bandwidth, which when being monitored on w.f.m. mode would seem wider still. The net result is that you have about ten stations to choose from for a given frequency displayed on your l.c.d.

The Eastern Bloc has increased the number of 88-108MHz stations, again by consulting the new *WRTH*. There are about 68 stations now compared to 31 in 1989. I wonder if they intend to move to our band and gradually close their one down? This would be sad for Sporadic-E studies.

**Richard Gosnell G4MUF
Swindon**

Dear Sir

I would like to say how much I enjoy your magazine. As a comparative newcomer to s.w.l. I have learnt a lot from your pages over the last year or so.

I would like to mention two companies who advertise in *SWM*. I recently visited Waters and Stanton of Hockley and found them a very fair company to do business with. Their staff were polite, informed and above all patient - they had time to answer my many questions.

Also C.M. Howes, from whom I received a kit just three days after sending the order.

On a different subject, it would be nice if some of the amateur stations would give their callsigns at a speed at which they can be written down. So many of them finish an over with a burst of letters and numbers that even playing a tape back at slow speed fails to untangle the all important callsign.

**R. Nice
Felixstowe**

junior listener

Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

Books, Books & More Books

It's books to start with this month. First, I've received the results of the 1992 Science Book Prize that I mentioned a couple of months back. The Junior prize was won jointly by *The Amazing Voyage of the Cucumber Sandwich* by Peter Rowan and *How Nature Works* by David Burnie.

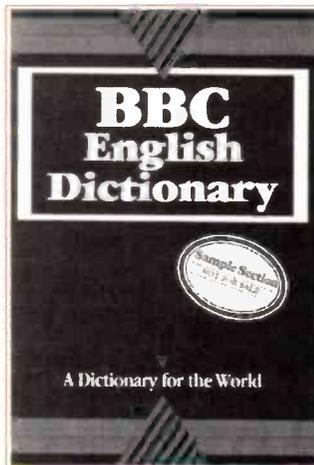
The next book also doesn't have anything to do directly with radio, but it is so good I thought I'd tell you about it anyway. It's the *BBC English Dictionary*. Apparently, four years of the BBC World Service radio broadcasts and millions of words of output have been analysed by computer to produce this dictionary - can you imagine how much information must have been processed!

Over 70 million words of news, current affairs and sports output were analysed. These were then fed into Cobuild's computerised 'Bank of English' (a 150 million words database).

What makes this so different is that it is a cross between an encyclopaedia and a dictionary. It tells you how the word should (or shouldn't) be used in a sentence and gives an example of a sentence using the word, this helps with understanding the meaning.

As it was only completed in January this year, it's about as up-to-date as you can get. As I said, it's got nothing to do with radio, but it came about from a radio station, so that's my link!

The dictionary costs £14.95 for a hardback version and should be available from good bookshops, but I expect that many schools will be investing in these books.



Dubai Radio

Another station who actively look for reports is Dubai Radio. Your reception report to them should include:

- 1: Your name and address printed clearly.
- 2: The date and time of reception in UTC (same as GMT).
- 3: The frequency on which you heard Dubai Radio as accurately as you can manage.
- 4: Several details of the programme heard so they can verify that you actually heard Dubai Radio
- 5: Your assessment of their signal using the SIO code
- 6: They would also appreciate reports of their other frequencies directed to your area at the same time, including those poorly received or not heard
- 7: A description of your station.

Their QSL address is: Dubai Radio, External Services, PO Box 1695, Dubai, United Arab Emirates.

They broadcast to Europe from 0612-2100 on 13.675MHz; 0615-1545 on 15.435MHz; 0615-1645 on 21.605MHz; 1600-2100 on 11.796MHz and 1700-2100 on 15.400MHz. English news bulletins are broadcast at 0330, 0530, 1030, 1330 and 1630UTC.

German Lessons?

If you are studying German as school, then a German language course for beginners may be of help. It is transmitted every Wednesday by Deutschlandfunk from 1900 to 1915BST and repeated the following Saturday at the same time on 236.4m medium wave, 1.269MHz ASTRA satellite, transponder 6 on the audio sub-carrier 7.74MHz of SAT 1. If you would like a course booklet send your name and address to Deutschlandfunk - English Service, PO Box 51 06 40, W-5000 Cologne 51, Germany.

News from Japan

Radio Japan is a station who welcomes reports from listeners, they must do as they receive about 90 000 letters from listeners each year. Each report gets a QSL card and the latest publicity material and they look forward to comments and suggestion on their programming.

Radio Japan is the country's international voice on short wave. It is run by NHK, Japan's only public service broadcaster. Radio Japan began in 1935 and now broadcasts 48 hours in 22 languages daily - yes that is possible if you transmit on more than one frequency at a time.

Media Roundup is a programme about short wave radio broadcasting and also things like high definition TV, antennas, satellite broadcasting and other scientific subjects. I think it goes out on Sundays between 1530 and 1555, 2130 and 2155 and 0130 and 0155 if I've read the latest schedule right! Frequencies like 11.865, 17.890 and 15.195MHz could be tried. I've no doubt if I'm wrong, someone will set me straight soon enough! Their QSL address is Radio Japan/NHK, Tokyo, 150-01 Japan.



Radio New Zealand

On June 2, Radio New Zealand introduced a new design of sticker into their range of goodies. Although their programmes are not actually designed for reception in the UK, they do get plenty of reports from UK listeners. Their *Mailbox* programme with Tony King on alternate Thursdays at 0840 on 9.7MHz is always worth a listen. Reception reports are welcome and for a **prompt** QSL response, your report should be accompanied by 3 IRCs. Radio New Zealand International, PO Box 2092, Wellington, New Zealand.

Next Month

In the next issue, I'll be taking a closer look at the Novice Licence and looking at a couple of receivers that you might like to put on your Christmas list!

Short Wave Magazine, August 1992

Better Reception

From the letters I get I know many of you are using portable short wave receivers rather than bench mounted communications receivers. Although this is a great way to start, one of the main limitations is often the in-built telescopic antenna. While this is usually fine for general domestic listening, it's not so good when you're chasing that rare DX station. There are two main problems with these antennas - they're too short and in the wrong location. By the wrong location I mean that the antenna should, ideally, be as far away as possible from any sources of interference. With the modern home being full of electrical devices it's not surprising to find all manner of interference problems. So what can you do? If your receiver has an external antenna socket, I would strongly recommend you make good use of it and install a simple long wire antenna. This should be as long as you can manage and located as far away as possible from any interference. Don't worry about running it in a straight line - you can put in all manner of bends without degrading its performance.

If you don't have an external antenna socket all is not lost as you can connect a long wire to the collapsed telescopic antenna. Although not as good as a proper socket it's generally better than nothing. The only exception to this is when trying to sort out a few very strong signals. With the simpler receivers you'll find that adding an external antenna may well cause the receiver to overload, in which case you're better off with the telescopic until the interfering station goes away.

If any of you have any useful tips for improving reception from simple receivers, I'd be very pleased to hear from you.

Radio Habana Cuba

Radio Habana Cuba will start regular single sideband broadcasts using upper sideband, 10% carrier for evaluation purposes. The transmitter will be a 30kW Siemens unit connected to several antennas, including their North Europe antenna.

Reports should be sent to:

Radio Habana Cuba, Apartado 7026, La Habana, Cuba.

RAE Courses

Bradford: The Bradford & Ilkley Community College will again be running courses for the Radio Amateur's Examination and the Morse Test. Enrolment times are September 8, 9 & 10 during the hours of 0930-1600 and 1800-2000. Late enrolments will be accepted. Course tutor is P.M. Nurse G0IFT. Further details from: **Bradford & Ilkley Community College, Great Horton Road, Bradford, West Yorkshire BD7 1AY. Or Tel: (0274) 753371 or 753377.**

London: The City of Westminster College (formerly Paddington College) will be running a Radio Amateur's Examination (RAE) evening course commencing early September 1992 (for May 1993 examination). Both Class A and Class B licences will be catered for (i.e. a Morse course will run concurrently). Additionally, an Advanced Morse course is

hoped to be conducted, taking candidates up to 22/25 w.p.m. with insight to professional/marine procedures, etc.

Professional college lecturers will conduct the course. Prospective candidates should contact the **College - Science & Technology Dept - Ann James. Tel: 071-723 8826** soonest for enrolment details, etc.

Brighton: Brighton College of Technology are running the next Radio Amateur course from Monday September 14. Two evenings classes are available. Mondays from 6-8.30pm covers the theory necessary to pass the C&G RAE. Wednesdays, also from 6 to 8.30pm for Morse and practical project building. Enrolment fees cover the cost of all notes and paperwork. For further details. **Tel: (0273) 667788 ext 605 or 730.**

Computer Fairs

There have now been over 40 All Formats Computer Fairs all over the country. Between one and two hundred trestle tables at every Fair, games consoles sell next to 486 PCs. The Autumn programme looks like this:

- September 5 - National Motorcycle Museum, Birmingham
- September 12 - Sandown Racecourse, Esher
- September 19 - Donington Racecourse, East Midlands
- October 3 - Northumbria Centre, Washington
- October 4 - University Sports Centre, Leeds
- October 10 - Assembly Rooms, Edinburgh
- October 11 - City Hall, Candleriggs, Glasgow
- October 17 - Novotel, Hammersmith
- October 18 - Brunel Centre, Temple Meads, Bristol
- October 24 - Haydock Park Racecourse
- November 1 - University Sports Centre, Leeds
- November 6 - National Motorcycle Museum, Birmingham
- November 7 - Sandown Racecourse, Esher
- November 8 - Southampton
- November 14 - Novotel, Hammersmith
- November 15 - Brunel Centre, Temple Meads, Bristol
- November 21 - Donington Racecourse
- November 22 - Northumbria Centre, Washington
- November 28 - Haydock Park Racecourse
- November 29 - City Hall, Candleriggs, Glasgow
- December 5 - National Motorcycle Museum, Birmingham
- December 12 - Sandown Racecourse, Esher

Roberts Radios

Roberts Radio have introduced some new radios to their 'Lifestyle' world radio range. The RC818 has a total of 45 programmable memories, five tuning methods, a clock alarm and dual time display. Provision is made for reception of single sideband and c.w. transmissions as well as stereo f.m. (headphones only). The tuning range for the s.w. section is 1.621 to 29.999. The cassette section can be pre-set to record in advance using the clock facility, while a clear liquid crystal displays all functions so the user knows what the radio is doing. The price for the radio is £199.99 from your local Roberts dealer and was reviewed in *SWM* July '92.

The R808 has many of the features of the larger 808, it also has 45 programmable memories and dual time display. Standby clock alarm and tri-colour display add extra value to this radio, although it does not have a b.f.o. The price for this radio is approximately £120.

To find out where your local Roberts Radio dealer is, contact: **Roberts Radio Co. Ltd., 127 Molesey Avenue, West Molesey, Surrey KT8 2RL. Tel: 081-979 7474.**



Samuel Morse Bicentennial Award

If you tried contacting the stations you needed during April and May 1991 for this award, then you only have until the end of August to apply for the award. If you've forgotten the scoring, or lost the rules, contact:

J. Harvey, 38 Bodenham Road, Northfield B31 5DS. Tel: 021-477 7447.

Gunn Diodes

Gunn devices generate energy at microwave frequencies from a d.c. power input and have many applications such as short range communications links and motion detection. The diodes are produced from epitaxial gallium arsenide grown in the manufacturer's own in-house epitaxy facility.

The X band (8.2-12.4GHz) diodes are available with 10, 20 and 30mW power ratings and operate from an 8V d.c. supply. The K band (18-26.5MHz) diodes have 5, 10 and 20mW power ratings and operate from a 5V d.c. supply. The actual frequency of operation is dependent on the circuit/cavity resonance. All diodes are housed in a standard anode heat sink package, other frequency ranges and packages are also available.

Circuit Distribution Ltd. Park Lane, Broxbourne, Herts EN10 7NQ. Tel: (0992) 441306.

RAIBC Appeal

Since BP withdrew their Lifestyle tokens from circulation late in 1991, replacing them with the new Options vouchers, Lifestyle tokens are no longer valid to exchange for goods by the general public.

However, within the new charitable option recently launched in their new catalogue, it allows charitable organisations such as the RAIBC (NI) to surrender these old vouchers for the next few months.

The RAIBC (NI) can use these old vouchers together with those from all other companies, including Air Miles, to purchase radio equipment and provide home study course on audio tape, for the blind and disabled in the community.

To date they have purchased and distributed more than £25 000 of equipment in the Province, using this method of fund raising. They do not ask the public for money as there are so many organisations looking for cash.

If you have any tokens no matter what brand they are, and you do not wish to use them yourself, please consider them and post them FREE OF CHARGE to the following address:

RAIBC (NI), FREEPOST BE1769, Belfast BT12 5BR.

Special Event Stations

Wirral & District ARC will be operating a special event station from the Lighthouse at New Brighton on Merseyside using the callsign **GB8TS** as part of the Grand Regatta Columbus '92 celebrations.

Tall Ships, sailing ships of all shapes and sizes, from all over the world, will visit the port for nearly a week. They will have recreated Christopher Columbus' historic voyage of 500 years ago, when he discovered America.

The station will be operational from Thursday August 13 when all the ships should be in port, until they depart in a grand parade of sail on Sunday 16th. Popular h.f. bands and some v.h.f. working will take place.

As an added point of interest, to those who like to work lighthouses on clumps of rocks in the sea, Perch Rock is in SJ39 for the purposes of the WAB awards. A rather unusual QSL card, befitting of the event and location, has been designed to send to those who send in their confirmation of working the station as well as for short wave listeners. All QSLs via the Bureau, please. All QSLs will be acknowledged.

Gerry Scott G8TRY. 19 Penkett Road, Wallasey, Merseyside L45 7QF. Tel: 051-630 1393.

GM0PNS will be active for approximately 7 days from 9/10 August from Pabay near Skye. Operation will be on h.f. from 80-10m on s.s.b. and c.w. Depending on the results achieved, operation from other islands in this part of Scotland may take place of the coming years.

Contacts will be confirmed by a special QSL. Radio amateurs who are also philatelists will be interested to know that Pabay is licensed to issue its own stamps. A special stamp is being issued to mark the event and a cover envelope with the stamp together with information on Pabay is available at £1.00.

To be certain of cards, QSL direct, cards will be returned via the RSGB QSL Bureau unless the special stamp is requested (as above). Please note that this is no way infers that they are charging for QSL cards, as requests for direct QSLs will be sent via the normal postal system, posted on the mainland after the event. The island of Pabay is located 2.5 miles from the village of Broadford on the south side of the Isle of Skye, NGR 675270.

QSL Address: GM0PNS. Isle of Pabay, Broadford, Isle of Skye IV49 9BP.

Stolen

Over the Easter holiday, Waters & Stanton had a container load of Micronet equipment stolen from a car park in the Midlands. If any readers can be of any help in tracing these goods, please contact:

Waters & Stanton Electronics. 22 Main Road, Hockley, Essex SS5 4QS. Tel: (0702) 206835.

FEBC Tests

FEBC, Philippines has recently installed a new Continental 100kW transmitter at their Bocaue site. It began test transmissions on Monday April 20. They are eager for reception reports so they can see how well they can be heard.

The test broadcasts are as follows:

Khmu (Sat/Sun only)
2215-2230UTC, 9.875MHz 260°
Lao
2230-2300UTC 9.875MHz 260°
Hmong
2300-2330UTC 9.875MHz 260°
Burmese
2330-0130UTC 15.460MHz 293°
Indonesian
0830-1030UTC 11.995MHz 210°
Cambodian
1200-1300UTC 11.690MHz 280°
English
1300-1600UTC 11.995MHz 280°

Reception reports for any of these broadcasts will be QSLed.

FEBC. Box 1, Valenzuela, Metro Manila, Philippines 1405.

Short Wave Magazine, August 1992

New DX-TV Converters

Two new DX-TV converters have recently been introduced by HS Publications.

The first is the popular D-100 'De-Luxe' with an automatic band scanning facility enabling the DXer to preview the most productive v.h.f. or u.h.f. channels when an opening is imminent.

The new unit features variable and switchable vision i.f. bandwidth for weak signal enhancement plus multi-system sound that is heard via an f.m. radio. An optional a.m. to f.m. adaptor is available for monitoring French TV a.m. sound.

The D-100 with bandscan costs £99.99 and the a.m. to f.m. adaptor costs £19.95. Both prices include UK postage and packing.

The second is a low-cost simple-to-use DXTV tuning system designed as a superior alternative to a v.h.f./u.h.f. upconverter. Known as the D-400, it also features variable vision i.f. bandwidth (6-3MHz approximately) and covers the most productive v.h.f. and u.h.f. DXing channels:

Bands I/II: Channels NZ1 to R4

Band III: M4-E12
UHF: E21 to 50 approximately

The D-400 operates from 13-28V d.c. or from a 220/240V mains supply using the adaptor supplied. The D-400 costs £49.95 (UK post free).

For further details, contact:
HS Publications, 7 Epping Close, Derby DE3 4HR. Tel: (0332) 381699.

First Aid

As a green as grass newcomer to s.w.l.ing, I have acquired a MARC double conversion receiver, with bands comprising l.w., m.w., m.b., 4 x s.w. 40kHz-30MHz and 3 x v.h.f. f.m., u.h.f., l.s.b., u.s.b., b.f.o. Unfortunately there is no paperwork with it. Hopefully someone may be able to throw some light on the matter. I will gladly pay any expense incurred for photocopies, etc.

Gerald Cowell. 28 Dunster Road, Worsley, Lancs M28 4AY.

Silver Jubilee

The White Rose ARS are celebrating their Silver Jubilee with a barbecue, family fun and open day on Sunday August 30. The venue is Moortown RUFC, Moss Valley, King Lane, Leeds. Listen out for the special callsign **GBOWRR** (White Rose Radio) active from August 16.

Betty Cappelluto, 7 Rycroft Place, Leeds. Tel: (0532) 555488.

Stealth Antenna

The Stealth Antenna is a tiny 90mm square of 0.8mm thick copper-clad polyimide coated with a non-corrosive graphite coloured coating that adheres to the inside of the car windscreen. Without a highly visible external antenna, thieves are less likely to be attracted to a vehicle in search of an expensive transceiver to steal.

Despite its small size, the Stealth Antenna out-performs a quarter wave whip under many circumstances, claim the manufacturers. The etched copper antenna is multi-polarised to reduce QSB caused by the varying polarisation of signals received in a moving vehicle. The antenna presents a low s.w.r. over the entire band and requires no adjustments of tuning.

Best of all, the Stealth Antenna can be installed without drilling holes, or risking paint scratches from magnets or suction cups. Once installed, it is inside the vehicle, protected from the elements and never in the way in a car wash or low garage.

The Stealth Antenna is available in models for 146 and 440MHz. The standard model can handle 50W of input power and costs \$59.95 (shipping overseas is extra).
j.Com, Box 194, Ben Lomond, CA 95005. Tel: (408) 335-9120 or FAX: (408) 335-9121. Credit cards are accepted.



When it comes to sheer know-how Look to Lowe

The NRD-535 with a subtle difference



The NRD-535 is a fine receiver, and fully confirms the JRC leadership in this particular field. However, even the best can be improved in specific areas; and after lengthy evaluation of the NRD-535 we decided that there were worthwhile improvements which we at Lowe, with our knowledge and specialist expertise could introduce to the more discerning listener – for it is the true “listener” who will appreciate what we have done.

First; we thought that the audio from the NRD-535 was not totally easy on the ear, and detailed investigation showed that the audio response had been “tailored” to suit the rather round shouldered response of the IF filtering. So, we went back to the IF filters and specified a higher performance SSB crystal filter with a 6dB bandwidth of 2.4kHz and a typical shape factor of 1.8:1; with less than 1dB passband ripple. For AM, we fit a more expensive filter with a 6dB passband of 5.7kHz and a shape factor of 1.5:1. The response of these new filters is very flat within the pass band, with steep symmetrical sides giving excellent adjacent channel rejection. The use of these more expensive filters allowed us to flatten the audio response of the receiver giving a much cleaner sound quality and a real improvement in intelligibility both on communications and broadcast stations.

We have noticed in the past that the audio output power from most modern receivers is barely adequate for driving a good loudspeaker, and since we now had top quality audio from the NRD-535, we designed and fitted a completely new audio power amplifier with enough power (3W at 5% distortion) to enable the user to sit back and enjoy that quality to the full.

The use of synchronous AM demodulation and/or ECSS is an established feature of many newer receivers, and fitting the optional CMF-78 ECSS board to the NRD-535 provides the user with the potential to recover good audio from signals which are subject to selective fading.

However we noticed a tendency for the ECSS to unlock during deep fades and then fail to re-lock after the fade. We now have a series of detailed modifications to the ECSS unit which removes this tendency and also improves the recovered audio.

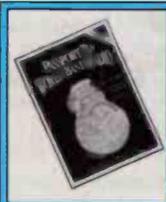
The Lowe Electronics modification pack definitely makes a good receiver into an outstanding receiver. When we sent a sample of our modified NRD-535 to Jonathan Marks at Radio Nederland, he confirmed that the results were quite remarkable and said so in no uncertain terms. We think that you will agree.

Naturally, these modifications cost a little more, but to complete the whole package we also pre-age the master reference oscillator in the receiver, check out the alignment, and issue an individual test certificate with each one. And because we are proud of our work we add a discreet badge to the front panel to tell you that you own a receiver with a difference.

The “Lowe” NRD-535. We make a good receiver into an outstanding receiver.

- New high specification IF crystal filter for SSB
- New high specification IF filter for AM
- New calculated audio bandwidth “flattening”.
- New higher power audio output system.
- New tighter specification ECSS system.
- Pre-ageing and “burn-in” of master oscillator.
- Individual test certificate for each receiver.

NRD-535.....	£1195
CMF-78 ECSS unit	£239
Lowe modifications	£117
Carriage.....	£10



THE LISTENERS' BOOK OF THE YEAR GETS EVEN BETTER

The new 1992 issue of 'Passport to World Band Radio' is now with us and it's even better than before. The 200 pages have risen to almost 400 and every section carries the unmistakable authority of the world's best short wave companion. Broadcasts are listed as before; not only in frequency order but also by language, country of origin AND the times of broadcasts. There are no less than 56 pages or receiver reviews, including the latest NRD-535 and Drake R-8, together with news, views and general information.

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



LOWE ELECTRONICS LIMITED

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

Short Wave Magazine, August 1992

For the very best in Communications Receivers Look to Lowe

VHF/UHF RECEIVERS. We stock the lot – from AOR to YUPITERU



Although our real love is HF, we recognise that many folk find that a handy VHF/UHF scanner provides a lot of listening enjoyment, and we stock all of the popular makes.

We also insist on telling the truth about them, and there are a couple of basic rules to observe. First, I know that they say the scanners will cover from 500kHz to 1300MHz, but if you think that they will perform on short wave – forget it. They are all barely adequate (except the AR-3000A but that's in a class of its own). Secondly, if you want to particularly listen to airband, for goodness sake buy a dedicated airband scanner because it will handsomely out-perform all of the wide frequency range receivers, (except again the AR-3000A).

Currently top of the shop are the VT-225 and VT-125 from Yupiteru. Daft name, but good gear. The VT-125 is VHF airband only, and the VT-225 gives both VHF and UHF airband. Prices are good at £149 for the 125 and £229 for the 225.

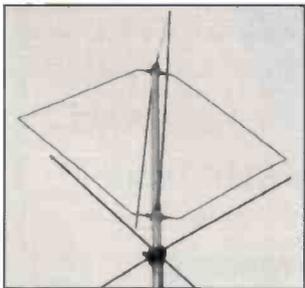
For wide range scanning, the MVT-7000 has established a good reputation for styling, ease of use, and good performance. Full coverage and 200 memory channels. Nice one. £289.

The new AR-1500 from AOR is interesting, because it is the first hand-held to offer a BFO for receiving SSB on short wave. (It covers 500kHz to 1300MHz by the way). My first reaction to its announcement was less than enthusiastic, but even I will say that it can make a reasonable job of SSB even though it is a long way from being a short wave receiver. Small and handy, the AR-1500 comes in at £279.

The AR-3000A – now this does stir the blood because it is an amazing achievement. To pack such a receiver in such a small package takes a lot of engineering, but the performance is excellent, and I can recommend it – only snag is the price, but for £765 it's a H*** of a good radio.

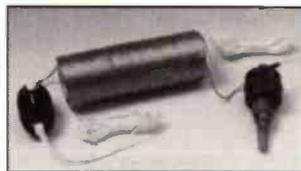
Want to know more? Just ask for full details at any of our branches, or send 4 first class stamps and request the "Airband Pack". Call in and see us soon for all that's good in receiving – DC to light.

RF SYSTEMS PRODUCTS



DX-One Electronic Antenna

Not cheap – but as World Radio TV Handbook said:- "... the best of its type available anywhere in the world". The DX-One is an outdoor active antenna for the range 50kHz to 50MHz, and cannot be bettered.....£249 inc VAT



MLB Antenna Mark I

Complete wire antenna including the MLB. 12.5 metres long. Frequency range 100kHz to 40MHz£56 inc VAT

MLB Antenna Mark II

Similar to the MLB Mark I but 20 metres long for improved performance at medium and long wave£67 inc VAT



Magnetic Longwire Balun

Transform (that's a pun) your short wave listening with the MLB. Described in the trade press as "the most revolutionary development for short wave listeners in the last 25 years." You have to believe that with a modest length of wire fed via the MLB, your reception will improve substantially, and the noise will go down.....£36 inc VAT

Coming soon. The new DX-7 active aerial as described on Radio Netherlands this week.

The answer to the flat dwellers' prayer.

STOP PRESS

At last in stock, the long-awaited T2FD low noise receiving aerial. Contact our sales desk at Matlock for full details.
T2FD – £149.95 inc VAT

FREE

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



BOURNEMOUTH: 27 Gillam Road, Northbourne Tel: 0202 577760
BRISTOL: 6 Ferry Steps Industrial Estate Tel: 0272 771770 CAMBRIDGE: 162 High Street, Chesterton Tel: 0223 311230
CUMBERNAULD: Cumbernauld Airport Foyer Tel: 0236 721004 LONDON (HEATHROW): 6 Cherwell Close, Langley Tel: 0753 545255
LONDON (MIDDXX): 223/225 Field End Road, Eastcote Tel: 081-429 3256 NEWCASTLE: Newcastle International Airport Tel: 0661 860418

LOWE ELECTRONICS

The new SRX-50 from Lowe

A
Price
Breakthrough In
Shortwave Listening

Only £39.95



For the beginner who wants to try out the fascination of short wave listening;

For the experienced short wave enthusiast who needs a Go-Anywhere portable;

For anyone who just wants to keep in touch, the SRX-50 is an amazing receiver.

Just look at the features:-

- Quartz controlled PLL synthesised for accuracy.
- Clear digital LCD frequency readout.
- Coverage of :-
Long wave (153-281kHz AM),
Medium wave (531-1602kHz AM),
Short wave (5.9-15.5MHz AM)
and even stereo FM broadcast (87.5-108MHz).

- Direct preset, manual or AUTO scan tuning.
- Supplied with stereo earphones.
- 20 memories (5 on each band) for storage and recall of favourite frequencies.
- 24 hour digital clock with alarm and timer function.

The Constant Companion

Now you have your SRX-50, the perfect accessory has to be the "Passport to World Band Radio". Almost 400 pages of the latest information on short wave stations will help you to find the service you need in an instant. All listed by frequency, language, time of day; the "Passport" is your constant guide.

Our price £12.95 plus £1.55 postage. (post free when ordered with SRX-50)

Retailed in the UK by LOWE ELECTRONICS LIMITED

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

Short Wave Magazine, August 1992

grassroots

rallies

* Short Wave Magazine & Practical Wireless in attendance *

July 26: The Rugby ATS 4th Annual Amateur Radio Car Boot Sale will be held at the BP Truckstop on the A5, 3 miles east of Rugby. Open from 10am, admission is £1 per car and facilities include a good cafeteria and toilets. Talk-in on S22 by GB6CBS. Pitches are £7 pre-booked or £9 on the day. Peter. Tel: (0455) 552449 or Kevin (for bookings). Tel: (0203) 441590.

***July 26:** The Scarborough Radio, Electronics & Computer Rally will be held in The Spa, South Foreshore, Scarborough. Doors open 11am.

August 9: The Annual Derby Rally will take place this year at the Littleover Community School, Pastures Hill, Littleover, Derby.

August 30: The Galashiels Club will hold their Open Day from 11 to 4.30pm at the Focus Centre, Livingstone Place, Galashiels. John Campbell. Tel: (0835) 22696.

August 31: Huntingdon ARS will be holding their annual Rally and Junk Sale at the Medway Centre, Coneygare Road, Huntingdon. Doors open 11am, close at 4pm. Trade stands, Bring & Buy, Components, Junk and the usual refreshment bar will be there. Car boot pitches are available. David Leach G7DIU. Tel: (0480) 431333.

September 6: The Vange ARS are holding their rally in the Laindon Community Centre, Laindon High Road/Aston Road, Laindon, Basildon, a short walk from Laindon Station (B R) on the Fenchurch Street to Shoeburyness Line. Doors open 10.30am to 4.30pm, admission is 75p with free raffle. Talk-in on S22. Roads will be signposted. Mike Musgrave. Tel: (0268) 543025.

***September 6:** Bristol Radio Rally will be held in Brunel's Great Train Shed, Temple Meads Station, Bristol. Lots of traders in an historic venue.

September 12: The Scottish National AR Convention will be held at the Fife Institute of Physical & Recreational Education, Viewfield Industrial Estate, Glenrothes, Fife. Doors open 11am to 5pm.

***September 13:** The 11th Lincoln Hamfest will be held at the Lincolnshire Showground and Exhibition Centre, 4 miles north of the city on the A15 Scunthorpe Road. As well as the usual amateur radio stands, they hope to have helicopter rides, model car racing and model aircraft displays. Refreshments (hot & cold/inside & outside) and licensed bar with real ale. Sue Middleton. Tel: (0522) 531788.

***September 13:** The BARTG Rally will be held at Sandown Park Exhibition Centre, Esher, Surrey. Peter Nicol G8VXY. Tel: 021-453 2676.

September 13: The Telford Rally will be held in the Telford Exhibition Centre, Telford, Shropshire. Doors open 10.30am. Admission is £1. Traders, flea market, restaurants, bars, free parking, NO Bring & Buy.

September 20: The East of England Radio Rally (Peterborough R & ES) will be held in the ICI Building, The East of England Showground, Peterborough. Admission £1 Doors open 10.30am (10am for the disabled). Mike Bowthorpe G0CVZ. Tel: (0733) 222588.

September 20: The Centre of England Radio Computer & Satellite Rally will be held at the British Motorcycle Museum, Bickenhill, near the NEC, Birmingham. Doors open 11.30am. Admission £1, DAPs 50p, children under 14 free. Over 60 traders in three large exhibition halls, talk-in on S22, bar & restaurant, free parking, concessionary rates to museum. Frank Martin G4UMF. Tel: (0952) 598173.

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. August 18 - Open Discussion on Radio. Paul Truitt G4WQO. 071-938 2561.

Aylesbury Vale RS: Wednesdays. The Village Hall, Hardwick. August 5 - Summer Social at the Crooked Billet Kingswood. Martin G4XZJ. (0296) 81097.

Barnsley & DARC: Mondays, 7.15pm. Darton Hotel, Station Road, Darton, Barnsley. August 3 - On the Air Night, 10th - 2nd Open Talk on 1992 Rally, 30th - Moon Bounce by G6ZTU. Ernie G4LUE. (0226) 716339.

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. August 18 - Operating Evening and BBQ. Geoffrey Milne. 081-462 2689.

Bromsgrove & DARC: Fridays. Avoncroft Arts Centre, South Bromsgrove, Worcester. August 14 - Club BBQ at Wasely Hills Country Park. Joe Poole. (0562) 710010

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

Chester & DRS: Upton Recreation Centre, Cheshire County Sports & Social Club, Plas Newton Lane, Chester. David Hicks. (0244) 336639.

Dacorum AR & TS: 1st (informal) & 3rd (formal) Tuesdays, 8pm. The Heath Park, Cotterells, Hemel Hempstead. Dennis Boast. (0442) 259620.

Derby & DARS: Wednesdays, 7.30pm. 119 Green Lane, Derby. August 5 - Rally Preparation at Littleover Community School, 26th - How Chips are Made by G3ZDM. Richard Buckby. Ambergate 852475.

Edgware & DRS: 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. August 13 - No Meeting, 27th - SSB Field Day Briefing. Hank Kay G0FAB. (081-205 1023).

Goole R & ES: Most Fridays, 7.30pm. West Park Pavillion, off Airmyn Road, Goole. Last Fridays. The Black Swan Inn, Asselby. August 7 - GOOLE 'On Air' Night, 14th - CW Instruction Evening, 21st - Summer Junk Sale, 28th - Social Evening at the Black Swan. Steve Price. (0405) 769130.

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. August 6 - Social Evening, 20th - Video &

Friedrichshafen with G4UNL. Roy G4UNL. 081-804 5643.

Hordean & DARC: 1st Thursdays, 7.30pm. Hordean Community School, Barton Cross, Hordean. August 6 - Packet Radio by Siskin Electronics. S.W. Swain. (0705) 472846).

Mansfield ARS: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. August 6 - Foxhunt followed by BBQ. Mary GONZA. (0623) 755288.

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. August 5 - HF SSB NFD/Town & Country Show Briefing, 12th - Real Radio Evening, 19th - Sea, Salt & Satellites by G3IOR, 26th - Science for All by G3PTB. Jack Simpson G3NJQ. (0603) 747992.

Oxford & DARS: 2nd & 4th Thursdays, 7.45pm. British Legion Club, Haddow Road, Crotch Crescent, Marston Road, Oxford. August 27 - Video Night. Terry Hastings. (0865) 863526.

Reading & DARC: 2nd & 4th Thursdays, 8pm. The Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading. August 13 - SWR by G3RZP, 27th - History of GB2SM by G3JUL. Nick Challacombe. (0734) 722489.

RSGB City of Bristol Group: last Mondays, 7pm. The Small Lecture Theatre, Queens Building, University of Bristol, University Walk, Bristol. August 24 - Video Evening, 30th - Picnic at Almondsbury Scout Camp. Dave Coxon G0GHH. (0275) 855123.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitchurch. August 5 - Top Band Working, 12th - DX Broadcast TV, 19th - Bring Your Morse Keys, 26th - Bristol Rally Planning. Len Baker. Whitchurch 832222.

Southgate ARC: 2nd & 4th Thursdays. Winchmore Hill Cricket

Club Pavilion, Firs Lane, Winchmore Hill, London N21. August 13 - WAB Hunting by G8UKT, 27th - Club DF Equipment Check, 31st Bank Holiday DF Hunt & Barbecue in White Webbs Park. Brian Shelton G0MEE. 081-360 2453.

South Notts ARC: Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. August 7 - Open Forum, 9th - 4th Foxhunt at 4pm, 14th - Designing & Constructing Repeaters by G0LCU, 16th - Treasure Hunt at 3pm, 21st - On Air, 28th - Weather Stations & Propagation by G4NPT, 30th - 5th Foxhunt at 4pm. Ray G7ENK. (0602) 841940.

Stratford upon Avon & DARS: 7.30pm. The Home Guard Club, Main Road, Tiddington, Stratford-upon-Avon. A. Beasley G0CXJ. 060-882 495.

Sudbury & DARC: 1st Tuesdays, 8pm. The Five Bells Inn, Great Cornard, Sudbury. August 4 - Bee Keeping by G4DHU. Colin Muddimer. (0787) 77004.

Three Counties RC: Alternate Wednesdays, 7.30pm. The Railway Hotel, Liphook, Hants. August 12 - Video Night, 26th - Junk Sale. Kevin G8GOS. (0420) 83091.

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. August 21 - Steam Nostalgia. Walt G3HTX. (0803) 526762.

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

Wirral ARS: 1st & 3rd Wednesdays, 7.45pm. Ivy Farm, Arrowe Park Road, Birkenhead, Wirral. August 12 - Committee Meeting, 19th - SSB Event Meeting.

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

Club Secretaries:

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

SWM SUBSCRIBERS' CLUB

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

This month we are offering SWM Subscribers' Club Members the chance to buy a copy of the Directory of Military Aviation Communications (VHF/UHF) Europe, North America, Middle East (1991 First Edition) at a saving of £6 .

Monitoring military aircraft communications is a challenging, exciting and interesting activity for the listener or military aviation enthusiast alike. The Directory of Military Aviation Communications (VHF/UHF) Europe, North America, Middle East, 1991 First Edition, edited by Jeff Brickner, is a must to accompany your airband receiver. This frequency guide has over 6000 listings in two main sections - 'by frequency' and 'by location'. Special military maps are included for England, France, Germany and Europe, highlighting areas of military activity, etc. A Glossary explains the abbreviations used by the military.

As a member of the SWM Subscribers' Club, you can buy your copy for just £12.95 inc. P&P, You would normally expect to pay £18.95 inc post & packing for this book.

This offer closes on 28 August 1992

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

1991

FIRST EDITION

Jeff Brickner, Editor

HUNTERDON AERO PUBLISHERS
P.O. Box 754 • Flemington, New Jersey 08822 USA

Be sure of your copy every month and qualify for the Subscribers' Club as well. Special offers and discounts normally available to all members.

Please indicate the type of subscription required:

SHORT WAVE MAGAZINE 1 YEAR

- £21.00 (UK)
- £23.00 (Europe)
- £25.00 (Rest of World)

PRACTICAL WIRELESS 1YEAR

- £21.00 (UK)
- £23.00 (Europe)
- £25.00 (Rest of World)

SPECIAL JOINT SUBSCRIPTION 1 YEAR ONLY

- £36.00 (UK)
- £39.00 (Europe)
- £41.00 (Rest of World)

Prices current at July 1992

Subscription to commence with issue dated.....

Please send me the *Directory of Military Aviation Communications (VHF/UHF) Europe, North Africa, Middle East* at the special SWM Subscribers' Club price of £12.95 inc. P&P.

To: PW Publishing Ltd., FREEPOST, Subscriptions Dept., Enefco House, The Quay, Poole, Dorset BH15 1PP

Name.....

Address.....

I enclose cheque/PO (Payable to PW Publishing Ltd) £.....

Charge to my Access/Visa Card the amount of £.....

Card No.

Valid from to

Signature..... **Credit Card Orders can be taken on (0202) 665524.**

If you do not want to deface your SWM a photocopy of this coupon will be accepted.

South Midlands Communications Ltd.

Southampton (0703) 255111 Leeds (0532) 350606 Chesterfield (0246) 453340
Birmingham 021-327 1497 Axminster (0297) 34918

LISTEN OUT

with **SMC**
SONY at SMC

YAESU
JRC
AOR
SONY
ICOM
KENWOOD
DRAKE
FAIRMATE
BEARCAT
LOWE
YUPITERU



The **FRQ9600**, a premium scanning receiver covering 60-905MHz, SSB, CW, AM & FM modes. 99 memories: 5, 10, 12.5, 25 & 100kHz scanning steps. Keyboard frequency entry. Optional converters to extend range from 0.15-30MHz and 800-1300MHz

Yaesu's serious about giving you better ways to tune in to the world around you. And whether it's for local action or world-wide DX, you'll find our HF/VHF/UHF receivers are the superior match for all your listening needs.

When you want more from your receivers, just look to Yaesu. We take your listening seriously.



The **FRQ8800** HF communications receiver. A better way to listen to the world. Continuous coverage from 0.15-30MHz optional module for VHF coverage from 118 to 174MHz. SSB, CW, AM & FM modes. Direct frequency entry keyboard.

NRD535 from JRC

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



JRC
NRD535

DRAKE
R8E



DRAKE R8E

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

A COMPREHENSIVE RANGE OF RECEIVERS AVAILABLE AT MOST BRANCHES



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

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

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



AOR AOR AOR

SMC are pleased to be able to offer a large number of models from the very comprehensive AOR range which includes both hand portables and mobiles/base stations.

All the receivers are built to the highest possible specification yet remain very competitively priced. Often the leaders in the field, the AOR range is proving very popular amongst both professional and non professional users.

The top of the range model must be the AR3000 which covers 100kHz-2036MHz without any gaps. The mid range model is the AR2800 which is a convenient unit for mobile or base operation and covers 500kHz-600MHz and 800-1300MHz. Last but not least is the AR2000 which is an extremely flexible handheld scanner covering 500kHz-1300MHz.

Why not contact us today for more details of the AOR range.



OTHER MAKES AND MODELS



The Bearcat 200XLT is the cream of the Bearcat handheld scanner range. With 200 memory channels and simple operation these are proving very popular. Frequency coverage 66-88, 118-174, 406-512 and 806-956MHz.



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



- Free Finance on selected items, subject to status. Details available on request.
- Up to £1000 instant credit, a quotation in writing is available on request, subject to status.
- Yaesu Distributor Warranty, 12 months parts and labour.
- Carriage charged on all items as indicated or by quotation.
- Prices and availability subject to change without prior notice.
- Same day despatch wherever possible.

Southampton (0703) 255111
SMC HQ, School Close
Chancellors Ford Ind. Est.
Eastleigh
Hants SO5 3BY
9am-5pm Mon-Fri
9am-1pm Sat

Leeds (0532) 350606
SMC Northern
Nowell Lane Ind. Est.
Nowell Lane
Leeds LS9 6JE
9am-5.30pm Mon-Fri
9am-1pm Sat

Chesterfield (0246) 453340
SMC Midlands
102 High Street
New Whittington
Chesterfield
9.30am-5.30pm
Tues-Sat

Birmingham 021-327 1497
SMC Birmingham
504 Alum Rock Road
Alum Rock
Birmingham B8 3HX
9am-5pm Tues-Fri
9am-4pm Sat

Axminster (0297) 34918
Reg Ward & Co. Ltd
1 Western Parade
West Street
Axminster
Devon EX13 5NY
9am-5.20pm Tues-Sat

AOR – ALL IN ONE

The AR1500 is the World's first true compact hand-held wide range receiver offering SSB as standard and has arrived in the UK. Coverage is from 500kHz all the way to 1300MHz without any gaps in the range. Channel steps are programmable in multiples of 5kHz and 12.5kHz up to 995kHz, 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, Belt hook, 5 metres (approx.) of aerial wire terminated in a BNC connector for shortwave reception and Operating manual.



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

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

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

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

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

Amazing value, all for an extremely attractive.

Recommended Retail Price of £279.00 including VAT.

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

Recommended Retail Price £269.00 including VAT.

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

Your listening horizons are truly extended with receive coverage from 100kHz all the way up to 2036MHz 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 from intermodulation effects.

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

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

Recommended Retail Price £765.00 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.



Please send a large S.S.A.E. (34p) for further details.



AOR (UK) LTD.

Room 2, Adam Bede High Tech Centre,
Derby Road, Wirksworth, Derbys DE4 4BG.
Tel: 0629-825926 Fax: 0629-825927

A subsidiary of AOR Ltd Japan

E&OE

NOAA Satellite Predictor Program Version 2.0

The original version of this simple but effective and accurate software for the BBC-B is easily adapted for other computers and has proved very popular if correspondence is anything to go by. Version 2.0, from Peter Rouse GU1DKD, offers a tidier display and shows the day alongside the date.

It seems I am not alone in usually knowing what day of the week it is but sometimes having difficulty remembering the date. The changes have been achieved by adding just 17 lines. However, this simplicity relies on the fact that new predictor charts are always based on a Friday start day. That is not as odd as it may sound because the figures that you need for the prediction are updated each Friday evening on the recorded telephone service from Lasham (the number is included in the program).

Before going any further I must make a comment about the problems that some readers had with the original program. There was absolutely nothing wrong with the listing but with hindsight it was perhaps not a good idea to use "I" as the variable for "increment". In every case where people contacted us with a problem they had misread "1" for "I". So if you are starting the program from scratch watch out on lines 200, 290, 360, 420 and 480. I have deliberately not changed the variable assignment because anyone who has the original will not need to re-enter the entire program.

This is what you should do if you are already using the program, change lines 380, 410 and 480 to match those in the new listing. Add lines 135, 471-478 and 610-670. If you do not wish to calculate the darkness hours passes then add the following line:

```
425 IF H<6 OR H>19 THEN GOTO 410
```

The digits '6' and '19' can be adjusted to suite seasonal variations of daylight hours.

What it all Does

For any reader who did not see the original program I will briefly recap on what it does. If you feed in the NOAA satellite data the program will print out a list of times for valid passes for the British Isles. The data is entered in the same sequence that it is supplied on the Lasham recording which is available after 6pm each evening (do not ring the number during business hours). The times given by the program will be for equator crossing (EXP) and so you will need add the appropriate number of minutes (at my own location around 33 for a Southbound pass and about 8 for a Northbound). The program cannot predict when you will acquire the signal as obviously this will depend on your antenna, receiver and location and even the equator crossing point for that pass. However, after the first few orbits you will get to know roughly how many minutes to add.

The program can easily be modified for other computers. It is written in Microsoft Basic and the only lines peculiar to the BBC are the VDU statements in lines 510 and 530 which are the printer off/on commands. Overseas readers should note that they'll need to change lines 430 and 440 to match their own location.

```

10 REM NOAA PREDICTOR BY PETER ROUSE (GU1DKD)
20 REM OFFERED AS PUBLIC DOMAIN SOFTWARE FOR THE BBC-B
30 VDU 3
40 CLS
50 PRINT:PRINT
60 PRINT "NOAA SATELLITE EQUATOR CROSSING TIME PREDICTOR"
70 PRINT"INPUT IN SEQUENCE SUPPLIED BY U.K. WEATHERWATCH"
80 PRINT"RECORDED DATA ON 025-683-448 AFTER 1800 HOURS"
90 PRINT:PRINT
100 INPUT"WHICH SATELLITE NUMBER",S:PRINT
120 INPUT"WHICH MONTH (NUMERICAL)",M:PRINT
130 INPUT"WHICH START DAY",Y:PRINT
135 J=1
140 INPUT"WHAT IS THE STOP DAY",T:PRINT
150 INPUT"EQUATOR CROSSING TIME (HOURS)",H:PRINT
160 INPUT"EQUATOR CROSSING TIME (MINUTES)",K:PRINT
170 INPUT"EQUATOR CROSSING TIME (SECONDS)",V:PRINT
180 INPUT"EQUATOR CROSSING POINT (DEGREES)",X:PRINT
190 INPUT "WHAT IS THE NODAL PERIOD",N:PRINT
200 INPUT"INCREMENT (IN DEGREES)",I:PRINT
210 REM DATA CHECK SEQUENCE
220 PRINT"THE SATELLITE IS NOAA" S
230 PRINT"START DATE IS ";Y;"/";M;"/";"1992"
240 THE STOP DATE IS ";T;"/";M;"/";"1992"
250 PRINT"THE EQUATOR CROSSING TIME IS ";H;" HOURS ";K;"
    MINUTES ";V;" SECONDS"
260 K=K+(V/60)
270 PRINT"THE EQUATOR CROSSING POINT IS ";X;" DEGREES"
280 PRINT"THE NODAL PERIOD IS ";N;" MINUTES"
290 PRINT"THE INCREMENT IS ";I;" DEGREES"
300 INPUT"IS THIS CORRECT (Y/N)";B$
310 IF B$="N" THEN GOTO 40
320 INPUT"PRINTER (P) OR SCREEN (S) ;R$
330 IFR$="P" THEN GOSUB 530
340 REM CALCULATION
350 PRINT:PRINT:PRINT
360 PRINT TAB(8)"NOAA";S; NODAL PERIOD ";N;" MINS
    ";INCREMENT ";I;" DEGREES"
370 PRINT
380 PRINT"DAY D/M EXP H:M":PRINT
390 N=N/60
400 H=(K/60)+H
410 H=H+N:IF H>24 THEN H=H-24:Y=Y+1:J=J+1
420 X=X+I:IF X>360 THEN X=X-360
430 IF X<200 AND X>170 THEN GOTO 460
440 IF X<360 AND X>330 THEN GOTO 460
445 IF X<3 AND X>0 THEN GOTO 460
450 GOTO 410
460 K=(H-INT(H))*60
470 IF Y=T+1 THEN GOTO 500
471 IF J=8 THEN J=1
472 IF J=1 THEN GOSUB 610
473 IF J=2 THEN GOSUB 620
474 IF J=3 THEN GOSUB 630
475 IF J=4 THEN GOSUB 640
476 IF J=5 THEN GOSUB 650
477 IF J=6 THEN GOSUB 660
478 IF J=7 THEN GOSUB 670
480 PRINT J$;" ";Y;"/";M;"/";TAB(12) INT(X);" ";TAB(18)
    INT(H);TAB(20)"; "INT(K)
490 GOTO 410
500 PRINT:PRINT TAB(8)"AM PASSES ARE SOUTHBOUND - PM
    PASSES ARE NORTHBOUND."
510 VDU 3
520 INPUT"PRESS 'RETURN' TO RE-CYCLE",Z:GOTO 40
530 VDU 2:GOTO 350
610 J$="FRI":RETURN
620 J$="SAT":RETURN
630 J$="SUN":RETURN
640 J$="MON":RETURN
650 J$="TUE":RETURN
660 J$="WED":RETURN
670 J$="THU":RETURN

```

Have you a Cormorant's Paper Bag?

Sunday 23 September 1990 was a mixed day on the Lley Peninsula, dark clouds and heavy rain in the morning, low pressure, a distant flash of lightning out to sea about 1.45pm - then the weather cleared. The afternoon was fine, warm and sunny, and after taking a gentle stroll with my wife, I returned home and wound my antenna up to full height, which in my case is 12m above ground, ground being 213m above sea level. The 144MHz band was quiet and the usual beacons were not very strong.

At 6pm I switched off all the equipment, although I left everything plugged into the wall sockets, and left the antenna feeder connected to the transceiver. The evening brought a very clear sky with just the odd heavy cloud in the distance.

In my village most people retire early to bed. It is a farming community, we have no pubs (we are the only 'dry Sunday' district in the UK), there are no main roads, and consequently out of the holiday season it is extremely quiet. But at 9.30pm the village was stirred by a sudden violent rainstorm, the raindrops sounding as loud as hail as they fell. At the peak of the rain's intensity there was an almighty flash of blue light, followed immediately by a complete power failure and the sound of a nearby explosion. When the initial shock to our nervous systems subsided, it became fairly obvious that either World War III had commenced or that a lightning strike had occurred somewhere close by.

Candles

After groping around for the stock of candles, we, that is the family and myself, began to take stock of the house and surroundings. There was no electrical power whatsoever,

*The common cormorant or shag
Lays eggs inside a paper bag.
The reason you will see, no doubt,
It is to keep the lightning out.*

Anon

*This anonymous poem has stuck in
the mind of P E W Alleyley GW3KJW
for many years and in this short
article he recalls the day that the
paper bag failed.*

the whole village was in darkness except for the glowing, disintegrating porcelain insulator on a nearby 11kV power line. I went outside, it had now stopped raining, to examine my antenna and mast. To my amazement it was still there apparently undamaged. Not wishing to tempt fate I quickly winched it down to half height. The sky was completely clear, the stars were shining brilliantly and with the four street lamps of the village not working I had the marvellous view of meteors flash from east to west.

Enough of nature, it was time to telephone the electricity board - MANWEB in our district, but the telephone refused to co-operate - it was totally dead. It was fortunate that the house was not on fire nor anyone injured.

In our village power cuts and failures are common events, at the slightest breath of wind the power lines fall down, it was time to go the bed and view the problem the following morning.

Monday dawned bright and sunny but without electricity.

My house is electrically dependent, gas has not reached us and will not this century. No sign of any employees from the electricity board nor British Telecom, although I had been told that MANWEB had been inspecting the power lines during the night.

Power Restored

A glance skywards towards the plethora of wires snaking between the houses and over the fields showed that the air break switches were open on the nearby 11kV line above the transformer feeding power up my lane to the respective houses. This transformer is suspended on two poles some 6m above the side of the lane and 10m from the nearest house. A ceramic insulator holding the earth shorting lines on the top of the next 11kV pole was missing, this is situated in the garden of the same house.

Nothing we could do but to go shopping, it was warmer in the car than in the house - the central heating system won't work without electricity. Returning home at 1pm, I was

delighted to see BT in force blocking the lane by our little telephone exchange. To my further delight, the power supply was restored, it was time to test the circuits. This revealed some interesting but frightening findings - the 5A fuse in the main fuse box protecting the ground floor lighting had blown, but when replaced the lights were working, and indeed no other fuses in the box had blown.

The central heating failed to function. This is separately fused with a 5A fuse protecting the burner and another 5A fuse protecting the water pump and the microprocessor switching system. The latter fuse had blown to such an extent that it had shattered into minute fragments making it almost impossible to remove from its holder. When it was finally replaced the system did not operate - the clever electronics had failed, due, no doubt, to a spike which had destroyed the microprocessor.

Next, the telephone. The wall mounting jack unit seemed to have borne the brunt of the damage, the jack plug had been thrown out, the pins blackened and the circuit inside the box ruined. BT repaired, or rather replaced, it the following day and also gave me a new telephone as the original one had become very noisy.

Testing Times!

