

ICOM

Count on us!

IC-R7000, 25-2000 MHz, Commercial quality scanning receiver



ICOM introduces the IC-R7000, advanced technology, continuous coverage communications receiver. With 99 programmable memories the IC-R7000 covers aircraft, Marine, FM Broadcast, Amateur Radio, television and weather satellite bands. For simplified operation and quick tuning the IC-R7000 features direct keyboard entry. Precise frequencies can be selected by pushing the digit keys in sequence of the frequency or by turning the

main tuning knob. FM wide/FM narrow/AM upper and lower SSB modes with six tuning speeds: 0.1, 1.0, 5, 10, 12.5, 25KHz. The IC-R7000 has 99 memories available to store your favourite frequencies including the operating mode. Memory channels can be called up by pressing the memory switch then rotating the memory channel knob, or by direct keyboard entry. A sophisticated scanning system provides instant access to the most used frequencies. By depressing the Auto-M switch, the IC-R7000 automatically memorises frequencies that are in use whilst it is in the scan mode, this allows you to recall frequencies that were in use. The scanning speed is adjustable and the scanning system includes the memory selected frequency ranges or priority channels. All functions including the memory channel readout are clearly shown on a dual-colour fluorescent display. Other features include dial-lock, noise blanker, attenuator, display dimmer and S-meter and optional RC-12 infra-red remote controller, voice synthesizer and HP 1 headphones.

IC-R71E, General coverage receiver.

The ICOM IC-R71E 100KHz to 30MHz general coverage receiver features keyboard frequency entry and infra-red remote controller (optional) with 32 programmable memory channels, SSB, AM, RTTY, CW and optional VFO's scanning, selectable AGC, noise blanker, pass band tuning and a deep notch filter.

With a direct entry keyboard frequencies can be selected by pushing the digit keys in sequence of frequency. The frequency is altered without changing the main tuning control. Options include FM, voice synthesizer, RC-11 infra-red controller, CK70 DC adaptor for 12 volt operation, mobile mounting bracket, CW filters and a high stability crystal filter.



Helpline: Telephone us free-of-charge on 0800 521 145. Mon-Fri 09.00-13.00 and 14.00-17.30. This service is strictly for obtaining information about or ordering Icom equipment. We regret this cannot be used by dealers or for repair enquiries and parts orders, thank you.

Datapost: Despatch on same day whenever possible.

Access & Barclaycard: Telephone orders taken by our mail order dept, instant credit & interest-free H.P.

Icom (UK) Ltd.

Dept SW, Sea Street, Herne Bay, Kent CT6 8LD. Tel: 0227 363859. 24 Hour.



23| Fire on Alpha



Cover The offshore oil rigs rely heavily on radio to keep in touch with the outside world, particularly when an emergency happens, and BP's Forties Alpha, in the North Sea, is no exception. Photograph courtesy of British Petroleum.

Also on the cover is Radio Sandino, one of the many broadcasting stations operating in Nicaragua. Read about the Nicaraguan "Radio War" on page 26

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Short Wave Magazine

Introduction to DX-TV Part 6	13	<i>Keith Hamer & Garry Smith</i>
SWM Review Howes TRF3 Receiver Kit	17	<i>Dick Ganderton</i>
Fire on Alpha	23	<i>Steve Voy</i>
The Radio War in Nicaragua	26	<i>George Wood & Hermod Pedersen</i>
Adding an Audio Amplifier to the Racal RA17	52	<i>G. W. Millmore</i>

REGULARS

A Word in Edgeways	2	<i>Your Letters</i>
What's New	3	<i>Latest News & Products</i>
Grassroots	6	<i>Club News</i>
Bookcase	9	<i>Books</i>
Airband	10	<i>Aeronautical Radio News</i>
Scanning	19	<i>For the Scanning Enthusiast</i>
Bandscan	28	<i>Broadcast Station News</i>
Starting Out	31	<i>For the Beginner</i>
Services	49	<i>Important Information</i>
Book Service	50	<i>Order Your Technical Books</i>
Rallies	52	<i>Where to Go</i>

SEEN & HEARD

Amateur Bands Round-Up	34	<i>Justin Cooper</i>
Decode	35	<i>Mike Richards G4WNC</i>
Info in Orbit	36	<i>Pat Gowen G3IOR</i>
Band II DX	38	<i>Ron Ham</i>
Television	39	<i>Ron Ham</i>
Long Medium & Short	40	<i>Brian Oddy G3FEX</i>

A WORD IN EDGEWAYS

Sir

I am writing to you in the hope that your readers might be able to assist me with some information. I have a Trio 9R59DS

communications receiver which over the last twelve months I have completely rebuilt. I would very much like to fit a digital frequency readout to this set, but unfortunately I do not know of anybody in the S. Wales area who could build this item for me or supply me with a circuit.

My address is 3 Digby Street, Barry, S. Wales CF6 6NP, and I will, of course, refund any expenses incurred.

P. A. SMITH
BARRY

Sir

Perhaps one of your readers could please help me. I am getting interference on my Sony ICF2001D short wave receiver from my Spectrum Plus computer. Can anyone recommend anything I could do to cut down or stop this. I would appreciate any help in this matter.

MISS L. GODBOLD
REDRUTH

If anyone has any experience of combating computer generated interference perhaps they could write to the Magazine so that we all can benefit

ED

Sir

I read with great interest your letter from Mr. R. Wilson, concerning the Pro 80 and the Nottingham Sony Centre and would like to add the following comments.

Firstly it is regrettable that our assistant misunderstood and was unable to answer Mr. Wilson's technical question.

However in our defence I would point out that at that time no consumer or dealer brochures, point of sale or training material was available for that product — a point I have taken up with Sony UK.

The instruction booklet is some 40 pages long and for a non enthusiast training on such a product is difficult without manufacturer's aids.

The ICF Pro 80 is just one

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 OF SWM SERVICES.

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.

Sir

In his article, "Starting Out", Brian Oddy comes dangerously close to making the same mistake as many short wave enthusiasts when he tackles the subject of reception reports to international broadcasters.

I find myself wondering what possible use the Overall Merit value of a SINPO report is if it is simply the average of the SINP values? Surely the broadcaster can work out that value themselves. The Overall Merit must surely be more than that. It is the listener's opportunity to assess, subjectively, the overall quality of the signal taking into account many factors which are hard to define.

However, while it is true that many broadcasters do verify reception reports, it is wrong to imply that we place a very high level of value on them. Those of us on the other side of the microphone want to hear from listeners not because they want a QSL card, although we are happy to oblige when we can, but because they are actually listening! It can hardly be said, as Brian Oddy implies, that you can have truly listened to a station after only five minutes even if it is the

of over 80 new additions to the Sony range this year, and unfortunately staff cannot have the benefit of knowledge and experience, such as Mr. Wilson's, overnight.

Indeed many short wave purchasers are not enthusiasts at all, but normal travellers, businessmen and holiday makers who wish to keep in touch with home while abroad.

Secondly, the structure and surrounding problems experienced at our location were somewhat underestimated by the writer. Our television reception is only due to several thousand pounds worth of electronics. An active, AN 1, would be difficult if not impossible to achieve.

minimum time to squeeze a QSL out of a station. To be sure the DX-er may have heard the station but what real assessment can he make of the content of the programmes?

All broadcasters are on the air to communicate information to their listeners and not, as many seem to believe, to issue QSL cards. We would far rather receive an honest letter commenting on programme content than an eye-catching report form, and such forms will certainly not, for the major broadcasters, bring quicker attention.

We value the DX listener as much as those who listen for other reasons. We find reception reports helpful in assessing reception conditions over a period of time but most of all we appreciate a simple letter about the content of our programme. The job of the broadcaster can be quite lonely and this broadcaster, for one, likes to know rather more than simply that his audience heard "an OM speaking followed by music".

ANDREW G. STEELE
DIRECTOR, PROGRAMME SERVICES
HCJB-UK
BRADFORD

Furthermore Mr. Wilson is mistaken if he believes we stock Sony short wave in the "hope of a quick sale".

Our shop provides a service to the community in that we sell every Sony product and every Sony accessory available in the UK. Our short wave sales are strong, we dispatch mail order goods all over the country and are suppliers to local authorities, universities and polytechnics.

However the purpose of my letter is not to criticise Mr. Wilson's comments, indeed I wish to apologise to and thank Mr. Wilson. Since the publication of his letter, our short wave sales have increased (Short Wave Magazine has increased public awareness of the products we carry).

Sir

I do not wish to prolong the controversy on the pros and cons of having a section in SWM to cater for the "free radio (pirates) or clandestine stations, but I would still like to voice my personal opinion on the subject.

SWM is, at the present time, a most excellent publication, uncluttered with quarter or half page articles devoted to specialised subjects.

The time factor also rears its head. Reading in one issue that a certain station had been heard, only to learn from the next that it had been closed down three weeks earlier by the DTI leaves much to be desired. The broadcast stations logged and published by SWM are there all the time and can be found most times, propagation being favourable, whereas the "free" radio stations can be somewhat sporadic.

There are many excellent organisations from whom current logs can be obtained and weekly news can be had only two days from the last batch of logs received.

Anoraks UK of Blackpool is one such organisation while Radiotelex of Bremen, W. Germany puts out a fortnightly report sheet. I think that the listeners to clandestine and pirate stations are already well catered for.

Thanks for a most excellent magazine.
JIM WILLETT
GRIMSBY

Finally I wish to offer Mr. Wilson the following challenge: — Perhaps he would care to have on loan an ICF Pro 80 for seven days (subject to security being left on the item), so that he may compare the performance for himself.

In return he could pass onto ourselves his opinions and findings and possibly even do a short staff training session for my staff one evening!

I look forward to hearing from Mr. Wilson and to reading Short Wave Magazine's own review of the ICF Pro 80.

DAVID ANDREWS
MANAGER
NOTTINGHAM SONY
CENTRE

WHAT'S NEW

Loch Ness Monster

The Mid Lanark ARS, in conjunction with the Scottish Tourist Board, are activating a series of stations using GB2LNM — no prizes for guessing what that stands for! The first event was on December 13/14.

Part two will be from Longriggend from December 15 to January 11. They should be using 3.5-28MHz as well as 144MHz. We'll give you details of part three when they are available.

A special QSL card will be issued for each contact. A memento consisting of either a certificate, wall poster or other item will be awarded for each contact (only one per person) free of charge on receipt of an s.a.e. (A4 size) with your QSL card.

These items will not be available until after 01.04.88.

GB2LNM
PO Box 20
Motherwell
Scotland

DXers Guide

The DXers Guide to Computing Edition 3.0 covers all aspects of using computers in the radio shack, including the latest on Packet radio, s.w.l. bulletin boards and computer-controlled receivers, in 34-pages. The guide is available for US\$3, £2, DM6, SEK20, FF20 or 7IRC's.

Please pay by international money order or cheque.

Updates 3.1, 3.2 and 3.4 have also been issued. The updates are included with new orders, and are available free of charge to those who already have the guide.

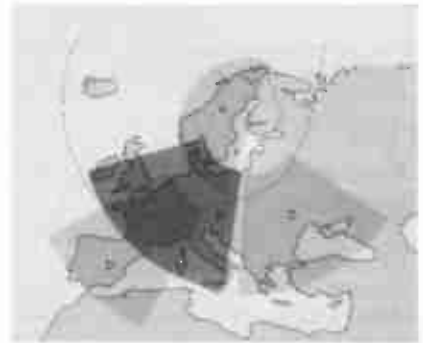
Radio Sweden International
S-105 10 Stockholm
Sweden

Finland in English

Radio Finland provides daily access to news about Finland and the North in Finnish, Swedish, English and German with additional broadcasts in French during the weekend.

Europe		
English 27.9.87-26.3.88 Medium and long wave bands		
UTC	kHz	m
0730-0755	963	312
1930-1955	558	538
2200-2225	254	1181
Short wave broadcasts		
UTC	MHz	m
0530-0755	6.120	49
0730-0755	11.755	25
	9.650	31
	6.120	49
1930-1955	11.755	25
	9.530	31
	6.120	49
2200-2225	6.120	49

Radio Finland International
Information
Box 95
00251 Helsinki
Finland



Radio Finland's coverage of Europe. English language broadcasts are indicated by the darker segment B.

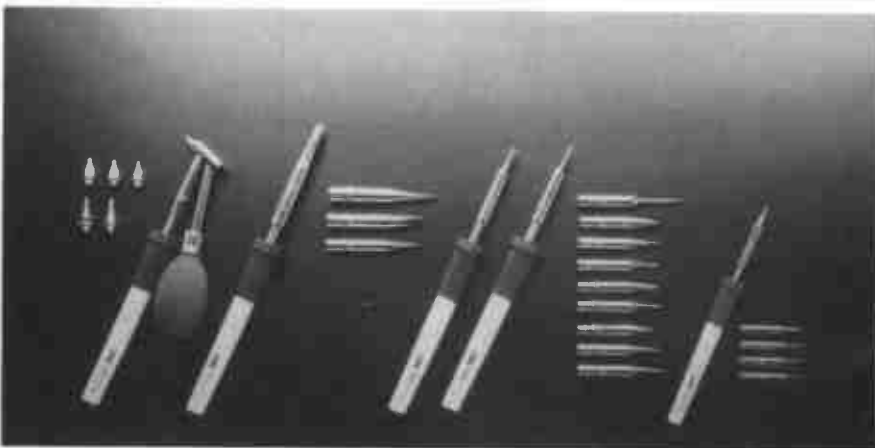
The Black Jaguar

The Black Jaguar Mk II, recently introduced into the UK by Nevada, is not an exclusive version of the high-performance motor car, but a pocket scanner with several interesting features.

The five frequency ranges cover 26 to 30; 60 to 80; 115 to 178; 210 to 260 and 410 to 520MHz with either a.m. or f.m. being available at the touch of a button. This gives you the opportunity to listen to CB, the military aircraft band and the 144 and 430MHz amateur bands as well as many other services.

The technical specification looks interesting and SWM is looking forward to reviewing it in the very near future. Price is quoted as £225. If you cannot wait until then get in touch with Nevada at:

189 London Road
North End
Portsmouth
PO2 9AE
Tel: (0705) 662145



Soldering Irons

There is a new series of JBC soldering irons available that are suitable for precision work on p.c.b.s. and home-brew equipment.

There is a choice of various tips and accessories and the heating system of the Pencil Line series offers high thermal efficiency. The smallest iron in the range is the 14N with a power rating of 11W a maximum temperature of 340°C and weighing only 18.5g. The 30N is 24W with a maximum temperature of 380°C and 40g in weight. The most powerful model is the

65N which is rated at 36W and a maximum temperature of 440°C.

There is also a power desoldering tool that can be operated with one hand too. This unit comes complete with its own heating element and includes a choice of six tips and an integral desoldering body replacement part.

EES Ltd
Seaway Parade
Baglan Bay
Port Talbot
W. Glamorgan SA12 7BR



WHAT'S NEW

Expansion

Due to business expansion, Ray Withers Communications Ltd., has moved to larger premises. They have also amalgamated with Raycom Ltd and will be trading under this name.

Raycom Ltd
International House
963 Wolverhampton Road
Oldbury
Warley
West Midlands
B69 4RL
Tel: 021-544 7124



Trans World Radio

We have just received details of the special Christmas Day broadcasts that are in addition to the schedule we published in the November 1987 issue.

Frequency (kHz)	Metre Band	Time (UTC)	Pwr kW	Deg ITU Zone	Target	Language
6145	49	0530-0725	50	170 12,13,15	Brazil	Portuguese
11815	25	1257-1400	50	327 7-9	N. America	English
15185*	19	1400-1700	50	336 6-9	N. America	English
1529	19	1700-2200	250	160 14,16	S. America	Spanish
15385**	19	1700-1900	50	176 12,13	Brasil	Portuguese
15385**	19	1900-2200	50	176 12	S. America	Spanish

*alternate 15180. **alternate 15390

Trans World Radio

Bonaire
Neth. Antilles
Caribbean

Radio Sweden T-shirts

Radio Sweden T-shirts are available in white, high quality 100 per cent cotton. It has their logo printed discreetly on the left.

As of November 1 the prices are: £5.00, DM15, US\$8.00 or SEK50.

The shirts are mailed as soon as they receive the order, paid by international money order, Swedish postal giro account No. 30690-2, International negotiable cheque or 16 international reply coupons.

Radio Sweden International
S-105 10 Stockholm
Sweden

New receivers launched by Sony

At the Telecom 87 exhibition in Geneva during October, the Japanese Sony Corporation displayed two brand new, and very different, receivers for the short wave listening market.

The Sony ICF-SW1 is probably the world's smallest digital short wave radio, offering continuous short wave coverage from 150kHz to 30MHz, together with v.h.f.-f.m. 88-108MHz. The set measures around 100 x 70mm, and features 10 memories and the benefit of stereo f.m. reception when using stereo headphones. Audio quality from the set's internal speaker is of a very high standard, and despite the fact that this new model only tunes in 5kHz steps on short wave, Sony have come up with a winner. The ICF-SW1 will be available from the summer of 1988, priced at somewhere near the £200.00 mark.

The other receiver provides something of a contrast. It's an all-singing, all-dancing multi-coverage mega-receiver! Apart from offering coverage throughout all the broadcast bands, this set goes on to provide reception of short wave and satellite FAX signals. The Sony weather-FAX receiver, which is currently only in prototype version, is aimed at the user who needs to know what the weather is doing — perhaps the farming community, or sailors on land or sea. Linked to an optional small satellite dish, the weather-FAX receiver can receive

satellite weather pictures from most of the orbiting weather satellites, providing excellent printed versions of the maps from its built in thermal printer. The set offers some 350 memory presets, synchronous detection, as seen on the ICF-2001D, a programmable timer and an interface to a computer through an RS-

232C port. RTTY signals can be decoded using this set, and the usual direct tuning, scan operations and memory scan facilities are provided. Sony are aiming this set at the professional market, with a projected price of around £2 500 for the receiver, with a further £1 500 for the parabolic satellite dish.



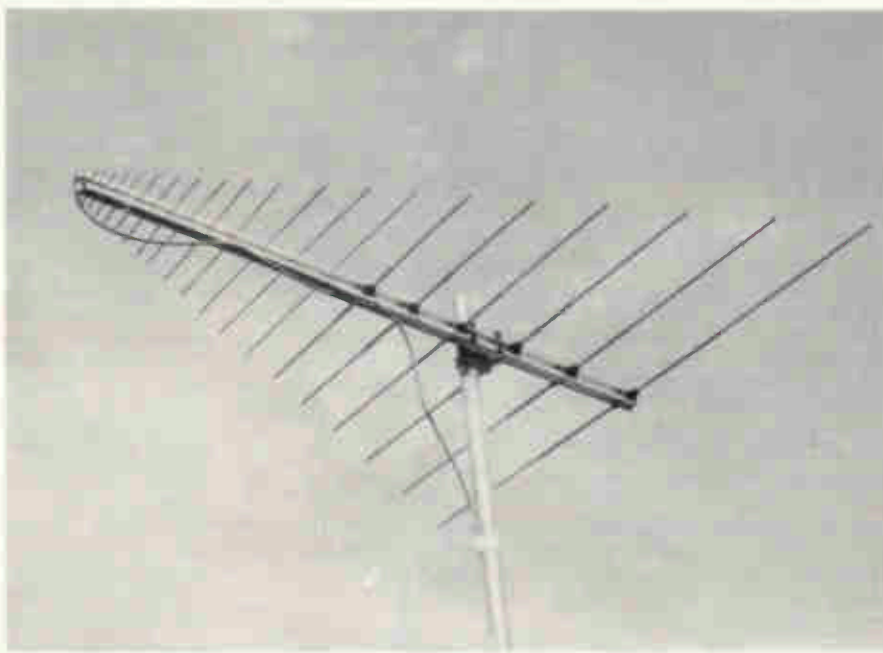
Scanning Antenna

We have received details of the CLP5130-2 from Waters & Stanton Electronics. The quoted specifications reads:

105-1300MHz
13.5dBi gain
15dBi front-to-back ratio
Boom length 1.37m
Longest element 1.37m
Power rating 500 watts
N connector
50Ω
Clamps for vertical or horizontal mounting
Price £82.50 inc VAT.

More details are available from:

Waters & Stanton Electronics
Main Road
Hockley
Essex SS5 4QS



Derby 144MHz Contest

Following their successful first DADARS 144 MHz contest, the club have decided to repeat the event this year. Briefly, the rules are:

Date: 13 March 1988
Time: 1300 to 1700UTC
Mode: Any mode, but band plans must be observed. Fixed, /A and /P all permitted.
Exchange: Callsign, RS(T), serial number (starting 001) and administrative county.

Scoring: G3ERD = 10pts, all others score 2. Final score is number of points by number of counties. Each country outside UK counts as a county.

Logs: Must be sent to **Derby & District ARS, 119 Green Lane, Derby DE1 1RZ** by

March 30.

Awards: (1) Full legal power, (2) Low power – 30W max output and (3) s.w.l. Specify whether single or multi-op.

If you require a full list of the rules, send an s.a.e. to the club.

ILA Award

The International Listeners' Association have sent me a list of the awards available from the association. Their membership has grown now to over 260 members representing twelve countries. Membership is £1.00 per year, which includes the quarterly newsletter.

Prefix Award

This is available for logging 250, 500, 1000 and 2000 different amateur prefixes. The qualifying prefixes are as the Geoff Watts Prefix Lists. You should list date, time, frequency, mode and full callsign. There is no fee for this award, but include a first class stamp.

Lifeboat Award

This is presented for logging 100 amateur stations in towns that have a lifeboat service. A list of the UK lifeboat stations is available. List date, time, frequency and callsign. There is a 50p fee which is donated to the RNLI.

Jamboree Award

This is available for logging Scout stations during the annual JOTA. List date, time, frequency and name of Scout Troop. There is a fee of 50p which is donated to a chosen charity. Certificates are awarded for the top three lists.

Medium Wave DXer Award

This is presented for logging 100 broadcast stations on medium wave outside your own country. List date, time, frequency and station name. There is no fee for this award, but you must send a first class stamp.

Monitor Award

This is available for logging 100 short wave broadcast stations outside your own country. List date, time, frequency and name

of station. There is no fee, but include a first class stamp.

Continental Awards

These are presented for logging 100 stations in continents outside your own. These can be either amateur or broadcast but **not mixed**. The awards are: North America (north of Mexico and including Canada, Alaska and Greenland); South America (including West Indies and Antarctica); Europe (including Scandinavia and Iceland but not USSR); Africa (including all states west of the Red Sea); Asia (including China, Japan, Indonesia and the Philippines); Oceania (including Australia, New Zealand,

Papua and all Pacific Islands); USSR (including European and Asian SSR). List date, time, frequency and callsign or station name. Loggings must be after December 1987. There is no fee but include a first class stamp.

Lists are returned with certificates or trophies.

Overseas stations can send IRCs in place of fees and stamps, 5 IRCs are worth one pound sterling.

ILA

1 Jersey Street
Hafod
Swansea SA1 2HF

International Listeners' Association — JAMBOREE AWARD

presented to

**FOR LOGGING SCOUT STATIONS IN
'JAMBOREE ON THE AIR' IN THE
SPIRIT OF
INTERNATIONAL FRIENDSHIP
THROUGH AMATEUR RADIO**

THE PROCEEDS OF THIS AWARD WERE DONATED TO MENCAP

GRASSROOTS

Lorna Mower

The **Rhyl & District ARC** meet at 7.30pm on the 1st and 3rd Mondays, in the 2nd Rhyl Scout HQ (behind the little Theatre) Vale Road, Rhyl. January 4 is Fire Prevention, and RTTY/SSTV Demo follows on the 18th. More details from Mike GWOHWK on Llandegla 621.

TARS Contest & Construction Night is the main event being held for those at the **Torbay ARS** on January 23. The club meets every Friday evening at 7.30pm in the English China Clay Social Club, Highweek, near Newton Abbot. Bob McCreadie G0FGX on Haytor 233 can tell you more.

Southdown ARS have their AGM on January 4. They usually meet on the 1st Mondays of the month, at 7.30pm in the Chaseley Home for Disabled Ex-Servicemen, Southcliff, Bolsover Road, Eastbourne. Should the 1st Monday be a Bank Holiday, the meeting will be held on the 2nd Monday. For further information contact Mr C. R. Evans G4VOS on Heathfield 3168.

The **Cheshunt and District ARC** have a busy time ahead, starting with a Natter Evening on January 6, Weather Satellite Reception by G4OAA on the 13th, Natter Evening on the 20th and SSB Basics by G3TIK on the 27th. There will be no meeting on December 30. The club meets every Wednesday at 8pm, in the Church Room, Church Lane, Wormley. More details from John or Terry Watkins G4VMR/G4VSL on Dane End 250.

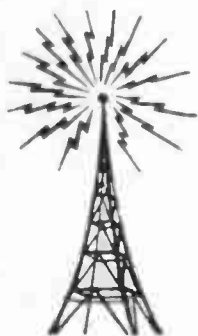
Halifax and District ARS meet at 7.30pm in the Running Man Public House, Pellon Lane, Halifax. The 1st Tuesdays being informal evenings, the 3rd Tuesdays being formal evenings. On January 19, David Holdsworth G6COG gives a talk on Raynet. For more information contact David Moss GODLM on Halifax 202306.

The **Felixstowe and District ARS** meet at 8pm in the Scout Hut, Bath Road, Felixstowe, unless otherwise specified. They have a Social evening on January 11 and a talk on Transverters by G4DDK on the 25th. There is no meeting on December 28. More from Paul Whiting G4YQC on Ipswich 642595.

The Year in Retrospect is the 1st

event for all those at the **Derby and District ARS** on December 30. They have a Junk Sale on January 6 and a Subscription Night on the 13th. All meetings are at 119 Green Lane, Derby and start at 7.30pm. More from Jack Anthony G3KQF on Derby 772361.

Mansfield ARS meet on the 1st Friday and 3rd Tuesday of each month at 7.30pm for 8pm, in the Victoria Social Club, Mansfield. There is no meeting on Friday 1 January, but on the 19th they have Signal Generators, Signal Tracing and Injection by Keith G4AAH. If you would like more details, you can contact Keith on Mansfield 642719.



Wimbledon & District ARS meet on the 2nd and last Fridays of each month at 7.30pm, in St Andrews Church Hall, Herbert Road, Wimbledon. January 8 is Bring and Test Your Own Equipment by Nick G6AJY and the 29th is Practical Soldering by Jim G4XML. No meeting on December 25. Enquiries concerning W&DARS activities from David Love G4RBQ on Burgh Heath 51559.



There will be no meeting for everyone at the **Dunstable Downs RC** on December 25. They usually meet every Friday at 8pm, in Chews House, 77 High Street, Dunstable. Tony G0COQ on Luton 508259 can tell you more.

Rugby Amateur Transmitting Society have a New Year Natter Night on January 5 and Constructors Corner (help and advice for the Construction

Competition) on the 12th. They meet every Tuesday at 7.30pm, in the Cricket Pavilion (outside Rugby Station). More from Kevin Marriott G8TWH on Rugby 77986.

Thursday 21 January is a talk on Homebrew Transmitters by G6FRZ, for everyone at the Eden Valley RS. They meet in the Ullswater Centre, Penrith or The Crown Hotel, Eamont Bridge. Meetings start at 7.30pm. Martin G4FUI on Penrith 66728 will be pleased to tell you more.

The **South East Kent (YMCA) ARC** meet every Wednesday evening at the Dover YMCA, Godwynhurst, Leybourne Road, Dover. Instruction classes in Morse or Radio Amateur Examination Coaching are held at the YMCA on Monday and Tuesday evenings. January 6 is the club's Natter Night, the 13th is Frequency Counters and how they work by G3ROO, the 20th is another Natter Night, and a talk on DX TV Working by G6IGI follows on the 27th. There will be no meeting on December 30. More from John Dobson on Dover 211638.

Bredhurst Receiving and Transmitting Society have a packed programme during January. Phase Lock Loops by G8NVH on the 7th, Construction Natter Night on the 14th, Slide Competition with Parkwood Photographic Society on the 18th, SWR - The Facts by G3MCK on the 21st, Construction Natter Night on the 28th and finally, a Christmas Dinner and Dance at P.W.C.A. on the 29th. There is no club meeting on the 24th and 31 December. The Society meets every Thursday at 8pm in Parkwood Community Centre, Deanwood Drive, Rainham, Gillingham. More from the Chairman, Kelvin Fay GOAMZ on Medway 376991.

Edgware & District RS have their AGM on January 14 and Station on the Air (Informal evening) on the 28th. The Society meets on the 2nd and 4th Thursdays of each month at 8pm, in the Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware. Ian Cope G4IUZ on Hatfield 65707, will I'm sure be glad to tell you more.



The **Sheffield ARC** usually meet every Monday at 8pm in the Firth Park Pavilion, Sheffield. Tuition for Morse and the Radio Amateurs Exam takes place between 7 and 8pm. On Monday 28 December they have Chrizzie Prezzie Swapshop. More from Alan Pemberton G8ZHG on Sheffield 395287.

There will be no meeting on December 28 for the **Atherstone ARC**. Preparation for 1988 contests and DF Hunts is planned for January 11, and on the 25th there is an informal evening in The Bull, Witherley, starting at 8pm. Contact John Arrowsmith G4IWA on Atherstone 713670 for more information.

Todmorden & District ARS meet every 1st and 3rd Monday at 8pm, in The Queen Hotel, Todmorden. They have a Construction Competition on January 4 and a Natter Night on the 18th. More from G1GZB on Todmorden 7572.

Hastings Electronics & RC meet on the 1st Wednesday of the month at Ashdown Farm Community Centre for their Committee Meeting and the 3rd Wednesday at West Hill Community Centre, Croft Road, Hastings for their main meetings. Both take place at 7.30pm. Every Friday is Chat Night at 8pm in the Club Room, Ashdown Farm Community, Downey Close, Hastings. The main event this month is Cellphones, on January 20. For further information contact Dave Shirley G4NVQ on Hastings 420608.

