Radio Communication

The Journal of the Radio Society of Great Britain

September 1992

Volume 68 No 9

THE VOICE OF AMATEUR RADIO FOR 79 YEARS

RSGB Business Strategy Conference – page 26

Plus: Peter Hart Reviews the YAESU FT-890 – page 28

LOWE

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Kenwood's New Compact FM Handheld Transceivers

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Managing Editor
Mike Dennison, G3XDV

Assistant Editor
Marcia Brimson

Production Editor
Sid Clark

Technical Editor
Paul Lovell, G3YMP

Technical Illustrator
Derek Cole

Editorial Secretary
Erica Fry

Typist
Belinda Gannon

All contributions and correspondence concerning the content of *Radio Communication* should be posted to:

The Editor
Radio Communication
Lambda House, Cranborne Road
Potters Bar, Herts EN6 3JE

Tel: (Editorial *only*): 0707 59260
Fax: (Editorial *only*): 0707 49503
E-mail (Telecom Gold) 87:CQQ083

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All display and classified advertising enquiries (excepting Members' Ads) should be directed to our advertisement agents:
Victor Brand Associates Ltd.,
'West Barn', Low Common,
Bunwell, Norwich,
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Tel: 095 378 8473
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Radio Communication is published by the Radio Society of Great Britain as its official journal on the first day of the relevant month and is sent free and post paid to all members of the Society.

Closing date for contributions, unless otherwise notified, is five weeks prior to publication date

Filmset by JJ Typographics Ltd, Unit 4, Baron Court, Chandlers Way, Temple Farm Industrial Estate, Southend-on-Sea, Essex SS2 5SE.

Printed by Southernprint (Web Offset) Ltd, Unit 17-19, Factory Road, Upton Industrial Estate, Poole, Dorset, BH16 5SN.

RSGB membership at 31 July 1992: 32,416

Radio Communication

NEWS AND REPORTS

TECHNICAL FEATURES

COVER PICTURE:
The RSGB's Business Strategy Conference incorporated ten committees known as syndicates. Our cover shows part of the HQ Administration Syndicate: (l to r) Janet Cragg, HQ Finance Officer; Peter Kirby, HQ General Manager; Smudge Lundegard, G3GJW, Finance and Staff Committee Chairman; and John Forward, G3HTA, F&S Comittee Vice-Chairman. Feature page 26.

PHOTOGRAPH: GORDON ALLIS, G0LRS.

REGULAR ARTICLES

RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS
Founded in 1913 incorporated 1926. Limited by guarantee
Member society of the International Amateur Radio Union

PATRON: HRH PRINCE PHILIP, DUKE OF EDINBURGH, KG

Membership is open to all those with an active interest in radio experimentation and communication as a hobby. Applications for membership should be made to the Membership Services Department from which full details of Society services may also be obtained.

Headquarters and registered office:
Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE
Telephone: 0707 49855 - Members Hotline and book orders
Fax: 0707 45105. Telex 9312 130923 (RSGB)
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Correspondence to honorary officers should be passed directly to them (QTHR), not to RSGB HQ.

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Corporate Members: UK and Overseas (*Radio Communication* sent by surface post): **£30.00.** Airmail rates on request.
UK associate member under 18: £15.00. Family member: £12.00
Corporate (Concessionary): £25.00 over 65 or full time student under 25. (Applications should provide proof of age at last renewal date and/or include evidence of student status.)
Affiliated club or society/registered group (UK): £15.00 (including *Radio Commmunication*). (Subscriptions include VAT where applicable.)

Special arrangements exist for blind and disabled persons. Details are available from RSGB HQ.

Membership application forms are available from RSGB HQ

Members Hotline and Book Orders:
0707-49855

The RadCom Leader

I AM VERY AWARE that in the past Headquarters has appeared to be very distant from you, the members. Perhaps, when you have tried to contact us the telephone has been engaged and when you have written, there appears to be a delay in getting your letters answered, or in receiving your membership packs or book orders.

Rest assured that, *on your behalf*, all staff are working very hard to improve this situation and to make your HQ more efficient, more approachable and customer friendly.

In April we held a very successful Open Day at Lambda House where over 250 of you came to see the workings of your HQ and to meet the support staff. This was a very popular event and the figures show it was well supported.

To continue the good work already carried out, the library, museum and radio shack are now open for members to visit on Tuesday and Thursday afternoons between 1.00pm and 5.00pm. The Chief Operator John Crabbe and our receptionist Lynette Crawshaw will both be on hand to assist you during your visit.

On production of your licence you will be able to operate the HQ shack and you can place your name and callsign in the Visiting Operators' Log in the shack.

The bookshop will be open as usual five days a week for you to be able to purchase a full range of RSGB books and products and those from our sister societies. It is hoped that I will be able to extend this invitation to cover weekend visits in the not too distant future.

Lambda House is situated with easy access from the M25, M1 and A1(M), so if you are on your way around, through or over London please drop in, we would love to see you.

I have had a request from the Finance Officer to jog the memories of all members who pay their subscription by standing order. If you have not as yet changed your standing order from the old rate of £25 to the new rate of £30 per annum, please do so as quickly as possible. Large numbers of members have not actioned this change and it is causing a number of problems within the accounts department and is adding to the Society's administrative costs.

And finally, I am pleased to announce that discussions are underway between the CAA, RA and the RSGB Licensing Advisory Committee for the provision of the use of amateur radio equipment in aircraft. This initiative was taken up by the RSGB some three years ago following members requests. I will obviously keep you informed of developments on this front, as the discussions progress.

Peter Kirby,
HQ General Manager

NEWS & REPORTS

● JULY's Space Shuttle amateur radio operation was a success despite antenna problems. WA4SIR, KB5SIW and KB5SIX made eight scheduled contacts with schools plus a number of random QSOs.

● THE RSGB's *GB2RS* broadcast service on 6m FM is useful for UK Novices but can also be heard at quite a distance as news reader G6HZV discovered recently when he received a report from SM0OGX.

● STOLEN from a car in Dukinfield in July: AKD 2001 (CAIRO version) S/N 2081 with mic and mobile speaker. Info please to Tameside Police on 061 330 8321, or G0NAJ, QTHR.

● STOLEN from a car in Washingborough, nr Lincoln, in July: Alinco DR-112EM S/N 0001126, with M285 mobile antenna. Info to G0GRA, QTHR, or Lincoln Police on 0522 529911.

● AN IARU Region 2 Conference is to be held 31 August to 4 September in Curacao, Netherlands Antilles. The next Region 1 Conference will be at De Haan, nr Ostend, in 1993.

● BOB HARRISON, G4UJS, RSGB Trophies Manager and Shropshire's EMC Coodinator has moved: His new address is Green Lane House, Whixall, Shropshire SY13 2PT.

● COMPONENT supplier Greenweld Electronic Components is holding a postal auction in the first week of September. Call them on 0703 236363 for details.

● ANY REPEATER keeper who has not received his free copy of *Repeater Report*, published in July, should contact John Davies at RSGB HQ.

● THE REPUBLIC of Slovenia, Armenia and Uzbekistan have become the 170th, 171st and 172nd members of the International Telecommunications Union.

● THE RAFARS will operate GB0RAF on HF and 144MHz at the Lincoln Hamfest on 13 September.

● THE 1992 WACRAL Conference takes place 9 - 11 October at Hoddesdon, Herts. Details G4EZU, tel 0474 533686.

● LATEST callsigns issued at 9 Aug were in the series G0SF*, G7NB*, 2*0AD* and 2*1AX*.

● RAF LEUCHARS will run GB1BOB on 19 September at its annual Battle of Britain Day.

● ARGENTINE President Dr Carlos Menem is active as LU1SM.

The RSGB's Business Strategy Conference was held at Warwick University on 10/11 July

RSGB – The Way Ahead

SOME EIGHTY members of the Society gathered to consider and recommend the way forward, not only for the RSGB but also for the future of amateur radio in the UK. The Society had not undertaken anything to compare with this before and a great deal of planning was done to ensure that the time available was used to best effect.