Now the task I dreaded doing - testing my radio equipment and computer. Everything had been left connected to the mains, but switched off. To my great surprise and joy it all worked, with the exception of a low current 12V power supply. I found that a 3A line fuse in the power unit had blown even though a similarly rated fuse in the mains plug had remained intact.

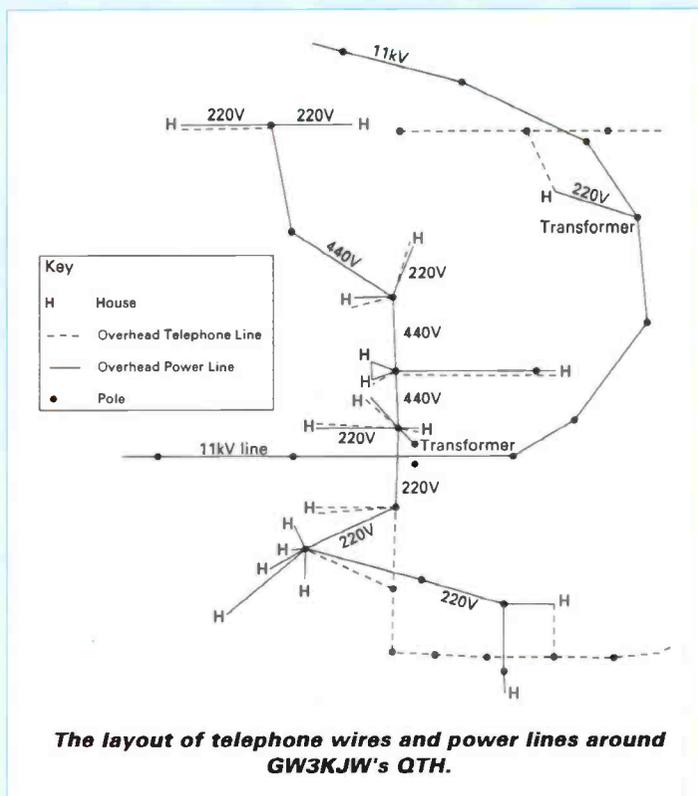
I consider the survival of

my radio equipment to be due to the fact that it is comparatively old, does not contain any i.c.s or processors and has a genuine mechanically tuned v.f.o. - no digital readout when I bought my TS-700G some 18 years ago.

By now the villagers, being a close knit community, were visiting each others' houses, finding out if the elderly residents were coping well and generally exchanging information of our respective damage. I found that most of the houses had suffered some damage to their various electrical and electronic devices. Only two houses in the lane had escaped without anything amiss, both being empty at the time and no current being drawn through any appliance. Over twenty telephones were replaced in the next two days.

I must point out that in our isolated part of the world, a place renowned and designated as an area of outstanding natural beauty, the electricity board and BT delight in maintaining out-of-date, above ground, network of wiring which is continually failing due to the often severe weather we receive, especially during the winter months. You will see from the drawing that we are criss-crossed by a cat's cradle of wires, 11kV lines transformed down to 440V and thence to 230V to feed the respective houses. The domestic electricity is connected overhead to the houses via slack, fraying and ionised copper wires to ancient brown pot insulators on the house walls or chimnies.

The telephone lines, which up to a few years ago, were above ground in our lane, are now trunked for a short distance beneath the road - but are fed up the same poles that carry the power lines, and then overhead to our houses,



to run parallel to the power lines and connected also at roof level.

It would seem that a single burst of lightning struck the 11kV line causing a massive spike or surge to travel along the line defeating the breakers and earth returns, transferring or induced into the lower voltage lines and into the telephone lines and thence into the houses.

Damage

The damage caused had been varied and inconsistent. Some houses had their electric light bulbs burn out, later examination of these bulbs showed that the glass bead holding the resistance wire had shattered although the bulb remained intact. A number of the clever television sets had failed, the cheaper and less sophisticated ones were still working. The only person with Astra satellite TV found that his converter had packed in but that the TV was still operable. The little telephone exchange was partly out of action for a day, and its emergency generator kept running even after the mains power was restored, its micro-processed little brain had died.

The householder on one

side of me lost one of this two telephones, the clever sophisticated memory one that cost eight times as much as the cheap and cheerful one that was still working. The 15A fuse protecting his garage wiring blew, he showed me his battery charger that had been running at the time of the strike, its meter was jammed hard over showing that the battery had received a charge greater than expected. The fuse had not protected the system, yet had been the fuse approved by the electricity board when the house had been re-wired.

The house on the other side of mine was totally untouched, the resident was away at the time and no current was being drawn.

At one house, close to the 11kV line, a hole was blasted in the floor directly beneath their telephone, at the same instant they lost their television set and video, and of course, the telephone.

It is apparent that nothing can be done to protect your property totally from a near lightning strike, but I wonder if the presence of so much copper wire in the air and a forest of high poles makes the vicinity more likely to attract lightning and more likely to disperse the force over a

greater area thereby increasing the effect.

The highest structure in the village, my antenna system, was untouched. It is at the rear of my property whilst all the power and telephone wiring is at the front of the house. I will be winding it down a lot more in future but frankly I do not think in reality I can say that it is totally safe from a strike.

Thunderbolt

Subsequently, during the 1990 Christmas holiday, a report appeared in the local and national news of a house being struck by a 'thunderbolt'. This house, 32km away from me, had its roof blasted away and the contents of the house destroyed. The occupier stated that a 'thunderbolt' had travelled down his chimney and entered the house. I studied the photographs of this house and noted that the power feed to the house was by overhead lines to the same chimney. I wonder if in fact the house was struck, or if the power lines were struck and a massive surge travelled along them into the house. I feel that there may be many more incidents similar to this.

Incidentally during the storm of 5 January 1991, a number of the power lines in my village were actually snapped apart by the force of the wind.

Praise

Although I object strenuously (in common with other residents) to the policy of carrying the power and telephone lines above ground, and on the same poles, I have nothing but praise for the maintenance engineers who regularly turn out in all weathers to repair their respective wiring.

NEVADA EVERYTHING

YUPITERU

MVT 7000 HANDHELD

PROBABLY THE UK'S MOST POPULAR HANDHELD SCANNER!

- ★ Receives 8 to 1300 MHz 100kHz-1300MHz (at reduced sensitivity)
 - ★ 200 Memory channels
 - ★ Rotary or keypad freq. control
 - ★ AM/FM/NFM
 - ★ Large display with signal strength
- MEASUREMENTS: EACH SET IS SUPPLIED COMPLETE WITH:- Full set of high power NiCads, AC charger, DC power lead and carry strap. **£289**



MVT 8000 MOBILE/BASE

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

- ★ Receives 8 to 1300MHz, 100kHz to 1300MHz (at reduced sensitivity)
- THIS RADIO IS ESPECIALLY SENSITIVE AT UHF FREQS. Set is supplied with mains power unit. **£299**

MVT 6000 MOBILE/BASE

An economy version of the new MVT 8000 above-housed in the same case.

- ★ Receives 25-550MHz, 800-1300MHz
 - ★ 100 Memory channels
- SPECIAL PRICE £199**

AIRBAND RADIOS

This month we are pleased to introduce THE WORLDS FIRST DEDICATED CIVIL/MILITARY AIRBAND RECEIVER, THE VT225.

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

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



EACH SET IS SUPPLIED COMPLETE WITH:- NiCads, earphone, carrying strap and mains charger **£229**

VT-125 UK CIVIL AIRBAND RECEIVER

Using the same technology as the VT-225, this set covers the full Civil Airband - hearing distant signals that are inaudible on some other scanners.

- ★ Covers 108-142MHz
- ★ 30 Direct entry memories
- ★ Search steps 25, 50, 100kHz SUPPLIED COMPLETE WITH NICADS AND UK CHARGER **£149**

FAIRMATE

HP2000

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

- ★ Continuous coverage from 500kHz to 1300MHz
- ★ 1000 channels of memory
- ★ Keypad or rotary control
- ★ AM, FM and WIDE FM modes
- ★ Search steps from 5 to 99.5kHz



EVERY SET COMES COMPLETE WITH:-

Full set of high power NiCads, 2 antennas, carrying case, earphone, DC cable, belt clip and strap, UK charger **£269**

MS1000 BASE/MOBILE SCANNER

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

- ★ Switchable audio squelch
- ★ Tape recorder output socket
- ★ Automatic - signal operated tape recorder switching
- ★ All metal case for improved EMC compatibility
- ★ Receives: 500kHz - 600MHz, 805 - 1300MHz. Supplied with mains power supply. **£279**



AOR SCANNERS

AR1500 HANDHELD

Covers 500kHz to 1300MHz receiving NFM, WFM, AM, and SSB. Supplied with a large selection of accessories including:-

- ★ Charger
- ★ Dry cell battery case
- ★ 5 mtr LW antenna
- ★ Ear piece
- ★ Soft case



NOW IN STOCK £279

AR2002 BASE/MOBILE

Receives 25 - 550MHz, 800 - 1300MHz, AM, FM, WFM. Supersensitive receiver. **£399**

AR2500 BASE/MOBILE

Receives 5-550MHz, 800-1300MHz AM, NBFM, WFM. 1984 Memory Channels, Fast 36 CH/SEC Scan. Resolves SSB with BFO control **£399**

AR2800

- ★ Receives 500kHz - 600MHz, 800 - 1300MHz AM, FM, WFM. SSB capability with BFO.
- ★ 1000 Memory **£395**

SCANNERS

ALINCO DJ-X1 HANDHELD SCANNER

- ★ Covers 500kHz to 130MHz
- ★ 100 Memories
- ★ AM/FM/WFM
- ★ 3 Scanning speeds



PLEASE NOTE:-

ALINCO DO NOT INCLUDE BATTERIES AND CHARGER AT THIS PRICE. **£249**

PRESIDENT SCANNING RECEIVERS

As main UK distributors, we carry all of their range including these new models:-

BEARCAT 50XLT

Popular beginners model!

- ★ 10 channel programmable
- ★ 66-88, 136-174, 406-512, MHz
- ★ Ni-Cad or dry battery powered
- ★ Ideal marine monitoring **£99**

BEARCAT 100XLT

Modelled on the ever-popular 200XLT but with only 100 channel memory capability and top frequency of 512MHz **£179**

All President range backed up by full in-house servicing facilities.

BEARCAT 200XLT

200XLT HANDHELD SCANNER

- Still one of the easiest to use, and the most reliable scanners on the market, easy to program, sensitive receiver.
- ★ 200 memories
- ★ 66-88, 118-174, 406-512, 806-956MHz
- ★ UK charger/nicad pack supplied. **£229**

BEARCAT 760XLT

A mobile/desktop version of the 200XLT above but with 100 memories. Supplied complete with mains adapter

SPECIAL PRICE £199

AR3000A NEW MULTIMODE SCANNER £765

AOR's top of the range model now improved.

- ★ Receives 100kHz - 2036MHz. Modes:- USB, LSB, CW, AM, FM, WFM.
- ★ Computer control is also available via the RS232 socket, "Computer control using Acepac 3 software now available, for use with IBM PCs and clones". **£119**

INTRODUCTORY OFFER

SUPPLIED WITH FREE WIDEBAND DISCONE WORTH £49.95

Note: This is a UK version from AOR and not a foreign grey import.

SONY

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

ICF2001D

A full coverage shortwave, VHF, and airband radio (150kHz to 136MHz). Receives AM, FM, and SSB **£299**

SW77

One of the new additions to the Sony range, the SW77 covers 150kHz to 30MHz plus 76-108MHz. With a rotary tuning dial, 125 scan memories, reception of AM, FM, USB, LSB, CW, tape record facility, this is a superb all rounder. **£349**

SW1E

Pocket shortwave plus VHF radio supplied with headphones, case and shortwave guide. This model won't hurt your pocket! **£149**

SW7600

One of Sony's most popular VHF and Shortwave radios, 76-108MHz FM, 150kHz - 30MHz Shortwave receives AM, FM, SSB. Well Rated. **£149**

AIR 7

Very popular, sensitive Airband handheld radio - lovely audio quality & large easy to use key board **£229**

NEW PORTABLE SONY SW55 MULTIBAND RADIO

Technically the best that Sony have come up with yet! Stable enough for FAX, yet easy enough to tune on SSB.

- A dual-conversion receiver with excellent results, the SW55 is a real winner.
- ★ 150kHz-30MHz, 76-108MHz, all mode inc. SSB
- ★ 125 multi-function memories inc. world time clock/alarm
- ★ 4-way digital tuning inc. scan/manual/direct access

How do they get it all in? - Call now or come and see for yourself! **£249**

AN1

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

AN3

Active antenna for Aircraft and VHF reception, suitable for Sony Air 7 and others. **£54**

WHY NEVADA?

Because we offer what we know to be the best un-biased advice on all of the products we keep! Both John and Paul have tried them all and can offer independent, and above-all honest, advice on all the range. Backed up by a full technical service department and an excellent next day delivery service, what more could you want - call now or pop in for a friendly chat!

SEND IN £2 FOR OUR NEW 72 PAGE COLOUR CATALOGUE (INCLUDES A £2 VOUCHER)

USE YOUR CREDIT CARDS FOR SAME DAY DESPATCH



ING FOR THE RADIO ENTHUSIAST

HUGE STOCKS - FAST DELIVERY - PERSONAL SERVICE

NEVADA COMMUNICATIONS, 189 LONDON ROAD, PORTSMOUTH PO2 9AE

TELEPHONE HOTLINE: (0705) 662145 FAX: (0705) 690626

SCANNER ACCESSORIES

LOW NOISE PRE-AMPLIFIERS

These new pre-amplifiers are a must for the scanner enthusiast and will allow reception of signals that were inaudible without them.

MODEL M75

For base and handheld scanners

- ★ 25-2100MHz
- ★ Low noise GaAs FET
- ★ Selectable filters for optimum performance
- ★ Variable gain/attenuation control



£69.95

MODEL M100

Same specification as the M75 above but with full RF switching. May be used with transceivers of up to 5 watts RF output Ideal for the latest TwinBanders

£79.95

TWO-WAY REMOTE MASTHEAD SWITCH

Uses one coax feeder to the

masthead and remotely switches between 2 antennas with this unit. Very low loss up to 1.3GHz. Uses Greenpar N type connectors

£44.95

JIM PSU101 MK IV

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

£29.50

JIM BHA3

Desktop stand for handheld scanners

£9.95

JIM CH-A4

Mobile holder for use with handheld scanners in the car

£6.95



SCANNING ANTENNAS

NEVADA SCANMASTER (500 kHz - 1500MHz)

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

£39.95



WB1300 DISCONE (25-1300MHz)

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

£49.00

MICRO-SCAN (180-1300MHz)

New low cost ground plane antenna

£12.00

SKYBAND (25-1300MHz)

Stainless steel economy wideband Discone recommended - bargain price only

£24.00

LOG PERIODIC BEAM (105 - 1300MHz)

20-element wideband beam - can be used for transmit on VHF/UHF amateur bands. 12dB fwd. gain

£135.00

DIAMOND D707 (500kHz - 1500MHz)

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

£99.00

DIAMOND D505 (500kHz - 1500MHz)

Mobile version of the D707 superb antenna

£69.00

TELESCOPIC SCANNER ANTENNA (BNC)

£5.75

RUBBER DUCK SCANNER ANTENNA (VHF/UHF (BNC))

£11.95

ICOM

ICOM We carry a varied selection of the Icom range of Amateur radio products including all of their latest models. However should you want something which is not in stock PAUL can get most things within 24 hours! (subject to availability). Icom have been known over the years for their Quality and Performance, here is just a small selection of their vast range!

IC R7100

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

£999

IC R72

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

£589

IC R1

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

£329

IC R100

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

£475

PHILLIPS D1875

Shortwave receiver covering all the major shortwave broadcast bands

SPECIAL PRICE £49.95

KENWOOD R2000 RECEIVER

A good 'Middle of The Road' Receiver giving general coverage receive from 150kHz to 30MHz. Built in clock and timer facility. Ten user programmable memories Optional VHF Converter (Secondhand models usually available)

£499

R5000 RECEIVER

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

£ CALL

SHORTWAVE RECEIVERS

LOWE HF-225

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

£439.00

LOWE HF-150

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

£329.00

NRD-535

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

£1115

DRAKE R8E

Don't let its looks fool you - this is a topclass receiver direct from the States and a company known for its quality and reliability. 100Kcs-30MHz supplied as standard (no hidden extras) with all filters and synchronos detector. Recent reviews agree - the performance of the R8E is second to none and still under £1000.00! Only

£965



DRAKE R8 VHF CONVERTER

In-board converter giving: 35-55MHz and 108-174MHz

£195

DRAKE MS8 MATCHING EXTERNAL SPEAKER

Improves audio reproduction

£49.95

DRAKE COMPUTER CONTROL

Drake software now in stock (for IBM PCs and clones)

£59.95

*For those of a technical nature, a full technical manual is now available

£29.95

SANGEAN ATS803A

Full short wave coverage portable receiver with FM stereo. 14 memory channels, 12 shortwave broadcast bands

£109.95

STEEPLETONE MRB7

Multi-band Radio. This radio will appeal to both Aircraft Enthusiasts and the Marine

Monitors. The multi-band 'jumbo' radio has almost everything you need to monitor these bands. LW, MW, & SW plus the Marine and Aircraft Bands... Good Starter!

£69.95



TRADING POST

We buy as well as sell new & used radio equipment, please feel free to call Paul or John for instant quotes on P/X's and Buy-in's

Yaesu FR101 Receiver c/w Ext. Spkr Ham Bands only. Ex. Cond. £500.00

Marc2 'Hipster' Receiver 150kHz-520MHz all mode. Based V.G.C. £199.00

Trio R1000 S/VW Receiver. Digital Display with timer V. Clean £350.00

Trio R2000 Rx. Good middle of the road receiver. Avg. Cond. £450.00

Icom R72 Gen. Cov. RX almost new still U/Clear. Bargain. £500.00

Yaesu FRG7 Good old Faithful Receiver... Still Going! £175.00

Realistic Pro37 200 Channel H/Hand Scanner. As new. £175.00

Sony Air7 Handheld Airband Receiver. offers around. £185.00

Nevada MS1000 Base/Mobile Scanner. Exc. Cond. G/Te. £215.00

Regency 7000 Base/Mobile Scanner. V. Sensitive Radio. £215.00

Fairmate HP2000 'The ultimate' in handheld scanners full 1000 memories. v.g.c. but tatty box £215.00

AOR AR3000A The best base station scanner money can buy All mode 150kHz - 2.1GHz Ex-demo model £699.99

Yupiteru MVT-7000 c/w PSU101 supply/stand. Avg. cond G/Teed fully tested model £220.00

Alinco DJ X1 The latest model in excellent condition with box and all manuals incl. Frequency book. G/Teed £225.00

Bearcat 200XLT. Old favourite easy to use with 900MHz and micad £140.00

Replacement Nicad Pack - for the Bearcat 200XLT + Bearcat 100XLT £29.95

Signal R535 airband receiver - known to be good £175

VT-125 II pocket airband scanner 30 memories and search £95.00

Sony Pro80 handheld receiver c/w VHF Conv. Cite. £199

THIS MONTH'S SPECIAL P/X DEAL

Get the very latest in handheld scanning receivers - the AR1500, by part exchanging any of the following:

Fairmate HP100, HP200 & HP2000, **AOR** 1000, 2000, 850 & 900s

Yupiteru MVT5000, 6000 & VT125s

Bearcat 200XLT, 100XLT, 100A, 50/55XLT & 70XLTs

Call us now - even if we haven't listed your radio, for what we know to be unbeatable P/X deals.

BOOKS...BOOKS...BOOKS...BOOKS

- Shortwave Confidential Frequency List.** £8.95
- Lists 0-30MHz Freqs. £5.95
- VHF/UHF Frequency Guide** A real must for serious users £4.95
- Marine Frequency Guide** Near the coast? Ideal book £6.95
- VHF/UHF Airband Guide** At last, now back in print. £8.95
- Scanners 2** by Peter Rouse, Both books full of good info. £10.95
- Scanners 3rd Edition**
- Short Wave Communications.** £8.95
- Renowned contributor to the popular Short Wave Magazine £3.95
- Air Traffic Radio 1991** (updated for '92). £2.95
- Sounds Easy** Guide to Britain's Radio Stations. £4.95
- Flight Routings Guide Book** (1992 version). £4.95
- UK Scanning Directory** £14.95
- Everything you wanted to know but were afraid to ask

Directory of Military Aviation Communications.

Space Shuttle operations, War games, in-flight refuelings, interception of Soviet **BEAR** Recon-Bombers, Military Airshows, secret coded transmissions, these are only a taste of what's in store in this publication. Frequency, Locations & some maps for Europe & North Africa are included for reference

£17.95

KW

COMMUNICATIONS

Chatham Road, Sandling
Nr Maidstone, Kent ME14 3AY

Telephone: 0622 692773
Fax: 0622 764614



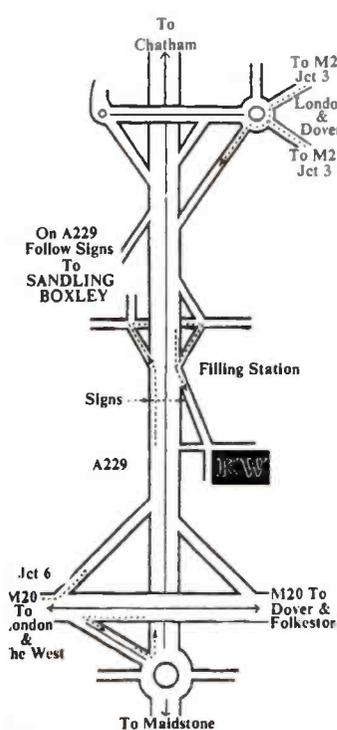
Instant credit available
Mail/telephone order by cheque
or credit card (E & OE)

KW Communications is back in business! After a brief "rest" and under new ownership and management that understands the needs of the listener, KW will be offering the shortwave listener and scanning enthusiast a wider range of equipment and accessories, carefully hand picked to ensure quality and value for money. Whatever your interests are, be it chasing tropical DX on the shortwave broadcast bands or checking the progress of Concorde over the Atlantic, we have the receiver for you - from the fabulous new Lowe HF150 to the truly superb JRC NRD-535. We also stock an enormous range of scanning receivers for monitoring air band, marine, amateur radio and other local VHF and UHF frequencies. We've got hand held, mobile and base station scanners from Signal's R537S airband receiver to the sophisticated Icom R7100. We stock a wide range of accessories including antennas, preamps, books and frequency guides and of course our experience to help you get the best from your equipment. Call in and see the widest range of equipment in the largest shortwave centre in the south east.



DON'T FORGET

We also have a range of pre used equipment - all fully warranted - and we'll be happy to take your receiver or scanner in part exchange. Simple, speedy mail order - ring for details



SCANNING RECEIVERS

ALINCO	
DJX1	New! .....£269.00

ICOM	
R1	Micro size scanner.....£369.00
R100	Excellent mobile.....£510.00
R7100E	.....£1120.00
R9000E	.....£4080.00

AOR	
AR3000A	New improved.....£765.00
AR2002	Old favourite .....£395.00
AR2800	.....£395.00
AR2500	Ask about software!.....£419.00
AR2000	.....£269.00
AR1500	Handheld inc. SSB!.....£299.00

SIGNAL	
R537S	Tuneable airband RX.....£59.95
R550	40 ch airband.....£129.00
R535	VHF, UHF airband.....£254.00

WIN	
WIN108	Free binoculars!.....£179.00

YUPITERU	
MVT7000	Great handheld .....£289.00
VT125UK	Airband scanner.....£179.00

FAIRMATE	
HP2000	Same spec AR2000 .....£259.00

SONY	
AIR7	Airband, AM/FM PSB ....£229.00

YAESU	
FRG9600	Old faithful with SSB.....£520.00

ACCESSORIES

NEW FROM MALDOL

"ACTION HUNTER" series of wide band set top and mobile antennas to suit most scanners. Also TX on ham and cellphone! Call for details.

JIM M75	Scanner preamp .....£69.95
JIM PSU101	Base stand/charger.....£29.95
D505	Active mobile ant .....£69.95
D707	Active base ant .....£99.95
D130N	Wide band discone.....£81.00
REVCONE	Low cost discone.....£39.95
Headphones	.....from £9.95
TCM 84V	Voice activated recorder.....£34.95
Magnetic longwire balun	.....£36.00
AT1000	SWL ATU .....£79.00

Plus all the books, frequency guides, connectors, insulators, aerial wire and coax to compliment your equipment.

SHORTWAVE RECEIVERS

KENWOOD	
R2000	.....£549.00
R5000	.....£895.00

ICOM	
R72E	.....£659.00
R71E	.....£875.00

YAESU	
FRG8800	.....£649.00

SONY	
SW1E	.....£149.95
SW7600	.....£149.95
2001D	.....£279.95
SW77E	.....£339.95

JRC	
NRD535	.....£1099.00

LOWE	
HF150	.....£329.00
HF225	.....£429.00

OPENING HOURS:
MONDAY-SATURDAY
9.30am-6pm
(MON open 10am,
SAT close 5pm)

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

Orders and remittances should be sent to: **PW Publishing Ltd, FREEPOST, Enefco House, The Quay, Poole, Dorset BH151PP**, marking your envelope **SWM PCB Service**. Cheques should be crossed and made payable to PW Publishing Ltd.

When ordering please state the Article Title as well as the Board Number. Please print your name and address clearly in block capitals and do not enclose any other correspondence with your order. You may telephone your order using Access or Visa. A telephone answering machine will accept your order outside office hours.

Please allow 28 days for delivery. Only the p.c.b.s listed here are available.

SHORT WAVE MAGAZINE PCB SERVICE



Telephone orders: (0202) 665524

Board	Title of Article	Issue	Price £
SR008	Experimental VHF Receiver	Jun 91	5.81
SR007	VLF Receiver	Dec 90	5.24
SR006	Medium Wave AM Radio	Nov 90	3.34
SR005	R210 Converter	July/August	6.87
SR004	PRO-2004 Modifications	Oct 89	6.63
SR003	HF to VHF Converter	Aug 89	5.22
SR002	Weather Satellite Reception	Jun 88	3.88

more letters!

Dear Sir

Thanks for the continuing excellence of SWM. Please keep it up.

Like Mr Heyes (Letters, April SWM) I have enjoyed tracking down the aeronautical beacons. I also suffered from the same problem - that of identification.

I can recommend to Mr Heyes a book called *The Europe & Middle East Supplement*. It is published by British Airways Aerad, PO Box 10, Aerad House, Hounslow, Middlesex TW6 2JA. It costs just under £10 and can be ordered by 'phone using a credit card (081-562 0795). I believe it is published monthly and is intended for use by airline pilots. I have found that one copy a year is sufficient as the beacons do not change very much. If this book is coupled with the Aerad Radio Navigation Charts EUR 1/2 and 3/4, most of the beacons in the UK and Europe can easily be identified.

The only drawback to this book is that the information is contained in an alphabetical sequence and not by frequency. With a little bit of time (and a computer) such a list can be produced.

I have enclosed a corrected list with locations of those beacons heard by Mr Heyes. I assume that the beacon listed as NE Heathrow is actually ME as this ties in with the Manchester Locator/Outer marker. I do not think that Heathrow has an NE marker, only OE.

316	OE	Dublin Airport (locator/outer marker)
317.5	VS	Valenciennes, Franco-Belgian border
319	LEC	Stavanger Consol station
323	WPL	Welshpool, Mid Wales (NDB)
323	SBL	Sherburn in Elmet, Humberside (NDB)
325	BAE	Barton, NW of Manchester (Airway A1 x B1)
335	WCO	Westcott (NDB on A47 S of Daventry)
340	HAW	Nr Dee Estuary (Locator)
349.5	LPL	Liverpool (Locator/Outer marker)
374	RNR	Radnor, S/Mid Wales (NDB A25 x B39)
380	WFD	Woodford, SE of Manchester (NDB on W923)
388	MCR	Manchester (Locator/Outer marker)
396	ME	Manchester (Locator/Outer marker)
407	GAR	Garristown, W of Dublin (NDB on B1)

Ron Galliers, London

Dear Sir

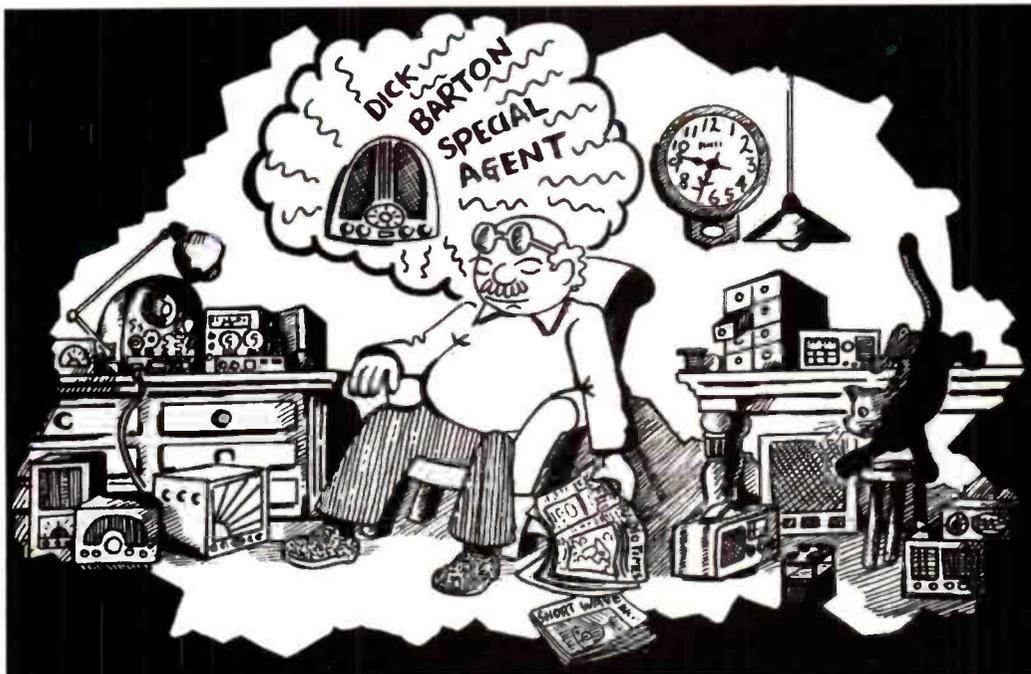
As an old s.w.l. of many years may I make a critical comment upon the phonetic alphabet in current use by 'hams'.

In the old days it was quite unmistakable and somehow very appropriate to the game.

- A - America
- B - Boston
- C - Canada
- D - Denmark
- E - England
- F - France
- G - Germany
- H - Honolulu
- I - India
- J - Japan
- K - Kentucky
- L - London
- M - Mexico
- N - Norway
- O - Ocean
- P - Portugal
- Q - Quebec
- R - Radio
- S - Santiago
- T - Tokyo
- U - United (or Uruguay occasionally)
- V - Victoria
- W - Washington
- X - X-ray
- Y - Yokohama
- Z - Zanzibar

This Romeo Juliet stuff just ain't appropriate to short wave radio. Can't we go back to it?

J.A. Thompson, Kent



Listen With Grandad

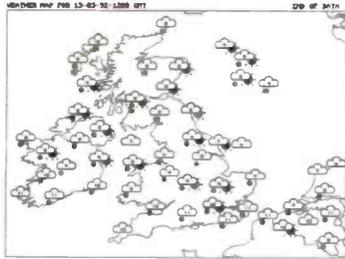
By Leon Balen and David Leverett



AND NOW FOR SOMETHING COMPLETELY DIFFERENT!

Besides our complete range of data communications equipment, we offer a growing range of electronic weather monitoring systems

A totally new way of looking at the weather!



Ever wondered what the strings of coded RTTY information churned out by Bracknell and other meteo stations actually meant? Wonder no more. This is weather observation data from ships, aircraft and land stations. ICS-SYNOP automatically plots it on a map on the screen of your IBM-PC. Operates with either ICS-FAX or PK-232 hardware.

ICS-SYNOP: £99.95

NF weather facsimile, RTTY, Navtex and FEC for the IBM-PC



All you need to produce superb reproduction of weather maps and amateur transmissions on the VGA screen of an IBM-PC. Extremely easy to use. Even the hardware to interface between your PC and an SSB receiver and a 9 to 25 pin interface adaptor are included.

ICS-FAX II: £129.95

Accessories

Book by Klingenfuss:

'A Guide to Weather Facsimile': £17.95

Radio receivers:

Sony ICF SW55: £249.99
Sony ICF SW77: £349.99

Sony receivers are the most user friendly solution for weather fax reception. Full details available.

Marine Systems

Interested in long distance sailing? Ask us for information on our own marine weather facsimile, Navtex and Radio Telex systems. Up to date weather information anywhere in the world plus direct contact with shore based telex and office fax machines.

Direct reception of Meteosat and NOAA weather satellites on your IBM-PC



Complete systems available, ready to plug in and go. Built to the highest professional quality. All packages come complete with software, documentation, interface, cable, receiver, pre-amplifier and antenna. Very easy to use and giving superb high quality images. Supports VGA, SVGA displays on 286 processors and above. Includes feature hitherto seen only on professional systems costing many times more.

MET-2a (Meteosat): £939.94
NOAA-2a (NOAA option): £646.19

Monitor local weather directly on your own PC



The new range of Davis Instruments can be used on their own with an LCD readout or can be connected to a computer for long term data logging. 32K inbuilt memory (stores up to 120 days observations).

Remote modem access. Records temperature, wind speed, wind direction, humidity, barometer, rainfall etc. etc. Send for free colour catalogue.

Weather Monitor II: £319.95
Weatherlink: £149.95

Note: All of the above HF radio related products require the use of a good quality general coverage SSB receiver or transceiver.

Data on any product available on request. Prices include VAT at 17.5%. Add £6.00 post and packing (£3.00 for books and software).

Please contact us for free catalogue and price list.

Our products are available direct and from dealers throughout Europe. Callers by appointment.



ICS Electronics Ltd. Unit V, Rudford Industrial Estate, Arundel, West Sussex BN18 0BD
Tel: (0903) 731101 Fax: (0903) 731105



A Battery Problem Solved

MR4099
S
O
L
D
S

If you have one of the older, but still popular, Matsui MR4099 or one of the variants of this receiver, such as the Sangean 803, Realistic DX440 and the Tatung TMR7602, you may have problems in fitting Ever Ready Silver Seal R20S batteries into it. George Millmore has worked out a way to overcome the problem.

You will need a small cross-headed screwdriver to remove the screws holding the back and battery box and this should be a good quality one as the screws are small and easily damaged.

Removing the Back

1: Remove all batteries, including those used for the memory back up.

2: Lay the receiver on its front with the bottom towards you. Remove the six screws holding the back of the receiver, one of which is in the left hand corner of the battery loading aperture.

3: Carefully lift off the back turning it over to the left of the receiver as in the picture. The battery compartment is assembled onto the back, and will be removed with it.

4: Note the position of the clip under the rod antenna, connecting the rod and lead to the set. This has to be replaced in the same position when reassembling, or the rod will jam when extended. Undo screw A and remove the rod, clip and lead. The back, together with the battery compartment is now free from the set, which should be put in a safe place while work is being done on the battery compartment.

5: Remove the screw and retaining clip B. Using finger and thumb, pinch the battery compartment at C and D, to release it from the plastics clips, lift slightly and

withdraw from the two clips, E.

Enlarging the Battery Compartment

It is now necessary to enlarge the inside of the battery compartment and the recess in the back of the set. Both are made of fairly soft plastics and can be rubbed away with a good grade or coarse sandpaper. This is best done with a strip of sandpaper wrapped around a spent battery, pushed to and fro in the compartment, and also along the recess in the back.

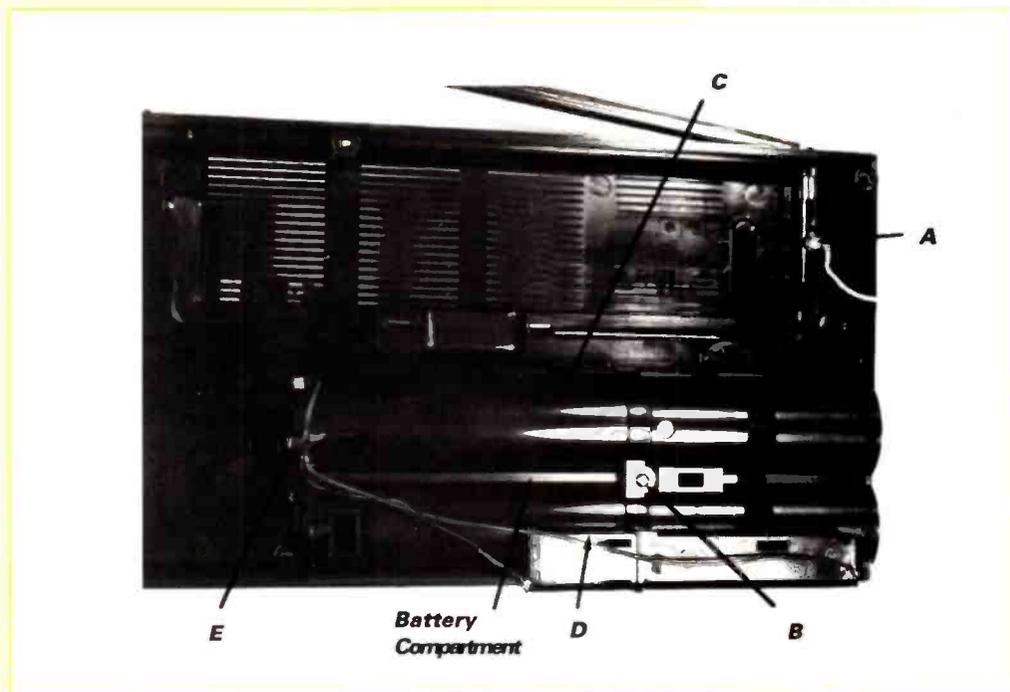
Pay particular attention to the ridges in the plastics under B, as these are the main cause of the problem. Remove enough of the plastics to allow the batteries to slide easily into the compartment.

To gain extra space, the cardboard sleeve was carefully removed from each of the four batteries that go into the compartment and replaced with a single layer of insulating tape. The cost of the tape is minimal compared to the extra battery life gained from using Silver Seal batteries. Finally, rub down with fine sandpaper to remove any roughness in the compartment and reassemble the set in reverse order.

It will be necessary to reset the clock and reprogram the memories after completing the modification. Any batteries that have become stuck in the compartment as a result of swelling can be removed by following steps 2-5 to gain access to the batteries from inside the compartment.

Footnote

The set used for the pictures was a new Sangean ATS-803A, kindly provided by Nevada Communications. In checking out the article against the set it was found that the battery compartment had been enlarged by the manufacturer and accepted Silver Seal batteries with no problems.



Manual AM/FM for the Realistic

Since a.m. is still in quite widespread use in the UK it is unfortunate that the a.m. detector in the PRO32 can only be employed when the set is programmed for civil airband reception (118 to 136MHz), says A. D. Ayres.

The modification is essentially very simple. It involves cutting one p.c.b. track, installing a switch and soldering two wires for the switch. There is some further minor work depending on how you decide to mount the switch.

What happens when you program the set for civil airband reception is that the microprocessor sends a voltage of +5.4V across a multi-way connector to the receiver board, this 5.4V enables the airband r.f. section and the a.m. detector. It also causes an electronic audio switch to select the output from the a.m. detector rather than the f.m. detector.

The modification uses a switch to supply the a.m. detector with 5.4V and to feed this as a control voltage to the electronic

audio switch. A p.c.b. track has to be cut so as to avoid activating the airband r.f. section when we only want to activate the a.m. detector and electronic audio switch. This track must be cut in the correct place or the microprocessor will not be able to select airband when it is required, (see Fig. 1).

It should be noted that this modification brings a.m./f.m. selection totally under manual control, so when you do want to listen to airband you will have to select a.m. yourself as the microprocessor will no longer be able to do it automatically.

Snags

The problem is that there is very little room for fitting switches inside the PRO 32. This difficulty is also

compounded by the fact that you may not want to make holes in the case.

One practical solution to this problem is to remove the earphone socket and to install a sub-miniature toggle switch in the hole, the wires that originally fed through the socket switching action being soldered together and the joint insulated with tape. This does, of course, mean that you lose the earphone facility and if this is not acceptable there are two more possibilities. Looking from the back you will see a small amount of free space at the top left hand corner, it may be possible to install a small open frame type earphone Jack in this position although it does mean drilling the case. Alternatively, the charge socket can be rewired to act as an earphone socket as it too has a switching action, the nice thing about this is that there is no need for the charge socket as the batteries come out in a tray and can be charged externally. I decided just to do without the earphone as I never used it, but for those of you who would like to try the charge socket conversion I have given the relevant wiring diagram in Fig. 3.

The Modification

Remove the back of the case by unscrewing the four obvious screws, use the correct size of crosshead Jeweller's screwdriver for this to avoid chewing up the screw heads. Referring to

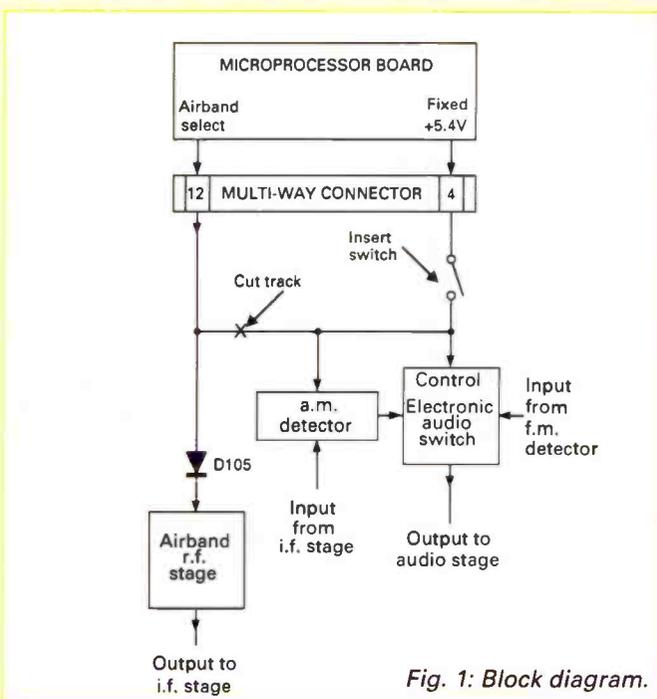


Fig. 1: Block diagram.

PRO 32

Fig. 2, locate the rear of the multiway connector J105 near the top of the board, the pins are clearly numbered so there should be no problem here. To get clear access to pins 4 and 12 it will be necessary to delicately move the wires aside. Halving located pin 12 look about 3mm below it to find D105, using a bright light and a magnifier examine D105, the anode end connects to a surface track that runs off between the legs of a 1nF ceramic capacitor C198. This is the track that must be cut, do it using a sharp fine pointed tool, check your work under the magnifier.

Next remove the earphone socket, the white and yellow wires are taken off and soldered together, the joint can be insulated with tape. The black wire is taken off but it was using the earphone socket as a passing connection point so it will need soldering up to maintain its continuity, again insulate with tape. The white wire is the speaker wire and the yellow wire is the audio output, the black is ground.

Install the subminiature toggle switch in the earphone socket hole, slight reaming may be needed but don't overdo it or the earphone Jack won't go back properly if you ever want to reverse the mod.

Locate pin 4 on the multiway connector; this carries a permanent 5.4V. Solder a thin wire to this pin and connect the other end to one side of the switch. If you are using a d.p.s.t. switch

take care to get the correct terminals for a simple on/off action.

Next locate R184, this is the tricky bit, it lies between the two diodes D122 and D123, the thing that looks like a resistor with the upper leg cut off is actually the test point TP105, R184 lies at one o'clock from TP105. Having located R184 you will find that it is vertically mounted, the leg that you can see, i.e. the top one, is covered in insulating material, use a sharp edge to scrape away some of this insulation, use a fine pointed soldering iron to tin the bare patch and then solder a fine wire to it. This wire goes to the other side of the switch and the modification is now complete.

Checking

Check that none of your wiring is causing short circuits and power up the set, select an a.m. station and try the switch in both positions the f.m. position should give low volume distorted audio while the a.m. position should give clear reception. Attempting to receive f.m. in the a.m. position will probably give no audio at all. Given careful work and attention to detail, the chance of error is small.

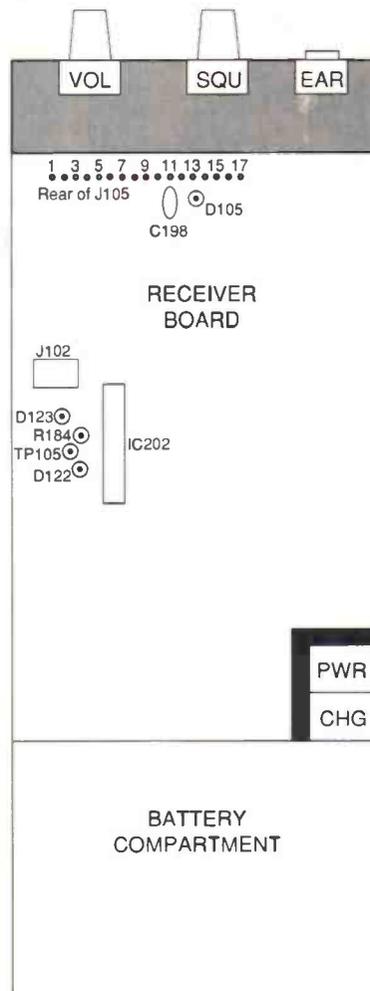


Fig. 2.

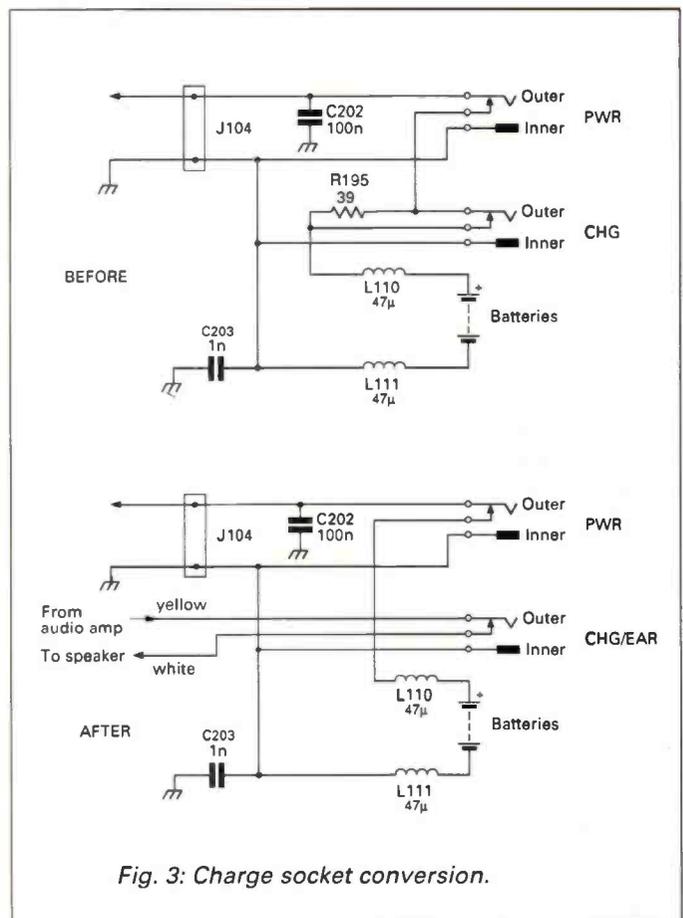


Fig. 3: Charge socket conversion.

MARTIN L

NATIONWIDE FORCE IN AMATEUR RADIO

MARTIN'S SUMMER SPECIALS

Throughout the remainder of the SUMMER MONTHS, why not spend it listening to the shortwave or scanner frequencies with a new set from MARTIN LYNCH? Lots to choose from, all at special prices with unbeatable after sales service. Our MAIL ORDER department is working flat out sending parcels all over EUROPE -

JRC NRD 535

£1149

Latest high performance receiver



Icom IC-R72E

£669

Budget priced SW Receiver. Used examples from £499



Drake R8E

£949

Receiver with most options fitted as standard



Yaesu FRG8800

£639

Excellent HF receiver. Used examples from £499



Icom IC-R9000

£3895

The flagship of communications receivers



Icom IC-R71E

£849

The big brother of the IC-R72. Used examples from £599



Kenwood R2000

£529

Kenwood's fine HF receiver. Used examples from £399



AOR 2800

£359

Wideband all-mode base/mobile scanner



Kenwood R5000

£885

Top of the range shortwave receiver. Used examples from £649.



AOR 3000A

£725

Genuine UK models at a special price for June only!



In addition to the above, I have at least 500 used items all to the strict demanding standards set out above. Phone for your free list and free valuation on your unwanted equipment.

Remember I also have the complete range of new Yaesu, Icom, Kenwood, Alinco, AOR, Drake etc in stock - and none of it grey imported. All that I sell is backed up by the official UK distributor.

Phone or write in today!

MARTIN LYNCH
G4HKS
THE AMATEUR RADIO EXCHANGE CENTRE

Tel: 081-566 1120 ■ Sales ■ Service ■ M



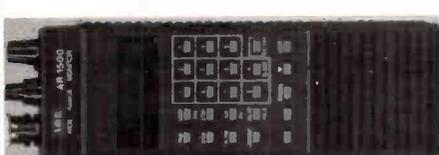
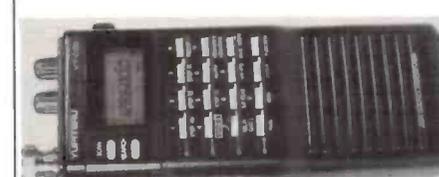
LYNCH . . .

▪ Sales ▪ Service ▪ Second User ▪ Mail Order ▪

remember I am an AUTHORISED STOCKIST for all that I sell. Phone or write today for your requirements. If it isn't listed below I have probably got it in stock and can get it to you usually within 48 hours. I'm still across the road from Northfields Underground on the Piccadilly line, (the nearest store to Heathrow by tube), and only

a few minutes from the M25/M4/M40 motorways. Don't worry if you can't make it to the shop – the mail order system is superb. Phone with your requirements and generally we dispatch the same day. Continue to support your independent retailer – it's the right thing to do!

73 MARTIN LYNCH

<p>Yupiteru MVT8000 £279</p> <p>Mobile or base wideband scanner</p> 	<p>Yupiteru MVT7000 £269</p> <p>Best performance receiver</p> 	<p>Icom IC-R1E £329</p> <p>Still the world's smallest pocket scanner</p> 
<p>AOR 1500 £279</p> <p>The latest all mode pocket scanner</p> 	<p>Yupiteru VT225 £229</p> <p>The ultimate airband enthusiasts scanner</p> 	<p>Lowe HF150 £325</p> <p>A British built high performance receiver</p> 
<p>Lowe HF225 £429</p> <p>Excellent British made base receiver</p> 	<p>Icom IC-R7100HF £1120</p> <p>50kHz-2GHz all-mode receiver. Icom approved conversion. See our other ad on page 49</p> 	<p>Alinco DJ-X1E £239</p> <p>Excellent miniature pocket receiver from Alinco</p> 

SUPPORT ✓ **YOUR INDEPENDENT RETAILER**
- It's the right thing to do !!

"NOW OPEN MONDAYS"

286 Northfield Avenue, Ealing, London W5 4UB.
Tel: 081 566 1120 Fax: (24hr) 081 566 1207

Shop opening hours:
Monday - Saturday 10 - 6pm
24 hour sales **Hot Line** 0860 339 339
(after hours only.)
Fax order line open 24 hours

Mail Order Tel: 081-566 1120 ▪ Sales ▪ Service ▪ Mail Order

YAESU

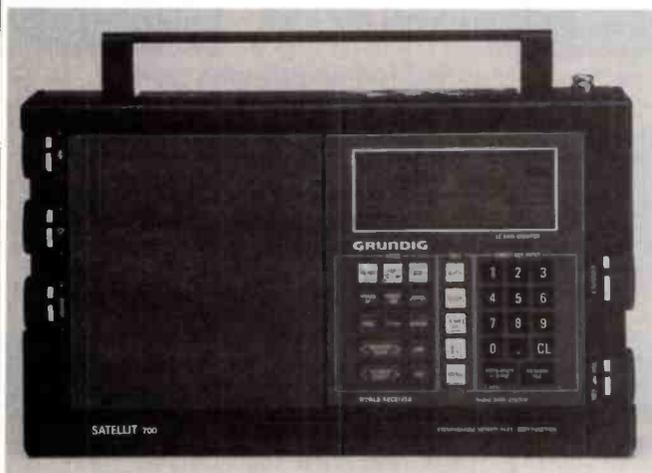
STANDARD

SRP 'SPECIALS'

WANTED

Shortwave Receivers and Scanners! CASH PAID

NEW! Grundig Satellite 700



Now in stock £349

World receiver with microcomputer-controlled PLL frequency synthesizer tuning. DATA Monitor. RDS - Radio Data System. Indication of station name in the display. 64 station memory positions with 8 alternative frequencies (included). ROM chart. Direct frequency input. Last station memory. Copy function. Storecompare mode. Memory scan. LCD quartz timer clock with 2 time zones.