Keighley ARS have an Informal evening planned for January 12, followed by an AGM on the 26th. All meetings start at 8pm and you can find out details of their meeting place by contacting Kathy G1IGH on Bradford 496222.

The **Wakefield & District RS** have got a lot planned for January. On Saturday 2 they have the



Members Cumulative Contest Finish, the 5th is On the Air, the Debate on the 12th, Mastermind follows on the 19th, the Society's Annual Dinner on the 23rd and a talk on Stateside by G1FOC is planned for the 26th. There is no meeting on December 29. The Society meets every Tuesday at 7.45pm in the Community Centre, Prospect Road, Ossett. More from John Bryan G4VRY on Leeds 820198.

Yeovil ARC meet every Thursday at 7.30pm in the Recreation Centre, Chilton Grove, Yeovil. There will be no official club meeting on December 31. They have a packed programme for January, starting with a talk on Contest Operating by G3GC on the 7th, Producing Aerial Gain by G3MYM on the 14th, Moon Bounce by G3MYM on the 21st and a Natter Night on the 28th. Further information from David Bailey G1MNM on Yeovil 79804.

The main January meeting, on the 16th is the Presentation of Bonsoi Antenna Farm by G3OLM at the **Crystal Palace & District RC**. They meet in the All Saints Parish Rooms, Beulah Hill SE19 (opposite the IBA transmitting mast). For any further details on the club contact Geoff Stone G3FZL on Forest Hill 6940.

The **Coulsdon ATS** meet at St Swithun's Church Hall, Grovelands Road, Purley at 7.45pm on the 2nd Mondays and last Thursdays, the last Thursdays are informal evenings. On Monday 11 January they have a general discussion - re 1988 programme. More details from Alan Bartle on Thornton Heath 0610.

January 8 is the Christmas Dinner for everyone at the **Ripon and District ARS**. They meet every Thursday at 7.30pm in the Old Air Raid Shelter (behind Ripon Town Hall). For more details on the Society, you can write to Liz Bulman at The Lodge, Lister House, Sharow, Ripon, North Yorkshire HG4 5BU.

Wirral and District ARC have a Drink & Waffle evening in the Railway Inn, Meols on January 6, AGM on the 13th, a meeting at Pensby Hotel, Pensby on the 20th and a Surplus Equipment Sale on the 26th. The AGM and Surplus Equipment Sale take place at the Irby Cricket Club, Mill Hill Road, Irby and start at 7.30pm. Gerry Scott G8TRY on Wallasey 1393 can tell you more.

The Radio Society of Harrow meet in the Roxeth Room, Harrow Arts Centre, High Road every Friday at 8pm. There will be no meeting on December 25. If you would like more details then contact Bob Pickles G3VCA on Ruislip 673287.

For all those connected with the **Mid-Sussex ARS**, the club shack will be closed on December 24 and

31st. The Society usually meets on Thursdays at Marle Place, Leylands Road, Burgess Hill at 7.45pm. For more details contact Mike Mundy G0GNV on Burgess Hill 41407.

The **Cornish Radio Amateur Club** meet in the Church Hall, Treleigh on the old Redruth Bypass, on the 1st Thursday of each month at 7.30pm. On January 7 they have Smith Charts by Simon Rodda. For more details about the club, contact N. Pascoe G4USB on Redruth 212314.

There will be no meeting on December 30 for the **Banbury ARS**. The Society usually meet at two week intervals, on a Wednesday night at 7.30pm in The Mill, Spiceball Park, Banbury. Further information available from Bryan Thornton G1110 on Banbury 51774.

Ipswich RS are closed on December 30. They meet on the 2nd and last Wednesdays in each month at 8pm, in the Rose and Crown, 77 Norwich Road, Ipswich. Jack Toothill G4IFF on Ipswich 464047, will be glad to tell you anything else you may need to know.

South Bristol ARC meet every Wednesday at the Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol. They have a Bring & Buy on January 13, HF Activity Evening on the 20th and the Club Project - Construction Evening on the 27th. More information from Len Baker G4RZY on Whitchurch 834282.

Southgate ARC meet every 2nd and 4th Thursday of each month at 7.45pm, in the Holy Trinity Church Hall (Upper), Green Lanes, Winchmore Hill, London N21. There will be no meeting on December 24. Further details from D. C. Elson G4YLL on Waltham Cross 30051.

The **Sutton & Cheam RS** have a Committee Meeting at 20 West Farm Avenue, Ashted on December 30, a Natter Night on January 4, AFS CW Team Contest (1300 to 1700UTC) on the 10th and G4XMK gives a talk on Air Spaced Capacitors on the 15th. Meetings are every 3rd Friday at 8pm, in the Downs Lawn Tennis Club, Holland Avenue, Cheam. Natter Nights are on the 1st Mondays in the Downs Bar. John Puttock G0BWW at 53 Alexandra Avenue, Sutton can tell you more.

A Drink and Waffle Evening on December 29 is the main event for all those at the **Chester & District RS** who meet at the Chester Rugby Union Football Club, Hare Lane, Vicars Cross, Chester at 8pm. More from Dave Hicks G6IFA on Chester 336639.

Loughton & District ARS meet on the 1st and 3rd Fridays of each month at 7.45pm in Loughton Hall (Room 20), Rectory Lane,

Loughton. There is no meeting on January 1. Further details can be obtained from John Ray G8DZH at 9 Albion Hill, Loughton, Essex IG10 4RA. Prestel Mbx 015083434.

Chelmsford ARS meet on the 1st Tuesday of each month at 7.30pm, in Marconi College, Arbour Lane, Chelmsford. There is a Film/Video Show on January 5. More details from Roy G3PMX or Ela G6HKM on Chelmsford 360540 at home and 353221 ext 3815 at work.

On January 8, the **Mid Lanark ARS** have a detailed talk on Scotrail Communications and Control of Trains throughout Scotland. They meet in Wrangholm Hall, Community Centre, Jerviston Street, New Stevenston, Motherwell. For more details contact David Williams GM1SSA on Holytown 732403.

Acton, Brentford & Chiswick ARC have their AGM on January 19. The Club meets every 3rd Tuesday of each month at the Chiswick Town Hall, High Road, Chiswick at 7.30pm. More from W. G. Dyer G3GEH on Acton 3778.

Verulam ARC meet on the 2nd and 4th Tuesdays in each month at 7.30pm in the RAF Association HQ, New Kent Road, off Marlborough Road, St Albans. On Tuesday 12 January they have an Activity Evening and on the 26th G3MCK gives a talk entitled Standing Waves. For more information contact Hilary G4JKS on St Albans 59318.

The **Coventry ARS** have a Computer Night on January 8, Night on the Air and Morse Tuition on the 15th and a talk/demonstration on Packet Radio follows on the 22nd. The Society usually meet every Friday at 8pm in the Baden Powell House, 121 St Nicholas Street, Radford. Further details from Jonathan Ward G4HHT on Coventry 610408.



The **East Kent RS** meet on the 1st and 3rd Thursdays of each month at 7.30 for 8pm in the Parkside Lodge (the former Youth

Centre), Kings Road, Herne Bay or if and where indicated, at our Radio Shack (the former coast guard look-out at Bishopstone). On January 7, G3TG, G4LQI (PA0CG) and G4SIA (VP9L) recall how they got started in Amateur Radio and on the 21st the Society has a Natter Night. Brian Didmon G4RIS on Whitstable 262042 can tell you more.

The **Vale of Evesham RAC** meet on the 1st Thursdays at 7.30 for 8pm in The Round of Gras, Badsey for their formal evenings and informal evenings are on the 3rd Thursdays at 8pm in the Gardeners Arms, Charlton. January 7 is A Year in the Life of VERAC with slides by G6TRS and the 21st is a Natter Night. More from Mike G4UXC on Evesham 831508.

St Helens & District ARC meet every Thursday at 8pm in the Community Resource Centre, Old Central Secondary School, College Street (directly opposite main Police Station). The Club's Secretary, Derek Ainscough G1OMY on Marshall Cross 818455 will be able to tell you more.

A busy month ahead for all those at the **South Manchester RC** who meet every Friday at 8pm in Sale Moor Community Centre, Norris Road, Sale. January 8 is Slides and Talk on the DXpedition to the Isle of Man, the 15th is Roses by G4USB and the 22nd is Oscilloscope Measurements by G4AOK. There will be no meetings on December 25 and January 1. Details from David Holland G3WFT on Sale 1837.

A Natter Night on January 12 is the first event planned for all those connected with **Workshop ARS**. A Return Quiz Night against Maltby ARSoc is on the 19th and another Natter Night follows on the 26th. The Club meets Tuesdays and I'm sure Kevon Fox on Dinnington 566724, will be able to tell you the time and place.

Sunderland ARS have an Annual Auction of Surplus Equipment on Sunday 16 January 1988 at "Parcupine Park", Queen Alexandra Road. Doors open at 11.30am onwards to receive goods, viewing starts at 12pm and auction starts at 12.45pm, talk on S22. For more details contact Nigel Marston G0ASM on Sunderland 5288079.

York ARS meet every Friday evening at 7.30pm in the United Services Clubroom, Micklegate, York. More from Keith Cass G3WVO, at 4 Heworth Village, York.

Itchen Valley RC meet on the 2nd and 4th Fridays of each month at 7.30pm in the Scout Hut, Brickfield Lane, Chandlers Ford, Eastleigh. Maurice Cheeseman G1IPQ on Southampton 736784 can tell you more. □

SHORT WAVE RECEIVERS



HF125



R2000



R5000



NRD525

HEADPHONES

HS7	KENWOOD miniature head phones	£16.66	£1.00
HS6	KENWOOD lightweight headphones	£28.68	£2.00
HS5	KENWOOD de luxe headphones	£39.87	£2.00

WORLD CLOCK

CWTC	CASIO world time clock	£18.98	£1.00
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		Price	Carriage
HF125	General coverage receiver made in Britain by Lowe Electronics, 30 kHz to 30 MHz	£376.00	£8.00
Options			
K125	Optional frequency entry keypad	£89.60	
D125	FM and synchronous AM detector	£89.60	
P125	Portable pack, includes internal nicads, charging system and active whip antenna	£89.80	
R2000	KENWOOD general coverage receiver 180 kHz to 30 MHz	£637.26	£8.00
Options			
VC10	VHF converter, adds 118 to 174 MHz	£170.76	£2.50
YG455C	500 Hz CW filter	£116.62	£1.00
R5000	KENWOOD general coverage receiver, 100 kHz to 30 MHz	£895.00	£8.00
Options			
VC80	VHF converter, adds 108 to 174 MHz	£178.32	£1.00
YK88C	500 Hz CW filter	£48.89	£1.00
YK88CW	270 Hz CW filter	£57.82	£1.00
YK88SW	1.8 kHz SSB filter	£49.29	£1.00
YK88A1	6 kHz AM filter	£80.68	£1.00
SP450	Matching speaker	£43.04	£2.50
VB1	Voice module	£34.02	£1.00
NRD525	JAPAN RADIO COMPANY general coverage receiver, 90 kHz to 34 MHz	£1198.00	£8.00
Options			
CMK168	Optional VHF/UHF Converter, adds 34-60, 114-174, 423-456 MHz	£391.38	£8.00
CMH550	Internally fitted RTTY demodulator	£102.19	£1.50
CMH552	Internally fitted RS232 interface	£91.78	£1.50
CC832	Cable for CMH832 interface	£60.25	£2.00
CFL851	300 Hz crystal filter	£126.37	£1.00
CFL852	500 Hz crystal filter	£126.37	£1.00
CFL853	1.0 kHz crystal filter	£126.37	£1.00
NVA88	Matching loud speaker	£62.88	£2.50

DATA DECODING EQUIPMENT

(read RTTY, CW or AMTOR using a UHF television or monitor)

CD600	Decoder for CW/RTTY/TOR/AMTOR	£218.14	£8.00
CD660	Decoder for CW/RTTY/ASCII/TOR/AMTOR	£264.97	£8.00
CD670	As CD660 but with built-in dot matrix display	£327.77	£8.00

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(use your short wave receiver to listen to VHF/UHF signals, check with us before you buy that your receiver is suitable).

MMC50288	6 metre converter, uses 10 metre IF	£37.98	£1.25
MMC14428	2 metre converter, uses 10 metre IF	£37.98	£1.25
MMC14428HP	as MMC14428 but higher specification	£47.84	£1.25
MMC452288	70 centimetre converter, uses 10 metre IF	£44.88	£1.25

FREE

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BOOKCASE

QUESTIONS & ANSWERS AMATEUR RADIO

by F. C. Judd G2BCX

Published by Newnes Technical Books

Available from Short Wave Magazine Book Service

111 x 164mm, 122 pages. Price £2.95 plus 75p P&P

ISBN 0-408-00439-8

This book aims to provide simple and concise answers to many questions that puzzle the beginner and student.

The book was originally published in 1980, but was re-written in 1986 to take into consideration the new amateur frequency bands and the updated

licence schedule. There are seven chapters: 1 — Introduction to Amateur Radio; 2 — The Radio Amateur's Examination and Transmitting Licence; 3 — Amateur Radio Technology; 4 — Equipment for an Amateur Radio Station; 5 — Aerials for Amateur Radio Transmitting Stations; 6 —

Operating Procedure, Signals and Codes; 7 — More about Radio Wave Propagation.

The "Questions" asked are many of the ones that puzzle beginners. Things like, "Can anyone become a radio amateur?", "Is the RAE difficult?", "What is the

relationship between frequency and wavelength?", amongst others.

It is not intended to be a textbook of all the technicalities involved in amateur radio, but it is a useful guide for those just starting out or wondering whether to have a go.

GUIDE TO WORLD-WIDE TELEVISION TEST CARDS — EDITION 2

by Keith Hamer & Gary Smith

Published by HS Publications

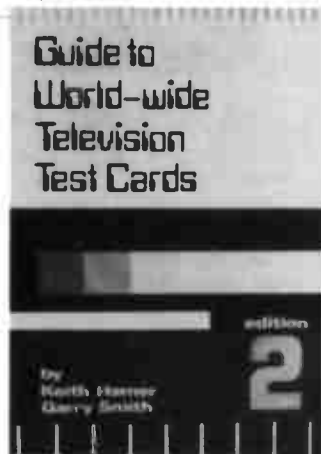
Available from Short Wave Magazine Book Service

148 x 208mm, 52 pages. Price £2.95 plus 75p P&P

Television reception is taken for granted by millions of viewers throughout the world, with colour TV now commonplace. To be able to check the performance of the transmission network, test cards are used by TV engineers and these have taken several forms since the BBC first devised Test Card "A"

The aim of this useful little book is to assist the long-distance television enthusiast (TV DXer) around the world with signal identification. Some 240 test cards, identification slides and clock captions are included and are laid out in a semi-alphabetical order. The transmission and colour system used generally in each country are shown below each picture.

Readers concerned with television graphic work and



operators of amateur television stations should also find this book of interest

TELEVISION & RADIO 1988

The IBA's Yearbook of Independent Broadcasting.

Edited by Mike Melaniphy

Published by The Independent Broadcasting Authority, 70 Brompton Road, London SW3 1EY

210 x 297mm, 190 pages. Price £5.90

Each year the IBA publishes its Yearbook to keep its viewing and listening audiences informed, in a readable way, of what it is doing and what it has achieved during the past year and what it plans to do in the future.

The articles cover such features as audience research, TV programmes, Oracle, direct broadcast satellites, advertising control, working in broadcasting, etc. under the umbrella heading of "The Independent Broadcasting System" Under Entertainment and Leisure you will find features on drama, films, comedy and light entertainment, music, chat shows and sport.

Another section covers news, current affairs and other similar factual and educational programmes while in the Engineering and Technical Services



section you can read about the technology used in broadcasting. The Reference section gives the addresses and details of the various IBA and ILR companies.

ELECTRONIC HOBBYISTS HANDBOOK

by R. A. Penfold

Published by Bernard Babani (publishing) Ltd

195 x 263mm, 88 pages. Price £4.95

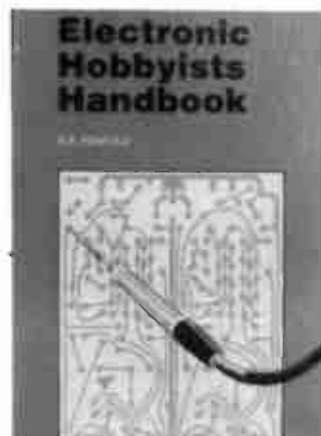
ISBN 0-85934-178-X

This book provides an inexpensive single source of easily located information that the amateur electronics enthusiast is likely to need for the day-to-day persuance of this fascinating hobby.

It covers common component colour codes, details the characteristics and pin-outs of many popular semiconductor devices, including various types of logic ICs, operational amplifiers, transistors, fets, unijunctions, diodes, rectifiers, diacs, regulators, triacs, etc.

Many useful types of circuit, such as timers and oscillators, audio amplifiers and filters are illustrated together with a separate section on power supplies.

A multitude of other useful data includes circuit symbols, interface details, amateur and CB frequency



allocations, etc.

Much of the data and information will be of use to the professional engineer as well as students.

THE 1988 ARRL HANDBOOK FOR THE RADIO AMATEUR

Published by The American Radio Relay League Inc.

Available from Short Wave Magazine Book Service

214 x 283mm, hardback. Price £19.25 plus 75p P&P

This is the 65th edition of this informative and useful book and for the first time in its history it is available only in hardback form. Each year the handbook gets thicker and thicker and this year is no exception at 58mm thick! That's a lot of pages — just how many is not revealed as the pages are numbered in Sections of which there are 40 plus the various PCB patterns and Index.

Several new constructional projects are included two of which are for receivers and one for a computer controlled receiving converter that turns any 28MHz general coverage receiver

No serious radio enthusiast or



radio amateur should be without this book.

AIRBAND

Godfrey Manning

Receivers

Your response to the offer by **Keith Jenkins** (Bristol) to supply modification details for the Signal R532 and Realistic PRO-30 receivers was overwhelming. The cost of photocopying has meant that Keith is faced with a curtailed budget for his private flying, so please could all recipients of the copies reimburse his expenses of £1 each? This is only reasonable.

More information on using the Signal R532 comes from **Graham Reading G1IFH** (Rotherham) who has coupled this set to a half-wave dipole that he cut himself. The v.h.f. airband, being 108-136MHz, is clearly only just longer in wavelength than the amateur 144MHz, band (144-146MHz in the UK), and behaves in much the same way as regards propagation and electrical properties. Unfortunately the spread does entail a wider bandwidth compared to 144MHz, but Graham cut his antenna for the centre of the communications part of the band, i.e. 127MHz. The calculations give an overall length of 1124mm, but don't forget that this is composed of two pieces, each 562mm long, held end-to-end with a dipole centre unit such as you might find at radio rallies or supplied by advertisers in this magazine. You might also find an old TV antenna is a useful source of such parts. Also, the antenna needs to be stood off from the mast by a half-wavelength (1124mm). Where the two quarter-wave rods meet at the centre, they don't actually touch, and this is where the 75ohm coaxial cable is connected, braid to the lower element, inner conductor to the upper element. Having home-brewed this antenna, Graham then goes on to ask if any reader knows of a source of professional antennas for airband! Write to me enclosing a blank stamped envelope and I'll put you in touch with Graham.

An interesting antenna story is told by **Brian Porter** (Droitwich), who was once a Ground Wireless Mechanic with the RAF where he produced that service's first really operational discone antenna. This was entirely experimental, and an NCO eventually ordered it to be disposed of. Unfortunately, an evaluation team had begun to show interest in the experimental set-up but arrived too late to save the antenna from its fate, much to the NCO's embarrassment!

Brian has a Lowe Nirecom AP12 shirt-pocket-sized receiver with 12 crystal-controlled channels and passes on this modification for the fitting of a safer flexible antenna. Remove the telescopic antenna and then, **with great care**, "self-tap" a BNC socket into the vacant hole. Solder the original antenna connection to the socket.

Frequency Information

Britain's newest airport is the London

Welcome aboard the first "Airband" of 1988. I hope that you'll continue to enjoy this regular feature, but don't forget that it relies on your contributions. Thanks to all who have written in: if you haven't done so yet, remember, there's a first time for everything!

(City) or Docklands STOLport and is attracting interest now that it's open. **L. Baker** (Bow, London) clearly lives nearby and points out that the Tower is on 119.425MHz. Now for the full story as I understand it. Thames radar is on 132.7MHz and hands over to the Tower for the final landing phase. The Tower backup frequency is 121.775MHz but there is another backup, City Radar on 128.025MHz; can anyone explain what this latter is for? After leaving special rules airspace, most flights appear to stay below the London Terminal Manoeuvring Area (base at 2500 feet altitude) remaining in the so-called uncontrolled airspace but partaking of a radar advisory service for which purpose they are normally handed off to Gatwick or, failing that, Heathrow radar. The instrument landing system has a steep $7\frac{1}{2}$ ° glide slope (runway 10: LSR, di-dah-di-dit, di-di-dit, di-dah-dit; runway 28; LST, di-dah-di-dit, di-di-dit, dah, both on 111.15MHz with paired distance measuring equipment). The concrete

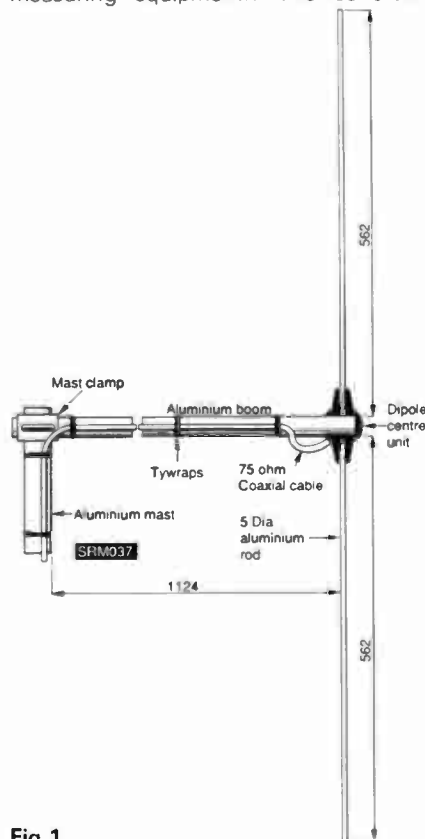


Fig 1

runway measures 1030 x 30 metres. The 28 locator outer marker is LCY: di-dah-di-dit, dah-di-dah-dit, dah-di-dah-dah, 322kHz. Squeezed between Royal Albert Dock to the north and King George V Dock to the south, the airfield is virtually at sea level so the QFE and QNH are the same! At the 10 end are two taxiways (with holds A and B) that give on to an apron with stands numbered 1-7. Helicopter operations are not permitted so route H4 that traverses the London Control Zone has been re-directed. Thanks to *Air-Strip*, Vol. 21, No. 250, page 352 (October 1987) which is the journal of the Midland Counties Aviation Society.

There are now 720 channels with 25kHz spacing in the v.h.f. com band of 118-135.975MHz. Originally there were half as many channels with 50kHz spacing and some airborne transceivers are only capable of operating on the old 360 frequencies. Ipswich has changed from 123.25MHz to a frequency on the new system, this being 118.325MHz. According to the Civil Aviation Authority Safety Promotion Section's publication *General Aviation Safety Information Leaflet (GASIL)*, July 1987 page 4, pilots should not assume that an aerodrome traffic zone is closed just because there is no reply on the frequency! It might be that you're on the old frequency, as has been the case at Ipswich. Pilots could ask the Flight Information Region controller to 'phone ahead to the aerodrome for landing clearance if their radios are limited to 360 channels.

From *GASIL* of October 1987 the following v.o.r. beacon changes seem to be current. This is only an extracted list intended for the enthusiast and pilots must not assume that I am providing them with a full NOTAM service!

CRANFIELD: v.o.r. temporarily withdrawn.

NEWCASTLE: v.o.r./d.m.e. now located on airport (112.05MHz).

DETLING: Temporary v.o.r./d.m.e. shows fluctuations (116.9MHz).

BELFAST: New v.o.r./d.m.e. on Aldergrove airport (117.20MHz) replaces old beacon (116.20MHz).

DEAN CROSS: v.o.r./d.m.e. temporarily withdrawn (115.20MHz) but temporary n.d.b. available with d.m.e. (channel 82X).

BARKWAY: Frequency changed to 116.25MHz.

In addition, changes to the special rules airspace around Newcastle airport are under discussion.

The squawk code used by the RAF Queen's Flight helicopters when engaged on royal flights is 4305. Royal flights are protected by purple airways — temporarily restricted airspace surrounding the flight. Royal flights have the callsign Kitty (or Kittyhawk if the Queen is actually on board). Let me recommend the *Flight Information Handbook* which is a Royal Air Force Flight Information Publication

on sale to civilian customers from 1 AIDU, RAF Northolt, West End Road, Ruislip, Middlesex, HA4 ENG. This contains a wealth of radio and flight planning information for enthusiast and pilot.

For those collectors of frequencies, here are the agreed emergency channels:

Distress (telegraphy): 500kHz.

Maritime distress (telephony): 2.182MHz, 156.8MHz.

Survival craft: 8.364MHz.

Aeronautical emergency: 121.5MHz (military: 243MHz).

NATO submarine distress: 4.340MHz.

Search and rescue control. International day: 5.680MHz; British day: 5.695MHz; International night: 3.023MHz; British night: 3.085MHz.

At the scene of search and rescue: UK: 244.6MHz; NATO: 123.1MHz or 138.7MHz secondary frequency; NATO training: 252.8MHz; Combined scene of search and rescue: 282.8MHz.

From Bromley, near Biggin Hill aerodrome, writes **B. C. Carter**. The frequencies for Biggin Hill are Approach: 129.4MHz; Tower: 134.8MHz; v.o.r./d.m.e.: 115.1MHz (BIG: dah-di-di-dit, di-dit, dah-dah-dit). As far as frequency information goes, there is nothing confidential about this! The suppliers of frequency lists who serve enthusiasts might give this impression but in fact there are plenty of officially recognised sources of information which sell directly to the public. Above I mentioned 1 AIDU at RAF Northolt (I recommend their *En Route Supplement*); and I'll give Jeppesen's address later on. A good source is Aerad (telephone for latest prices: 01-562 0795) and I recommend their *Europe Supplement Volume 1 Communications*.

Help Please!

Information, circuit diagrams, or even just the manufacturer's or dealer's address is wanted by the owner of Narco MK.12 and Mk.12A v.h.f. combined com/nav transceivers. He is **Ray Orr GBWXB** (QTHR in Hertford). If any reader sends details to me please try to include a blank stamped envelope so that I can put you in touch with Ray. Remember, some reader might do you a good turn one day!

What sort of navigational aid is EUREKA? **Brian Porter** found it north of Wem, Shropshire, positioned at the side of the road and equipped with pair of Yagis. I've never heard of it — someone please put us out of our misery.

News from Abroad

A holiday at Dubrovnik, Yugoslavia, enabled **Graham Whiting** (Leamington Spa) to experience a 4 knot wind, temperature 33°, and CAVOK. Ideal for flying, Graham must have been the only guest at the Hotel Grand Park who actually found its location under the approach to

Dubrovnik Airport to be one of the resort's attractions! Graham could first spot approaching navigation lights at night, just before the aircraft arrived at the outer marker; on came the landing lights before the aircraft disappeared from view. Any idea which runway was in use, Graham? The runways are 12/30 running about parallel to the coast and are 3300m (10827 feet) long. The apron is on the south-west (coastwards) side. Approach: 123.6MHz, Tower; 118.5MHz, the 12 outer marker being 8 nautical miles from the v.o.r. located at the 30 threshold (DBK: dah-di-dit, dah-di-di-dit, dah-di-dah, 115.4MHz). Other n.d.b.s. are KLP (dah-di-dah, di-dah-di-dit, di-dah-dah-dit, 318kHz) over which the 12 holding pattern is based; CV (dah-di-dah-dit, di-di-di-dah, 397kHz) between the 12 outer and middle markers; and GR (dah-dah-dit, di-dah-dit, 414kHz) similarly close to the threshold on the approach to 30. Average elevation is about 500 feet. There are 12 stands on the apron but it takes two of them to accommodate a Boeing 747!

From Boksburg, South Africa, **Dave Edwards** provides reception reports for the BBC but is also interested in aircraft having himself flown in the RAF. How about airborne amateur radio? Dave heard VK6XX who was operating from a QANTAS Boeing 747 overhead Burma at the time! I assume that the VK6 was one of the flight crew. Note to prospective amateur/passengers: do not try to operate from an aircraft without the commander's permission or you may interfere with the aircraft's system (let alone infringe your licence conditions). It is not unknown for the transmitters (especially h.f.) on airliners to cause various electrically-controlled systems to act strangely. This is fine if the effects are previously known to the flight crew but could mimic an emergency if it happened without warning. One example that I have come across is erratic indication by the undercarriage gear warning lights on the Boeing 747 during h.f. transmission. Even the oscillators and synthesisers in receivers can cause problems.

Thanks to **Nigel Tucker** (Zimbabwe) for passing on the address of Jeppesen, one of the chart suppliers. It is: Jeppesen & Co. GmbH, Postfach 16-447, Kaiserstraße 77, D6000 Frankfurt/Main 16, German Federal Republic (Tel: 069 238030). If in Frankfurt, you'll find this office opposite the Hauptbahnhof (main railway station).

Glossary

First, fuel figures. **Brian Porter** asks about burnoff: this is usually the amount of fuel consumed, typically measured by weight in kilos. The take-off speed of an aircraft depends on various factors including weight (if the aircraft is too heavy, it may not be able to fly at all). Loaded weight can

be measured by knowing who and what is on board; then the fuel requirements (the uplift) can be calculated. In flight, weight losses are negligible apart from fuel burnoff. Each engine on an airliner typically has a fuel flow meter showing kilos per hour; this includes a totaliser which is zeroed before engine start and then shows fuel burn for that engine thus far into the flight. A grand total meter shows fuel burn for all engines added together. This value will be subtracted from the take-off weight to find the landing weight from which in turn the Vref landing speed may be looked up in tables. The idea of landing is to bring the aircraft to a halt in the shortest distance so it helps to hit the runway at the slowest practical speed in the first place. But speed gives rise to the airflow over the wings that generates the lift to counteract gravity; more weight means more lift needed, which in turn requires a higher landing speed. Get it wrong (too slow) and the result is a heavy landing with possible damage to undercarriage and even airframe. The burnoff enables the landing weight to be found and it's important! Some aircraft can take off with so much fuel that they would be too heavy for an immediate landing if an emergency arose; hence the need to dump fuel first.