As with any exercise of this type, it is as well to know how we stand at present and just where we want to go. The *Survey of Amateur Radio Opinion* which the Society carried out just prior to the conference provided a valuable guide and source for current opinion, while the large number of papers submitted by members pointed the direction for a wide area of Society and amateur radio matters.

The organising team was: Peter Tucker, GU4DWZ, Honorary Treasurer and John Forward, G3HTA, Vice Chairman of the Finance and Staff Committee. They were assisted throughout by Alan Warr, Reader in Information Strategy and Information Technology at Bournemouth University and Ian Dowse, G0DYW, who had worked with him on a previous strategy exercise.

The President, Terry Barnes, GI3USS, welcomed all those who attended. Alan Warr then reminded conference delegates of their objectives and just what was meant by strategy. This was followed by a most illuminating presentation of the survey results from Roger Western, G3SXW.

Syndicate Chairmen at Warwick (l to r): Back Row - Don Field, G3XTT (Marketing & Public Relations); Peter Chadwick, G3RZP (Publications, Franchising & RadCom); Clive Trotman, GW4YKL (Membership Profile); Peter Burden, G3UBX (Information Technology); Mike Dixon, G3PFR (Radio Policy/Interests - VHF/Microwaves); John Bazley, G3HCT (Radio Policy/Interests - HF). Front Row - 'Smudge' Lundegard, G3GJW (Headquarters Administration); Joan Heathershaw, G4CHH (Council & Committee Structure); John Case, GW4HWR (Training) and Peter Tucker, GU4DWZ (Financial Plan).

The conference was structured to have ten separate syndicates, each dealing with an area of RSGB organisation, management and related areas of amateur radio interest. There were periods for syndicates to liaise with each other and interim reporting so that progress could be measured and guidance offered. The last afternoon started with a plenary session chaired by John Forward, G3HTA, in which he attempted to limit each of the ten chairmen to a five minute presentation of their syndicate's recommendations followed by questions of explanation rather than debate. This was the point where the conference showed how successful it had been in identifying areas for change and development in the organisation and purpose of RSGB in its service to members and amateur radio.

TURN TO PAGE 26 FOR A FULL REPORT

RSGB Council Nominations — Vacancies

THE FOLLOWING vacancies exist for the term 1993 -1995:

Ordinary Members

T I Lundegard, G3GJW, retires and is eligible and willing to stand for re-election.

J Bazley, G3HCT, retires and is eligible and willing to stand for re-election.

G R Jessop, G6JP, retires but is not eligible for re-election (Article 26).

Zonal Members

I D Suart, GM4AUP, Zone G (Scotland) retires and is eligible and willing to stand for re-election.

R P Horton, G4AOJ, Zone C (South-East England) resigned from Council 15 May 1992.

P E Chadwick, G3RZP, Zone D (South-West England) is elected President of the Society for 1993 thereby creating a zonal vacancy.

Note: Article 26 of the Society's Memorandum and Articles of Association prohibits re-election after two consecutive terms of office.

Full details of how to nominate prospective Council Members were given in August *RadCom*. **Nominations must be received at RSGB HQ by 1 Oct.**

Amateur Radio Morse Tests

New test format

When the RA introduced the 5WPM Novice Morse Test in June 1991, they were of the opinion that the QSO format would be a sensible preparation for real operating conditions encountered on the air. The RA has now announced that from 1 Jan 93 the 12WPM Morse Test will change to a similar QSO type format. This revision will ensure that both Morse Tests are tailored to reflect operating procedures in the amateur service. The requirements will be as follows:-

In the receiving test the candidate will be required to receive a minimum of 120 letters and 7 figures in the form of a typical exchange between radio amateurs. The duration of the test will be approximately 2 minutes 30 seconds. A maximum of six uncorrected errors will be allowed. A manual Morse key will be used to send the test.

In the sending test the candidate will be given a text to send by hand on a straight Morse key consisting of not less than 75 letters and 5 figures, also in the form of a typical exchange between radio amateurs. The duration will be approximately 1 minute 30 seconds. There must be no uncorrected errors in the sending and not more than four corrected errors will be permitted.

The test can include any of the following commonly used abbreviations, Q-codes, or procedural characters:

ABT AGN ANT BK CPI CPY CQ CUL CW DE DR EL ES FB FER GA GD GE GM HPE HR HVE HW K MNI MSG NW OC OM OP PSE PWR R RPRT RST RX SIG SRI TEMP TKS TNX TU TX TXR UR VERT VY WID WX XYL YL 73 88 QRA QRG QRK QRL QRM QRN QRO QRP QRQ QRS QRT QRV QRX QSA QSB QSL QSO QSY QTH AR CT BT KN VA? / Erase

For example, a receiving test might look like this:

CT G0VJF DE WZ3PCK GA OM ES TNX FER CALL UR RST 479 = MY NAME IS RALPH QTH 25 KM SOUTH OF BLUFF CITY = WX TODAY SUNNY ES TEMP 18C SO HW CPY? AR G0VJF DE WZ3PCK KN

And a sending test:

WZ3PCK DE G0VJF GA RALPH UR RST 569 WID QSB = NAME IS JIM ES QTH WREXHAM OK? AR WZ3PCK DE G0VJF KN

These changes will standardise the 5 and 12WPM Morse tests. There will be a common list of codes and abbreviations and the test passages will be of the same length with the same number of permitted errors. The 5WPM receiving test will use computer generated Morse, whilst the 12WPM test will be hand sent.

In order to accommodate candidates who have already prepared themselves to take the test under the present system, a three month introductory period will be allowed during which time candidates can choose in advance to be tested under the old or new format. As from 1 April 1993 all tests will be conducted using the new QSO format.

Identification of candidates

From 1 January 1993, candidates for a Morse Test will be required to bring to the test centre two recent passport sized photographs of themselves. The present requirement for the candidate to bring written proof of identity will no longer be required.

Radiocommunications Agency Report 92

COUNCIL MEMBER Hilary Claytonsmith, G4JKS, represented the Society at the launch of the Radiocommunications Agency's Annual Report on 28 July and sent this report:

"John Michell, the Chief Executive, outlined the achievements of the Agency over the year 1991-92. He emphasised the importance of a quality service to customers. The RA had commissioned a customer survey which showed that although the Agency has become much more approachable and responsive, there is still plenty of scope for improvement. An enquiry point is being set up at Waterloo Bridge House to improve accessibility. Local offices are to take on a higher profile.

"**Spectrum review:** The Government has instigated a Stage 3 spectrum review. The Committee will be headed by Sir Colin Fielding and will look at 'spectrum use in the range 28-470MHz'

"**Highlights:** On the international front, WARC 92 had been mostly successful with new allocations for mobile radio services around 2GHz, new allocations on the mobile satellite bands and satellite broadcasting frequencies.

"There will be a financial saving following the take over of licensing by SSL. This should help to keep the Amateur licence fee steady.

"The RA has been working with the RSGB on improving the management of the repeater network and on establishing a scheme for reporting interference to the Agency.

"The EMC Directive will come into force in October and the Agency will be the UK Notified Body for certifying EMC compliance on most types of radio transmitters.

"**RIS:** Complaints about pirate radio stations have been reduced. There were 530 raids on these stations during the year.

"**Relocation:** As from the second half of 1993 the Agency will be located in London Docklands: the exact building has yet to be decided."

Copies of the Annual Report can be obtained free of charge from: The RA Library, Room 605, Waterloo Bridge House, Waterloo Road, London, SE1 8UA, telephone 071 215 2071.

PHOTOGRAPH: G4JKS

RA officials: (l to r) Barry Maxwell, Head of RIS; John Michell, Chief Executive; Michael Goddard, Head of Spectrum Management and Stephen Spivey, Head of Mobile Radio Licensing.

RSGB to Fight Threat to VHF/UHF Bands

MICHAEL HESELTINE, President of the Board of Trade, has announced a spectrum review, covering "one of the most intensively used parts of the radio spectrum", 28 to 470MHz. The aim of the review is to "examine existing and planned use .... and make recommendations on that use in the light of national and international developments in radio communications."

As with the previous two reviews which covered 470 - 3400MHz and 3.4 - 30GHz, the RSGB will actively represent the interests of radio amateurs by making a detailed formal submission to the review committee. The Society, with its various committees of experts and its long experience of national and international negotiation, is uniquely placed make a well-organised case against any threat to our 28, 50, 70, 144 and 430MHz bands.