SANGEAN ATS 803A

(Direct key-in world receiver with quartz alarm clock timer)

Tunable BFO SSB/CW!

Specifications and features

★ 150-29.999 continuous tuning with no gaps. Phase locked loop-double conversion Superheterodyne ★ Full shortwave/AM/SSB 150-29999kHz no gaps! + FM87.5-108 mono/stereo ★ 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 memories - nine memory channels for your favourite station frequencies. 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 adaptor. ★ General coverage of all AM bands in LW/MW/SW (dedicated broadcast band coverage on all versions), plus of course the FM band for quality sound broadcasts in headphone stereo. ★ SLEEP function turns the radio on or off after an adjustable time of 10-90 minutes. ★ Separate BASS and TREBLE controls for maximum listening pleasure. ★ External antenna jack for better reception. ★ Adjustable RF GAIN control to prevent overloading when listening close to other strong stations or if there is interference. ★ New Improved wide/narrow filter (6/2.7kHz) ★ BFO control (Beat Frequency Oscillator) enables reception of SSB/USB/LSWB (single side band) and CW (Morse Code) transmissions. ★ Illuminated display to facilitate night-time use. ★ Designed for both portable and desk top use. ★ Five dot LED signal strength Indicator.

DIMENSIONS: 29.2cmx16.0cm (11.5inx6.3inx2.36in).
OUTPUT: 1200mW (10%THD) WEIGHT: 1.7kg (3.75lbs) without batteries. Wide/narrow filter switch.

£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 1300MHz. Total height - 36ins - 9ins at widest point. Comes complete with 4 metres of RG58 coax cable and BNC connector fitted. Ideal indoor - high performance antenna and can also be used as a car antenna when your car is static. REMEMBER YOUR SCANNER IS ONLY AS GOOD AS YOUR ANTENNA SYSTEM!

£49.00 + £3.00 p&p



SKY SCAN V1300 Antenna

Most discons only have horizontal elements and this is the reason that they are not ideal for use with a scanner. Most of the transmissions that you are likely to receive on your scanner are transmitted from vertically mounted antennas. The Sky Scan V1300 discone has both vertical and horizontal elements for maximum reception. The V1300 is constructed from best quality stainless steel and aluminium and comes complete with mounting pole. Designed and built for use with scanners.

£49.95 + £3.00 p&p



SKY SCAN Magmount MKII

For improved performance, wide band reception, 25 to 1300MHz. Comes complete with protective rubber base, 4m RG.58 coax cable and BNC connector. Built and designed for use with scanners.

£24.95 + £3.00 p&p



SAMLEX®

Regulated 13-8V DC power supply

WITH SHORT CIRCUIT PROTECTION



Model
RPS1210-
10-14 amp.
£49.95 +
£5.00 p&p



Model
RPS1215-
15-20 amp.
£69.95 +
£5.00 p&p

S.R.P. TRADING

Manufacturers and distributors of communications equipment
Unit 20, Nash Works, Forge Lane, Belbroughton, Near Stourbridge, Worcestershire.
Telephone: (0562) 730672 Fax: (0562) 731002

Showroom opening times: Monday - Friday 9.00 - 5.30pm Saturday 9.00 - 1.00pm. Callers welcome.



Broadening the Bandwidth



Essentially the process of radio reception involves the amplification and selection of in-coming signals. The act of selecting what is required and exclusion of that which is not can take place anywhere in the signal's path, from the antenna to the loudspeaker. With the advent of integrated circuits and the ability to lay out complex circuitry in limited space, the production of small audio filters with knife-edge selectivity has become a practical proposition.

British Success

One of the most successful of these, known to radio amateurs and short wave listeners world-wide, is made by Datong, a Leeds based company. The FL2 has independently adjustable high pass and low pass filters with very steep cut off skirts. The unit is connected in series with an external loudspeaker or phones; it contains its own audio amplifier, capable of driving a loudspeaker, which dutifully produces an output at the same volume as the signal fed in. This means that the user can precisely control the range of frequencies which pass through it. Low rumblings and high whistles which a

receiver's own selectivity circuits fail to eliminate do not reach the listener's ears.

The FL2 also has an adjustable notch filter which can be set to eliminate a specific whistle. The FL3 is exactly the same, except that it also incorporates an automatic notch filter which will detect the presence of a whistle, home in, and eliminate it.

Lower Frequencies Lost

The author, a keen DXer and short wave listener, used an FL3 for some months and developed an admiration which was marred by one single flaw. The pass-band frequencies, that is the frequencies which the filter will allow through, can be set anywhere between 3kHz and 200Hz. For prolonged shortwave listening the minimum of 200Hz was found to be too high. Certainly, frequencies necessary for purely communication purposes were admitted, but lower tones were filtered out. Bass guitars were lost, as were the warmer tones of speech.

The remedy is to reduce the minimum high-pass frequency to a nominal value of 80Hz. This modification is quite straightforward; it involves the replacement of four

capacitors and can be carried out by anybody handy with a soldering iron and in possession of a minimum of tools.

The Modification

The following procedure should be followed:

1) Remove the top cover by removing the four feet. The unit slides out.

2) For FL3: remove the two screws securing the auto notch filter board (the smaller board), and remove the mounting pillars below it.

3) Remove the remaining nuts holding the main printed circuit board in place.

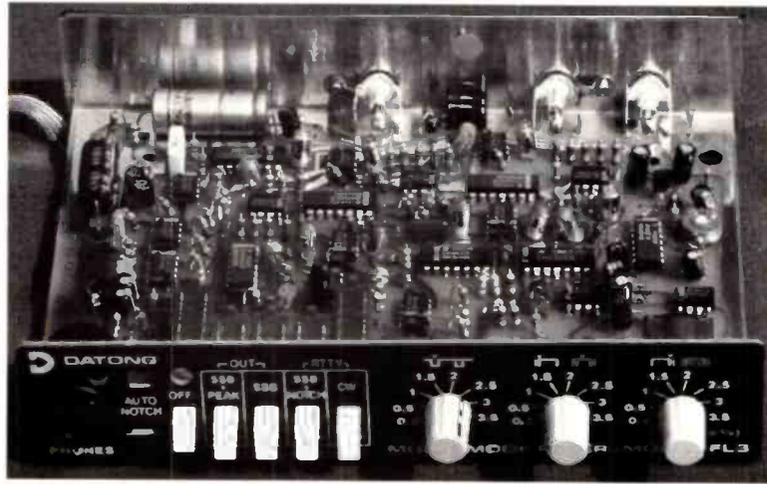
4) Remove the four screws from the base plate which secure it to the front and back panels. The base plate can now be lifted off.

5) Carefully remove the four 1nF (1000pF) capacitors indicated. The use of Solderwick may help in freeing them from the board and clearing solder from the holes. The 3.3nF (3300pF) capacitors must now be fitted in their place. Make sure that their connecting wires do not foul adjacent copper tracks on the double sided printed circuit board.

6) Re-assemble in reverse order of dismantling.

In these days of overcrowded wavebands, being used by ever more powerful transmitters, short wave listeners require more selectivity from their equipment. One way in which interference can be eliminated is by processing the audio signal after it leaves the receiver. Don Phillips M.Sc describes how to perform a simple modification on the popular Datong range of filters to enable them to be used more flexibly.

of the Datong FL2 and FL3 Audio Filters



Internal view of the Datong Audio Filter. The modification described in this article is simple to carry out.

Improvements

The filter will work exactly as before except that there will be much more audible depth to the signal when the high pass filter is set at its minimum. As well as making general short wave listening more enjoyable, it is found that being able to hear lower audio frequencies makes adjusting for a zero beat in e.c.s.s. reception a much easier task. The author has also found the modified filter to be invaluable in reproducing his collection of historic 78r.p.m. records. The scale printed on the front panel round the (central) adjustment potentiometer will of

course, now be slightly inaccurate. This has not presented any difficulties in practice.

Components Required

It is important that the four capacitors are physically small enough to be fitted on the crowded circuit board. They must also be of reasonably close tolerance as what is effectively being adjusted is the time constant of four separate filters working in tandem. If they do not work together the overall sharpness of the filter unit will be lost. Tubular polystyrene capacitors of 5% tolerance were found to be suitable;

these are easily available from Cirket (Stock no. 04 33209).

Although this modification does not call for any cutting or drilling to the Datong filter, it should be borne in mind that modifications to equipment generally invalidate the guarantee obligations of the manufacturers.

I would like to express my thanks to Datong for their initial assistance in the development of this modification. Information about Datong products can be obtained directly from Datong Electronic Ltd., Clayton Wood Close, West Park, Leeds LS16 6QE. Tel: (0532) 744822

Abbreviations

e.c.s.s.	exalted carrier single sideband
Hz	hertz
KHz	kilohertz
nF	nanofarad
pF	picofarad
r.p.m.	revolutions per minute



This annotated photograph shows the four capacitors that are to be changed for 3.3nF.

An Extra Selectivity Option for the Yaesu FRG-8800

W
O
R
L
D
S

The popular Yaesu FRG-8800 Communications Receiver comes from a well established and celebrated stable. Don Phillips MSc, describes how to build and install a circuit that will raise the performance and flexibility of this versatile work-horse.

The modification described could also be adapted to assist owners of other receivers who require an additional selectivity setting. It is designed to avoid the questionable practice of drilling, filing or cutting of chassis or panels.

It is compact, neat and easy to use. It is generally available and in many respects, its performance is very good. The Yaesu Musem FRG-8800 is rated by the *World Radio TV Handbook* as a 'serious short wave listener's receiver', but, from the analysis made of its performance, it would appear that it is excluded from the highest category of 'semi-professional receiver' by being described as having only 'fair' selectivity. The author, an active broadcast DXer, has found his own modified receiver to now be unquestionably good in this respect.

An Additional Circuit

The FRG-8800 is manufactured with the switchable option of two selectable bandwidths which are nominally 6 and 2.7kHz, achieved by two ceramic filters in the 455kHz i.f. circuitry. The 'a.m. wide' mode employs the former; the 'a.m. narrow', and upper and lower sideband and c.w. modes employ the latter. The additional circuit described in this article detects whenever the

2.7kHz filter is switched in and provides the i.f. signal with alternatively the narrow 2.7kHz filter, or a narrower 2.4kHz filter. In other words, when listening in a.m. mode, the listener can call upon three selectivity settings by simply toggling the NAR/WIDE button; the order will be: 6 - 2.7 - 2.4 - 6kHz and so on.

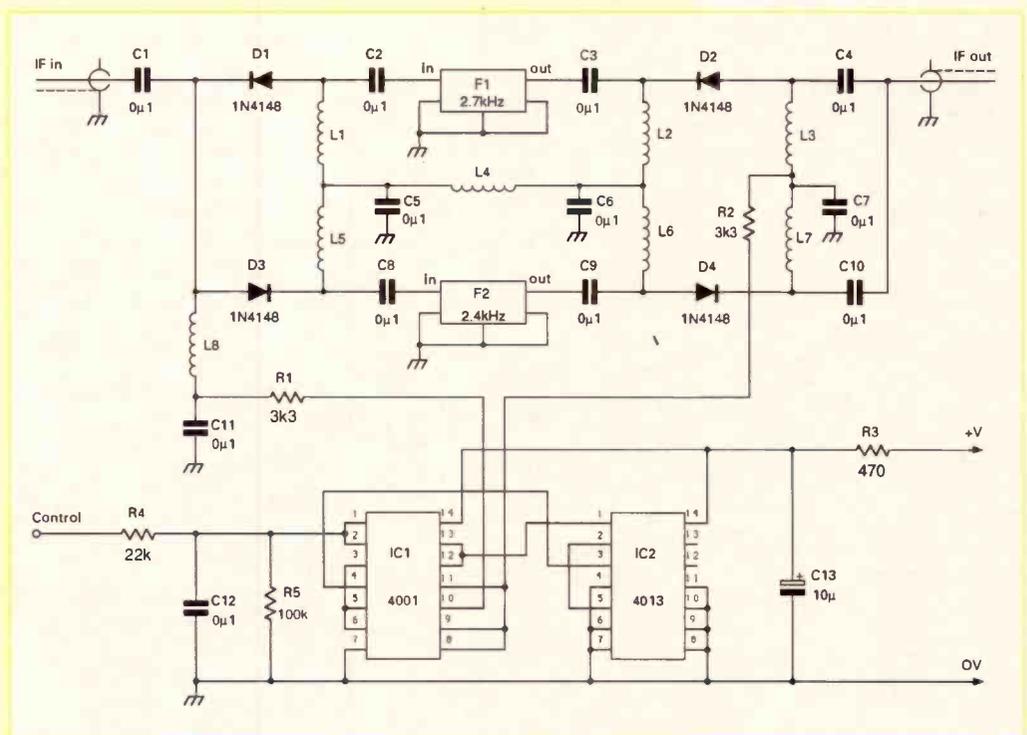
When listening in other modes, switching between 2.7 and 2.4kHz is effected by switching through the a.m. wide setting, e.g.: i.s.b. (2.7) - a.m. - i.s.b. (2.4). In practice this is easy to use; by switching from u.s.b. to i.s.b. directly the filter in use is retained. The advantages of installing a narrower filter in

this way are two-fold, namely, the use of the 2.7kHz filter is retained giving the a.m. user an overall choice of three selectivity settings, and there is no need for fitting an additional switch or making any external modification to the receiver. Although this modification is fully reversible and the receiver can be fully restored to its original specification, it should be noted that tampering with the equipment invariably invalidates the manufacturer's guarantee.

Circuit Description

The circuit employed

Fig. 1: Filter switching circuit.



S D D O W

consists of diode switching controlled by simple logic (Fig.1). The control voltage is connected to the FRG-8800's own filter switching circuits and will receive the forward edge of a positive pulse every time the narrower filter is called upon. This pulse is buffered by IC1 and fed to a D type flip-flop, IC2. This effectively acts as a divide by two, making its output go positive once for every two pulses that reach the control point. The output of IC2 returns to IC1 where it is buffered and an inverted output also produced.

We have then two voltage output points, pins 9 and 10 of IC1. When one is positive, the other is negative: they change polarity each time the control pulse is generated - each time the user selects the narrow filter setting on the receiver. This see-sawing voltage is then connected to the diode network. When the positive voltage is delivered to the input side of the circuit, via L8, diodes D3, D4, D5 and D6 are switched on and the i.f. signal passes through Filter 1. Similarly when the voltage is reversed, diodes D1 and D2 are switched on and Filter 2 comes into use. The use of r.f chokes instead of resistances allows the d.c. to

be brought to the circuit without significantly changing the overall in/out impedance of the circuit: as far as the FRG-8800's own circuits are concerned this additional circuit 'looks' much like the original filter that it replaces.

Versatility

Although this modification has been designed with the FRG-8800 in mind, it could easily be adapted to fit a variety of receivers. If it were not possible or desirable to utilise a receiver's own logic circuitry to control this circuit, it can be easily switched by connecting a press-to-make switch (such as Cirkit 53-00300) from the positive side of C15 and the control input side of R4.

Making a Start

In view of the complexity of the FRG-8800 circuitry and the requirement to faithfully follow the circuit shown in Fig. 1, it is recommended that only those with a proven competence to dismantle equipment and lay out a circuit board should undertake this modification. It does, however, call for very little direct work with the receiver - simply the careful relocation of a ceramic filter unit and the soldering of two additional wires to the main p.c.b. It is recommended that the *FRG-8800 Service Manual* (at a cost of around £8) is purchased.

Before laying a hand on the unsuspecting FRG-8800, it is suggested that the circuit is completed and tested. It will not be possible to incorporate the 2.7kHz filter at this stage, but the signal path can be completed by placing a wire link between C8 and C9. A piece of Veroboard approximately 127 x 95mm is ideal for building the circuit on. It will be necessary to leave three or four copper tracks along one side unused to enable the board

to be subsequently mounted.

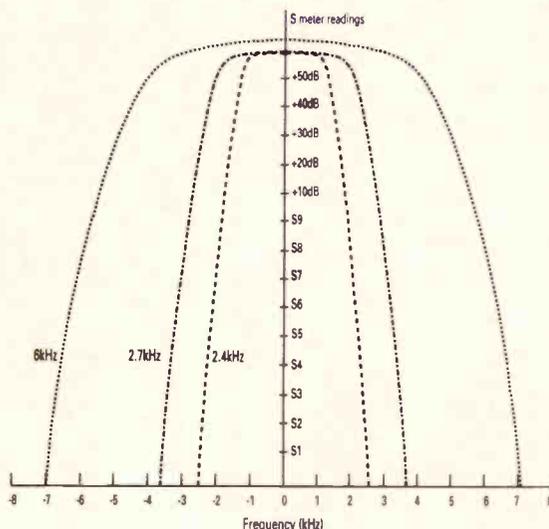
It is advisable to lay out the components in a logical manner, sticking, as far as possible to the relative positions of the components as shown in the circuit diagram. This will mean that the input and output is quite separate. Do not forget that the circuit is switching a radio frequency. Keep wiring and the use of copper tracks to a minimum. Make sure that all tracks that are not in use are earthed. Do not overheat the filters when mounting them, and always use holders for mounting the integrated circuits. CMOS logic is particularly vulnerable to damage by static charges, so do not plug in the integrated circuits until switch-on time.

Testing the Circuit

The circuit is capable of running satisfactorily on any voltage between about 6 and 15V. It can be tested by using a 9V battery to power the circuit. The control point is then temporarily held to the positive terminal. Pin 4 of IC1 will go positive. Repeated positive pulses will be seen to divide by two as pin 1 of IC2 will respond to every other one. The see-sawing output voltage will be seen on pins 9 and 10 of IC1.

For the constructor who has access to a sweep generator and spectrum analyser, the dynamic testing of the circuit as a whole will be straightforward. For those of us without, it is possible to get some idea of whether the circuits are working by connecting the output of the board to the receiver's antenna socket and the input to a short antenna. Tune the receiver to 455kHz and check that the circuits are at least passing static at that frequency; also short out each of the two signal paths to earth via a capacitor in turn to check that the r.f. is being switched.

Fig. 2: Intermediate frequency selectivity curves.



Installing the New Board

Now comes the part that calls for a cool head and a steady hand. Place the receiver on an old towel or soft cloth and remove the top and bottom cover. Remove the internal batteries and the battery holder. Remove the six steel coloured screws to enable the back panel to become loose. Remove the six screws securing the main circuit board. Unplug the screened connector J01 (1st in Lo In, next to L28) form the main board. By easing the back panel carefully back it will be possible to ease up the main board to expose the underneath. The following surgery will be easier if the main board is held gently up by a piece of masking tape.

Next, very carefully remove the CF03, the larger of the two filters. It will be necessary to use Solderwick when doing this, taking care not to overheat the main board or component. Two pieces of thin coaxial cable, about nine inches in length, are now required to carry the signal from the new board to the site of CF03. R119 is connected to the input side; R121, the output. The use of narrow pins or short stubs of stiff wire to enable the coaxial wire to be mounted on the component side of the main board is recommended. The braiding should be connected at both ends, being the new circuit's only point of earthing.

The only other two connections to the main circuit are as follows. The 11V rail, which is called upon to act also as the positive supply voltage for the new circuit, runs down the very thin track down the whole length of the main circuit board; it passes next to CF03. It can be easily picked up at the small test point next to D31. The control input can be picked up from junction of R 146 which joins to the collector

of Q60 (centre wire). Be sure not to allow solder to come into contact with adjacent tracks!

Mounting and Switching On

With the exception of the bottom cover, the FRG-8800 should be re-assembled, in reverse order of dismantling. The new circuit board can then be installed. The author does not have the v.h.f. converter installed in his FRG-8800; it was therefore possible to mount the new board in the space that this would occupy. By utilising the large hole on the top lip of the v.h.f. aperture to screw the new circuit to, it is possible to effect this modification without modifying the casing either externally or internally. If the v.h.f. converter is in place there should be sufficient room to mount an extra circuit behind the loud speaker. It is suggested that, in this circumstance, the practicalities of mounting the board can be explored before the circuit is constructed.

The modified receiver is then ready to be switched on. It will not take the user long to become used to the fact that an extra selectivity position can be switched in by switching through the a.m. wide position. Serious DXing sessions soon develop the practice of hitting the NAR/WIDE button twice to move narrow to really rather good.

Plotting Selectivity Curves

Typical selectivity curves showing the relative responses of the three ceramic filters (Fig.2.) are helpful in appreciating the real improvement brought about by the addition of the 2.4kHz filter. The successful constructor of this modification can easily produce his or her own selectivity curves by using the excellent signal strength meter on the FRG-8800 which allows the

You Will Need

Resistors

Carbon Film 0.25W 5%

470Ω	1	R3
3.3kΩ	2	R1,2
22kΩ	1	R4
100kΩ	1	R5

Capacitors

Mylar foil

0.1μF	12	C1 to 12
-------	----	----------

Electrolytic

10μF 25V	1	C13
----------	---	-----

Inductors

10mH	8	L1 to 8 (Circuit 34-10302)
------	---	----------------------------

Semiconductors

Diodes

1N4148	4	D1 to 4
--------	---	---------

Integrated Circuits

4001	1	IC1
4013	1	IC2

Filters

Ceramic 455kHz i.f.

2.4kHz	1	F2 (CFJ-455K5)
2.7kHz	1	F2 (CFM-455JI) from FRG-8800

Miscellaneous

14-pin d.I.I. i.c socket (2); Veroboard 0.1in, 127 x 95mm; Coaxial cable RG174A/U 0.5m; Solder wick.

All components used can be obtained from: Cirkit, Park Lane, Broxbourne, Herts EN10 7NQ Tel: (0992) 444111

plotting of a revealing comparison.

A steady unmodulated r.f. signal source is connected to the receiver's antenna input. The receiver is set initially to a.m. wide, tuned in, and the source and the ATTENUATOR controls are adjusted until a +60dB reading on the signal strength meter is observed. Graphs for each filter position can then be made. The vertical axis is signal strength: S1 to +60dB. The horizontal axis is bandwidth in kilohertz; call the frequency you have tuned to zero and allow about 8kHz each side to plot the falling responses by detuning the receiver in 0.5kHz steps.

Short Wave Listening

Although it is instructive to observe how broad filter

specifications really are under test conditions, there will be no substitute for using the newly installed narrow filter to hunt real DX. The additional filter will not only produce a narrower audio response when tuned to a.m. broadcasts, but an improvement in the reception of u.s.b. and l.s.b. signals will be noticed. One of the FRG-8800 design compromises made with the relatively broad 2.7kHz filter, is that when the receiver is tuned to an u.s.b. signal, some of the signal can be received in the l.s.b. mode. This means that interference in the unwanted sideband will be present and signals with different modulations on each sideband cannot be properly received at all. With the addition of the 2.4kHz filter these problems are overcome.



ASK ELECTRONICS LTD



248 Tottenham Court Road, London, W1P 9AD Tel: 071-637-0353/0590 Fax: 071-637-2690

SONY

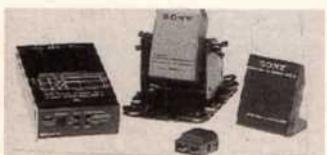
ICF-SW1E £134.95



ULTRA-COMPACT SHORTWAVE RADIO WITH PLL SYNTHESIZER CIRCUITRY

FM/LW/MW/SW reception • PLL synthesized circuitry • FM stereo • Continuous AM frequency coverage • 4 way tuning: 10 memory presets, auto scan, manual tuning, 10 key direct tuning • Programmable timer • Sleep function • Digital clock and alarm • LCD display with light function • Dual conversion system • 2 step tone control • Key protection • Record out socket • Supplied with stereo earphones, shortwave guide and compact aerial • Power: 2xAA size battery.

ICF-SW800 £94.95
ICF-SW15 KIT £195
ICF-SW20 £59
AN-1 ANTENNA £49



SONY SPECIALISTS 071-637-03531 071-637-0590 Fax: 637-2690

SONY ICF-SW55 "SUPERADIO"

- World time zones • SSB
- Full digital p/sets
- Multiband

£249 only

YOUR SONY SPECIALIST

Full Worldwide Guarantees from SONY! CALL THE SONY SPECIALISTS 071-637-0353/0590!!
Mail Orders Welcome. 071-637-0590/0353 Fast - Efficient - Convenient. To your doorstep!!

SALE
ICF-SW7600 £134.95



HIGH PERFORMANCE PORTABLE RECEIVER WITH PLL SYNTHESIZER CIRCUITRY AND CONTINUOUS AM FREQUENCY COVERAGE

LW/MW/FM/SW/SSB reception • PLL synthesized circuitry • FM stereo • Continuous AM frequency coverage • 4 way tuning: 10 memory presets, auto scan, manual tuning, 10 key direct tuning • Sleep function • Digital clock • Programmable timer • 2 step tone control • Antenna input socket • Headphone socket • Key protection • LCD display • Dual conversion system • Supplied with compact antenna, stereo earphones and AC power adaptor • Power: 4xAA size battery.

ICF-PRO80 Air/marine band scanner £275
ICF-AIR7 £229
WA-8800 Full SW M-band stereo cassette recorder £199
CR-V21 world band receiver - fax printout, RTTY weather rec £2699

SONY CAR "DISCMAN"

Full range

D808K £229
D802K £189
D800K £169
D202 £145

ROBERTS

R727 5 bands - FM/MW/SW/LW/SW1-4 £79.95
R747 3 bands £92.95
RF-M3 Tiny £59.95
RP-26 FM/MW/LW £81.95
RP-14 Cassette radio 4 FMs £60.95
RC-30 Mono cassette radio £51.95

AWARD WINNERS

071-637-0353/0590

AN AWARD WINNING MASTERPIECE

ICF-2001D Kit £319.95 ONLY
Finest all-round pro-receiver in the business.

FW/LW/MW/AIR multi-band reception • 32 station preset memory • Synchronous detector circuit • PLL quartz-locked synthesiser circuit digital/analogue tuning • 2-way scan tuning (memory, broadcast, define) • 2-position tone control • Direct metro band access • 4-event programmable time • AM attenuator SSB reception • External antenna for AM, FM and AIR band • 288x159x52mm (w/h/d) 1.7kg. 2001 DSYSTEM-ICF-2001D with active antenna AN-1 in one complete package.

NEW ICF-SW77 Similar specification to 2001D but with jog-shuttle dial tuning for accuracy £329



D33 £119
DT66 £189
D350 £250
D99 £189
DZ555 £325

"Flagship machine"
WC's equaliser memories

GRUNDIG

SATELLIT 650 £459.00
SATELLIT 500 £275.00
SATELLIT Cosmopolit £91.90
YACHT BOY 220 £56.99
YACHT BOY 230 £73.00
CONCERT BOY 225 £36.70

PLEASE MAKE ALL CHEQUES PAYABLE TO ASK ELECTRONICS AT: 248-250 TOTTENHAM COURT ROAD, LONDON, W1P 9AD, UK

PHILIPS

D2345

• Portable Radio • LW/MW/FM/2 x SW • Fine tuning Control • Mains/battery supply £24.95

D1875

• Compact 12-band Portable Radio • LW/MW/FM/9 shortwave • Large tuning control • Tuning LED indicator • Telescopic and ferritecore aerial • DC supply connection • Earphone connection • Wrist strap • Attractive pouch £49.95

DAT

digital audio tape

Sony TCD3 £425
Casio DA7 £575
Casio DA100 £389

• All electrical digital world receiver • LW/MW/FM/13 x SW • Continuous tuning over total AM band • Direct keyboard tuning • 9 station memory • Variable pitch BFO for CW/SSB reception • Touch panel switching • LCD frequency display • Mains/battery supply

STILL ONLY! £119.95 BEST BUY!!

PHILIPS D2935 RADIO

CALL NOW FOR IMMEDIATE DESPATCH! MAIL ORDER LINES 071-637-0590/0353!!



PROFESSIONAL W/BAND RECEIVERS £2699
WORLD BAND RECEIVER WITH MULTIBAND/SATELLITE RECEPTION AND RTTY/WEATHER FAX PRINTOUT

FM/LW/SW/SAT reception • Reception and print out of weather fax and RTTY weather satellite information with optional AM-P1200 aerial • Built-in printer • Triple loop PLL synthesized circuitry • 5 way tuning: 421 memory presets, scan tuning (auto, define and memory), spectrum analysed tuning (using graphical display of signal strength), manual tuning with jog dial, 10 key direct tuning • Continuous waveband coverage AM 9.29999.99 KHz, FM 87.5 - 108 MHz, SAT 137.62/141.12 MHz • Synchronised detection system • Auto memory input for easy automatic storage of up to 10 stations • Priority reception • 8 Programme/1 week timer • TCLO (Temperature Compensated Crystal Oscillator) for ultimate stability of the reception frequency • Active search system • Memory list • Sleep function • Cassette player /computer interlock for data storage and other uses • Built-in high resolution thermal printer using 110mm paper with horizontal resolution of 860 dots • Printer with enlargement capability • Dual power supply - AC adaptor/rechargeable battery pack • External active antenna • AF filter • Digital quartz clock • Large LCD display with contrast control • Squelch control • Key protection • AM attenuator, dual conversion system • RF gain control • Record out • External aerial sockets • Supplied with AC adaptor: Rechargeable battery pack, battery charger, active antenna with bracket and cable kit, dust cover, printer paper, shortwave guide, fax guide and operation table • Power: NP22.

MULTI-BAND RADIOS/SCANNERS/TRANCEIVERS

LONDON'S PREMIER COMMUNICATION EQUIPMENT BARGAIN CENTRE

071-637-0590/0353

"FULL RANGE KENWOOD COMMUNICATIONS EQUIPMENT"

AN P1200

Offset Parabolic antenna and frequency converter • Designed to augment the CRF-Y21 • Capable of receiving fax broadcasts from meteorological satellites • Size: 1.25m x 2m x 1.5m (w x h x d) £1599

SALE

PANASONIC RF-B900 W/BAND RECEIVER

YUPITERU AIR-POWER AT YOUR FINGERTIPS

VT-125 II £169.95
MVT-7000 £289.95

PANASONIC

RF-B10 World band receiver - pocket size £59.95
RF-B65 S/pro multi band digital radio - memories preset £169.95
RF-B45 Digital m/band radio £129.95

071-637 0353/0590

ICOM

SCANNERS/TRANCEIVERS

KC-R1 15-1300 MHz
100 memories...only £359.95
KC-2SET £289
ICR-7000 £899

FULL RANGE STOCKED



GOVT. AND LOCAL AUTHORITY ORDERS ARE WELCOME. TAX-FREE EXPORT! MAIL ORDER IMMEDIATE DESPATCH

A Novel 3.5MHz Receiver with Reaction

Follow-up

This follow-up offers some help with the constructional aspects of this project.

The coil was not shown on the printed circuit board overlay in an attempt to avoid cluttering up an already complex set of drawings. However, the various connections were identified on the p.c.b. by a series of letters alongside the appropriate points (e.g. C.)

Unfortunately, neither the circuit diagram or the coil drawing carried these letters.

The circuit diagram shown here has the corrections outlined in part 3 as well as the coil letters. On the p.c.b. component overlay drawings, Figs. 3.3 & 3.4, the positioning of Veropins is shown by bold circles around the appropriate hole in the p.c.b. The use of Veropins simplifies the attachment of leads from components not on the p.c.b. Capacitor C1 is mounted directly onto the contacts of switch S1.

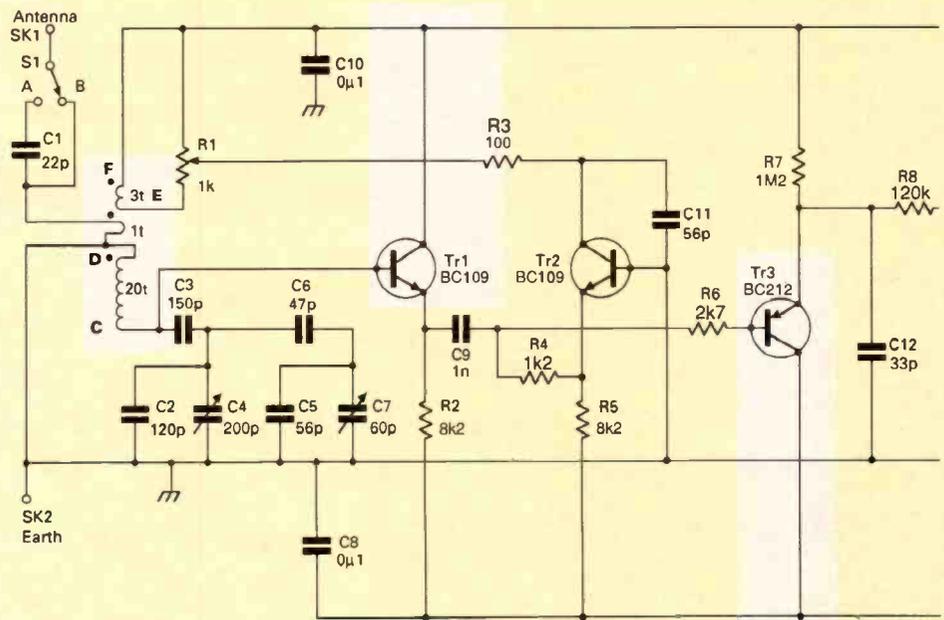


Fig. 4.1: Part of the circuit diagram showing the two corrections outlined in Part 3 of this project, together with the identification letters for the coil connections to the p.c.b.

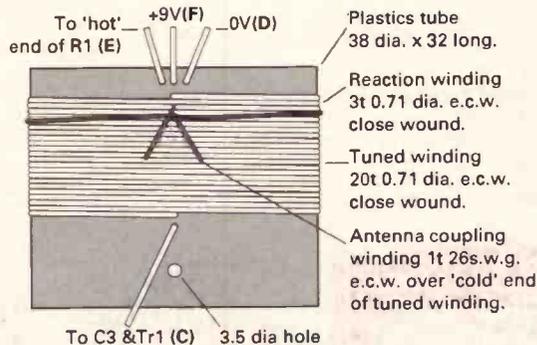


Fig. 4.2: Details of the coil with the identification letters for the connections to the p.c.b.

Be sure of getting your copy of SWM each month. Place this regular order form with your newsagent... today

Dear Newsagent, please reserve / deliver my monthly copy of SHORT WAVE MAGAZINE

Distributed by Seymour

NAME

ADDRESS

Signed

If you can't see SWM on the bookshelf at your local outlet, please call the Editorial Office in Poole and we will talk to our distributors to find out why!

New Marine Beacon Frequencies

Earlier this year, marine m.f. beacons across Europe changed frequency. Godfrey Manning G4GLM lists those in the British Isles.

On April 1, the frequency of every marine m.f. n.d.b. changed. Although the new plan has effects throughout Europe, this article lists only those beacons still operating in the UK, Channel Islands and Ireland. Some beacons from the previous plan have now disappeared.

The advantage of the new scheme is that each beacon has its own frequency, without the need to be grouped with any others. Previously, each beacon in a group took it in turns to transmit. Frequencies are now only shared by beacons which are widely separated by distance and so may transmit simultaneously. Also, continuous operation is now available 24 hours

a day. You will need a radio equipped with a b.f.o. to receive the c.w. Morse identifications of these beacons since there is no modulating tone.

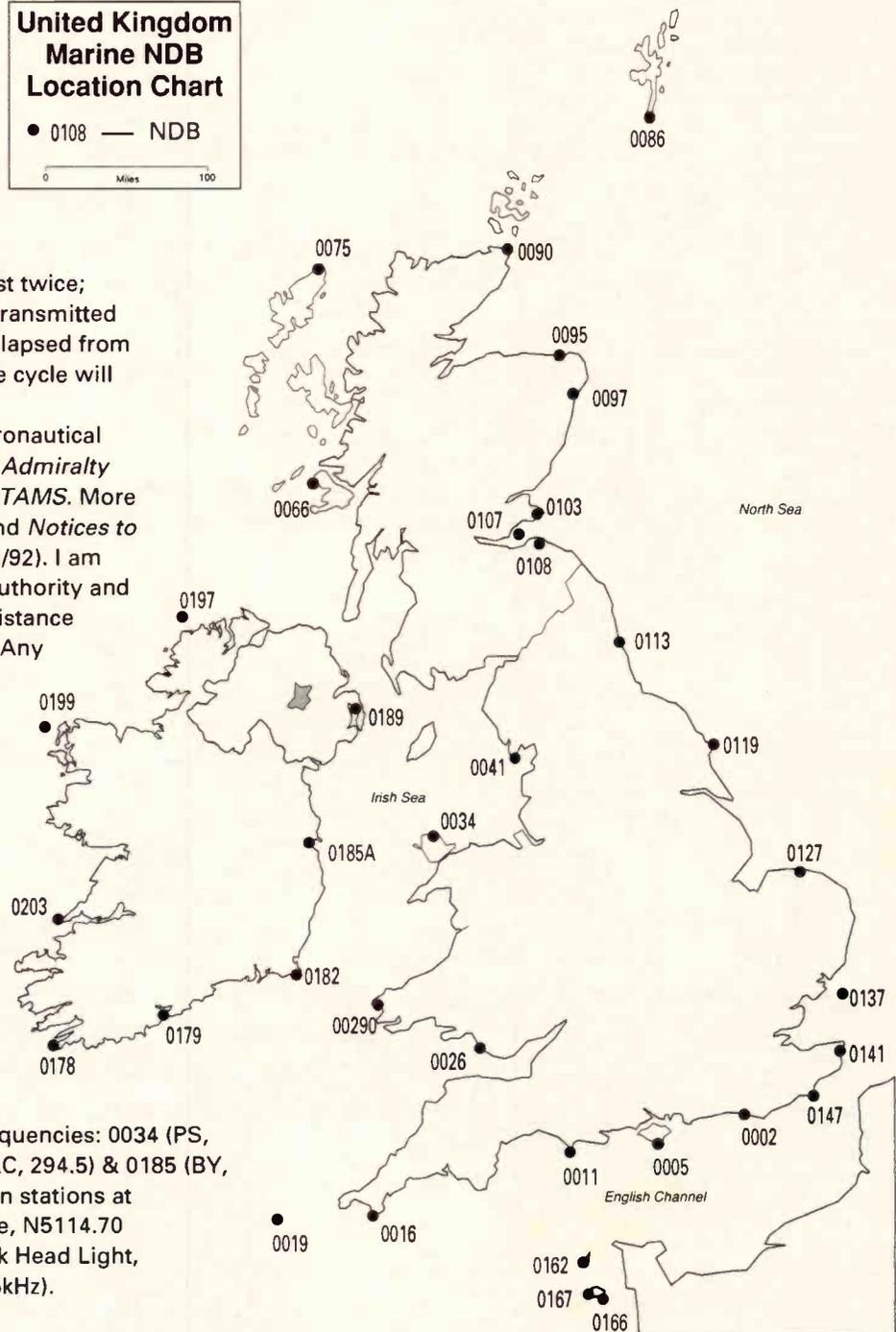
For about 13 seconds, the Morse call sign identification will be sent at least twice; thereafter, plain carrier will be transmitted until a total of 60 seconds has elapsed from the start of the Morse. Then, the cycle will repeat.

These beacons also have aeronautical application. Changes appear in *Admiralty Notices to Mariners* but not *NOTAMS*. More details appear in *AIC 28/1992* and *Notices to Mariners Weekly Edition 1 (11/1/92)*. I am indebted to the Civil Aviation Authority and the Hydrographic Office for assistance with the information in the list. Any errors or omissions are mine.

Beacons primarily intended for aviation use are not affected and do not appear in the main table, even if they are receivable by vessels at sea.

The main table does not include calibration stations. These are sometimes co-located with n.d.b.s but are not in continuous operation. The following beacons (by reference number) have associated calibration stations with the given call signs and frequencies: 0034 (PS, 294.5); 0113 (PT, 294.5); 0179 (KC, 294.5) & 0185 (BY, 286.5). There are also calibration stations at Lynmouth Foreland Light House, N5114.70 W00347.13 (FP, 294.5) and Black Head Light, N5446.01 W00541.29 (BA, 294.5kHz).

United Kingdom Marine NDB Location Chart
 ● 0108 — NDB
 0 100 Miles



Beacons in the British Isles

Marine n.d.b.s from 1/4/92

Refer also to Map

Ref	Name	Position	Ident	Freq. (kHz)
0002 *	Brighton Marina	N5048.67 W00005.95	BM	294.5
0005	St. Catherine's Light	N5034.52 W00117.80	CP	293
0011	Portland Bill Light	N5030.82 W00227.30	PB	313
0016	Lizard Light	N4957.58 W00512.07	LZ	284.5
0019	Round Island (Scilly)	N4958.70 W00619.33	RR	298.5
0026	Nash Point Light	N5124.03 W00333.06	NP	299.5
0029	South Bishop Light	N5151.15 W00524.65	SB	290.5
0034	Point Lynas Light	N5324.97 W00417.30	PS	304
0041	Walney Island Light	N5402.92 W00310.55	FN	306
0066	Rhinn of Islay Light	N5540.38 W00630.70	RN	293
0075	Butt of Lewis light	N5830.93 W00615.72	BL	289
0086	Sumburgh Head Light	N5951.30 W00116.37	SB	304
0090	Duncansby Head Light	N5838.67 W00301.42	DY	290.5
0095	Kinnairds Head Light	N5741.87 W00200.13	KD	301.5
0097	Girdle Ness Light	N5708.32 W00202.83	GD	311
0103	Fife Ness Light	N5616.73 W00235.10	FP	305
0107 *	Inchkeith Light	N5602.02 W00308.08	NK	286.5
0108 *	Fidra Light	N5604.40 W00246.98	FD	290
0113	Souter Light	N5458.23 W00121.80	SJ	292
0119	Flamborough Head Light	N5406.95 W00004.87	FB	302.5
0127	Cromer Light	N5255.45 E00119.10	CM	313.5
0137 *	Sunk Light	N5151.00 E00135.00	UK	294.5
0141	North Foreland	N5122.49 E00126.85	NF	311
0147	Dungeness Light	N5054.77 E00058.67	DU	300.5
0162 *	St. Peter Port, Guernsey	N4927.37 W00231.37	GY	304.5
0166 *	St. Helier, Jersey	N4910.62 W00207.50	EC	306
0167	La CorbiVre Light	N4910.85 W00214.90	CB	295.5
0178	Mizen Head	N5127.05 W00948.80	MZ	300
0179	Old Head of Kinsale Lt	N5136.27 W00831.97	OH	288
0182	Tuskar Rock Light	N5212.15 W00612.38	TR	286
0185A	Baily Light	N5321.68 W00603.09	BY	289
0189	South Rock Light Vessel	N5424.47 W00521.92	SU	291.5
0197	Tory Island Light	N5516.35 W00814.92	TY	313
0199	Eagle Island Light	N5416.98 W01005.52	GL	307
0203	Loop Head Light	N5333.65 W00955.90	LP	311.5

Aeronautical n.d.b.s Receivable by Vessels at Sea

Ref	Name	Ident	Freq. (kHz)
0007	Fawley, Hythe	FAW	370
0008	Bournemouth (Hurn)	HRN	401.5
0012	Exeter	EX	337
0013	Berry Head	BHD	318
0017	Penzance Heliport	PH	333
0018	St. Mary's, Isles of Scilly	STM	321
0020	St. Mawgan	SM	356.5
0025	Cardiff	CDF	363.5
0027	Swansea	SWN	320.5
0030	Strumble	STU	400
0031	Aberporth	AP	370.5
0039	Blackpool	BPL	276.5
0049	Ronaldsway, Isle of Man	RWY	359
0055	Turnberry	TRN	355
0074	Stornoway	SWY	669.5
0078	Dounreay	DO	364.5
0082	Scatsta	SS	315.5
0085	Sumburgh, Shetland Is.	SUM	351
0091	Wick	WIK	344
0093	Kinloss	KS	370
0096	Scotstown Head	SHD	383
0101	Leuchars	LU	330
0120	Ottringham	OTR	398.5
0133	Great Yarmouth	ND	397
0138	Southend	SND	362.5
0161	Alderney	ALD	383
0163	Guernsey	GRB	361
0165	Jersey East	JEY	367
0168	Jersey West	JW	329
0181	Waterford	WTD	368
0184	Killiney	KLY	378
0187	Dublin (Rush)	RSH	326

Marine n.d.b.s by Ident

Ident	Reference
BL	0075
BM	0002
BY	0185A
CB	0167
CM	0127
CP	0005
DU	0147
DY	0090
EC	0166
FB	0119
FD	0108
FN	0041
FP	0103
GD	0097
GL	0199
GY	0162
KD	0095
LP	0203
LZ	0016
MZ	0178
NF	0141
NK	0107
NP	0026
OH	0179
PB	0011
PS	0034
RR	0066
RR	0019
SB	0029 & 0086
SJ	0113
SU	0189
TR	0182
TY	0197
UK	0137

Marine n.d.b.s by Frequency

Freq. (kHz)	Reference
284.5	016
286.0	182
286.5	107
288.0	179
289.0	075 & 0185A
290.0	108
290.5	0029 & 0090
291.5	189
292.0	113
293.0	005 & 0066
294.5	0002 & 0137
295.5	0167
298.5	0019
299.5	0026
300.0	178
300.5	0147
301.5	0095
302.5	0119
304.0	034 & 0086
304.5	0162
305.0	103
306.0	041 & 0166
307.0	199
311.0	097 & 0141
311.5	0203
313.0	011 & 0197
313.5	0127

* Indicates a low-powered beacon, range 10nm or less. Marine n.d.b. Location Diagram

propagation

by Ron Ham

Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

From Edinburgh, Ron Livesey, using projection apparatus, identified 4 active areas on the sun's disc on April 3, 4, 15, 16 & 24; 5 on days 18 & 19; 6 on the 21st, 24th & 26th and 7 on the 2nd & 25th. At his observatory in Sevenoaks, **Cmdr Henry Hatfield** located one sunspot group, 12 filaments, 9 small quiescent prominences and an active area nearly flaring, in the eastern hemisphere at 1407 on May 6. Henry's radio telescopes recorded 'on the spots' bursts of solar noise at 136 and 1297MHz on the 8th. In Bristol, **Ted Waring** counted 17 sunspots on May 5; 12 on the 19th and 20 on the 22nd.

After finding an almost complete absence of 28MHz beacons on May 20, **Ford White** (Portland) checked the sun and saw a large sunspot on the central meridian which was no doubt the cause. He then followed its progress daily until it left the disc on the 26th. **Patrick Moore** (Selsey) also kept watch on this spot and kindly sent a drawing, **Fig. 1**, which he made from his solar projection screen at 0935 on the 24th. **Fred Pallant** (Storrington) found h.f. propagation "ugh!" on April 30 and May 2 & 20. He reported a high noise level with several loud bursts at 0900 on the 2nd and because the bands were so dead on the 20th he checked that his antenna was connected.

Aurora

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received reports of 'active aurora' up to 90 for the overnight period on April 19 and 'glows' on the 24th from the Kirkwall Met Office and 'active aurora' on the 2nd and 3rd and 'corona 2/3 sky' on the 5th from Jay Brausch in North Dakota.

Auroral reflected radio signals from the Lerwick beacon, GB3LER on 144MHz, were received by **Doug Smillie** (Wishaw) at 1720 on the 3rd and 1414 on the 18th. Tone-A signals were detected in the h.f. bands by **Tony Hopwood** (Upton-on-Severn) from 2030 to 2130 on May 9 and 2015 to 2100 on the 29th. **Gordon Foote** (Didcot) heard the German beacon, DK0WCY, (10.144MHz) send weak auroral warnings on May 14, 15, 23 & 24. **Fred Pallant** heard 'rough' and 'raspy' tones from the beacons Z21ANB early on the 4th, SK5TEN at 1025 on April 27, 0812 on May 5 and 1836 on the 23rd and GB3RAL at 1021 on April 28, 0900 on May 9 and 1710 on the 10th. Auroral reflected television pictures were seen in Bands I and III on May 10 by **Simon Hamer**.

Beacon	April					May																								
	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
DFRAAB	X									X					X	X				X	X							X	X	X
DK0TEN											X									X	X							X	X	X
DLOGI	X								X	X			X	X						X	X			X	X			X	X	X
EA3JA						X			X	X			X	X						X	X			X	X			X	X	X
HG5GEW																												X		
IY4M			X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
KA1NSV			X																	X	X			X	X			X	X	X
KD4EC			X																	X	X			X	X			X	X	X
KF4MS																				X	X			X	X			X	X	X
KJ4X																				X	X			X	X			X	X	X
LA5TEN	X									X	X	X	X							X	X			X	X			X	X	X
OK0EG										X	X	X	X							X	X			X	X			X	X	X
OH2TEN	X	X								X	X	X	X							X	X			X	X			X	X	X
PT7BCN	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PY2AMI	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SK5TEN	X	X				X				X	X	X	X							X	X			X	X			X	X	X
VE3TEN																														
VK2RSY	X	X	X	X					X	X																				
VK6RWA	X																			X	X			X						
VK9VF	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
WA4DJS		X	X							X	X	X								X	X	X		X	X			X	X	X
W3VD										X	X																			
Z55VHF										X	X																			
Z58PW										X	X																			
ZZ1AMB	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5B4CY	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Fig. 2.

Magnetic

Although there were no magnetic storms recorded during April, the magnetometers used by **Tony Hopwood**, **Karl Lewis** (Saltash), **Ron Livesey** and **Doug Smillie** were unsettled on days 3, 5, 6, 8-10, 17-23 inclusive and 26, 27 & 29. In May **Tony Hopwood** recorded storm conditions on the 8th and 9th and disturbed conditions on days 4, 7, 10, 22, 23 and 29.

Propagation Beacons

First, my thanks to **Gordon Foote**, **Richard Gosnell** (Swindon), **Henry Hatfield**, **Ted Owen** (Maldon), **Fred Pallant**, **Ted Waring** and **Ford White** for their 28MHz beacon logs which enabled me to prepare a chart, **Fig. 2** showing their combined efforts. **Henry Hatfield** found EA3JA 'very loud' on May 1, **Gordon Foote** said that LA5TEN, OH2TEN and SK5TEN "sounded almost

next door" on the 18th and **Fred Pallant** copied very strong signals at times from DK0TEN on the 15th and 23rd.

For nearly a year **Ford White** has heard a beacon like signal on 28.205MHz which only seems to appear when sunspots or aurora are about. For instance, he copied it during the morning of last November 9 following an aurora that stretched from Bristol to Shetland overnight. "It is very hard to read," said **Ford** who reckons it could be FUHKEK or FU5KEAA. He last heard it on March 25 and May 7, 14 and 18.

Sporadic-E

At 2002 on May 21, **Richard Gosnell** heard an Arabic news bulletin on 87.5MHz, "fading at times into a pop music programme", but twice mentioning a town, **Djedida**, in Tunisia. He heard classical music on 69.8 & 70.3MHz at 1630 on the 23rd and Arabic music with a French commentary on 88MHz plus frequent Italian 'non-stop

pop' around 87.5MHz on the 29th. **Richard** says that the Sony ICF-PRO80 receiver, "is fun for spotting the stronger band openings when away from base." The set is portable, has 40 memories and with a choice of a.m., s.s.b. or n.f.m. modes over the range 25 to 54MHz it sounds a useful tool for the study of auroral and Sporadic-E propagation.

Sporadic-E disturbances to Band I and the atmospheric pressure chart covering this particular period can be seen in my television column elsewhere in this issue.

Tropospheric

While on holiday in Cornwall on May 6 & 7, **S.M. Hockenhill**, using a Philips D2345 portable with its own rod antenna, logged BBC Radios 1, 2, 3 & 4

from Rowridge, Radio 4 from Haverfordwest & Les Platons and Radio Solent. These were, "competing with 20 very powerful signals from French stations," he said.

I found French and German stations, plus a very strong signal from BBC Radio Oxford in Band II around 0830 on the 17th.

"I have not seen the radio band so jammed with European stations for many a long time," wrote **George Garden** about the opening on the 16th & 17th. He caught the first indication of a lift to Europe when a German station came up on his car-radio while he was driving between Montrose and Inverbervie. At 1700 on the 23rd, **George**, again using his Sharp car-radio high on Cairn O' Mounth, added two new stations to his growing Band II log. The first was Radio Cracker (Edinburgh) around 102MHz and the second was Radio Clyde FM on 102.5MHz. Between these he heard someone talking about events in Lincolnshire, so, before leaving the site he patiently waited for the announcer to confirm that it was Lincs FM. This was of particular interest to **George** because the Lincs FM transmitter was at the southern end of a fog belt which extended along the East Coast.

Simon Hamer (New Radnor) received signals in Band II from Germany and Scandinavia on the 24th.

A Great Loss

I regret to report that **Doug Smillie** passed away unexpectedly during May. His consistent reports on auroral and magnetic events will be missed by all who read my columns. **Doug's** dedicated work in this field will be a great loss to both the astronomical and radio fraternities alike. We extend our deepest sympathy to his family and many friends.