Club Time

Have you thought of joining one of the many aviation hobby clubs? In addition, many museums accept members and will typically offer admission without charge as well as regular newsletters as benefits of membership; there is often also the chance to work on the exhibits. Here is a list of just some of the hobby clubs for enthusiasts; if any other clubs or museums would like to keep me informed of their activities then I will try to give them a mention.

Air-Britain. A national society which also has affiliated local branches. Membership benefits include regular newsletters and journals, discounted publications, travel, annual fly-in, etc. Membership secretary: Barry Womersley, 19 The Pastures, Westwood, Bradford-on-Avon, Wiltshire. BA15 2BH.

Midland Counties Aviation Society. Circulates monthly journal *Air-strip* (as mentioned before), publishes annual *Airport Timetables*, organises travel, etc. Registrar: Richard Queenborough, 17 Leylan Croft, Birmingham, B13 0DB.

The Aviation Society. Regularly produces *Winged Words* newsletter; publishes *High in the Sky*. Contact the Registrar, 6 Martin Drive, Darwen, Lancashire, BB3 2HW.

Please include a pre-paid reply envelope when contacting any of the clubs.

It's back to earth for this month. Think write in and give me something to think about for next time! □

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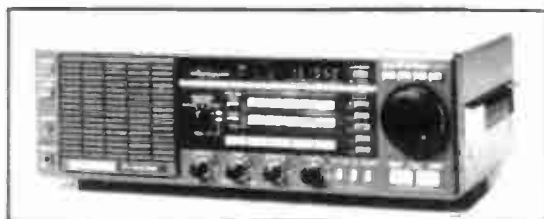
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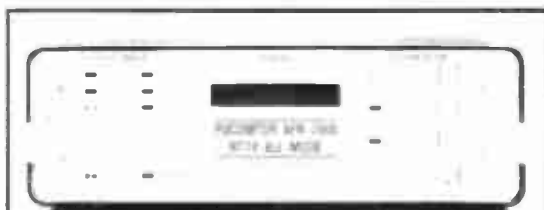
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INTRODUCTION TO DX-TV

Part 6

Keith Hamer and Garry Smith

Successful DX reception at u.h.f. is largely influenced by factors such as local terrain and the geographical location of the receiving site. In some areas, extreme fringe reception may be enjoyed on a daily basis from certain Continental transmitters, while in others it may be a struggle even under enhanced conditions. An efficient antenna is essential which should be mounted as high as possible but the main problem is knowing where to draw the line. The neighbours may start moaning if the antenna is too high or too large, and planning permission will have to be obtained if a mast is erected. For many enthusiasts an antenna mounted at a height of 9-12m provides good results. A chimney stack is often a convenient location and since the type of antenna required is of the domestic variety albeit for difficult reception areas, the neighbours (and the chimney) should have few grounds for complaint.

Antenna Design

The design of most broadcast receiving antenna has evolved around the tried and tested Yagi principle, comprising a half-wave dipole cut to the required operating frequency with parasitic elements mounted a certain distance in front and behind. In its basic form, only one element mounted behind is used. This is known as a reflector and is normally 5 per cent longer than the dipole. However, on the more elaborate arrays, the trend is to use a multi-element reflector to achieve a good front-to-back ratio thus minimising unwanted signal pick-up from the rear. Parasitic elements mounted progressively in front of the dipole are known as directors. Increasing their number will increase the forward gain of the system and enhance its directional properties.

The Yagi array is an inherently narrow-band system and attempts to broaden the bandwidth will result in a lowering of gain throughout its operating range. Consequently, a wideband system will be a compromise in terms of gain and bandwidth for a given number of elements, when compared with an array cut to a specific frequency. As a rule-of-thumb guide, the reflector is cut to the lowest required frequency and the dipole cut to approximately mid-band. The directors are usually cut to the higher end of the operating spectrum and where several are used, the gain at the upper end achieves a greater figure than at the lower end. This arrangement is considered beneficial since signal losses increase with frequency.

Antennas for UHF

Several factors have to be considered when choosing an antenna system for the reception of long-range signals at u.h.f. First, u.h.f. antennas can be purchased for wideband operation over the full Channel

This month we examine the various points to bear in mind when choosing an antenna for long-distance TV reception at u.h.f.

21 to 68 spectrum or for use over a limited range or group of channels only (see Fig. 1). The latter type of antenna tends to exhibit a greater forward gain for a given number of elements than its wideband counterpart. Such an antenna could be exploited to provide maximum gain and

Group	Channels	Operating Bandwidth	Colour Code
A	21-34	471.25-581.25MHz	Red
B	39-53	615.25-733.25MHz	Yellow
C/D	48-68	687.25-853.25MHz	Green
E	39-68	615.25-853.25MHz	Brown
W	21-68	471.25-853.25MHz	Black

Fig. 1: Channel groups and colour coding for u.h.f. antennas.

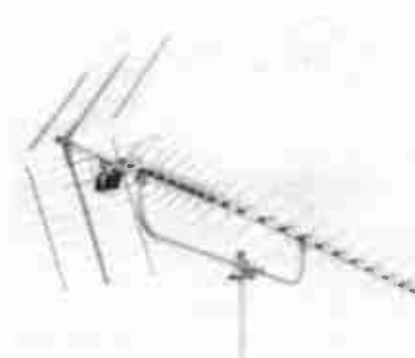


Fig. 2: Typical Continental-style Yagi array — the Triax UNIX 92 elements.

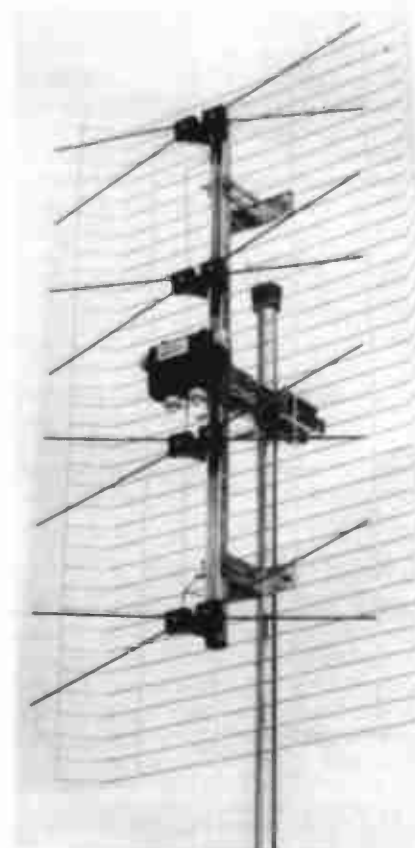


Fig. 3: The Triax BB Grid.

optimum results from a particular station if reception is feasible on a regular basis. The more ambitious and wealthy DX enthusiast may decide to opt for this approach and use separate antennas to cover each group of channels, provided that sufficient space exists on the mast! However, the majority of DX-TV enthusiasts prefer the use of a wideband array at u.h.f. mainly for operational ease and cost effectiveness, despite its slightly lower gain.

Large or Compact

Wideband systems at u.h.f. tend to fall into two main categories: the Continental-style Yagi (Fig. 2) and the stacked "bowtie" or grid (Fig. 3). The former type is easily recognised by its large reflector assembly and its chain of full-wave X-director assemblies affixed to a long boom. By comparison, the grid type of array is extremely compact and consists of stacked dipole assemblies (usually four) mounted some 75 to 100mm in front of a rectangular mesh reflector. The front-to-back ratio is typically 25 to 30dB with either design. Both types of array are marketed by several manufacturers, with slight variations and subtle guises.

The Colour King "bowtie" array (originally manufactured by Wolsey Electronics Ltd, but now produced by Antenna Quality Products Ltd) is perhaps the most well-known throughout the DX fraternity. It has been employed successfully in a number of installations for well over a decade. A similar design, currently marketed by Triax is called a "BB Grid" while the one by Jaybeam is known as the JBB 4 or "Billboard" array.

The Continental-style Yagi is favoured by many DX enthusiasts because of its high gain and directional properties. Inherent in its design, the highest gain occurs towards the upper end of its operating bandwidth, this being typically 17 to 18dB, with the wideband version. The increasing gain towards the upper end of the u.h.f. spectrum produces a progressively sharper signal acceptance angle. This means its optimum directional performance will be achieved at the higher end of the u.h.f. spectrum, rather than on

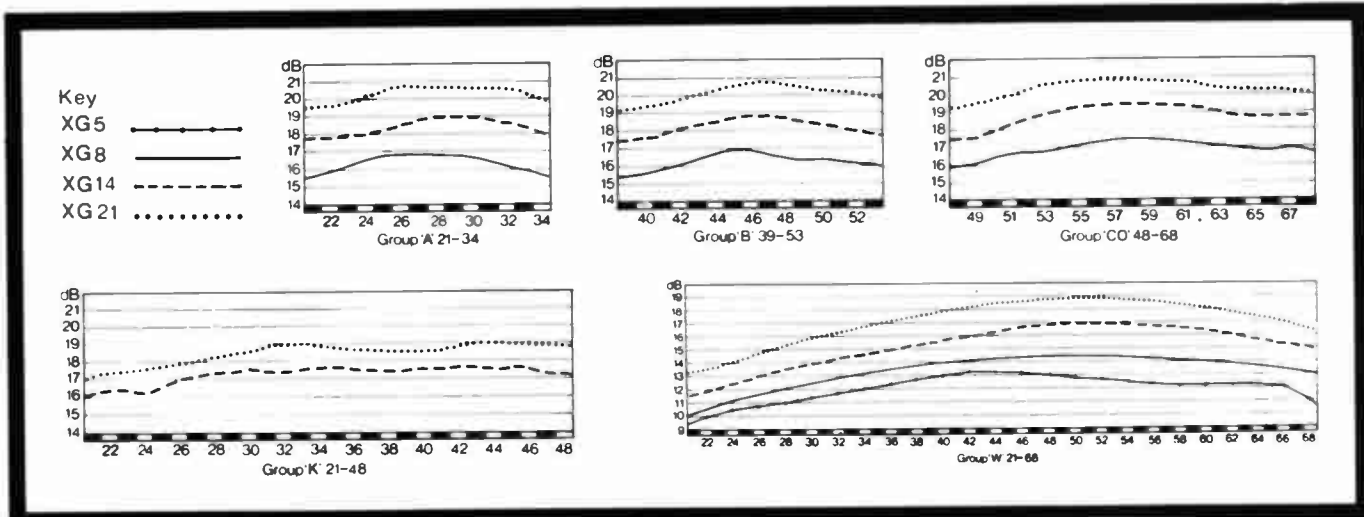


Fig. 4: Forward gain characteristics of the Antiference EXTRAGAIN range. The XG suffix number denotes the number of director bays.

the lower channels throughout Group A. Some manufacturers, Antiference for example, produce a semi-wideband array covering Channels 21 to 50. This model number has a "K" suffix, e.g. XG21K.

More Uniform

An antenna based on the grid design maintains a more uniform level of forward gain throughout the u.h.f. spectrum than the Yagi. The maximum gain available from a single unit is less than the largest Continental-styled Yagi can offer. Typically, the grid design can offer a gain of approximately 10dB at the lower end of group A rising to a peak of around 13 to 14dB throughout Group B. However, it is less costly and more compact than the long Yagi. A drawback of the grid design is its very wide signal capture angle, typically 68 degrees, which may ultimately lead to greater problems of co-channel reception than with the Yagi.

Stacking

Antennas can be stacked in configuration to provide a reduction in the forward acceptance angle and to enhance the gain of the system. Phasing kits are usually available from the respective antenna manufacturers for this purpose. Generally, two similar arrays may be stacked side-by-side for DX applications but four arrays mounted in quad formation are not unknown. In the case of the grid design, quad stacking can significantly reduce the acceptance angle to approximately 30 degrees. It must be stressed that if such a system is used, particular attention must be paid to wind loading and whether the rotator and support mast is capable of withstanding such loads safely.

Log-periodic Array

An antenna worth mentioning is the log-periodic. It is an inherently wideband design but, unlike the Yagi, all the

elements function as dipoles which are cut to respond to different frequencies. As a consequence, this type of antenna is more structurally complex than the Yagi and at a given frequency only part of the array actually contributes to the gain. This makes it lower relative to the number of elements when compared with the Yagi design. For example, the Jaybeam LBM2 log-periodic attains a gain of only 8dB. On the credit side, it has an exceptionally clean polar response with very few side lobes and the gain is virtually constant throughout the u.h.f. spectrum. However, it fails to seek the approval of enthusiasts due to its low forward gain.

Results

Over the years, the authors have tried various arrays at u.h.f., with impressive results under flat as well as enhanced reception conditions. The receiving site is located 80-90m a.s.l. at Derby with the antennas mounted at a height of 12m above ground level. The take-off between north-east and south-east is reasonably good although a slight rise is visible to the south.

The local Sutton Coldfield transmissions occupy Channels 40,43, 46 and 50 while Waltham uses 54, 58, 61 and 64. Channels 21 to 33 are occupied by semi-locals such as The Wrekin, Belmont and the Kimberley (Nottingham) relay. Channel 30 is relatively clear apart from a fluttery "Channel 4" signal from Crystal Palace. Despite this, reception from France and the Netherlands is possible virtually daily, even under flat conditions, on Channels 39, 42 and 45. It must be stressed that signals are only just visible above noise level, even when using receiving equipment with reduced bandwidth i.f.s. Needless to say, a multi-standard receiver fails to produce anything!

Grid Array

A Wolsey Colour King was found to perform well in terms of gain over the entire u.h.f. spectrum. Indeed, it was the

only array found to give regular DX reception of the Dover transmitter on Channel 66 at a distance of 140km! The acceptance angle was perhaps far too wide and problems with co-channel reception did occur, even under exceptionally enhanced conditions. Belgian signals from the now defunct Wavre transmitter on Channels 25 and 28 could never be satisfactorily separated from those of Belmont. On the credit side, this disadvantage meant the antenna would be an ideal candidate as a "search" array. This would enable the operator to be more aware of DX signals arriving from a wider area, without having to continually rotate the antenna.

In general, this type of array is very cost effective for DX work and its compact size provides an unobtrusive system if mounted on a chimney stack.

Semi-wideband Yagi

A Yagi was selected to take advantage of the benefits of a narrower acceptance angle. A wideband array, such as the Antiference XG21W (21 director bays) was initially considered but the forward gain characteristics were disappointing below Channel 30. The forward gain of this particular version attained a peak between channels 45 and 60, but since the lower channels were felt to be of greater interest for DX purposes, the XG21K was eventually chosen. This provided a reasonably level gain over the required DX channels with a more gradual fall-off towards the lower end of Group A.

Once erected, the array was rotated to the south and immediate results were obtained from Hannington on Channels 39 and 42 (BBC 1 South and TVS respectively). Rotating slightly to the south-east produced recognisable pictures from the French Dunkerque outlets on Channels 39, 42 and 45. Also, Dutch NOS-1 signals from the Wieringermeer transmitter were available, albeit extremely weak.

The narrower acceptance angle was impressive, especially throughout Group

INTRODUCTION TO DX-TV

B channels and many of the co-channel problems associated with the former Colour King were not as prominent. As expected, the acceptance angle became noticeably wider towards the lower Group A channels and the rejection of sem-local relay transmitters seemed no more superior to the previous array in use. The off-screen results on fringe signals, from a gain point of view, were felt to be no more superior than those obtained from the Colour King.

The local Waltham transmitter in Group C/D created problems when the semi-wideband system was in use. Cross-modulation effects occurred on some channels throughout its normal operating range, even with the array beamed away from Waltham. This was due to the unpredictable polar response on channels above its designed bandwidth. Also, the use of a wideband mast-head amplifier (470-860MHz) feeding a distribution amplifier aggravated the problem.

Wideband Yagi

Earlier last year, a decision was made to replace the Antiference XG21K with an array embracing a greater range of frequencies. Group A was becoming increasingly congested especially with

more Channel 4 transmitters entering service and it was felt that the easiest DX channels were now located above Channel 33. This was despite the presence of the local Sutton Coldfield and Waltham transmissions operating on Channels 40, 43, 46, 50, 54, 58, 61 and 64! The antennas had suffered damage during severe gales and this also influenced the decision!

The wideband version of the Triax Unix-92 array (22 director bays) was purchased and duly erected. Surprisingly, its construction was much lighter and the boom length shorter than the XG21. It was very simple to assemble too. Its golden anodised finish makes it aesthetically pleasing against any skyline, although our feathered friends will probably modify its colour scheme over a period of time!

Daily results are possible from France and the Netherlands on Channels 39, 42 and 45. Channel 4 reception from Crystal Palace on Channel 30 is more prominent with the new array but low-level signals from Winter Hill (Granada TV) on Channel 59 seem more difficult to secure than with the Colour King a few years ago.

Note that some wideband arrays are only suitable for use up to Channel 60. Ensure that the sticker on the antenna boom indicates the coverage you require.

Whichever type of array you eventually

choose, some method of antenna rotation is essential. A good quality low-loss coaxial cable downlead is also essential in order to preserve as much of the signal as possible. Finally, a mast-head amplifier is often desirable in order to overcome any feeder losses but their use can create problems, especially when operated too close to a local transmitter.

Cost

The typical cost for a grid is between £15 and £25, while a Continental-style Yagi costs from £35 depending upon the number of elements.

Addresses

The following manufacturers may be contacted for further information on their range of antennas. **Antenna Quality Products Ltd., Unit 34, Gelli Industrial Estate, Rhondda, Mid Glamorgan F41 7UW.**

Antiference Ltd., Bicester Road, Aylesbury, Bucks HP19 3BJ. Tel: (0296) 82511.

Jaybeam Ltd., Kettering Road North, Northampton NN3 1EZ. Tel: (0604) 46611.

Triax Aerial Systems Ltd., Saxon Way, Back Lane, Melbourn, Nr Royston, Herts SG8 6DN. Tel: (0763) 61755. □

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HOWES TRF3 RECEIVER KIT

Dick Ganderton

When I was a schoolboy I hankered after building a one-valve short wave receiver complete with Eddystone plug-in coils and a slow-motion drive. Unfortunately my pocket money would never allow me to purchase the components, let alone keep it in h.t. batteries, so I had to content myself with ever more complex crystal sets. It was not until I started work as an apprentice that I achieved my aim. However, the Works Manager was not impressed with my front panel with its holes enlarged using mother's best scissors and insisted that I made another one using proper tools — it even had to be stove enamelled and AID inspected!

Learning

A lot can be learned about short wave radio by building a simple receiver. You learn how to solder as well as experiencing the incomparable thrill of hearing foreign stations on a receiver built by your own fair hands.

For the beginner, or newcomer to home construction, the purchase of a kit of parts offers many attractions. It removes the doubts associated with attempting to buy the individual components. Are they correct, can I substitute such and such a part for the one specified, where do I go to buy this bit? C. M. Howes Communications have a good reputation for the quality of their kits and I reviewed their ASL5 Audio filter kit in the April 87 issue of this magazine.

The TRF3 is a simple short wave receiver using the tuned radio frequency (t.r.f.) principle and is intended for the reception of a.m. broadcasting stations between 5.7 and 12.8MHz. The t.r.f. was very popular in bygone days particularly in the guise of the one-valver as they were simple and relatively cheap to build. This set uses modern silicon semiconductor technology instead of valves but is still capable of a reasonable performance.

The kit is supplied in a stout cardboard box containing good quality components, a glass fibre printed circuit board with component placements screen printed onto it, and a comprehensive set of instructions for both building and operating the set. A suitable tuning capacitor is available as an extra in case you have not already got one and the only other parts needed are a slow-motion drive, a couple of knobs and a suitable case.

The instructions are aimed at the complete novice and include a section on how to solder. All the components are listed, together with a description to allow easy identification, and a space is provided to enable you to tick off as you fit and check each component. The only step in the assembly of the p.c.b. which is at all awkward is winding L1, which is a small toroidal core with two separate windings. The enamelled wire is supplied and as long as the instructions are followed faithfully

The one-valve, short wave receiver is still one of the most asked for projects, but, unfortunately, the last of the kits disappeared from the market several years ago. The Howes TRF3 kit, reviewed here, seeks to fill this gap using modern semiconductor technology.

then no problems will arise. If you manage to get the direction of one of the windings wrong the set will fail to work properly.

No problems were encountered with fitting any of the components into the pre-drilled holes on the p.c.b. or in soldering them to the copper pads. A clean, hot soldering iron is vital, particularly when it comes to soldering the pins of the integrated circuit.

Case

I fitted the p.c.b. into a low-cost Minfordds case which provides a reasonable looking set without an enormous outlay. If you want to use a more exotic case then go ahead — it won't make the set work any better! The switches provided in the kit for the attenuator and bandchange are three-position slide types. Personally I hate fitting these to a front panel as it involves very accurate filing of the slots for the operating knob and, no matter how careful I am, the slots always seem to look out of line. The alternative would be small rotary switches which would increase the cost of the kit and take up more front panel space.

Slow-motion Drive

To give some degree of feel to the tuning control a slow-motion dial of some sort is needed and I used one of the variety described in Maplin's catalogue as "Vernier Dial Medium" giving a reduction of 6:1 between the knob and the tuning capacitor shaft. Why it's called a "vernier dial" beats me as there is no vernier scale fitted — just a single fiducial line! With hindsight I would probably have been better off using the "Vernier Dial Large" which does have a vernier fitted and boasts a 10:1 reduction drive as well as a 70mm diameter dial. Of course a larger case would have been needed to take the bigger dial assembly!

Operation

Using a tuned radio frequency (t.r.f.) receiver such as the TRF3, requires patience if the best results are to be obtained. The TUNING and REACTION controls are inter-dependent to a large extent. Switching on for the first time, with a short wire antenna connected, and using a stabilised bench power supply set to 12V, the REACTION control was slowly turned clockwise until a "rushing" noise was heard in the headphones. This proved that the reaction was functioning correctly and that the toroidal coil had been wound correctly. Using the TUNING control it was possible to tune in to stations right across the dial on all three bands, proving that the set was working.

I found that turning the VOLUME control too far clockwise caused the set to "motorboat". However, this has not proved to be a real problem when using the set as the audio level is then far too



HOWES TRF3 RECEIVER KIT

high with too much distortion to be comfortable. I fitted a small 8Ω loudspeaker, culled from a cheap transistor radio set, into the bottom of the case. A few 6mm holes drilled in the bottom, before glueing the speaker in place, let the sound out. For discreet listening a pair of headphones can be plugged into a switched jack on the back panel, the loudspeaker then being automatically disconnected. At 12V the current consumption when receiving a broadcast station at maximum usable volume was 150mA. Although I used a bench power supply for convenience the set could be battery powered and will work on a supply of between 9 and 14V d.c.

Dial Calibration

The slow-motion drive is fitted with a dial graduated from 0 to 100, commonly termed a "logging scale". With three different wavebands it is obviously necessary to produce a set of three charts to enable you to determine the frequency that the set is tuned to. There are several ways of performing this task — which you use depends upon the test gear at your disposal. The instructions suggest using a crystal controlled frequency marker such as the Howes XM1 kit.

As an alternative they suggest listening for the oscillation of the TRF3 on an already calibrated receiver by connecting the antenna sockets of the two sets to-

gether. Just in case you are in the position of having no calibration facilities at all a set of tables is included in the instructions. Obviously these will only be a rough guide as the true calibration will depend on how you have wound L1 and the exact values of the tuning capacitors. Comparing these tables with my own calibration charts, made with an accurate signal generator, showed mine to be a fairly consistent 200kHz low at both ends of the scale reducing to 100kHz low at the centre. I drew the charts on a piece of thin card which was then stuck onto the top of the case for easy reference.

Conclusions

This kit is an excellent introduction to both home construction and short wave listening. Simple to assemble, it should work first time if the instructions are followed. Using a 20m length of wire, strung west to east from the bedroom window to the nearest tree, as an antenna I was able to tune into a number of European broadcast stations in the 6MHz (49m) and 7MHz (41m) bands. The reaction control was reasonably smooth to use, allowing the optimum reception to be achieved. It also proved possible to tune into stations using Morse, adjusting the REACTION control so that oscillation occurred to produce an audible beat note.

Only two amateur bands fall within the coverage of the TRF3 — 7MHz (40m) and

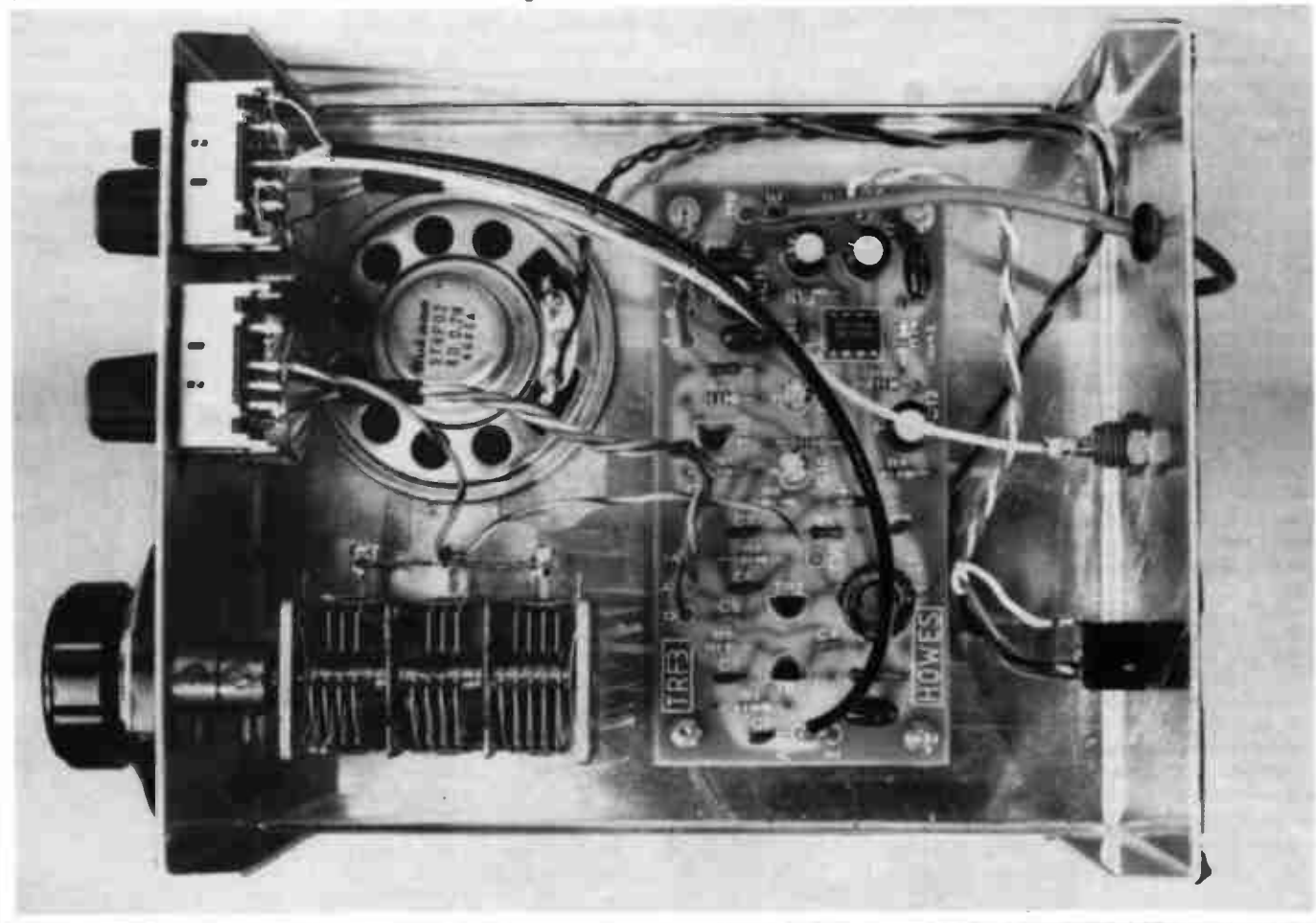
10MHz (30m). It should be possible to extend the coverage by rewinding the toroidal coil, but this would need some experimenting to be undertaken by the constructor.

Cost

The TRF3 costs £14.50 in kit form (£19.90 as an assembled p.c.b.) with the tuning capacitor adding an extra £1.50, plus 90p post and packing direct from **C. M. Howes Communications, Eydon, Daventry, Northants NN1 6PT. Tel: (0327) 60178.** To complete the set you need a case (about £3.00), slow-motion drive (£5.00), plus knobs, sockets and wire. The total cost should not exceed £25.00 for which you will get many hours of pleasure. □

SPECIFICATIONS

Frequency coverage:	5.6 to 6.8MHz 6.3 to 8.1MHz 7.9 to 12.8MHz
Spurious r.f. output:	<0.1μW
Audio output:	2W into 8Ω
Power supply:	9 to 14V d.c. 15mA quiescent 150mA full volume



SCANNING

Alan Gardener

One of the most important decisions made was to clear the v.h.f. Broadcast Band II frequencies at around 100MHz of the existing users, and to extend the upper limit of the band to 108MHz. This was intended to bring Britain in line with the majority of other countries who use this band exclusively for broadcasting. Although good for the radio companies with the expansion of existing services and the promise of new stations, it was not such good news for the displaced users who now have to find new allocations.

The most important of these are firstly the Police and Fire Brigades, who had until this time exclusive use of the middle portion of the band. Secondly, the power and transport industries were the main users of the so called "Mid" Band allocation, the mobile transmit frequencies of which lie in the upper section of the broadcast band.