Licensing Benefits

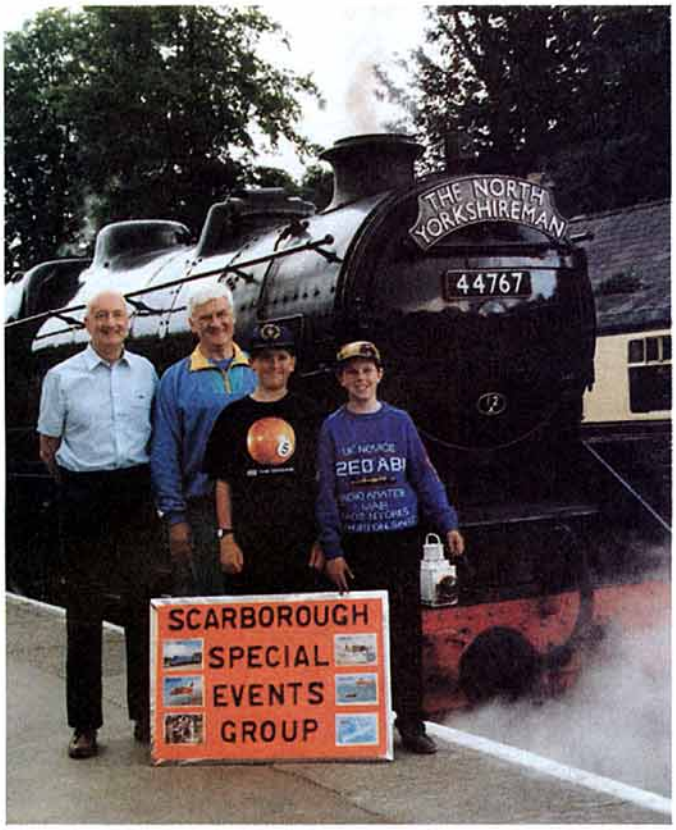
SUBSCRIPTION Services Ltd, which was awarded the amateur radio licensing contract this year by the RA (other tenders included one from the RSGB), is "determined that licensing should not be a chore or a bind for people" according to SSL's Head of Sales and Marketing, Bob Lessels in a Press Release issued in August.

Some "inevitable early teething problems" are admitted but "people are now starting to see the benefits of dealing with SSL, benefits which chiefly consist of generally easier application and renewal processes."

A Direct Debit payment facility has been introduced which should reduce the possibility of accidentally becoming a 'pirate' when payment details go astray (an experience which came as a rude shock to an upstanding senior RSGB member last year).

A Helpline is available seven days a week, from 0830 to 1000 to make customers lives easier. Just call 0272 258333, give your callsign and address and your details can be brought up on SSL's computer screens.

According to Mr Lessels, SSL staff "want to help by offering a professional service designed purely to make licence application and renewal activities as trouble free as possible." Has SSL overcome its early problems? Write and let us know your *recent* experiences, good or bad.



Peter, G3JBR; Roy, G4SSH; Andrew, 2E1AUZ and Philip, 2E0ABI alongside 44767 *George Stephenson* ready to depart from Grosmont Station on the 25th Anniversary of the North Yorkshire Moors Railway in June.

Attention All Trio-Kenwood Users

FROM 1 DECEMBER 1992, Watford based Trio-Kenwood UK Ltd will take over the distribution of Kenwood amateur radio products in the UK and Ireland.

Mike Atkins, Communications Division Sales and Marketing Manager, says that "our relationship with Lowe Electronics has been long and successful and we look forward to its continuation, albeit on a different basis." He adds that considerable resources will be available to market Kenwood products in the UK.

Lowe Electronics will continue to distribute the products until the end of November by which time Trio-Kenwood UK will have set up dealerships, avoiding any disruption of supply to customers.

The company can be contacted on 0903 816444.

Worked All Britain Lifeboat Appeal

THE WAB organisation, which puts the UK on the map whilst raising money for charity, is organising special event stations all round our coast at places where lifeboats are sited.

A certificate will be awarded to those who work (or hear for SWLs) ten of these stations on the LF and HF bands, and five on the VHF and UHF bands. Log extracts should be sent with a minimum donation of £3 to A C Keeble, G4HPU, Heater Field, Colchester Road, Ardleigh, Essex CO7 7PA. All proceeds will go towards the WAB 25th Anniversary Appeal to provide a 'D' Class Lifeboat.

The WAB Honorary Treasurer, G4IAR, QTHR, would also be pleased to hear from anyone who wishes to make a donation.

Members of the Worthing and District ARC took part in a sponsored walk to raise £913 for the WAB Appeal.

1993 President

AT A MEETING in July, Council elected Peter Chadwick, G3RZP, President for 1993. Peter has a long history of service to the Society, concentrating particularly on the technical aspects of the hobby.

New RLOs

Northants/Warwicks

The new RSGB Liaison Officer for Northamptonshire and Warwickshire is: David Linnel, G0MJK, 19 Beech Avenue, Northampton NN3 2HE. His telephone number 0604 711647.

West Midlands

The new RLO for the county of West Midlands is: Peter Morrall, G4TMK, 22 Chudleigh Road, Erdington, Birmingham B23 6HB; tel 021 382 8494.

RSGB Subs by Direct Debit

COUNCIL DECIDED some time ago to introduce a direct debit payment option for members' subscriptions. It will be available to members just as soon as the financial software is fully working on our new computer system which is currently being set up.

DXNS Goes Yellow

TO IMPROVE readability, the *RSGB DX News Sheet* is now being printed on yellow paper. This essential part of a successful HF (and 6m) DX station costs £24 for a year's worth of 50 editions.

Derek Lund, the new Despatch Dept Supervisor at RSGB Headquarters.

1993 AGM

FOLLOWING REQUESTS for clubs to offer venues for the next few RSGB Annual Meetings, the Northern Amateur Radio Society's Association has been chosen by the Council to host the 1993 meeting. This year's AGM will be held in the same place as last year, the Royal Society for Chemistry in London.

Slow Morse

DURING SEPTEMBER and early October there will be the opportunity for Novice and Full licensees to practice their Morse at slow speeds in a new contest introduced by the RSGB HF Contests Committee. The event will take place on Mon 7 Sep, Tue 15 Sep, Wed 23 Sep, Thur 1 Oct and Fri 9 Oct, 1900 - 2000GMT. It is intended that all entrants should not send at more than 12WPM and never faster than the other station does. It takes place on the 80m band 3.550 - 3.575MHz with a power limit of 10W. For further details see July's *Contest News*.

Albania

THE ALBANIAN Amateur Radio Association has become the latest member of the IARU. There are now 23 Albanian radio amateurs and another 32 licences have been issued to foreigners.

The RSGB Mencap Albania Appeal formally ended on 14 August. If you have any sponsorship money outstanding, or wish to make a late contribution, please contact Marcia in the *RadCom* office urgently on 0707 59260. Further details of the amount raised, and prize winners, will be announced in November's *RadCom*.

A crowded marquee at the 1992 RSGB National Mobile Rally in Woburn Park.

RAE and Morse Courses

BELFAST - Belfast Institute of Further and Higher Education is running a 28 week **RAE** course starting 8 Sep, 5.30pm. Further details (from 1 September) from Mr J Wilson, 0232 327244 x 297.

BROMLEY - Bromley Adult Education is holding **RAE** and **Morse** classes at the Poverest Centre in Orpington, Kent, commencing 21 Sep. Enrolment: by credit card on 081 462 9184 (24 - 28 Aug), by fax on 081 462 7768 (24 - 28 Aug), by post to Bromley Adult Education, Princess' Plain, Bromley, Kent BR2 8LD (1 - 11 Sep), in person to the above address 8 - 10 Sep. Further details Dr Malcolm Williamson, G0EGA, 081 695 6000 x 4853 or 4816 (office hours only).