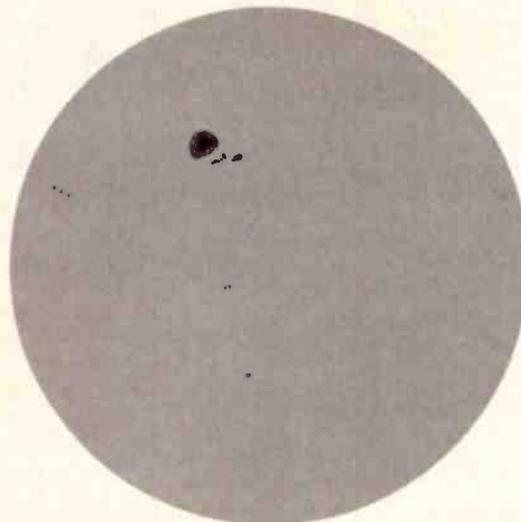


Fig. 1.

ssb utility listening

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

At long last I am back. I can tell you now that the mystery virus turned out to be Leukaemia and five months in hospital in the UK was no fun for me or my family back in Guernsey. However, all is now well and thank you for the letters and cards wishing me a speedy recovery. The biggest thank you must go to Graham Tanner who stepped in at very short notice and not only kept the column going splendidly but managed to retain the same style. Graham has promised to write the occasional special article for *SWM* from time to time so we will not be losing his talents.

I thought I was going to be in for some fairly intensive listening whilst in hospital and armed myself with my trusty Philips D2935 portable and a length of wire that I could drop out of a window or string to the nearest drip stand. Fine in theory but not in practice because modern hospitals are full of so much equipment throwing out hash that short wave listening is a non starter. Anyway, the receiver did manage to pick up Radio Guernsey on medium wave so at least I was able to keep up with the news back home.

More on Antennas

Anyway, down to the nitty gritty and like myself Graham's mailbag consisted of a lot of letters asking about the best antenna for general listening. Both he and I have extolled the virtues of the G5RV as a good all round, inexpensive option. However, not everyone has room for this antenna and in many instances readers may be not be able to use more than about twenty or thirty feet of long wire. There are two particular problems with the long wire: If you run it straight into the house and feed the high impedance socket on the receiver you are almost certainly inviting problems with pick-up of interference from thermostats, electric motors and micro-based

devices (these days that includes computers and central heating, washing machine and cooker controllers). If you try to overcome that problem by feeding the antenna via screened coaxial cable you run into the second problem and that is coupling of balanced to unbalanced devices and impedance mismatches. One device that claims to overcome this is known as a magnetic long wire balun and it is being imported by Lowe Electronics. Apart from providing a proper match between antenna and standard 50Ω coaxial cable it also drains any static build-up on the antenna down to ground. That not only helps to protect the receiver but should also mean less noise. I have been given one of these devices to try and will report the results in due course.

I managed to get to the Elvaston Rally in June and spoke to John Wilson from Lowe about various new products. I was surprised to hear that their HF-150 receiver is virtually commanding black market prices in places like Germany. This little receiver has few controls and switches but quite stunning performance for its price and size and at the moment the sub-contractors who make them for Lowe cannot turn them out fast enough. There's been such a shortage that some enterprising continentals have actually been bringing cars over to the UK, filling up the boot with sets and taking them back to sell.

Logs. What Logs?

Because of the change over back to your's truly I have only got one set of logs. Guess who they are from. Yes, the man who knows what's going to happen even before it happens: Paul H. of Newbury. Paul has found a new USAF channel in use in Europe during the evenings. It is channel A-9 on 4.612MHz. Paul say's it's not part of the usual 'Cemetery' net but is an 'Inform'

network channel. So far he has heard little of interest on the channel but I suggest all you USAF watchers keep a check on this one as people do not set up new channels for nothing.

Paul's log consists of two Australian Air Force channels. He heard Air Force 10 working Air Force Sydney on 8.975MHz and the same aircraft working a warship on 13.207MHz. New York Radio was heard working NAT-tracks on 13.354 and 'Spar 65' (a C-20 aircraft) working Andrews Air Force base. Several airline message services were heard including EI-AI on 13.304MHz, American Airlines with Stockholm on 13.9425, Alia Amman with a Royal Jordanian flight on 13.255 and Saudia Air on 11.288MHz. There was the usual stack of USAF traffic including SAM 201 on 11.153, Elmendorf Air Force Base (Alaska) on 13.201, SPAR 60 (Boeing 707) and SAM 86971 on 11.226 and SAMs 26000 and 30500 and SPAR 64 all in Russia with James Baker on 23.035MHz. RAF Boulmer were heard setting up an air defence network on 8.992MHz and NASA Shuttle-comms relays were heard on 21.395MHz via WA3NAN. Paul also heard traffic on several US Navy channels including 4.711, 6.720, 6.723 and 8.972MHz.

You may recall that prior to my sudden departure I queried the expression 'Alligator Playground' and wondered if it was an exercise area. Paul believes the expression actually refers to both the UK and US Naval Tactical Data System as part of NATO operations. The expression simply refers to all the stations that are on the net at any given time. Paul also adds another snippet about NUCO which is heard on RAF defence nets. He believes it means NATO code for uniform operations and indicates that a message is about to be encrypted. un-NUCO ends the message and returns to traffic in the clear.

Paul has also asked about any h.f.

communications used by Channel Islands Air Search who received publicity recently in *Aviation News*. As someone who has been actively involved in both advising and installing equipment for CIAS I can tell you that no h.f. is used. However, for anyone who is interested let me say that I hope to do a separate article for *SWM* on CIAS later this year. They currently operate a Piper Aztec but this is being upgraded to a BN Islander which will have better radar, radio homing equipment and survival gear which can be dropped to casualties. Radio equipment covers all civilian aviation frequencies and marine channels. CIAS is funded and manned entirely by volunteer pilots (most are professionals) and observers. In Europe such a search and rescue organisation is quite rare (possibly unique) but in America there is an organisation known as the Civil Air Patrol which does use h.f. I confess that I have never heard them although according to some American magazines they are quite active. They often use USAF frequencies although I do hope in the near future to produce a small list of unique CAP frequencies. Meanwhile if anyone has logged any CAP operations I would be interested to hear from them particularly if they can give some indication of what type of call sign formats are used.

Watch this Space

Coming up in the near future I will be looking at the NOAA hurricane hunters again now that we are approaching the hurricane season in the Caribbean. I shall soon take a look at Antarctic operations as well because the spring starts down there in November and there's usually a flurry of activity as the supply ships start to reach the bases after the long winter. Any comments or contributions on the above will be gratefully received.

CALL RADIO LINE

UP-TO-DATE NEWS & INFORMATION FOR LISTENING ENTHUSIASTS

Updated every Saturday

0891 654676

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

America
Gerry Dexter

The arrival of a new station from a country never represented on short wave before is always an exciting time for DXers. Never mind that the arrival was expected, the hunt is immediately on! So it was with Palau (Belau), an island in the western Pacific Ocean and one of those administered by the United States as part of the US Trust Territory of the Pacific Islands.

The station is the Voice of Hope - Asia operated by High Adventure Ministries (KVOH and the 'Hope' stations in Lebanon) that just came on the air in May, initially with religious music and identification announcements, though full programming should surely be underway by now. The 100kW station uses the call KHBN and is scheduled from 2000 to 0800 on 11.980 and 0800 to 1600 on 9.830MHz. English broadcasts will run between 0300 and 0800 with all other hours in Chinese. There's a choice of two addresses for reception reports: PO Box 93937, Los Angeles, CA 90093, USA or PO Box 66, Koror, Palau 96940.

WJCR Now on the Air

WJCR, mentioned last time in the 'yet to be' category is now on the air from the small town of Upton, Kentucky, south of Louisville. WJCR's programming runs 24 hours per day, beamed to Europe and Latin America, with most of it gospel music. The

frequencies in use are 7.490MHz (that could change to 7.485MHz) and 15.660MHz. A second 100kW unit should be on the air soon, if it isn't already, giving the station two active frequencies at the same time. The station verifies with a QSL card and form letter. Upton's population is only around 500 persons ('a wide spot in the road' as we say here) so the only address needed is: WJCR, Upton, KY 42784, USA.

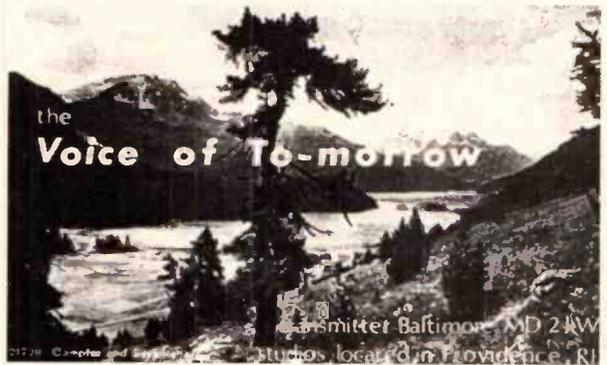
Offbeat Programmes

WRNO, WWCR and WHRI carry a number of independently produced anti-Cuban, pro-Croatia, anti this, anti that programmes. There are two fairly new ones that are a bit more unusual than the others and worth a listen, just for curiosity's sake. Radio 16th of December is a feature said to be produced at the Haitian embassy in Washington. It is aired via WHRI Mondays - Fridays at 2100-2300 on 17.830MHz, Sundays 1100-1300 on 9.85MHz, all in Creole, supporting the ousted Haitian government. This is another of the programmes placed by Radio Miami International and RMI will handle reception reports. RMI's address is PO Box 521733, Miami, FL 33152, USA. This programme would likely go off the air in the event the elected president of Haiti is returned to power.

Another, more ominous programme is National Vanguard Radio being aired over WRNO on 7.355MHz at 0100-0130 Mondays, and possibly other days, too, as yet not monitored.

This programme takes a very racist tone and is apparently connected with National Vanguard Books, which sells books and literature along those lines. Further, it seems to have close ties with the infamous US quasi-pirate, quasi-clandestine station the Voice of Tomorrow which makes two or three broadcasts per year. One US DXer says he believes the announcer on Vanguard - who identifies himself as Kevin Alford Strong - is the same as the one on the Voice of Tomorrow. They announce an address of PO Box 90, Hillsboro, WV

Radio Exterior de Espana should soon have its Costa Rica relay station on the air.



The racist pirate broadcaster Voice of Tomorrow seems to be connected with National Vanguard Radio, being aired over WRNO.

24946, USA. WRNO airs a disclaimer after the programme concludes.

Costa Rica

Adventist World Radio has begun to air test broadcasts from the transmitters it purchased from the now defunct Radio Impacto. The frequency 6.150MHz has been used already and 5.030MHz will air in the future. In addition, the transmitter you hear on 9.725MHz will eventually move to the 'Impacto' site. All of which would mean better reception on a greater choice of frequencies.

Radio Universidad de Costa Rica is one of those stations that seem to be active on short wave for a time, then vanish for a period of months, or even years. At present the station is active and several DXers have had logs of this one during recent months - on the station's usual frequency of 6.105MHz. There seems to be very little talk, however, The programming segments include opera, classical and music from the 1940s. The station leaves the air at 0404, but starts its sign off procedure at 0400.

TIFC, Faro del Caribe, is currently being well heard with its English language segment at 0300 on 5.055MHz.

And, still we wait for the arrival of Radio Exterior de Espana's new Costa Rican relay station, designed to improve REE's coverage in the Americas, even though it has provided fine signals all along. Once this gets going we can look for programmes from Radio Nacional de Costa Rica via this facility.

Caribbean

A reactivated station from the Dominican Republic is Radio Santiago, listed for 9.778MHz but heard lately about 100kHz higher. The station, located in the city of the same name, announces itself (in English) "This is Radio Santiago, International Wave, 9875 in the 31 metre band". (The frequency is actually 9.878MHz.) It's being heard in the evenings in North America (around 0300UTC). Reception reports are requested to PO Box 282, Santiago, Dominican Republic. Can't but wonder if this station is the same as the Radio Santiago that was active back in the 1950s, using 6.075MHz.

Chile & Uruguay

Some North American DXers have been taking logs on a couple of seldom heard Chilean stations. Radio Santa Maria, at Coyhaique can be heard with some struggle (but more easily when co-channel Radio Globo, Brazil is silent) on 6.030 or just a shade below at around 0000. An even worse interference problem is Radio Marti, which also uses 6.030MHz. In the same time frame Radio Esperanza, 6.088MHz, has also shown but with a goodly amount of QRM involved here, too. It is normally a struggle to hear either of these fairly rare stations.

Not yet reported by North American monitors is a still relatively new Uruguayan station, Radio Integracion Americana - although it has been heard in past years under other names. This station uses 6.045MHz to sign off at 0059. Its address is Eduardo Acevedo 1464, Piso 9, Montevideo, Uruguay.

Also Noted

Suriname is a fairly difficult country to log, even for us in North America. A few DXers have been lucky enough to pull in Radio Apinte on 5.005MHz (actually varying almost to 5.006MHz) at around 0400, with a station identification in English at 0402UTC. The Surinam government station is no longer on short wave.

Radio Canada International is airing a segment produced by the Canadian Forces Network for Canadian military personnel serving in the crisis area that used to be Yugoslavia. It's certainly a temporary thing and may even be off the air by now. It's scheduled Monday through Friday between 1900 and 1930 (in French & English) on 5.995, 7.235, 13.650, 15.325, 17.875 & 21.675MHz. The English segment airs from 1908 to 1914, French at 1922 to 1928UTC.

Former El Salvador clandestine station Radio Farabundo Marti, mentioned last time, is to use f.m. only. It will operate from San Salvador on 102.1 and in other towns on 97.7, 92.5 and 91.7 using the callsign YSFF. Radio Venceremos continues to be active on short wave, though it has moved from the 6.750MHz area back to 6.320MHz (sometimes heard on 6.300MHz).

That's my story for this time but I hope you'll join me again in three months for another Bandscan America!

1 EUROPA	6 AMERICA CENTRO
2 ORIENTE MEDIO	7 AMERICA NOROCC
3 MAGRES	8 AUSTRALIA
4 AFRICA	9 JAPON
5 AMERICA SUR	10 FILIPINAS



Absortado 156.202 - 28080 MADRID
Tel: 346 11 60 - Telex: 42412 REXT E - Fax: 261 63 38

RADIO EXTERIOR DE ESPAÑA

satellite tv news

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

We are accustomed to hearing about satellite television at Ku band (10.9-11.7GHz) and continuing into the DBS band through to 12.5GHz. Less perhaps with C Band (3.65-4.2GHz) which generally requires a large dish and is the traditional telecommunications band. TV and u.h.f. generally relates to domestic (terrestrial) TV from the local services and of course TVDXing. Very few realise that u.h.f. is also utilised for satellite television!

Back in 1975/6 NASA conducted their SITE experiment using the ATS-6 satellite, an attempt to prove (which it did) that inexpensive satellite TV would provide a mass audience in developing countries for education, instruction and entertainment. ATS-6 operated at 860MHz and transmitted from an orbital slot at 35°E, sufficient to give line of sight into the UK and although a long way off of main bore-sight (the main footprint was centred into India) stray or side lobe radiation was enough to provide reasonable quality pictures for TVDXers. That was 17 years ago.

Also in 1976 the ITU granted several certain frequencies for u.h.f. satellite TV and the Russians entered early DBS (direct broadcast by satellite) using 714MHz (approx. Ch. 51 u.h.f.) with a powerful single channel satellite known as EKTRAN. The purpose of EKTRAN was (and still is) to provide the Central Television main channel inexpensively to the frozen wastes of Siberia and Northern Russia sufficient to allow communal or single home reception on simple equipment. In fact the coverage footprint covered virtually all of the Northern Hemisphere as seen from 99°E, extending down into India, Sri Lanka and somewhat weaker into South Africa.

The typical EKTRAN satellite operates for about 2 years running a 200W klystron into a helical bad frame looking antenna producing a 57dBW signal right hand circular. A couple of years ago a 2nd service was received by Indian TVDXers at 754MHz (Ch. 54), a similar programme to the 714MHz offering but with a 3 hour time shift, it being suspected the 754MHz transmissions were directed more towards the Russian Far Eastern region bordering the Pacific. The 714MHz programme is known as Orbita III and whilst operating (it now being off the



air) the 754MHz as Orbita II. These unique transmissions were well over the European horizon and out of UK reception scope, though they have been received in Istanbul and by a TVDXer in Finland.

The significance of the above dialogue comes in a letter from Bindu Pakadi from Bangalore, India. He writes that an Indian company called 'PTI-TV' (Press Trust of India) have leased a 99°E Ekran transponder and in July will commence test transmissions leading to a 6 hours per day service in August in English, Hindi, Bengali and Malayalam - the latter the main language of the South Indian State of Kerala. Many Malayalans work in the Gulf region and the service area of an Ekran covers all of this region. It's anticipated the service will operate at 754MHz. The Indian government has been complaining about the proposed Hindi language service via AsiaSat 1 (Star TV) at C Band but its possible that Star TV may now be concerned if a rival (and cheap to receive) popular service starts at u.h.f. Obviously u.h.f. antennas are cheaper/simpler to produce than C Band and a u.h.f. outdoor tuner unit with f.m. video demod is cheap to produce in quantity. An interesting development, stay tuned for developments....

Odd to relate that reader Bindula Gunasekera from Colombo, Sri Lanka dropped a line to describe his own equipment - home-built - for both EKTRAN and C Band, based around dishes and even on a relatively small dish, picture quality is high from EKTRAN. The photograph shows the dish, right hand helical probe + head pre-amp housing and the Russian (CIS) test card indicates the picture quality.

If you're into fluent French and satellites then there is a club just for you, the Satellite TV Club (reception

Fig. 1: The 714MHz receiving dish for the Russian/CIS Orbita III service constructed by Bandula Gunasekera, Colombo. Note that it points almost directly upwards compared to the UK where dishes are at about 30° elevation!

individuelle des TV mondiales via satellites) and address is Place de Monds, 33360 CENAC, France. Annual membership is 120 Francs, further details include return postage, say 4 Francs.

Orbital Sightings

Ian Waller (Lincoln Satellite) sent in an excellent photograph of the WTN feed out of Rio during the Earth Summit talks in June, this was logged in C Band at 4.18GHz left hand over Intelsat 515 18°W. With the opening of the Portuguese RTP Internacional TV service on Eutelsat II F3 16°, the service is also carried on Russian Gorizont 12 at 40°E along with TV5 Europe, CNNI and Russian/CIS Channel 1.

Des Sherwell near Maidenhead noticed that signals from IRIB, Iran on Intelsat 602 63°E (well down on the UK horizon) suddenly increased in signal strength during the 1st week of June giving entertainment quality signals on a 1m dish. At such a low elevation signals are prone to rain fade due to the longer tropospheric path the signals travel than if directly above.

Berry Habekotte, Holland using his 900mm dish received the first ARTE programme over Kopernikus (DFS-1 23°E) May 30 ARTE is the French/German originated programme that likely to use the currently defunct La Cinq French network from September.

On a personal note I suddenly find myself 'retired' rather earlier than anticipated and experiencing the (lack of) benefits from joining the DEP club - but this has allowed me for the first time in many years the ability to 'tune up' in the daytime - and what a wealth of signals there are to be received during this period.

Brewster, Washington State is a small town in the Rockies - in the middle of nowhere it seems looking at the map, well it does sport her own Satellite Earth station as the Brewster E/S test pattern was received May 19 at 1000 over the Brightstar NTSC (System M) feed on Intelsat VI F3 - out of curiosity I've written to the Brewster E/S to ask about themselves.

Asplendid outside broadcast in true traditions for Canal Plus was transmitted via the Starbird OB service on June 7 from Plymouth Sound, shots of cliffs, the sea, yachts, an old castle

building, sparkling sea in a rocky cove, shots from an overhead helicopter - of course all in French as indicated from the colour bars ident - 'Plymouth Europe 1 Star Canal +'. This over Eutelsat II F1 12.52GHz.

The recent football matches in Sweden have gained bad press, unusually the ITV Sport UK feed was linked via Intelsat VI f3 11.49GHz horizontal rather than Eutelsat. If you have the opportunity of monitoring a UK bound feed that is actually terrestrially live in the UK listen to the echo time delay between the incoming satellite feed and the local u.h.f. off-air signal.

Orbital Slot News

Bad news for Filmnet movie buffs that have invested into pirate decoders, both transponders 11 and 23 on Astra 1A, 1B will go to D2MAC from August 24 with only transponder 11 continuing in D2MAC from August 31.

Heavy talks at the Australian Broadcasting Commission (ABC) in their consideration of how to fund an ABC TV Asian service over Palapa B2P. The cost of a revamped domestic ABC service for a 6-7 hour day will be \$2 million and for a custom tailored service with regional news up to \$20 million - which would need government funding. Discussions have been held with another mainland broadcaster SBS-TV and if the service should be commercial or subscription (or a mix). With the BBC TV World Service beaming into South East Asia from AsiaSat 1 (Star TV) and other countries planning services across that region, Australia is, in effect, being pushed into providing a service or being left far behind.

One development that Australia is well aware of comes from Indonesia, who has now confirmed orders with International Technologies Inc. for the first (of 4) small satellites that will provide television and radio programming available to rural and remote areas cheaply using both standard (analogue) and the digital compression techniques. By using digital compression within L Band (Radio) and S Band (TV) up to 4 TV channels can be squeezed into the space of a single traditional analogue TV channel. Indostar 1 will have 2 analogue (FM) TV channels and 8 digitally compressed TV channels, and with up to 8 digital radio channels (DAB). TV will appear in S Band (2.52-2.67GHz) and L Band radio (1.46-1.492GHz). At the same time development plans are proceeding for 2 types of low cost TV receivers, one for analogue and the other digital. The service is planned to start January 1995.

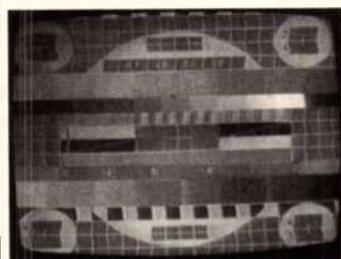


Fig. 2: Test card received on above dish from the Orbita III service.



Fig. 3: Partial line shuffle scrambling on Eutelsat II F3 11.59GHz -, note window reflection!

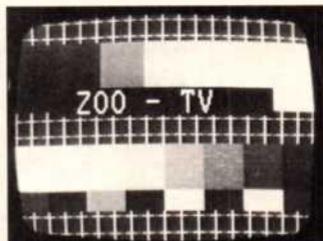


Fig. 4: 'ZOO TV', this mystery test card turned out to be an international feed from the pop group U2 during their UK tour.

amateur bands round-up

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

G4ZVJ writes to mention that he will be in American Samoa as KH8/G4ZVJ between August 26 and September 2, and, possibly, from 5W1VJ for a short period. All QSLs and s.w.l. Reports will be answered via: Andy Chadwick G4ZVJ, 3 Park Villas, Cheadle, Stoke-on-Trent ST10 1HZ.

Letters

Nice to hear again from **Ron Pearce** in Bungay, Suffolk; Ron's latest 'special' is a one-transistor and earpiece receiver with which he tried 14MHz sideband. After about 1.75 hours of construction work, the receiver was buckled to an old Joystick and promptly produced VK5AFA, VE1YX, W5KNK, PA2PQ, VE3RM, VE3ULT, PY5QBU and the 4J1FS Malji-Vyotskij DXpedition which is 'wrapping-up' as these lines are being written. As the little beastie covers Top Band to Ten we are promised some lists to show just what can be done.

Simple gear is also a 'thing' with **Eric Masters** in Worcester Park Surrey, who listens on 7MHz c.w. with a Lake DTR7. It seems the UK and IARU Field Day yielded Eric quite a lot of signals, with E15DR filling a long-time gap in the list, F5BM, F6EZV, FD1PQE, various Gs, DJ5CU, DL1BL, DL2IAD, DL4SCH, DL8FCX, Y41HL, YL2KJ, Y04RDW to fill another gap, YU1AVQ, YU3CAB, OG30J, OK1AVG, ON4AGL/P, ON4AGZ/P, ON4AUZ, ON4DST/P, ON4VM, ON6MS/P, ON6SI/P, OROOST & UA9CM.

Gerald Bramwell, of Manchester, has beaten his c.w. reader into good manners, so a larger proportion of the signals this time are from the key. On Top Band we find (s.s.b.) YL2GUY, UB4MSF, RB4MCI, PA3DEW, GW0JUJ, GM30XU, ON5CD (c.w.), YL2PQ, LY7A, UZ3AWD, 4J1FS, PA0AUV, PA3GCU, G3KNW, G3TPW, G00PB, GB6MX, Y42DK, F6AUS, GW3DRV, G4DBN, DJ9IE, P14ZLD & 4N2X. 3.5MHz stumped up with sideband signals from TA4A, ZC4DG, VK3DZM, PT7BSH, VK5RQ, 4X6ZK, 7P8DX, PT7BZ, VK5HB, 4J1FS (M-V Island), plus oodles of Europeans and Russian signals. On 7MHz we begin to see the green ink for RTTY; G3NBY & G3NXQ, plus c.w. from 4J1FS, YL2PQ, OZ7YY, G0HGA, G4HEB, GM3HBN, Y23RJ, G3BWR, I4XAM, LB8ZD, CX4SB, OA1DFM, LU4ASE, plus sideband from ZS6IR, EA8BYL, HF0POL, CN8NS, 9J2SZ, CX5TV, CX1TE, U5G0, PY7XC, 4X11L, 9K2HA/M, 9K2HF, FM5WE, PR7MH, PR7FB and lots of smaller fry. Turning to 14MHz one finds sideband from JA7HMZ, JA9IPF, LU7BQ, LU1ALF, 9K2MC, YV5ENI, CE3HA, 9K2MU, JA1JAN, EA8NQ, LU9HKK, 9Y4H, LU5DL, east coast Ws and VEs aplenty, with c.w. from W3BFF, EA1AK/EA8 and Europeans, and RTTY booked in from W4JXM, U050IN, YL2KF, IK2JES, AM6ABL, EA1EBB, SP9AGV, 8P6SM, FG4FI and lots of

nearer stuff in all three modes. Coming to 18MHz there is sideband from W6DMJ and lots of East Coast W/VE, 4J1FS, OY1A, 7X2DG, VU2RX, PY4OY, PT7BZ, JF7DZA, VP9HE, JR2LJO, PJ8AD, EA8BGY, JH1EDB, while the keybashers are represented by W9KIA, WE1BB, 4J1FS, EA6/DJ8VG/P, OK3CPC, and of course the various minor actors. 21MHz seems to have been the flavour of the month; the teleprinting types like WB2RAJ, N4JTP, NT3B, K0RC, W6RSZ, WB8C, N2LT, N4LIH, AM92EL, G0VWS, A45ZX, EA4XQ/5, 8P6SM; ZA1TAG and PY1DEA on the key, plus sidebanders such as umpteen W/VEs, Europeans, YV2EMR, KC1WJ/P/C6A, ZS1DX, J28GG, PJ9EE, HI8FH, V44NK, AM8TE, JS6GIM, JA4TXW, EA8AQQ, WP4AFA, CP8AK, HK6QJN, LU1QCE, TR8JWH, 4Z5BW, 4Z5BW, HL1LVA, CX5CG, J72AJ, 7Q7JL, PY2BX, ZS6BJH, PT2JB, 5Z4FM, 4X6YY, ZP4AA, HK30JY, AM8AMT, JN2WUZ, JF1VTZ, JA9IPF, PT7ZK, HS1BV, VU2TTC, PY1DEA, CE4JZO, 4X1NM, 4X6UU, JE1SGS, 5Z4BI, KP2AD, EA8FM, LU5EWO, PY5JA and the supporting cast. 24MHz c.w. offered AD6C and IK6BAK, and sideband from W/VE/VO, including W6SAI, UL70BM, ZS1ATY, PW8EMU, KP2J, EA8AMT, PY2BAW & CM6LE. Finally 28MHz, where VE1PZ stands alone for N America, plus Europeans, ZS6AUH, AM8AKN, ZD7DP, LU2FJH, EA8UFC, LU5SBJ, CE3FB, CX7RM, LU7CK, PY1CAS, LU8VCC, WP4IVB & 7Q7XX. Quite a collection!

Vince Cutajar is in M'Scala, Malta, where he plays the WARC bands; so 18MHz gave T77T, OD5RF, FS/W1FC, YN1MF, YS1RRD, NP4TN, ZD8MS, S92QM, OJQ/SMONZZ & OD5RAK; a switch to 24MHz produced OD5RF again, VO1XC, FS/W1FC, HH2PK, 4J1FS on M-V Island, TT8ZH, 3B8AD & S92QM.

Back in this country and the Isle of Sheppey, where **Ted Trowell** has a den. On 28MHz he logged all-c.w., with PY3CJI, TA7I, ZP6CW, TA2EC, PY2SHS, 7P8SR, PU2FDN & N9ND twice. 24MHz was used on 7Q7XX, while on 21MHz, we see E08BED, LU1LHM, IL7I0RKV, WB2TSL, W5/HK0BKX, TU4SR, VG1NH, W08L, VP5/WB9HRO; and 18MHz

managed VE2EXR, 3B8CF, UB9X/UB2KA, 4L3D, and SV0HS/SV5 twice. On 20m (14MHz) we find VG7FGE, and on 10MHz 9H3GQ & TA7A. UA0QFC fell in the bag on 7MHz, 80m was, as usual, skipped, and on Top Band came the only sideband logging, by way of ON7BW; c.w. noted HB0/DL6SDW/P & LY2BVJ.

Down west to Yeovil now, where **Don McLean** found conditions poorish. Starting on 28MHz, Don mentions BZ4RBD, CT3FT, HC7SK, LU3CQ/P for IOTA SA-055, JA40K, JA5QJD, ON4AVO/5N0, VU2KFC, VU2VMI, XX9AW, ZD7SM, ZF2SD, ZP4AA, 5H3GM, 6T2YD/5A, 7Z1AB, 7P8DX 7P8EB & 9L1MR. The 24MHz scalps included A71BS, CM6LE, OD5RF, PZ1EL, U18ZAC, VP2EOH, VP8CFM(S Sorkney), YB0WWL & 5N0HBK. The favourite band was 21MHz with A71BK, AH0M/W7 (Romeo of XY0RR fame in Reno, Nevada), BV4A0, CO2MA, CP5HG, DU1EIU, EM5T, E08BED, FR/DJ8CR/G, FY5AN, G4SMC/8R1, GW3CCY/5N0, HC1EEV, HH2Z, H16UD, HF0POL (S Shetland), HL2KAT, HL5JRS, HL9TK, HK30JY, HZ1AB, HZ1TA, J73PP, JAs, JD1BF1 (Minami Torishima), JX9EHA, JY3ZH, OD5ZZ, P29GC, RA0QD, RH0E, RL7PC, T20AA, TL8JWM, TU2JL, TZ6NU, UA0FF, UA0ICE, UA0KBY, UL8LWA, V44KAA, V85CJ, Vks, VU2DK, VU2JJQ, VU200, Y11RJ, ZF1DX, ZF2SD, ZP2AA, ZP8AA, 5H3GM, 5H3SW, 5Z4BI, 7Q7XX, 8J3ITU, 9K2JR, 9M2CW & 9M8BL. On 18MHz we see FFOXX and GM4JDS, while the 14MHz tally included EP2AG, IL/I0TWA, IY3VFR/IL3(IOTA EU130), S2/H A5BUS, VP8CGK (S Georgia), ZA1BM, 5H3DC, 9K2DT & 9M2SH.

Andrew Marriott in Bath stuck to the c.w. mode, and found VE7CC, WB/G0EOH, 4K4/UA6WCG, UH8BBZ on 21MHz, and on 18MHz 7P8RQ, 4J1FS, TM5CHA, W7MBJ in Nevada, leaving 18JVR/IL3(IOTA EU130), S2/H A5BUS in Arkansas, KD6WVV, WA6UDR, KM6HV, ZA1SES & U6FAL.

Up north of Wick is the home of **Don Robertson**, who also prefers the c.w. mode, though he does sometimes sample the delights of sideband. On 7MHz Don booked in 4J1FS & 9J2SZ; on 10MHz he sorted out YV5AZC, 3A/

DF2UU, S79FI, 4J1FS, UA1RV/MM, UJ8KA, 4X4VF, RJ8JM. A flip of the switch to 14MHz and LU2AAW, V47GW, UA0ZCY, ZA1TRD, RA0AMT, UM8MZ, 4J1FS, 4K4BVI, PP2RR & 3X0HN. The big list was on 18MHz where Don snapped up VU/VK2DXI, SV9/SV1AHH, 8Q7WP, FR5GG, UA00GN, KP4YD, 9V10K, 3D2QB, 4K20LQ, AH6JF, EA9/DK7ZB, UA0ZC, UJ8KA, WH6ASW/KL7, ZL1MH, SV0HS/5X5, VP2EOH, 4K4/UA90PA, RK9S, OZ1FJB/MM near 9V1, V85AA, KL7AF, RE5Q, VK7AAQ, LU1EN, VK4RF, UD8DWW, ZA1TAE, PY7DH, HL1LUX, 4U7ITU, UA0KCL, UB9X/UB2KA, 9V100, EH4MC, RI8BU, KH2FT & S79FI. 21MHz came up with UJ8KAC/RU9J, ZS70SAN, S79CK/D, UA0SQT, BV2TA, VP5P, TU4SR, CE3DNP, UM8QDX, RA0FN, UA0FZ, 4L6MC, 9H3JR, ZY2YN, 7X2CR, VU2SQT, RV7RSWB & KD6WVV/C6A. There was only HZ1HZ on 24MHz, while 28MHz produced SV0HS/SV5, V85KX & UZ73WO.

Antenna

A BIG envelope with a USA postmark popped through my letterbox yesterday; when I opened it, it contains a book of reprints of articles on Aerials by 'Kurt N Sterba' and his XYL 'Lil Paddle'; these appeared originally in *World radiomagazine*. Quite apart from the humour - somewhat sledge hammer to we G types (!) the main thrust is towards debunking the silly statements which appear in technical books and articles about antennas. For \$12, including post and packing by Visa or Mastercard you get one of the best series of short articles on the subject that I have seen, with the chuckles thrown in for good measure - oh, and I suspect the front cover is a cartoon of Benjamin Franklin and the lightning. Letters to Worldradio, 2120 28th Street, Sacramento, CA 95818. No Mr Editor, you can't have my copy, I'll dine out on the jokes for months yet!

Deadline

To be serious once again, the address for all your letters is as above, and the deadline is Aug 7, Sept 4 & Oct 9.

1927 - 1977

DORCHESTER RADIO STATION

GOLDEN JUBILEE

AMATEUR RADIO STATION

80m - G5UF/A 2m - G3AJZ/A

TO _____

DATE _____ TIME _____ BAND _____ RS _____

GBL DIRECT TO RADIO STATION, BRIDPORT RD., DORCHESTER, DT2 9QR
OR VIA R.S.G.B.



QSL



ONL 6085

H. MATTHE

PAY A VISIT TO

SUPER HAMSTORES

TOP VALUE AT SUPER HAMSTORES THIS MONTH THE NEW ICOM IC-728 HF TRANSCEIVER

- All HF Bands Tx
- General Coverage Rx
- Speech Compressor
- Passband Tuning
- Direct Digital Synthesizer
- 26 Memories
- Handmic Supplied
- 3 Scanning Functions

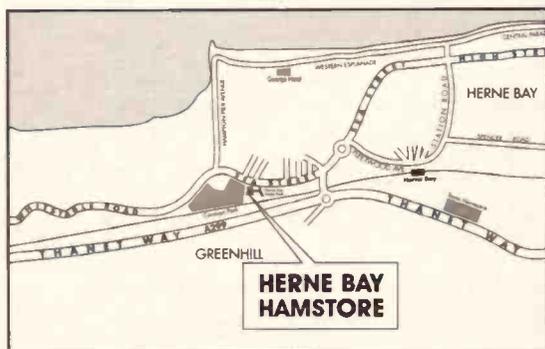


The exciting NEW IC-728 represents excellent value at only **£825.00 inc. VAT.** The IC-728 is at Hamstores NOW! Come along and put ICOM's newest rig through it's paces.

HAMSTORES stock a wide range of new Amateur gear plus a large selection of second-hand and ex-demo stock including; **BARENCO, DIAMOND, COMET, SONY, AOR, LOWE, DRAE, CUSHCRAFT, KANGA KITS, DEECOMM, ALLGON, TOYO, AEA, CDR, MET, MFJ, AKD, ICOM, YAESU, KENWOOD, ALINCO, JRC** ETC. Watch this space for more news, 73s, Chris G8GKC, Gordon G3LEQ & John G8VIQ.

**BOTH STORES NOW OPEN TUESDAY - SATURDAY. 09:00 - 17:00
WEEKDAYS. 09:00 - 16:00 SATURDAYS.**

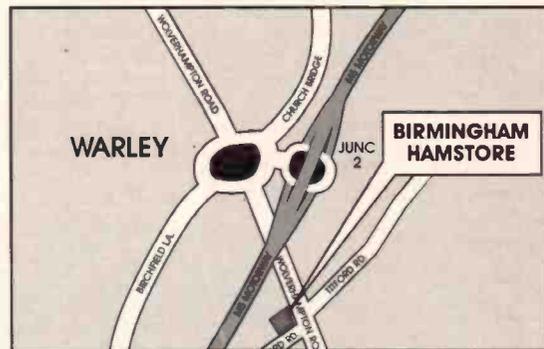
HERNE BAY



Payment by Access, Visa and Switch. Part-exchanges welcome, finance can easily be arranged (subject to status). Interest free credit is available on selected new ICOM products.

If you cannot visit an ICOM HAMSTORE in person we operate an efficient, computer-based Mail order service. Stock items normally despatched within 24Hrs.

BIRMINGHAM



Unit 8, Herne Bay West Industrial Estate,
Sea Street, Herne Bay, Kent CT6 8LD
Telephone: (0227) 741555, Fax: (0227) 741742



International House, 963 Wolverhampton Rd.
Oldbury, West Midlands B69 4RJ
Telephone: 021 552 0073, Fax: 021 552 0051

GAREX ELECTRONICS

GAREX VHF PREAMPLIFIERS

Miniature (only 34x9x15mm), any frequency in the range 40-200MHz, up to 25dB main.
 Stock versions: 6m, 4m, 2m, 137MHz (W-Sat).....£12.21
 Airband 118-136MHz (reduced gain due to frequency spread).....£12.21
 Other frequencies in the range 40-200MHz to order.....£14.56
 Any of the above finished in die-cast box with BNC or SO239 connectors (state which) add
 £12.00 to the above prices. N connectors add £14.00.

GAREX NPA-2 HIGH PERFORMANCE 144-146MHz PREAMPLIFIER

RF switched (35 watt max. power), 3 band pass stages for improved
 selectivity 16dB gain, fitted in die-cast box with BNC sockets.....£49.95

GAREX DC/DC INVERTERS

A popular line for many years. Economy package: chassis section cut from commercial R/T gear,
 rewired & tidied up to make free-standing unit, no expensive cabinet just basic value for money.
 12V DC input, 250V 150mA DC output.....£11.50
 12V DC input 400V 200mA DC output.....£12.50
 (24V versions to order)

4 METRE RX CONVERTER

High quality PMR front end by famous manufacturer, modified to make a 4m
 converter: 10-11MHz output. Full data. Requires xtal. approx 15MHz.....£17.32

4 METRE 0.5 WATT FM Tx

Tx low power driver unit matching above Rx, with modulator, ready aligned, with data:.....£16.30
 Or + xtal for 70.45MHz. £20.35. Suitable PTT fist microphone.....£4.04

PYE ANTENNA RELAYS

12V operation, handles 50 watts up to 200MHz.....£1.99 5+:£1.53 each

WESTMINSTER FM BANDWIDTH CONVERSION KITS

Converts 50kHz or 12.5kHz FM Westminsters (UHF or VHF) to Amateur band 25kHz spec.
 Comprises 2xIF filters + squelch board.....£15.28

60MHz 10 WATT FM PA

Solid state assembly, 0.25 watt drive, 10-15 watts output.....£16.95
 Also available: matching driver and modulator assemblies for complete 50MHz Tx.
 REVCO 50MHz mobile antennas available.

SPECIAL OFFER GAREX VHF FM MONITOR RECEIVERS

Single channel NBFM monitor receiver, any spot frequency from 27-200MHz in neat cabinet
 180x140x50mm. Built-in speaker. Requires 12V DC supply. Includes crystal for your choice of
 frequency (allow 4 weeks delivery).
 Ideal for Packet, RAYNET and other Emergency frequencies. Special price £59.95.
 Many options available, including multi-channel, ask for details.

SPECIAL OFFER REVCO RADAC DIPOLE NEST WIDEBAND ANTENNA

Receive 25-1300MHz out-performs discons, with guaranteed Tx performance on
 144-146MHz and either 50MHz or 70MHz (state which).....£59.95
 Upgrade kits available to allow Tx on 27-28MHz also 50MHz and 70MHz.

Write, phone or fax for lists. Regular lines, components and bargains for callers.

Open 10am - 5pm Mon - Fri (occasional Sat).

ALL PRICES INCLUDE UK CARRIAGE AND VAT AT 17.5%

GAREX ELECTRONICS 

STATION YARD, SOUTH BRENT, SOUTH DEVON TQ10 9AL
 Phone: (0364) 72770 Fax: (0364) 72007

What you've all been waiting for...!

It's now available!

Write In for your copy today!

Building on our success

story over the past decade, we are proud to present our latest catalogue, now regarded as a reference work in it's own right for both the trade and enthusiast markets.

We've got it all listed, from satellite equipment to TV-DXing, from SECAM/PAL transcoders to Canal Plus decoders, from an F-plug to a multi-standard video recorder, from a VHF/UHF signal strength meter to an NTSL/PAL/SECAM teletext TV.

We've even developed a full facility manually tuned enthusiasts' satellite DXing receiver to find those weak transponders. And we've stocked all those little bits and pieces that no-one else keeps.

Send £1 for our glossy brand new 34 page catalogue, which you will receive back by return of post.



11 Kent Road, Parkstone, Poole Dorset BH12 2EH
 Tel: 0202 738232 Fax: 0202 716951

Aerial Techniques



The new **AR2000**
 500kHz-1300MHz
 with better sensitivity than the original 2000
£269

HF-225
 Gateway to the world
£429 inc VAT



Frequencies: 30kHz-30MHz.
 Tuning: 8Hz steps.
 Memories: 30 channels.
 Filters: IF filters for all modes fitted.
 Tuning: Keypad & spin-wheel.
 AM/FM Sync. Detector (optional).
 Keypad for remote entry (optional).
EXCELLENT QUALITY at a REASONABLE COST



AR3000A

The AR3000A is a follow on from the highly acclaimed AR3000. Many major improvements have been implemented at the request of enthusiasts.

The tuning control is now 'free running' to provide a smooth feel for SSB/CW, x10 buttons have been added to make step size faster and more convenient. All information is contained on the LCD instead of a separate status LED indication. The RS232 facility has

a switch on the rear panel to enable/disable operation. Memory clear and full microprocessor reset functions are available from the front panel. The re-writing of microprocessor firmware using an even more efficient language has further increased scan and search speeds.

£765

HF-150 Compact Communications Receiver
£329 inc VAT

Designed as a logical alternative to the Japanese 'push button portables', the HF-150 places a 'real radio' within your price reach. Whilst reflecting the Lowe approach to simplicity of operation, the HF-150 nevertheless has all the features and facilities you need. This truly is 'Real Radio'.

Frequency coverage: 30kHz-30MHz.
 Modes: USB/LSB/AM/Sync. AM (selectable S'band).
 IF Bandwidths: 2.5kHz & 7kHz.
 Tuning: 8Hz steps with variable speed. Memories: 60 holding frequency & mode.
 Aerial inputs: 600 ohms, 50 ohms & Hi-Z Whlp.
 Power: 12Vdc from mains adaptor (supplied).
 Case: All metal light alloy case.
 Size: 185mm(W) x 80mm(H) x 160mm(D).
 Weight: 1.3kg (less batteries).



NOW IN STOCK

AR1500

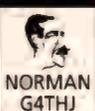
100kHz-1300MHz and same modes as the AR2000. Price to be confirmed approx. £279

+SSB

Please remember, we are the sole authorised importer of **STANDARD** equipment in the UK. We also stock all the popular makes ie. Icom, Yaesu, Kenwood, Alinco, Lowe etc. We are able to offer a full back-up service and spares from stock.

400 EDGWARE ROAD, LONDON W2
 Telephone: 071-723 5521 Telex: 298765
 OPENING TIMES: 9.30am-5.30pm Mon-Fri, 10am-4.30pm Sat.
 Normally 24hr despatch but please allow 7 days for delivery

LOWE ELECTRONICS



dxtv round-up

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

When Joan and I visited Exbury Gardens in the New Forest on May 20 our attention was drawn to a felled tree trunk sporting 51 plastic labels showing its size at the time of a particular historical event. For example, the centre label of the seven shown in Fig. 1, reads, "First public demonstration of TV 1926". Unfortunately this magnificent tree was toppled during the great storm early in 1990 and was probably weakened by the hurricane in October 1987. Television has come a long way since that first demonstration 66 years ago. However, although today it is a highly technical subject, with worldwide coverage, changes within the earth's complex atmosphere can cause it a lot of problems.

Band I

From Meerut, (India) Lt. Col. Rana Roy received signals from unidentified stations, around Ch.E2 (48.25MHz), from SE. Asia, via trans-equatorial-propagation (TEP), at 2100 on April 15 and 1700 on the 21st and 28th. John Woodcock (Basingstoke) logged pictures from Italy (RAI) at noon on May 5 and at 1535 on the 15th. He saw ice hockey from Estonia at 1530 on the 7th and watched their news at 1200 on the 9th and added Sweden (test-card & news), Spain (TVE1) and Portugal (RTP) on the 7th, 12th and 18th respectively.

During May, Russ Burke (Northampton), received pictures from Italy, (RAI-UNO) and Spain (TVE1 & 2) on days 2-4 & 11 and a test-card from Russia (CIS - Commonwealth of Independent States) on the 12th. I saw a fading WWII film around Ch.R2 (59.25MHz) toward the end of an opening at 1855 on the 18th, while earlier, at 1730, John Woodcock saw a film about the Battle of Britain from Estonia so I assume it was the same one.

Between 1130 and 1200 on the 21st, Richard Bell (Melton Mowbray), using a PYE99 receiver, Labgear pre-amp and a 3-element beam, received test-cards scribed '1SR-P' and 'SR1-TV Bratislava' from Czechoslovakia. Later, at 1300, he saw commercials from 'RAI' and at 1928 he logged adverts from 'TVE1'. At 1550 on the 23rd, he watched a western film with 'TVE1' in the bottom righthand corner and during a session from 1100 to 1300 on the 25th, he noticed the letters U.K.T. and the figure '1' on the lower right of a weak picture plus a news programme with 'CST' (Czechoslovakia) and test-cards labelled '1SR-P' again and '1 PROGRAM/ODK3'. The dials on Richard's set are marked with the letters 'A', 'B' & 'C' for Band I and 'D' to 'H' for Band III.

David Glenday (Arbroath) received pictures, via Sporadic-E, from Czechoslovakia and Yugoslavia on the

9th, a music programme in SECAM colour from an ex-USSR station, with '1' logo, at 0810 on the 12th and Spain (TVE1) at 1715 on the 14th. Similar openings also proved rewarding for Carl Bowen (Strelley) and Bob Brooks (Great Sutton). Between them they logged test-cards and programmes from stations in Czechoslovakia, Finland (YLE), Italy, Poland (TVP), all Scandinavian countries, Spain and Russia (TSS). The TSS clock was seen by Richard Bell who also caught glimpses of a cartoon, motorcycle racing, a news-reader and saw the logos 'B', 'BECTN', 'P.T.P.' Fig. 2, and '2'. I used the Paint section of the Windows program on my Amstrad 2286/40 to reproduce the sketch in Fig. 2, from Richard's letter.

Among the Norwegian regionals seen by Carl and Bob were Bremanger, Gamlem, Hemnes, Melhus and Steigen. They both logged Denmark (DR) and Sweden (SVT Kanal 1) and Bob added cartoons from Italy and Spain, ice hockey from an unidentified source around Ch. E3 (55.25MHz) and the ident 'Bratislava'.

During Sporadic-E openings on the 24th, 25th & 31st, David Glenday received signals from Czechoslovakia, Germany (ARD1 & SWF1), Hungary (MTV1 Budapest), Italy and Spain and saw the captions 'BECTN' and 'OCTAKIHO'.

During his extensive propagation studies Richard Gosnell (Swindon), received television signals from Czechoslovakia and Italy on the 23rd, Spain on the 13th, 21st & 30th and Scandinavia on the 18th. Simon Hamer (New Radnor) identified pictures from Austria (ORF1), Czechoslovakia, Denmark, Finland, Germany, Iceland (RUV), Italy, Norway (Greipstad), Portugal (RTP1), Russia (TSS), Sweden (SVT1), Switzerland (+PTT/SRG1) and Yugoslavia (JRT), at times while periods of Sporadic-E were in progress on days 6, 7, 9, 12, 14, 18, 21, 23 & 24.

Among the captions seen on test-cards or programmes by Owen Jones (Blurton) during the May events were 'Bratislava', 'Budapest', 'CNOPT' (sport), 'HOB0CTN' (news), 'NTA', 'NYLA', 'RAI-UNO', 'Sverige', 'TVE1', 'TVP1', 'TV2' and '1SR-P'. He also watched ice-hockey on the 7th and 9th, news and sport, on the 12th and 25th and cartoons on the 21st and 29th. Owen uses a Labgear converter and a home-brew antenna.

Satellite TV

A new logo from the Russian CIS, Fig. 3, was seen by Rana Roy, via satellite, on April 17 and he would like to know the source. He also saw an announcer, Fig. 4 and a news title, Fig. 5, from the BBC's Asian service on March 18 and April 18 respectively. In Holland Peter de Jong received a range of international Idents, Figs. 6, 7 & 8 from



Fig. 1.

the satellite Eutelsat II on April 14, 16, 17 and on the 11th, he caught their logo, Fig. 9.

Weather Briefs

The slightly rounded variations in atmospheric pressure, Fig.16, for the period April 26 to May 25 were taken at, noon and midnight, from the barograph installed at my home in Sussex. In answer to a number of letters the special chart and ink for these instruments is usually obtainable from a good jeweller. Although some areas had heavy thunder storms in May the rainfall that I recorded was a mere 0.91in and most of that fell overnight on April 30/May 1.

"A brilliantly clear and cloudless day by 1100Z, as befits an anticyclone, but there was a biting ENE wind and a temperature of only 13°C. The North Sea had dampened and chilled the lowest levels of the air sweeping onshore into Essex and on down the English Channel," wrote Richard Gosnell about May 17, adding, while above the high-atmospheric pressure ensured warm and dry air. "The perfect combination for a duct," he said. As you will see in Fig.16, the pressure at my home had reached 30.5in (1032mb) on the 17th and starting to fall.

Tropospheric

You're dead right about that duct Richard, because at 0830 on the 17th I saw a cartoon from a German station in Band III and during the evening both the BBC and ITV told viewers that 'atmospheric conditions' were disturbing their pictures. On the 16th and 17th, David Glenday received pictures from Belgium (BRT1 & RTBF1), Denmark (DR), France (Canal+), Germany (ARD1) and Norway (NRK) in Band III and Belgium (BRT1 & 2, Canal-Belgique & Tele21), Denmark (TV2), France (ANT.2, FR3 & TF1), Germany (HR3, MDR3, NDR3, RTL+, SAT1, SSVC, WSF3, WDR3 & ZDF), Holland (NED1, 2 & 3) and from English transmitters at Sudbury and Tacolneston on Bands IV and V.

John Woodcock logged a test-card from Holland (PTT-NED1) at 1035 on the 17th and later, between 2305 & 2330, he watched a chess match and their news.

"I anticipated quite rightly a good

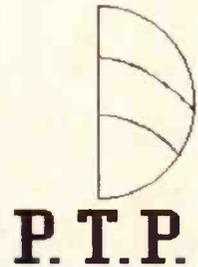


Fig. 2: Russia.



Fig. 3: Russia.



Fig. 4: BBC Asia Service.



Fig. 5: BBC Asia Service.



Fig. 6: From Eutelsat.



Fig. 7: From Eutelsat.

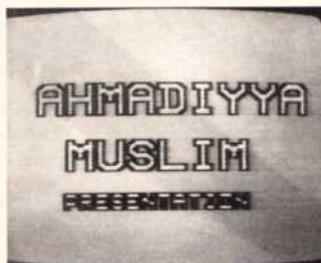


Fig. 8: Via Eutelsat.



Fig. 14: Russia.



Fig. 15: Wales.



Fig. 9: Via Eutelsat.

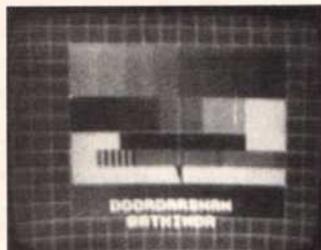


Fig. 10: Bathinda.