New Slots

After extensive research new slots have been found in the spectrum and the existing users given new allocations. The release of the old v.h.f. TV Band III to private mobile radio helped to take some of the strain with transport industries such as British Rail and the bus and coach companies being given new allocations at around 205MHz. The power industries were slotted into a new allocation at 148MHz cleverly matched with the base station transmit portion of the old p.m.r. "Mid" Band. Finally the introduction of newer equipment with reduced channel spacings permitted the Home Office (HO) engineers to slot the Police and Fire Brigades into other existing HO allocations. (see Table 1.)

This represents a major engineering effort on the part of the HO when one

Most readers will be aware of the changes made to several important frequency allocations as a result of the 1979 Geneva World Administrative Radio Conference, the results of which are only now starting to filter through.

considers that an effective service has to be maintained during the changeover period, with both old and new schemes running in parallel until installation has been completed. The majority of equipment is being supplied by the major British communication companies – such as Marconi, Burndep and Philips – with modern synthesised designs replacing the old and now rather ageing crystal controlled equipment. The new multi-channel equipment will give a greater degree of system flexibility than previously possible, allowing changes in operating frequencies to be made quickly and permitting operation on other forces channels should the need arise.

The only slight problem there being the use of differing modulation systems, some forces who preferring the use of f.m. instead of a.m. as a result of previous operational experiences. However with modern designs of equipment this should not present too many difficulties.

Improved Audio Quality

This handy tip was passed on by reader Peter Mann, who finds that the audio quality from most receivers can be improved by the use of an external speaker

connected via a cheap graphic equaliser to the loudspeaker socket. These are intended for use in cars to boost the output of stereo radio / cassette players and at the same time provide a greater degree of tone control. Peter uses a unit made by Murphy which he bought at an amateur radio rally for £7.50. This offers 5 watts output and 10 bands of tone control with up to 12dB of cut or boost in each band. The unit requires a 12V supply and he obtains this from a spare socket fitted at the back of his R7000 receiver.

Clean Up

In use the unit can be used to "Clean up" noisy signals by boosting the speech band and cutting the low and high frequencies that only distract from the wanted information; other uses include notching out continuous tones, boosting weak tones (when using s.s.b.) and providing Hi-fi quality from TV and sound broadcast stations. Peter offers one word of warning however, which is that the higher power types of equaliser use a balanced output circuit, this means that none of the loudspeaker connecting leads from the output of the equaliser should be connected to the earth supply rail.

Another Tip

Another tip passed on by Peter is to provide a 12V power input to the R7000. All that is required is to mount the existing power connector which is hanging inside the back of the receiver through the blanked off slot in the rear panel, a mating connector and inline fuse holder can then be obtained from Tandy which will provide this facility at a fraction of the cost of the official d.c. kit. Peter also mentions that he runs all his receivers from a large 12V power supply (fitted with two separate overvoltage protection circuits) as he finds this keeps them a lot cooler running during long periods of unattended operation.

New Products

This month I have news of two new products to watch out for – the first is a TV adaptor for the Icom R7000 receiver. Called the TV-R7000 this is a stand alone unit which plugs into the i.f. output socket on the back of the receiver, and provides separate audio and video outputs to feed a TV monitor. The unit is only intended to demodulate f.m. TV signals so this limits the main use to amateur TV reception on 1.3GHz or as a tuneable i.f. for use in a satellite TV system. I have been informed that the unit will produce pictures from normal TV stations but with slight patterning. The anticipated price is approx £90 contact: Icom UK Tel: (0227) 363859 for details.

Table 1. Post WARC Frequency Allocations

Old Allocation (MHz)	New Allocation (MHz)	Main User
80.0 – 84.0	81.9 – 83.9	Fire Mobile TX
80.0 – 84.0	143.0 – 144.0 146.0 – 148.0	Police Mobile TX
97.6 – 102.1	70.5 – 71.5	Fire Base TX
97.6 – 102.1	152.0 – 153.0 154.0 – 156.0	Police Base TX
105.0 – 108.0	139.5 – 140.5	Power industries Mobile TX
138.0 – 141.0	148.0 – 149.0	Power industries Base TX
105.0 – 108.0	192.5 – 199.5	Transport industries Mobile TX
138.0 – 141.0	200.5 – 207.5	Transport industries Base TX

The second item is a high gain wide-band antenna intended for scanning receivers. Called the Butternut SC-3000 and already well known in the States it has only just arrived in this country. Features are a claimed frequency coverage of 30-512MHz, with a gain of up to 7dB at u.h.f., 3dB at v.h.f. and unity at lower frequencies, this is achieved mainly by its larger than average capture area with an overall height of 5.8m. The slim construction may, however, make it less obtrusive than the more conventional disccone type of wide-band antenna. The cost is approx £63. Contact the importer: HRS Electronics Ltd. Tel: 021-771 2525 for a list of distributors.

Sub-Audible Tones

Much of the new hand held v.h.f. and u.h.f. amateur radio equipment being imported into this country is fitted with facilities for the generation and detection of sub-audible tones. This is an interesting development caused mainly by the widespread use of sub-audible systems on the very many "private" amateur built repeaters in the States. The commercial use of this technique referred to as Continuous Tone Signalling System (c.t.s.s.) is very common and operates in the following way.

Security

A system using c.t.s.s. has a low frequency audio tone superimposed on the normal transmission, this is usually in the region of 30 – 200Hz and at approx one tenth of the normal maximum modulation level. This tone can then be detected at the receiver and used to open the audio muting or squelch circuit. This means that only transmissions with the correct frequency tone will be heard by the user, making it ideal for situations where a channel is shared and each user only wants to hear calls addressed to his group.

Community Repeaters

For this reason many p.m.r. systems use c.t.s.s. to give a degree of security on shared channels, indeed the principle is used to good effect in a system often referred to as a community repeater or more correctly Community Base Station (c.b.s.). Say a company requires a small radio communications system – in a normal system the operator would have to establish a base station at a good site, often a hilltop, usually miles from the control point in order to provide the required coverage.

This normally is the most costly part and in many cases is just too expensive. In order to be able to provide a cheap system off the shelf, many p.m.r. companies operate

at least one c.b.s. These are located on good sites generally covering a city area, the base station is arranged to re-transmit the signals being received as in any standard repeater system. The difference being that each individual group of users sharing the system has a different frequency c.t.s.s. tone assigned to it.

Logic

This means that each group using the system can only hear its own traffic and is not annoyed by calls made by other users. All the equipment used by each group works on the same principle with the group control station working in exactly the same way as the mobile stations. Logic in the repeater stops equipment with either no tone or the wrong frequency tone from being able to access the system. Individual groups are timed, and locked out for a period if they make excessive use of the system, giving all users a fair share of c.b.s. time.

Increasing Demand

To prevent stations clashing with each other when calling in, the mobile is inhibited from transmitting whilst another call is in progress. Some c.b.s. repeaters operate in the p.m.r. "High" and "Low" bands but the majority are found on u.h.f., particularly in cities, with the c.b.s. transmit in the region of 440.0 – 443.5MHz paired with 425.5 – 429.0MHz for receive. With the increasing demand for radio channels c.t.s.s. is likely to play an important role in the installation of new systems and indeed may be a useful introduction in the v.h.f. and u.h.f. amateur bands.

Cellular Radio Tracking

Cellular radio is at present one of the fastest growing communication systems in the UK. The principle of operation is simple in that the country is divided into a series of "cells" varying in size depending on the projected number of users per cell at any instant. When a user moves into a new cell the mobile detects this by monitoring data on one of the control channels, the mobile then re-registers its number in the new cell with the central computerised control system. In this way the system knows in which cell each mobile is, in order to be able to route calls to the correct area without having to try every cell in the system. This means that the location of each mobile is logged on the central computer as it re-registers with each cell.

This could be of great use to companies wishing to keep track of key personnel or goods in transit – obviously the accuracy of such a system depends upon the size of

each cell, but using an adaptation of the system greater accuracy could be achieved. In the British system the received signal strength is continuously monitored and when this drops below a preset threshold the mobile tries to find a stronger signal to lock on to. Once this is done the mobile switches almost instantaneously to the new channel, the user being unaware of any change.

Triangulation

Other cellular systems use a different method of detection, to determine when to swap cells. The principle used in this case is to measure the time taken for a mobile to send a reply to a special digital code transmitted by the cell base station. If this exceeds a pre-determined limit the system decides that the mobile is out of range for that particular cell and an alternative is found. If this system was modified slightly so that three or more different base stations interrogated the mobile, then by measuring the times taken to reply the approximate distance from each base station could be determined, and a triangulation performed to locate the mobile to within a very small area.

Many companies have already spent vast sums of money on vehicle location systems, so don't be surprised if the commercially minded cellular system operators offer this facility before too long.

Feedback

The first of your letters are now arriving and I am reading your ideas, comments and suggestions with great interest. If you haven't yet thought of writing – how about it? I am now collecting information on the following topics so perhaps you may be able to help: Computer control, extra features you would like on new generations of receivers, the Law and scanning receivers, reception of satellites on 1.6GHz, antennas, preamplifiers, new frequency allocations, new products, modifications, hints and tips. Phew! that should keep us both busy for a while, so if you require items returning please send an s.a.e. with your letter. I will try to feature material as soon as possible, but be warned from the initial response this may take some time.

Let me take this opportunity to wish you all a Happy New Year – with your help towards the future development of this column we should cover some interesting material during 1988.

All mail to PO Box 1000, Eastleigh, Hants S05 5HB. If you require items returning please enclose an s.a.e.

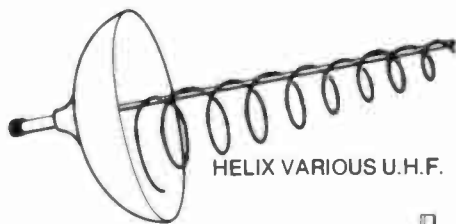
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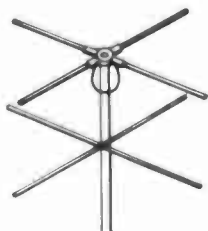


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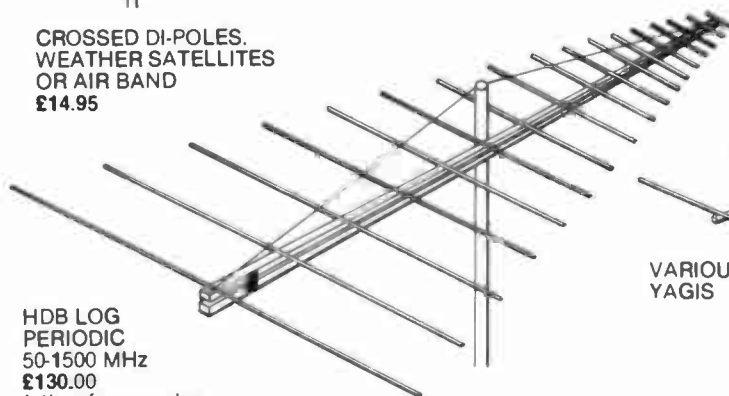
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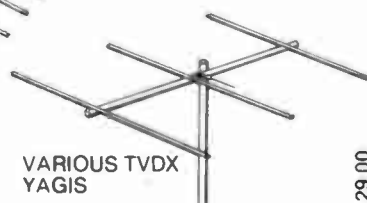
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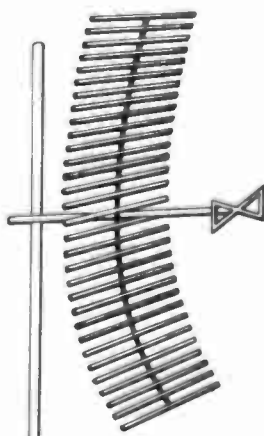
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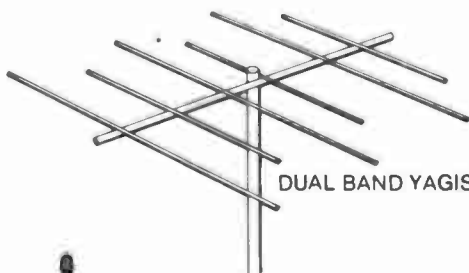
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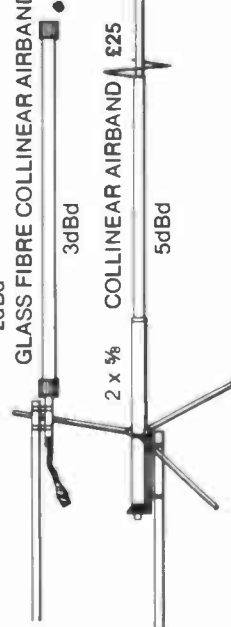


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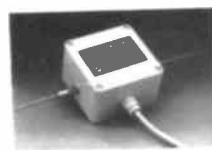
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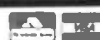
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FIRE ON ALPHA

Steve Voy

Saturday 15 March 1975 was like any other day on *Forties Alpha*. Construction work was well under way on the first of the planned quartet of platforms, 177km north east of Aberdeen. Skilled and semi-skilled men from up to a dozen nations were working, in some cases up to 16 hours a day to produce a giant, fabricated steel structure protruding from the middle of the North Sea. Close by were the usual entourage of vessels. The Dutch manned *Thor* with her giant crane and the American barge *Hercules*. Further afield was the Italian pipe-laying barge *Castoro II* whilst here and there were the now common collection of supply and standby vessels. No ships were alongside *Forties Alpha* as a force 8 gale was imminent and the surrounding seas were already pitching at heights of over 9m. It was 1445 hours.

Fire Fire

In the radio shack located just beneath the helideck, a group of crew members were waiting the chance of a radio call home. Some had risen early before they were due to start their next shift at 1800 hours. The first indication of an emergency came when the hand-held portable strapped to a foreman's waist belt gave forth, "fire, fire!". Within the minute a head appeared round the doorway of the radio cabin and gasped, "There's a fire on the south side".

Radio Operator, Stan Crabtree followed the group out and saw the thick black smoke enveloping the opposite corner of the platform. His companions started to run in the direction of the fire. Stan returned to the radio operating position. He picked up the microphone of the marine v.h.f. set monitoring Channel 12.

"*Boston Defender*, we have a fire, please stand by" he announced.

"Och aye we see, Roger" came back the broad east Scottish brogue of the stand by ship's skipper. The time was 1448 hours.

The platform's v.h.f. radio channel used with hand-held f.m. sets issued to key personnel, came alive with shouted instructions, observations and opinions. Confusion. Within minutes the deep, resonant tones of Offshore Installation Manager, Ted Roberts, came on the frequency with strong, realistic orders and the noise subsided. The inter-field radio frequencies were quiet. No one communicated with anyone else and no one called the *Alpha*. It was as if all were watching and listening. A few minutes later, Roberts came into the radio cabin.

"I want you to send a PAN", he said. This was the designation used for an urgency situation, one grade down from distress. Crabtree scribbled down the details. He looked at the clock. It was 1500 hours, the start of the three minute Maritime Silence Period on the R/T distress frequency of 2182kHz. Stan knew

Radio has been used many times in emergencies at sea. Here, Steve Voy recalls an event nearly 13 years ago in which radio voice channels contributed towards a speedy conclusion to a dangerous situation.

these times were restricted to distress traffic but he also knew his transmitter power was low due to a necessarily poor antenna system almost enshrouded by the mass of metalwork that was growing day by day. At 1502 he went on the air.

"PAN, this is *Forties Alpha* in position 57 degrees 47 minutes north 00 degrees 58 minutes east. Fire on platform, may require assistance."

Within seconds the reassuring tones of the operator at Stonehaven Radio responded, "Roger *Forties Alpha*". Gerry, Dutch radioman on the Heerema barge *Thor* was the next to acknowledge quickly followed by the *Hercules*. Moments later came the slow drawl of the Italian operator on the *Castoro II*, "*Castoro dui* Roger we come to you". This was an impromptu gesture from a floating workshop whose movements were dependent upon three tugs. Crabtree responded, "thank you but please stay where you are" Manager Roberts remained in the radio room for a few minutes and then left, making his way to the scene of the fire.

Explosions

During the next few minutes a series of explosions were each followed by the



Alpha in happier times — producing gas flame (Photographs courtesy of British Petroleum)

FIRE ON ALPHA

sound of heavy objects falling indiscriminately around the rig. These were fragments of exploding gas bottles. One piece landed with a thud on the helideck. It was later found that a piece of metal had gone through one side of a crane window and out of the other. In all, an estimated 27 oxygen and acetylene bottles disappeared!

No Water Anywhere

Ironic as it may seem, in the middle of the North Sea, the *Alpha* had no water to fight the fire, at least none that could be used. The day previous, a fault had been discovered in the pipework distribution system on a lower deck, and a 457mm section of pipe-work had been removed for testing. This meant that the appliances on the top two decks were inoperative. Most of the portable chemical fire extinguishers had quickly been expended.

Gaining Ground

The fire was slowly gaining ground. The site was such that it was only possible for one man to attack the flames at any one time. There were gaps in time when this man was replaced when his extinguisher was exhausted and the fire made the most of it. The flames now reached a store of plastic coated cable trays which resulted in the whole area being plunged into darkness from the thick, black smoke. A spectator on one of the nearby vessels later remarked that at one stage the whole platform was obscured from view. "We wondered if we would ever see it again," he said.

Ted Roberts reappeared in the radio shack and dictated another message. Radioman Crabtree went on the air again. After the PAN prefix he transmitted: "No assistance required for evacuation,

may need assistance for fire fighting". It was 1509 hours.

A few minutes later the speaker on the Aircraft v.h.f. frequency of 123.45MHz came to life.

"Forties Alpha, this is Golf Victor Bravo, having a barbecue?" quipped the pilot of the outward bound helicopter. The aircraft was 97 km away at this time but the plume of rising black smoke had been visible on the horizon. *Victor Bravo* was instructed to proceed to the *Thor* and remain there.

Another voice now came through on the marine frequency of 2182kHz.

"Forties Alpha, this is Sedco Kilo, we have three vessels with fire fighting equipment on board."

The *Sedco "K"* was a drilling rig about 64km to the north. A request was made for the fastest ship to come to Forties. The tug *Atlantik* turned south and set off at full speed. ETA would be in 2½ hours.

Back on the platform, help came from another quarter.

"This is *Tender Carrier*, if you take our hoses we can pump up water."

The Norwegian supply vessel *Tender Carrier* had been standing off waiting to discharge cargo but obviously monitoring the situation. The ship now approached the rig on the south east corner. Although there was a considerable sea running, the skipper managed to position and stabilise the vessel to accept a hose line suspended by the platform's south west crane. This undoubtedly changed the whole situation. Once connected, the odds were reversed.

Continuous Water

Now a continual supply of water was available and being pumped up to combat the fire, and it was showing results. The time was 1536 hours.

Crabtree knew that the helicopter *Victor Bravo* had landed on the *Thor* and

dropped off her passengers. Then, the *Thor* master came on Channel 12 v.h.f.

"Do you want more fire extinguishers, chopper can bring them over."

The answer was yes. Fire fighting equipment was loaded onto the helicopter and a few minutes later *Victor Bravo* landed on the *Alpha* helideck. The wind direction fortunately was such that this was achieved without too much danger.

"Forties Alpha, this is Delta Alpha Charlie Papa our ETA 1800 hours at the platform". The *Atlantik* was due in just over two hours.

At 1547 hours, a call was made to Stonehaven Radio. "Cancel my PAN message, situation under control."

At this time the German tug was requested to continue towards the *Alpha*, but at 1612 hours she was informed that assistance was no longer required, and offered grateful thanks.

Smokey Haze

Crabtree left the radio room for the first time since the start of the emergency. There was still a smokey haze in the vicinity of the fire and all the surrounding metalwork was understandably black and scorched. Men were laughing and joking, obviously relieving tensions. There had been no serious casualties, although one or two of the foremost fire-fighters had been partially overcome by smoke.

Back at the radio, the UK wanted to talk to *Forties Alpha*. Stonehaven patched through a stream of radio-telephone calls, some business, some personal from anxious relatives and a few from the Press. ITN were all set for a taped presentation, they had flashed an aerial photograph of the rig onto TV screens during the afternoon sports programmes and now wanted the full story. The "no comment" from the platform left them more frustrated than ever.

How Did it Happen?

How did it happen? Inevitably the question had to be asked and the answer was comparatively simple. A piece of metal from a welder's torch had fallen through a grated companionway to the deck below and ignited spillage from some temporary diesel tanks. The flames had quickly found pieces of dunnage, rags and oil drums that are always present on construction sites. What had come to the forefront was the spirit of co-operation between groups of men of differing nationalities.

Manager Ted Roberts has perhaps had more than his fair share of emergency situations during a lifetime in the Oil Industry. He readily admits the fire on *Alpha* surpassed them all.

"We were so far from land and there were so many people on board," he recalls. In all there were 322 persons on *Forties Alpha* that day. □



Alpha during early stages of construction (1975).

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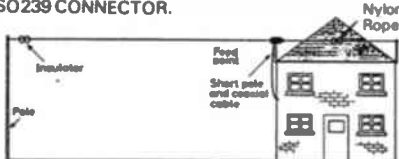


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THE RADIO WAR IN NICARAGUA

George Wood and Hermod Pedersen

"They read lists of names in their radio broadcasts," said Swedish foreign aid worker Bengt Kjeller when we met him in Matagalpa, a town in northern Nicaragua near one of the Contras' rebels operations zones. "My name is one of them."

Bengt Kjeller is a popular man among the farmers on Nicaragua. Representing the Swedish Co-Operator Centre, he has helped bring co-operative rural general stores to farmers in more than 100 isolated villages. For his efforts, Bengt Kjeller is on the Contras' deathlist.

It is chilling listening comes from Radio 15 de Septiembre, which broadcasts from Honduras. It is one of dozens of foreign radio stations that can be heard in Nicaragua. Many carry programmes opposing that country's Sandinista government. Sometimes the propaganda is subtle, but not on Radio 15.

"They try to keep people from participating in projects, which are aimed at helping the poorest," says Father Marcus Lester, a Roman Catholic priest from Kentucky we met in a small village outside Matagalpa. "They also use the Church and try and convince people that the Church is on the Contras' side."

The radio war escalated soon after the dictator Somoza was driven out by the Sandinist Liberation Front in 1979. The remnants of Somoza's National Guard fled to Honduras and Costa Rica. With a liberal application of CIA money they were re-organised as the Contras. Shortly afterwards Radio 15 went on the air.

According to *Washington Post* journalist Christopher Dickey the station, located outside the Honduran capital Tegucigalpa, also served as a warehouse for CIA weapons — from rifles and grenades to artillery. Unfortunately things didn't go exactly as planned. The first station manager stole as much cash as he could get his hands on, even selling the transmitter valves before he disappeared. His successor, Noel Ortiz, had to pawn his watch to get the money to replace the valves and get the station on the air, in 1981.

Credability

From the beginning Radio 15 wasn't afraid to abandon truth. Early broadcasts warned Nicaraguans against the Sandinistas' polio vaccination campaign. The vaccine, Radio 15 warned, would kill the children. When that didn't happen, the station changed its story — the new line was that the vaccine would turn kids into "Commies".

Last year the station was joined by La Voz de la UNO, which has a similar message, and a similar format. Whereas Radio 15 is officially the voice of the FDN, the largest Contra group, La Voz de la UNO, is supposed to be operated by UNO, the United Nicaraguan Opposition, the organisation intended to unite the

The wars in Central America are fought on the airwaves as well as on the ground, and monitors have front row seats. But tuning in on the radio war has a frightening side as well, if you're on the Contras' deathlist. Radio Sweden International's DX Editor George Wood has visited Nicaragua and Costa Rica, together with Swedish journalist Hermod Pedersen, an expert on Latin American DXing.

various Contra groups. But strident anti-Sandinista programming on the two stations has tended to damage credibility.

"You can hear them here," we were told by coffee farmer Ramon Amador in Jinotega in northern Nicaragua. "But very few people listen since they lie so much."

This lack of credibility has led the Contras to start yet another station, with American help. Radio Liberacion went on the air at the beginning of the year on medium wave 1.52MHz, with a 50kW transmitter believed to be broadcasting from El Salvador. The money to run the station comes from the \$100 million in aid to the Contras approved by Congress.

With a powerful signal that can be heard well in Managua, Radio Liberacion is one of the Contras' most important weapons in the war. In 1979, only 15 per cent of the population could read and write. The combined circulation of the country's newspapers before the revolution was less than 60 000. That compares to more than 500 000 radio receivers.

In Nicaragua radio is the most important means of communication.

La Voz de Nicaragua.



But the country's own resources are meager, compared with the inflow from abroad. According to a study by Howard Frederick of Ohio University, in 1985 at least 75 foreign medium wave and f.m. radio stations could be heard in Nicaragua. Twenty-six of these were in Costa Rica, 18 in Honduras, and four (before the advent of Radio Liberacion) in El Salvador. In addition, there are the short wave broadcasters — such as Radio 15.

International telecommunications expert Frederick says in his report: "In the United States military doctrine of 'low intensity warfare', political, economic, and psychological weapons are the primary means of aggression. Especially important are the channels of electronic communication, used so easily to disinform and destabilise."

Media Threat

The voice of America has also become a weapon in the war on Nicaragua. The Reagan administration has allocated two billion dollars to expand the VOA in the Caribbean basin. The Marnandate II report prepared by pro-Reagan groups says "the administration has developed and strengthened the Voice of America, realising that it is an important and effective tool for public United States diplomacy that we must use extensively in the war of ideas."

A VOA relay station was installed in 1985 in northern Costa Rica. With an output power of 100kW, it is one of the most powerful medium wave stations in Central America, and can be easily heard in Nicaragua. To put the station on the air, the VOA circumvented Costan Rican law, which prohibits foreign individuals or organisations from operating radio stations in the country. The VOA organised a group of sympathetic local business executives and politicians, which officially owns the station. However, 60 per cent of broadcasts are VOA relays. The rest are carried in the name of "Radio Costa Rica".

The VOA escalation against Nicaragua has continued as well — the Honduran government has approved a new VOA relay station in San Lorenzo, just a few kilometres from the Nicaraguan border.

Perhaps the biggest media threat to Nicaragua comes from Radio Impacto, a legal station operating from a suburb of the Costa Rican capital San Jose. Radio Impacto was started in 1983 by men who had owned stations in Nicaragua during the Somoza dictatorship. According to the Central American Historical Institute at Georgetown University, the station has had close connections with the Contra movement (ARDE) formerly headed by Eden Pastora. But when we met the current head of the Contras there, Alfredo Cesar, he denied any relationship.

"We have no connection with Radio

THE RADIO WAR IN NICARAGUA

Impacto or any other radio station in Costa Rica," he told us.

We tried to visit the station several times, but were refused permission.

Radio Impacto tries to be an alternative radio service for Nicaragua. It has professional announcers, and concentrates on current music and round-the-clock news.

"Radio Impacto is our most important competition," we were told by Adrian Roque, who heads the News Department at Nicaragua's major public broadcaster, La Voz de Nicaragua. "We're forced to be better, especially in our news coverage."

Against the battery of propaganda broadcasts from abroad, Nicaragua has 49 radio stations, of which 2 are in private hands. Of the 17 public broadcasters in Nicaragua, only two — radio Sandino and La Voz de Nicaragua — even approach national coverage.

Ironically La Voz de Nicaragua was started by the American Marines in 1931, as Radio Nacional. It was seen as a weapon in the war against Augusto Somoza's guerilla army. The Somoza family ran Radio Nacional until the revolution in 1979, along with 16 other stations.

Most of the smaller stations confiscated from the Somozas have been organised as the Peoples' Radio Broadcasting Corporation, Coradep. These small local stations have limited coverage areas, and concentrate on popular music. For example, Radio Paz in Managua plays mostly Easy Listening music, while Radio Tropical has a Caribbean music format.

La Voz de Nicaragua is clearly the most popular station in the country, at least in those parts of the country where it can be heard.

"We try to really be the voice of the people," Adrian Roque says. "We make the programmes people want and play the music they like, whether it is cumbia, breakdance or Michael Jackson."

Contact with listeners is important at La Voz de Nicaragua. The two most popular programmes are called "Contacto 620" and "Hablamos", both talk shows where listeners are put live on the air, either from La Voz's jeeps, which travel around the capital, or by calling in themselves. The programmes specialise in airing complaints about public agencies.

"The listeners can complain about anything they want. Then we call up the responsible authorities and let them respond to the criticism on the air," says Adrian Roque.

La Voz de Nicaragua is also the country's voice abroad, with broadcasts in both Spanish and English. Both services share one small room. Paula Dobbyn, one of the three members of the English group, came to Nicaragua with a construction brigade. When the brigade returned to US after a few weeks, she stayed in Nicaragua to pick coffee. Eventually she joined La



Bengt Kjeller, Swedish aid worker outside Comalapa by the grave of a farmer's leader killed by the Contras. Kjeller is also on the Contras' death list.

Voz de Nicaragua. Like the other members of the group, she has no previous experience in radio.

The biggest problems are the lack of equipment and the lack of experience," she told us. "Besides Barney Romero, the head of the English collective, we've had five or six people from North America or Britain working here. No one had any experience in radio, except for one person who had worked in college radio."

The hour long programmes concentrate, as might be expected, on Nicaragua and the situation in Central America.

"We start off with headlines and main block of news, about what is happening in Nicaragua or in Latin America. Then we usually put in a song. We try to play Nicaraguan music, but sometimes we use Latin music, or even music from the United States. Then we have *Updates*, a series of international stories. After that we have a song or an interview."

"This week I interviewed three US Vietnam vets who are here protesting the United States' policies in Central America. Before that we covered the Hasenfus trial. Each week we try to have an interview in English about what is happening in Nicaragua."

The second most popular station in Nicaragua today is Radio Sandino, the station operated by the ruling Sandinista Party. It began as an underground broadcaster in the mountains in 1977, during the struggle against Somoza. After the dictator's fall on 19 July 1979, Radio Sandino took over one of the stations operated by the Somoza family, Estacion Equis in Managua. The 1979 edition of the *World Radio TV Handbook* in fact, listed

Anastasio Somoza himself as the station manager.

Today Radio Sandino is the domestic station heard best around Nicaragua. The 50kW medium wave transmitter on 7.5MHz is the country's strongest. The station has two f.m. transmitters with a wide coverage area. We could even hear them, sounding like locals, in the hills above Matagalpa, 121 kilometres away.