CHESHIRE - Avondale Adult Education Centre, Heathbank Road, Edgeley, Stockport, Cheshire. **RAE** and **Morse** courses from 28 Sep. **Morse** Code Course - Mon evenings: **RAE** Course - Tue evenings, both 7 - 9pm. Enrolment in week commencing 14 Sep, when any enquiries about the courses will be answered. Further information from Avondale School or contact course tutor Rik Whittaker, G4WAU, on 061 427 4730 evenings/ weekends.

CHESHIRE - North Cheshire Radio Club is running evening classes, starting September, leading to the **RAE**. Tutors are all radio amateurs. Enrolment Sunday 13 Sep, 7.15pm in the club shack, Morley Green Social Club, Morley Green, Wilmslow. Classes will be held each subsequent Sunday evening until the exam. Details Gordon Adams, G3LEQ, tel 0565 652652 or Jim France, G3KAF, tel 061 439 4952.

EAST SUFFOLK - Felixstowe & DARS is running an **RAE** course starting September, aiming for the May 93 exam. The society is already a City & Guilds Examination Centre for both the **RAE** and **Novice RAE** exams. Further details from Paul Whiting, G4YQC, tel 0394 273507.

GUILDFORD - Guildford College of Technology will be running the City & Guilds 765 **RAE** course from 14 Sep to the examination in May 93. Beginners welcome. Enrolment: 7/8 Sep 2 - 4pm or 6 - 8pm. For further information contact Brian Purse at the College on 0483 31251 x 4864.

KEIGHLEY - Keighley College is running an **RAE** Course. Enrolment 8 - 10 Sep, 6 - 8pm and Sat 12 Sep, 9am - noon. Details from course tutor Ralph Turner, G3VRX, tel 0274 586882 or from Keighley College, tel 0535 618555.

KENT - Mr L N Buck, G0DLR, is running an **RAE** Course at 21 Willow Walk, Culverstone, Meopham, Kent DA13 0QS.

Evening course running from last week in September to May. The exam will be taken at the North West Kent College of Technology. Special arrangements made for shift workers. Details 0732 823 483.

KINGSTON-UPON-THAMES - Kingston College Radio Club offers both **RAE** and **Novice** courses. It is also a centre for both exams and welcomes external candidates. Course tutor is G7DGW and enrolment takes place 14 Sep, 6.30 - 8.30pm. Details from the club at Kingston College, Kingston Hall Road, Kingston-upon-Thames KT1 2AQ, tel 081 546 2151 x 2066.

MANCHESTER - North Trafford College, Talbot Road, Stretford M32 OXH, tel 061 872 3731. Lecturer: J T Beaumont, G3NGD. Starting in September an **RAE** Course comprising: Theory - Mon evening or Wed morning; **Morse** Code - Tue evening or Wed afternoon; Amateur Television - Wed morning; Advanced Radio Course - Tue afternoon. The full day course (Wednesday) should appeal to retired or unemployed people as a successful student could apply for an 'A' licence at the end of the first year. Enrolment: 2 - 4 Sep.

MEDWAY - Medway District Adult Education Centre is running a daytime **RAE** Course, starting 30 Sep. Course is in two parts: 1) 12.30 - 3.30 **RAE** Course leading to the City & Guilds examination. 2) 3.30 - 4.30 Maths for the RAE (this is optional and is designed to meet the needs of those who are worried about coping with the calculations in the main RAE course). The evening **RAE** course will be at Rede Evening Institute, Carnation Road, Strood, starting 29 Sep 7 - 9pm. Early enrolment recommended as course numbers may need to be limited. Enquiries to Main Office, Medway District Adult Education Centre, Eastgate, Rochester; 0634 845359.

NEWCASTLE UPON TYNE - Gosforth High School, Regent Centre, Knightsbridge, Newcastle on Tyne NE3 2JH are running an **RAE** course. Classes on Tues, 7 - 9pm. The course instructor is M Stott, G0NEE. Duration is 24 weeks, plus 3 weeks revision for the exam in May. Pre-enrolment evening Thursday 3 Sep, 7 - 9pm. Enrolment dates 5 - 7 Sep 6.30 - 8pm. Details Michael Stott, tel 0661 832020.

NORTH LINCOLNSHIRE - North Lincolnshire College is offering both the **RAE** and **Morse** as a part-time evening course at the Lincoln site commencing, respectively, 21/22 Sept at 7pm. Contact tutor Richard Merriman, G3SIP, on 0522 510530 for registration details.

NOTTINGHAM - Arnold & Carlton College will run **RAE** and **Morse** courses from September. The RAE Full Course will run on Weds evenings, commencing 16 Sep, 6.30 - 9.15pm. The RAE Short Course, suitable for those resitting the exam or those with some basic electronics knowledge, is aimed at the December exam. It runs on Thurs evenings commencing 17 Sep 6.30 - 9.15pm. A second short course will commence January to prepare students for the May exam. The tutor is Alan Lake, G4DVW. The Morse Class runs on Weds evenings 7 - 9pm, tutored by Ron Wilson, G4NZU, commencing 16 Sep. Enrolment: by post, telephone (credit cards only) or at the College 8 - 10 Sep, 2 - 7pm, or on the evening of the first class though early attendance is advised. Enquiries to Central Admissions, Arnold & Carlton College, Digby Avenue, Mapperley, Nottingham NG3 6DR or tel 0602 615886.

NOTTINGHAMSHIRE - West Notts College, Mansfield is running a full **RAE** course starting 14 Sep for the May exam. Classes Mon evenings, 7 - 9pm at the Derby Road College. Enrolment 9/10 Sep. Details Alan Lake, G4DVW, tel 0602 382509.

PONTYPOOL - Pontypool & District ARS's **Novice** Training Course starts 6.30pm Thurs 17 Sep at The Settlement, Rockhill Road, Pontypool. Anyone wishing to enrol should contact the Secretary (Con, GW0FJH) on 0495 762604 *asap* so that manuals etc can be obtained in sufficient time.

SOUTH EAST KENT - South East Kent (YMCA) ARC starts **Morse** classes in October. Further information from Eileen, G7HXJ, on 0304 372656.

STEVENAGE - Stevenage & DARS is running a **RAE** course starting 7 Sep at Cottswood House, Ridgemond Park, Stevenage. Details from Peter Good, G7HCL, tel 0438 724509 or Tony Wiltshire, G0OVO, tel 0438 312163.

STOURBRIDGE - Old Swinford Hospital School, Stourbridge is running **Morse** classes starting Weds, 9 Sep. Primarily aimed at 12WPM Morse Test, the course will run until Easter and will include hints on operating procedures and a weekly 'on-air' net. Classes start 7.30pm. Details Ian Tomson, G0LOZ, Deputy Headmaster at the school, or for enrolment information Phil Harris, G4SPZ, on 0299 403025.

TAUNTON - Somerset College of Arts and Technology, Wellington Road, Taunton are running an **RAE** course for the May exam, Tues evenings, 7 - 9pm, commencing September. Course tutor is Peter Upton, G7CCV. Enrolment details tel 0823 283403, x 211 or 219.

TELFORD - Telford College, Haybridge Road, Wellington, Telford. **Morse** for Radio Amateurs - Short Wave Listeners - Pilots, objective - 12WPM. Course for beginners by John, G0ISI, commences Thurs 24 Sep 7pm. Enrolment: Mon 7 Sep 2 - 8pm or Tue 8 Sep 10 - 8pm. Tel: 0952 641122.

WINCANTON - The Community Education Department, King Arthur's Community School, West Hill, Wincanton, Somerset BA9 9BX starts an **RAE** Course in September. Enrolment Tues 15 Sep. Classes begin Mon 21 Sep, 7 - 9pm for the May exam. Details Mr D Bonniface. Tel 0963 34360 (eve's/wkends).

Zonal Council Member for Wales Clive Trotman, GW4YKL, accompanied President Elect, Peter Chadwick, G3RZP, on an official visit to Garden Festival station, GB4NGF, which was situated in the Churches Combined Pavilion. The station was organised and operated by members of the World Association of Christian Radio Amateurs and Listeners (WACRAL) who were indebted to ICOM(UK) for the loan of an IC765 HF transceiver and to SAS for the Cushcraft R5 vertical. Over 600 QSOs with 40 countries were made and thousands of visitors were presented with bilingual publicity material.