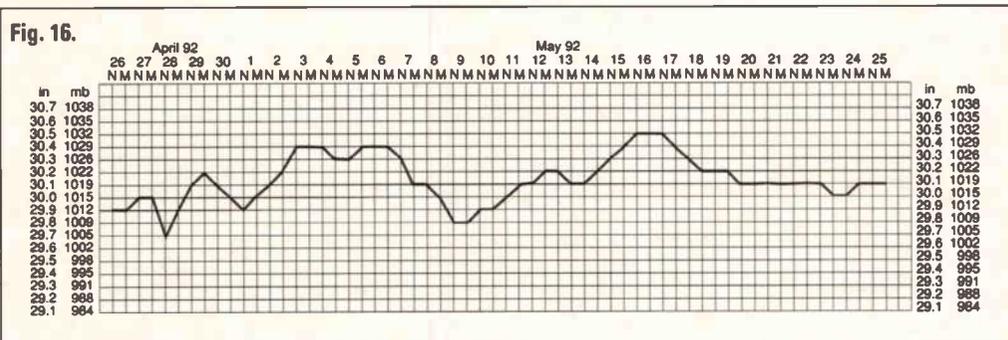
Fig. 11: Lahore.



Fig. 12: Lahore.



Fig. 13: Germany.



deal of DX would be available with the prolonged spell of hot weather and high pressure we have had during this last week," wrote **George Garden** (Edinburgh). With this in mind on the 17th, he took the television gear to his usual DX spot, high on Cairn O'Mounth and was rewarded with strong signals from Holland (PTT-NE02 & 3) and parts of the UK on the u.h.f. band. He also saw ITV Tyne Tees from Bilsdale, 'in strong colour' (Ch. 29) and Pontop Pike, (Ch. 61) and Borders TV 'as good as a local' from Selkirk on Ch. 59.

As expected Simon Hamer had a good haul on the 17th with strong signals in Bands III, IV & V from stations in Belgium (BRT1 & 2 & RTBF1 (French)), Denmark (DR & TV2), Germany (ARD1, NDR3, RTL+, SWF3, WEST3 & ZDF), Holland (NED1, 2 & 3), Ireland (RTE1 & Network 2), Norway (mainly Band III) and Sweden (SVT1 & 2 & TV4).

Carl Bowen received v.h.f. pictures from Holland (NED1) on the 17th and Denmark (S. Jutland) on the 18th. Bob Brooks saw good colour vision and sound from Denmark (DR) and Germany (ARD Munchen & RTL Koln) at the higher end of Band III on the 17th. The "evening of the 19th saw a dramatic thunderstorm, rather like the classic 'Dracula' films with continuous flashing and rumbling," wrote David Glenday. He added, "the thunderstorms heralded a cold front which brought all tropospherics to a halt by the following morning." This event was well summed up by David who said "it was the best opening since that great summer of '89. German relays with e.r.p.s of under 0.5kW were received" and the British forces broadcasting service test-card from Osnabruck was in glorious colour. He logged Nederland 3, (Ch.59) from the Maastricht relay for the first time,

the American Forces Network from Soesterberg and 'Eins Plus' during a deepfade by Chatton on Ch.E49. "Need I say more?" remarked David.

Tropospheric conditions were often good during May, for example, Russ Burke received a test-card from Holland (PTT NED3) on the 6th. While in Cornwall on the 6th and 7th, **S.M. Hockenull** noted that pictures from the local BBC 1 (Ch. 22), BBC 2 (Ch. 28) and TSW (Ch. 25) were subject to co-channel interference from stations in France. At one time he saw the French caption 'TF1' 'floating' in the background of BBC 1 on Ch. 22. "By the evening of the 8th, conditions generally returned to normal" said S.M. accompanied by an increasing W-SW breeze, low-cloud and drizzle.

The weather turned suddenly warm on the 13th and, as the high pressure began to fall, French stations, most likely Canal+, began to appear in Band III on my JVC 3060 with its own rod antenna, while I was parked at Emmets Gardens in Kent and later in Ashdown Forest, Sussex.

During the afternoon of the 23rd, George Garden again went to Cairn O'Mounth for a spot of DXing and, by carefully adjusting his antenna as he tuned through the u.h.f. band he found programmes with the Tyne Tees logo, from Bilsdale and Pontop Pike on Chs. 29 and 61 respectively. His best DX came at 1700 when he caught the station clock of Yorkshire Television (Ch. 47) from Emley Moor. Later that evening the BBC1 weather chart 'showed fog extending all along the East Coast and inland to as far as the midlands of England', George then realised that the DX he logged was between the two fog limits.

"May has been a very busy month,

with a number of first-time stations being received," wrote **David Ashley** (Norwich) on June 1 and reports that in Bands IV/V, "multi-station pile-ups were a common occurrence half way through the month." On the 15th, the 'grand-daddy' of all pile-ups came when David's four local stations suffered co-channel interference for most of the day. Contributing to this was the strong signals he received from Belgium (Canal+), Denmark (TV1), Germany (ARD1, N3, SAT1 & ZDF) and Holland (NED1, 2 & 3). He also watched programmes from Central and Tyne Tees TV on the 15th, HTV West, Tyne Tees and Yorkshire TV on the 17th and Central, Tyne Tees and Yorkshire on the 19th and 20th. I see from David's log that he received pictures from Holland on 19 out of the 25 days in May when he found conditions good.

Rana Roy noted tropospheric openings on April 2-5, 14, 15, 17 & 20 when he received pictures in Band III from Amritsar (Ch.E7), Bathinda (E.12), Fig.10, Faisalabad (E.6), Delhi (E.7), Jalandhar (E.9), Kanpur (E.5), Kasuali (E.6), Lahore (E.11), Figs.11 & 12, Mussoorie (E.10) and Pehawar (E.7). From some of these he saw adverts and plays in Urdu, Breakfast TV, cartoons, Teletext and test-cards.

SSTV

During May, **John Scott** (Glasgow), using a Robot decoder, copied slow-scan television pictures, with imaginative captions, mainly around 14.230MHz, from stations in Germany, Fig.13, Italy, Russia, Fig.14 and Wales Fig.15. Note the horizontal bars of interference on Figs. 13 & 15 which may have been caused by ignition, local electrical noise or another station.

airband

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

New equipment is always a popular subject with readers. Before buying, think of the future: what changes are expected to the frequencies that you're interested in? Even if you can afford to replace your receiver after having owned it for only a short while, think how little resale value it will have if its coverage is obsolete.

The Sony Air-7 receiver is still useful, despite having been around for a number of years. I recommend it for its excellent r.f. performance, which is surely a top priority when choosing a receiver. Its solid construction is also commendable if a portable application is intended. As well as the v.h.f. airband (108-135.975MHz), it covers medium frequencies (good for n.d.b.s as well as broadcasters), marine and amateur v.h.f. allocations and f.m. broadcasts. This is a very handy range to have in one 'box'. The entire navigation sub-band is covered from 108MHz and 25kHz channels may be tuned throughout the complete airband (although the navigation segment actually remains on 50kHz at the present time).

It is also important to be aware of the limitations of any equipment. The Air-7 can only memorise up to 10 frequencies in the airband. Searching is only possible across the whole band, there being no facility for sub-band limits. Coverage stops at 136MHz with no possibility of modifying the set to receive the new 136-137MHz allocation. It is strongly rumoured that 12.5kHz channels will be adopted in the communications segment towards the end of the decade and the Air-7 will not receive the newly interleaved channels if this happens.

Sony have now brought out the Air-8 which is remarkably similar to the Air-7 but slightly cheaper. I've only seen it advertised by one supplier. An older advert showed a receiver identical to the Air-7 apart from the 'Air-8' label; a more recent catalogue shows the same receiver with the important difference that coverage has been extended to include the 136-137MHz segment. However, the text in the catalogue still says that coverage stops at 136. No mention is made of channel spacing and there are still only 10 memories.

The only supplier that I'm aware of is Transair Pilot Shop, West Entrance, Fair Oaks Airport, Chobham, Near Woking, Surrey GU24 8HX, Tel: (0276) 858533. Price is £199 plus £3.50 postage, inclusive of VAT.

If anyone buys one of these, let me know how it performs! In summary, the v.h.f. airband has already been extended up to 137MHz and 12.5kHz channel spacing seems likely eventually. The u.h.f. airband is already divided into 12.5kHz channels.

The newer wideband scanners also have their place. Again, there are

disadvantages, of course. Wideband circuits are susceptible to picking up strong signals other than the one being tuned in. This can cause the scan to stop on a particular channel even though there is actually nothing there. The scanner has latched on to a strong signal (often a broadcast) that's actually on another frequency. The effect is worse when an external antenna is in use; attenuation is a simple remedy, filtering also works but is more complicated. Base stations are far less prone to such strong signal breakthrough than hand-helds.

Receiver Problems

A frequent question I'm asked is how broadcasts can appear on the v.h.f. airband and vice versa. Something along these lines is worrying Lee Williams (Birmingham). A typical superheterodyne receiver (and that's most commercial ones) consists of two parts. It's easier to design a receiver that picks up just one frequency, and often 10.7MHz is chosen. So, the first section of our two-part receiver is a fixed-frequency 10.7MHz receiver which is able to amplify a radio signal at this frequency and eventually turn it into recognisable audio.

As good as it is at receiving 10.7MHz, this receiver is not much use. We want to pick up other frequencies as well! The other half of the receiver is the bit through which the signal from the antenna passes first. This circuit converts whatever frequency you want to 10.7MHz. This converted signal can now be received by the other part of the circuit. In fact the 10.7MHz signal is an intermediate step in the process of reception and not surprisingly is called the intermediate frequency.

In order to produce 10.7MHz from, say, 127.125MHz it is necessary to mix it with another oscillation. The local oscillator, so called because it's part of your receiver, might be on 116.425MHz. One of the things that happens when you mix these two signals is that new frequencies are generated - including the difference between the two (127.125 - 116.425 = 10.7).

What happens if 105.725MHz gets into the receiver? Well, mixing again, we could get 116.425 - 105.725 = 10.7. Now you see how a superhet can receive two frequencies at once - separated by twice the i.f. Please note that all answers are printed in the column and I do not reply directly.

Information Sources

Every five years or so, the military change all of their u.h.f. channels. This happened in May so any information sources on this subject could be obsolete unless they have been updated recently. As usual I suggest that you should obtain your information

from the most direct source possible, rather than reading it second-hand elsewhere. So, to obtain the latest copy of the RAF *En Route Supplement British Isles and North Atlantic* send £7.25 plus £1.00 postage to 1 AIDU, RAF Northolt, West End Road, Ruislip, Middlesex HA4 6NG. Cheques should be payable to 'MOD Public Sub Account RAF Northolt' and must be crossed 'Bank of England Account HMPMG'. Issues from May 11 onwards show the new changes. Other *En Route Supplements* are *Northern Europe*, *European Mediterranean* and *Africa & Southern Asia*. There is also a useful *Flight Information Handbook*.

I expect Chris Ward (Sutton Coldfield) will hesitate no further in ordering his copy. Like Paul Wey (Baldock) he brings the latest u.h.f. changes to my attention. Paul reports that the Red Arrows are now on 242.2MHz during their displays.

The CAA have updated their Doc 514 entitled *Aeronautical Information Services (AIS): A Guide*. Although much of this document seems to be the sort of detail that will only interest keen pilots and commercial operators, there are two appendices which will immediately appeal to my readers. One lists nav aids (in alphabetical order of name) giving ident and type of beacon; the other gives the ICAO four-letter codes for aerodromes. Both lists are confined to the UK. The good news is that it's free of charge but an s.a.s.e. (A4, 200g) would doubtless be appreciated. Write to Mr. P.J. Chambers, Aeronautical Information Service, Room 162, Control Tower Building, London (Heathrow) Airport, Hounslow, Middlesex TW6 1JJ. When you get your copy, don't ignore the more detailed sections - it's surprising what you can learn from them.

Another source of useful information is *Short Wave Communications* by fellow columnist Peter Rouse GU1DKD and published by PW Publishing Ltd. A copy of this is the prize from the last Christmas Quiz and the Editor has kindly sent it to the winner, R. Spooner (Cleveland).

Let's Play!

I must be getting old. 'Airband' first appeared in August 1987 so this issue marks the start of the sixth year. Mike Hack G8SLU is a reader with a long memory; in that first 'Airband' I mentioned a computer simulation 'game' for the Amstrad PCW. Hewson's *Heathrow Air Traffic Control* simulates a secondary surveillance radar screen at Heathrow Approach and is very realistic considering the limitations of the PCW which is hampered by a rather slow Z80 processor. Mike also has a version; this runs on his Spectrum.

Over the years many computerised readers will have progressed to PC compatibles. What aeronautical

simulations are available? Well, Microsoft's Flight Simulator is well known. It is available with a real control column but I found it rather touchy and unrealistic on the computer that I tried it on. I suspect that quite a fast processor is needed for realism, but that shouldn't be too hard to find these days. I have also heard high acclaim for another package called *Airline Transport Pilot (ATP)* although I haven't tried this one personally.

One that will interest Mike is *Tracon* which runs in 512K on a PC compatible under MS-DOS with or without Windows. The name is a contraction of *TRAffic CONtrol*, an Americanism. A typical screen display shows secondary radar in the left three-quarters of the screen with flight progress strips in the rightmost column. Again I've not tried it but the idea looks good. The package can even link to the *Microsoft Flight Simulator*. The cost is £45.99 plus £3.50 postage from Transair Pilot Shop (address previously).

Frequency and Operational News

Not as exciting as the u.h.f. changes mentioned above, but still useful to know, are some n.d.b. amendments which appear in *AIC 44/1992* from the CAA. The Cardiff (GG, 329.5) and St. Mawgan (SM, 356.5kHz) n.d.b.s have been withdrawn. Changes of frequency now put the n.d.b.s at Brawdy (BY) on 427, Finningley (FY) on 417, Lee-on-Solent (LS) on 432 and Leuchars (LU) on 417kHz.

I noticed that Seneca G-FLYI is no longer operating as Capital Radio's 'Flying Eye' traffic-jam spotter. The replacement is Cougar G-FLII which accommodates just four occupants and has been seen flying over Edgware when operating out of Elstree. The underwing colour scheme is unusual, with its contrasting rectangles which contain the registration and make it readily identifiable from the ground. Capital broadcasts to the London area on 1.548 and 95.8MHz.

"Has Humber side changed frequency?" So asks F.J. Hermann (Hull). Indeed, Approach is now on 124.675 instead of the old 123.15MHz. Tower remains on 118.55MHz. There are also two non-directional beacons (n.d.b.s) which are on frequencies similar to medium-wave broadcasts. On the approach to runway 21, and at 4.1nm out, is a beacon with call sign HMS on 350.5kHz. On the aerodrome itself is another n.d.b. with call sign KIM on 365kHz. Humber side was active in the War when it was known by its local name of Kirmington.

CONTINUED ON PAGE 51 ➔

Waters & Stanton Electronics

UK's largest stockist of specialist receivers



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

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

SONY SW-7600 £149
200kHz-30MHz + FM BROADCAST SSB/CW/AM
Includes free AC supply aerial and case!

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



NEW LOCAL STORES

Most receivers on these two pages can now be purchased from us via your local MAPLIN stores in:

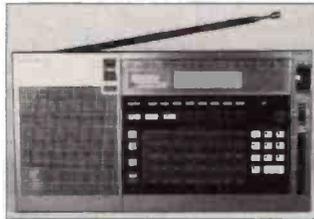
**BIRMINGHAM
MANCHESTER
READING
BRISTOL
LEEDS
BRIGHTON
GLASGOW**

Now you can call at your local store and enjoy the full Waters & Stanton after sales warranty.

Contact your nearest store today for the Maplin convenience and the Waters & Stanton technical back-up and warranty.

SONY ICF-2001D £289
150kHz-30MHz + FM + airband USB/LSB/CW/AM (sync)

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



SONY ICF SW77 £349
150kHz-30MHz + stereo FM AM/SSB/CW

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



"It's Fantastic!" Optoelectronics 2300

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

Simply switch on and connect an aerial to read



£149.95

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

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

YUPITERU MVT-7000 £289
1MHz-1300MHz FM/AM/WBFM
Includes ni-cad pack and charger

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



YUPITERU VT-225 £229
Military & Civil Airband Monitor

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



NEW!

VHF/UHF airband monitor AM/FM
108-142/
222-291MHz.
Superb sensitivity,
100 memories - (see above)

AR-1500 £279
2MHz-1300MHz FM/AM/SSB/CW

Yes it's true, a hand held scanner that also gives you SSB and CW reception. New from AOR, this is the most comprehensive hand held scanner yet. If you want full details, phone or write for the full specification. And remember as the UK's largest stockist of receivers, we can offer you the kind of back-up service that such an advanced product needs.

Retail and Mail Order: 22 Main Road, Hockley, Essex SS5 4QS. Tel: (0702) 206835/204965 Fax: (0702) 205843
Retail Only: 12 North Street, Hornchurch, Essex. Tel: (07084) 44765
VISA & ACCESS MAIL ORDER. 24 Hour Answerphone. Open 6 Days a Week 9am-5.30pm
Rail: Liverpool St./Hockley or District Line/Hornchurch

ALINCO's

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

"A Scanner of Unrivalled Performance"

Specification:

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

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

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

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

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

NOW IN STOCK AT MAPLIN STORES IN:

BIRMINGHAM - MANCHESTER - READING BRISTOL - LEEDS - BRIGHTON - GLASGOW

OTHER ALINCO STOCKISTS:

AVON: G4TJB (0934) 512757 : Uppington Tele-Radio Ltd (0272) 557732 : Amdat (0272) 699352
BUCKINGHAMSHIRE: Photo Acoustics Ltd (0908) 610625 CAMBRIDGESHIRE: Link Electronics (0733) 346770
CHESHIRE: CB37 Communications (0270) 588440 : Flightdeck Ltd 061-499 9350 CORNWALL: RV Heming Ltd (0637) 872191 : Marine Instruments (0326) 312414 COUNTY DURHAM: Border Communications 091-410 6969
DORSET: Poole Logic (0202) 683093 EIRE: Intronic 010-35321 631007: Long Comms 010 3537337152
ESSEX: Waters & Stanton (0702) 206835 : Selectronics (0268) 691481 HAMPSHIRE: Farnborough Communications (0252) 518009 : Siskin Electronics (0703) 207155 : Nevada Communications (0705) 662145
HERTS: Potters Bar Radio 0707 49456 ISLE OF MAN: Audio & Domestic Spares (0624) 815889
LANCASHIRE: Holdings Amateur Electronics (0254) 59595 : Stewarts Radio (0253) 21163
LONDON (CENTRAL): Pali-Fones 071-436 0022 : Lee Electronics 071- 723 5521 : Ask Electronics 071-637 0590 : Ramsons 071-724 2373
LONDON (EAST): Waters & Stanton (07084) 44765
LONDON (NORTH): Radio Shack 071-624 7174
LONDON (WEST): Martin Lynch 081-566 1120
MERSEYSIDE: Amateur Radio Comms (09252) 29881
NORFOLK: Eastern Communications (0692) 650077 : DP Hobbs Ltd (0603) 615786
NORTH HUMBERSIDE: Peter Rodmell (0964) 550921
NORTHERN IRELAND (LONDONDERRY): Omnicomm (0504) 48295
NORTHERN IRELAND: Tyrone Electronics (0662) 242043
NOTTINGHAMSHIRE: RAS Nottingham (0602) 280267
SCOTLAND: Jaycee Electronics Ltd (0592) 756962
SURREY: Syon Trading (0372) 372587
SUSSEX: BREDHURST ELECTRONICS (0444) 400786
TYNE & WEAR: Alyntronic 091-2761002
WALES: TMP Electronics (0244) 549563 : Electromart (0792) 842135
WEST MIDLANDS: Aviation Hobby Centre 021-782 6560 : Hewards Home Stores Ltd 021 354 2083 : Dewsbury Electronics (0384) 390063
WEST YORKSHIRE: Fish Communications (0484) 420774
WORCESTERSHIRE: Johnson Sound Services (0905) 25740 : SRP Trading (0562) 730672
YORKSHIRE: Air Supply (0532) 50981.



£249.95

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

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

Several readers have commented on *The UK Scanning Directory*, which I mentioned in the June column. Reactions have varied depending on their level of involvement with the hobby, typical comments included 'I was amazed that such information could be published' or 'How do they get away with it' with just a couple of readers saying 'It didn't tell me much that I didn't already know' or 'It has helped to fill in one or two gaps in my own list'. My overall impression is that most people have gained a lot of information from the publication. The publishers hope to produce an updated version soon and are asking purchasers to send them updated information, I will be very interested to see the next edition - if it appears.

A few readers commented that it would be great if the publication was available as a PC compatible ASCII text file so that they could incorporate it into their own frequency databases. This sounds like a very good idea but I suspect it would cause problems for the publishers as it is much easier to copy off the disk than photocopy the whole booklet. Perhaps an ASCII version could be produced for those people who contribute information on disk?

I know that several readers produce and swap frequency lists many of which have been sent to me for inclusion in the column. I am always pleased to receive such information (especially on disk) as it allows me to assess what is happening nationally. I must make it clear that for legal reasons I cannot print specific frequencies, however I do try to include details of new systems and allocations whenever possible.

Databases

Whilst we are on the subject of frequency lists **Jim Cove** of Liverpool wonders how other readers keep track of their frequency information. He has a PC and wonders if there are any simple database programs available which are particularly suited to this task. He wants to be able to enter information into the PC with the receive frequency, transmit frequency (if known), mode, call sign and any other information. He has tried various professional databases but finds that they are usually far too complicated, take up a large amount of memory and cannot cope with mixed format information.

The ideal database would be memory resident with the information stored as a large ASCII file, the size of which would only be limited by the available disk space. The program would operate like a simple ASCII text editor but with specialised search and sort facilities. Information could be entered in free format, apart from the receive frequency which would always

appear at the beginning of an entry. This would be separated by a space from the rest of the information. Each entry would only occupy one line on the screen and could contain a maximum of 80 characters. The program would allow on screen viewing of the information with the ability to update, edit and remove entries. A simple numerical sort could be performed to maintain the list in frequency order. A simple search command would find all the entries relating to a particular frequency or keyword and display them on the screen with the option to output them to a file or printer. The ability to import from and export to other databases in an ASCII format would also be useful.

I remember trying a database program a couple of years ago which had many of the features that Jim is looking for. However I am not sure if it ever became commercially available. I would imagine that there is almost certainly a suitable program available, probably as shareware, can any readers recommend one?

Long Distance Reception

The summer months are now with resulting in enhanced tropospheric propagation conditions on the v.h.f. and u.h.f. bands. Most warm evenings bring in signals from well beyond normal listening range and several readers have been glued to their scanners trying to identify mysterious new signals. One of these is **Percy Tannac** of Hampshire who has monitored French signals in the u.h.f. bands between 440-450MHz, he wonders what they are as they sound a bit like telephone conversations. You are correct Percy, they are telephone conversations. Most European countries use earlier versions of our 900MHz cellular telephone system. These mainly operate at around 450MHz but the French system uses slightly lower frequencies for its system. During the summer months many transmissions from France can be heard particularly along the southern coastline of Britain. These cause considerable problems for users in this country as the transmissions frequently appear on commercial base station receive frequencies. These interfering signals can often be very strong and in some cases may even override more local transmissions.

To add to the problem the interfering signal may on occasion be retransmitted by the base station only to cause additional problems for other base stations in other countries. This used to happen fairly frequently to amateur repeater stations on 430MHz (70cm) as the UK stations use exactly the opposite transmit and receive frequencies as those used in several neighbouring European countries. The end result was that every time

propagation conditions improved the repeaters used to 'lock' each other up. Better co-ordination of repeater frequency allocations has improved this situation.

The police are another user who are particularly troubled in this respect. This is because their Personal Radio schemes use the same frequencies for reception as European cellular base stations use for transmission. A study has been made of these problems but it would seem that only a complete reorganisation of the way frequencies are used by neighbouring countries would resolve the situation. This is likely to cost a considerable amount of money and take many years to achieve but there are the first signs of frequency allocations being co-ordinated within countries who are members of the EEC.

Turning to slightly lower frequencies **Richard Gosnell** of Wiltshire was impressed that readers were able to identify Pakistani Police transmissions on 38.650MHz. He has now set a new challenge - can anyone identify the Russian sounding, CB like transmissions that can be occasionally heard on 25kHz channels between 34.15 - 34.5MHz?

Portable 'Phones

It looks as if my assumption that the CT2 public cordless phone system was dead may have been a bit premature. A new revamped system is now being rapidly installed in certain areas of the UK. The system will be known as 'Rabbit' and is being operated by a branch of Hutchinson Telecommunications. This is a very large international company which may well have enough financial 'clout' to ensure that the system survives the early stages of its inception.

CT2 is like a public version of a standard cordless telephone. It uses digital transmissions on thirty 100kHz wide channels in the 865-868MHz band. The unit can be used like a normal cordless phone if the user has a special base unit in his home, but the handset can also be used outside the home if you are within range of a public phone point. In this case you can only make outgoing calls which you will be charged for electronically. The main objections people had to using CT2 when it was first introduced were the high monthly rental costs and the lack of a facility to receive incoming calls when the handset was used away from home. In order to overcome these problems Hutchinson have put together a very attractive package consisting of a CT2 handset and personal pager. As the company has not had to recover the same level of development costs as the original CT2 operators they can afford to charge much lower rental costs. The personal pager option allows callers to leave CT2 users their phone number which

can then be called at the CT2 users convenience.

CT2 is not the only system being installed at the moment, equipment and antennas for the new GSM digital cellular telephone system is now starting to make an appearance in several areas around the country. The first installations which were sited within the confines of the M25 have now been operating for some time but there are still very few mobiles in existence. As GSM is supposed to offer a much higher grade of service than existing analogue cellular systems I would anticipate that the system operators will wait until a large proportion of the country is served by GSM base stations before they formally launch the new service. Unlike the existing cellular system GSM base stations do not use separate channels for speech and signalling. System control information is conveyed within the digital format used to transmit speech so, it is unlikely that you will hear GSM transmissions unless the system is actually in use.

Antennas

John Bidgood of Hampshire has been experimenting with different antennas and reports good results from an antenna which was originally designed for use on the 27MHz CB band. The antenna in question is called a 'Super Lance' and measures approximately 760mm long. Although it did not give particularly good results on 27MHz (I suspect this is mainly due to its compact dimensions) it has proved quite effective for reception purposes on the v.h.f. air and marine bands and on various v.h.f. and u.h.f. amateur bands, even though it is mounted inside the roof space of his house. John finds that it makes a good second antenna when compared to his externally mounted wideband 'Diamond' discone. As I have said before it often pays to experiment with antennas as they frequently exhibit resonances well beyond their intended operating frequency. Almost any externally mounted antenna will make a big difference to reception when compared to the telescopic or 'rubber duck' antennae supplied with the receiver. My thanks to John for passing on this information.

Industrial Espionage

I make no excuses for returning to the subject of bugging, in this case the use of electronic devices for industrial espionage. Whilst passing time in one of my favourite bookshops I came across a very interesting publication entitled *The Industrial Espionage Handbook* by Hugo Cornwall, Published by Random Century 1991, ISBN 0-7126-3634-X. The author has already written a well-known book which has been

revised several times on the subject of Computer Hacking. This time he turns his attention to Industrial Espionage. Although at first sight this subject may seem unrelated to the usual contents of this column, the book does include several chapters on bugging and scanning related topics, which is the main reason for mentioning it. In addition to these subjects there is a

wealth of other information concerned with collating and interpreting information which I am sure could be used to great effect by readers with specific monitoring interests.

Information

Once again the end of another column, my thanks to all those readers who

have written to me with information and comments regarding the column. Due to the number of letters I receive and the amount of work undertaken during my full time employment I am not usually able to reply directly to readers, however I do try to answer specific questions in the column whenever possible. I also regret that I cannot provide photocopies of articles

which have appeared in back issues of SWM or other magazines. If you require such information I suggest that you either contact the Editorial Offices directly or obtain copies via your local library.

Until next month - Good Listening.

Airband 47 ➡

The next three deadlines (for topical information) are August 7, September 4 and October 9. Replies always appear in this column and it is regretted that no direct correspondence is possible. All letters to 'Airband', c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS. Genuinely urgent information/enquiries, Tel: 081-958 5113.

Abbreviations

AIC	Aeronautical Information Circular	MOD	Ministry of Defence
AIDU	Aeronautical Information and Documentation Unit	MS-DOS	Microsoft Disc Operating System
CAA	Civil Aviation Authority	nav	navigation, navigational
f.m.	frequency modulation	n.d.b.	non-directional beacon
g	grams	nm	nautical miles
ICAO	International Civil Aviation Organisation	PC	Personal Computer
i.f.	intermediate frequency	PCW	Personal Computer Word-Processor
K	1024 bytes	RAF	Royal Air Force
kHz	kilohertz	s.a.s.e.	self-addressed stamped envelope
MHz	megahertz	u.h.f.	ultra high frequency
		VAT	value-added tax
		v.h.f.	very high frequency

SCANNERS IN DONCASTER

YAESU



SONY



KENWOOD

GET HOOKED ON EAVESDROPPING

PHONE FOR FULL DETAILS

THE 'RIG SAVER'

SLIMLINE ■ Allows you to safely mount your hand-held or mobile radio where you can see the controls...

£24.95 + £2p+p

HEAVY DUTY ■ Mounts any single surface.

£29.95 + £2p+p

Adaptable to any vehicle or station use.

Construction made of high quality aluminium.

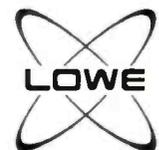


FREE SLIMLINE 'RIG SAVER' WITH ANY NEW VHF/UHF HANDHELD OR SCANNER



FAIRMATE

BEARCAT



YUPITERU

ALAN HOOKER

42 NETHER HALL ROAD, DONCASTER, SOUTH YORKSHIRE, DN1 2PZ
TEL/FAX: (0302) 325690

Open: Monday-Saturday 10-5pm Closed Thursdays

Short Wave Receivers & Scanners
Aerial Accessories & Masts



ELLIOTT ELECTRONICS

for the Radio Enthusiast



RIGS, ANTENNAS, SWR BRIDGES, POWER SUPPLIES, TEST GEAR, COMPONENTS, MORSE KEYS, COAXIAL CABLES, ROTATORS, MICS, PLUGS AND SOCKETS, SWITCHES.



Books for radio amateurs
FAMOUS "Complete Guide to VHF/UHF Frequencies 26-2250MHz"

JAYBEAM AMATEUR ANTENNAS

APPOINTED DISTRIBUTOR

Call us on LEIC.

553293

OR COME AND LOOK AROUND AT

QSY OLD MAN TO

60 Hinkley Road
Leicester LE3 0RB



Instant finance available
Written details on request.



SIGMA EURO-COMM

Importers of Communication Equipment
Manufacturers of Antennas & Accessories
AMATEUR - SCANNERS - ANTENNAS - CB



AOR2000
500kHz-1300MHz
£249

• Free SE700 Discone •

also available

AOR3000A -
AOR2800 - AOR2500
'PHONE FOR A GREAT DEAL!'

Now available

YUPITERU
MVT7000

Hand held
1MHz-1300MHz
FM/AM/WBFM
£269 with FREE SE700



FREE with all Scanners sold via Mail Order - DISCONE ANTENNA



SIGMA SE1300
20-1300 MHz Receive
Transmit 50, 144, 430,
900, 1200 MHz input
power rating: 200 watts
input impedance: 50 ohms.
£49.00 + p&p



SIGMA SE700
70-700 MHz Receive
Transmit 70-500 MHz
Max power on transmit
500 watts impedance
50 ohms.
£22.00 + p&p

Mail Order: Cheques and P.O. made payable to Sigma Euro-Comm.

TRADE ENQUIRIES WELCOME

After 6pm and Weekends 021 705 3441 and 0922 414836

Sigma Euro-Comm, Unit 14, 272 Montgomery St., Birmingham Enterprise Units, Sparkbrook, Birmingham B11 1DS. Tele/Fax: 021 766 8146

METEO-PC

Pixel-Plus announces METEO-PC the cheapest weather satellite decoder ever. Available as a kit or ready built and tested PCB. Unlike other products METEO-PC does not require any alterations to the host PC.

- PMK1 : Full kit (you supply +/-12V & case) £29
- PMB1 : Ready built & tested PCB £39
- PMC1 : Cased & Tested unit £59
- PML1 : PC to Decoder cable £9
- PMS1 : METEO-PC1 software £19
- PMS2 : METEO-PC2 software £49
- VHF1 : 137 MHz receiver kit - available soon

SPECIAL OFFER
Order software &
hardware
together
and SAVE £5

Send SAE to **PIXEL-PLUS DEVELOPMENTS**

Nailstone, Nuneaton, Warks. CV13 0PZ 0530-62565



Professional WEATHER MONITORING at low cost

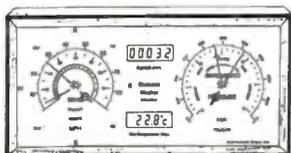
FEATURES (depending on model)

- WIND DIRECTION
- WIND SPEED
- GUST ALARM
- GUST SPEED
- RAINFALL
- SUNSHINE
- OUTSIDE TEMPERATURE
- MIN-MAX TEMPERATURE
- RELATIVE HUMIDITY
- BAROMETRIC PRESSURE
- WOODEN CABINET
- MAINS & 12-24V DC

★★ All main readings at a glance ★★

SEND FOR
COLOUR
BROCHURE

Prices from
only
£189
inc. VAT



R&D ELECTRONICS, PERCY AVENUE, KINGS GATE, BROADSTAIRS,
KENT CT10 3LB. TEL: (0843) 866662 FAX (0843) 866663

SSE HIGH QUALITY ACCESSORIES

THE CHARGEN & SCANNER SPECIALISTS

FOR SCANNING MONITOR RECEIVERS

JIM PSU-101

1. JIM PSU-101 MkIV. A high quality UK manufactured fully regulated 220-240V AC power supply with RADIO BASE HOLDER combined. For use with FAIRMATE HP-100E/200E/2000/1000AB. AOR-1000/1500/2000. YUPITERU MVT-5000/7000/125, VT225. REALISTIC PRO-35/38. ICOM-R1. UNIDEN UBC50XL. BC55XLT. UBC70XLT, ALINCO DJ-X1. UBC100XLT. New unique features include 2 DC output sockets one for radio and the other for accessories. A bracket for BNC socket for antenna connection. Separate DC leads included. 9 volt version for Tandy, etc. available. **PRICE £29.95.**
2. JIM BH-A3. Universal base stand for handheld scanners-transceivers etc. convenient, safe support of radio. Adjustable front stop. Heavy duty chromed base. Bracket for BNC socket for base antenna connection. **PRICE £9.95.**
3. JIM CH-A4. Car mounting holder for handheld scanners- transceivers with BELT CLIP support. Safe and convenient use of scanner etc. in car, truck, boat etc. **PRICE £7.00.**
4. JIM BC-4H. Unique FAST Universal 4 hour + 14 hour Ni-cad charger. "auto-switch-off" timer (no more guessing). Ideal Fairmate, AOR, Yupiteru etc. Leads + 4 sizes of AA holders supplied. **PRICE £19.50.**
5. JIM SM-A1 High quality S meter for scanners CB. **PRICE £26.95.**
6. JIM SM-A2 Signal meter for scanners CB. **PRICE £16.00.**



Payment by postal order or cheque. Prices include postage
Further information on SSE products, send A4 SAE to:

SOLID STATE ELECTRONICS (UK)
6 The Orchard, Bassett Green Village,
Southampton SO2 3NA
Tel: (0703) 769598

SOLID STATE ELECTRONICS (UK)

6 The Orchard, Bassett Green Village,
Southampton SO2 3NA
Tel: (0703) 769598

NEW
PSU-101 MK IV

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

The pictures transmitted by the various WXSATS are at their best during the summer months - May to July, with the sun reaching high elevations over the northern hemisphere. Regular correspondent Brian Dudman of Harrow sent me Fig. 1 showing a sunny Europe with plenty of detail from NOAA 11. Looking closely at the image you can clearly see the fog in the North Sea that hugged the eastern coastline of the UK for several days in May.

The evening passes of three of the American NOAA satellites (numbers 9, 10 & 12), all pass north-bound over the UK during the early evening, reaching us while transmitting infra-red on both channels. This shows that they are in twilight, but they quickly switch to visible imagery well before the UK is reached. However, see the later paragraph!

The quality of the visible image transmitted by each NOAA is different, possibly due to ageing of the satellite's systems. NOAA 9 is the oldest satellite and its visible image is distinctly degraded when compared with NOAA 11, though admittedly one cannot always compare similar levels of illumination. However, comparing visible images from NOAA 9 and 12 which can be almost identical - the difference becomes obvious.

The Russian WXSAT METEOR 3-3 has continued to transmit continuously on 137.40MHz, noted by several correspondents including John Wills of Romford who heard it in early May. Pieter Herko of Poland sent me a picture - see Fig. 3. This satellite came on following the problems with METEOR 3-4 that occurred in April when those images went haywire (I don't know any better technical term)! Peter de Jong of Holland sent in Fig. 5, which shows the strange appearance of the MET 3-4 image at that time.

The class three METEORS all orbit at about 1200km height, which is the highest orbit (apart from geostationary!) of the various WXSATS and so we can follow METEOR 3-3 much further north than the others. Unless you have a poor northerly horizon you can expect to see most of Greenland from this satellite. The Russian WXSAT operating on 137.85MHz is currently (mid-June) METEOR 2-19 which replaced METEOR 2-20 around May 20.

US Equipment for METEOR

Goddard's ozone-mapper ground crew went to Moscow to calibrate their instrument on METEOR 3, and another ozone mapper may also be added to a later METEOR. The Russians have suggested eventually merging the US and Soviet civilian weather satellite systems. This may give better data transmission continuity and more opportunities to operate new instruments.

Thermal Images

Another seasonal aspect of satellite imagery is seen in the summer infra-red images. During the winter months the seas are usually warmer than the land and so appear darker on the NOAA images (but lighter on the METEOR class three images which are reversed). Norway and Sweden show this quite markedly.

As the summer approaches, the temperature rises and during the afternoon the land reaches much higher temperatures than the sea and so becomes very dark. By mid-summer the land rapidly warms up during the day, and so the image shows the warm land as dark and the cooler sea as light. Norway has, by then, reversed its previous appearance and the land has a dark thermal image, contrasting superbly with the snowy mountains.

During the clear, sunny evenings of mid-May I had a look at temperature variations around the UK using each of the NOAA's; the coastal waters were still only about 11°C; the towns showed 13°C and the moors near Plymouth were at 15°C. Paris was still registering 17°C.

Such measurements are possible because part of the picture section that contains the thermal infra-red image has a set of temperature calibration wedges included - see the left edge of Fig. 1. Some software uses this information to directly calculate the temperature, other programs may require 'ground truth' data, i.e., an actual temperature, perhaps measured locally to use as a reference point.

A NOAA Surprise

On May 27, NOAA 12 came over Britain transmitting a visible image during the evening pass and then changed over to infra-red while still approaching the UK, i.e., the opposite of normal operations! NOAA 9 came up shortly after and repeated the surprise. NOAA 10 behaved normally, transmitting infra-red until reaching the UK which was still enjoying summer twilight when it switched, quite normally, to visible. Early the next morning I monitored NOAA 12 which, of course, was in sunlight but found it still transmitting two infra-red images! Within a couple of days all was back to normal with all of the NOAA WXSATS. Some days later I received a disk from Paul Wilson of Macclesfield containing information obtained from Bulletin Boards including SpaceNews and Usenet which carried a note that apparently a software error had caused the problem.

New Products

During the last two years I have invited (at least) three British companies to send me details of their new weather



Fig. 1: NOAA 11 Sunny Europe from Brian Dudma.



Fig. 2: 'Satfoot' screen display from Roger Ray.

satellite products for possible mention in this column. None responded.

Since then, I am pleased to say that Pixel-Plus Developments of Nuneaton (not included above) have sent me details of their new range of equipment, aimed at the increasing WXSAT market. They supply both hardware and software which runs on most current PCs (80286 and above) and have both a basic version, called PMS1 and a more advanced program called PMS2. The hardware can be bought either in kit form or as completely built units, and comprises a decoder and a receiver for the polar satellites, the latter unit I understand is due to be released shortly.

The interface unit (the part which takes the decoded satellite data and passes it to the computer for analysis and display) uses the PC's parallel printer port, which they claim is a unique approach allowing them to upgrade the software more easily and cheaply. For further details and prices contact PPD: Tel (0530) 62565.

Letters

Roger Ray sent me a picture from the screen of the program 'Satfoot' shown in Fig. 2. He has been waiting for a Maplin METEOSAT unit for a number of months but has now decided to stick to the NOAA's and METEORs! One or two other readers have told me similar stories. The quality of photographs being submitted for inclusion in this column is often quite high and I aim to include three or four per edition. I have a backlog of pictures, including some from Peter de Jong, Peter Beardmore, Brian Dudman and others, plus some from Peter Cotton of Comar Electronics and Dave Cawley of Timestep Weather Systems.

Ray Lowes of Sutton-on-Sea has recently set up a WXSAT receiving

system using his '286' PC which has 4Mb RAM and a large capacity hard disk. He is now using the Timestep PROsat scanning receiver and PROsat II software, so wrote simply asking for recent Kepler elements. As always these are available from me; just send an s.a.e. A correspondent from Hulland Ward in Derbyshire has a similar system to Ray's but was worried when he used the gridding facility in PROsat II to put a latitude and longitude grid over the UK and found that it did not place them correctly. However, when he checked the satellite Kepler elements he realised that they were old and so wrote to me for updates. Any program (and there are a number now calculating grid lines) will only place them accurately for a couple of weeks or so, after which the errors will accumulate.

Pieter Herko is monitoring several types of satellite including the WXSATS, the amateur radio satellites such as SARA, UoSAT-2, DO-17, the shuttles and, of course, MIR. Pieter has built his own a.p.t. decoder and sent me some print-outs of NOAA and METEOR passes, one of which (a complete pass of METEOR 3-3 from North Africa to Greenland) is shown in Fig. 3. Pieter also monitors the COSMOS navigation and military satellites that operate in the 150.0MHz band. He asks whether the data heard from these navigation satellites can be decoded? Yes they can, but it is quite an exercise! Somewhere amongst my collection of satellite information I do have a description of how the data can be analysed, but it runs to several pages.

400MHz Band

I Hogan GOFYN of Manchester has been monitoring for 20 years and has recently picked up satellite signals in

JAVIATION

THE VHF/UHF AIRBAND SPECIALISTS

AT LAST

Our new combined VHF/UHF frequency listing running to over 100 pages is now available. The new publication is in the same format as our previous individual lists and is updated with the same regularity. Not only have we *joined* both lists together but added some extra information as well. Compiled by enthusiasts for enthusiasts (sorry about the cliché!) – The best available or so we would like to think.



VHF/UHF Frequency Listing:

£6.50
+ £1p&p

AR-2000

In stock, £269.00 supplied with FREE leather carry case worth £14.99

MVT-7000

Excellent performance, easy to use, supplied with all accessories – £289.00

ICOM IC-R1

The smallest hand-held available. Special offer until end of March – £330.00

AOR AR-2500

We have a small number of units available at a special price of £399.00 including IBM PC software

Carlton Works, Carlton Street, BRADFORD, West Yorkshire, BD7 1DA
Telephone: 0274-732146 Facsimile: 0274-722627

C.M.HOWES COMMUNICATIONS

Mail Order to: Eydon, Daventry,
Northants NN11 6PT
Tel: 0327 60178



EASY TO BUILD KITS!

Building your own equipment is not only interesting and fun, but enables you to build up your station facilities without having to spend a fortune. You could update an older receiver with our new DFD4 Digital Read-out, or build yourself an excellent little rig for holiday and portable use. All our amateur band receivers have matching transmitter kits, so you can start with a simple receiver and build up your station in easy stages.



Novice kits housed in optional "hardware packs"

DFD4 ADD-ON DIGITAL READ-OUT

The HOWES DFD4 enables you to add modern digital read-out accuracy to analogue type receivers and transceivers. The 100Hz resolution will enable you to find stations accurately - be on the right frequency ready to catch those brief messages that you would otherwise miss whilst tuning randomly. The DFD4 can accommodate any IF frequency offset, and VFOs that tune normally or "backwards". We have designed this kit to be as versatile as possible. Why not give me a ring to discuss its use with your radio?

DFD4 Kit: £39-90

Assembled PCB modules: £59-90

ASL5 DUAL BANDWIDTH FILTER

Add extra selectivity to your receiver with the HOWES ASL5. The dual filters provide a narrow (300Hz) CW filter and sharper roll-off than crystal filters on SSB or other speech modes. A great addition to reduce noise and interference with all the popular general coverage receivers. No mods are required to the set, the ASL5 connects in-line with the external 'speaker or headphone socket.

ASL5 Kit: £15-90

Assembled PCB Module: £24-60

DXR10 10, 12 & 15M SSB/CW RECEIVER

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

DXR10 Kit: £26-60

Assembled PCB module: £39-90

SOME OTHER ACCESSORY KITS

	Kit	Assembled
AA2	HF Active Antenna 150kHz to 30MHz.	£8-50 £12-90
AA4	25-1300MHz Active Antenna for scanners	£19-80 £26-80
CBA2	Buffer to connect DFD5 to our receivers	£5-90 £9-50
CSL4	Additional SSB/CW filtering for our receivers	£10-50 £17-40
CTU30	HF Bands ATU for RX or 30W on TX	£31-50 £38-40
CV100	HF Converter for VHF Scanners	£26-50 £37-90
DCS2	"S Meter" for our receiver kits	£9-20 £13-80
DFD5	Digital Readout for use with our receivers	£41-50 £64-50
SPA4	Wide-band Receiver Pre-amp 4-1300MHz	£14-90 £20-90
ST2	Morse Practice/Side-tone Oscillator	£8-90 £14-30
SWB30	SWR/Power Indicator & load	£12-90 £18-50

PLEASE ADD £1-20 P&P for kits or £3-00 for hardware.

ANTENNA INTERFACE

CA30M Hardware Pack plus
CTU30, SWB30 & ST2 Kits.
CA30M: £28-90



HOWES KITS are produced by a professional RF design and manufacturing company. They contain good quality printed circuit boards with screen printed parts locations, full clear instructions and all board mounted components. Sales and technical advice are available by phone during office hours. Please send an SAE for our free catalogue or specific product data sheets. Normally all items are in stock and delivery is within seven days.

72 & 73 from Dave G4KQH, Technical Manager.

the 400MHz band, in particular 400.800MHz. He wonders what services use this band. From my records, the band 400.05 to 400.15MHz is allocated to standard frequency and time satellites, and the 400.15 to 406.00MHz band is allocated to meteorological satellites and sondes, and government telemetry.

Beginners' Kepler Elements

During the last few months I have been describing Kepler elements, those parameters used to keep satellite tracking programs up-to-date. There are just two more items to cover - Mean Anomaly and Drag.

Mean Anomaly: All of the measurements described in previous months (such as Epoch, inclination etc.) allow us to draw the actual orbit of the satellite around the earth, but do not give the satellite's current position in that orbit.

Our reference point is the orbit's perigee, that point nearest to the earth, and our reference time is the Epoch. Starting at 0° (the perigee point itself,) we measure along the orbital ellipse until we reach the satellite, and this angle (measured from the perigee) is called the anomaly.

Drag: This final parameter (sometimes called acceleration) is not always given with Kepler elements. At ground level the atmosphere has a pressure which averages about 1000mb (millibars). As we ascend, the pressure gradually drops because gravity reduces with height above sea level. By a few hundred kilometres the atmosphere is very rare. Consequentially, the orbits of satellites that are passing through the earth's atmosphere are affected, particularly those orbiting below several hundred kilometres. Geostationary, and other distant orbiting satellites are affected differently!

The drag parameter refers to the change (increase) in Mean Motion (MM) of the satellite. As mentioned previously, MM is the number of orbits completed per day. So the atmosphere is actually causing the satellite to speed up as its height reduces, hence the drag has a positive value. Because the orbit of the satellite is reduced in size while the speed increases, an unstable situation arises. The craft is subjected to increasing friction from the ever-more-dense atmosphere and so its surface temperature rises, and eventually, if no action is taken, the satellite 'burns up' in the upper atmosphere - we call it orbital decay.

Orbits approaching decay have an MM of something over 16 revolutions per day. Consequentially, low orbiting satellites such as the Russian MIR complex and the Shuttle will have relatively high drag parameters, whereas the Russian METEOR class 3 satellites have a relatively low drag.

The geostationary satellites will have an extremely low drag. Technically, it is the rate of change of the number of revolutions per day. When missing from an element set, you can usually improve longer term prediction accuracy by using a figure of about 0.000001.

Negative Drag! Logically drag would always have a positive value because the atmosphere will always tend to increase the satellite's mean motion. However, there are one or two complications. These elements are often measured over a short section of the orbit and, given occasional measurement inaccuracies, sometimes the drag parameter can be quoted as negative. Another factor, particularly for the higher orbiting satellites, is the effect of gravity which can occasionally be modified by the presence of the Moon. During periods when the Moon is aligning (appearing near) the satellite, the latter's orbital speed will be slightly (and temporarily) modified. In normal use I avoid using a negative drag factor.

PC Prices

Anyone who watches the computer market cannot have failed to see the continued fall in prices of all categories and types of computer. Given the capability of currently marketed software I am sure that the PC route is the way to travel for anyone who is contemplating taking an interest in the WXSATs.

The choice of suitable systems for decoding picture data (a.p.t.) is wide and considerably improved from the distant days when I bought my first system. (I wince when I see the invoice!) For those people who haven't got a computer but who wish to consider buying one, I would suggest looking closely at the specialist magazines.

Because of my belief that computers provide the best all-round

solution to the future of WXSAT monitoring I have written a detailed section on this topic in my forthcoming book being titled *Weather Satellites and Beyond*. Keep reading in future months for more details!

Framestores

My framestore still remains used almost as much as before I switched to computer operations, and I am pleased to see that many *SWM* readers still use framestores as well, judging from my mail. If you don't have a computer but want to start WXSAT monitoring, low cost framestores could be an answer. The main limitations are the inability to examine sections of the image after the event, and the lack of animation. It is possible to modify a framestore to store more than one image but it is not an easy task.

Predictions

For those who have the equipment to tune into the WXSATs but no predictions program I occasionally include a summary here for a selected day. The table lists AOS (acquisition of signal) time UTC, the LOS (loss of signal), the maximum elevation and whether east or west, and finally whether travelling north or south.

Sunday 26 July 1992

Satellite	AOS	LOS	Maxel	Direction
MET 2-19	0750	0805	40W	NB
MET 3-3	0815	0833	29W	NB
NOAA 12	0901	0915	47W	SB
MET 2-20	1301	1318	54E	SB
NOAA 11	1442	1458	74W	NB
MET 3-3	1745	1805	74W	SB
NOAA 12	1848	1903	75E	NB

Please remember that I cannot be sure whether every satellite listed will be operating. NOAA's 10 and 9 are excluded because they should be off. Either MET 2-19 or 2-20 will be operating, but probably not both.



Fig. 3: METEOR 3-3 Africa northwards from Pieter Herko.

WARC

The World Administrative Radio Conference which took place last February/March allocated or confirmed a number of frequency bands, including those used by various groups of satellites. Here is the list for the 137MHz band.

- 137.000-137.025MHz (25kHz) world-wide primary
- 137.025-137.175MHz (150kHz) world-wide secondary
- 137.175-137.825MHz (650kHz) world-wide primary
- 137.825-138.000MHz (175kHz) world-wide secondary

Frequencies

The WXSATs transmit a.p.t. (picture) telemetry on frequencies within the 137MHz band as shown above. The specific frequencies used are as follows:

- NOAAs 9, 11 a.p.t. on 137.62MHz
- NOAAs 10, 12 on 137.50MHz
- METEOR 2-19 or 2-20 on 137.85MHz
- METEOR 3-3 on 137.40MHz
- METEOR 3-4 or 3-5 on 137.30MHz
- OKEAN 3 on 137.40MHz occasionally

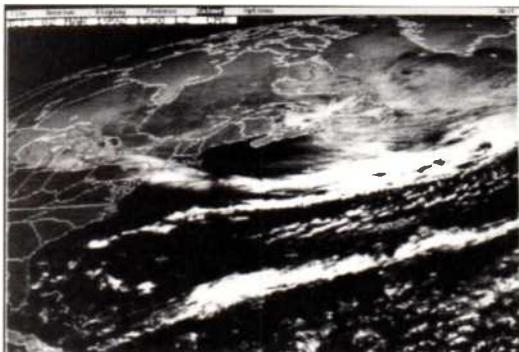


Fig. 4: Western Atlantic METEOSAT-3.



Fig. 5: METEOR 3-4 fault condition during April from Peter de Jong.

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

Steven Verhaegen from Brussels has written with a novel way of decoding Morse transmissions. Steven doesn't have a dedicated morse decoder so he has to use his brain power! The problem is most commercial stations send at 20 w.p.m. or faster, which is far too fast for the beginner. Steven's solution is to record the signals using the fastest speed on a reel-to-reel tape recorder. He can then replay the signal at his leisure using a slower speed. Because the frequency of the side-tone will also be lower, it's a good idea to record the signal with a higher than normal tone.

Rob Margrave of Leamington Spa has written in response to my request for help with Atari ST software. Frustrated with the lack of commercial FAX software he's written his own. The program requires any ST/STE with a mono monitor and at least 512kb of RAM. It interfaces with a Kantronics KPC-2 terminal and enables FAX images to be displayed and processed on the computer. Once an image has been received it can be cropped, inverted and flipped horizontally or vertically. The images can also be loaded and saved using the GEM.IMG format so enabling transfer to other programs. It also includes a facility for unattended down loading of images. Once an image is in memory you move about using scroll bars or zoom-in to interesting detail using the mouse. If anyone would like more information, Rob can be contacted at 24 Canon Young Road, Whitnash, Leamington Spa, Warwickshire CV31 2QU. When writing please remember to include an s.a.e. for the reply.