The problems concerning the Miskito Indians in eastern Nicaragua, and their demands for autonomy, have led to Radio Sandino introducing special programmes for the Caribbean coast. These programmes are carried over all Radio Sandino transmitters, so that the Spanish speaking residents in the west for the first time have an opportunity to hear news and music from the remote east country.

"We have to tell people about what is happening there," explains the head of information at Radio Sandino, Maria Eugenia Urroz.

Radio Sandino is first and foremost the station of the Sandinist Party. Even the news is affected by the party's priorities. Radio Sandino would never dream of carrying news about the military situation until after checking first with the military authorities.

"We wait until we have their approval before we carry military news," Radio Sandino News Director Educardo Romero told us. "There is a chance that some items get old, that a station like Radio Impacto will have it first. But we wait until we have it confirmed. We think that's more important than being first."

La Voz de Nicaragua has a different policy. Because it has to compete with Radio Impacto, La Voz doesn't always wait for confirmation from the authorities.

"We try to work with the military," La Voz's News Director Adrian Roque says. "But we also have to think of the listeners, and if something important happens we put it on the air without waiting for approval. We try to be independent."

The majority of Nicaragua's radio stations, 32 altogether, are privately owned. Several are openly critical of the government. There is a censorship law in Nicaragua, but it is not applied to radio stations (probably because of the difficulty of enforcement).

Three stations, however, have been closed since the Sandinistas came to power in 1979. Radio Amor and Mi Preferida were closed in 1981 accused of having carried false reports that Nicaraguan troops had invaded Honduras. One of the Catholic Church's two stations, Radio Catolica, was closed in 1986 for failing to follow the radio regulations, by neglecting to broadcast president Daniel Ortega's "State of the Nation" speech.

Peter Laughton

Mystery Solved

Back on September 6, well-known UK medium wave DXer Gordon Bennett was monitoring 1210kHz around 0500UTC. He heard station WCAU in the USA, and the station Radio Caribbean in Dominica with a programme in French. After some careful analysis he noticed that the French language programme was in fact a live relay of Europe Number 1, an all news and current affairs station with studios in Paris and a large long wave transmitter in Felsberg, West Germany. Gordon mentioned this on the AWR Media programme, broadcast each Sunday in Europe at 0915UTC on 9670kHz, and wondered if anyone could solve the mystery. Well, it appears that Radio France International isn't the only French external broadcaster. Both Kiss FM and Europe Number 1 have been able to hire time on the French Telecom satellite over the North Atlantic at reduced rates. As a result, the current-affairs service Europe Number 1 is being relayed by Radio Caribbean (and also by stations in French Guiana). It's not a propagation or receiver anomaly.

Radio Tara (?)

It was a staff member of Radio Luxembourg who first noticed that Ireland had been granted a long-wave frequency of 254kHz back in the 70s and so far not used it. Radio Luxembourg therefore approached the Irish national radio, RTE in Dublin, with the idea of putting a high-power long wave transmitter on the air to reach Ireland and Britain with commercial music programmes, mainly during the daylight hours. Luxembourg and Ireland would have equal shares in the new station. In January of this year the Irish minister for Communications, Jim Mitchell, gave the go-ahead. The project is now taking shape. Two 300 kilowatt transmitters have now been ordered, and the plan is to couple these together. The ground for the 300m high antenna mast is being cleared at the moment, and the studios are being built just outside Dublin. So when will the project be ready? Sometime in the latter part of 1988 said a spokesman at RTL, "when it is right to launch it". More than £4 million sterling has been invested in the new station, not including an undisclosed figure for promotion of the new service in Britain and Ireland. Part of the campaign will have to include telling people between 16 and 34 years that long wave exists. Radio 4



Radio Luxembourg

uses 200kHz of course, but younger listeners are not used to tuning long wave for music and entertainment. It appears there has been interest in the station from advertising agencies eager to reach at least two countries with one commercial. Until now the name "Radio Tara" has been given to the operation, but it appears this is only a working title.

Finland on Full Power

Radio Finland is now using a much higher power on 963kHz. This is a new 600 kilowatt transmitter at Pori, and has considerably increased the reach of Finland's external service. North Sea pirate ship Radio Caroline, has lost its evening service as a result.

More Transmitters Appear in Europe

In October the religious broadcaster Trans World Radio and the commercial enterprise Radio Monte Carlo officially inaugurated a new 1000 kilowatt medium wave transmitter. It is based at Roumoules in southern France. Until that point, an old transmitter in Monte Carlo had been used, just outside TWR's Monte Carlo studios. A new antenna has been constructed at the French transmitter site to beam signals in one of five chosen target areas in Europe and North Africa. Programmes on unchanged 1467kHz have been extended by 5½ hours daily between 0400 and 2345UTC.

In Munich, the Voice of America has switched on a new 500 kilowatt transmitter to be used for transmissions to the Soviet Union, replacing some ancient equipment captured from the Nazi Germany propaganda machine over 40 year ago.

Italian Indecision

The Adventist World Radio station in Forlì

Italy has started testing in the evenings again after a period of silence due to bad reception. English is now broadcast 1930 to 2000UTC daily, followed by a hour broadcast in German. The religious station is currently using an old 10 kilowatt transmitter for the broadcasts and says they can only be of an experimental nature until the Italian government decides what to do next. At present, AWR Forlì has received no decision from the Italian government as to whether they will issue licences for private s.w.c. stations in the country. So upgrading of the low-power transmitter facilities will not take place until official status is granted.

Cruise Update

At this year's Association of North American Radio clubs convention in Toronto Canada, a prize of a one week cruise, was offered to those who entered the convention raffle. Doug Hunsinger and his wife Chris of Silver Spring, Maryland USA found out later that they were the lucky winners.

Dutch Medium Wave Changes

After several months of low power operation, around some 20 kilowatts in fact, engineering work on the Dutch domestic medium wave transmitter, Radio 3 has been completed. The frequency of 675kHz is now operating with 120 kilowatts again. The Dutch broadcasting authorities have decided to start using the 400 kilowatt transmitter on 1008kHz much earlier in the morning. Until now, programmes on that channel, under the name Radio 5, started at 0800UTC.

Now the transmitter comes on at 0600 UTC, and carries the music orientated programmes of Radio 2 until 0800. The organisation responsible for broadcast transmitters in The Netherlands, the NOZEMA, has started putting transmitter information on the Dutch Television Teletext service. Page 235 contains a complete list of TV transmitters, their frequencies, and any extra maintenance information. Page 236 does the same for radio.

The Dutch domestic service broadcaster, NOS, has announced the launch of a packet radio project. An amateur radio packet station and transmitter are currently being installed on top of the tall NOS main building. It should provide an important link in the already extensive

CAPITAL RADIO 604 kHz

packet radio network across The Netherlands. It is being given the nickname "Radio 6" in the broadcasting corridors in Hilversum. Also, because of an over-whelming response to the NOS computer line 010 31 35 45395, it has often been impossible for the system operators to get access to the system for up-keep, except at odd hours in the early morning. So the number of lines has been expanded. In the last two years the computer bulletin board has received in the region of 18 000 calls.

Tone From Jerusalem

For much of October the frequencies of Kol Israel, the Israeli external service carried only the interval signal or a 1000 kHz test tone. Journalists at the station went on strike in pursuit of a pay-claim. This also affected the domestic radio and TV service as well, and gave a sudden boost to short wave listening in the country. Only the Israeli army station remained on the air, although out of sympathy the station broadcast no news. But there's an interesting postscript to all of this. A research institute connected with the University of Hifa recently published the results of an investigation it made. The report indicated that there was a relationship between listening to the news and tension or nervousness. "The more people listen to the news, the more nervous they become" concluded the report published a few months back. In the first few days of the strike though the group went out into the Israeli streets again. Was the average Israeli calmer because there was little or no news? In fact the results show no connection or even the opposite. The average Israeli is just as tense or nervous as when he or she had access to more than enough news.

Number One in Greek Street

In Africa, one of the most successful short wave international broadcasters is Africa Number One, based in the country of Gabon. Successful, that is, in taking part of the audience away from traditional international broadcasters such as the BBC, Voice of America or Radio France International. For the most part, Africa Number 1 is serving Francophone Africa. It has a programme with a heavy diet of music and commercials. Now the advertising agent in London for Africa Number 1 is experimenting with programmes in English in an attempt to open new markets. In a small studio in Greek Street, London, we reached the radio producer Brian Crease. He told us that the two English/French music programmes they're producing are proving highly successful and may be expanded to include sporting events.

Bermuda Beams

Situated in the western North Atlantic

Ocean, 900km east of the coast of North America, this archipelago of 7 main islands and 150 smaller ones owes much of its economy to foreign tourism. Currently the Bermuda government in the capital Hamilton are examining plans by two American businessmen. They want to establish a 500 kilowatt medium wave station on the northwest shore of Ireland Island North for the purpose of external broadcasting. Part of the aim would be to promote tourism to the island, and the primary target for the station would be listeners in an arc stretching from Washington DC, USA in the south, up through Toronto and Montreal, Canada, and over to Boston, Massachusetts USA. Mr Edward Schober, one of the entrepreneurs, says the plans involve choosing a frequency in the lower part of the newly expanded medium wave dial in North America between 1600 and 1690 kHz. Around 95 per cent of radios of recent manufacture can tune to 1610 and 1620kHz, and they have one of those channels in mind. The station at the top of the dial would be commercial, with no initial backing from the Bermudan government.

The target group are "middle-aged males". People over 40 with a high income are also likely to be interested in adverts for holidays on Bermuda, home computers, investment services and top line cars, so the thinking goes. Although the name hasn't been fixed, the plans for the high-power medium wave station have taken two years of thorough research. At the earliest the station could begin broadcasting in the spring of next year. But there are few more hurdles to go yet. In case you're wondering, the station would only put out its programme of international music, features and commercials, in the local evening hours,

to take advantage of long distance medium wave a.m. reception. With that kind of power, the station would probably become an easy medium wave catch too.

Developments in Southern Africa

The BBC has now begun testing their second 100kW transmitter at their Lesotho relay base. The World Service is well received during daylight hours on 6190kHz, but at night the Beeb has chosen 3340kHz, which is only 2kHz up from Maputo in Mozambique on 3338. We understand that engineers in London are working on the problem.

South-West Africa/Namibia has a new "National Service" carried by all stations of the SWABC twice a day. The programmes are in English and Afrikaans between 0430-0700 and 1930-2200UTC. The s.w. frequencies are 3270 and 3290 kHz, though the morning period may be switched to 4930 and 4965kHz at around 0625 very shortly, due to propagation conditions. There are also two m.w. channels, 594 and 747kHz. The change means that the various stations go their separate ways only between 0700 and 1930 as the period 2200-0430 carries another joint service, the SWABC's all night music service announced every half-hour alternatively in English, Afrikaans and German. English, it seems, is to be made the official language of SWA/Namibia. This step is included in the territory's draft constitution drawn up by the transitional government.

And finally to Transker, where the religious programmer "Southern Sound" which was hiring airtime at night from Capital Radio Transker has had to close down for financial reasons. It seems their cheques started bouncing! This means Capital Radio operates on 3927.8kHz between 0300-0500 & 1700-2200 and during the day, that is 0500 to 1700UTC on 7149kHz.

Preserve that "Terrible" Building

The BBC is to change the frequency of its Radio 4 domestic service by 2kHz on 1st February 1988. The move to 198kHz is in line with a World Administrative Radio Conference resolution back in 1979, requiring long wave stations to operate on a frequency spacing of 9kHz.

Although it may not sound a significant move, changing just two kilohertz requires some extensive modifications to the giant antennas at the three transmitter sites of Droitwich, Westerglen and Burghead. Meanwhile demolition of the BBC's old transmitter building at Droitwich has been delayed because of a preservation order placed on it by local conservationists. They believe the building is an excellent example of 1930 architecture, but when it was constructed local residents complained it was an eyesore. □

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STARTING OUT

Brian Oddy G3FEX

Although many radio signals are present at most locations in the world, their presence cannot be detected without a suitable antenna and receiver. It is important to appreciate that the antenna provides the tiny signal voltages required by the receiver and that both the antenna and the receiver work together as a team in this detection process!

As the electromagnetic waves associated with each signal travel past a receiving antenna, their electric (E) and magnetic (H) fields induce, or set up, a tiny alternating electromotive force (e.m.f.) on the antenna — this in turn causes a tiny alternating current to flow in it. The peak-to-peak potential of each e.m.f. is likely to be only a few microvolts, where 1 microvolt is one-millionth part of a volt. The waveform of each signal voltage will be an exact replica of the modulation envelope generated by the transmitter concerned — see "Starting Out" *SWM* December '87. For highest efficiency, the length of the antenna must bear some relationship to the length of the radio wave and this and other aspects of antenna design will be discussed later in this series.

The Receiver's Role

It is the incredible job of a receiver to select the particular signal voltage required by the listener from all those present on the antenna and then process it so as to recover the original modulating information. Some receivers do this more effectively than others and numerous designs have evolved over the years, ranging from the simple crystal set, which was only capable of detecting strong signals from a local broadcast station, to the modern communications receiver which may be capable of processing signals voltages of only a few tenths of a microvolt at the antenna terminals!

Tuned Circuits

Irrespective of the complexity of the receiver, each design relies upon the properties of **tuned circuits** to select wanted signals and reject unwanted ones. A simple tuned circuit consists of a coil of wire called an **inductance** (L) attached to two or more insulated metal plates which form a **capacitor** (C). L and C may be connected either in parallel (Fig. 1a) or in series (Fig. 1b). The values of L and C determine the frequency to which the circuit responds or **resonates**. By changing the value of L or C the circuit may be adjusted or **tuned** to resonate at any desired frequency.

It can be shown that a high impedance exists across a parallel circuit at the resonant frequency and that a low impedance exists at all other frequencies (Fig. 1c). Exactly the opposite response is obtained when the L and C are wired in series (Fig. 1d). Any practical circuit unavoidably contains some resistance and this causes the peak of the response curve

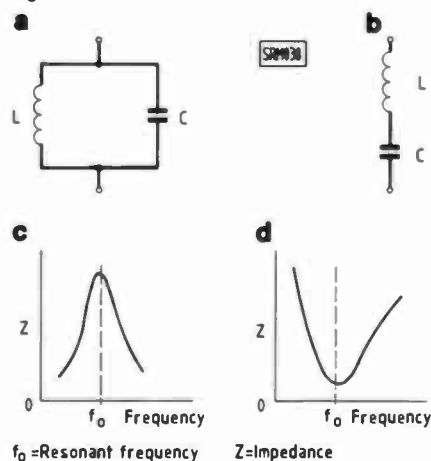
to become flattened, i.e. the selectivity of the circuit is diminished.

If an antenna and earth are connected to a parallel tuned circuit, and it is then adjusted to resonate at the frequency of a wanted signal voltage on the antenna, the circuit will present a high impedance to the wanted signal and a virtual short circuit to all others — it will in effect select the desired signal and reject all others.

The coil was usually tapped in the early receivers to provide adjustment, but later the capacitor was made variable instead, so that more precise adjustments could be made. Most modern receivers contain fixed coils and variable tuning capacitors. To change the range of reception, a bank of fixed coils is employed and each coil is selected by a **wave change switch**.

Having selected the desired signal it then has to be processed by the receiver in order to recover the original modulating (audio) information. Because the tiny signals at the receiving antenna become more difficult to process as the frequency of a transmitted signal is increased, the early receivers carried out this process called **detection**, immediately after the signal had been selected by a single tuned circuit. Most modern receivers however make use of the **superhetrodyne** principle (superhet for short) which overcomes these problems by converting the tiny high frequency signals to a much lower frequency which can then be more easily amplified and processed.

Fig. 1



Antenna

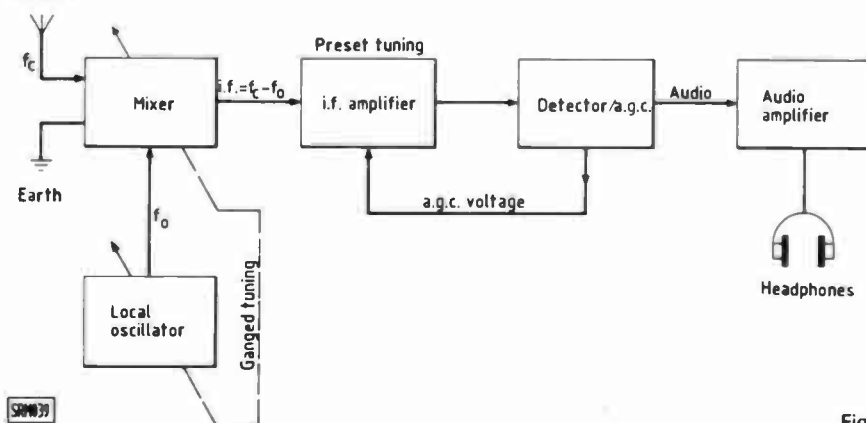


Fig. 2

Superhet Principles

When two frequencies are fed into a mixing device it can be shown that **sum and difference** frequencies are generated. By mixing an incoming signal (f_c) with a locally generated oscillation (f_0), $f_c + f_0$ and $f_c - f_0$ are produced. If the difference frequency $f_c - f_0$ is selected then, effectively a lower frequency results. This is called the **intermediate frequency** (i.f. for short) — see Fig. 2. If the local oscillator tuning and the incoming signal circuit tuning are **ganged** a constant i.f. difference results.

This lower frequency replica of the original antenna signal is fed to an i.f. amplifier which can be sharply tuned at the factory to the chosen intermediate frequency to provide both amplification and selectivity. The i.f. then passes into a **demodulator** or **detector** circuit. The audio output from this is amplified and is then used to drive a loudspeaker or headphones.

A portion of the signal present at the output of the i.f. amplifier is used to provide an **automatic gain control** (a.g.c.) potential to vary the gain of the i.f. amplifier(s) as the strength of the signal varies due to fading. These general principles are the building blocks used in most of the simpler modern receiver designs and there are so many receivers to choose from these days that a newcomer to this hobby may well find it difficult to decide which receiver will suit his needs! Some of the receivers are quite inexpensive — certainly cheaper than one could build for the money.

Portable Receivers

Most of the cheaper receivers are transistorised portable superhets and include a built-in telescopic "whip" antenna. Although nearly all of them cover the l.w. and m.w. bands, some have only one s.w. range covering several s.w. bands — this results in a very cramped scale, so they are best avoided. The better portables have the major short wave broadcast bands spread out across the length of the dial, each one being selected by the wave-change switch e.g. 16m,

STARTING OUT

19m, 31m, etc., corresponding to the internationally agreed broadcast bands (see page 51, July '87 *SWM*). A popular portable of this type is the Russian-made Vega 206 — see appendix.

Limitations

Obviously these receivers have certain limitations, especially on the s.w. bands where, for example, the receiver tuning may gradually drift off the station over a period of time, but this can be overcome by an occasional adjustment to the main tuning knob. The calibration of the dial/scale may not be very accurate, but this can be overcome, to some extent, by adding a logging scale and preparing a set of calibration graphs (see appendix, page 32 September '87 *SWM*). The simple circuits used may result in a lack of sharpness in the tuning, allowing the sidebands from an unwanted station to interfere with a wanted signal. Another more important problem is that **image signals** may appear on the bands — the cause of these will be revealed in a future article in this series.

More Advanced Designs

Because of these problems the word

“portable” may imply something less than the best in the mind of some listeners, however these days there are many semi-professional solid-state portable receivers available in a higher price range (£100-£350) which may well suit most listeners. They are capable of providing excellent reception of most of the s.w. global broadcasts and are very easy to operate. Everything that the average listener needs is built-in — even the built-in whip antenna will prove to be adequate for anyone who lives in a fair location! These portables are often more sensitive than some of the older valved communications receivers which require an external antenna — they also have another advantage over them, namely a **digital frequency display**, which makes it a simple matter to tune accurately into a particular station or to find the station again on a subsequent occasion.

Communication Receivers

Most dedicated DXers are intent on searching for signals intended for distant target areas and since such signals may be very weak, or hidden under copious amounts of interference from other stations, they do not rely on a portable receiver to obtain their results — instead,

they often employ a modern **communications receiver**. Communication receivers have always been the standard of excellence and needless to say they are very expensive, ranging in price from about £400 to £2000 or more. To ensure the best results they require a good antenna system — they also need to be used by someone who understands how to operate them! Some of the interesting features included in the more advanced portable sets and communication receiver designs will be discussed next month.

Appendix

The Russian-made Vega 206 portable covers the l.w. and m.w. bands and has six s.w. ranges. It costs only £25.45 — see small ads in *Practical Wireless*.

The general specifications and prices of some of the current semi-professional portable and communication receivers detailed in “What Receiver” — see pages 48 and 49, November 87 *SWM*.

Radio Nederlands publish an excellent guide to many of the receivers available called the *Receiver Shopping List* — it is available free of charge by writing to: — **Media Network, P.O. Box 222, 1200JG Hilversum, Holland.** □

THE RADIO WAR IN NICARAGUA

◁ 27

The station says this was due to technical problems and that parts of the speech were in fact broadcast.

When we asked President Ortega about the closure of Radio Catolica, he said nothing about his speech, but instead criticised the station's programming: “Radio Catolica supported the attitude that can be found within the Church hierarchy in Nicaragua that the revolution can only lead to atheism. For that reason they believe that any means can be used to destroy the revolution. This we cannot accept.”

The Contras have tried to exploit the differences between the Sandinistas and the Church hierarchy. But the closure of Radio Catolica was not opposed by the entire Church in Nicaragua. Village priest Marcus Lester told us that he didn't miss the station at all.

Radio is alive and well in Nicaragua. The airwaves around the country are filled with news, music, and — not least — propaganda. Because much of the radio war is being fought on short wave, listeners in North America can monitor the struggle from their armchairs. Bueno escucho!

Stations to Look for

Radio 15 de Septiembre — has been heard on many frequencies, including 555, 5565, 5570, 5950, 6130 and 6.215MHz. News in English is reported at 0200hrs. Address: FDN, 1999 Thomas Jefferson St., Suite 605, Washington, DC 2007, or FDN, Box 16-0953, Miami, FL 33116, USA.

La Voz de la UNO — Most reported on 5.889MHz, but also 5.95MHz. Address — same as above, or possibly ARDE, Apartado 348, 1000 San Jose, Costa Rica.

Radio Miskut — broadcasts programmes in Miskito and Spanish to Nicaragua's Atlantic coast. Reported irregularly from 1130hrs on 5.95 and 5.565MHz, and at 2100 and 0130hrs on 6.265MHz. Address — same as above, or Comision Politica MISURA, Ap. Postal 1668, Tegucigalpa, Honduras.

Radio Monimbo — 6.23MHz, said to have been founded by the son of the martyred publisher Joaquin Chamorro. Reported irregularly. □

Radio Impacto — 6.15MHz, formerly on 6.16MHz, most recently reported on 6.14MHz. Address — Ap. 497, San Pedro de Montes de Oca, Costa Rica.

Radio Liberacion — 1.52MHz, broadcasts 0000-1200hrs.

La Voz de Nicaragua — 6.015MHz variable. English has been carried at 0100 and 0400hrs, most recently reported at 0000hrs. Address — France Telcor, Villa Panama, Managua, Nicaragua or Box 248, Managua, Nicaragua.

Radio Sandino — 7.5MHz. Address — Ap. 4776, Managua, Nicaragua or Paseo Tiscapa, Managua, Nicaragua.

Radio Zinica — in Bluefields on Nicaragua's Caribbean coast, uses 6.12MHz. Address — Ap. 25 Bluefields, Nicaragua.

Mercenaries fighting in Central America are reported to be using 6.593MHz s.s.b. around 0000 UTC and 6.6225MHz around 0045. □

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UR70 70ohm coax per metre	0.35	(0.10)
UR95 50ohm coax dia. 2.3mm per metre	0.40	(0.10)
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50 metres 16 swg hard drawn copper wire	6.95	(1.50)

ANTENNA BITS	£	(c&p)
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Bricomm 7 1MHz Epoxy Traps (pair)	9.95	(1.50)
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Small Ceramic egg insulators	0.65	(0.20)
Large Ceramic egg insulators	0.85	(0.20)

ANTENNA TUNER UNITS	£	(c&p)
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Kenwood AT230	208.67	(2.50)
Kenwood AT250 auto	366.00	(-)

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Yaesu FT 73R Handheld + FNB10	273.00	(-)
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Justin Cooper

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All-Time Post War HPX Ladder

Name	Last Mth	Prefixes This Mth
Phone Only		
B. Hughes (Harvington)	3309	3309
E. M. Gauci (Malta)	3224	3272
E. W. Robinson (Felixstowe)	2623	2647
H. M. Graham (Chesham)	1932	1932
M. Ribton (Gillingham)	1856	2018
M. Rodgers (Bolton)	1818	1827
N. Hembrey (Northiam)	1592	1610
F. Dunn (Chester)	1566	1566
B. Patchett (Sheffield)	1207	1307
C. R. Eve (Jersey, C.I.)	1009	1076
A. P. Lincoln (Aldershot)	888	888
R. G. Williams (Borehamwood)	874	874
B. E. Woodcock (Leeds17)	New	752
L. Marcquardt (Hereford)	629	629
A. Vest (Durham)	605	605
A. Woodcock (Denmark)	603	603
CW Only		
F. Dunn (Chester)	2035	2035
H. Scott (Rievaulx)	1396	1396
N. Melville (Edmonton)	1181	1202
P. J. Barnes (Blackpool)	393	458
C. R. Eve (Jersey, C.I.)	323	323
M. Rodgers (Bolton)	268	304
RTTY Only		
W. J. Prior (Lochcarron)	515	525
C. R. Eve (Jersey, C.I.)	492	498
N. Hembrey (Northiam)	334	334
M. Rodgers (Harwood)	251	270

Starting score, 500 for Phone, 200 for CW or RTTY. Entries in accordance with HPX Rules.

Annual HPX Ladder Starting date 1 January 1987

Name	Last Mth	Prefixes This Mth
J. J. Sales (Lancaster)	450	450
S. Burgess (Stockport)	301	427
A. Hall (Lockington)	406	406
P. McAllen (Southampton)	224	395
S. Hill (Port Talbot)	320	339
M. Probert (Basingstoke)	260	260

200 Prefixes to have been heard for an entry to be made in accordance with HPX Rules. At score 500, transfer to the All-Time list is automatic. Note, the Annual Table is a Phone only listing.

Most in 1987

E. M. Gauci (Malta)	820	976
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Rules as for the Annual Listing. An entry for this listing must be in addition to any claim for the All Time Post War listing.

New Chums

First, we have the letter of P. Hawkins. Paul is keen on the i.f. bands, using a Trio R1000 and a KX2 a.t.u.; on Top 8and he has heard many USA stations, 3D2RY (Fiji), 9H1EU and ZL2BT. This last is good DX in anyone's book on Top 8and, although easier from Paul's location than it would be from, say East Anglia, as a look at the Grey Line Path will show.

Now we head for Sheffield, where B. Patchett is one of the lucky ones to be able to have equipment at his work place. A

sloping long-wire plus a.t.u. has been adequate for Brian to hook on to various Ws, VP2V, ZL, plus of course the smaller fry. On a different tack, Brian comments on people giving S9 reports and then calling for a repeat. He feels that if a signal is S9 it must therefore be perfectly readable. That seems to me to be a circular argument, in that we have an RS(T) reporting system purely because we are allowing for the possibility of an R4S9 signal — indeed our local Sunday-morning net often yields such, while the odd call-in from the other side of the country is

Last time out I mentioned the havoc caused by gales — and at this QTH I have to admit to looking fearfully out of the window almost every morning since then — high winds have occurred on most days, and rain on most others! This is the season of the year when cautious antenna users keep a close eye on the chances of guys chafing against anything nearby; quick action to "serve" any affected stays with a protective coating may well save an expensive failure. My own favourite serving is with pieces of retired garden hosepipe cut to suitable lengths and slipped over the stay to protect it, and taped into position to make it stay where the danger lies. The sailing buffs often use lots of what they call "baggywrinkle" for the same purpose, as obviously on a boat any chafing can "see off" a sail in short order.

No doubt about it, the bands are looking up. Last month has seen quite a few days when there has been real DX on the 28MHz band which indicates an enormous lift since we passed the minimum a year ago. This, in part, arises from the fact that the rise from minimum to peak is almost always faster than the fall from peak to minimum, but of course there is a large fact or labelled "activity" in the equation. Nowadays, with all the beacons about, one can get a fair idea that a CQ call would be worthwhile. Before the beacons came on you might have a band that was wide open, while being listened to by thousands, but with no-one actually seeing the value of a speculative CQ — until a contest weekend comes along and people actually try!

Letters

Although he has concentrated on c.w. this time, M. Rodgers (Harwood) nonetheless has some prefixes to claim on Phone and on RTTY; to spread one's interests on the air is always a good thing.

Suggestions

In a long and well-argued letter, D. A. Whitaker (Harrogate) touches on various matters. Firstly, he reviews a book recently published — and in our book-list — called *Short Wave Radio Listener's Handbook*. For the average s.w.l., David reckons, to buy this book would be money well spent. As for that, the author, Arthur Miller is well-known in the s.w.l. field as being thoroughly latched on to what matters, that we do know.

David feels we should end the year with HPX, and then start again with a clean slate. On this, my mind is open — let us have your views as sharply as possible, please.

maybe RS551! Perhaps the problem arises from a reporting of readability by ear while giving the strength from an optimistic S-meter? My own S-meter is biased the other way, and I only use it for comparison purposes, normally giving S9 when the meter reads quite a bit less.

S. Burgess (Stockport) had a ball during the CQ WW Contest Phone leg on October 18, when he found 28MHz open to Africa and the Caribbean. On the 18th there was a good opening to JA around 1000Z, mainly heard working TF3CW.

P. McAllen (Southampton) noted the SORASD expedition to Spanish Sahara, having some trouble with generators, and also noted, while they were sorting the trouble out, signals from BY4RB and XX9C. Peter often hears interesting stations on the European DX Net on 14.247MHz, at 1600Z on Wednesdays and Thursdays.