PHOTOGRAPH: G4JKS

The RSGB stand at 'Ham Radio' Friedrichshafen was manned by President Terry Barnes, GI3USS, and Zone G Council Member Ian Kyle, GI8AYZ (left). Almost 20,000 visitors attended 'the biggest rally in Europe'. For the first time, computer exhibitors had their own exhibition hall which attracted many teenage visitors. Many visitors, especially those from Eastern Europe, camped on the show grounds.

PHOTOGRAPH: SEAGULL PICTURE CO.

The Milton Keynes and District ARS Car Boot Rally (held this year on 6 September) has easy access from the M1, or even by plane as it is at Cranfield Airport, Beds. The photo shows another option for the braver visitor. Last year's rally can be seen lining the road at the top of the picture.

SUPER HAMSTORES

LAUNCH DAY FOR ICOM'S BIRMINGHAM SHOWROOM

Well, it's not exactly the official opening day, because we opened in Birmingham last January. Since then we have been very busy bringing it up to Super Hamstores standard by stocking up with all kinds of goodies for the radio Amateur, shortwave listener and scanning enthusiast.

We believe that we now have one of the best showrooms in the country, but don't take our word for it, come along and take a look for yourself. We are open every day from Tuesday to Saturday, but on ...

SATURDAY 12th SEPTEMBER

you are invited to call in and celebrate the setting-up of our Super Hamstore in Birmingham.

Between **10am and 4pm** on that day we plan to give our visitors an extra special welcome. Yes, we do have the best coffee on hand every day, but how about a little Buck's Fizz? Maybe you might even treat yourself to a new radio, there will also be some ***extra special discounts on offer*** plus ...

•Loads of clearance items •Selection of second-hand radios •2m/70cms transceiver checks •Test your morse code skill •Advice on the Radio Amateurs exam •Guidance on the novice course •Local radio club representation •Loads of radio books •Shortwave listening demonstrations •Operating desks c/w rigs by major manufacturers •Extensive stocks of new gear •Scanning radio displays •Mobile radio aerials and accessories •Portable radios of all kinds •Data sheets for you to mull over, in fact everything for radio hobbyists, be they listeners or transmitters!

We stock items by AEA, AKD, Alinco, AOR, Barenco, CDE, Comet, Cushcraft, Dee Comm, Diamond, Drae, Hills Kits, Hustler, Icom, JRC, Kenwood, Lowe, MFJ, Siskin, Sony, Toyo, Yaesu, Yupiteru etc. Gordon G3LEQ, John G8VIQ and their Herne Bay colleagues look forward to meeting you!

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

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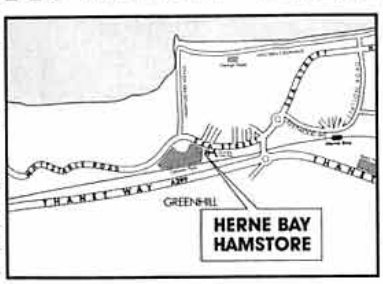
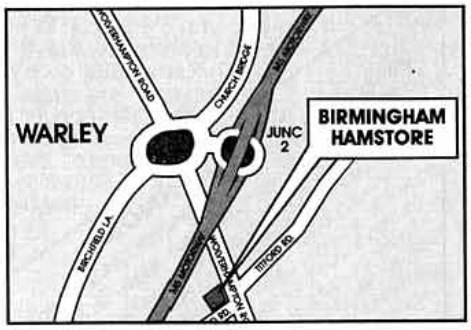


Payment by Access, Visa and Switch. Part-exchanges welcome, finance can easily be arranged (subject to status). Interest free credit is available on selected new ICOM products.

If you cannot visit either ICOM HAMSTORE in person we operate an efficient Mail order service. Stock items normally dispatched within 24Hrs.



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MARTIN LYNCH -

From the person who put the "stuffing" back into celebrating his 2nd birthday at the EALING shop.

For those of you who couldn't make it to my party last year, no worries! Here's another one for you to go to. The official day is SATURDAY, the 12th of SEPTEMBER. Open from 8 o'clock to 8 o'clock there is of course FOOD and DRINK, but most of all I'll be TALKING TURKEY even more than usual with HUGE SAVINGS ACROSS THE RANGE. NEW & USED, it doesn't matter, OFFER ME A SENSIBLE PRICE AND WE'VE GOT A DEAL!

If you can't make it to EALING, come and see me and the LYNCH MOB on SUNDAY, at the famous B.A.R.T.G.

I'll be talking Turkey

POUND FOR POUND

TURKEY & HAM PIE THE

New Lines for Autumn

cushcraft ANTENNAS

I've been selling CUSHCRAFT for donkeys years – the range is now available either MAIL ORDER or by visiting the shop.

PRODUCT LIST

40-2CD	40m 2 element Beam	D3W	30-17-12m Dipole	13B2	2m 13 element Beam
20-4CD	20m 4 element Beam	R7	40-10m H/W Vertical	124WB	2m 4 element Beam
20-3CD	20m 3 element Beam	R5	20-10m H/W Vertical	A144-7	2m 7 element Beam
15-3CD	15m 3 element Beam	AP8	80-10m Vertical	A144-11	2m 11 element Beam
10-4CD	10m 4 element Beam	AV5	5 Band HF Vertical	A144-20T	2m 10 element X Oscar
TEN-3	10m 3 element Beam	AV3	20-15-10m Vertical	AR-2	2m Ringo Vertical
A4S	20-15-10m 4 element Beam	617B	6m 6 element Boomer	ARX-2B	2m Ringo Ranger II
A3S	20-15-10m 3 element Beam	A50-6S	6m 6 element Beam	AR-270	2m/70cm Vertical
A3WS	17-12m 3 element Beam	A50-5S	6m 5 element Beam	424-B	70cm 24 element Beam
D40	40m Rotary Dipole	A50-3S	6m 3 element Beam	A430-11	70cm 11 element Beam
D4	40-20-15-10m Dipole	AR-6	6m Ringo Vertical	416TB	70cm 8 element X Oscar
D3	20-15-10m Dipole	17B2	2m 17 element Beam	ARX450B	70cm Ringo Ranger II

TONNA ANTENNAS

The full range of Tonna antennas is still available at good value for money prices.

DIAMOND & COMET ANTENNAS

Base and Mobile, their range of Verticals and car fixings is virtually endless.

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The professional range of MUTEK products is now, once again available in LONDON. From their HIGH PEFORMANCE Mast Head Pre-Amps to their Transverters and replacement Front-End boards you are assured of the very best in commercial quality.

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Manufactured in the U.K. by Airwave Systems, this is the very latest in advanced electronic keyers. Based on the Motorola 68HC705 microcomputer, the designers have eliminated the requirement of input keyboards and rows of switches and knobs – in favour of you telling it what you want – by the key itself!!

Features include:

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- Internal 9V battery or external 9 - 15V DC supply
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Available now.... only £99.00 inc. VAT

OPTOELECTRONICS 1200 HANDHELD FREQUENCY COUNTER/SNIFFER...

It's like having a wideband receiver in your hand, displaying transmissions going on around you, but giving you the actual TX frequency their operating on in BIG CLEAR digits! Ideal for checking your own transmitter frequency and lots of others. Can detect R.F. at over 200 meters depending on power output. Ideal for the D.F'er. See the frequency, then tune in on your scanner.

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During the first two years of MARTIN LYNCH I sold more USED EQUIPMENT than any other retailer in the U.K? The reason is simple. All used equipment is checked and cleaned before offered for sale. Once sold, it is offered with a meaningful GUARANTEE, often extendible to 12 months. Remember whether you are selling for CASH or wish to PART-EXCHANGE, call me. I buy for stock and can usually collect the same day, anywhere in the U.K. Give me a call!

Only £149.00, including nicads, charger and antenna.