OOPS!

It's confession time I'm afraid. John Dimond from South Africa has written to point out an error in the May 'Decode' under the section titled Simpler Solution. In this feature I was discussing the way you could salvage a RTTY signal that had been received with the wrong shift. All was fine except for the example I gave to help clarify the process! I suggested that the letters ABMUTO could be converted to 12.759MHz. My mistake was with the first two characters of the example. I should have quoted QWMUTO. Of course, if you haven't seen the May 'Decode' this will all be gobbledegook! My apologies to all those who've been confused.

Hoka Reference Tape

Hoka UK, the Code 3 people have just sent me a copy of a new cassette tape designed to help listeners identify utility modes. The tape is supplied as a standard C-90 audio cassette on which are recorded a wide variety of utility signals. The signals are all real off-air - warts and all, so they sound very

authentic. The fact that they're real signals also means that they can, at least in theory, be decoded. In practice this is not so easy because of the shortcomings of the cassette system. Although the audio cassette systems works quite well with music and voice signals, it's nowhere near stable enough for complex data modes.

The most serious problem is likely to be the motor speed. If the replay unit operates at a slightly different speed to that of the original recorder two main problems occur. The first is that the audio tones of the recorded signal may not align with those of your decoder. If you're using the Code 3 this is not a problem, as the centre frequency can be varied over a wide range. The second and more serious problem is that of the signal timing. The speed difference coupled with the wow or short term speed variations can seriously effect the timing of the utility signals. Although not too much of a problem for simple Baudot signals, the more complex ARQ modes can suffer quite badly.

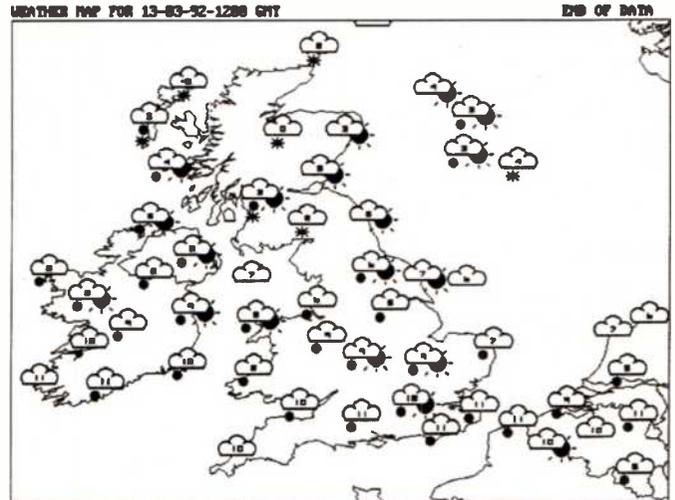
Although all this may sound like bad news this is not the case. The main use of the tape is to allow signals to be recognised by their characteristic sound. For the newcomer this may sound a bit far fetched but in practice it works extremely well.

Let's now look at the tape in a little more detail. The review version was supplied with a small (103 x 138mm) six-page booklet. This contained a detailed listing of all the modes included along with a few technical details. These technical details included the emission type, baud rate, centre frequency and shift. Not only does this give the information you need for decoding but it also helps you identify unfamiliar modes. This information was supplemented by a few notes on each mode describing the common implementations and uses.

The range of modes covered was extremely comprehensive ranging from simple RTTY through to complex military modes. There were a total of twenty-eight modes all of which were time indexed to ease location. Although fairly expensive at £20.00, I found the tape to be invaluable for identifying undecodable signals. An example of this is the many RTTY like signals around 11.214 and 11.254MHz. Using the Hoka tape, I was able to identify a number of these as a NATO pseudo random keyed broadcast mode. For those wanting more information Hoka UK can be contacted at 26 Bury Road, Shillington, Hitchin, Herts SG5 3NY, Tel: (0462) 711600.

DPA Press FAX

After all the speculation about this station in the last few 'Decodes', I now have official confirmation of its fate.



ICS-SYNOP weather chart.

As I suspected, this FAX service migrated to satellite at midnight on March 31. They did in fact send a message that roughly translated said - see you on satellite for the next traffic item. The DCF-30 and DCF45 transmissions on 110.55 and 129.1kHz have also now moved to satellite. All these services are designed for reception by paying subscribers as opposed to some of the h.f. press services that operate a general broadcast mode.

Swed-ARQ

Following my feature on this mode back in the June 'Decode', I've now received some more up-to-date frequencies for you. The frequencies are approximate as the service tends to move around quite a lot due to the use of ex-amateur equipment rather than full spec commercial gear.

6.981, 10.1516, 10, 1525, 10,1659, 12.103, 13.866, 14.406, 14.524, 14.8144, 14.878, 14.9035, 14.97, 17.4585, 18.258, 18.688, 18.692, 18.810, 18.947, 19.2181, 19.426, 19.622, 20.012, 20.607, 20.7, 20.811, 20.9194, 20.9206, 20.922, 20.944, 20.947, 20.960, 20.982, 20.987, 20.99, 22.9306, 23.0787, 23.506, 23.528, 23.548, 23.586, 23.593, 25.224, 26.6619MHz.

If you have any detailed information on complex mode frequencies please drop me a line.

Piccolo

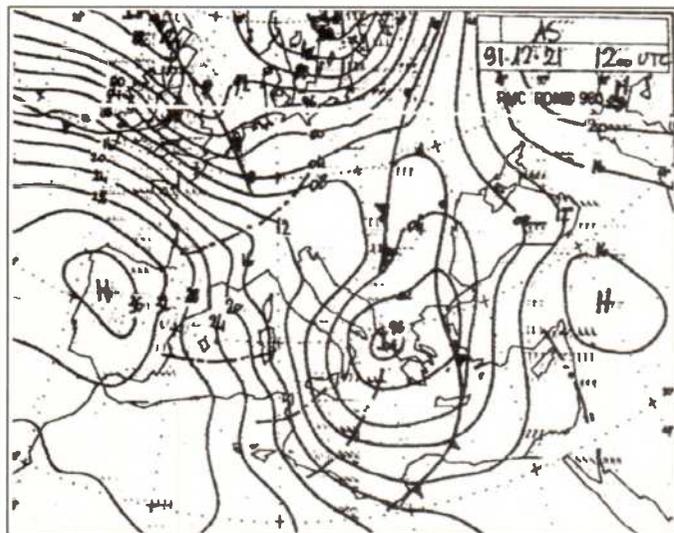
Continuing my series of complex mode explanations, this month it's the turn of this sophisticated British system. The system was originally developed for use by the UK Foreign and Commonwealth Office for communications with its embassies around the world. The communications problems to embassies in foreign countries are significant for a number of reasons. Most of these are

associated with their location in city centres. This means that there's rarely room for large antennas and there's likely to be a high level of man-made noise. This coupled with the long route lengths adds up to a significant communication problem.

According to the *Radioteletype Code Manual* (Klingenfuss) the first experimental Piccolo system was installed in Delhi in October 1962. Since that original installation, the system has undergone many developments culminating the current, Mk VI, version. With most of the embassies now using satellite systems, the main user seems to be the Royal Air Force. Perhaps one of the most unusual uses of the system was for the transmission of a regular newspaper to the QE2 from Portishead. The Piccolo system was chosen primarily for its extremely low error rate.

Having taken a look at its history, let's now dig a little deeper into the operation of the system. Perhaps I ought to start by explaining why it's called Piccolo. This is simply because the system uses a combination of tones that sound just like a piccolo!

The original MK1 system used thirty-two tones - one for each of the combinations available in the ITA2 RTTY alphabet. When operating, the appropriate tone was sent for a period of 100ms to represent each character. In order to keep to a narrow bandwidth, each of the tones was spaced a mere 10Hz apart. This gave a total bandwidth requirement of 370Hz. This narrow spacing also placed considerable demands on the frequency stability and accuracy of the transmitter and receiver. The specification demanded an overall accuracy of ± 1 Hz. One of the keys to the high reliability of the system was the comparatively long duration of each element of the signal. The 100ms tone length leaves plenty of time for the receive filters to isolate the



FAX image received by George Newport.

tone even through heavy noise and fading. Typical error rates on this system were an excellent 1 in 10⁴. It's worth noting that this is achieved without any built-in error correction system.

Moving on to the latest, Mk VI version, we find that the system has been simplified somewhat and now uses either six or twelve tone pairs. By far the most common variant uses the sixtone option and runs at an effective data rate of 50 or 75 baud. In this system the six tones are spaced 20Hz apart with each character comprising a unique combination of two tones. Because two tones are used, each is sent for 50ms instead of the original 100ms used in the thirty-two tone version. Although slightly less reliable than the original system, the performance is still excellent. The main advantage is a greater tolerance to frequency variation and a subsequent reduction in equipment cost.

Having had an insight into this mode, your next question I'm sure is - how can I decode it? This is not easy as there are very few systems on the market that can handle Piccolo. The only ones I'm aware of are the Hoka Code-3 (option 2) and Universal M-8000. One further complication is the need for a very stable receiver and a lot of patience - this mode is extremely tricky to tune in accurately. Just to finally put the dampers on, should you successfully lock on to a Piccolo signal you'll find that the vast majority of the traffic is encrypted. For those who'd like to tune in just to see what a Piccolo signal sounds like, here are a few frequencies to try: 14.7095, 15.855, 16.2695, 20.655 and 20.2663MHz

Those of you with baud rate measurement facilities will find that Piccolo signals give a measured rate of 13.33 baud. This is not the true baud rate but simply a result of the 50ms tone duration.

ICS-SYNOP

This new decoding package has just been released by ICS Electronics in Arundel. As the name implies, ICS-SYNOP has been designed to process the SYNOP RTTY data that's transmitted by so many weather stations. For those not familiar with these transmissions, they comprise detailed weather reports from monitoring stations all over Europe. In order to keep the data in a common format the reports are sent to a strict code which is called SYNOP. The final transmission comprises a series of five figure groups which contain the station identifiers along with the detailed weather reports. Perhaps the most popular UK station for this data is Bracknell Meteo on 4.489MHz using 50 baud RTTY. The problem facing most readers is how to make use of the received information. There have been several solutions printed through this column but perhaps the easiest is to use a commercial decoding package such as the ICS-SYNOP.

This particular implementation has been designed to operate either with ICS-FAX, ICS-FAX 2 or the PK-232 terminal unit. In essence it needs an external RTTY-ASCII decoder and processes the received ASCII data.

Once the data has been received the package is able to present the information in a wide range of different formats. In addition to straightforward text displays, the decoded data can be graphically represented. The graphic display is by far the most interesting and enables the data to be examined in many different ways. For example you can choose to just display the temperatures for Europe or just the UK. You can also select various combinations so as to give you just the information you need. I've shown an example in the column which gives the cloud cover, temperature and

precipitation for the UK. One of the great advantages of using SYNOP data for weather charts is the up-to-date data - many of the measurements are only a few hours old.

Like many modern packages ICS-SYNOP is only available for IBM PC compatibles. In order to take advantage of the graphic displays you will need an EGA or VGA display. Although it will work with CGA and Hercules displays, you will lose the graphic display option. Once the data has been captured there are various storage options for the processed images. They can either be saved to disk or output to a standard dot matrix or laser printer. For those with Paint packages, the images can be saved in PCX format for later processing. You can also create computer slide shows of your favourite images. In addition to general amateur usage, I would have thought this type of package would make an extremely effective educational tool.

The current price for the ICS-SYNOP is £99.95 plus £3.00 post and packing. For more details contact ICS Electronics at Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD, Tel: (0903) 731101.

Xinhua News Agency

Paul Chace of Chichester has recently sent me a copy of a QSL letter from this popular news agency. Included in this letter were details of their English transmissions beamed to Europe. Knowing that many of you have a strong interest in press stations I've reproduced the details here:

2330 to 0200UTC, 9.417 (BZP59), 9.491 (BZR69)
0530 to 0830 and 0930 to 1230UTC, 14.367 (BZP54), 18.872 (BZR68)
1330 to 1600UTC, 11.68 (BZP51), 12.265 (BZR62)
1730 to 1900UTC, 9.417 (BZP59), 9.491 (BZR69)

ERA Printer Link

Back in the April 'Decode' I included a plea for help from Ray Pugh of Southport. He wanted help in finding a suitable printer for his ERA Microreader. Well, P. Dennison of Thornton Cleveleys has written recommending the Star LC-20 printer and SPC-10 serial interface. The connection between the ERA and printer is made using a screened lead with the centre connected to pin 3 of the 25 way D plug while the screen goes to pin 7. You will also need to set the d.i.p. switches on the SPC-10 as follows:

- 1 on
- 2, 3, 4 and 5 off
- 6 on
- 7 and 8 off

With the settings complete you can

connect both units together and power-up. My thanks to P. Dennison for providing this information.

Frequency List

Finally here's the frequency list for this month which has been compiled from logs sent in by: **George Newport**, **Ted Rickett**, **Day Watson**, **Jan Nieuwenhuis**, **Lee Williams** and **Steven Verhaegen**. If you would like a copy of my complete list just send three first or second class stamps to the address at the head of the column.

The format for the list is the usual, frequency, mode, speed, shift, call sign, time and notes.

- 2.4235, ARQ, 100, 170, SAB, -, Goeteborg Radio
- 3.1725, RTTY, 50, 850, 1MB1, -, Rome Meteo
- 3.3319, Autospec, 68.5, 85, -, -, Oil Rig?
- 3.517, CW, -, -, GNI1, 2133, Niton Radio
- 3.6073, CW, -, -, GKZ1, 1614, Humber Radio
- 3.6078, CW, -, -, GHD2, 1630, Hebrides Radio
- 3.652, FAX, 120, 576, -, -, RN London
- 3.731, FAX, 120, 576, GXH, 2032, USN Thurso
- 4.2025, FAX, 90, 576, RAT21, -, Moscow Meteo
- 4.211, CW, -, -, LGB, 1725, Rogaland Radio
- 6.918, FAX, 120, 576, ECA7, 1734, Madrid Meteo
- 7.625, FAX, 120, 576, 1BH, 1355, USAF Vicenza
- 7.806, RTTY, 50, 400, -, 2000, Tanjug Press
- 7.959, RTTY, 50, 400, 9BC23, 2050, IRNA Press
- 8.167, FAX, 60, 288, LQB9, 2208, DyN Buenos Aries
- 10.2885, ARQ-E, 96, 170, -, 0627, MFA Bonn
- 10.536, RTTY, 50, 400, CFH, 2300, Halifax Meteo
- 11.1236, FEC-A, 96, 400, DGL26L2, -, PIAB Bonn
- 11.4235, FEC, 100, 170, SPW, -, Warsaw Radio
- 12.3145, FAX, 120, 576, -, 2112, UNID US Navy
- 13.510, FAX, 120, 576, CFH, 2015, CF Halifax
- 13.8758, ARTRAC, 125, 90, -, 0558, MFA Budapest
- 14.573, RTTY, 50, 400, -, 0707, JANA Tripoli - arabic
- 18.932, RTTY, 50, 400, -, 1200, Algerian Press APS
- 17.0226, FEC, 100, 170, WLO, 2031, Mobile Radio
- 18.093, FAX, 120, 576, LRD84, 2148, Buenos Aries Meteo
- 19.697, CW, -, -, OST, 1252, Oostende Radio
- 19.862, FAX, 120, 576, NPN, 1640, USN Guam
- 20.0118, Twinplex, 100, -, -, 1752, Pakistan Emb, Belgrade

GUIDE TO FACSIMILE STATIONS

12th edition • 416 pages • £ 20 or DM 50

The recording of FAX stations on longwave and shortwave and the reception of meteorological satellites are fascinating fields of radio monitoring. Powerful equipment and inexpensive personal computer programs connect a radio receiver directly to a laser or ink-jet printer. Satellite pictures and weather charts can now be recorded automatically in top quality.

The new edition of our FAX GUIDE contains the usual up-to-date frequency lists and precise transmission schedules, including those of Bracknell Meteo and Royal Navy London. It informs you about new FAX converters and computer programs on the market. The most comprehensive international survey of the "products" of weather satellites and FAX stations from all over the world is included: 358 sample charts and pictures were recorded in 1991 and 1992! Here are that special charts for aeronautical and maritime navigation, the agriculture and the military, barographic soundings, climatological analyses, and long-term forecasts, which are available nowhere else.

Additional chapters cover

- List of 310 frequencies monitored in 1991 and 1992. Call sign list.
- Exact schedules - to the minutel - of 90 FAX stations, and of meteorological satellites GMS (Japan), GOES (USA), and METEOSAT (Europe).
- Abbreviations. Addresses. Regulations. Technique. Test charts.

Further publications available are *Guide to Utility Stations* (10th edition), *Radioteletype Code Manual* (11th edition) and *Air and Meteo Code Manual* (12th edition). We have published our international radio books for 23 years. They are in daily use with equipment manufacturers, monitoring services, radio amateurs, shortwave listeners and telecommunication administrations worldwide. Please ask for our free catalogue, including recommendations from all over the world. For a recent book review see the *Decode* section in *Shortwave Magazine* 8/91. All manuals are published in the handy 17 x 24 cm format, and of course written in English.

Do you want to get the *total information* immediately? For the special price of £ 88 / DM 245 (you save £ 15 / DM 40) you will receive all our manuals and supplements (altogether more than 1700 pages!) plus our *Cassette Tape Recording of Modulation Types*.

Our prices include airmail postage to everywhere in the world. Payment can be by £ or DM cheque, cash, International Money Order, or post giro (account Stuttgart 2093 75-709). Dealer inquiries welcome - discount rates on request. Please mail your order to ☉

Klingenfuss Publications
Hagenloher Str. 14
D-7400 Tuebingen
Germany
Tel. 01049 7071 62830

PACKET/DIGITAL RADIO

"KANTRONICS VERSION 5.0 UPDATE NOW IN STOCK"

EXCITING NEW PRODUCTS FOR 1992!

Over the past year we have spoken to many of you at radio rallies and telephone to find out the sort of products you want to see in 1992. As a result we have come up with what we feel are interesting new additions to our already extensive range (the UK's biggest).

OUR NEW 4 PORT PC-TNC.....

For those with really serious applications in mind by the time you read this ad our new FOUR port PC card will be available. The impressive specifications includes:
Port 1 - VHF/UHF 1200 baud
Port 2 - HF (300) & VHF/UHF 1200 Baud
Port 3 - 9600 baud (licensed from G3RUH of course)
Port 4 - Hi-speed/PSK header

The world standard G8BPQ networking software has already been written for the card and is of course provided free of charge with the card together with a modified version of the excellent BayCom terminal for those who just want to get out there and enjoy packet at it's best. **AVAILABLE NOW!**
Phone/write for details

OUR AMAZING MINI-PAK SYSTEM....

If you are not using packet yet and you own a PC you ought to be seriously considering our Mini-Pak system. At under £80 it represents excellent value and uses an especially prepared version of the excellent BayCom software (under license). **AVAILABLE NOW!** Phone/write for details. **SEE MARCH 91 HRT REVIEW!**

If it's in stock (and it usually is) we will despatch it the same day.

NOTE: Prices include VAT, carriage extra.

A FEW OF OUR OTHER PRODUCTS..

AEA
PK-232MBX+AMTOR MAILBOX...£339.95
PK-88 VHF/HF TNC + new MBX.....£149.95
PCB-88 PC internal card TNC.....£149.95

KANTRONICS
KPC2 HF/VHF with Wefax£168.50
KPC4 VHF/VHF dual port£247.25
KAM all mode with Wefax.....£291.00

PACCOMM
HANDIPACKET as used on MIR...£199.00
PC-320 dual port PC card£ 159.00
TINY-2 with PMS version 3.0.....£ 149.00

SOFTWARE & LEADS

We supply software for most computers **FREE** of charge with all TNCs & Multimodes. We also stock leads for just about any TNC - Computer/Radio radio plus on real-time clocks, back-up and software DCD boards.

CONFUSED NEWCOMER?

Don't be shy, we are here to help. Call or write for our latest catalogue/price list. We also stock good books and demonstration tapes. Call anytime from **8am-8pm Mon-Sat**.

Siskin Electronics Ltd

2 South Street,
Hythe, Southampton,
SO4 6EB.
FAX: 0703-847754

Tel: 0703-207587,207155



THE AVIATION HOBBY CENTRE

1st FLOOR, MAIN TERMINAL BUILDING,
BIRMINGHAM INTERNATIONAL AIRPORT
BIRMINGHAM B26 3QJ

Telephone: 021 782 2112 or 021 782 6560

OPEN 7 DAYS A WEEK (including bank holidays)

Why not pay us a visit and watch the aeroplanes at the same time. We have two shops, one on the first floor by Mag-Lev (have a free ride to BR station and back) and one in the airport's viewing gallery (viewing gallery open everyday - admission 30p).

Airband radios from £9.95 and scanners from £149 plus a variable selection of good secondhand and part exchange models.

We stock radios by Fairmate, Jupiter, Icom, Steeplestone, Textet etc., models and prices to suit you.

Come and see the finest range of books on aircraft and associated subjects there is; by publishers such as Ian Allan, Airlife, Putnam, PSL, Haynes, MCP and many more. Air maps, frequency charts, books on ATC, even books on how to fly a Cessna or a Jumbo Jet, we stock 'em all. Books for the student pilot and PPL, checklists, flight cases, current topo charts always in stock, nav-flight computers and much more. We also stock aviation postcards, posters and badges (callers only). Can't visit? Then send £1 for our mail order catalogue or telephone us on:

021 782 2112 or Fax: 021 782 6423

We accept all major credit cards and cheques with bankers card number (up to £500 for personal callers with I.D.)

ALSO: Why not take advantage of our **SPECIAL OFFER:-**
Our most popular multi-band radio with a 'rubber duck' aerial -
Airband - FM - PSB, batteries included,
12 months guarantee - **£24.95 POST FREE!**

THE KITS WITH ALL THE BITS!

Guaranteed complete to the last nut!

COMPACT 80m CW QRP Tx/Rx

DTR3 Kit - £87.50 P&P £3.00 Ready Built - £148.00

- ★ Stable VFO ★ Sideloss ★ Audio Filter
- ★ Requires 12/14 VDC ★ Very detailed instructions ★ Black steel case
- ★ Printed panel

40m & TOP BAND VERSIONS
ALSO AVAILABLE

ANTENNA TUNING UNITS

TU1 Kit - £41.25 Ready Built - £57.50

TU2 Kit - £51.00 Ready Built - £72.00

P&P £3.00

- ★ Large dia. coil ★ High grade capacitor ★ Built in balun ★ Circuits to match your antenna ★ Up to 30 Watts of CW ★ TU2 has sensitive QRP/SWR meter
- ★ TU1 is ideal for SWL

QRP SWR METER

- ★ Specially designed for QRP ★ HF 1-30MHz
- ★ Can be set down to 1/2 watt for FSD
- ★ Ideal for milliwatting ★ Low insertion loss 0.2dB

TUA1 Kit - complete with case & meter £18.00 P&P £1.00

CARLTON (Receiver)

80-40-20m Dc Rx

- ★ Receives USB, LSB and CW ★ Very sensitive and selective ★ Simple modular construction
- ★ 12-14 volt battery operated ★ Printed fascia

Kit complete with case - £88.50 P&P £3.00

PSU 15 REGULATED POWER SUPPLY

- ★ Ready built ★ Mains Input ★ 13.8V @ 1.5A output ★ Ideal for DTR3 & 'Carlton' ★ Fully protected

Supplied ready built - £52.00 P&P £4.00

Send SAE for brochure or call Alan G4DVW on 0602 382509

LAKE ELECTRONICS

7 Middleton Close, Nuthall, Nottingham NG16 1BX
(callers by appointment only)



long medium & short

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

Whilst preparing LM&S I use a good communications receiver and a number of outdoor antennas to check, as far as possible, that each broadcaster is still active on the frequency reported. My checks suggest the SINPO ratings quoted by some are over-generous. Study the criteria of the SINPO code before making an assessment, enthusiasm should not override judgment.

Long Wave Reports

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

Following his reception of l.w. transatlantic signals in Canada earlier this year, **Alan Roberts** (Quebec) checked the band late at night during April. Conditions were unsuitable except on April 15, when he heard a woman speaking in a language he did not recognise, followed by music that appeared to be N.African in origin. It seems likely that he was hearing a signal from Bechar, Algeria (1000kW), but no ident was heard. The signal was poor.

Alan says, "I'd always expected long distance l.w. reception to be better in winter than in summer, but openings on two nights this month (May) show how one could never be sure when DXing". Two DX signals were logged on May 8. At 0305UTC he heard a man speaking in French on 216kHz, assumed to be R.Monte Carlo via Roumoules (1400kW), but no ident obtained. At 0410 he heard a woman speaking in French on 162, probably Allouis, France (2000kW). On May 30 at 0405 a talk in Arabic and N.African music was heard on 153, probably from Bechar.

Medium Wave Reports

Whilst on the top of the Mendip Hills, **Sid Morris** searched for m.w. transatlantic DX on the nights of May 15-17. His Sangean ATS 803 was connected to a car radio antenna and he logged a total of 8 stations in Canada and the USA.

Broadcasts from 9 stations in Canada, the USA, the Caribbean and S.America were heard in Grimsby by **Jim Willett**. He logged VOCM in St.John's, NF on 590 as SIO222 at 2330. This was quickly followed by WINS in New York on 1010, SIO222 at 2350. By 0100 the signal from CJYQ in St.John's on 930 was peaking SIO333. The Atlantic Beacon, Turks & Caicos Is. on 1570 was heard at 0205 and R.Globo in Rio, Brazil became audible on 1220 at 0230, both SIO222.

In Worthing, **Ron Damp** heard the signals from CJYQ on 930 at 0045, rated 22222. Although he searched the band until 0300 only one other transatlantic signal was heard. It was WNEW in New York on 1130 and was 23222 at 0250.

After dark sky wave signals from stations in N.Africa have also been heard. From Algeria **Sheila Hughes** (Morden) logged Algiers 891 (600/300kW) 33333 at 2105; Alger 981 (600/300kW) 33333 at 2120; Les Trembles, 549 (600kW) 32222 at 2235; Ain Beida 531 (600/300kW) 22222 at 2345. Over in Newry, Co.Down **Eddie McKeown** heard Tunis-Djedeida, Tunisia on 630 (600kW) 32132 at 2032. **George Millmore** (IOW) also found reception from N.Africa and S.Europe quite good after dark. He rated the 6kW signal from Messina, Italy on 1143 as SIO222.

Short Wave Reports

Conditions in the 25MHz (11m) band have enabled some signals to reach their intended target area, but outside those areas reception has been very unreliable. Potent signals from RFI via Issoudun on 25.820 (Fr to E.Africa 0700-1550) have reached **Jana Arunachalam** in Thumrait, Oman, typically 44445 at 1050. Earlier in the year the signals from RFI on 25.820 and DW via Julich on 25.740 (Ger to E.Asia, M.East 1100-1355) were reaching E.Canada, but Alan Roberts says the transmission times are now unsuitable for the prevailing conditions. At best the signals rate 25222, but often they are 15111 or inaudible.

Reception of these signals is usually poor in the UK

Medium Wave Chart

Freq kHz	Station	Country	Power kW	Listener
520	Hof-Saale	Germany	0.2	C*,K*
531	Ain Beida	Algeria	600	I*,L*
531	Leipzig	Germany	100	K*,M*
531	Oviedo	Spain	10	K*
540	BRT-2 Wavre	Belgium	150/50	E*,K*,L,M,O
549	Les Trembles	Algeria	600	I*,L*
549	DLF Bayreuth	Germany	200	K*,L,M,D
558	Espoo	Finland	100	K*
558	Valencia	Spain	20	K*,L*
567	Berlin	Germany	100	K*
567	RTE-1 Tullamore	Ireland (S)	500	D,E,L,M,O
576	Stuttgart	Germany	500	K*,M*
585	RF Paris	France	8	L,O
585	RNE-1 Madrid	Spain	200	K*,L*,M
594	Frankfurt	Germany	1000/400	K*,L*,M*
594	Muge	Portugal	100	K*,L*
603	Lyon	France	300	L
603	Sevilla	Spain	20	K*
603	BBC-4 Newcastle	UK	2	E*,K*
512	RTE-2 Athlone	Ireland (S)	100	D,E*,L,M
612	Lerida	Spain	10	L*
612	Tallinn	Estonia	100	L*
621	RTBF-1 Wavre	Belgium	80	L,O
621	Barcelona	Spain	10	K*
630	Vigra	Norway	100	K*,L*
630	Tunis-Djedeida	Tunisia	600	K*
639	La Coruna	Spain	100	K*,L*,M*
648	BBC Orfordness	UK	500	F*,J*,K*,L,M.)
657	Burg	Germany	250	K*
657	RCE-2 Madrid	Spain	20	K*,L*
657	BBC Wrexham	UK	2	E,M
666	Bodenseesender	Germany	300/180	K*
666	Lisboa	Portugal	135	L*
675	Marseille	France	800	E*,K*
675	Hilversum-3 Lopik	Holland	120	B,L
684	RNE-1 Sevilla	Spain	250	K*
684	Beograd	Yugoslavia	2000	K*
693	Berlin	Germany	250	K*
693	BBC Droitwich	UK	150	E*,M,N,O
702	Aachen/Flensburg	Germany	5	K*
711	Rennes 1	France	300	B,H,L,M*
711	Heidelberg	Germany	5	K*
720	Norte	Portugal	100	K*
720	BBC-R4 London	UK	0.5	E*,L
729	RTE-1 Cork	Ireland (S)	10	D,M
729	Oviedo	Spain	50	K*,L*
738	Paris	France	4	K*,L*
738	RNE-1 Barcelona	Spain	250	K*,L*
747	Hilversum-2 Flevo	Holland	400	B,J,K*,L,M
756	Brunswick	Germany	800/200	K*,L*
756	BBC-R4 Redruth	UK	2	L
765	Sottens	Switzerland	500	K*,L*,M
774	BBC-Enniskillen	Ireland (N)	1	D
774	San Sebastian	Spain	50	K*,L*
783	Berlin	Germany	1000	K*,L*,M*
792	Sevilla	Spain	20	K*,L*
801	M'chen-Ismaning	Germany	300	E*,K*
801	RNE-1	Spain	20	K*
810	SER Madrid	Spain	20	K*
810	BBC-Burghead	UK	100	M
810	BBC-Westerglen	UK	100	K*,L*
828	Corca Dhuibhne	Ireland (S)	1	D
837	Nancy	France	200	K*,L*
837	R.Popular, Sevilla	Spain	10	L*
846	Rome	Italy	540	B,K*,L*,M
855	Berlin	Germany	100	K*
855	Murcia	Spain	125	K*,L*
864	Paris	France	300	K*,L*,M
873	AFN via Frankfurt	Germany	150	E*,K*,L*,M*,P*
873	Zaragoza	Spain	20	L*
882	COPE Malaga	Spain	5	K*
882	BBC-Washford	UK	100	H,K,L,M,D
891	Algiers	Algeria	600/300	I*,K*,L*,M*
891	Hulsberg	Holland	20	K*,L*
900	Milan	Italy	800	K*,L*
909	BBC-Brookmans	UK	140	M
909	BBC Moorside	UK	2	E
918	R.Intercot.	Spain	20	K*,L*
927	BRT-1 Wolvenem	Belgium	300	B,K*,L,M,D
936	Bremen	Germany	100	B,K*,L*,M*
936	SER Lerida	Spain	2	K*
945	Toulouse	France	300	K*,L*
954	RCE Madrid	Spain	20	K*,L*
963	Sofia	Bulgaria	150	K*
963	Pori	Finland	600	K*,L*,M
972	Hamburg	Germany	300	B,K*,L*,M*
981	Alger	Algeria	600/300	I*,L*
990	SER R Bilbao	Spain	10	K*
999	R.Popular, Madrid	Spain	20	K*
1008	Hilversum-5 Flevo	Holland	400	B,L,M,O
1008	Malaga	Spain	?	K*
1017	Rheinsender	Germany	600	K*,L*,M*
1017	RNE-5 Burgos	Spain	5	K*
1026	Graz-Dobl	Austria	100	K*
1035	Prog 3 Lisbon	Portugal	120	K*,L*
1044	Dresden	Germany	250	K*
1044	Sebaa-Aiouen	Morocco	300	L*
1053	BBC-R1 Droivnich	UK	150	M,O
1053	Zaragoza	Spain	10	K*
1062	Kalundborg	Denmark	250	K*,L*
1071	Brest	France	20	H,K*,L
1071	Lille	France	40	O
1071	Rajkot	India	1000	A
1071	Bilbao	Spain	5	K*
1080	Katowice	Poland	1500	K*,L*
1089	BBC-Brookmans	UK	150	M
1098	Nitra	Czechoslovakia	1500	L*
1098	Dammam	Saudi Arabia	5	A
1098	RNE-5	Spain	10	K*
1107	AFN via Munich	Germany	40	K*

Freq kHz	Station	Country	Power kW	Listener
1107	RNE-5 Barcelona	Spain	20	K*
1116	SER-Pontevedra	Spain	2	K*
1125	La Louviere	Belgium	20	K*,L,O
1125	RNE 5	Spain	10	L*
1134	Valencia	Spain	10	L*
1134	Zadar	Yugoslavia	1200	K*,M
1143	AFN via Stuttgart	Germany	10	K*,M
1143	Messina	Italy	6	L*
1152	RNE-5	Spain	10	K*
1161	Stara Zagora	Bulgaria	500	*
1161	Strasbourg (F.Int)	France	200	K*
1179	Santiago	Spain	10	K*
1179	Solvelborg	Sweden	600	G*,K*,L*,M,P
1198	Kuurne	Belgium	5	K*,L,O
1198	Al-Hiswah	Yemen	400	A
1197	VOA via Munich	Germany	300	K*,M
1206	Wroclaw	Poland	200	B
1215	COPE Castellon	Spain	2	K*
1224	Vidin	Bulgaria	500	K*
1233	Melnik	Czechoslovakia	400	K*
1242	Marseille	France	150	K*
1251	Huisberg	Netherlands	10	K*
1260	VOA via Rhodes	Greece	500	K*
1260	Valencia	Spain	20	K*,L*
1269	Neumunster	Germany	600	E*,K*,L*,M
1278	RTE-2	Ireland (S)	10	B,O,E,K*,L*,M
1287	Litomysl/Liblice	Czechoslovakia	300/200	K*,L*
1287	Melnik	Czechoslovakia	400	B
1296	San Sebastian	Spain	5	K*
1296	BBC Orfordness	UK	500	K*,L*,N*,O
1305	Orense (RNE5)	Spain	5	K*
1314	Kvitsoy	Norway	1200	E*,J*,K*,L,M
1323	R.Moscow/Leipzig	Germany	150	B,K*
1332	Rome	Italy	300	K*,L*
1341	BBC-Lisnagarvey	Ireland (N)	100	E*,L*
1350	Nancy/Nice	France	100	K*,M
1350	VOA via Manama	Bahrain	50/25	A
1359	Berlin	Germany	250/100	K*
1368	Manx R., Foxdale	DOM	20	D,E*,K*
1377	Lille	France	300	K*,L,M,O
1377	Ukraine	Ukraine	50	C
1386	Kalinograd	Russia	500	K*,L*,M
1395	R.Tirana/Lushnja	Albania	1000	B,K*,M
1404	Brest	France	20	H,K*,L
1413	BBC/Masirah Is.	Oman	1500	A
1413	RCE Zaragoza	Spain	20	K*
1422	Heusweiler	Germany	1200/600	E*,K*,L*,M*
1422	Riyadh	Saudi Arabia	20	A
1431	Dresden	Germany	250	K*
1449	Berlin	Germany	5	K*
1487	TWR Monte Carlo	Monaco	1000/400	K*,L*,M,N
1476	Wien-Bisamberg	Austria	600	B,K*,L*,M
1494	Clermont-Ferrand	France	20	K*,L*
1503	Stargard	Poland	300	K*,L*
1512	BRT Wolvenem	Belgium	600	E*,J*,K*,L,M,O
1521	Kosice	Czechoslovakia	600	K*,L*
1530	Vatican R., Rome	Italy	150/450	I*,K*,L*
1539	Mainflingen	Germany	700	K*,L*,M
1557	Nice	France	300	K*
1566	Samen	Switzerland	300	K*
1575	Burg	Germany	250	K*,M
1575	Genoa	Italy	50	L*
1583	Langenberg	Germany	400/800	E*,K*,L*,M*,N
1602	Vitoria	Spain	10	K*
1611	Vatican R., Rome	Italy	5	J*

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

Listeners:

- A: Jana Arunachalam, Thumrait, Oman.
- B: Vera Brindley, Woodhall Spa.
- C: Tim Bucknall, Congleton.
- D: Tim Bucknall, Lisburnis.
- E: Scott Caldwell, Warrington.
- F: J. Eaton, Woking.
- G: Francis Hearne, Bristol.
- H: Simon Hockenhill, E.Bristol.
- I: Sheila Hughes, Morden.
- J: Rhoderick Illman, Oxford.
- K: Eddie McKagown, Newry.
- L: George Millmore, Wootton IOW.
- M: Sid Morris, Rowley Regis.
- N: Tom Smyth, Co.Fermanagh.
- O: Phil Townsend, E.London.
- P: Michael Williams, Redhill.



UAE
Radio &
TV Dubai
pennant.

ARE

COMMUNICATIONS '92
"The shop with the smile"

NOW REVITALISED!

ARE are pleased to announce that we have re-opened under new management and with what is the widest range of equipment ever offered from a single store in London. Not only do we offer our very popular Icom modifications but we also keep an extensive range of other receivers available, plus a good range of secondhand equipment with realistic prices.

REMEMBER, we are only a phone call away for good, honest, friendly advice, a brochure you may need or just a chat. Give us a call now or pop in and see us and you'll see why.

73's - Alan and Jez.

8 Royal Parade Hanger Lane, Ealing London W5A 1ET
Tel: 081-987 4478 Fax: 081-981 2585

OPEN MONDAY-FRIDAY 9.30-5.30 SATURDAY 9.30-3pm EASY PARKING AT THE REAR OF THE SHOP

Authorised agents for:

AOR SONY YAESU JRC DRAKE ALINCO LOWE ICOM YUPITERU KENWOOD

ICR100-SSB



Wideband base/mobile receiver with SSB.
100kHz-1856MHz

- IN STOCK -

SSB kits also available seperately

ICR7100-HF



Icom's base receiver with continuous coverage.
200kHz-2000MHz.

Phone now for details

HF kits also available seperately for ICR7100 and ICR7000

ICR1-SSB



The smallest pocket scanner available with SSB.

100kHz-1300MHz or convert your existing ICR1

PHONE NOW

ASK FOR DETAILS

Part exchange and equipment purchases welcomed! Credit facilities available subject to status. APR from 37.8%. Located next to Hanger Lane Tube Station (Central Line) and on the junction of the A406 & A40. DON'T DELAY PHONE TODAY on 081-997-4476

GOLD SEAL BP GARAGE

NORTH WALSHAM RD

B1150

EDWARDS RD

SHOP OPEN
MON-SAT 9.30-5.30

THE SHORT WAVE

CENTRE
NORWICH



Do you need a scanner or receiver ?
Do you need amateur radio equipment ?

"Kenwood, Icom, Yaesu, Alinco, Yupiter, Aor etc"
But most of all do you need equipment serviced?
We have up to date test equipment, fully equipped workshop for all types of radio equipment.

Second Hand Equipment Available, Part Exchange Welcome.

TEL: OR FAX: 0603 788281

Prop: P. Gunther G4XBT, 95 Colindeep Lane, Sprowston, Norwich, Norfolk NR7 8EQ. VAT No. 595 1239 21

NEW SHOP OPEN NOW!
"PHONE US NOW FOR BEST PRICES"

Long medium & short

Local Radio Chart

Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener	Freq kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum R.	I	7.50	B,I,M	1242	Invicta Sound (Coast)	I	0.32	B*,L,M
585	R.Solway	B	2.00	B,H,J*	1242	Isle of Wight R.	I	0.50	B,F,I,J*,M
603	Invicta Snd(Coast)	I	0.10	B,G,I,J*,M	1251	Saxon R. (SGR-FM)	I	0.76	L,M
630	R.Bedfordshire	B	0.20	C*,G,I,J,L,M	1260	GWR (Brunel R.)	I	1.60	G,H*,I,M
630	R.Cornwall	B	2.00	I,M	1260	Leicester (GEM-AM)	I	0.29	J,M
657	R.Clywd	B	2.00	H,I,J,L,M	1260	Marcher Sound	I	0.64	D
657	R.Cornwall	B	0.50	I	1278	Pennine R.(C.Gold)	I	0.43	O,I
666	DevonAir R.	I	0.34	G,I,M	1305	Red Dragon (Touch)	I	0.20	F,I,J*,M
666	R.York	B	0.80	A,D,J*,M	1323	R.Bristol (Som.Snd)	B	0.63	J*,M
729	BBC Essex	B	0.20	I,L,M	1323	S'thern Sound (SCR)	I	0.50	G,I,L,M
738	Hereford/Worcester	B	0.037	L,M	1332	Hereford R.(WGM)	I	0.60	B,J,L,M
756	R.Cumbria	B	1.00	H	1332	Wiltshire Sound	B	0.30	H*,I,M
765	BBC Essex	B	0.50	I,J,L,M	1359	Essex R.(Breeze)	I	0.28	G,H*,L,M
774	R.Kent	B	0.70	I,L,M	1359	Mercia Snd (Xtra-AM)	I	0.27	J,M
774	R.Leeds	B	0.50	D	1359	R.Solent	B	0.85	I,M
774	Severn Sound (3CR)	I	0.14	I,J,M	1368	R.Lincolnshire	B	2.00	B*,M
792	Chiltern R.	I	0.27	G,I,J,L,M	1368	R.Sussex	B	0.50	I,L
801	R.Devon	B	2.00	E,F,G,I,J*,M	1368	Wiltshire Sound	B	0.10	H*,I,J
828	Chiltern Radio	I	0.20	C*,E,L,M	1413	Sunrise R.	I	0.125	I,L,M
828	R.Aire(Magic 828)	I	0.12	A,B,D	1431	Essex R.(Breeze)	I	0.35	B*,G,L,M
828	R.WM	B	0.20	J	1431	R.210 (Cl. Gold)	I	0.14	G,I,M
828	ZCR	I	0.27	E,F,I,M	1449	R.Peterboro/Cambs	B	0.15	I,J,M
837	R.Cumbria	B	1.50	D	1458	GLR	B	50.00	I,M
837	R.Leicester	B	0.45	A,G,I,J,L,M	1458	GMR	B	5.00	D,H,K
855	R.Devon	B	1.00	I,M	1458	R.Cumbria	B	0.50	H
855	R.Lancashire	B	1.50	D,H,J*	1458	R.Devon	B	2.00	M
855	R.Norfolk	B	1.50	A,G,I,L,M	1458	R.Newcastle	B	2.00	I
873	R.Norfolk	B	0.30	G,I,J*,L,M	1458	Radio WM	B	5.00	J
936	GWR (Brunel R.)	I	0.18	G,I,J,M	1476	City Sound (1st Gold)	I	0.50	G*,I,L,M
945	R.Trent (GEM-AM)	I	0.20	D,J,M	1485	R.Humberside	B	1.00	A,H
954	DevonAir R.	I	0.32	G,I,M	1485	R.Merseyside	B	1.20	D,J
954	R.Wyvern	I	0.16	J,M	1485	R.Sussex	B	1.00	I,L,M
990	WABC (Nice & Easy)	I	0.09	J,M	1503	R.Stoke-on-Trent	B	1.00	D,H*,I,J,M
990	R.Devon	B	1.00	G,I,M	1521	R.Mercury	I	0.64	B,G*,I,L,M
990	Hallam R.(C.Gold)	I	0.25	A	1530	Pennine R.(C.Gold)	I	0.74	D,H
999	R.Solent	B	1.00	F,G,I,M	1530	R.Essex	B	0.15	I,L,M
999	R.Trent (GEM-AM)	I	0.25	A,M	1530	R.Wyvern	I	0.52	I,J
999	Red Rose R.	I	0.80	D,H	1548	Capital R. (Gold)	I	97.50	C*,G*,I,M
1017	WABC Shrewsbury	I	0.70	D,J,M	1548	R.Bristol	B	5.00	F,H,K
1026	R.Cambridgeshire	B	0.50	A,L,M	1548	R.City (City Talk)	I	4.40	D
1026	R.Jersey	B	1.00	F,I,M	1557	Chiltern R.(Gold)	I	0.76	C*,H,J
1035	R.Kent	B	0.50	I,L,M	1557	Ocean Sound (SCR)	I	0.50	G,I,M
1035	R.Sheffield	B	1.00	D	1557	R.Lancashire	B	0.25	D
1035	West Sound	I	0.32	H,K	1557	Tending R.(Mellow)	I	?	M
1116	R.Derby	B	1.20	A,D,H*,J,M	1584	R.Nottigham	B	1.00	D,M
1116	R.Guernsey	B	0.50	F,I,M	1584	R.Shropshire	B	0.50	J
1152	BRMB (Xtra-AM)	I	3.00	E,J	1602	R.Kent	B	0.25	I,J*,L,M
1152	LBC (L.Talkback R)	I	23.50	G*,I,M					
1152	R.Broadland	I	0.83	A,H*,M					
1161	GWR (Brunel R.)	I	0.16	G,M					
1161	R.Bedfordshire	B	0.10	C*,L,M					
1161	R.Sussex	B	1.00	I,M					
1161	Viking R. (C.Gold)	I	0.35	A					
1170	Ocean Sd.(SCR)	I	0.12	G,H*,I,M					
1170	R.Orwell (SGR-FM)	I	0.28	L,M					
1170	Signal R.	I	0.20	D,J					

because the signals arrive via backscatter and other modes. In E.London, **Phil Townsend** listened to RFI and DW at lunchtime. Whilst in Coverack, **Simon Hockenhill** logged the Voice of the UAE in Abu Dhabi on 25.690 (Ar to Far East 0900-1100) as 25333 at 1005. In Congleton, **Tim Bucknall** rated R.Nederlands 25.940 (Du to W.Africa 1030-1115, Sun only) as SIO253 at 1047.

In the 21MHz (13m) band good reception of R.Australia's signals has been noted here: Darwin 21.525 (Eng to SE.Asia 0100-0800) was SIO444 at 0630 by **Cyril Kellam** in Sheffield, 21.725 (Eng to S.Asia 0900-1257) 44444 at 1250 by **Tony Singh** in Hitchin; Carnarvon 21.775 (Eng to Asia 0100-0900) 33333 at 0649 by **Ken Milne** in Basingstoke. Some mornings the 21.725 signal has been clearly heard in Southern Africa, **P.Guruprasad** (Madikwe) rated them 45333 at 0915.

In the morning, R.Japan via Moyabi 21.575 (Eng, Jap to Europe, M.East, Africa 0700-0830) was noted as 'good' at 0700 by **Ernest Randall** in Dalton; R.Czechoslovakia 21.705 (Eng to Asia, Pacific 0730-0800) 43343 at 0735 by **Chris Shorten** in Norwich; R.Pakistan, Islamabad 21.520 (Eng to Europe 0800-0845) 44444 at 0800 in Morden; VOA via Kavala 21.455 (Eng to M.East, N.Africa, Europe 0800-1100) SIO333 at 0823 by **Philip Rambaut** in Macclesfield; AIR via Aligarh 21.735 (Eng to NE.Asia 1000-1100, Th to Thailand 1115-1200) 33443 at 1055 by **Peter Polson** in St.Andrews; R.Pakistan, Islamabad 21.520 (Eng to Europe 1100-1120) 42333 at 1100 in Newry; UAE R.Dubai 21.605 (Ar, Eng to Europe 0615-1645) SIO444 at 1120 by **John Coulter** in Winchester; Croatia R.Zargreb 21.480 (Eng 1205-1208) 34543 at 1206 by **David Edwardson** in Wallsend; BSKSA, Saudi Arabia 21.505 (Ar [Home Service] to N.Africa 1030-1700) 55444 at 1250 by **J. Eaton** in Woking.

Later, R.Nederlands via Flevo 21.665 (Eng to S.Asia 1330-1430) 44545 at 1400 in Thumrait; R.Finland via Pori 21.550 (Eng to M.East, E.Africa 1405-1430) 34333 at 1407 by **Rhoderick Illman** in Oxted; WCSN, Maine 21.545 (Eng to Europe 1800-2000) 45434 at 1845 by **Darran Taplin** in Brenchley; R.Nederlands via Bonaire 21.590 (Eng

to Africa 1730-2025) SIO455 at 1900 by **Kenneth Buck** in Edinburgh; WYFR, Florida 21.615 (Eng, Ger, It to Europe 1600-?) 35433 at 1915 in Worthing; HCJB, Ecuador 21.455 (world-wide u.s.b. + p.c.) SIO433 at 1939 by **Bill Clark** in Rotherham; RCI via Sackville 21.675 (Eng, Fr to Europe 1900-2059) 54445 at 2010 in Coverack; RFPI, Costa Rica 21.465 (Eng to Caribbean 1800-0330) SIO433 at 2215 by **Bryan Kimber** in Hereford; VOFC via Florida 21.720 (Eng to Europe 2200-2300) 44334 at 2215 by **Peter Pollard** in Rugby.

UK listeners have reported good DX reception in the 17MHz (16m) band. Several of R.Australia's broadcasts were logged here: Shepparton 17.795 (Eng to C.Pacific areas 2130-0600) rated 44444 at 0330 in Hitchin, 17.715 (Eng to Pacific areas 0000-0830) 44344 at 0440 in Norwich; Carnarvon 17.670 (Eng to Pacific areas 0400-0700) SIO433 at 0610 in Hereford; Darwin 17.565 (Eng to Asia 1430-1800) 44333 at 1530 in St.Andrews. R.New Zealand's transmission to Pacific areas on 17.770 (Eng 2130-0800) has often reached the UK well. In W.London, **Bill Griffith** logged it one morning as peaking 54555 at 0610!

Some broadcasts to distant places were logged in the morning: SRI via Sottens 17.565 (Eng to M.East, Africa 0600-0630) SIO433 at 0615 by **Francis Hearne** in N.Bristol; VOA via Kavala

17.705 (Ar to M.East, N.Africa 0330-0800) SIO333 at 0740 in Macclesfield; R.Finland via Pori 17.800 (Eng to Japan, Far East 0830-0855) 34333 at 0845 in Thumrait; BBC via Mahe 17.885 (Eng to E.Africa 0600-1400) 54444 at 0915 in Morden; Voice of Greece, Athens 17.525 (Gr, Eng to Australia 0800-0950) SIO444 at 0940 in Sheffield; R.Pakistan, Islamabad 17.902 (Eng to Europe 1100-1120) 24122 at 1104 in Newry; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) heard at 1258 by **Roy Patrick** in Derby; R.Cairo via Abis 17.595 (Eng to S.Asia 1215-1330) 44544 at 1240 by **Darren Beasley** in Bridgewater.

Good reception was noted later from R.Romania Int, Bucharest 17.850 (Eng to Europe 1300-1355) SIO444 at 1351 in Winchester; RTM, Morocco 17.595 (Fr, Eng to M.East, N.Africa 1400-1700) 44344 at 1607 by **Vera Brindley** in Woodhall Spa; R.Pakistan, Islamabad 17.555 (Eng to M.East 1600-1630) 33333 at 1630 by **Robert Connolly** in Kilkeel; R.Algiers Int, via Bouchaoui 17.745 (Fr, Eng to M.East, Europe 1700-1800) 43444 at 1714 in Basingstoke; VOA via Selebi-Phikwe 17.650 (Eng to Africa 1600-2200) 45434 at 1900 in Brenchley; BBC via Ascension Is. 17.880 (Eng to C.Africa 1745-2030) 33343 at 1920 in Worthing; HCJB, Ecuador 17.790 (Cz, Sw, Ger, Fr, Eng, Sp to Europe 1800-2230) SIO444 at 1902 in Edinburgh; R.Havana, Cuba

- Listeners:
A: Vera Brindley, Woodhall Spa.
B: Tim Bucknall, Congleton.
C: Tim Bucknall, Newport Pagnell.
D: Scott Caldwell, Warrington.
E: Francis Heame, N.Bristol.
F: Simon Hockenhill, E.Bristol.
G: Sheila Hughes, Morden.
H: Eddie McKeown, Newry.
I: George Millmore, Wootton, IDW.
J: Sid Morris, Rowley Regis.
K: Tom Smyth, Co.Fermanagh.
L: Phil Townsend, E.London.
M: John Wells, East Grinstead.