E. W. Robinson (Felixstowe) found the period interesting, and netted several interesting prefixes, although at the time of writing he had not been able to latch on to FH4EC. That VU4GDG expedition was heard a couple of times, once with the suffix/DVP and once with the /APE — these suffixes were used to indicate which operator was actually at the controls, as an aid to log-keeping.

P. Barnes (Marton, Blackpool) hadn't heard a VK for years when he heard VK8AV working a PA on 21MHz; a QSY to 28MHz promptly threw up another one, in VK6WT, working DF9QV. A new one from South Africa was HC1GC, about S1 while working a W4. On a different tack, Peter wants to know about MARS stations. These are military, operated by amateurs, carrying what the Yanks call "traffic" comprising personal messages to their friends back in the States. They are normally just outside the bands.

Next we turn to a letter simply signed "Basil" from Leeds, BR5 44266. Basil uses a Trio JR310, and a JR599, but prefers the older receiver, and finds that either are capable of doing the job when compared with the modern "black boxes". True enough, and many of the receivers using digital techniques are "way down" compared with older receivers. I often use a simple direct-conversion receiver to a G3RJV design on 14MHz, and finds it has a lot going for it. Often, indeed, being battery-powered, it works when the main receiver is picking up local noise through the mains, although I do take care to filter the mains input. Basil gets a lot of fun listening for Islands — as he says, IOTA gives a new slant when you run out of DXCC countries!

On now to E. M. Gauci (Malta) who says that the weather has

SEEN & HEARD

now subsided to a civilised temperature, so he can spend some more time in the shack; thus he goes up to 3272 prefixes total, and 976 for the year.

Interesting Problem!

C. R. Eve (St. Helier, Jersey) says he has found 7MHz unusable from about 1630 to midnight, thanks to a tremendous buzzing noise, and since 14MHz closes fairly early, he is reduced to using 3.5MHz. Now, we suspect that the noise on 7MHz is electronic in origin, maybe a computer addict — although we can't suggest a type. As for not finding much on 3.5MHz, I strongly suggest that Chris tries using an r.f. attenuator; leave the RF GAIN at maximum and gradually bring in the attenuator, dB by dB, until suddenly the noise level drops, leaving signals much clearer. I almost always have the 20dB attenuator "in" when using this band, whether transmitting or just listening around. The problem is simply that the receiver front-end just can't cope with the enormous unwanted signals that ride in on the antenna, are amplified in the r.f. stages and then hit the mixer which promptly mixes everything with everything

else resulting in a very high noise level. As the attenuation is brought in, so these unwanted signals fall, until, just as they get low enough to stop overloading the mixer, the receiver reverts to normal operation. The noise level was masking signals and when it drops, behold, there is your DX!

To revert to the point of using an attenuator, M. Ribton (Gillingham, Kent) is now using a Drake 2A, and finds 7MHz a revelation; Mike notes that the local Tandy shop stocks an attenuator for a humble three quid, and he also adds the use of the RF GAIN to the same end — so much so that 7MHz is now becoming a favourite band! Agreed; but it is always preferable to use attenuation rather than reduce RF GAIN for the single reason that as the RF GAIN is backed down the receiver noise figure also drops off, whereas using full RF GAIN and the attenuator keeps the receiver noise figure at optimum. But there is no doubt those old Drake receivers were very good in this region, which is why so many DX operators still have them about.

Angles

One of the sadder things about the development of our hobby in the past thirty years is the decline in home-construction, alongside the rise of new forms of activity. It seems a little sad to me when, for example, we no sooner hear of such a concept as packet radio, and find that we are seeing advertisements for the equipment needed long before we can acquire a circuit we can homebuild. The point is that while some such as I can get hold of the basic data and then design and construct the electronics, the majority of amateurs and s.w.l.s are, of necessity, not electronics engineers. Why should such be denied the pleasure of home-construction? To those who argue that we are on the right path, all I can say is that people are coming into the hobby, getting on the air and dropping out again nowadays, whereas backalong it was always a case of once into the hobby one stuck.

Along with this rise of commercial equipment and

decline of home-construction has come another phenomenon — the amateur radio equipment designed to please the designer regardless of how difficult it has become for the user. Fashion dictates that to be modern it must have a microprocessor, regardless of whether or not the result is an improvement.

On the same theme, there is the idiotic fashion for solid-state output stages, which, for s.s.b. at least, are far poorer performers in terms of the quality of the output signal under two-tone test conditions. Don't blame the suppliers to the amateur market — I know of highly professional areas where the output stage should be a valve, but where market forces (fashion, in other words) are forcing makers to degrade their product by going solid-state, despite possible risk to life and limb. But then, man was never a very rational creature, and probably never will be!

Finale

That's it for another month. By now you will all have had your Christmas junketing and be getting ready to start a new year. May it be all good DX and fun!

Reports for February '88 issue by January 7 please

This month has seen quite a lot of RTTY activity both on the commercial and amateur front. The generally improved conditions on the higher h.f. bands means that some new stations should be receivable soon. A selection of this month's commercial reports are shown here:

- 10.137MHz 50 baud normal — Brazzaville
- 19.228MHz 75 baud normal
- 19.178MHz 50 baud normal — Jeddah
- 13.510MHz 75 baud reversed — Halifax
- 14.555MHz 50 baud reversed
- 14.638MHz 75 baud reversed — USA
- 14.903MHz 50 baud reversed — TASS
- 14.937MHz 75 baud normal — Asecna
- 10.260MHz 75 baud normal — TASS
- 18.560MHz 50 baud reversed — Tehran

For those of you who like to tune around, the best bands to monitor are the ITU fixed service allocations as shown here:

- 4.000MHz to 4.063MHz
- 4.438MHz to 4.650MHz
- 4.750MHz to 5.480MHz
- 5.730MHz to 5.950MHz
- 6.765MHz to 7.000MHz
- 7.300MHz to 8.195MHz
- 9.040MHz to 9.500MHz
- 9.775MHz to 10.000MHz
- 10.100MHz to 11.175MHz
- 11.400MHz to 11.700MHz

DECODE

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

- 11.975MHz to 12.330MHz
- 13.360MHz to 14.000MHz
- 14.350MHz to 15.010MHz
- 15.450MHz to 16.460MHz
- 17.360MHz to 17.700MHz
- 18.030MHz to 21.000MHz
- 22.720MHz to 23.200MHz
- 23.350MHz to 25.600MHz
- 26.100MHz to 27.500MHz

Amateur RTTY has been particularly good, with some interesting openings on the 28MHz band. The first of these was on November 8 when I logged CE3BBW (Chile) in the late afternoon, the signal was stable and clear of the noise though the actual signal strength was quite low. The second opening was on November 15 and I managed to log some very good DX between 1140 and 1200UTC as shown here: PS7KM (Brazil), LZ2FX (Bulgaria), 388FP (Mauritius), LU2DGO (Argentina), 9Q58G (Zaire), S79WS (Seychelles), OE2XAL (Austria), Y26WL (E. Germany) and OK1NP (Czechoslovakia). As you can see from the times, the opening was quite short and required an element of luck to catch the DX. One of the problems when trying to log RTTY DX on 28MHz is spotting the opening. Fortunately amateurs have set up a world-

wide beacon system which makes light work of establishing the propagation conditions on 28MHz. A selection of the more commonly heard beacons are shown here:

- DLOIGI (Mt Predigtstuhl) 28.205ZMHz
- IY4M (Bologna) 28.195MHz
- LU1UG (Gral Pico) 28.255MHz
- PY2AMI (Sao Paulo) 28.299MHz
- ZS6PW (Pretoria) 28.270MHz
- Z21ANB (Bulawayo) 28.250MHz
- 5B4CY (Cyprus) 28.220MHz

This is only a small selection as there are over 50 beacons in the 28MHz band alone. For more up-to-date propagation data on the amateur bands, Ron Ham runs a propagation column in our sister magazine *Practical Wireless*. The Amateur beacon network can be used not only to check the amateur bands but to give a good indication of general band conditions.

FAX

I've found another unidentified FAX station! The station transmits on 12.471MHz using 120 r.p.m. and an IOC of 576. You can see one of the typical charts from the station in this column. The transmissions seem to be of

Russian origin but are unusual in that the station shuts down in between transmissions and does not send a stop tone at the end of the transmission. One other unusual point is that the transmitted charts cover Northern Europe, the North Atlantic and the USA! I have no mention of this station in any of my literature, so if any of you can help I would be very pleased to hear from you. The only transmission time I have found so far is around 1900UTC.

My best FAX DX this month was AXM34 on 11.030MHz (120 r.p.m. and IOC 576). Although all my literature identifies this as Canberra Meteo the received chart is marked Melbourne Meteo.

Computercations

As mentioned last month, I visited this Rally in Brixham on November 1. I must say that although the event was quite small it was one of the friendliest rallies I have been to. This rally was the first where I attempted a live FAX demonstration and the results were quite good.

I took along my own station which is my trusty Icom IC-720A transceiver, ICS FAX-1 and an Epson RX-80 printer. The main problem when operating in an unfamiliar location is setting up a suitable antenna system. With some help from the rally organisers I set up a long wire

SEEN & HEARD

antenna about 30m long over a flat roof, the feed was RG-173 coaxial cable to try and minimise QRM. The station was initially set up on the Saturday night but a shortage of time meant we had to leave the site before I had a chance to check the performance.

On arrival Sunday morning, I found that I was suffering severe QRM from my printer. Fortunately this was easily cured as the mains earth was not connected to the receiver ground line!

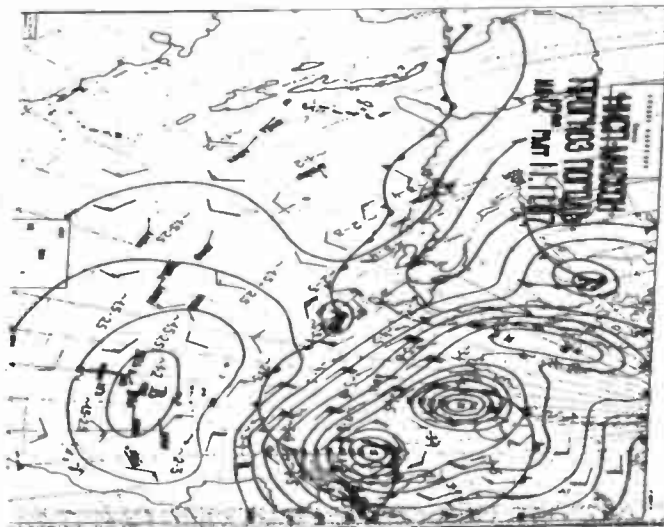
I was hoping to be able to show some amateur FAX signals from the DARC FAX contest, but unfortunately the h.f. demonstration station started up and wiped out the h.f. bands! The QRM was not due to a poor transmission but the fact that my antenna was only a few metres from the other stations. Despite these problems I did manage to receive DJ4SR (W. Germany) in the morning. The only portion of the spectrum that was reasonably clear of QRM was the l.f. band between about 100 and 150kHz.

Fortunately there are several interesting FAX signals in this band so a live demonstration was still possible. I think that mine was the only station running a live demonstration, although there were plenty of others running computer-based reception systems. It was also quite surprising the number of people who are very confused about FAX weather transmissions. A lot of people were also seeing a FAX reception system for the first time and were impressed with the picture quality, especially the re-broadcast Meteosat photographs. Overall the experiment was a resounding success, except that I was tied up all day discussing FAX and short wave listening and Elaine had to cope with the PW SWM stand on her own.

Seen – Little Heard

Few observers seem to have been able to capture the "MIR" cosmonauts' signals as they overflow our area this past month, although many excellent sightings were available in clear skies. One of the reasons may be that more communications are now going via the geostationary tracking data and relay satellites on s.h.f., and another may simply be that longer rest periods were instituted following heavy work rosters. A further problem is that the timing of the passes supplied depends upon a number of non-determinable factors for accuracy.

The Keplerian elements from which we calculate passes are normally some six weeks old by the time we get them into print, by which time a mere second of epoch inaccuracy will multiply up to two seconds on the next orbit,



Unidentified FAX station 12.471MHz.

Klingenfuss

I have just received the sixth and latest edition of the Klingenfuss *Guide To Utility Stations* hot off the press. For those of you not familiar with this publication it is quite simply the short wave listeners "bible" and represents the most up to date frequency list available. The beauty of this publication is that it is updated annually, for the ultimate in current information you can even subscribe to a supplement service which means you are sent two updates during the year. If you are sceptical about the value of an annual update the following is the details of the changes between the 5th and 6th editions:

- 85 new frequencies
- 192 new call signs
- 5502 total changes

Another Klingenfuss publication hot off the press is the *Tenth Edition of the Radioteletype Code Manual*. This manual comprises a unique collection of all the current codes and transmission systems used by the Utility stations. It makes essential reading for anyone interested in understanding the workings of the wide range of signals on to days crowded bands. The codes covered are very comprehensive ranging from simple ITA No 2 (Baudot) to Third-shift 6-element Japanese!

For details of price and availability keep an eye on the Book Service page.

New AX.25 Products

I have received some news

recently from Siskin Electronics. They have introduced two more AX.25 terminal node controllers from Pac-Comm into their range – they are the ones importing the TNC220.

The first new line is the Tiny-2, which is a new, low cost, TNC designed for use on v.h.f. and u.h.f. at a speed of 1200 baud. It uses standard TNC-2 ROMs and so is capable of being used for NET/ROM, TCP/IP, etc.

- It's main features are:
- It uses standard TNC-2 ROM
- 32K RAM and 32K ROM standard
- Latest 1.1.5 software
- Extruded aluminium case only 127 x 178mm
- Supports RS232 and t.t.l. computers
- 12V d.c. operation

The Tiny-2 is being introduced at a special price of £99.95 inc VAT (plus P&P), but for more details on the product contact Siskin direct. Hopefully in the not too distant future I shall get my grubby hands on one to try and then I'll be able to report more fully.

The other recent introduction is the Micropower-2, this is a very low-power TNC drawing only 40mA at 9 – 13V d.c. It is small and lightweight (127 x 178 x 35mm and 624g). It is ideal for portable or solar power operation. It is similar in features to the Tiny-2 but built and tested to a higher specification, with additional options available in the New Year.

The Micropower-2 is £159.95, but again you should contact Siskin direct for full details. Their address is, Siskin Electronics, PO Box 32, Hythe, Southampton SO4 6WQ.

That's all for this month, so I'll wish you all a Merry Christmas and Happy New Year and I look forward to receiving your reports in 1988.

Reports for February '88 issue by January 11 please

INFO IN ORBIT

Pat Gowen G3IOR

17 Heath Crescent, Hellesdon, Norwich, Norfolk NR6 6XD

three on the next, and so on. After six weeks a compound discrepancy results that can produce predictions more than 15 minutes out. Yet another problem in long term predictions is that often the space station will be moved in orbit, and hence orbital period, since the last set of calculations were provided. Even another is that the solar flux is now increasing, meaning an increased drag factor from the denser atmosphere, causing orbital height variations resulting in further changes of orbital period, particularly with such low orbiters as "MIR" and "Salyut".

Bill Eyre writes from Whaley Bridge, near Stockport, to say that despite listening on his AOR-2002 with discone antenna from 1200 to 1230 on the date suggested, and again from 1500 to 1535, nothing was heard, making him wonder if his equipment was adequate. Bill can be assured that it most certainly is, as the 143.625MHz signals are very strong, and can even be heard on an inexpensive portable radio covering the air band. To all listeners, it is recommended that the receiver be left with the squelch left lightly on for the whole period of the day when

active passes are present, which will surely produce signals when the actual pass times resolve. For greater accuracy, topical and updated pass times for the UK may be obtained by enthusiasts by listening to information provided on the AMSAT-UK nets, at 7pm local time on Mondays and Wednesdays, and at 1015 on Sundays, all on 3.780MHz ± QRM.

At the time of writing, a further Progress supply vehicle is on its way up to automatically dock with MIR, and soon now cosmonaut Yuri Romanenko will be coming back to earth, having been in space for an all-time record period of weightlessness since February this year. Not surprisingly he has been feeling unwell recently, and a medical doctor will be going up by a SOYUZ-TM-4 for a visit in the very near future. Thus, we may expect to see continued activity

on all of the "MIR" associated communications frequencies, and regular observation should bring its rewards.

Seen & Never Heard . . .

When the JAS-1 amateur radio satellite was launched to become OSCAR-12, at 2045 on Tuesday 14 August 1987, the upper stage also carried a large geodetic laser reflector ball, called the "EGP" short for Experimental Geodetic Package, now called "EGS-1" for Experimental Geodetic Satellite No. 1, and known in Japan as *Ajisai*, meaning *Hydrangea*. In the west it is usually referred to as the *Mirrorball*.

Its purpose is to act as a phased laser reflector, in order to accurately determine any movement of land points, on the mainland of continents or the outlying islands, thus giving valuable information in the study of plate tectonics. This is a vital science in Japan, as the threat of earthquakes is always present, and these could well be forecast and prepared for by the knowledge of the degree and speed of shift of the points under mensuration.

Ajisai has no radio beacon aboard, and no transponder, and serves purely as a passive reflector, using its surface covered with many laser retro-reflectors and plane mirrors. It has many plane mirrors plus 120 clusters of corner-reflectors forming twelve cubes around the centre, each being a corner, so that the three faces meet at 90 degrees to form an equilateral triangle. The special silica glass surfaces are polished to an optical accuracy within 0.1 of a micron, thus giving a very efficient reflecting basis.

It thus forms one of the prettiest sights in the sky, where it can be seen from up to four hours after dusk and four hours before dawn (being in a high 1500km circular 50 degree inclination orbit) as a bright blue-white twinkling star, flashing six times per ball rotation, or twice per second, when illuminated by the sun. Each flash appears to be far longer than the actual 5 milliseconds duration, but this is due to the persistence of vision of our eyes. It has a magnitude of between 1 and 3, about as bright as the Pole Star. To find it, follow the AMSAT nets each Wednesday at 7pm on Mondays and Wednesdays, or at 1015 am each Sunday on 3.580MHz when predictions for its fellow launched Fuji-OSCAR-12 will be given. Some five and a half minutes after FO-12 will come *Ajisai* on a similar path, easily spotted against a clear dark sky.

Fig. 1 is a picture of *Ajisai* before launch, its size being comparable to the diminutive JA YL standing beside it.



Fig. 1.

Weathersats

Mark Smith of New Costessey, Norwich, is now studying for his amateur-radio licence, and hopes to be on the air soon after the May 1988 RAE has been sat. In the meantime, concurrent with his studies both amateur and professional, he is enjoying radio and electronics as a keen short wave listener, having now recently added weather satellites to his repertoire of enthusiastic applications.

"I have always been very interested in electronics and computers" writes Mark "and when I saw the WXSAT receiving station possibilities in the pages of *Short Wave Magazine* I promptly ordered the advertised demonstration disc on offer. On viewing, I became very impressed with the pictures on it, to the extent that I promptly ordered the complete kit. This consisted of the MRS-20W receiver, the antenna and the interface, which took several evenings of building to complete" Mark then sent the complete receiver back to the suppliers, who, for a small fee, completed the alignment required, returning it within a week.

He found the system gave excellent results, limited only by the 160 x 256 pixel (in eight colours) resolution of his BBC-B computer. The equipment can be seen in Mark's study in Fig. 2, which shows the computer on the lower desk, with the left hand unit above it the receiver, and the right hand unit the interface. On top of the desk unit sits the Pye monitor for viewing the results which follow.

Fig. 3 and 4 respectively are visible light and infra-red x2 pictures taken from NOAA-9 as it passed over the UK on 4 July 1987, each giving a very clear view of north-east France and the UK with cloud cover toward Scotland. Fig. 5, an x2 NOAA-9 picture taken on 15 July 1987 shows side by side visible light and infra-red pictures, with good views of Africa at the bottom, southern Europe and the Mediterranean Sea central, with the UK at the north. Mark also sends us a photograph of his antenna, Fig.6, a circularly



Fig. 2.



Fig. 3.



Fig. 4.

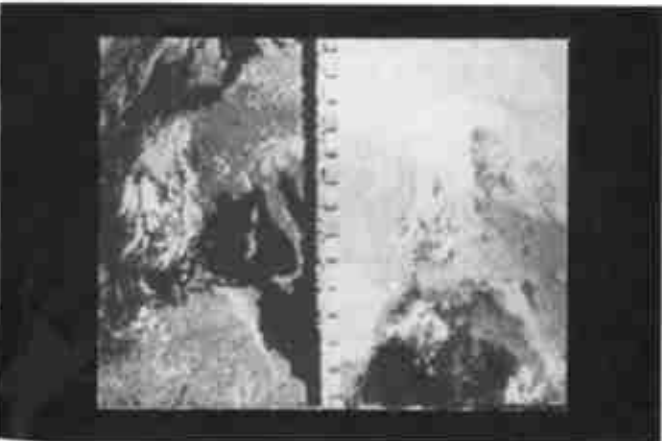


Fig. 5.

SEEN & HEARD

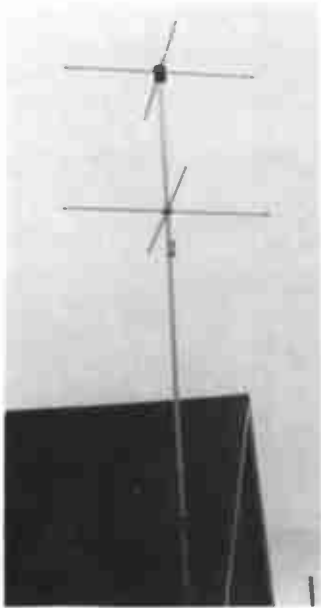


Fig. 6. polarised crossed dipole backed up with a reflector, mounted in the clear on a scaffold pole at the

corner of the house. It is 7 metres above ground, fed with some 10 metres of cable, and uses no pre-amplifier.

Mark says that he would like to express his thanks to Chris Hornby, who has always given a prompt reply to any queries, and that his next step is to add a framestore and a METEOSAT.

Whole Orbit Data

Better known as w.o.d., this is one of the main and most interesting features of both the UoSAT-1 and 2 (OSCAR-9 and 11) spacecraft, giving the basis for many intriguing and productive space experiments. The onboard computers of both satellites can store any selected channels of telemetry data collected in a whole orbit (or more) in its memory, thus giving a complete presentation of the whole picture

of its parameters by transmitting these to ground stations during a typical twelve minute pass.

Whilst these take quite a lot of time to decode, translate, and plot to form a meaningful format, a computer will do all of this for you in lightning time. Neill Taylor G4HLX has produced such a program for the versatile Spectrum computer, which does all the work for you. All you need to do is record the 145.825MHz UoSAT-1 or UoSAT-2 signal when the w.o.d. data is being transmitted, and having played the program into the computer, feed in the tape to the ear-plug. The program instructions can be easily followed to produce a graph of the channel(s) monitored, to give a graph such as Fig. 7, in this case the Navigation Magnetometer "Z" axis.

If a specific portion of the presentation requires finer

analysis, such as the complex between 2.5 hours and 3 hours, then this section can be further represented by adjusting the "X" and "Y" baselines to give a graph as seen in Fig. 8. Readers will immediately see that a host of interesting and informative data is available from which much educational and research work can evolve. The program is called WOSP and details are available from Neill at 87 Hunters Field, Standford in the Vale, Faringdon, Oxon., SN7 8ND. This compliments his SUDD program for demodulating the UoSAT telemetry and bulletins, and the SPIX program for seeing the CCD pictures taken from the satellites. All three programs are available at a reduced price of £12.00, with any one at £4.50 each. (Add 50p postage for Europe, £1.00 overseas, all in sterling). The University of Surrey would appreciate results from w.o.d. observers, and "Seen Heard" would like to print your results and findings in this column.

Reports for February '88 issue
by January 11 please

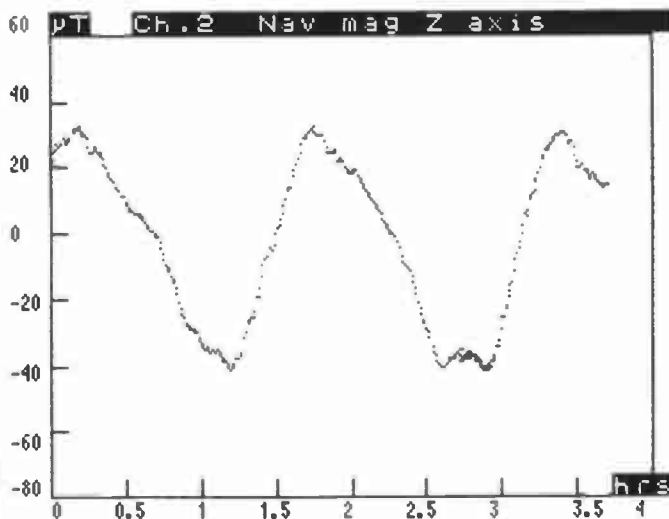


Fig. 7.

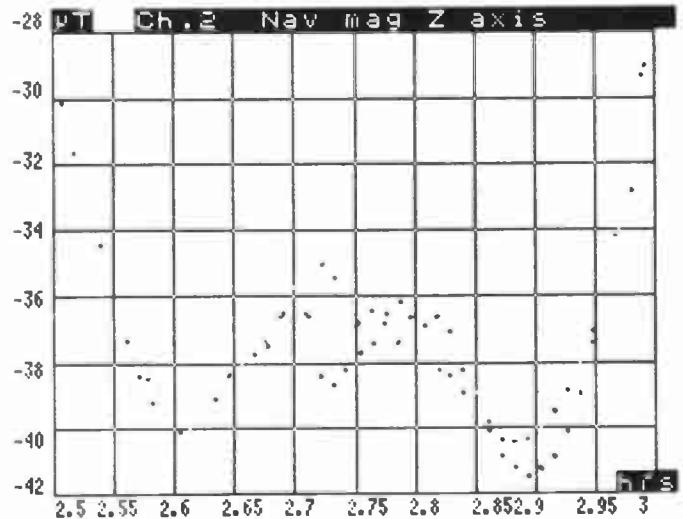


Fig. 8.

In Rotherham, Ken Lancaster monitors and records all types of broadcast stations around the world using Trio R5000 and Sony ICF2001D receivers and a Sansui D33XL stereo tuner, with Revcone antenna, for Band II. Much of Ken's equipment is shown in Fig. 1 and do remember readers, a photograph of yourself accompanied by details of your gear and antenna system is always welcome for this column.

Tropospheric

"This week should have been interesting for all Band II DXers due to the high pressure," wrote Ken because, during the tropo-opening between November 4 and 8, he logged stations from Belgium, France, Germany and Holland, which he identified by listening for their idents on the

BAND II DX

Ron Ham

Faraday, Greyfriars, Storrington, West Sussex RH20 4HE



hour. I received many French stations between 98 and 101MHz at 0905 on the 5th and 1500 on the 7th and, earlier on the 7th, BBC Radios Bristol, Kent, Oxford, Shropshire, Stoke on Trent and RTE - Radio-One, were pounding in on my ex-military R 216 communications receiver, fed by a Revcone antenna. Throughout this event, I found many inter-station "warbles" as I carefully tuned from 87 to 103MHz. Such "warbles" often occur when signals sharing the same or similar frequencies appear together. At 1830 on the 5th, Michael Hirst (Droylsden) heard BBC Radio Sussex on 104MHz on his Philips D2935 receiver and in Belfast, Bill Kelly listened to the local news and station ident from BBC Lancashire at 0815 on the 6th.

During the evening of the 4th,

SEEN & HEARD

Simon Hamer (New Radnor) logged stereo signals from Hesicher Rundfunk's transmitters at Beidenkopf, Gr. Feldberg, Hoher Meissner and Rimberg, Norddeutscher Rundfunk at Aurich, Hamburg, Harz and Steinkimmen and Westdeutscher Rundfunk at Langenberg and Teutoburger Wald. He also heard programmes from the American Forces Network at Frankfurt and the British Forces Broadcasting Service at Bielefeld. "The East and West German stations were the star performers during this event," remarked Simon.

Antennas

A simple dipole antenna, installed in the loft or better still outside, with a good quality coaxial feeder is a worthwhile addition to any enthusiast's station, especially when an extra antenna is only required for DXing, while



Fig. 2. The author's two dipoles.

Reports for Band II DX and Television columns to Ron Ham by January 11 please

Although the emphasis this time is on that early November tropo, we must not overlook the variety of short life Sporadic-E disturbances which also occurred. These produced some interesting DX in Band I proving, once more, that it is worth checking this area of the spectrum throughout the winter period.

Band I

Bob Brooks (South Wirral) positively identified test cards and programmes from Sweden (TV1) at 0834 on October 8, Denmark (DR) at 0805 on the 9th, Czechoslovakia, Italy, Spain and the USSR spasmodically on the 12th, Denmark and Spain during the morning of the 18th, Austria, Czechoslovakia (SR1 TV Bratislava), Finland, Germany (ARD/ZDF, Grunten and SWF-RBG), Norway (Bagn), Poland, Spain, USSR and Yugoslavia (Ljubljana) between 1044 and 1548 on the 21st, Czechoslovakia, Finland, Italy, Spain and the USSR between 1045 and 1434 on the 22nd, Switzerland and the USSR early on the 23rd, Hungary (MTV) and Portugal (RTP) at midday on the 24th and Czechoslovakia, Norway and the USSR during the morning of the 26th. In addition, Bob enclosed photographs of a Swedish caption, Fig. 1 and a Yugoslavian test card, Fig. 2, which he captured while previous events were in progress.

Edwina and Tony Mancini (Belper), logged test cards from Austria (ORF-FS1), Czechoslovakia (CST DDK-3 and RS-KH), Denmark, Finland (YLE-TV1), East and West-Germany (DFF DDR-F1 and ARD Grunten), Holland (PTT

NED-1), Poland (TVP-1), Sweden (SVT-Kanal 1), USSR (EESTI TV Tallin) and Yugoslavia (JRT RTV-LJNA changed to RTV-1 Ljubljana) on the 21st, Sweden and Switzerland (+PTT SRG1) on the 24th, Denmark and Portugal (RTP-1) on the 25th and Norway (Kongsberg) and Denmark on the 26th and 30th, respectively. They also found Finland and Norway on November 1, Italy on the 2nd, Holland on the 2nd, 4th and 9th, USSR on the 8th and 11th and East-Germany and Sweden on the 16th.