THE LATEST H.F. TOP TEN

1. ICOM IC728 – Straight in at number 1, ICOM's latest H.F. Multimode. All band, general coverage, 100W O/P with P.B. tuning and up-to-date packaging make this a firm favourite! **£825.00**

2. YAESU FT890 – You thought the FT990 reviews were good, wait until you read this one! The world's smallest H.F. all band transceiver with optional auto A.T.U. – built in. **£1075.00**

3. KENWOOD TS690S – A first 100W H.F. transceiver with general coverage receive and a full feature 6 metre option, running 50W output thrown in? Price up two separate rigs and see what that comes to! Free PSU. **£1395.00**

4. YAESU FT990 – So I've finally beaten my own U.K. record for sales of FT1000's with the FT990! Rob Mannion and Peter Hart say it's good – so have dozens of Martin Lynch customers. **£1799.00**

5. YAESU FT1000 – Its confirmed – the ultimate in H.F. base station – £3K is a lot of money, but for a life long investment? I don't think so. If you want the best engineered transceiver and appreciate quality, ring me for a super deal.

6. KENWOOD TS950SDX – The latest version of the 950 series, more user friendly and further enhanced features will ensure this competes head on with "No.5" **£2995.00**

7. ICOM IC725 – H.F. 100W, all mode general coverage, built to ICOM's exacting standards, enter the world of H.F. for a budget price. **£775.00 – free F.M. fitted.**

8. KENWOOD TS850S – As popular as the TS830S in its day? Probably. Without question the most reliable and best priced H.F. transciever I've sold in the last eighteen months. **£1475.00**

9. YAESU FT767GX – Now series II, YAESU are the only company to offer general coverage, 100W, all mode and 2M/6M/70CM (as options) all in one neat package...Oh don't forget the built in P.S.U., digital power/SWR metering, auto A.T.U. etc., etc.. **£1599.00**

10. KENWOOD TS450S – High performance H.F. from a neat mid-size package. Defiantly takesover from the world beating TS440S. New display, improved receive performance and a sensible price.

MARTIN LYNCH

G4HKS

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Remember to bring your PART-EXCHANGES along. I'm still paying top money either to buy out-right or as a part exchange against another item.
Finally, Thanks for a great first TWO years at Northfields. Without your help, I couldn't have got as far as I have today. Without you I haven't got a business. I'll never forget that.

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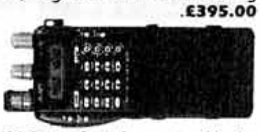
PERFECT AUTUMN FEAST

THE LATEST VHF/UHF TOP TEN

1. KENWOOD TM732E – With Kenwood's hi-fi styling influence, their visual appearance and ergonomics are left unchallenged. The TM732E is the latest high power dual band compact transceiver. Remote head, full 50W out on 2 & 35W on 70CM. In stock **£599.00**

2. KENWOOD TM741E – The only "triple band" mobile with all options located in one small housing. You can have a 2M & 70CM transceiver with a choice of 6M or 10M or 23CM working along side. Full duplex between any of the bands. The ultimate choice of Raynet users country wide, together with my 7 pages of mods, it's unbeatable! **£759.00**

3. ICOM ICW2E – The milestone and bench mark to which other dual band handies are compared – full duplex, dual band 2/70, A.M. RX on airband, 900MHz receive and lots more, together with never ending range of accesories **.£395.00**



4. ALINCO DJ580E – The latest dual band handie hosts features that others are still catching up on, how many for example can still operate below 3.8 volts?! Patented by ALINCO, this is one of its many outstanding features. All for a very low price of **£369.00**

5. KENWOOD TH-78E – Can't keep up with the ever changing range of dual banders? Neither can I! The successor to the TH-77E, this one is splendiforous. (Splen what?). The only handie to offer you dual band RX on both bands, i.e. two frequencies on 2 or 70CM's in addition to its dual band TX capabilities. Beats the hell out of me! **£395.00**

6. KENWOOD TH-28/48E – Along the lines of their new TH-78E, these new single banders offer you single band TX on either 2 or 70, together with dual RX on one band (i.e. two frequencies in-band simultaneously received), plus RX on the opposite band i.e. for the TH-28E transceiver on 2 and RX on 70CM, or visa-versa for the TH-48E. Phone.

7. ALINCO DR-599E – Dual watch, remote head high power mobile 2/70. Special attention to U.K. operation - one of the few to offer tone burst inside the rig, not built into the mic like most. New bright lit display and a host of features. **£539.00**

8. ICOM IC275H/475H – The best in high power base station multimodes. These two supremos from ICOM have killed the competition dead – there isn't anyl 100W on either 2 or 70, only enquire if you are serious on VHF or UHF operation.

9. YAESU FT736R – Like the FT767GX. YAESU have as yet, no competitor alternative to this one – all mode 2 & 70 with 6M and 223CM all in one box. P.S.U. included. ICOM & KENWOOD wakey wakey! Is there a patent pending on this idea?? **£1395.00(6/23 extra)**

10. ALINCO DJF1E/S1E – Small, neat, tough, versatile, 2M handies with AM air band. **£239/£179**

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At the last count, over six pages of condensed print. All pre-owned equipment sold by Martin Lynch is thoroughly tested cleaned and offered with a meaningful guarantee. Furthermore, if you are ordering mail order, you have a money back guarantee if the equipment is not as described to you. Here's a little sample of what's in stock at present.

ICOM			
IC04E 70cms Handheld/keypad TCVR	**£165**	**TS120V** 10w QRP HF TCVR +cw filt	**£329**
IC211E 10w, 2mtr basem TCVR	**£399**	**TS530S** Top perf HF TCVR + cw filt	**£569**
IC228H 2m FM, 45w - 20 mem, 12v.	**£220**	**TS780** 2m/70cms base TCVR	**£699**
IC251E 2m all mode base TCVR	**£425**	**TS830S** HF TCVR various specs.	from **£595**
IC271E 2m multimode 25w TCVR from	**£499**	**TW4100E** Dual band FM mobile 45w	from **£399**
IC275E 2m base TCVR 25w ssb/fm/cw	**£595**	**YAESU**	
IC28E 2m fm mobile TCVR	**£175**	**FC902** ATU various	from **£165**
IC2KL/PS Linear 1kw!!	**£750**	**FRG7** RCVR g.c. 500kHz-30mHz	from **£150**
IC322OE Dual band 2/70cm mobile	**£425**	**FT ONE** HF TCVR	**£795**
IC4E 70cms handheld-ideal novice	**£129**	**FT101ZD** HF TCVR Mk3	**£529**
IC551D 100w dig. multimode 6m TCVR	**£549**	**FT101ZD** HF TCVR +warc	**£549**
ICR72 Communications RCVR	**£499**	**FT107M** Solid state HF TCVR +psu	**£595**
KENWOOD		**FT203** 2m FM handy TCVRs	from **£119**
PS50 Heavy duty psu for 440	**£165**	**FT208R** 2m FM handy TCVR	**£119**
R1000 Communications RCVRs	from **£239**	**FT209RH** 2m FM handy 5w various	from **£160**
TS950S HF gen cov RCVR	**£1895**	**FT221R** 2m base multimode TCVR	**£325**
TH77E Dual band handy TCVR	**£325**	**FT411** 2m handy TCVR	**£195**
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		FT757GX HF TCVR g.cov various	from **£499**

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12th September *MARTIN LYNCH BIRTHDAY PARTY 8 to 8 at Ealing*
13th September *B.A.R.T.G. Sandown Race Course, ESHER SURREY*
27th September *HARLOW RALLY, Sports Centre HARLOW, ESSEX.*
23rd/24th October *LEICESTER SHOW, GRANBY HALLS Leicester.*
13th December *Verulum A.R.C. Rally in Hatfield Poly, Herts*

MARTIN LYNCH SPONSORS "THE H.F. & IOTA CONVENTION" 26th & 27th September.

I'm proud to announce that I am sponsoring the 1992 H.F. & IOTA Convention this year at the ICL Beaumont Conference Centre in Old Windsor, Berkshire. With excellent lectures including H.F. DX station design, H.F. Transceivers, H.F. Trophies, and DXpeditions, there will also be a full range of all the latest equipment from the major H.F. manufacturers on display for you to discuss with both myself and Barry Cooper, G4RKO. Accommodation and overseas visitors contact Roger Ballister, G3KMA on 0276 858224. For Programme & DX Dinner, Contact Bob Wheelan, G3PJT on 0223 263137.

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THE PHOENIX RISES!