Long Wave Chart

Freq kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	K*,N
153	Donebach	Germany	500	A,B,D,G*,H*,J,M,N
153	Brasov	Romania	1200	B,G*
162	Allouis	France	2000	B,D,F,G,H,I,J,K*,L,M,N
171	Kaliningrad	Russia	1000	B,C,G,H*,J,J,M
171	Moscow	Russia	500	D*,M
177	Oranienburg	Germany	750	A*,B,C*,D,F,G*,H*,J,M,N
183	Saarouis	Germany	2000	A,B,D*,F,G,H,I,J,M,N
189	Caltanissetta	Italy	10	N
198	BBC Droitwich	UK	500	A,D,F,G,H,I,L,M,N
198	BBC Westerglen	UK	50	B,G
207	Munich	Germany	500	B,E,G*,H*,J,M,N
207	Azilal	Morocco	800	E
216	RMC Roumoules	S.France	1400	A,B,D,G,H*,I,J,K*
216	Oslo	Norway	200	B,F*,G*,N
225	Konstantinow	Poland	2000	B,G*,H*,I,J,M,N
234	Junglinster	Luxembourg	2000	B,D,F,G,H,I,J,M,N
234	St.Petersburg	Russia	1000	B,G*
243	Kalundborg	Denmark	300	B,D*,F*,G*,H*,J,M,N
252	Tipaza	Algeria	1500	E*,F*,N
252	Atlantic 252	S.Ireland	500	A,B,E,F,G,H,I,J,L,M,N
261	Burg	Germany	200	H,I,N
261	Moscow	Russia	2000	B,G*,J,M
270	Topolina	Czechoslovakia	1500	B,F*,G*,H*,I,M,N
270	Drenburg	USSR	15	C*
279	Minsk	Byelorussia	500	A*,B*,C*,F*,G*,H*,J*,J,N

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

- Listeners:
A: Vera Brindley, Woodhall Spa.
B: Kenneth Buck, Edinburgh.
C: Tim Bucknall, Congleton.
D: Scott Caldwell, Warrington.
E: Simon Hockenhill, E.Bristol.
F: Sheila Hughes, Morden.
G: Eddie McKeown, Newry.
H: George Millmore, Wootton, IDW.
I: Sid Morris, Rowley Regis.
J: Fred Pallant, Storrington.
K: Alan Roberts, Quebec, Canada.
L: Tom Smyth, Co.Fermanagh.
M: Phil Townsend, E.London.
N: John Wells, East Grinstead.

long medium & short

Tropical Bands

Freq MHz	Station	Country	UTC	DXer	Freq MHz	Station	Country	UTC	DXer
2.560	Xinjiang	China	2355	F	4.885	Voice of Kenya	Kenya	2022	M
3.215	R.Orange	S.Africa	1810	L,P	4.895	Voz del Rio Arauca	Colombia	0410	P
3.220	R.HCJB Quito	Ecuador	0415	P	4.895	R.Moscow (Kalinin)	Russia	2055	B,I,K,M
3.240	TWR	Swaziland	2051	K	4.900	V de la Rev Conakry	Guinea	2120	E
3.255	BBC via Maseru	Lesotho	1925	F,L	4.905	R.Nat.N'djamena	Chad	1950	B,E,K,L,M
3.300	R.Cultural	Guatemala	0331	F	4.910	R.Zambia, Lusaka	Zambia	2102	E,M
3.315	AIR Bhopal	India	2305	L	4.915	R.Anhanguera	Brazil	2245	E
3.315	SLBS Freetown	Sierra Leone	2126	K	4.915	R.Ghana, Accra	Ghana	1945	E,F,I,K,L,M
3.325	FRCN Lagos	Nigeria	2245	F	4.915	Voice of Kenya	Kenya	1920	M
3.330	R.Kigali	Rwanda	1825	P	4.920	R.Quito	Ecuador	0330	G
3.365	R.Rebeldia, La Julia	Cuba	0100	K,P	4.930	R.Moscow	Russia	2010	B,K,L
3.365	GBC Radio 2	Ghana	2057	F,G,K,L,M,O	4.935	Voice of Kenya	Kenya	1914	B,E,F,H,J,K,L,M
3.380	R.Malawi	Malawi	1930	F	4.940	SLBC (Eng.Comm.)	Sri Lanka	1540	A
3.915	BBC Kranj	Singapore	1613	K,L	4.940	R.Kiev 2	Ukraine	1923	B,I,K,L,M
3.940	PBS Hubei Wuhan	China	2100	P	4.950	R.Nac.Luanda	Angola	1900	M,P
3.955	BBC Skelton	England	2000	K,L	4.958	R.Baku	Azerbaijan	1950	B
3.965	RFI Paris	France	1920	C,E,I,K,L,N	4.960	AIR New Delhi	India	0032	K
3.980	VOA Munich	W.Germany	1910	I,K,L	4.960	R.Baku 2	Russia	2015	I
3.985	R.Beijing, China	via SRI Berne	2045	C,K	4.975	R.Uganda, Kampala	Uganda	1940	M
3.985	SRI Berne	Switzerland	2005	C,I,L	4.975	R.Dushanbe	Tadzhikistan	2328	K
3.995	DW Cologne (Julich)	Germany	1930	K,L	4.990	AIR via Madras	India	0021	K
4.010	R.Frunze 1	Kirghizia	2320	K	4.990	FRCN Lagos	Nigeria	1909	B,O,L,M
4.055	R.Moskva 1 (Kalinin)	Russia	1948	C,K	5.005	R.Nacional, Bata	Eq.Guinea	2100	B,E,M
4.500	Xinjiang	China	2225	F,P	5.010	R.Garoua	Cameroon	1911	B,E,G,K,M
4.600	R.Baghdad	Iraq	1805	L,P	5.010	SBC Singapore	Singapore	1400	A
4.635	R.Dushanbe	Tadzhikistan	0015	K	5.015	R.Moskva 2	Russia???	0149	K
4.650	R.Santa Ana	Bolivia	2300	P	5.020	SLBC Tamil Home Serv.	Sri-Lanka	1545	A
4.735	Xinjiang	China	2230	F,L	5.025	R.Parakou	Benin	2035	L
4.740	Ashkhabad	Russia	2322	K	5.035	R.Bangui	C.Africa	2110	G,K,P
4.750	R.Bentour	Cameroon	1942	K,M	5.035	R.Alma Ata	Kazakhstan	2057	B,F,G,I,K
4.765	Brazzaville	PR Congo	1900	B,D,E,F,I,K,L,M,P	5.040	Vos del Upano, Macas	Ecuador	2315	E
4.770	FRCN Kaduna	Nigeria	1900	B,F,K,L,M,P	5.040	R.Tbilisi 1	Georgia	2057	B,C
4.783	RTM Bamako	Mali	2130	E	5.045	R.Cultura do Para	Brazil	0315	G
4.795	R.Douala	Cameroon	1925	B,K,M,P	5.047	R.Togo, Lome	Togo	2055	B,E,G,I,K,M
4.795	R.Moscow (Khar'kov)	Ukraine	2015	L	5.050	SBC Singapore	Singapore	2200	P
4.800	LNBS Lesotho	Maseru	2057	M	5.050	R.Tanzania	Tanzania	2024	B,M
4.805	R.Nac.Amazonas	Brazil	2245	E,F,P	5.055	RFO Cayenne(Matoury)	French Guiana	0445	K
4.810	R.Yerevan	Armenia	1953	E,K,L	5.075	Caracol Bogota	Colombia	0015	G
4.815	R.diff TV Burkina	Ouagadougou	2100	E,K,M	5.260	R.Alma Ata 2	Kazakhstan	2100	G,I,K
4.820	R.Moskva 4	Russia	1954	B,E,K					
4.825	R.Moscow (Yakutsk)	Siberia	2022	B					
4.825	Khar'kov	Ukraine	2357	I,K					
4.830	R.Tachira	Venezuela	2330	E,F,G					
4.832	R.Rejoi	Costa Rica	0420	P					
4.835	R.Totuluktan, Coban	Guatemala	0305	G					
4.835	RTM Bamako	Mali	1957	B,G,I,K,L,M					
4.845	ORTM Nouakchott	Mauritania	1955	B,I,K,L,M					
4.850	R.Yaounde	Cameroon	1916	B,I,K,M					
4.850	AIR Kohima	India	2030	I					
4.850	R.Tashkent 2	Uzbekistan	0018	K					
4.860	R.Moscow	Russia	1935	L					
4.865	PBS Lanzhou	China	2155	K,L					
4.870	R.Cotonou	Benin	2100	B,E,F,I,K,L,M,P					
4.885	R.Clube do Para	Brazil	2245	F					

DXers:

- A: Jana Arunachalam, Thumrait, Oman.
- B: Darren Beasley, Bridgwater.
- C: Scott Caldwell, Warrington.
- D: Bill Clark, Rotherham.
- E: Antonio De Abreu-Teixeira, Evesham.
- F: David Edwardson, Wallsend.
- G: Bill Griffith, W.London.
- H: P.R. Guruprasad, Madikwe, S.Africa.
- I: Sheila Hughes, Morden.
- J: Rhoderick Illman, Oxted.
- K: Eddie McKeown, Newry.
- L: Sid Morris, Rowley Regis.
- M: Fred Pallant, Storrington.
- N: Peter Pollard, Rugby.
- O: Richard Radford-Reynolds, Guildford.
- P: Jim Willett, Grimsby.

17.705 (Eng to Europe 2000-2100) 44344 at 2057 in Oxted; also 17.815 (Eng to Africa 2000-2100) 44443 at 2028 by **Scott Caldwell** in Warrington; RCI via Sackville 17.875 (Eng to Europe 2100-2159) 53343 at 2159 by **Robin Harvey** in Bourne; VOFC via Okeechobee 17.750 (Eng to Europe 2200-2300) SIO444 at 2234 in Rotherham; VOA via Kavala 17.810 (Eng to M.East, N.Africa 2200-0000) 44444 at 2234 in Rugby; Voice of the UAE in Abu Dhabi 17.855 (Eng to USA? 2200-0000) 55455 at 2240 in Woking.

Good 15MHz (19m) reception from many areas has been noted. The most distant signals reach the UK from R.Australia, but they are beamed to other areas: Shepparton 15.240 (Eng to Pacific 0000-0930) 32332 at 0715 in Newry, 15.320 (Eng to New Guinea 2100-0730) 54444 at 2216 in Woking; Darwin 15.170 (Eng, Chin to Asia 0900-1400) 33433 at 1105 in St.Andrews.

Many of the 19m signals are meant for listeners in Europe. Among those noted were RFI Costa Rica 15.030 (Eng 1800-1200) SIO333 at 0730 in Sheffield; R.Japan via Yamata 15.250 (Eng, Jap 0700-0900, also to M.East, Africa) SIO322 at 0751 by **Ron Pearce** in Bungay; RAI Italy 15.485 (It [R.Uno home service] 0800-1700) heard at 1200 in Derby; WCSN, Maine 15.665 (Eng 1400-1600) 34333 at 1439 in Oxted; Voice of Vietnam, Hanoi 15.010 (Eng, Viet, Russ, Fr, Sp 1600-0000?) 44333 at 1740 in Woodhall Spa; WCSN, Maine 15.665 (Eng 1800-2200?) 34232 at 1935 in Worthing; RCI via Sackville 15.325 (Eng 1900-1929) SIO444 at 1910 in Edinburgh; RNB, Brazil 15.265 (Eng, Ger 1800-2050) 44444 at 1915 in W.London and 43334 at 1952 by **Charles Beanland** on Gibraltar; WWCR Nashville 15.690 (Eng 1200-0000) 33322 at 1952 in Basingstoke; R.Kuwait 15.505 (Ar 1800-0000, also to N.Africa) 53553 at 2036 in Bridgwater; WYFR, Florida 15.566 (Eng 2100-2200, also to Africa) 55444 at 2138 in Warrington; R.Korea 15.575 (Ger, Fr, Russ, Eng, Sp, Port, It 1800-?) heard at 2145 by **Julian Wood** in Elgin.

Among those noted to other areas were the BBC via Woofferton 15.070 (Eng to M.East, Africa 0700-2315) 34434 at 1100 in Thumrait and 55444 at 1820 in Madikwe; R.Denmark via RNI 15.270 (Da to W.Africa 1330-1355) SIO444 at 1330 by **Tom Smyth** in Co.Fermanagh; R.Veritas Asia, Philippines 15.140 (Eng ident 1500, Pil 1505-1600) 'poor' at 1500 in Dalton; Vatican R, Italy 15.090 (Am, Fr, Eng, Port to Africa 1700-1900) 54454 at 1730 in Norwich; R.Portugal via S.Gabriel 15.250 (Port to Africa 1500-1900) SIO434 at 1810 in Winchester; Voice of Greece, Athens 15.630 (Gr, Eng to Africa? 1800-1850?) 45434 at 1845 in Brenchley; VOA via Selebi-Phikwe 15.495 (Eng to Africa 1900-2200) SIO322 at 2109 in Macclesfield; VOA via Tangier 15.205 (Eng to M.East, N.Africa 1700-2200) 33343 at 2112 in Bourne and via Greenville 15.580 (Eng

to Africa 1600-2200) SIO322 at 2139 in Rotherham; R.Sofia, Bulgaria 15.330 (Eng to USA 2145-2315) SIO544 at 2300 in Hereford; R.Damascus, Syria 15.095 (Eng to USA 2110-2210) 43444 at 2206 in Kilkeel; AIR Delhi 15.080 (Home Service) heard at 0230 in Hitchin.

Particularly good reception of R.Australia's 13MHz (22m) broadcast to S.Asia via Carnarvon 13.755 (Eng 1430-2100) has been noted in the UK. Their signal peaked 55555 at 1749 in Woking. It was also logged in Thumrait as 43443 at 1435. Later, their Carnarvon broadcast to SE.Asia 13.705 (Eng 2100-2300) was SIO322 at 2226 in Rotherham.

Also heard here were SRI via Sottens 13.635 (Eng to Asia, Australia 1100-1130) 54544 at 1106 in St.Andrews; R.Austria Int. via Moosbrunn 13.730 (Ger, Fr, Eng, Sp to Europe 0400-1700) 45454 at 1137 in Newry; UAE R.Dubai 13.675 (Eng to Europe 1030, 1330 and 1630) 43343 at 1340 in Norwich and SIO455 at 1630 in Edinburgh; KSDA, Guam 13.720 (Eng to S.Asia, E.Africa 1700-1900) 55444 at 1745 by **Richard Radford-Reynolds** in Guildford; DW via Julich 13.790 (Eng to W.Africa, M.East 1900-1950) 35544 at 1925 in Brenchley; RCI via Sackville 13.650 (Eng to Europe 1930-1959) 55555 at 1955 in Bridgwater; R.Kuwait 13.620 (Eng to Europe, USA 1800-2100) 34423 at 2027 in

Basingstoke; SRI via Sottens 13.635 (Eng to M.East, Africa 2000-2030) SIO334 at 2016 by **Michael Williams** in Redhill; WHRI Red Lion 13.760 (Eng to Europe, Canada 1700-0000) SIO444 at 2044 in Bungay; Voice of the UAE in Abu Dhabi 13.605 (Relay of Capital FM) 53444 at 2240 in Worthing.

The 11MHz (25m) band carries many programmes for European listeners. Some stem from HCJB, Ecuador 11.730 (Eng 0700-0830) 55555 at 0745 in Norwich; R.Romania Int, Bucharest 11.940 (Eng 1300-1355) SIO322 at 1330 in Co.Fermanagh; R.Finland via Pori 11.755 (Eng 1405-1430, also to W.Africa) SIO444 in E.London; REE Spain 11.920 (Sp 0700-1000) 44444 at 1442 in Woodhall Spa; UAE R.Dubai 11.795 (Eng 1600-1640, also to N.Africa) 44444 at 1600 in Rugby; R.Pakistan, Islamabad 11.570 (Eng, Ur 1700-1900) 54554 at 1825 in Woking; ISBS, Iceland 11.402 (Ic 1855-1930) SIO444 in Winchester; AIR via Aligarh 11.620 (Hi, Eng 1845-2230) heard at 1900 in Hitchin and 44444 at 2025 on Gibraltar; R.Algiers via Bouchaoui 11.715 (Eng 2000-2100, also to M.East) SIO433 at 2000 in Hereford; R.Damascus, Syria 12.085 (Eng 2005-2105) SIO444 at 2018 in Sheffield; R.Beijing, China 11.500 (Eng 2000-2200) 33332 at 2030 in Warrington; R.Japan via Moyabi 11.735 (Jap, Eng

2200-0000) 44434 at 2330 in Morden.

Throughout the day there are numerous broadcasts to other areas. Among those noted were R.Netherlands via Bonaire 11.895 (Eng to Pacific areas 0930-1030) 24333 at 0946 in Basingstoke; BBC via Masirah Is. 11.760 (Eng to M.East 0900-1400) 44445 at 1100 in Thumrait; Polish R, Warsaw 11.840 (Eng to Africa? 1500-1555) 44444 at 1520 in St.Andrews; R.Pakistan, Islamabad 11.570 (Eng to M.East, N.Africa 1600-1630) 35543 at 1600 in Wallsend; Vatican R, Italy 11.625 (Eng to Africa 1730-1800) 43433 at 1730 in Brenchley; Voice of Israel, Jerusalem 11.587 (Eng to N/C.America 1900-1930, also to W.Europe) noted as 'excellent' in Dalton; VOA via Ascension Is 11.820 (Eng to Africa 2000-2030) 54554 at 2005 in Bridgwater; Wings of Hope, Lebanon 11.530 (Ar, Eng, Russ to M.East 0300-2300?) 53334 at 2100 in W.London; R.Sweden 11.730 (Eng to Asia, Australia 2030-2130) 53343 at 2101 in Bourne; Voice of Israel, Jerusalem 11.603 (Eng to N/C.America 2130-2200, also to W.Europe) SIO333 at 2130 in N.Bristol; DW via Julich 11.865 (Port to S.America 2130-2300) SIO444 at 2130 by **Antonio De Abreu-Teixeira** in Evesham; R.Sofia, Bulgaria 11.720 (Eng to USA 2145-2315) 35443 at 2210 in Worthing; R.Tirana, Albania 11.825 (Eng

long medium & short

to USA? 2200-2230?) SIO323 at 2210 in Redhill; BBC via Ascension Is. 11.750 (Eng to S.America 2200-0330) SIO444 at 2330 in Rowley Regis; R.Sofia, Bulgaria 11.660 (Eng to USA 0000-0045) 44344 at 0032 in Newry.

The reports included some of the **9MHz (31m)** broadcasts to Europe: BBC via Limassol 9.660 (Eng 0800-1515, also to Scandinavia) SIO212 at 1110 in Macclesfield; RFI via Allouis 9.805 (Eng 1230-1300) SIO333 at 1230 in Redhill; R.Norway Int, Oslo 9.590 (Eng 1300-1330, Sat/Sun only) SIO434 at 1300 in E.London; Polish R, Warsaw 9.525 (Eng 1700-1755) 43333 at 1715 in Morden; REE via Noblejas 9.875 (Eng 1900-2000) 34334 at 2000 in W.London; R.Pyongyang, N.Korea 9.345 (Eng 2000-2050, also to M.East, Africa) 34543 at 2020 in Wallsend; Voice of Turkey 9.445 (Eng 2000-2100), noted as 'very good' at 2045 in Dalton; R.Budapest, Hungary 9.835 (Eng 2100-2200) 43233 at 2100 in Bourne; VOIRI, Iran 9.022 (Fr, Ger, Eng, Sp, Ar 1800-2230) SIO444 at 2120 in Evesham; R.Cairo via Abis 9.900 (Eng 2115-2245) 33333 at 2141 in Kilkeel.

Also logged were R.Nederlands via Bonaire 9.630 (Eng to Pacific areas 0730-0830) 53444 at 0806 in Guildford; R.Korea 9.870 (Kor, Eng, Fr, Ar, Ger, to M.East, Africa 1700-?) 42232 at 1700 in Madikwe; R.Sweden via Horby 9.655 (Sw, Eng, Fr, Sp to M.East, Africa 2000-2200, also to Europe) 44444 at 2002 on Gibraltar and SIO322 at 2030 in N.Bristol; SRI via Schwarzenburg 9.885 (Eng to M.East, Africa 2000-2030) 54545 at 2025 in Rugby; WSHB Cypress Creek 9.465 (Eng to USA, Caribbean 2200-0000) SIO444 at 2305 in Rowley Regis.

Some of the **7MHz (41m)** transmissions come from distant places: RSA, S.Africa 7.230 (Fr to Africa 0300-0400?) 53343 at 0300 in Norwich; also 7.270 (Eng to Africa 0300-0400?) 33433 at 0325 in Thumrait; Voice of Nigeria, Ikorodu 7.255 (Ha, Swa, Fr, Eng to W.Africa 0455-2300) 33433 at 0504 in Newry; WYFR Okeechobee 7.355 (Eng to Europe, Africa 0600-0800) heard at 0640 in Congleton; RFPi, Costa Rica 7.375 (Eng to Caribbean 0000-1200) SIO233 at 0730 in Hereford; AIR via Aligarh 7.412 (Eng to Europe 1845-1945, 2045-2230) 54434 at 1850 in Worthing, 33434 on Gibraltar and SIO433 at 2216 in Rotherham.

Many of the **6MHz (49m)** broadcasts to Europe stem from stations in Europe. Those noted were DW, Germany 6.115 (Ger 0800-1700) 43444 at 1438 in Woodhall Spa; R.Austria Int 6.155 (Eng 1830-1900) 54444 at 1830 in St.Andrews; R.Yugoslavia, Belgrade 6.100 (Eng to Europe 1830-1900?) SIO333 at 1834 in Elgin; Polish R, Warsaw 6.135 (Eng 1930-2025) 43433 at 1930 in Brenchley; R.Czechoslovakia 6.055 (Eng 2000-2030) 54554 at 2015 in Bridgwater; R.Budapest, Hungary 6.110 (Eng 2100-2200) 43333 at 2100 in Morden; R.Sweden via Karlsborg 6.065 (Eng 2030-2130) 55555 at 2058 in Warrington;

R.Finland via Pori 6.120 (Eng 2130-2155) SIO444 at 2130 in N.Bristol.

Also logged were the BBC via Antigua 5.975 (Eng to Caribbean 2000-0430) SIO333 at 0402 in Rotherham; R.Inconfidencia, Brazil 6.010 (Port 24hrs) SIO222 at 2250 in Evesham; R.Nacional da Amazonia, Brazil 6.180 (Port 0800-0000?) 43333 at 2300 in Kilkeel; Alma Ata, Kazakhstan 5.915 (Eng to C.Asia 2330-0200) 34533 at 2352 in Wallsend.



Transatlantic DX Chart

Freq kHz	Station	Location	Time (UTC)	DXer
USA				
890	WLS	Chicago	0120	B
1010	WINS	New York	2350	C
1130	WNEW	New York	0250	A
1440	WFTQ	Worcester	0140	B
1500	WTOP	Washington	0210	B
1510	WSSH(WKKU)	Boston	0400	C
1520	WWKB	Buffalo	0130	B
1600	WWRL	New York	0150	B
Canada				
580	CFRA	Ottawa	0535	C
590	VOCM	St. John's	2330	C
620	CKCM	Grand Falls	0305	C
930	CJYQ	St. John's	0945	A,C
1110	CBD	St. John's	0150	C
1220	CRCW	Moncton	0135	B
1400	CBG	Gander	0155	B
1410	CIGO	Pt Hawkesbury	0240	B
C.America & Caribbean				
1570	Atlantic B'con	Turks & Caicos Is	0205	C
South America				
1220	R. Globo	Rio, Brazil	0230	C

DXers:

A: Ron Damp, Worthing
B: Sid Morris, Mendip Hills
C: Jim Willett, Grimsby

RFI sticker

Station Addresses

BBC Wiltshire Sound,
56/58 Prospect Place,
Swindon SN1 3RW.

ILR Mercia Sound/Xtra AM,
Hertford Place,
Coventry CV1 3TT.

Radio Habana Cuba,
Apartado 6240,
La Habana,
Cuba.

Radio Inconfidencia,
C.P. 1027,
30130 Belo Horizonte, Brazil.

Radio CBG,
PO Box 369,
Gander, NF A1V 1W7, Canada.

Radio WNEW,
655 3rd Avenue,
New York, NY 10017, USA.

Equipment Used

Jana Arunachalam, Thumrait, Oman: Panasonic RF-B45 or Sony ICF-7600DS + 6m wire.
Charles Beanland, Gibraltar: Sangean ATS-803 + a.t.u. + r.w. or Howes AA2.
Darren Beasley, Bridgwater: Philips D2935 + a.t.u. + 10m wire.
Vera Brindley, Woodhall Spa: Sangean ATS-803A + whip or r.w.
Kenneth Buck, Edinburgh: Lowe HF-225 + r.w. in loft or screened loop.
Tim Bucknall, Congleton: Sony ICF-2001D + AN-1.
Scott Caldwell, Warrington: Saisho 2000 or Sony ICF-2001 + r.w.
Bill Clark, Rotherham: Sony ICF-2001D + built-in whip or r.w.
Robert Connolly, Kilkeel: Sangean ATS-803A + 30m wire in loft.
John Coulter, Winchester: Yaesu FRG-7 + r.w.
Ron Damp, Worthing: Racal RA17 + Hex Loop or 30m inverted V dipole.
Antonio De Abreu-Teixeira, Evesham: Sony ICF-2001D + 12m wire.
J. Eaton, Woking: Lowe HF-225 + Datong A270 in loft.
David Edwardson, Wallsend: Trio R600 + inverted V trap dipole.
Bill Griffith, London: Matsui MR-4099 + 25m wire.
Robin Harvey, Bourne: Matsui MR-4099 + built-in whip.
Francis Hearne, N.Bristol: Sharp WQT370 + r.w.
Simon Hockenull, E.Bristol: Philips D2345 + built-in whip.
Sheila Hughes, Morden: Sony ICF-7600DS + loop or Panasonic DR48 + 15m wire.
Rhoderick Illman, Oxted: Kenwood R5000 + Lowe Mag.Balun + 19m wire.
Cyril Kellam, Sheffield: Sony ICF-7600DS + AN-1 or 25m wire.
Bryan Kimber, Hereford: Zenith R7000 or Realistic SX190 + 25m wire.
Eddie McKeown, Co.Down: Tatung TMR-7602.
George Millmore, Wootton, IOW: Racal RA17L + v.l.f. converter + loop.
Ken Milne, Basingstoke: Matsui MR-4099 + 6m wire.
Sid Morris, Rowley Regis: Kenwood R5000 + 31m wire or Sangean ATS-803A.
Fred Pallant, Storrington: Trio R2000 + r.w. in loft.
Roy Patrick, Derby: Lowe HF-125 + 22m wire.
Ron Pearce, Bungay: Home-built single f.e.t (2N3819) straight set.
Peter Pollard, Rugby: Sony ICF-2001D + AN-1.
Peter Polson, St.Andrews: Lowe HF-225 + loop or indoor Joystick.
Richard Radford-Reynolds, Guildford: Sangean ATS-803A + 10m wire.
Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.
Ernest Randall, Dalton: Lowe HF-225 + 15m wire or Realistic DX-390.
Alan Roberts, Quebec, Canada: Lowe HF-225 + 31m, 19m or 11m dipole.
Chris Shorten, Norwich: Matsui MR-4099 + 10m wire.
Tony Singh, Hitchin: Zenith 7000 + built-in whip.
Tom Smyth, Co.Fermanagh: Morphy Richards R191 or Vega Selena + whip.
Darran Taplin, Brenchley: Yaesu FRG-7700 + FRA-7700 or FRT-7700 + 35m wire.
Phil Townsend, London: LF converter + Lowe HF-225 + loop or a.t.u. + r.w.
John Wells, E.Grinstead: RCA AR88D + loop, also l.w. converter.
Jim Willett, Grimsby: RCA AR77 + 4m loop or Trio 9R-59DS + a.t.u. + X dipole.
Michael Williams, Redhill: Sony CFS-201L cassette radio + built-in whip.
Julian Wood, Elgin: Kenwood R2000 + Yaesu FRT-7700 a.t.u. + 6m wire.

watching brief

Andy Emmerson G8PTH
71 Falcutt Way, Northampton NN2 8PH

I am delighted to say some of our ATV repeaters are still active. Here is the news from the ones whose people have sent in reports.

Another First for GB3ZZ

GB3ZZ, the Severnside repeater covering Bristol, Cardiff and the Severn Estuary has chalked up another first for a British amateur television repeater station. The repeater now features a 24-hour weather satellite picture service that can be accessed by any user by means of the d.t.m.f. pad used for its other features. For the benefit of those who only watch the repeater (non-transmitting folk), a 40 second slot of weather satellite pictures circulates with the normal test card/text regime.

A crystal-controlled weather satellite receiver produces an audio signal, which is decoded to produce the picture. This is done in a digital framestore, to a design originally produced in the early 1980s by YU3UMV. The framestore produces a picture made up of 256 x 256 pixels with 64 levels of grey. This seems quite poor by some of today's high-resolution PC computertype displays, but I think that most people that watch it are reasonably satisfied with the results.

Many repeater users have been quite fascinated by the images produced by the system. It seems to be getting good use, especially when the forecasters say bad weather is on the way. For instance a very intense area of low pressure passed over Scotland, bringing a few days of unsettles weather. This showed up very well on the satellite, with the characteristic swirl of cloud around the depression. Those of you who are really interested in weather satellites may be interested in joining the Remote Imaging Group (RIG). RIG is an RSGB-affiliated society for people who specialise in the reception of weather satellite images. They produce a very good magazine at roughly quarterly intervals, packed full of information on the latest equipment for better reception and picture decoding. Full details of membership are available from Des Watson, Norton,

Gote Lane, Ringmer, Lewes, East Sussex BN8 5HX. Don't forget to include an s.a.e. with your enquiry.

The Severnside Group are planning to enhance the present system; they say they are certainly not going to rest on their laurels! One enhancement will be to display both information channels of METEOSAT, Channel 1 on 1691MHz and Channel 2 on 1694.5MHz. The repeater logic to carry out the switching function should be ready soon and you will key *60# for Channel 1 and *61# for Channel 2.

A New Repeater for Humberside

Clive Reynolds G8EQZ, Andy Goy G4HJD and Richard Guttridge G4YTV are proposing to build and license an amateur television repeater operating in the 24cm band. A possible site has been found at Aldbrough, offering a good service area to the east of the Lincolnshire Wolds. This should provide a TV repeater service from Bridlington in the north to Cleethorpes in the south and Hull in the west.

The site at Aldbrough is owned by Tony Leake G0NAA who has a farm on the cliff top. The use of the site and the 23m lighting tower will be shared with Tony's antennas and those of GB3HA when it moves down the coast from Hornsea.

Whether the repeater goes ahead or not depends on user support. If this seems like a good idea to you why not contact Clive G8EQZ on (0482) 563691 or Richard G4YTV on (0964) 562948? You can also call them on 144.750MHz, the ATV talk-back frequency or write to the callbook addresses.

Home Counties News

GB3HV, which covers the Thames basin from a site above High Wycombe, went off the air at the beginning of September last year. Tests are going on to find a new location for the repeater and the new site is likely to be in High Wycombe since the group wants to retain or improve the existing coverage area. Garry G4CRJ and colleague G0DAE have been carrying



If you want your signals to go a long way under weak conditions, a clear display is essential. Two of these three shots win the G8PTH seal of approval - guess which!

out tests using the normal repeater flat-plate antennas atop a 15m mast with the dual input pre-amp at mast head, with transmit power split equally into two of the flat-plates. Test have been carried out in full duplex mode with talkback on 144.75MHz from Mike G8LES's car.

Stations who have given reports were dotted around the coverage area; the furthest station was in Southampton (about 80km away and definitely not line-of-sight). Results from the new site are promising and it seems better than the old one. They are looking at another site as well which has an 24m mast on it, which should be even better.

GB3HV beams ESE and SSE from High Wycombe so a problem with the old site was coverage into High Wycombe itself! This time they are

planning on having a pair of low-gain antennas beaming north to cover the locals.

A System for Solent

The newly formed Solent Amateur Radio and Television Club (G4PXH chairman, G8LES technical) will be building a new TV repeater that will be a copy of GB3HV.

It is hoped to locate it at Thorn Hill, near Southampton, which is 75m a.s.l. on a 24m mast. The repeater will be in beacon mode on the odd half hour allowing GB3HV to beacon for half an hour, starting on the hour. So stations who are in-between will be able to see both. A link is also planned between the two repeaters, the relay station to be located probably somewhere near Four Marks.

Andy Emmerson's column appears on a quarterly basis. In the intervening two issues this page is taken up by Brian Oddy's 'Long Wave Maritime Beacons' column, but 'Off The Record' will not be appearing until we can sort out the legal position with the DTI.

Watch this space.

SCANNER OWNERS

Listen in when you are 'out' with the amazing AUTO-VOX

Connect to any receiver with a squelch control and the AUTO-VOX will automatically switch your tape recorder on and off as signals are detected. A MUST for all scanner owners.

Return to a neatly compressed tape of all the action

The AUTO-VOX may be fitted directly into larger scanners or recorders, taking its power from the rig itself, or housed separately in the free project box supplied. Supplied as a kit with all parts and instructions or ready built and tested.

KIT £12.50 AUTO-VOX BUILT £25.00

Turbo-Charge your scanner with a little help from RADIO RESEARCH

AR 1000/2000 - FAIRMATE HP100/200 - Full coverage modification. 0.5-1300MHz. Upgrades your rig with NO GAPS - Why pay more?£5.00

Customising Packs for REALISTIC PRO-2004, 2005, 2006 & 2022. Full of useful mods for your set. (State pack required).....£5.00

400 Channel Upgrade for REALISTIC PRO-2004 with Super-Scan rate.....£5.00

Send a SAE for full details and prices of all our scanner upgrades

RADIO RESEARCH (SWM) 3 Pasture Close, Whitmore, Staffs. ST5 5DD

Computer control of Your Radio with SCANCAT

- * One program controls all radios
- * Unlimited frequency disk files
- * Create your own presets
- * Scan between any frequencies in any increment
- * Create databases of popular frequencies
- * Load Memories
- * Kenwood R-5000 and others
- * Yaesu FRG-9600 and others
- * JRC NRD-525
- * AOR-3000 with Spectrum Analysis
- * Icom's R-71, R-72, R-7000 (most others)

Requires PC compatible with I serial port - Interface for Radio.
Once you use SCANCAT with your radio you will never use your radio again without SCANCAT!

J & J Enterprises - 4001 Parkway Dr.-Bossier City, LA, USA 71112
PH. 318-631-3081 (1400.2100 GMT) or FAX 318-631-3082

\$49.95 plus \$5.00 post
FREE INFO
DEMO \$5.00 plus \$2.50 post
Visa - Mastercard - AmEx or Money Order

SERVICE MANUALS Available for most Video Recorders, Colour & Mono Televisions, Cameras, Test Equipment, Amateur Radio Vintage Valve Wireless, Any Audio, Music Systems, Computers, Kitchen Appliances etc. Equipment from the 1930s to the present and beyond. Over 100,000 models stocked, originals and photostats. FREE catalogue Repair & Data Guides with all orders.

MAURITRON TECHNICAL SERVICES (SWM),
8 Cherry Tree Road, Chinnor, Oxfordshire, OX9 4QY
Tel: (0844) 351694 Fax: (0844) 352554

ANORAK MONTHLY

Is a new monthly publication featuring news of Radio Caroline, Satellite Radio, Local Radio, Short Wave, International Radio and more.

For the latest issue send 50p plus a SAE (or £1.50 for last three issues) to:-
CM LEISURE SALES, DEPT. SW, P.O. BOX 46, ROMFORD RM11 2QE
(our preferred method of payment is a coin taped to a piece of card, stamps or blank postal orders).

REMEMBER THE PIRATE STATIONS

If you would like a copy of our latest comprehensive catalogue featuring hundreds of souvenir items from the Offshore Radio eras of the Sixties, Seventies and Eighties.

Send a cheque or postal order for £2.50 made payable to "CM Leisure Sales" (refundable with first order) or, if you would like a sample copy of Anorak Monthly, as well, send £3.00 for both (or £4.00 including back issues).

SAVE £80*

***Pro-2006 Super Low Price**
25-520, 760-1300MHz, AM/FM
12/240 volts, 400 memories
ONLY £249.50 - List £329.95

PRO-2022 - £179.95	(List £199.95)
PRO-9200 - £119.95	(List £129.95)
PRO-2025 - £89.95	(List £99.95)
PRO-35 - £149.95	(List £179.95)
PRO-37 - £199.95	(List £229.95)
FERGUSON SRB1 SAT. RX & DISH	£59.95

All scanners include FREE p&p in the UK. 12 months warranty

Link Electronics
(Authorised Tandy dealer)
228 Lincoln Road, Peterborough PE1 2NE
(0733-345731) SAE for leaflet. Phone for latest on second-hand bargains

MARTIN LYNCH

G4HKS

THE AMATEUR RADIO EXCHANGE CENTRE

286 Northfield Avenue, Ealing, London W5 4UB. Tel: 081 566 1120 Fax: 081 566 1207

ANNOUNCING THE NEW ICOM ICR-7100HF Mk. III



FROM CHRIS PARNELL, THE SKILLED DEVELOPMENT ENGINEER WHO ORIGINATED THE ICOM ICR-7000HF, MARTIN LYNCH CAN NOW OFFER THE NEW ICR-7100HF.

After months of specialist engineering, I can now offer the receiver with a frequency range of 50kHz to 2000MHz. By pressing the original dimmer button on the front panel, the ICR-7100 transforms into a high performance HF receiver in addition to its VHF/UHF capabilities. You do not have to guess at the display like other attempts at the modification. 14,200,00MHz reads as displayed. Employing a modified version of the ICR-7000HF module, Icom UK have approved the installation so you have total peace of mind.

AT ONLY £1120 INCLUDING VAT,
THE NEW ICR-7100HF IS AVAILABLE FROM STOCK.

PART EXCHANGE WELCOME.

081-566 1120

Mk. III version with R.I.T. on SSB

DEALER AND OVERSEAS ENQUIRIES WELCOME

BUYING OR SELLING... DIAL 081-566 1120 NOW!

ALINCO

KENWOOD

AOR

YAESU

ICOM

STANDARD

Authorised Dealer

Martin Lynch is a Licensed Credit Broker. Full written details upon request. Typical APR 32.9%

PHONE 081-566 1120

For fast mail order Tel: 081-566 1120. Please add £10.50 for 48 hour delivery.
SHOP OPENING HOURS: Monday - Saturday 10 - 6pm. 24 hour Sales HOT LINE 0860 339 339 (after hours only.)
FAX order line open 24 hours.

Weather Satellites

Timestep have been producing inexpensive weather satellite equipment for 7 years. Following our success in both the UK and North American education market, we are now bringing our expertise to the amateur satellite user. All of our equipment is designed, built and fully supported in Britain, by Timestep engineers.

Lawrence Harris uses Timestep equipment for his column in Short Wave Magazine. Les Currington who received the first Chinese Feng Yun image and presented it to Chinese Diplomats, also uses Timestep equipment.

PCSAT III

This innovative package will receive NOAA, METEOR, OKEAN, FENG YUN, METEOSAT, GOES and GMS. All images are received automatically on any PC with CGA, EGA, VGA or SVGA display.

Zoom, Pan, Contrast Stretch, False Colour, and Laser Print are just some of the features this system offers. Extensive filtering and a precision A-D are used on an internal PC Half Card, for superior image quality.

Animation from Meteosat is no mere gimmick! The atmosphere is a fluid in constant motion. Follow the dynamic progress of storms and cloud cover, on up to 100 full frames continuously animated images!

The really important feature is the ability to display in 800 pixels 600 lines and 256 colours, all at the same time. Some other systems will display 256 colours but only in far less resolution. Nearly all VGA and SVGA graphic cards are supported.

Full Satellite Resolution is received and stored by the system in a massive 512Kb file. This enables the stunning image quality and image processing.

Only £199.00 inc VAT & postage
Upgrade for £99.00 and your PC GOES in exchange.

Meteosat Receivers

Meteosat Yagi	£124.95
Metosat Preamp	£92.00
20m Meteosat cable	£16.00
Meteosat receiver	£199.00
PCSAT III cable	£9.95
PCSAT III system	£199.00

Complete Meteosat system as above only £640.00 inc.

Polar Systems

We produce a professional scanning receiver for NOAA, METEOR, OKEAN and FENG YUN; and low cost antenna systems. INSTANT TRACK is the ultimate Polar tracking program for up to 200 satellites at £24.95 inc.

Computers

We can supply PCs to any specification at really good prices. Call us if you need details or if you want to purchase a complete "turnkey" solution.

Call or write for a full catalogue.

Timestep Weather Systems
Wickhambrook Newmarket
CB8 8QA England
Tel 0440 820040 Fax 0440 820281

RADIO SHACK



AR3000A

The latest full coverage receiver/scanner covering all frequencies from 100 kHz to 2036 MHz. Available from stock **£765.00**

SCANNERS FROM RADIO SHACK

AR-950	Base/mobile scanner	£199.95
AR-2000	Series II 0.5-1300MHz, 1000 memories	£269.00
AR-1500	NEW - as above, with SSB	£299.00
AR-2002	25-550 & 800-1300MHz	£399.00
AR-2500	Base/Mobile 5-550 & 800-1300 MHz RS232	£419.00
AR-2800	Base/Mobile 0.5-600 & 800-1300MHz	£395.00

ALL AOR PRODUCTS STOCKED

PRO-38	10 Channel handy scanner	£79.95
PRO-2022	200 Channel search & scan	£199.95
PRO-2024	60 Channel search & scan	£99.95
PRO-37	200 Channel SPECIAL PRICE UNTIL JANUARY 31	£169.95
PRO-2006	400 Channel 25-560 & 720-1300 MHz	£329.95
IC-R-1	Icom's min.100kHz-1300 MHz 100 Ch. scanner	£369.00
IC-R-100	High performance base/mobile	£485.00
IC-R7100	25-2000MHz high performance receiver/scanner	£1120.00
BJ MK3	Black Jaguar	£179.00
DJ-X1	Alinco's latest	£269.00
UBC-200XLT	200 Channel Handy Bearcat	£229.00
MVT-6000	Jupiter base/mobile station	£249.00
MVT-7000	Latest hand-held Jupiter	£279.00
HP-200E	From Fairmate 1000 memories	£269.00
MS-1000	Nevada Base receiver	£279.00
R-535	Signal Airband Receiver	£199.00



DRAKE R8 RECEIVER £965.00

HF-225	Low high performance compact receiver	£429.00
R-2000	Kenwood's HF receiver, 10 memories	£549.00
VC-10	VHF convertor for above	£165.00
R-5000	Kenwood's De-luxe HF set	£895.00
VC-20	VHF convertor of R5000	£170.00
FRG-8800	Yaesu HF Receiver	£649.00
FRV-8800	VHF convertor for above	£100.00
NRD-535	JRC-HF receiver	£970.00
IC-R71E	Icom HF receiver	£875.00
IC-R72E	Latest set, mains with internal battery pack	£589.00
IC-9000	The ultimate radio	£4080.00

Carriage free in U.K. Call us for our tax free export prices.

We will be pleased to quote you for anything you require in the communications and computer field. We are pleased to hear from you and see you. We aim to give you the attention you deserve, so please call before you come along.

73s Terry Edwards G3STS

RADIO SHACK LTD

188 Broadhurst Gardens, LONDON NW6 3AY



(Just around the corner from West Hampstead Station on the Jubilee Line)



Tel: 071-624 7174 Fax: 071- 328 5066

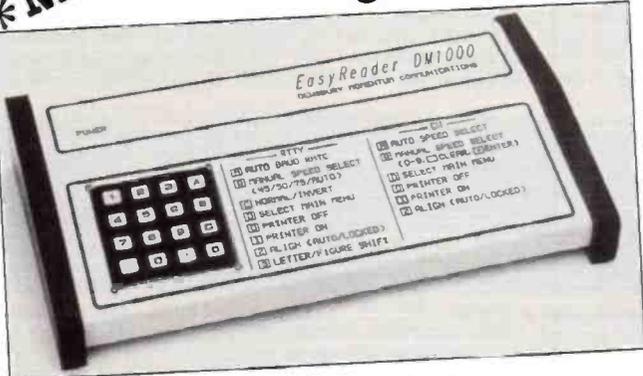
DEWSBURY ELECTRONICS

DEWSBURY ELECTRONICS DEWSBURY ELECTRONICS DEWSBURY ELECTRONICS

*** NEW ***

Easy Reader DM-1000

*** VERSION 3 ***



Introducing the all new 'Easy 3 Reader DM-1000' decoder. In our opinion "the most simple to use decoder ever seen".

- On screen tuning indication
- New literal mode for ARQ
- Status line on screen
- Output to video monitor

- SITOR / AMTOR
 - FEC (NAVTEXT)
 - RTTY Baudot
 - CW morse 2-99 wpm
 - RTTY ASCII
 - Automatic or manual speed selection
 - Printer output (parallel/centronics)
 - Options: UHF TV modulator RS-232 interface
- £225.00 inc. VAT Postage £5.00

S.A.E. for details

DEWSBURY ELECTRONICS
 176 LOWER HIGH STREET,
 STOURBRIDGE, WEST MIDLANDS DY8 1TG
 Tel: (0384) 390063 Fax: (0384) 371228



DEWSBURY ELECTRONICS DEWSBURY ELECTRONICS DEWSBURY ELECTRONICS



AMDAT



4 Northville Road, Northville Bristol, BS7 0RG 0272 699352

The Leading Amateur Radio Retailer for Bristol and South Wales

Credit Available

At last! The first radio-controlled clock with time zone setting
 Ideal for use in the shack as you can now display GMT all the year round



The new generation of radio-controlled alarm clocks perform a large number of functions; these now include time zone adjustment.

Other features: Alarm time display (Hours/minutes), alarm readiness display, day of the week in a choice of 3 languages, eternal calendar (date/day/month), visual reception monitoring, internal time memory, illumination, alarm repetition, 24 hour automatic alarm system, battery charge indicator, transmitter check button and 24 hour display.

Available in Anthracite or White 12.5 x 6.5 x 3.2 cm

The ability to change time zone allows operation throughout Europe

Ideal for the shack, office or home Available now only £54.95 inc p&p
 Large range of other JUNGHANS clocks in stock. Send SAE for details

High Specification Computers

AMDAT can supply all the parts you need to build your PC or we can supply built and tested systems to your specification

- 386 SYSTEMS now availablefrom £499+VAT
- 386 MOTHER BOARDSfrom £100+VAT

Send SAE for full computer price list

AMDAT stocks a wide range of amateur radio equipment and accessories at our Bristol shop. Call in or send an SAE for a full catalogue.

*Second hand radio equipment bought and sold.
 Wide range of books and magazines available*

Prices subject to change Prices shown include VAT except where shown

Many Radio Amateurs and SWLs are puzzled. Just what are all those strange signals you can hear but not identify on the Short Wave Bands? A few of them such as CW, RTTY, Packet and Amtor you'll know – but what about the many other signals?

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 having at least 640K 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 £299!

- Morse – Manual/Auto speed follow. On screen WPM Indicator
- RTTY /Baudot/Murray/ATA2/CCITT2 plus all bit Inversions
- Sitor – CCIR 825/476-4, ARQ, SBRS/CBRS FEC, NAVTEX etc
- AX25 packet with selective call sign monitoring, 300 Baud
- Facsimile, all RPM/IOC (up to 16 shades at 1024 x 768 pixels)
- Autospec – Mk's I and II with all known interleaves
- OUP-ARQ Artrac – 125 Baud Simplex ARQ
- Twinplex – 100 Baud F7BC Simplex ARQ
- ASCII – CCITT 5, variable character lengths/parity
- ARQ6-90/98 – 200 Baud Simplex ARQ
- SI-ARQ/ARQ-S – ARQ1000 simplex
- SWED-ARQ/ARQ-SWE – CCIR 618 variant
- ARQ-E/ARQ1000 Duplex
- ARQ-N – ARQ1000 Duplex variant
- ARQ-E3 – CCIR 519 variant
- POL-ARQ – 100 baud Duplex ARQ
- TDM242/ARQ-M2/4-242 CCIR 242 with 1/2/4 channels
- TDM342/ARQ-M2/4 CCIR 342-2 with 1/2/4 channels
- FEC-A – FEC100A/FEC101
- FEC-S – FEC100 Simplex
- Press DPA – 300 Baud ASCII F7BC
- Sports Info. 300 Baud ASCII F7BC
- Hellsreiber – Synchron./Asynch.
- Sitor RAW – (Normal Sitor but without synchronisation)
- ARQ6-70
- Baudot F788N

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

Six options are currently available extra to the above specification as follows: 1) Oscilloscope. Displays frequency against time. Split screen storage/real time. Great for tuning and analysis. £29. 2) Piccolo Mk 6. British multi-tone system that only we can decode with a PC! £59. 3) Ascii Storage – Save to disc any decoded ascii text for later processing. £29. 4) Coquelet – French multi-tone system, again only on offer from Hoka! £59. 5) 4 Special ARQ and FEC systems i.e.. TORG-10/11, ROU-FEC/RUM-FEC, HC-ARQ (ICRC) and HNG-FEC. £69. 6) Auto-classification – Why not let the PC tell YOU what the keying system is?! £59.

NEW VERSION 4.00 JUST RELEASED – Now with improved user interface and even more features!

Please add £5 to the above prices for carriage by fully insured First Class Postal delivery (default method).

Call or write for our comprehensive information leaflet – there is just not enough room here to tell you everything about Code3!

Professional users – please ask about our new CODE30 DSP unit available soon! (Piccolo down to -12dB S/N!!) Prices start from £1250.

HOKA ELECTRONICS (UK)

26 Bury Road, Shillington, Hitchin, Herts. SG5 3NY

Phone (0462) 711600 or Fax (0462) 711769



NEW

FAX and WEATHER SATELLITES

Full resolution charts and greyscale pictures from any SPECTRUM computer to a dot matrix printer. Basic system £40 plus interface for FAX £40 or WX SATS £59.

APT-1 WEATHER SATELLITE MODULE

Enables all weather satellite signals to be displayed on any FAX system. Plugs into RX-8 system direct. £59 or £39 if ordered with RX-8.

RX-8 8-MODE RECEIVE

Every possible feature and performance to receive FAX, HF & VHF PACKET, COLOUR SSTV, RTTY, CW, AMTOR, UoSAT and ASCII on any BBC computer. Reviews Oct. 89 Ham Radio Today and July 91 Rad Comm. Complete system of EPROM, interface, instructions, leads and demo cassette £259.

RX-4 RTTY CW SSTV AMTOR RECEIVE

Performance, features and ease of use make this still a best seller. Needs TIF1 interface. **BBC, CBM64** tape £25, disk £27. **VIC20** tape £25. **SPECTRUM** tape £40, + 3 disk £42 inc adaptor board (needs TIF1 also) or software-only version £25. **TIF1 INTERFACE** has 4-pole filtering and computer noise isolation for excellent HF and VHF performance. Kit £30, ready-made, boxed with all connections £40. Available only with software.

Also **MORSE TUTOR** £8, **LOGBOOK** £8, **RAE MATHS** £8 for **BBC, CBM64, VIC20** and **SPECTRUM**. **BBC LOCATOR** with UK, Europe, World maps £10. Disk £2 extra for all. Lots of information available about everything, please ask. Prices include VAT and p&p by return.



technical software (SWM)

Fron, Upper Llandwrog, Caernarfon LL54 7RF
Tel: (0286) 881886



AFFORDABLE PACKET

COMMODORE 64/128... ATARI ST... IBM COMPATIBLE PC... SPECTRUM

It is now possible to use the above computers to run Packet Radio with an outlay of much less than £100!!

Commodore, PC and Spectrum systems allow HF and VHF working, while the Atari system only offers VHF. PMS facilities are available on the Commodore, and the Spectrum if a microdrive is fitted. Digipeating facilities are offered on all versions. The Spectrum modem can also be supplied with a centronics printer port. We supply a fully tested modem, with a free copy of suitable software.

Commodore 64, Atari ST and PC Modems£55.00

Baycom Agency

Spectrum Modem£75.00

Spectrum Modem with printer port£85.00

S.A.E. for details

J.B.P. ELECTRONICS LTD.



Unit 45, Meadowmill Estate, Dixon Street,
Kidderminster DY10 1HH Tel: (0562) 753893



FOR SALE: 4CX250B Eimac/ITT, ex-equipment but fully tested at high power – £30 plus VAT, post paid each. Discounts for 10 or more pieces.

FOR SALE: Sockets for 4CX250B by AE1 UK, ex-equipment but working and clean at £17 each, discounts for larger quantities. Ceramic circular chimney for same at £8 each.

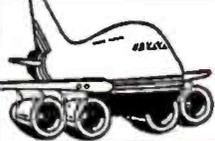
WANTED VALVES: KT66, KT77, KT88, PX4, PX25 valve collections, klystrons, magnetrons, transistors. Please post us list of what you have. Quick replies, cash waiting.

BILLINGTON EXPORT, Unit F2 Oakendene Industrial Estate, Near Horsham, RH13 8AZ.

Callers by appointment only. Tel: (0403) 865105 FAX: (0403) 865106.

Minimum order £50 + VAT. (UK/export).