Programme captions and Station idents always make an interesting subject if your camera is handy as Noel Smythe (Caerphilly) proved when pictures appeared on his screen from Austria, Fig. 3, Czechoslovakia, Fig. 4, West Germany, Fig. 5 and Spain, Fig. 6, during the 1987 Sporadic-E season. Throughout the season, Spanish signals were predominant, especially during the peak month, June, when Len Eastman, (Bristol) recorded and later photographed some of the people taking part in their programmes, Figs. 7, 8, 9 and 10.

Tropospheric

The atmospheric pressure rose sharply from 30.1 on November 2 to peak at 30.5 late on the 3rd where it remained until it began to fall at midday on the 5th. True to

form, a tropospheric opening accompanied the declining barometer and varying degrees of co-channel interference affected the u.h.f. band from the evening of the 4th to mid-morning on the 8th. At 0445 on the 6th, I saw a "Good Morning" caption from Central Television, followed by job adverts from Aston, Handsworth and Sparkhill mixing it with a Thames programme around Ch. 43.

Between the 2nd and 6th, Andrew Jackson (Birkenhead), using a Yoko F6 receiver and 18-element antenna, logged strong, although sometimes fading, pictures from Anglia TV -Ch. 24, BBC 1 Midlands, North-East, North and Wales on Chs 26, 33, 47 and 52 respectively, Central TV -Ch. 23, HTV -Ch. 49, Tyne Tees TV -Ch. 29, Yorkshire TV -Ch. 47 and S4C on Ch. 42. Among the many u.h.f. signals found by Simon Hamer (New Radnor), were transmissions from Egem, Oostvleteren and Profondeville (Belgium), Brocken and Lobau (East-Germany), Aachen, Angelburg, Bielefeld, Cuxhaven, Flensburg, Grunten, Hamburg, Kiel, Nordhelle, Regensburg, Rhon, Steinkimmen, Torfhaus, Waldstein and Wessel (West-Germany), Arnhem, Goes and Wieringermeer (Holland) and Cairnhill in Ireland. He also received pictures from France (A2, Canal Plus, TDF, TF1 and

conditions are right, or in places where a large beam is not permissible. Briefly, a dipole is made from two aluminium rods, cut to the length required for the frequency, with an insulator block in the centre where the feeder is connected to each rod. The length of each rod is around 750mm for Band II. Dipoles are reasonably cheap to buy or can be made from redundant TV antenna parts. However, when using the latter, do make sure that the insulator block is free from corrosion and that good electrical continuity exists between the feeder and the end of each rod. This can be measured using the ohms range of a multi-meter or a torch-battery and bulb. The upper of my two home-brew dipoles, seen in Fig. 2, is broadside on to Rowridge, IoW, for Band II reception and the lower faces nearby Midhurst, for u.h.f. television.

TELEVISION

Ron Ham

Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

FR3) on most channels and Luxembourg (RTL) on Ch. E27. "Canal + was everywhere" said Simon.

In Carmarthen Ian Davidson received pictures from BBC South, Belgium (BRT), Holland (PTT-NED2), Germany (ZDF) and Television South in the u.h.f. band and as Band II opened, Ian identified programmes from Belgium and France, I received pictures and test cards, often in colour, from Belgium (BRT TV1 and RTBF1) and Ireland (RTE 1 and 2), Bob Brooks logged test cards from Belgium, France, East and West Germany, Holland and Ireland, Simon added Denmark (TV Avisen-news-) and Luxembourg and the Mancinis rounded off the Band III score with Czechoslovakia on Ch. R10.

During the event, Edwina and Tony watched cartoons from Belgium and France, military music from Czechoslovakia, news and a variety of programmes from Germany and Ireland and sport from Holland.

Noel Smythe also received pictures from Belgium, Fig. 11, during a similar event on January 31.

SSTV

Between October 26 and November 2, Ray Gilchrist (Millom) received slow scan pictures, on 14MHz, from 12 countries, Austria, Czechoslovakia, Finland, France, Germany, Italy, Poland, Portugal, Spain, Switzerland, Sweden and the UK. Ray recently installed his gear at a new QTH and his results so far look good, especially that "RTTY-CW-SSTV" caption seen in Fig. 12.

SEEN & HEARD



Fig. 1: Sweden.

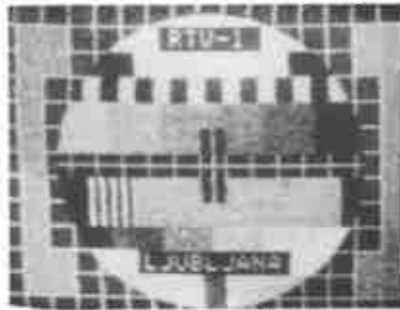


Fig. 2: Yugoslavia.



Fig. 3: Austria.



Fig. 4: Czechoslovakia.



Fig. 5: West Germany.



Fig. 6: Spain.



Fig. 7: Spain.



Fig. 8: Spain.



Fig. 9: Spain.



Fig. 10: Spain.



Fig. 11: Belgium.



Fig. 12.

The second stage of a three part plan affecting the stations operating in long wave band will be introduced on the 1 February 1988. The plan is being implemented over a four year period and is designed to alter the spacing of the stations so that they are at 9kHz intervals starting from 153kHz.

The first stage of the plan was introduced on 1 February 1986 and affected the stations operating below 200kHz. This second stage will affect the

LONG MEDIUM & SHORT
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stations operating below 245kHz. Some of the moves to be expected are BBC Droitwich to 198; DLF Munich, Kiev and Morocco to 207; Roumoules and Oslo to 216; Konstantinow to 225; Junglinster and Moscow to 234. In addition to

its normal role, BBC Droitwich has served for many years as a very accurate 200kHz frequency standard for amateurs and professionals alike — no doubt it will be missed.

The final stage of the plan is due

to take place on the 1 February 1990 — this will change the upper band limit from 281 to 279kHz.

DX REPORT

(Note: LW & MW frequencies in kHz, SW in MHz; Time UTC)

Long Wave DX

Although the shortest day has now passed, the long dark winter nights will be with us for some time and that has to be good news

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SEEN & HEARD

Freq MHz	Station	Location	Time (UTC)	DXer
870	WWL	USA New Orleans, LA.	0130	G
880	WCBS	New York, NY.	0255	E
1000	WTAK	Huntsville, AL.	0430	G
1010	WINS	New York, NY.	2253	C.D.E.F.G
1050	WFAN	New York, NY.	0305	B.C.E.G
1060	WAMT	Titusville, FL.	0230	G
1090	WBAL	Baltimore, MD.	0310	B.C
1110	WBT	Charlotte, NC.	0130	G
1130	WNEW	New York, NY.	2359	D
1190	WOWO	Ft. Wayne, IN.	0300	H
1210	WCAU	Philadelphia, PA.	0307	C
1220	WGAR	Cleveland, OH.	0300	H
1500	WTOP	Washington, DC.	0040	B
1510	WSSH	Boston, MA.	0700	C
580	CFRA	CANADA Ottawa, ON.	0330	H
590	VOCM	St. John's, NF.	0300	A.B.C.E. F.H
610	CKYQ	Grand Bank, NF.	0051	F.H
620	CKCM	Grand Falls, NF.	0310	B
670	CHYQ	Musgravetown, NF.	2336	F
710	CKVO	Clarenceville, NF.	0641	C
930	CJYQ	St. John's, NF.	2250	B.C.D.F
1570	CKLM	Lavel, PQ.	0045	B
550	XEKL	C.AMERICA & CARIBBEAN Mexico.	0330	G
550	XEGUZ	Mexico.	0336	G
770	R. Jamaica	Jamaica.	2330	G
1010	XEXN	Mexico.	0630	G
1165	R. St. Johns	Antigua.	0100	G
1210	R. Caribes	Dominica.	0003	C
1570	Atlantic Beacon	Turks & Caicos IIs.	0150	B,H
1610	Caribbean Beacon	Anguilla.	2209	B.C.E.G.H
1100	R. Globo	SOUTH AMERICA Sao Paulo, Brazil.	0135	C
1220	R. Globo	Rio, Brazil.	0110	B.E

DXers

(A)	David Edwardson, Wallsend.	(E)	Paul O'Connor, Birmingham
(B)	Bill Kelly, Belfast.	(F)	Nick Rank, Buxton.
(C)	Alexander Little, Glasgow.	(G)	Tim Shirley, Bristol.
(D)	George Morley, Redhill.	(H)	Jim Willett, Grimsby.

for anyone interested in I.w. DXing! Some of the weaker signals noted on certain frequencies after dark have been attracting the attention of **David Hackwell** in Warrington — he used a 0.25m loop in conjunction with a synthesised hi-fi tuner to compile most of his log for the chart, but he brought into use a giant 14-turn 2m loop in an attempt to obtain positive identification of the stations sharing 263! The signals from two of the stations mentioned in his report, namely **Baku**, USSR 218 and **Erzurum**, Turkey 245 could only be heard after midnight — worth noting if you have yet to hear them!

In Wallsend, **David Edwardson** has been experimenting with the 55 turn 0.23m by 0.27m loaded loop antenna detailed last month. He tried removing the 3.9mH loading inductor to see if it would improve the strength of received signals, but little increase was noted. As expected, it shifted the frequency coverage h.f. from 85-600kHz to 160-900kHz, but it also resulted in an unexpected reduction in the sharpness of the tuning, making it easier to peak up on a signal. Using the loop without the loading ahead of a I.w. converter and Trio R600 receiver, David compiled his log for the

chart at 0125UTC.

The reports from two listeners who have been monitoring the band both during the day and at night made interesting reading. An increase in the signal strength from certain stations was noted at night by **Philip Rambaut** in Macclesfield, namely **Motala**, Sweden 189 — S1 to S3; **Azilal**, Morocco 209 — S1 to S2; **Konstantinow**, Poland 227 — S2 to S3; **Burg**, E. Germany 263 — S1 to S3 and **Topolna**, Czechoslovakia 272 — S2 to S3. However some signals remained very constant despite their distance, namely **Oranienburgh**, E. Germany 177 — S3; **Saarlouis**, W. Germany 183 — S4; **Roumoules**, Monaco 218 — S4.

Similar effects were observed in Tunbridge Wells at night by **Darran Taplin** who used a Vega 206 portable receiver to check the band. However the logs show that some of the signals which remained constant at night in Macclesfield actually increased in Tunbridge Wells i.e. **Allouis**, France 162 — S4 to S5; **Oranienburgh**, E. Germany 177 — S2 to S3 and **Saarlouis**, W. Germany 193 — S3 to S4. The constant signals were **DLF Munich** 153 — S2; **Roumoules**, Monaco 218 and **Junglinster**, Luxembourg

236. Similar comparisons at your locations may be interesting.

Listening during the day, **Bill Eyre** was surprised at the strength of some of the signals he logged in Stockport — exceptions being **DLF Munich**, W. Germany 209 and **Minsk**, USSR 281. **Phil Townsend** added two more stations to his growing list of daylight DX, namely **Tipiza**, Algeria 254 and **Radio Volga**, Burg GDR 263. Using a Panasonic RF1680L portable, Phil found that **Radio Algiers** had a very noisy signal in London.

Writing from Bristol, **Tim Shirley** says he has now received QSL cards confirming his reception of **Motala**, Sweden 189; **Oslo**, Norway 218 and **Kishinev**, USSR 236. However he has not heard from **Radio Monte-Carlo**, Monaco 218 although he sent them a reception report about 8 weeks ago, so he is now wondering if they are interested in listener reports. Tim used a Realistic DX400 receiver to compile his list for the chart.

In Thessaloniki, Greece **George Efratiades** has been monitoring 200kHz on his Philips D-2225 portable in the hope of adding the **BBC Droitwich** transmission to his growing list of I.w. DX — so far he has been unable to hear any trace of the signal.

7600D portable with a 0.5m loop in Glasgow. **Alexander Little** rated **CKVO Clarenceville**, Nfld 710 as **SINPO** 13422 at 0641; **VOCM St. John's**, Newfoundland 590 as 14422 at 0645 and **WSSH Boston**, Mass 1510 as 23333 at 0700.

At least two of the stations regularly heard in the UK last winter have changed their call signs and programme format — **WHN New York**, NY 1050 used to broadcast country music, but now has continuous sports/talk programmes under the call sign **WFAN** on 1050; **WMRE Boston**, Mass. 1510, known as the "memory station" because of its programmes connected with past events and music, has been operating from Boston under the new call sign **WSSH** since July on 1510.

There are several entries in the chart this time which have not been mentioned before in this series, consequently they are subject to confirmation by QSL, namely **XEGUZ** 550; **XEKL** 550; **Radio Jamaica** 770; **WTAK** 1000; **WAMT** 1060; **XEXN** 1010 and **St. Johns**, Antigua 1165 — all noted by **Tim Shirley**, also **CFRA** 580 logged by **Jim Willett** in Grimsby.

Other MW DX

MW Transatlantic DX

The reception conditions have improved considerably during the last few weeks and some of the transatlantic signals are now audible in the UK well before midnight. The signals from **CJYQ** in St. John's, Newfoundland 930 have been especially good, in fact **George Morley** says "whether one can call **CJYQ** a DX station is I think in doubt, as by 2300 on two or three occasions it motored in here at S3 to S4, sounding more like a local!" George is now using a "Sooper Loop" with his Trio R5000 receiver at his listening post in Redhill and finds it to be quite an improvement over his old 1m loop and much easier to control too!

Since there is no need to burn the midnight oil, or to use a communications receiver with a giant loop antenna to hear **CJYQ** in the UK just now, this could be a good time for anyone contemplating this aspect of our hobby to try transatlantic DXing for the first time — even a simple transistor portable may produce results!

Two of the signals logged by **Bill Kelly** in Belfast also rated as S3, namely those from the **Caribbean Beacon**, Anguilla 1610 at 2245 and **Radio Globo** in Rio, Brazil 1220 at 0110. Although the bulk of the signals logged by DXers were heard soon after midnight (see chart), some of them have still been audible in the UK just before dawn! Using a Sony ICF

Urumqi, China was logged by **David Edwardson** on 1521 at 1700 — he used a 1m loop with his Trio R600 receiver. He turned the loop towards the Middle East at 1800 and picked up **Duba**, Saudi Arabia on 1521 and **Sfax**, Tunisia on 1566 at 1915.

An RCA AR77 receiver and a loop antenna enabled **Jim Willett** to log **Ain Beida**, Algeria 531, **Sidi Bennour**, Morocco 540; **Les Trembles**, Algeria 549, **Batra**, Egypt 621; **Santah**, Egypt 864; **Algiers**, Algeria 891 and 981 — all were received between 2000 and 2300. In his report Jim pointed out that Egypt is roughly the same distance from the UK as the Canadian East coast! His log also included some seldom mentioned stations — **Bleven**, Bulgaria 594; **Sarajevo**, Yugoslavia 612; **Timisoara**, Romania 630; **Sud Radio**, Andorra 819; **Megara**, Greece 981; **Bari**, Italy 1116; **VOA Rhodes**, Greece 1260; **Cyclops**, Malta 1557 and **Lisbon**, Portugal 1593.

RTA Algiers, Algeria 981 was also logged by **Nick Rank** in Buxton — he rated their signal as **SINPO** 33333 at 1900. At 2215 he logged **Kiev**, Ukraine on 1404 as 2332 and at 0500 he picked up the Russian home service interval signal on 1008. By using a 1m loop ahead of his new Matsui MR 4099 portable, **John Nash** has added several stations to the growing list of Spanish DX he has logged during the evenings, namely **La Coruna** 639; **Sevilla**

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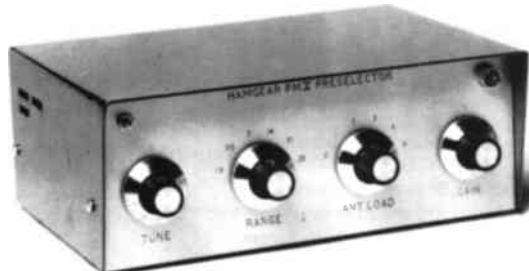
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Fig. 1. John Nash.

684; Oviedo 729; Cadiz 747; Sevilla 792; Bilbao 990; Vigo 1224; San Sebastian 1260; Zaragoza 1413 and Pamplona 1503 — Fig. 1 depicts John with his equipment in Brighton.

Robert Taylor has been testing out his new Sony ICF 7600DS portable in Edinburgh during the evening and logged RTE-1 Tullamore, S. Ireland 567; Braunschweig, E. Germany 756; AFN Frankfurt, W. Germany 873; Milan, Italy 900; Bremen, W. Germany 936; Pori, Finland 963; Flevoland, Netherlands 1008; Wolfsburg, W. Germany 1017; Solvesborg, Sweden 1179; Neuminster, W. Germany 1269; Kvitsoy, Norway 1214; Leipzig, E. Germany 1323; Nancy, France 1350; Manx Radio, Isle of Man 1368; Monte-Carlo, Monaco 1467; Wolvertem, Belgium 1512 and Mainflingen, W. Germany 1539.

Phil Townsend added several new stations to his growing list of daytime DX — Bayreuth, W. Germany 549; Kuurne, Belgium 1188; RTE-2 Dublin, S. Ireland 1278; BBC Radio Ulster via Lisnagarvey 1341; Saarbrücken, W. Germany 1422 and Langenberg, W. Germany 1593.

Using a Realistic DX-150A receiver with a 25m wire antenna, Darran Taplin picked up the BBC 2kW relay in Wrexham during the day! At night, Darran has been monitoring the broadcasts on 963 from Finland via their new transmitting station in Pori and noted SINPO 54434 in his log at 2223. Some of the more distant stations noted in his log were Madrid, Spain 585; Rome, Italy 846; Milan, Italy 900; Algiers, Algeria 981 and Stargard, Poland 1503.

Writing from Wootton, IOW George Millmore says he took his Vega Selena portable with him on holiday to Hamilton, Scotland. He found daytime reception conditions there far from ideal due to TVI, but managed to log three of the Official stations in S. Ireland — RTE-1 via Tullamore 567 and via Cork 729, also RTE-2 via Athlone 612. John Parry of Northwich took a small pocket portable receiver with him on holiday to the Greek island of Rhodes. Although

the local VOA 500kW m.w. relay on 1260 provided him with news of world events at 0800, he found he could only hear the BBC World Service broadcasts via their Cyprus relay at night.

The report from George Efstratiades indicates that the BBC World Service broadcasts via Orfordness on 1296 are audible every night in Greece — however the signal is usually only fair to poor with some jamming noted at times. The reports on the BBC 648 broadcasts via Orfordness continue to arrive here and make interesting reading — John Berridge says their signal is inaudible in Cardiff during the day, but at night it peaks SIO 555. As might be expected, their signal is loud and clear on the home built crystal set which Ron Pearce has been testing in Bungay! However it seems that his little set is capable of pulling in more distant stations too, since BBC Radio Scotland 810; AFN Frankfurt, W. Germany 873; BBC Radio Ulster, via Lisnagarvey 1341 and even TWR Monte-Carlo, Monaco 1467 have been logged by Ron during the evening!

MW Local Radio DX

A very warm welcome to three new contributors to this section, namely David Hackwell of Warrington, Paul Hawkyard of Newcastle-upon-Tyne and Michael Hirst of Manchester. David compiled his first extensive log for the chart by using a 1.5m loop in conjunction with synthesised hi-fi tuner. A newcomer to DXing, Paul used a Sony ICF 7600DS portable to prepare his first log for the chart. Michael used a Philips D-2935 receiver with internal antenna when checking the local radio scene for the first time — he says he was surprised by the number of stations he received.

Writing from Morden, Sheila Hughes says "I am really enjoying this local radio DXing, but I could do with more hours in the day, no shopping and no visiting!" Sheila has sent reception reports to some of the stations and has so far received a QSL from ILR Chiltern Radio, written confirmation and

other information from BBC Radio Northampton and a personal letter from the Engineer-in-Charge of BBC Radio Norfolk!

It is quite remarkable that some of the low power transmitters can be heard at considerable distances — at night, Tim Shirley has been hearing the broadcasts from Radio Norfolk via their 250W transmitter in West Lynn on 873 and Alan Curry was delighted to hear County Sound 1476 for the first time during daylight — their 500W transmitter located at Peasmarsh is about 385km from his home in Stockton-on-Tees!

Robert Taylor compiled his list with the aid of his new Sony ICF 7600DS portable — he says he finds the digital readout most helpful when searching the band for new stations. A Sony IC 2002F receiver was used with a 3m indoor wire antenna by Bill Griffith in Richmond to check the band by day and at night during a six week period. Francis Hearne added two more stations to his growing list of DX — he used a Sharp GFA3 receiver with a wire antenna in Ilford.

George Millmore checked the local scene while on holiday in Hamilton, Scotland — no doubt he would like to be able to log some of the stations he heard up there at his home in the Isle of Wight!

Short Wave DX

Following last month's report that two transmissions in the 25MHz (11m) band have been heard in the UK, Dick Moon decided to check the band in George, S. Africa to see if either of the signals were audible there — to his surprise he heard Radio Norway International on 25.730 at 1335. Their transmission in Spanish is beamed towards Africa from 1300 and it certainly seems to be reaching its target since it rated as SINPO 55555! The other transmission mentioned last month, namely Radio Netherlands on 25.970 was not received by Dick and it has not been audible here recently either.

This band seems to be attracting the attention of some broadcasters at a rather earlier point along the upward slope of the new sunspot cycle than had been expected. The latest development noted here is that a powerful unmodulated carrier exists on 25.825 around 1000 — it suffers from fading, which suggests that it does not originate from this country.

Although the reception conditions prevailing on the 21MHz (13m) band are unstable, a number of interesting broadcasts may usually be heard during the day. Radio Japan broadcast direct from Tokyo to S.E. Asia on 21.550 from 0200 until 0900. They also reach listeners via a relay in Moyabi, Gabon on 21.695 — this

transmission is in English and commences at 0700. Radio Bucharest, Rumania 21.655 beam programmes in English to Australia in the early morning — John Berridge logged their signal as SIO 455 at 0645.

Using a Grundig 1400SL receiver in Trelewis, Leighton Smart has been listening to the programmes in English beamed towards W. Africa and Europe by Radio RSA in Johannesburg, S. Africa on 21.590 from 1100 until 1156 — their signal rated as SINPO 34443. He also picked up RSI Stockholm, Sweden on 21.690 beaming their programmes in English to the Middle East at 1100 — as expected their signal was poor and suffered from multi-path problems.

The broadcasts from Radio RSA are very popular with many listeners and their afternoon transmission to W. Africa and Europe on 21.590 from 1300 is usually well received in the UK. Tim Shirley is a regular listener to their "Mail Bag" programmes hosted by Shirley Veal and Kathy Fitch. Tim has also been listening to some of the topics in English broadcast by UAE Radio Dubai on 21.605 at 1330 — their transmission is mainly in Arabic and commences at 0615.

Overseas readers may be interested to know that the BBC World Service is broadcast to listeners in E. Africa on 21.470 from 0900 until 1615 and to West, Central and South Africa on 21.710 from 1100 until 1615. A transmitter at Woofferton, Shropshire is used on 21.470 between 0900 and 1030, then a transmitter in Daventry, Northants takes over until 1615.



Jim Willett, Grimsby.

SEEN & HEARD

Freq kHz	Station	ILR or BBC	DXer
585	R.Solway	B	C,F,J,O*
603	Invicta Sound	I	B,C,F,L*,P
630	R. Bedfordshire	B	B,C,F,K,L*,N,P
630	R.Comwall	B	K
657	R.Ciwyd	B	C,F,L*,P
657	R.Comwall	B	K
666	DevonAir R.	I	K,M
666	R.York	B	A,C,D*,F,P
729	BBC Essex	B	C,N,P
756	R.Cumbria	B	C,D*,F
756	R.Shropshire	B	C,F
765	BBC Essex	B	B,C,F,N,P
774	R.Kent	B	B,F
774	R.Leeds	B	C,F,L*,O*,P
774	Severn Sound	I	C,F,L*
792	Chiltern R.	I	B,C,F,G,N,P
801	R.Devon	B	C,F,K,L*,M*
828	R.WM	B	C,F,L
828	R.Aire	I	C,F,P
828	Chiltern R.	I	B,M,N,P
837	R.Cumbria	B	A
837	R.Furness	B	C,F
837	R.Leicester	B	B,C,F,L*,N,O*,P
855	R.Devon	B	K,L*
855	R.Norfolk	B	B,K,L*,N,P
855	R.Lancashire	B	C,F,I
873	R.Norfolk	B	E,F,G,K,L*,M*,M,P
936	GWR	I	C,F,K,L*
945	R.Trent	I	C,F,H*,K,L*,M*,P
954	Devonair	I	C
954	R.Wyvern	I	C,F,L*,M*
990	Beacon R.	I	C,F,L
990	Hallam R.	I	C,F,P
999	Red Rose R.	I	A,C,F,P
999	R.Solent	B	B,G,N
1026	R.Cambridgeshire	B	A,B,F,G,N,P
1026	Downtown R.	I	C,F
1026	R.Jersey	B	M*
1035	R.Kent	B	B,C*,G,M
1035	NorthSound R.	I	A.P.
1035	R.Sheffield	B	C,F
1035	West Sound	I	J
1107	Moray Firth R.	I	J
1107	R.Northampton	B	G,K,P
1116	R.Derby	B	C.F.P
1116	R.Guernsey	B	M*
1152	BRMB	I	L
1152	R.Broadland	I	M*,P
1152	R.Clyde	I	J
1152	LBC	I	B*,N

Freq kHz	Station	ILR or BBC	DXer
1152	Metro R.	I	D*
1152	Piccadilly R.	I	C,F
1161	R.Sussex	B	N
1161	R.Tay	I	J
1161	Viking R.	I	C,F
1170	R.Orwell	I	N,P
1170	Signal Radio	I	C,F
1170	Ocean Sound	I	G
1242	Invicta Sound	I	B,K,N,P
1251	Saxon R.	I	B,K,N,P
1260	Marcher Sound	I	C,F
1260	Leicester Sound	I	F
1278	Pennine R.	I	C,F,O*,P
1305	R.Hallam	I	F,P
1323	R.Bristol	B	F
1323	Southern Sound	I	B,F,N
1332	Hereward R.	I	C,E,F,O*,P
1359	Essex R.	I	B,G,N,P
1359	Mercia Sound	I	C,F,L*,M*
1368	R.Lincolnshire	B	B
1368	R.Sussex	B	B,N
1431	Essex R	I	N
1431	Radio 210	I	L*
1449	R.Cambridgeshire	B	P
1458	R.London	B	B,N
1458	R.Manchester	B	C,F,O*,P
1458	R.WM	B	L
1476	County Sound	I	A,B,F,H,L*
1485	R.Merseyside	B	C,F
1485	R.Sussex	B	B,G,L*
1503	R.Stoke-on-Trent	B	C,F,H*,L*,P
1521	R.Mercury	I	B,N
1521	R.Nottingham	B	F
1530	R.Essex	B	B
1530	Pennine R.	I	C,F
1530	R.Wyvern	I	O*,P
1548	R.Bristol	B	H
1548	Capital R.	I	B*,N
1548	R.City	I	C,F
1548	R.Forth	I	J
1548	R.Hallam	I	F
1557	Hereward R.	I	F
1557	R.Lancashire	B	C,F
1557	Northants 96	I	C*,P
1557	Ocean Sound	I	C*
1584	R.Nottingham	B	C,F,P
1584	R.Shropshire	B	L*
1602	R.Kent	B	B,F,H*,M,P

Note:—
 Entries marked * were logged during darkness.
 All other entries were logged during daylight.

DXers	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
(A) Alan Curry, Stoke-on-Tees.	Daniel Masterson, Stoke-on-Trent	George Millmore, while in Hamilton, Scotland.	John Nash, Brighton.	Paul O'Connor, Birmingham.	Tim Shirley, Bristol.	Darran Taplin, Tunbridge Wells.	Robert Taylor, Edinburgh.	Jim Willett, Grimsby.
(B) Bill Griffith, London.								
(C) Dave Hackwell, Warrington.								
(D) Paul Hawyard, Newcastle-upon-Tyne.								
(E) Francis Hearne, Ilford								
(F) Michael Hirst, Manchester								
(G) Sheila Hughes, Morden								
(H) Bill Kelly, Belfast.								

A transmitter in Rampisham, Dorset is used for the whole of the transmission on 21.710.

The programmes from WHRI South Bend, USA on 21.700 have been attracting the attention of John Parry at 1430 — he rated their signal as SINPO 45544. A regular broadcaster who also uses that frequency from 1500 is Radio Japan — they beam their programmes in English and Japanese to Europe via a relay in Moyabi, Gabon on 21.700 until 1700. Neil Dove has been listening in Lockerbie to some of the interesting topics they cover, but he experienced some co-channel

interference from WHRI and rated their signal as 33542.

Colin Diffell has been monitoring the band during the early evening in Corsham and logged three broadcasts from the USA — WCSN Boston, Mass 21.515 at 1835; WYFR beaming to W. Africa via Okeechobee, Florida on 21.525 at 1843 and their transmission for listeners in Europe via Okeechobee on 21.615 at 1852.

The reception conditions are also generally unstable on the 17MHz (16m) band, but some interesting long distance signals have been logged by UK DXers in

the early morning. A number of the broadcasts heard here are really intended for other areas. Listening in Great Missenden, Howard Newell picked up FEBA Radio, Seychelles on 17.855 at 0630 — they beam their programmes in English to the Middle East from 0600 until 0700. Howard uses a Toshiba RP F-11L portable and rated their signal as SINPO 12211. Another broadcast directed towards the Middle East stems from Radio RSA Johannesburg, S. Africa on 17.825 at 0630 and their programmes in English may often be heard in the UK too — Sheila Hughes used her Vega 206 portable to listen to their sports report and noted SINPO 44333 in her log.