Not that the TS950 ever died, but the new TS950SDX will probably take you to new DX horizons. Once again Kenwood engineers have set a new standard in performance and ease of use. Better receive performance and new control software are among the highlights but let's tell you a few of the others...

FARMING NEWS

If you have a desire to establish your own aerial farm, call in at your local branch to see the huge range of antennas, rotators and accessories we're now stocking. Famous names you can choose from include Yaesu, Emotator, Barenco, Maldol, Jaybeam, Cushcraft, Tonna and many more. Whether you want a simple, low cost 2m beam, a full size triband HF beam or one of the increasingly popular multi band verticals, your local Lowe branch will probably have it.

Upgrading your antenna can sometimes be as effective as buying a new rig. However if you'd like to do both, we'll be pleased to talk about a package deal for you. Visit your local branch for full details.

HERE WE GROW AGAIN!

Lowe Electronics are pleased to announce the opening of another new showroom. This time customers in Leeds and surrounding areas are the ones to benefit. You'll find us at **34 New Briggate, Leeds** right in the city centre.

The new showroom will be run by **Tom Beaumont, G4DVZ**, probably better known as **G4LAR**, who has a long history of serving amateur radio enthusiasts in the area.

You'll find the full Kenwood range on show, together with all the other quality brands we are famous for including Kantronics, Emotator, Maldol, Manson, and all that's good in amateur radio. He'll also have a wide range of scanners and receivers from Signal, Sony, Yupiteru, AOR and of course our own highly respected receivers.

Why not ring Tom now on 0533 452657 and talk about your next rig?

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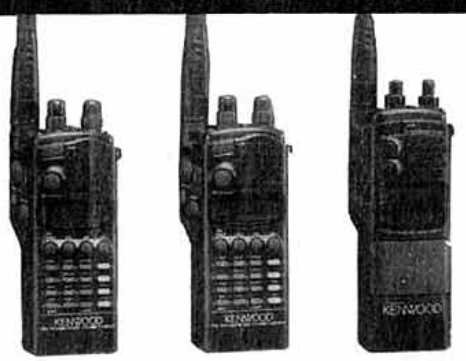
★ **Built in DSP for RX/TX**
Front panel menu controllable; tailoring RX/TX passbands
★ **50 volt MOSFET finals**
Excellent linearity for optimum performance and enhanced reliability
★ **Direct digital synthesis**
1 Hz tuning steps, especially useful for digital mode operation
★ **AIP — advanced intercept point**
Kenwood's exclusive circuit provides a superior dynamic range of 108dB
★ **Expanded sub-receiver functions**
Including CW filter selection
★ **Comprehensive front panel**
Menu system to customise operation
★ **RM-1 remote function keypad included**
★ **Built in automatic antenna tuner**
★ **Quick memory feature**
Five memory channels for quick recall
★ **SSB IF slope tuning**
IF VBT and AF VBT for CW, IF and AF notch filters (all modes except FM)
★ **100 memory channels**
Store frequency, mode, filter setting, auto tuner, tone frequency
★ **Built in CW memory keyer**
Optional DRU-2 enables voice memory
★ **TF Watch, TF Set, Delta F (frequency offset)**
For easy operation during split frequency DX chasing
★ **Optional MC 90A microphone**
To exploit performance characteristics of DSP

This is the transceiver everyone will want. Demand will almost certainly outstrip supply, so place your order with your local Lowe branch to ensure priority delivery as shipments come in.
The price? ..... around **£3229**

THE NEW TRIO FROM KENWOOD



TH28E around **£249**
TH48E around **£279**
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LONDON — Fred G4RJS, 223 Field End Road, Eastcote, Middlesex HA5 1QZ. Tel: 081-429 3256 Fax: 081-868 2876

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SOUTH WEST — Colin G3XAS, 27 Gillam Road, Northbourne, Bournemouth BH10 6BW. Tel: 0202 577760 Fax: 0202 593882

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HF NEWS

JOHN ALLAWAY G3FKM
10 Knightlow Road, Birmingham
B17 8QB

RSGB *DX NEWS SHEET* says that KH3AE and KH3AF on **Johnston Island** will try to operate from Sand Island at weekends between now and the end of the year. They hope to use the large Loran towers (which are due to be dismantled) to erect LF antennas and will check 1.8MHz at 0200, 0400, and 0500. ZK1WL, on **Penrhyn Island** sometimes appears on 14.226MHz at 0930 and before the later net on that frequency begins. G3MCN will be staying with ZK1DD in Rarotonga this month and has the callsign ZK1HJ - according to *RSGB DX News Sheet* he may visit Palmerston Atholl (IOTA OC-124) during his stay. T20WW, in **Tuvalu**, uses 21.035MHz at 1045 and according to *Long Island DX Bulletin* will make skeds for 14MHz. VR6BX on **Pitcairn Island** now has RTTY and seems to appear near 14.085 and 21.085MHz. According to *DXpress* JA2NQG will be visiting **Lord Howe Is** from the 15th to the 22nd of this month and will operate as VK9LS.

Since 5 July stations in **Croatia** have been using the 9A prefix. Club stations are now using 9A1, former YU2s 9A2, ex-YT2s 9A3, and ex-4N2s 9A4. DXCC status is sure to be granted but details were not available at the time this was being written.

G0DYW received news from OD5SK that he is testing a 28MHz beacon - OD5TEN - on 28.170MHz from his home in Tripoli. The *Long Island DX Bulletin* says that V85PB can be found most days near 14.195MHz at about 1130 and that he will make skeds for 21 and 28MHz. A Japanese group will be visiting Pohnpei Is in **Micronesia** between 4 and 13 September. They will have two stations active on all bands with SSB and CW. One callsign is to be V63SM. If my understanding of the Spanish is correct *Lynx DX Bulletin* says that HA5VK is on the air from the Hungarian Embassy in Phnom Penh in **Cambodia** as XU7VK, and that he is using 1kW into a twelve-element log periodic antenna! He is said to use 21.315MHz between 1600 and 1800. I have now heard from G1WAG that the operators Ali and Dhiya have now been reinstated as operators of the club station YI1BGD, in **Iraq** and are active on RTTY and AMTOR. Good news from **Bangladesh**; after a long period of waiting for official permission from the authorities Saif, S21A, (President of the Bangladesh Amateur Radio League) is now on the air. He has been worked on 14 and 21MHz SSB. His appearance could be followed by that of S21B, and a fully authorised operation by W6ZC.

Region 2 News says that novices in **Cuba** are now allowed on 1.8, 3.5 and 7MHz and use the CL prefix, and that at the end of 1991 there were 1151 licensed amateurs on the island. PY0TYP, on **Trindade Is** is very active on the lower bands and he seems to like 7.065MHz after 2200.

The DX Advisory Committee has voted against making Ceuta and Melilla separate countries, and the deletion of Southern Sudan and Spratley Is from the DXCC list.

VQ9AC on **Chagos** appears most days between 21.310 and 21.320MHz at about 1830. 5T5CJ in **Mauritania** is now on the WARC bands and has been noted on 24.900MHz at 1600. According to *RSGB DX News Sheet* I1s LNU, VEJ, and XPJ will be in **Tanzania** and **Zanzibar** until 4 September as 5H3NU and 5H1TY.

OVERSEAS NEWS

LATEST NEWS from Mike, G3JKX/V85KX, concerning goings-on in **Brunei** is that he has moved and now has a new TS690S to his Isoloop antenna. He hopes to be on 50MHz soon and is also looking forward to the 1.8/3.5MHz season. He invites written requests for skeds and also makes a plea for *accurate times in UTC* on QSLs please - 10 minutes out means two pages in the logbook! A particular trouble is with US cards dated in the US way and this is made worse by them being one day behind. Finally Mike says that V85CJ is back on the air; Bill, V85AA is temporarily off the air and that Gerry, V85GA; Hassam, V85HG; Ambran, V85SS; and Chang, V85FC, are all active.