G2VF LOOP ANTENNAS WITH ATU FOR HF HAM BAND TRANSMISSION (SWR One to One 40, 15 and 10 One Point Five to One 80 and 20) **AND SWLs LONG AND MEDIUM WAVE FOR BCLs.** Loops 21 inches square or triangle. No special skills required. Circuits, Parts Lists sources of supply assembly data. **HIGH FREQUENCY LOOP 80 to 10 Metres £5. LONG AND MEDIUM WAVE LOOP FOR BCLs £3. LONG MEDIUM SHORT WAVE LOOP 1500 to 10 METRES FOR BCL SWL £8. SHORT WAVE ATU LOOP OR LONG WIRE £4. PRE AMP LW MW S WAVE £2. PHOTOCOPY HRO MANUAL £4. MW LOOP WITH PRE AMP ATU £3. PRE AMP FOR G2VF HF LOOP OR ATU £4. SHORT WAVE ATU BUILT-IN PRE AMP FOR LOOP OR LONG WIRE £7. SAE details. All projects D.I.Y. METAL DETECTOR £2. **F. G. Rylands, 39 Parkside Avenue, Millbrook, Southampton SO1 9AF. Tel: (0703) 775064.****



FLIGHTDECK THE AIRBAND SHOP

192 Wilmslow Rd., Heald Green, Cheadle, Cheshire SK8 3BH
Telephone: 061-499 9350 Fax: 061-499 9349

ALL THE ENTHUSIAST NEEDS

Main Stockists of receivers by:
SONY, ICOM, LOWE, KENWOOD AOR, YUPITERU,
UNIDEN, SIGNAL, WIN, FAIRMATE.
Comprehensive range of accessories,
aerials, books, aero-charts etc.

PX welcome, finance available (subject to status).
Opening hours: 9:30 am - 5:30 pm (CLOSED WEDNESDAYS)
We are located on the A34 (Wilmslow Road), 2 miles South from the M63
Junction 10, just 3 miles from Manchester International Airport
Send 50p for illustrated catalogue from dept. SWM4

MODULATIONS COMMUNICATIONS

62 Wootton Road, Abingdon, Oxon. Tel: & Fax: (0235) 521400



400 Channel with Hyper Scan
• Hyper Scan doubles the scanning speed - 13 or 26 channels per second
• Covers 25-520, 760-1300MHz
Realistic PRO-2006 - Features ten 40-channel memory banks, a 10 channel monitor bank for temporary storage, plus search and favourite channel priority functions. Sound search control prevents lock-ups on unmodulated carriers. Back-lit LCD display with dimmer. AM, FM, narrow and FM-wide modes. Jacks: tape out, 3.5mm headphone, external DC power and BNC aerial input. Memory back-up requires 9v battery. Measures 76x222x209mm. Mains operation (or 12 VDC cord, extra) 20-9145

£329.95

FAIRMATE HP2000
As the UK distributor for Fairmate we are constantly working with them to update and produce new features and models.

- Continuous freq. Coverage from 100kHz to 1300MHz
- 1000 Channels of memory
- Keypad or rotary control
- AM, FM and wide FM modes
- Search steps from 5kHz to 995kHz

Every set comes complete with:- Full set of high power nicads, 2 antennas, carrying case, earphone, DC

£289

MVT 7000 Handheld
The latest in a family of three!

- Frequency coverage from 8 to 1300MHz (100kHz-1300MHz at reduced sensitivity)
- 200 Memory channels
- Rotary or keypad frequency control
- AM/FM narrow and wide FM modes
- Large easy read display with signal meter.

Every set comes complete with:- Full set of high power nicads, telescopic antenna, 240vac mains charger, DC power lead and carry strap.

£289

NEVADA AUTHORIZED DEALERS Tandy AUTHORIZED DEALERS ALSO CB RADIO STOCKISTS VISA Part exchange welcome/Mail order Call John G1FEK or Val G1HQB

AIR SUPPLY

83B HIGH STREET, YEADON, LEEDS LS19 7TA. Tel: (0532) 509581
Shop just two minutes from Leeds Bradford Airport.

AIR TRAFFIC CONTROLLERS

On hand to help you towards an interesting and rewarding pastime. Specialists in AIR BAND RADIOS AND SCANNERS. Hand held, mobile or base - AOR, Signal, Black Jaguar, Yupiteru, Icom, Uniden, Sony, Nevada: HF receivers from Sony, Icom, Lowe, Yaesu, Kenwood: wide range of accessories, aerials, plus CAA publications, maps, books, models from IMC, Wooster, Schabak, photos, souvenir products from British Airways and British Midland Airways. Large range of pilots products. Agents for Transair, AFE and Airtour. Plus lots more.

If you would like our info pack send large SAE and stamps to value of 50p.

Shop hours: 1000-1330: 1430-1700 (hours do vary) CLOSED WEDNESDAY

ELECTRONICS VALVES & TRANSISTORS

Phone for a most courteous quotation
081-743 0899

We are one of the largest stockists of valves etc, in the U.K.

COLOMOR (ELECTRONICS) LTD. 170 GOLDHAWK ROAD LONDON W12 8HJ

HOLDINGS AMATEUR ELECTRONICS

G3LLL for ICOM & YAESU and AOR SCANNERS
New & S.H. Receivers, Transceivers & Specialist service for older rigs, valves and cw filters for FT101 etc. Closed all day Thursday.

45 JOHNSTON STREET, BLACKBURN BB2 1EF
5 Miles from Junc. 31, M6 Tel: (0254) 59595
BUT HOLS? PHONE FIRST.

PC HF FAX 6.0

RECEIVE and TRANSMIT FAX IMAGES

This latest version of PC HF FAX not only enables you to receive weather charts, rebroadcast satellite pictures, amateur and press transmissions on your PC computer but also has the ability to transmit your own fax messages.

NEW FEATURES INCLUDE:
230 page manual with worldwide fax frequency and schedule list.
Integrated online fax broadcast schedules with multiple search fields.
Support for Super VGA displays as well as Hercules, CGA, EGA, VGA, LCD.
Standard capture resolution 640x800 with 16 grey levels, with VGA, and EMS memory images are saved at 1280x800 with 256 grey levels.
True colour press and satellite rebroadcast images in EGA, VGA and SVGA.
Printer support for 14" wide printers plus Epson compatible colour printers.
File compression, image cropping, Digital noise reduction, Pixel photometry, and Contrast control.
Import of ASCII text files for conversion and transmission as fax files.

Installation is simple, both the demodulator and modulator plug into the serial port of the PC and are powered by the computer.

Upgrade for existing PC HF FAX users £39.95 p&p £1.50
£116.33 inc VAT p&p £3.25
Optional Transmit Modulator £59.80



All items come complete with a comprehensive manual, tutorial audio cassette and demodulator. They will work on any PC compatible computer from 8088 to 486 and notebooks. The demodulator plugs into the serial port of the PC and requires audio from a radio receiver. Suitable dedicated receivers and aerials are also available.

Call today for full details and brochures

COMAR ELECTRONICS

UNIT 10, SAMUEL WHITES ESTATE,
MEDINA ROAD, COWES,
ISLE OF WIGHT, PO31 7LP

Tel: 0983 200308 Fax: 0983 280402

PC GOES/WEFAX

PC GOES/WEFAX enables you to receive both FAX and SATELLITE images on your PC computer

In FAX mode it will display weather charts, rebroadcast satellite images, press and amateur transmissions. In SATELLITE mode it will capture images from both METEOSAT and all Polar orbiting satellites. Some of its many advanced features are:

- Image resolution: 640x800x16 standard, 1280x800x256 with VGA and 1MB EMS
- Super VGA support
- Display in black/white, monochrome grey scale, blue/grey
- Colour or user programmable colour
- supports all known FAX and satellite transmission modes
- Start, stop, phasing tone recognition and tuning oscilloscope
- Latitude and longitude gridding on Polar orbiting images
- Interactive thermal infra red analysis
- Polar orbiting prediction program
- Multiframe animation
- Image brightness
- Contrast
- Reversal and rotation control.

Price only £199 inc VAT p&p £3.25

PC SWL 3.0

PC SWL is a complete package allowing decoding of data sent over radio

This new version contains the following facilities:

- RTTY baudot 45, 50, 75 and 100, or user selectable rate
- ASCII 75, 110, 150, and 300, or user selectable rate
- FEC/ARQ including AMTOR/SITOR 75 and 100 baud
- MORSE CODE with automatic or manual speed control
- NAVTEX marine weather and navigational information
- RAW HEX for manual decoding
- Improved automatic signal analysis
- Integrated shortwave station log, to enable search, sort and store stations
- New drop down menus, integration with PC HF FAX.

Upgrade for existing PC SWL users £39.95 p&p £1.50
£99 inc VAT p&p £3.25
Order PC SWL and PC HF FAX together for only £178 p&p £3.25

SWM BOOK SERVICE

VISA
0202 665524

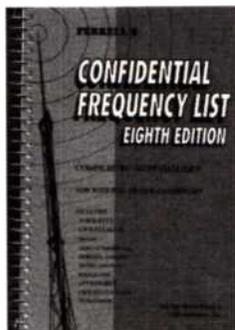
The books listed have been selected as being of special interest to our readers. They are supplied from our editorial address direct to your door. Some titles are overseas in origin.

HOW TO ORDER

POST AND PACKING; add £1.00 for one book, £2.00 for two or more books, orders over £40 post and packing free, (overseas readers add £1.75 for one book, £3.50 for two or more for surface mail postage) and send a postal order, cheque or international money with your order (quoting book titles and quantities) to PW Publishing Limited, FREEPOST, Enefco House, The Quay, Poole, Dorset BH15 1PP. Please make your cheques payable to Short Wave Magazine, payment by Access, Mastercard, Eurocard or Visa also accepted on telephone orders to Poole (0202) 665524. Books are normally despatched by return of post but please allow 28 days for delivery. Prices correct at time of going to press. Please note: all payments must be made in Sterling.

O/P = Out of print, O/S = Out of stock.

LISTENING GUIDES



FERRELL'S CONFIDENTIAL FREQUENCY LIST
Compiled by Geoff Halligey Completely revised, much larger and spirally bound. Now covers 1.6-28MHz covered in great depth, with new reverse frequency listing. Who's using what frequency and mode, what's that call sign? A very comprehensive book. 390 pages. £17.95

SOUNDS EASY (1991 EDITION)
Compiled by Ken Davies A complete guide to the numerous local radio stations throughout the UK. If you do a lot of travelling this book is invaluable. Indexed by area, it makes finding your kind of sounds easy. 52 pages. £2.95

AIR TRAFFIC RADIO (8th Edition)
Compiled by Ken Davies Completely revised to make this one of the most comprehensive guides to the UK airband communications. Frequencies and abbreviations used in UK air traffic control. Where to listen for tower, ground and radar control in civilian and other airports. Includes a section on off-shore oil related use. 72 pages. £4.50

INTERNATIONAL RADIO STATIONS GUIDE (BP255)
New revision by Peter Shore
As in, 'Broadcast Roundup', his column in PW, Peter Shore has laid this book out in world areas. There are sections covering English language transmissions, programmes for DXers and s.w.l.s. Along with sections on European m.w. and UK f.m. stations. 266 pages. £5.95

AIR BAND RADIO HANDBOOK (3rd Edition)
David J. Smith
Listen to conversations between aircraft and ground control. The author, an air traffic controller, explains more about this listening hobby. 174 pages. £7.50

DIAL SEARCH
1991 Edition. George Wilcox
The listener's check list and guide to European broadcasting. Covers m.w., l.w., v.h.f. and s.w., including two special maps. 54 pages. £3.95

FLIGHT ROUTINGS 1992
T.T. Williams
Identifies airline flights, schedule, charter, cargo and mail, to and from the UK and Eire and overflights between Europe and America. 104 pages. £5.75

GUIDE TO BROADCASTING STATIONS
20th Edition 1989/90. Philip Darrington
Frequency and station data, receivers, antennas, Latin American DXing, reporting, computers in radio, etc. 240 pages. £18.95

GUIDE TO FACSIMILE STATIONS 11th Edition
Joerg Klingenfuss
This manual is the basic reference book for everyone interested in FAX. Frequency, call sign, station name, ITU country/geographical symbol, technical parameters of the emission are all listed. All frequencies have been measured to the nearest 100Hz. 408 pages. £16.00

GUIDE TO FORMER UTILITY TRANSMISSIONS
3rd Edition. Joerg Klingenfuss
Built on continuous monitoring of the radio spectrum from the sixties until the recent past. A useful summary of the former activities of utility stations providing information for the classification and identification of radio signals. 126 pages. £8.00

GUIDE TO UTILITY STATIONS
10th Edition. Joerg Klingenfuss
This book covers the complete short wave range from 3 to 30MHz together with the adjacent frequency bands from 0 to 150kHz and from 1.6 to 3MHz. It includes details on all types of utility stations including FAX and RTTY. There are 15802 entries in the frequency list and 3123 in the alphabetical call sign list plus press services and meteorological stations. 502 pages. £21.00

HF OCEANIC AIRBAND COMMUNICATIONS
3rd Edition. Bill Laver
HF aircraft channels by frequency and band, main ground radio stations, European R/T networks and North Atlantic control frequencies. 31 pages. £3.95

MARINE UK RADIO FREQUENCY GUIDE
Bill Laver
A complete guide to the UK s.w. and v.h.f. marine radio networks. Useful information, frequency listings and the World Marine Coastal Phone Stations. 62 pages. £4.95

NEWNES SHORT WAVE LISTENING HANDBOOK
Joe Pritchard G1UQW
A technical guide for all short wave listeners. Covers construction and use of sets for the s.w.l. who wants to explore the bands up to 30MHz. 288 pages. £14.95

RADIO LISTENER'S GUIDE 1992
Clive Woodyear
This is the third edition of the essential radio listener's guide. Simple-to-use maps and charts show the frequencies for all the radio stations in the UK. When travelling or at home, the guide gives you all the frequencies you'll ever need. 56 pages. £2.95

THE COMPLETE VHF/UHF FREQUENCY GUIDE
This book gives details of frequencies from 26-2250MHz with no gaps and who uses what. Recently updated, there are chapters on equipment requirements as well as antennas, etc. 88 pages. £5.95

THE INTERNATIONAL VHF FM GUIDE
7th Edition. Julian Baldwin G3UHK and Kris Pritchard G8AUU
The latest edition of this useful book gives concise details of repeaters and beacons worldwide plus coverage maps and further information on UK repeaters. 79 pages. £2.85

THE POCKET GUIDE TO RTTY AND FAX STATIONS
Bill Laver
A handy reference book listing RTTY and FAX stations, together with modes and other essential information. The listing is in ascending frequency order, from 1.6 to 27.1MHz. 60 pages. £3.95

SHORT WAVE LISTENERS CONFIDENTIAL FREQUENCY LIST
Bill Laver
Covering the services and transmission modes that can be heard on the bands between 1.635 and 29.7MHz. £8.95

VHF/UHF AIRBAND FREQUENCY GUIDE
Fourth Edition
A complete guide to the airband frequencies, civil and military, including how to receive these signals, the frequencies and services, VOLMET and much more about the interesting subject of airband radio. 124 pages. £6.95

WORLD RADIO TV HANDBOOK 1992
Country-by-country listings of l.w., m.w. & s.w. broadcast and TV stations. Receiver test reports. English language broadcasts. The s.w.l.'s bible. 576 pages. £18.95

FAULT FINDING

MORE ADVANCED TEST EQUIPMENT CONSTRUCTION (BP249)
R.A. Penfold
A follow on from *Test Equipment Construction (BP248)* this book looks at digital methods of measuring resistance, voltage, current, capacitance and frequency. Also covered is testing semi-conductors, along with test gear for general radio related topics. 102 pages. £3.50

HOW TO USE OSCILLOSCOPES AND OTHER TEST EQUIPMENT (BP267)
R.A. Penfold Hints and ideas on how to use the test equipment you have, to check out, or fault find on electronic circuits. Many diagrams of typical waveforms and circuits, including descriptions of what waveform to expect with particular faults, or distortion in audio amplifiers. 104 pages. £3.50

ARE THE VOLTAGES CORRECT?
Reprinted from PW 1982-1983
How to use a multimeter to fault-find on electronic and radio equipment, from simple resistive dividers through circuits using diodes, transistors, i.c.s and valves. 44 pages. £1.50

GETTING THE MOST FROM YOUR MULTIMETER (BP239)
R. A. Penfold
This book is primarily aimed at beginners. It covers both analogue and digital multimeters and their respective limitations. All kinds of testing is explained too. No previous knowledge is required or assumed. 102 pages. £2.95

MORE ADVANCED USES OF THE MULTIMETER (BP265)
R.A. Penfold
This book is primarily intended as a follow-up to BP239, *Getting the most from your Multimeter*. By using the techniques described in this book you can test and analyse the performance of a range of components with just a multimeter (plus a very few inexpensive components in some cases). The simple add-ons described extend the capabilities of a multimeter to make it even more useful. 85 pages. £2.95.

OSCILLOSCOPES, HOW TO USE THEM, HOW THEY WORK
3rd Edition
Ien Hickman
This book describes oscilloscopes ranging from basic to advanced models and the accessories to go with them. £14.95

TRANSISTOR RADIO FAULT FINDING CHART (BP70)
C. E. Miller
Used properly, should enable most common faults to be traced reasonably quickly. Selecting the appropriate fault description at the head of the chart, the reader is led through a sequence of suggested checks until the fault is cleared. 635 x 455mm (approx). £8.95

CONSTRUCTION

COIL DESIGN AND CONSTRUCTION MANUAL (BP160)
B.B. Babani
Covering audio to r.f. frequencies, this book has designs for almost everything. Sections cover such topics as mains and audio output transformers, chokes and r.f. coils. What is the required turns ratio? This book will show you how to find out. Text and tables. 160 pages. £2.50

SIMPLE ELECTRONIC CIRCUIT AND COMPONENTS (BP62)
F.A. WILSON
Components, circuits, formulae and radio matters are dealt with in this book. A book to fill in the gaps that appear when taking the RAE or the Novice course. Also eminently suitable for anyone wishing to study at home. 209 pages. £3.50

SHORT WAVE SUPERHET RECEIVER CONSTRUCTION (BP276)
R.A. Penfold A general purpose receiver to build, from antenna to audio, described in understandable English. 74 pages. £2.95

HOW TO DESIGN AND MAKE YOUR OWN PCBs (BP121)
R. A. Penfold
Designing or copying printed circuit board designs from magazines, including photographic methods. 80 pages. £2.50

INTRODUCING QRP
Collected articles from PW 1983-1985
An introduction to low-power transmission (QRP). This book includes full constructional details of a variety of designs by Rev. George Dobbs G3RLV for transmitters and transceivers covering Top Band to 14MHz, together with test equipment by Tony Smith G4FAI. 64 pages. £1.50

MORE ADVANCED POWER SUPPLY PROJECTS (BP192)
R. A. Penfold
The practical and theoretical aspects of the circuits are covered in some detail. Topics include switched mode power supplies, precision regulators, dual tracking regulators and computer controlled power supplies, etc. 92 pages. £2.95

POWER SUPPLY PROJECTS (BP76)
R. A. Penfold
This book gives a number of power supply designs including simple unregulated types, fixed voltage regulated types and variable voltage stabilised designs. 91 pages. £2.50

PRACTICAL POWER SUPPLIES
Collected articles from PW 1978-1985
Characteristics of batteries, transformers, rectifiers, fuses and heatsinks, plus designs for a variety of mains-driven power supplies, including the PW "Marchwood" giving a fully stabilised and protected 12V 30A d.c. 48 pages. £1.25

QRP NOTEBOOK
2nd Edition. Doug DeMaw W1FB
This book, enlarged and completely revised, deals with the building and operating of a successful QRP station. Lots of advice is given by the author who has spent years as an ardent QRP'er. All the text is easy-to-read and the drawings large and clear. 180 pages. £7.95

TEST EQUIPMENT CONSTRUCTION (BP248)
R.A. Penfold
Describes, in detail, how to construct some simple and inexpensive, but extremely useful, pieces of test equipment. 104 pages. £2.95

50 (FET) FIELD EFFECT TRANSISTOR PROJECTS (BP39)
F.G. Rayer
50 circuits for the s.w.l., radio amateur, experimenter or audio enthusiast using f.e.t.s. 104 pages. £2.95

MORSE

INTRODUCING MORSE
Collected Articles from PW 1982-1985
Ways of learning the Morse Code, followed by constructional details of a variety of keys including Iambic, Triambic, and an Electronic Bug with a 528-bit memory. 48 pages. £1.25

THE SECRET OF LEARNING MORSE CODE
Mark Francis
Designed to make you proficient in Morse code in the shortest possible time, this book points out many of the pitfalls that beset the student. 87 pages. £4.95

INTERFERENCE

INTERFERENCE HANDBOOK (USA)

William R. Nelson W4SFG

How to locate and cure r.f.i. for radio amateurs, CBers and TV/stereo owners. 253 pages £9.50

TELEVISION

A TV-OXERS HANDBOOK (BP176) R. Bunney
Information on transmission standards, propagation, receivers including multi-standard, colour, satellites, antennas, photography, station identification, interference etc. Revised and updated 1986. 87 pages. £5.95

GUIDE TO WORLD-WIDE TELEVISION TEST CARDS

Edition 3. Keith Hamer & Garry Smith

Completely revised and expanded, this is a very handy and useful reference book for the DXTV enthusiast. Over 200 photographs of Test Cards, logos, etc., world wide. 60 pages. £4.95

THE ATV COMPENDIUM

Mike Wooding G6JOM

This book is for those interested in amateur television, particularly the home construction aspect. There is not a 70cm section as the author felt this is covered in other books. Other fields, such as 3cm TV, are covered in depth. A must for the practical ATV enthusiast. 104 pages. £3.00

MAPS

IARU LOCATOR MAP OF EUROPE

DARC

This multi-coloured, plastics laminated, map of Europe shows the AIRU ('Maidenhead') Locator System. Indispensable for the v.h.f. and u.h.f. DXer. 692 x 872mm. £5.25

NORTH ATLANTIC ROUTE CHART

This is a five-colour chart designed for the use of ATC in monitoring transatlantic flights. Supplied folded. 740 x 520mm. £5.00

QTH LOCATOR MAP

This full-colour map has been produced by the Hungarian Amateur radio clubs for v.h.f. and u.h.f. amateurs in Europe. The map is based on the 'Maidenhead' Locator System and also the main v.h.f. and u.h.f. beacons with their locator, power output, height above sea level and modulation system. 970 x 670mm. £5.95

RADIO AMATEUR'S MAP OF NORTH AMERICA (USA)

Shows radio amateur prefix boundaries, continental boundaries and zone boundaries. 760 x 636mm. £3.50

RADIO AMATEUR'S PREFIX MAP OF THE WORLD (USA)

Showing prefixes and countries, plus listings by order of country and of prefix. 1014 x 711mm. £3.50

RADIO AMATEUR'S WORLD ATLAS (USA)

Seventeen pages of maps, including the world-polar projection. Also includes the table of allocation of international call sign series. £4.50

SATELLITES

AN INTRODUCTION TO SATELLITE TELEVISION (BP195)

F. A. Wilson

Answers all kinds of questions about satellite television. For the beginner thinking about hiring or purchasing a satellite TV system there are details to help you along. For the engineer there are technical details including calculations, formulae and tables. 104 pages. £5.95

THE SATELLITE EXPERIMENTER'S HANDBOOK 2nd Edition

Martin Davidoff K2UBC The book is divided into four main sections - History, Getting Started, Technical Topics and Appendices. It provides information on spacecraft built by, and for, radio amateurs. In addition, it discusses weather, TV-broadcast and other satellites of interest to amateurs. 313 pages £14.50

SATELLITE TELEVISION A layman's guide

Peter Pearson

Pictures from space, that's what satellite television is all about. Orbiting satellites 35 000km high receive TV signals from stations on the earth and retransmit them back again. This book explains all you need to know to set up your own satellite TV terminal at home, dish and accessories, cable and tuner. 73 pages. £1.00

SATELLITE TELEVISION INSTALLATION GUIDE

2nd Edition. John Breeds

A practical guide to satellite television. Detailed guidelines on installing and aligning dishes based on practical experience. 56 pages. £11.95

THE SATELLITE BOOK (A complete guide to satellite TV theory and practice)

John Breeds

This book deals almost exclusively with television broadcast satellites and is a comprehensive collection of chapters on topics, each written by an expert in that field. It appears to be aimed at the professional satellite system installer, for whom it is invaluable, but it will be appreciated by a much wider audience - anyone interested in satellite technology. 280 pages. £27.00

WEATHER SATELLITE HANDBOOK 4th edition

Dr Ralph E. Teggart WB8DQT

This book explains all about weather satellites, how they work and how you can receive and decode their signals to provide the fascinating pictures of the world's weather. There are plenty of circuit diagrams and satellite predicting programs. 192 pages. £14.50

RADIO

AIR & METEO CODE MANUAL

10th Edition. Joerg Klingentuss

Detailed descriptions of the World Meteorological Organisation Global Telecommunication System operating FAX and RTTY meteo stations, and its message format with decoding examples. Also detailed description of the Aeronautical Fixed Telecommunication Network amongst others. 289 pages £15.00

HIGH POWER WIRELESS EQUIPMENT

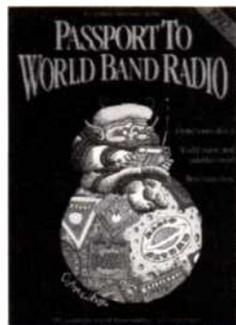
Articles from *Practical Electricity* 1910-11

Edited by Henry Walter Young

A reprint of interesting practical articles from the very early days of radio. 99 pages. £8.85

PASSPORT TO WORLD BAND RADIO 1992

This book gives you the information to explore and enjoy the world of broadcast band listening. It includes features on different international radio stations, receiver reviews and advice as well as the hours and languages of broadcast stations by frequency. 384 pages £14.50



RADIOTELETYPE CODE MANUAL

10th Edition. Joerg Klingentuss

This book gives detailed descriptions of the characteristics of telegraph transmission on short waves, with all commercial modulation types including voice frequency telegraphy and comprehensive information on all RTTY systems and c.w. alphabets. 96 pages. £8.00

RESCUE

Paul Beaver & Paul Berriff

This book follows the life and conditions of rescue helicopter crews. This is not drama, this is real life and it makes a true impression of the rescuers for the reader. There are transcriptions of air/ground and between crew dialogues, a summary of the main distress and rescue radio frequencies and helicopter base locations. 192 pages. £9.99

SCANNERS (Third Edition)

Peter Rouse GU1DKD

A guide for users of scanning receivers, covering hardware, antennas, accessories, frequency allocations and operating procedures. 245 pages. £8.95

SCANNERS 2

Peter Rouse GU1DKD

The companion to *Scanners*, this provides even more information on the use of the v.h.f. and u.h.f. communications band and gives constructional details for accessories to improve the performance of scanning equipment. 216 pages. £10.95

SHORT WAVE RADIO LISTENERS' HANDBOOK

Arthur Miller

In easy-to-read and non-technical language, the author guides the reader through the mysteries of amateur, broadcast and CB transmissions. 207 pages. £7.99

WORLDWIDE HF RADIO HANDBOOK

Marty R. Cooke

This book lists high frequencies used by aircraft and aeronautical ground stations. Divided into sections, Military, Civil etc. The book should be easy to use. £6.95

1934 OFFICIAL SHORT WAVE RADIO MANUAL

Edited by Hugo Gornbsack

A fascinating reprint from a bygone age with a directory of all the 1934 s.w. receivers, servicing information, constructional projects, circuits and ideas on building vintage radio sets with modern parts. 260 pages. £10.15

BEGINNERS

AN INTRODUCTION TO RADIO DXING (BP91)

R.A. Penfold

How to find a particular station, country or type of broadcast and to receive it as clearly as possible. 112 pages. £1.95

BEGINNER'S GUIDE TO RADIO

9th edition Gordon J. King

Radio signals, transmitters, receivers, antennas, components, valves and semiconductors, CB and amateur radio are all dealt with here. 266 pages. £12.95

ELECTRONICS SIMPLIFIED - CRYSTAL SET CONSTRUCTION (BP92)

F.A. Wilson

Especially written for those who wish to take part in basic radio building. All the sets in the book are old designs updated with modern components. 72 pages. £1.75

SIMPLE ELECTRONICS CIRCUIT & COMPONENTS Book One (BP62)

The aim of this book is to provide an inexpensive but comprehensive introduction to modern components. 209 pages. £3.50

COMPUTING

AN INTRODUCTION TO COMPUTER COMMUNICATIONS (BP177)

R. A. Penfold

Details of various types of modem and their applications, plus how to interconnect computers, modems and the telephone system. Also networking systems and RTTY. 96 pages. £2.95

NEWNES AMATEUR RADIO COMPUTING HANDBOOK

Joe Pritchard G1UQW

Shows how radio amateurs and listeners can 'listen' to signals by reading text on a computer screen. This book also covers the application of computers to radio 'housekeeping' such as log-keeping, QSL cards, satellite predictions and antenna design as well as showing how to control a radio with a computer. 368 pages. £14.95

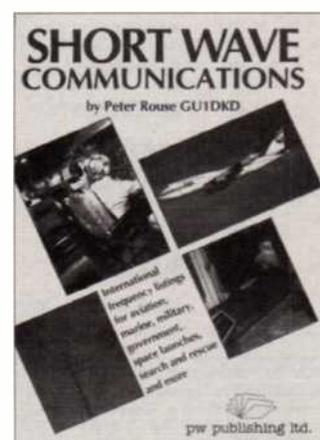


This is only a small selection of our Book Service selected as being of particular interest to SWM readers. See last month's issue for further titles. Our sister publication, Practical Wireless, carries titles for the radio amateur.



RADIO TECH MODIFICATIONS NUMBER 3

This book is intended as a reference guide for the experienced radio technician. Produced for the US market, it contains modification instructions for a wide range of scanners, CB rigs and amateur equipment, including Alinco, Icom, Kenwood, Yaesu and other makes. 160 pages. £9.95



SHORT WAVE COMMUNICATIONS

Peter Rouse GU1DKD

A new book from the word-processor of this best-selling author. Covers a very wide area and so provides an ideal introduction to the hobby of radio communications. International frequency listings for aviation, marine, military, space launches, search and rescue, etc. Chapters on basic radio propagation, how to work your radio and what the controls do, antennas and band plans. 187 pages. £8.95



THE UK SCANNING DIRECTORY

**NEW
2nd EDITION**

The success and popularity of this book has demanded a second edition to accommodate the wealth of new information.

Now over 7000 spot frequencies are listed in the 30MHz to 1GHz range, filling in the parts that other books leave blank. As well as covering the popular VHF Maritime Service and Civil and Military Aviation, "The UK Scanning Directory" also includes the new military frequencies, Emergency Services, Army, Royal Navy, RAF ground services, Eye-in-the-Sky Links, Personal Paging Systems, News Networks, Taxi Services, Courier Services, details of callsigns, duplex frequency splits and channel numbers, and much, much more.

Price £14.95 incl. UK postage. Overseas post add £1 airmail worldwide

INTERPRODUCTS

582, 8 Abbot Street, Perth PH2 0EB, Scotland
Tel & Fax: 0738-441199



ALYNTRONICS

129 CHILLINGHAM ROAD, HEATON,
NEWCASTLE-UPON-TYNE NE6 5XL TEL: 091-2761002

THE ONLY AUTHORISED DEALER IN THE NORTH-EAST FOR

ICOM & YAESU

WE ALSO STOCK MANY OTHER ITEMS OF EQUIPMENT FROM
MFJ ★ BUTTERNUT ★ CUSHCRAFT TONNA ★ DIAMOND ★ AOR
BEARCAT ★ FAIRMATE ★ JUPITER ★ LOWE ★ TEAM
MIDLAND ★ NEVADA ★ CTE ★ WELZ
★ REVEX ★ BOOKS & MAPS ★



LICENSED CREDIT BROKER



OPEN 10am - 5.45pm TUES - FRI 10am - 4.45pm SAT

LIC: 1962

G3RCQ

R.A.O.T.A.

Established 1979
Open 7 days per week 9am-9pm

ELECTRONICS

I BUY AND SELL SCANNERS, RECEIVERS AND AMATEUR RADIO EQUIPMENT



9 Troopers Drive · Harold Hill · Romford · Essex
(M25 Junction 28)



Stocks are changing daily so it's always worth giving me a call, I can also supply all brands of new equipment - phone me anytime between 9am and 9pm 7 days a week.



0708
374043



or mobile

0850 320134

MAIL ORDER · PART EXCHANGE

Index to Advertisers

AOR (UK) Limited	14	Garex Electronics	44	Nevada Communications	Cover ii, 18, 19
ARE Communications 92	60	Hoka Electronics	68	Pixel Plus	52
ASK Electronics	34	Holdings Amateur	69	Practical Wireless	74
Aerial Techniques	44	Howes, CM	54	President Electronic	2
Air Supply	69	ICOM (UK)	Cover iii, 43	R & D Electronics	52
Alan Hooker	51	ICS Electronics	22	Radio Research	65
Alyntronics	72	Interproducts	72	Radio Shack	66
Amdat	67	J & J Enterprises	65	Rapid Results College	75
Aviation Hobby Centre	58	J & P Electronics	68	Rylands, F G	68
Billington Valves	68	Javiation	54	SRP Trading	28
C M Leisure	65	KW Communications	20	Short Wave Centre, The	60
Cirkit	75	Klingenfuss Publications	58	Sigma Euro Comm	52
Colomor Electronics	69	Lake Electronics	58	Siskin Electronics	52
Comar Electronics	69	Lee Electronics	44	South Midlands Communications	13
Dewsbury Electronics	67	Link Electronis	65	Technical Software	68
Dressler	74	Lowe Electronics	Cover iv, 8, 9, 10	Technology Partners	75
Elliott Electronics	52	Martin Lynch	26, 27, 65	Timestep Weather	66
Flightdeck	69	Mauritron	65	Waters & Stanton	48, 49
G3RCQ Electronics	72	Modulations Communications	69		

PUBLISHED on the fourth Thursday of each month by PW Publishing Ltd., Enefco House, The Quay, Poole, Dorset BH15 1PP. Printed in England by Southernprint (Web Offset), Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (0202) 622226. Distributed by Seymour, Windsor House, 1270 London Road, Norbury, London SW16 4DH. Tel: 081-679 1899, Fax: 081-679 8907, Telex: 881245. Sole Agents for Australia and New Zealand - Gordon and Gotch (Asia) Ltd.; South Africa - Central News Agency Ltd. Subscriptions INLAND £21, EUROPE £23, OVERSEAS (by ASP) £25, payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Enefco House, The Quay, Poole, Dorset BH15 1PP. SHORT WAVE MAGAZINE is sold subject to the following conditions, namely that it shall not without the written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

trading post

Fill in the order form on page 76 in **BLOCK CAPITALS** - up to a maximum of 30 words plus 12 words for your address - and send it, together with your payment of £2.35, to Trading Post, *Short Wave Magazine*, Enefco House, The Quay, Poole, Dorset BH15 1PP. If you do not wish to cut your copy of *SWM*, or do not wish to use the orderform provided, you must still send the corner flash or your subscription number as proof of purchase of the magazine. Advertisements from traders, apparent traders or for equipment which it is illegal to possess, use or which cannot be licensed in the UK will not be accepted.

FOR SALE video transfer, 8mm films, slides, photos, titles plus sound track onto VHS. Send s.a.e. for details or Tel: (0570) 481076. Swyn-y-Nant, Drefach, Llantbther, Dyfed SA40 9YB.

FOR SALE. Military airband monitor. No doubt you've noticed the change, log your frequencies in order so you know what that frequency is! The logbook has pages running 118-135MHz and 225-400MHz in 25kHz separation - ideal this time. Plus pages at rear for listing favourite airfield lists. Only £5.00 including P&P. Mr T Fors. 94 Everingham Road, Sheffield S5 7LG.

FOR SALE Trio R600, SP120 speaker, Yaesu FRG-7, Icom IC-R70, Trio R2000 complete with v.h.f. converter, all mint, boxed, covers, manuals. Sewell. Tel: (0686) 626385. Lower Grove, Mochdre, Newtown, Powys SY16 4JQ.

FOR SALE Memorex twin stereo cassette deck plus Memorex stereo amplifier, both new, £60 each or w.h.y? **FOR SALE** radio books *SWM*. **WANTED** Realistic 40-channel hand-held CB. **FOR SALE** digital multi-meter bench type, new, £35. Tel: Newark (0636) 77944 evenings otherwise answerphone.

FOR SALE Braun T1000CD 12 wavebands mains/battery with nine rechargeable - circuit diagrams, offers. Tel: (0823) 275158 (Taunton).

FOR SALE FRG-7700 h.f. receiver, all mode, manual, good condition, £150. DX1000 Bearcat h.f. receiver 10kHz-30MHz, switchable i.f.s, manual, boxed, first class performer, all mode, digital display memory, £200. Can deliver. Tel: (0695) 22573 after 6pm.

FOR SALE JRC NRD-535 communications receiver, 5 months old, superb condition, £775. Buyer collects, cash only. Ian. Tel: (0706) 31658 Rochdale, Lancs.

FOR SALE Sony SW-55 all boxed, only 2 months old, 10 months guarantee, immaculate condition, costs new, £250, selling for £190, also AN-1 active antenna, £30, good reason for sale. Dean. Tel: (0256) 336611 ext 291 days. (0256) 469628 evenings, Basingstoke.

FOR SALE R210 working, unmodified with p.s.u., £50. Also Grundig Yacht Boy 400, nine wave bands, £25 o.n.o. or w.h.y? Tel: (0785) 225106 Staffs.

FOR SALE AOR1000 boxed, as new. Hand-held scanner, £190. Tel: (0926) 511085 Kenilworth.

FOR SALE Sony CRF-320 excellent receiver, 32 bands, digital, £375. Icom R-7000 mint condition, boxed, TV f.m. adapter, SP20 speaker with audio filter, bargain, £600. Kenwood R-2000, boxed, £350. National RF-B600L. memo, auto, scan, fine receiver cost £550, sell £250. Satellit Grundig 600 PRO, mint condition, £150. Tel: 081-571 5759.

FOR SALE Kenwood TS-520SE transceiver, AT200 a.t.u., MC50 mic, 1kW dummy load plus cables and manuals, all excellent condition, £175 including carriage. Tel: (0603) 661478 evenings.

FOR SALE Fairmate HP200E, 12 months old with all accessories, mint condition, £175 o.v.n.o. Tel: (0229) 861661, Cumbria.

FOR SALE JVC 5in DXTV v.h.f./u.h.f. 5.5-6MHz sound, £50. D100 deluxe DXTV converter, £50. Sony 2in b/w TV u.h.f. hand-held, £50. Tel: (0294) 221842.

FOR SALE Trio R2000 h.f. receiver fitted with v.h.f. converter. All modes, digital display with clock and timer, very clean, good condition, £350. Tel: (0482) 631523, Humberside.

WANTED s.s.b. unit for Grundig Satellit 6000. Also circuit. Also Codar a.t.u. Reasonable price. Tel: 051-648 3031.

EXCHANGE 25 photo books, various subjects, darkroom, studio, etc., mint condition, cost over £200. For FRG-7, scanner, w.h.y? Aintree. 1 Brid Close, Bridestowe, Devon EX20 4EJ.

FOR SALE Realistic PRO2022 programmable scanner, 200 channels, 66-88, 108-174, 380-512 & 806-960MHz. Discone antenna included. Receiver boxed, brand new condition, £165 o.n.o. Tel: (0772) 39895.

FOR SALE Bearcat BC200 XLT scanner, v.g.c., £110. Tel: 081-785 9077, Putney.

FOR SALE WIN 108 airband receiver, hardly used, excellent condition, boxed as new, £95. Tel: (0203) 404322 after 6pm, Coventry.

FOR SALE Zenith Royale 3000 receiver in good condition, £60. Tel: (0695) 28945.

FOR SALE Sony PRO808-waytuning, airband, 40 pre-sets, boxed, new condition, £170 o.n.o. Sony TCR302 tape deck, £70 o.n.o. Bracknell, close delivery. Tel: (0344) 777730 evenings, (0494) 471111 ext 2133 day.

WANTED Sony ICF2001D and active antenna in **EXCHANGE** for Tunturi rowing machine with microprocessor, Body 2000 exercise cycle with microprocessor,

weight bench with various weights and expanders. Tel: (0507) 490504, Lincs.

FOR SALE Eddystone 840 200kHz-30MHz receiver, £60. Oscilloscope CT436 double trace, £50. HRO MX RX power pack, full set bandspread coils in cabinet, rack-mounted model, mint condition. Offers? Tel: 091-274 5844 after 6pm, Newcastle upon Tyne.

FOR SALE Realistic PRO 2006 scanner with Hyperscan, covers 25 to 1300MHz a.m. and f.m. narrow and f.m. wide modes, 400 channels, excellent condition, £200 no offers. Tel: (0643) 706623, Minehead, Somerset.

FOR SALE Racal RA17L valved h.f. communications receiver, good working order, better than many 'modern' receivers at a fraction of the price, £125 o.n.o. Tel: (0538) 373847.

FOR SALE or **EXCHANGE** Sony CRF 320. **WANTED** older type Grundig Satellit with s.s.b. unit and case or w.h.y? Tel: (0709) 522535 Rotherham area, S. Yorks.

FOR SALE Lowe HF-225 a.m./f.m. sync detector, keypad, whip antenna, antenna tuning unit. Equipment has had under 25 hours of use. New discone and 15 metres UR67 cable, £475. Tel: (0784) 436688, Egham.

WANTED good condition Eddystone 750 or 940. D. Fletcher. Tel: (0223) 843408, Cambridge.

FOR SALE Dressler s.w. ARA60 active antenna, 50kHz-60MHz, complete with power supply 1.2m long glass fibre tube, ideal for limited space, cost £159, Sell £100 o.n.o. Tel: (0843) 586823 after 6pm, Ramsgate, Kent.

More Trading Post on Page 76

practical Wireless

M · O · R · S · E - W · E · E · K · E · N · D

Worried about the Morse test? Are you all 'keyed up' about Morse? Does the prospect of getting an 'A' licence 'bug' you? Do you want to put that final 'polish' on your 'keying'? And do you then want to have the opportunity to take your test, while you're enjoying a 'short break' weekend holiday?

If so, why don't you put your name down for the *Practical Wireless Morse Weekend*? For around the £160 mark, we're planning to provide meals and accommodation in a good quality, comfortable Hotel. The weekend will start on the Friday evening, and finish after lunch on the Sunday. You will have the opportunity to have some Morse tuition, before you take the Morse test itself. You'll also have the chance to see and try all the latest aids for c.w. working in amateur radio, meet the experts, other 'key' enthusiasts and have fun at the same time.

OTHER ATTRACTIONS

Originally planned for the late spring, we're now

looking at a weekend in September. There will be other attractions for friends and family members not joining in with the amateur radio events. Don't forget that we're very close to the delights of the New Forest, the Hampshire and Dorset sea-side resorts and some delightful 'Stately Home' attractions. With that in mind, we plan to organise some coach trips so that the weekend will have something for everyone.

EXCELLENT COMMUNICATIONS

Communications to this part of the UK are excellent. We've got superb train services from the north and Scotland and even abroad if need be! If you're interested, please send a fully refundable deposit of £25 per person to:

PW Morse Weekend, Enefco House, The Quay, Poole, Dorset BH15 1PP. Tel: (0202) 678558.

Alternatively, if you want to hear more about the Morse Weekend, why not call Rob Mannion G3XFD to talk about it? (Between 3 and 4pm please!)

dressler

COMMUNICATIONS LIMITED

191 Francis Road, Leyton, LONDON E10 6NQ

Tel: 081-558 0854/556 1415

Fax: 081-558 1298

Telex: 8953609

24 hour hotline ansaphone

Open: Monday-Friday 9.00am - 5.30pm

Saturday 9.30am - 4.30pm

ICR1
£325



ICR72
+ARA60
£699



ICR71
+ARA60
£875



ICR7000
Few only
£1000
inc ARA1500



ICR7100 inc HF or ARA1500 £1120

PRE-OWNED UNITS

FRG9600 x 2 each £375
ICR7000HF £750
ICR71 £675
LOWE 225 + accessories £425
FRG7700 £295
AOR2001 £199
MX8000 £275

Phone for latest prices and offers



Prices correct at time of going to press. Please phone for latest quote. Or contact your local agent any time on the following numbers: Terry (Biggleswade, Beds.) 0767 316 431. Stuart (Bromley, Kent) 081-313 9186.

YAESU
FRG8800 HF receiver £585



FRG9600 50-950MHz £499

ALINCO

DJX-1 £259

SONY
SW77 only
£349



YAESU

ICOM

KENWOOD

STANDARD

KENWOOD

R5000inc ARA60 £925
R2000 £ PHONE
LOWE 225 £429
LOWE 150 £329



JRC

NRD535D+ECSS+BWC+1kHz
filter inc. ARA60 £1699
NRD535 only £975
NRD535 inc ARA60 £1095



AOR

AOR3000A
AOR2000
AOR2800

PHONE FOR SPECIAL PACKAGE DEALS

YUPITERU

MVT7000 £279

DRESSLER ACTIVE ANTENNAS

ARA60 ACTIVE ANTENNA
50kHz - 60MHz with limited performance up to 100MHz

ARA1500 50MHz -1500MHz
Frequency Gain
50-1000 11.5dB
100 - 1500 11.0dB

£163.00 - 'N' connection

SHORTWAVE ACTIVE ANTENNA

940mm High 64mm diameter complete with cable + PSU and interface £163

Now fully tuneable interface. Intercept point + 21dBm typical.

SHINWA SR001

Remote control full feature receiver. Still only

£299!

Announcement: Change of Title: Commencing with the JULY issue

The 'BUYERS & SELLERS DIGEST' will be published as :

Radio Amateur Advertiser

Now indicating clearly the content, plus the FREE ADVERTISING SERVICE to the RADIO/ELECTRONIC enthusiast

There cannot be a more economical service than FREE ONE for advertising those surplus items, No obligation to subscribe to the magazine to participate
In this FREE SERVICE

AVAILABLE BY SUBSCRIPTION ONLY. RATES (inc postage) :
12 monthly issues: UK £12.00 - EUROPE: £18.00 - REST OF WORLD: £22.00
For further information 9" x 4" S.A.E. Introductory sample copies available at £1.00 inc postage (Note may not be current issue)

**BUYING OR SELLING IS EASY WITH
FREE PRIVATE ADS**

Technology Partners, PO Box 6, South Shore, Blackpool FY4 4YG

RADIO AMATEURS EXAM? PASS FIRST TIME!

Before you enrol check the benefits of RRC'S unique Home Tuition Service

RRC has helped thousands of students to success in their examinations with this unique system of postal tuition, one which guides you, step-by-step, to qualify in the shortest possible time. Only The Rapid Results College offers you all these advantages:

- | | |
|--|---|
| <input checked="" type="checkbox"/> A qualified personal tutor | <input checked="" type="checkbox"/> Free advice before you enrol |
| <input checked="" type="checkbox"/> Study material prepared by specialists | <input checked="" type="checkbox"/> Telephone Helpline |
| <input checked="" type="checkbox"/> Completely self-contained courses | <input checked="" type="checkbox"/> Free 'How to Study' Guide |
| <input checked="" type="checkbox"/> Handy pocket-size booklets | <input checked="" type="checkbox"/> Instalment Plan |
| <input checked="" type="checkbox"/> Personal study programme | <input checked="" type="checkbox"/> Free Postage on course material |
| <input checked="" type="checkbox"/> Regular marked tests | <input checked="" type="checkbox"/> Worldwide Airmail Service |
| <input checked="" type="checkbox"/> Courses regularly updated | <input checked="" type="checkbox"/> Extra tuition free if you don't pass first time |
| <input checked="" type="checkbox"/> 48 hour despatch | |

POST COUPON TODAY FOR FREE
RADIO AMATEURS PROSPECTUS

Please send me my prospectus as quickly as possible.

Mr/Mrs/Miss/Ms _____

Address _____

Postcode _____

 **The Rapid Results College**
Dept. JV125, Tuition House, London SW19 4DS. FREE ADVICE: 081 947 7272 (9am-5pm)
PROSPECTUS: 081 946 1102 (24 hour Recordcall Service quoting Dept. No. above).



OUT NOW!

Summer '92 Electronic Constructors Catalogue



Many new
products including:

- **Audio Amplifier Modules**
Range of 14 high power audio modules, encapsulated to an integral heatsink in Bi-polar, MOSFET and Class A formats with power outputs from 15 to 180 watts.
- **Books**
18 new titles from the top electronics publishers.
- **Burglar Alarm**
Volumetric alarm triggered by change in air pressure eg an opening door, easy to install - no wiring required.
- **Spectrum Analyser Adaptor**
Converts a conventional scope into a low cost, 250MHz spectrum analyser.
- **Low Profile Mains Transformers**
Encapsulated, top quality PCB mounting mains transformers.
- **Airband Scanning Receiver**
100 programmable channels, covering civil and military frequencies.
- **Stereo Valve Amplifier**
Top quality stereo hi-fi amp from Velleman - at a very competitive price!
- **Extended Ranges**
of connectors, equipment cases, filters, crystals, fuses, fans, kits, ATUs, semiconductors, loudspeakers, sounders and toroidal transformers.

With 24 product sections, 192 pages,
3000+ lines and £££s of discount vouchers,
be sure to get your copy now!

Available from most newsagents or
directly from Cirkit.

£1.70
+ 30p p&p

Cirkit



CIRKIT DISTRIBUTION LTD
Park Lane · Broxbourne · Hertfordshire · EN10 7NQ
Telephone (0992) 444111 · Fax (0992) 464457

PORTABLE PERFECTION



IC-R100 Mobile/Base Receiver.

On the road or at home the IC-R100 is the ideal solution to receiving stations in the 500kHz - 1800MHz frequency range.

For listening convenience a 24-hour system clock with timer functions, 100 memory channels, direct keypad entry and handy scan functions are featured.

- AM, FM and FM-wide modes.
- 10 programmed scan ranges.
- Priority scan.
- Memory scan.
- Auto memory write scan.
- AFC function.
- Variety of tuning steps.
- Built-in preamp and attenuator.
- 150(W)x50(H)x181(D)mm.

IC-R1 Handheld Receiver.

Tune into the world around you on the IC-R1, one of the smallest receivers ever made. With continuous coverage from 2MHz - 1300MHz, AM, FM and FM-wide reception right into the palm of your hand.

- Ultra compact size.
- 100 memory channels.
- Direct keyboard entry.
- 10 programmed scan ranges.
- Auto power saver.
- 24-hour system clock with timer functions.
- Advanced scan functions.
- Built-in S-meter.
- Built-in nicad batteries.
- 49(W)x102(H)x 35(D)mm.



Shown here are the two smallest receivers in the ICOM range, designed to complement the larger base stations. Whatever your requirement the answer is ICOM, so good to receive.

For further information about ICOM products and the location of your nearest authorised dealer please contact:
Icom (UK) Ltd. Dept SW Sea Street Herne Bay Kent CT6 8LD
Telephone: 0227 741741 (24hr). Fax: 0227 741742.



ICOM

HF RECEIVER TECHNOLOGY

INNOVATION DESIGN MANUFACTURE TECHNICAL SUPPORT

HF-150 Compact Communications Receiver

£329 inc VAT

Designed as a logical alternative to the Japanese 'push button portables', the HF-150 places a 'real radio' within your price reach. Whilst reflecting the Lowe approach to simplicity of operation, the HF-150 nevertheless has all the features and facilities you need. This truly is 'Real Radio'.

Frequency coverage: 30kHz - 30MHz
Modes: USB/LSB/AM/Sync. AM (Selectable S'band)
IF Bandwidths: 2.5kHz & 7kHz
Tuning: 8Hz steps with variable speed
Memories: 60 holding frequency & mode



Aerial inputs: 600 ohms, 50 ohms & Hi-Z Whip
Power: 12Vdc from mains adaptor (supplied)
Case: All-metal light alloy case
Size: 185mm(W) x 80mm(H) x 160mm(D)
Weight: 1.3kg (less batteries)



Frequency coverage: 30kHz - 30MHz
Modes: AM/LSB/USB/CW/NBFM (Sync AM optional)
Filters: 6 Input bandpass filters
Tuning steps: 8Hz - 125Hz (stepped by mode)
Construction: Fully floating chassis

Remote control: RS232C Computer interface (optional)
Memories: 30 holding a host of data
Tuning: Spin-wheel, keypad & MHz button freq. entry
Power supply: 110-120 or 220-240Vac 50Hz
Size: 483mm(W) x 88mm(H) x 320mm(D)

HF-235 The Professionals' Choice

£1116 inc VAT

HF-225 Gateway to the World

£429 inc VAT



Frequencies: 30kHz - 30MHz
Tuning: 8Hz steps.
Memories: 30 channels
Filters: IF filters for all modes fitted
Tuning: Keypad & spin-wheel
AM/FM Sync. Detector (optional)
Keypad for remote entry (optional)
Excellent quality at reasonable cost

LOWE ELECTRONICS LIMITED

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

Barry (S Wales): 0446 721304 *Bournemouth: 0202 577760 Bristol: 0272 771770
Cambridge: 0223 311230 Cumbernauld: 0236 721004 London (Heathrow): 0753 545255
London (Middlesex): 081-429 3256 Newcastle Airport: 0661 860418 *Closed on Monday

Sole appointed UK Distributor for KENWOOD Amateur Radio