The broadcasts from Radio Australia via Carnarvon, W. Australia on 17.715 are intended for listeners in S. Asia, but their signals sometimes become audible in the UK around dawn via the long path across the Pacific. Their daily transmissions commence at 0100 and George

Hewlett monitors them in Torquay from 0400 until close down at 0900. He says this frequency now suffers from jamming — even when the signal becomes audible it is usually very poor or unusable. The programmes from Radio Afghanistan, Kabul are relayed to listeners in S. Asia via Moscow on 17.665 from 0500 and their broadcasts may sometimes be heard in the UK. Using a Trio R2000 receiver with a 5MHz inverted V dipole antenna in Rainham, John Thompson picked up their newsbulletin in English at 0900 and rated their signal as SINPO 22222.

Radio Pakistan, Islamabad is one of the broadcasters who beam their programmes to listeners in Europe during the morning. Their transmission commences at 0715 on 17.660 and is mainly in Urdu, but some items in English are included before close down at 1120 — Howard Newell picked up one of their popular Cricket commentaries at 1050 and found reception quite good, rating their signal as 43343. UAERadio Dubai

SEEN & HEARD

Freq kHz	Station	Country	Power (kW)	DXer
153	Brasov	Romania	1200	F*, G*, J*
153	DLF Donebach	W. Germany	500	C, D, E*, F, G, H, I, J
162	Allouis	France	2000	B*, C, D, E, F*, G, H, I, J
171	Kaliningrad	USSR	1000	C, D, F, G*, J*
171	Medi 1 Nador	Morocco	1200	D*, F*, J*
177	Oranienburg	E. Germany	750	C, D, E*, F, H, I, J
180	Ankara	Turkey	1200	J*
182	Polati	Turkey	1200	J*
183	Saarlouis	W. Germany	2000	B*, C, D, E, F, G, H, I, J
189	Motala	Sweden	300	C, D, F*, J
189	Caltanissetta	Italy	?	J*
200	BBC Droitwich	UK	400	A, B*, C, D, E, F, H, I
200	Leningrad	USSR	150	G*
209	DLF Munich	W. Germany	500	C, D, F*
209	RUV Reykjavik	Iceland	100	G*
209	Azilal	Morocco	800	B*, D*, F*, J*
209	Kiev	Ukraine	500	B*, D*, G*
218	Roumoules	Monaco	1400	C, D, E*, F, G, H, I
218	Oslo	Norway	200	A, D*, F, G
218	Baku	USSR	?	D*, J*
227	Konstantinow	Poland	2000	B*, C, D*, J*
236	Junglinster	Luxembourg	2000	A*, B*, C, D, E, F, H, I
236	Kishinev	USSR	1000	F*, G*, J*
245	Kalundborg	Denmark	300	A*, C, D, E*, F, I
245	Erzurum	Turkey	200	D*, J*
254	Tipaza	Algeria	1500	A, C, D, E*, F, G*, H*, I, J*
254	Lahti	Finland	200	B*, D*, F*
263	Burg	E. Germany	200	E*, F*, I, J
263	Moscow	USSR	2000	C, D*, E*, J*
272	Topolna	Czechoslovakia	1500	C, D, E*, F*, J, I, J*
281	Minsk	USSR	500	C, D*, E*, F*

Note: —
 Entries marked * logged during darkness.
 All other entries were logged during daylight.

DXers

- | | |
|---------------------------------|-------------------------------------|
| (A) John Berridge, Cardiff. | (F) Philip Rambaut, Macclesfield. |
| (B) David Edwardson, Wallsend. | (G) Tim Shirley, Bristol. |
| (C) Bill Eyre, Stockport. | (H) Darran Taplin, Tunbridge Wells. |
| (D) David Hackwell, Warrington. | (I) Phil Townsend, London. |
| (E) Paul O'Connor, Birmingham. | (J) Jim Willett, Grimsby. |

also beam their programmes towards Europe from 0615 until 1500 on 17.865, but much of their broadcast is in Arabic. However they also have some segments in English which cover a variety of interesting topics — a talk entitled "Women in Islam" heard by Sheila Hughes at 1330 being a typical example. Sheila rated their signal as 4333 at 1330.

Some of the many broadcasts noted by DXers during the daytime include Radio Moscow, USSR (World Service) 17.665 — rated by John Nash as 44344 at 0805; WCSN Boston, USA 17.640 — logged by Darran Taplin at 1109 as 44444; BRT Brussels, Belgium 17.595 at 1350 and Vatican Radio, Rome 17.870 at 1415 — both were rated as SIO 434 by Robert Taylor. The BBC World Service may be found on 17.740, 17.790, 17.880, 17.885 and 18.080 during much of the day. Note: — 18.080 is an "out of band" frequency now allocated to amateur radio. VOA beams programmes in English to W. Africa via Bethany E. USA on 17.800 from 1600 until 2300 — John Nash rated their signal as 33243 at 1930.

RCI in Montreal, Canada 17.820 beam a variety of interesting programmes in eight languages towards Europe from

1330 until 2100 via their transmitter in Sackville, E. Canada. John Nash rated their signal as 54444 at 1935 and he also logged them on 17.875 from 1800 until 2100. The programmes in Dutch and English from Radio Surinam International reach listeners in Europe at 1700 via a Radio Bras transmitter in Brazil on 17.835 — Jim Willett rated their signal as SINPO 34433.

The broadcasts from Radio HCJB in Quito, Ecuador cover a wide variety of topics, consequently they are popular with many listeners. Paul Hawkyard says "The main station I listen to is HCJB at 2100 as it has a great DX programme which tells you what is happening, when and where". Their broadcasts on 17.790 usually reach the UK well — Paul rated their signal at 2130 as SIO 434.

The reception conditions prevailing on the 15MHz (19m) band have enabled Radio New Zealand to be logged for the first time this year by George Morley on 15.150 at 1830. George says "An amazing signal — an overall performance of SIO 233 to 334, with their broadcast of early morning news, weather forecast for all areas of the North and South Islands, Stock Exchange report and music etc. It peaked around

1850, fading down to SIO 131 by 1930". The conditions that night must have been exceptional however, because their signal has not rated more than SIO 121 since — but that does not mean it will not happen again! If you are one of the many DXers who want to log Radio NZ for the first time, keep monitoring 15.150 around 1830!

In contrast, it seems that the long distance reception conditions prevailing in the early morning have deteriorated. The broadcasts from Radio Australia to the S. Pacific area on 15.240 via Shepparton, S.E. Australia may usually be heard from 0500 UTC, but George Hewlett says that reception is often poor or even non-existent just now.

Some of the broadcasts logged by UK DXers during the day were Radio Japan, Tokyo 15.235 — a direct transmission heard by David Edwardson at 0700; Radio Sophia, Bulgaria 15.140 — rated as 54444 by John Nash at 0740; Radio Pakistan, Islamabad 15.605 — logged by Ian Curry in Stockton-on-Tees as 44444 at 0856; FEBA Seychelles 15.405 — noted by George Morley as SIO 321 at 1106; Radio Bangladesh, Dhaka 15.525 at 1230 and RSI Stockholm, Sweden 15.345 at 1300 — both were logged in Birmingham by Paul O'Connor; VOIRA Tehran, Iran 15.084 at 1300; Radio Ulan Bator, Mongolia 15.305 at 1315; Radio Norway International, Oslo 15.310 at 1420 and the Voice of Israel, Jerusalem 15.615 at 1540 — all were logged by Robert Taylor; Radio Finland, Helsinki 15.400, rated as 55555 by Leighton Smart at 1452; UAE Radio Dubai 15.320 — noted by Paul Hawkyard as SIO 344 at 1630.

Later, RFI Paris, France 15.435 at 1832 and SRI Berne, Switzerland 15.570 at 1911 were both logged by Colin Diffell and Africa No. 1 Gabon on 15.475 was rated as 34333 by John Thompson at 1852. John Parry has been listening to some of the programmes beamed to Europe by RCI in Montreal via Sackville, E. Canada on 15.325 from 1330 until 2300 and noted 44554 in his log at 2130 — their very popular DX programme may be heard on Saturday evenings.

Several of the broadcasts audible in the UK during the evening stem from the USA. WYFR beam towards Europe via Okeechobee, Florida on 15.566 from 1900 until 2145 with programmes in English — Michael Hirst logged their signal as SIO 333 at 2008 and Tim Shirley picked up their transmission via Okeechobee to S. America on 15.170 at 2100. Tim also logged VOA via Greenville 15.410 at 2140 (English to W. Africa); WRNO New Orleans 15.420 at 2100 (English to Europe) and AFRTS via Greenville 15.430 at

2200 (English to N. Atlantic areas). WINB Red Lion, Pa. 15.185 was noted by John Nash as 34222 at 2014.

Some of the broadcasts from S. America were noted in the reports from DXers too. In Sheffield, Cyril Kellam has been listening to RNB Brasillia, Brazil on 15.265 at 1800, rating their transmission to Europe as SIO 343. Some of the interesting topics broadcast from Quito, Ecuador by Radio HCJB on 15.270 from 1900 have also been attracting Cyril's attention — he rated their signal as SIO 444. Many DXers listen to their DX programme on Saturdays at 2130. RAE Buenos Aires, Argentina 15.345 was logged by Alan Curry as 22222 at 2100.

Two broadcasters in the USA have now decided to operate in the 13MHz (22m) band, namely WYFR in Oakland, California and WHRI in South Bend, Indiana. The transmission from WYFR was logged on 13.695 by three UK DXers during the evening — Michael Hirst, Howard Newell and Tim Shirley. Michael noted their signal as SIO 323 at 1953 and it was still being heard by Tim at 2130. WHRI was heard on 13.760 at 1950 by Michael and Howard who rated their signal as SIO 333. At the time of going to press exact details of both transmissions are unknown.

Many broadcasters use the 11MHz (25m) band to reach the listeners in their chosen target areas since the propagation conditions are generally more reliable than on the higher frequency bands. Some of the interesting broadcasting logged by DXers during the morning stem from FEBC Manila, Philippines 11.850 (33343) at 0905 — noted by John Nash; BBC via Limassol, Cyprus (World Service) 11.760 (33233 at 0910) — Alan Curry; KTRW Guam, Pacific 11.805 (32232 at 0915) — John Thompson; Radio Bucharest, Rumania 11.840 (222 at 1057) and Radio Finland, Helsinki 11.945 (343 at 1100) — Paul Hawkyard; RFI via Allouis, France 11.670 (545 at 1015) — Robert Taylor.

The reports compiled later in the day include the Voice of Greece, Athens 11.595 (433 at 1445) and Radio Cairo, Egypt 12.050 (333 at 1500) — both noted by Robert Taylor; UAE Radio Dubai 11.730 (44444 at 1637) — Ian Curry; Radio Kuwait, St. of Kuwait 11.675 (54444 at 1853) — Darran Taplin; AIR New Delhi, India 11.620 (34232 at 1900) — Howard Newell; Radio Beijing, China 11.500 (333 at 1935) — Paul Hawkyard; RHC Habana, Cuba 11.795 (32323 at 1944) — Alan Curry; Radio Damascus, Syria 11.685 (44444 at 2005); Radio RSA Johannesburg, S. Africa 11.900 (44333 at 2130) — Sheila Hughes; VOFC Taipei via

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ADVERTISERS INDEX

Aerial Techniques.....	41
Bredhurst Electronics Ltd.....	33, 41
Casual Electrics.....	47
Colomor.....	47
Component Centre.....	47
Datong.....	22
Dewsbury Electronics.....	12
Elliott Electronics.....	33
Fairbotham & Co Ltd.....	47
Garex Electronics.....	25
Hamgear Ltd.....	43
Howes C M.....	16
ICOM (UK) Ltd.....	Cover ii
Johnsons Shortwave Radio.....	41
Klingenfuss Publications.....	25
K and M Services.....	41
Lowe Electronics Ltd.....	8
Photo Acoustic Ltd.....	16
Practical Wireless.....	30
Rylands F G.....	47
Sandpiper Communications.....	21
SEM.....	47
Short Wave Newsletter.....	47
Spacetech.....	43
Stephens James.....	43
Technical Software.....	33
Theasby.....	47
Uppington Tele-Radio (Bristol) Ltd.....	25
Reg Ward & Co. Ltd.....	22
Waters & Stanton.....	Cover iii
Wilcox G.....	41
Yaesu.....	Cover iv

SEEN & HEARD

Freq MHz	Station	Country	UTC	DXer
2.325	ABC Tennant	Australia	2040	N
2.333	RRI Jakarta	Indonesia	1536	Q
2.380	R.Limeira	Brazil	2300	Q
2.560	Xinjiang	China	2320	C,I
3.200	Vos. 1.Fuzhou	China	2130	Q
3.210	R.Mozambique	Mozambique	2300	U
3.225	AIR Simla	India	1730	Q
3.230	R.Nepal	Kathmandu	1705	J
3.230	ELWA Monrovia	Liberia	2200	U
3.300	R. Cultural	Guatemala	0650	N
3.305	AIR Ranchi	India	1530	Q
3.315	AIR Bhopal	India	1530	Q
3.320	R.Suid Africa	S.Africa	0205	J
3.330	R.Rwanda	Kigali	0200	F,U
3.345	AIR Jammu	India	1740	Q
3.365	AIR New Delhi	India	2315	F
3.365	GBC Radio 2	Ghana	2131	J,O
3.380	R.Malawi	Malawi	1917	F
3.900	Vos. 2.Fuzhou	China	1645	H
3.905	AIR Delhi	India	2310	H,J
3.930	R.Capital	Transkei	2030	F
3.940	PBS Hubei Wuhan	China	2248	J,U
3.945	NSB Tokyo	Japan	0600	Q
3.955	BBC Daventry	England	1800	A,K,T
3.955	R.Orion	S.Africa	2145	U
3.965	RFI Paris	France	1800	G,L,T
3.965	R.Afghanistan	via USSR	0355	H
3.975	BBC WS Skelton	U.K.	1800	T
3.980	VOA Munich	W.Germany	1800	T
3.985	R.Beijing	China	2234	J
3.985	SRI Berne	Switzerland	1800	T
3.995	DW Cologne	W.Germany	1900	G,L,R
4.000	Bofoussam	Cameroon	2300	U
4.010	R.Frunze	USSR	1600	F
4.035	PBS Xizang Lhasa	Tibet	0001	C
4.060	R.Moscow Kharkov	USSR	2104	C,J,P,R
4.080	R.Ulan Bator	Mongolia	2200	F
4.220	Xinjiang	China	2349	C
4.330	PBS Xinjiang	China	0015	C
4.500	Xinjiang	China	2350	C,H
4.545	Alma Ata	USSR	1800	K
4.635	R.Dushanbe, Tadzhik	USSR	0035	C,E
4.735	Xinjiang	China	2315	E
4.740	R.Afghanistan	via USSR	1900	C,D,E,M,U
4.755	Sani Radio	Honduras	2357	E,F
4.755	RRI Ujungpadang	Indonesia	?	Q
4.760	ELWA Monrovia	Liberia	2118	C,J
4.760	R.Inca, Lima	Peru	0117	F
4.760	R.Frontera	Venezuela	2330	Q
4.765	R.Moscow	Via Cuba	0145	E
4.770	FRCN, Kaduna	Nigeria	2100	M,O,U
4.775	R.Gabon Libreville	Gabon	1930	B
4.775	AIR Gauhati	India	2315	C,E,H
4.780	RTD	Djibouti	0037	F
4.780	V.Carabobo	Venezuela	0320	N
4.785	R.Baku	USSR	2110	B,E
4.785	RTM Bamako	Mali	2230	E,H,J,M,U
4.790	R.Atlantida	Peru	0130	U
4.790	Azad Kashmir R.	Pakistan	1710	B,J,U
4.795	R.Douala	Cameroon	2100	M,U
4.795	R.Ulan Ude	USSR	1940	B,P
4.800	R.Popular Cuenca	Ecuador	0630	C
4.805	R.Nac Amazonas	Brazil	2340	J,U
4.805	Voice of Kenya	Kenya	0100	U
4.810	R.Yerevan	USSR	1940	B,E

Freq MHz	Station	Country	UTC	DXer
4.815	R.Beijing	China	1559	C
4.815	R.diff TV Burkina	Ouagadougou	2110	B,E,H,M,O,U
4.815	R.Pakistan Karachi	Pakistan	1615	J
4.815	R.Nac.Tabatinga	Brazil	0236	Q
4.820	R.Botswana	Botswana	1900	Q
4.820	La Voz Evangelica	Honduras	0145	E
4.825	R.Ashkhabad	USSR	2125	B,C
4.830	Africa No.1	Gabon	1900	A,C,G,M,O,T
4.830	R.Relej	Costa Rica	0150	E,U
4.830	R.Tachira	Venezuela	0100	C,E,G
4.835	RTM Bamako	Mali	1950	C,E,H,M
4.845	R.Nacional, Manus	Brazil	0148	E,G
4.845	ORTM Nouakchott	Mauritania	2238	C,E,M,O
4.850	R.Yaounde	Cameroon	2046	M,Q
4.850	R.Capital, Caracas	Venezuela	0230	U
4.860	Kalinin	USSR	1950	B,O
4.865	PBS Lanzhou	China	2152	E,M,O,U
4.870	R.Cotonou	Benin	1950	B,H,M,O
4.870	RRI Sorong	Indonesia	1500	Q
4.875	R.Nac.Boa Vista	Brazil	0210	E,G
4.880	SABC Radio 5	S.Africa	1850	A,J,M,O,U
4.885	R.Beijing	China	1607	C
4.885	Voice of Kenya	Kenya	2020	M
4.890	ORTS, Dakar	Senegal	0400	U
4.895	Ashkhabad	USSR	1920	A,E,M,P
4.905	N'djamena	Chad	2137	J,M
4.905	R.Relegio,Rio	Brazil	0200	E
4.915	R.Nac.Macapa	Brazil	0300	U
4.915	R.Ghana, Accra	Ghana	1915	B,M,O
4.920	R.Quito	Ecuador	0430	U
4.930	Ashkhabad	USSR	0150	E
4.930	R.Tbilisi	USSR	2350	E
4.940	Kiev	USSR	0001	E
4.940	R.Yaracuy	Venezuela	0435	H
4.945	Caracol, Neiva	Colombia	0600	G,N,U
4.945	R.Nat. Porto Velho	Brazil	0015	E
4.970	R.Rumbos	Venezuela	0415	U
4.970	Xinjiang	China	0008	C
4.975	R.Timbira, Sao Luiz	Brazil	0130	U
4.975	R.Uganda	Uganda	2050	M
4.975	Dushanbe	USSR	0015	E
4.980	Ecos del Torbes	Venezuela	0045	E,G,H
4.985	R.Brazil Central	Brazil	0430	U
4.990	FRCN, Lagos	Nigeria	2050	H,M,P
4.990	Radio RSA	S.Africa	0430	H
4.990	Yerevan	USSR	1950	H
5.005	R.Nacional, Bata	Eq. Guinea	1911	M
5.005	R.Nepal	Khumaltar	0432	H,J
5.010	R.Garoua	Cameroon	2100	B,H,M,O,S
5.010	R.Singapore	Singapore	1545	I,N
5.020	ORTN Niamey	Niger	1917	F,H
5.020	R.Nac Caracus	Venezuela	0317	G
5.025	R.Rebelde	Cuba	0030	U
5.035	Alma Ata	USSR	0040	C,H
5.035	R.Bangui	C.Africa	2205	M
5.040	R.Tbilisi	USSR	2000	C
5.045	R.Togo Lome	Togo	2205	F,H,M,O
5.050	Voz de Yopal	Columbia	0059	C
5.050	R.Singapore	Singapore	1545	J,N
5.050	R.Tanzania	Tanzania	1706	J
5.057	Gjrokaster	Albania	1945	M
5.060	PBS Xinjiang	China	2300	C,E
5.075	R.Beijing	China	2105	M,O
5.095	R.Pakistan	Islamabad	0040	C
5.095	R.Sutatenza, Bogota	Colombia	0050	C,E,G,U
5.290	R.Krasnoyarsk	USSR	2250	E

DXers

- | | |
|--------------------------------------|--------------------------------|
| (A) Alan Curry, Stockton-on-Tees. | (G) David Jones, Liverpool. |
| (B) Neil Dove, Lockerbie. | (H) Bill Kelly, Belfast. |
| (C) David Edwardson, Wallsend. | (I) Alexander Little, Belfast. |
| (D) Bill Eyre, Stockport. | (J) George Morley, Redhill. |
| (E) David Glover, Newton-le-Willows. | (K) John Nash, Brighton. |
| (F) Davy Hossack, West Lothian. | (L) Paul O'Connor, Birmingham. |

- | | |
|---|-------------------------------|
| (M) Fred Pallant, Storrington. | (Q) Tim Shirley, Bristol. |
| (N) Ron Proudfoot, Newcastle-upon-Tyne. | (R) Robert Taylor, Edinburgh. |
| (O) Philip Rambaut, Macclesfield. | (S) John Thompson, Rainham. |
| (P) Nick Rank, Buxton. | (T) Philip Townsend, London. |
| | (U) Jim Willett, Grimsby. |

Okeechobee, Florida 11.900 (44333 at 2200) - John Thompson; Radio Japan via Moyabi, Gabon 11.800 (53333 at 2200) - Alan Curry also RAE Buenos Aires, Argentina 11.710 (55444 at 2215) - Neil Dove.

The good long-distance recep-

tion conditions prevailing in the morning just now on the 9MHz (31m) band enable many UK listeners to enjoy the broadcasts to Europe from Radio Australia via Shepparton, S.E. Australia on 9.655. Their transmission commences at 0700, but George

Hewlett reports that jamming often spoils reception at that time - however this usually clears by 0715. Cyril Kellam is one of the many regular listeners to their programmes - he uses a Realistic DX-360 portable and logged their signal as SIO 444 at 0800.

Another popular early morning broadcast was noted in the report from Francis Hearne - Radio HCJB Quito, Ecuador on 9.860 with English to Europe from 0645 until 0830. He also picked up Radio RSA Johannesburg on 9.585 beaming programmes in

SEEN & HEARD



English to W. Africa from 0630 until 0730. Sheila Hughes enjoys listening to the latest DX news from AWR Lisbon on 9.670 at 0900. Listening in Walton from 1400, David Jones logged REE Madrid, Spain 9.570; Vatican Radio, Rome 9.645 and RBI Berlin, GDR 9.730 — he uses a Sony ICF 7600DS portable.

During the evening Philip Rambaut logged Bamako, Mali 9.635 at 1724; Radio Pyongyang, N. Korea 9.345 at 2035; San'a Yemen 9.780 at

2108 and the Voice of Vietnam, Hanoi 9.840 at 2112. The DX programmes broadcast by Radio Sophia, Bulgaria on 9.700 have been attracting the attention of David Glover in Newton-le-Willows at 2130. Later, John Sadler of Bishops Stortford picked up RAE Buenos Aires, Argentina on 9.690 at 220.

Although many European broadcasters use the 7MHz (41m) band throughout the day, the news from the ICRC (Red Cross), Geneva may only be heard on the

last Sunday of the month at 1100 — John Thompson logged their transmission via SRI Berne, Switzerland on 7.210 as SINPO 43433. Some of the long-distance broadcasts logged during the day include WYFR via Okeechobee, Florida 7.355 (54444 at 0716) — noted by John Nash; Radio Beijing, China 7.800 (333 at 1800) — Robert Taylor; Radio Australia 7.205 (44444 at 2029) — Leighton Smart also AIR New Delhi, India 7.410 (44444 at 2137) — Ian Curry.

Many of the daily broadcasts in the 6MHz (49m) band also stem from stations in Europe. Some of the more distant signals logged by DXers were Radio HCJB Quito, Ecuador 6.130 (32552 at 0715 — noted by John Parry; KLNS Anchor Point, Alaska 6.095 at 0800 — Tim Shirley; Radio Bangladesh, Dhaka 6.240 (333 at 1410) — Bill Kelly; Radio Australia via Carnarvon, W. Australia

6.035 (22422 at 1911) — David Jones; Radio Bucharest, Rumania 7.145 — noted by Julian Wood while in Watford at 1930 and the Voice of Kenya, Nairobi 6.100 logged by Davy Hossack in West Lothian at 2357.

Station Addresses

BBC Radio Solway, Elmbank Lover's Walk, Dumfries DG1 1NZ. ILR Devonair Radio, The Studio Centre, 35-37 St. David's Hill, Exeter, Devon EX1 4DA.

Radio Senegal, International Service, 58 Boulevard de la Rep., Dakar, Rep. Senegal.

Radio Afghanistan, External Service, Ansary Wat, P.O. Box 444, Kabul, Dem. Rep. Afghanistan.

Radio Mozambique, External Service, C.P. 2000, Maputo, Rep. Mozambique.

Radio Yaounde, Radiodiffusion Nationale, Boite Postale 281, Yaounde, Rep. Cameroon.

Reports for February '88 issue
to Brian Oddy
by January 11 please

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G. W. Millmore

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Whilst this was probably more than adequate for the type of listening that the set was originally designed for, it leaves a lot to be desired when used for normal domestic listening.

Monitor Speaker

A small monitor speaker, which can be muted, is fitted to the front panel. Provision is made at the rear of the speaker to connect a 3Ω external speaker, but if a speaker of, say, 150mm diameter is connected to this outlet the valve is run close to its limits to drive it. Consequently considerable audio distortion takes place.

External Amplifier

It is a fairly easy task to take an audio feed from the receiver without needing to carry out any alterations to the set. Adding an external audio amplifier is, therefore, a simple matter.

The receiver is turned onto its side and the bottom plate removed. With this out of the way it will be found that the AF GAIN CONTROL is easily accessible.

All that is required to enable the external amplifier to be connected is a length of screened cable connected across the pot terminals. Ensure that the inner of the screened cable is connected to the "top" of the pot, (point A in Fig. 1), and that the screen is soldered to the "earthy" side. There is sufficient room under the chassis to take the cable to the back of the set without pinching it when replacing the bottom plate.

Judging by the number of Racal RA17 receivers advertised as Government surplus in the past, there must be quite a lot in use by short wave listeners.

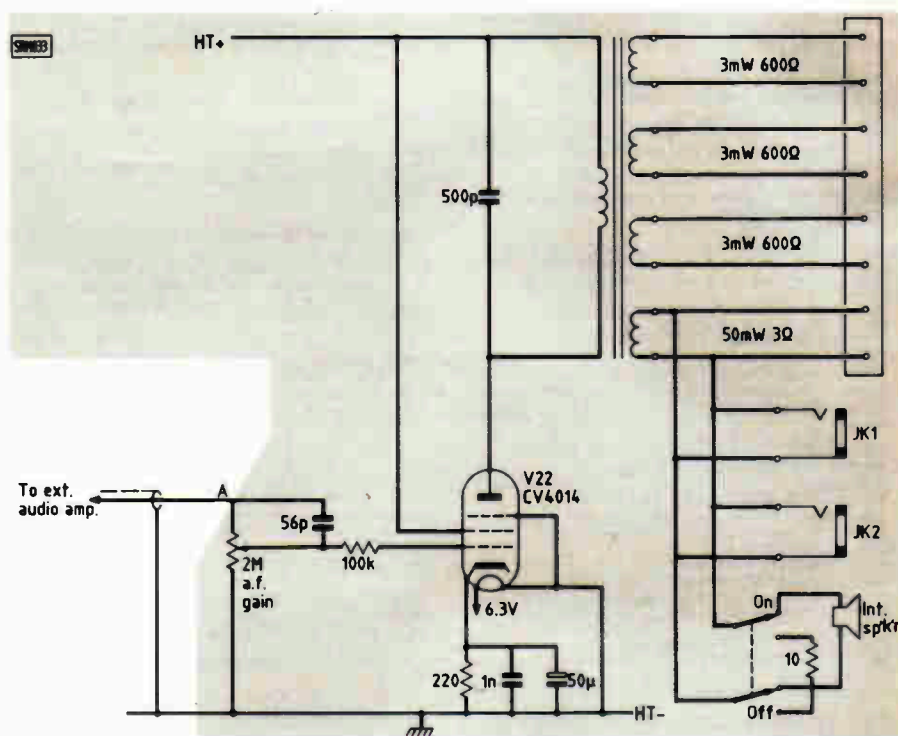
Connecting the screened lead across the AF GAIN CONTROL will not affect the receiver's existing a.f. stage, but the control should be set to minimum when using an external amplifier.

The other end of the screened cable can now be connected to any conventional a.f. amplifier providing that it has a high impedance input.

Using an Old Radio

If you do not have a suitable amplifier, and do not wish to go to the trouble of building one, then an old valved radio set will do just as well. The cable can be connected to the PICK-UP sockets with the outer screen to the "earthy" side. The set should be switched to the GRAM mode and then the VOLUME and TONE controls of the old radio will work in conjunction with the Racal receiver. □

Fig. 1: The a.f. output stage of the Racal RA17W, showing Point A as referred to in the text.



RALLIES

★ SWM will be in attendance.

*** January 31:** The Northern Amateur Radio Societies Association (NARSA) has had to move its rally from Belle Vue. The new venue is the Norbreck Castle Hotel Exhibition Centre, Queens Parade, Blackpool. All the attractions for which "Belle Vue" was well known will be at Blackpool, Bring and Buy, RSGB Morse Tests — pre-booked of course, Traders large and small. Talk-in on S22. Admission is £1 (OAPs 50p under-14 free).
Peter Denton G6CGF
051 630 5790

March 13: The Bury Radio Society will be holding their 1988 rally at a new venue. The bigger venue is the Castle Leisure Centre, Bolton Street, Bury. There will be the usual large number of stands, a bring and buy and masses of radio and electronics traders. Talk in will be on S22.

M. L. Jamil G1VQE
29 Harrow Close
Blackford Bridge Bury

March 20: The Tiverton SW Radio Club are holding The Mid Devon Rally at the Pannier Market, Tiverton. There is easy access from junction 27 of the M5 and excellent parking facilities on site. There will be two halls of trade stands, a bring and buy and a mobile snack bar. Talk-in will be on S22.

G4TSW
Mid Devon Rally
PO Box 3
Tiverton



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