G0CLK has relayed some interesting information from the Lvov ARS in Ukraine. The 'Cossack Brotherhood' has built a reconstruction of a 'Chajka'. This is a traditional narrow-boat used by Cossacks in the seventeenth century and holds about thirty. They will reconstruct a historical journey in this from Kiev down the river Dneiper to Odessa, and then across the Black Sea to Istanbul. From there they hope to go to Piraeus in Greece and then to Genoa. They should have started on 10 July and should finish by 30 October. UB5BDC and UB5WAL will be on board and will man a 24 hour operation using the callsign US92KS/MM on 7.050MHz (+ or - 3kHz), and in the areas 14.150-14.200 and 21.200-21.250MHz. A special QSL will be available (see *QTH Corner*) - please enclose one IRC. If you work the station on all three bands a special diploma is available for 10 IRCs.

CONTESTS

YLRL HOWDY DAYS

1400 9 September - 1700 10 September

For lady operators only. I can provide copies of the rules (SASE please). In the 1992 DX-YL to NA-YL Contest, G4EZI scored 144 points and GM4YMM 84, and in the 1992 YL-OM contest (phone) GM4YMM came fourth with 16,984 points.

THE FOC LATE SUMMER CW QSO PARTY

0000 5 September - 2400 20 September

The object of this is to promote CW activity on *any* band - HF and VHF/UHF/SHF. FOC activity is concentrated around 25kHz up from lower band edges and FOC members will identify by calling 'CQ FOC'. Plaques will be awarded to non-FOC entrants who appear in the most FOC members logs overall, to those who work the most European FOC members, and to those who work the most non-European members. Plaques and certificates will also be awarded to "those who contribute to the success of the event in any way considered worthy of a prize by the adjudicators". Logs and reports should be sent to Peter Miles, G3KDB, 151 Leomansley View, Lichfield, Staffs WS13 8AU, no later than by the end of October. [What an excellent idea - *G3FKM*].

Ben Post, 5Z4BP.

EUROPEAN SSB DX CONTEST

1200 12 September - 2400 13 September

Rules of the CW event were given last month and are similar - except that these were overtaken by events! Please note that Croatia (9A), Slovenia (YU3), and Bosnia-Herzegovina (YU4) now count as multipliers separately from Yugoslavia (YU1, YU5, YU6, and YU7). Deadline for log entries for this one is 15 October 1992.

VK-ZL-OCEANIA DX CONTEST

1000 3 October - 1000 4 October (SSB)

1000 10 October - 1000 11 October (CW)

Work as many ZL/VK/Oceania stations as possible 1.8-28MHz (excluding WARC bands). One contact per band and each is worth two points. Exchange RS/T plus QSO number beginning from 001. Multiplier is sum of all ZL/VK/Oceania prefixes worked on each band. Listeners may enter and in their case the two parts of the contest are combined. Post logs to NZART VK-ZL-O Contest Manager John Litten, ZL1AAS, 146 Sandspit Rd, Howick 1705, New Zealand to arrive by 1 February 1993. I have copies of rules - advised if you are entering (SASE please). In the 1991 contest (Phone) G3SNN scored 3036 points and was European third. G5MY scored 192. In the CW section G3GLL was European fifth with 2800 points. G3ESF scored 2028, G5MY 1152, and GW4HBK 168.

EUROPE FOR QRP WEEKEND 1992

1600 2 October - 2359 4 October

Organised jointly by the G-QRP and OK-QRP clubs. CW only on 3.560, 7.030, 14.060, 21.060, and 28.060MHz all + or - 10kHz. Power not to exceed 5W output. Exchange RST, power output, and name. QSOs with own country do not count - with Europe they count one and elsewhere

RSGB HF & IOTA CONVENTION

ICL Beaumont Conference Centre, Old Windsor, Berkshire.

26 & 27 September 1992

Programme subject to change without notice.

PROGRAMME

FRIDAY EVENING, 25 SEPTEMBER

Informal IOTA reception. Visit to the QTH of G3KMA, IOTA Director

SATURDAY 26 SEPTEMBER

IOTA CONVENTION

0915	Welcome and Director's Address, September 1992 Honour Roll / Annual Listing
1115	Question & Answer Session on IOTA Policy
1430	'How to mount an effective Island DXpedition'
1930	DX & IOTA DINNER. Speeches, Presentations, DXpedition Slide show.

SUNDAY 27 SEPTEMBER

HF CONVENTION. Doors open 0900

	Stream A	**Stream B**	**Stream C**
1015	'Build your own linear' *by Ross, GW3NWS*	'Use and abuse of towers' *by Strumech*	'How to win NFD'
1130	'HF transceivers - how far have we really come?' *by Peter Hart, G3SJX*	'EMC - good radio housekeeping', *by Robin, G3JWI*	Trophy Presentation and Contest Forum; *Chaired by Dave, G4BUO*
1400	'SWR' *by Peter Chadwick, G3RZP*	DX Packet Cluster forum and demonstration	DXpeditions: 'Pacific Islands' *by Andy, G3ZVJ;* 'South Sandwich' (provisional) 'Clipperton Island' *by Vincent G0LMX/FO0CI*
1515	'Home brew HF equipment' *by Mike Grierson, G3TSO*	'HF DX - the inside story' - survey results, *by the RSGB HF Committee*	
1630	Raffle		
1700	Convention Closes		

Also

1415 – Young Amateur Of The Year presentation

ADMISSION

£4 (covers both days)

One and two night fully-inclusive DX Dinner, meals and accommodation packages available.

DINNER TICKETS (non-package visitors) £18

GENERAL ENQUIRIES	Bob Whelan, G3PJT, tel 0223 263137
ACCOMMODATION BOOKINGS	ICL Beaumont Conference Centre, tel 0753 868181 x 2100
OVERSEAS VISITORS	Roger Balister, G3KMA, tel 0276 858224

ICL Beaumont Conference Centre is located off the A308 between Old Windsor and Egham. From M25 J13 follow A30 Staines, then A30 Egham, A308 Windsor, first mini roundabout left, then first right. Beaumont is second entrance on left. By rail via Egham or Windsor from either Waterloo or Paddington. By air via London Heathrow (10 miles).

Sponsored by Martin Lynch, The Amateur Radio Exchange

BAND REPORTS

This time I have to thank the following for sending in reports: G2HKU, G3s EUE, GVV, KKJ, YRM, G4s DJC, DRN, GW4KGR, G4s NXG/M, OBK, XRV, G0s HGA, IDE, KDS and LRX, and the UK DX Packet Cluster (courtesy of G4PDQ). Stations listed in italics were on CW:-

1.8MHz

0200 *CX4CR*, HF0POL, *VY2SS*
2100 *RL7FGO, UL0R, 7Q7XX.*
2300 *A22MN, EH92G, UD6/Y42DA, RN9/UA3YFU, VQ9SS, ZA1A.*

10MHz

0600 *TT8ZH, 3C1EA.*
2100 *A22MN, D44BS,PY0FF, OK1IAI/YA, 5T5CJ.*
2200 *FY5FY, VK8AV, ZA1A.*
2300 *D44BS, OX/DK2OY, VK6NV, ZL4HB, 5N0SKO.*

14MHz

0500 *FO5BI/P, HK0C*, T32LN, 3D2XV.
0700 AH6HM, KH3AF, P29DX, VR6MW, ZK1s AR, RS.
0900 V63JP, VE7, W6-W7.
1000 N5AJW/JW, P43LJP, ZA1BM, ZD8MS.
1500 H44KA.
1800 BV2A, *WR1Z/KH9*, KL7HKX, SU2MT, V85GA, 4S0UK.
1900 *JT5AA, JU830C/4.*
2000 HS1HSJ, *S79SGA, YA2CW*, 5H0ROA.
2200 *BY1PK, BY4AA, FS4PL, 8R1JV.*
2300 FH8CB, *XQ0YAF, 9V1YC*

18MHz

0000 CE0YFL.
0700 *AH6IP*, ZK1RS.
1400 HH2PK, *VK9NS/KH9*, PJ8AD, TA2ZA, VQ9QM.
1600 *JT1/JI2MED*, VS6CT, *XU8CW, 3C1EA*, 5H0ROA.
1800 TZ6NU, *OK1IAI/YA, 9V1OK*
1900 *AP/WA2WYR*, F6BLQ/D2, PZ1EL, VP8GAV.
2200 *KP2J, OD5/SP7LSE*, P4/PA3ECI, TU4EB, ZF2AH.

21MHz

0500 FO5FR, TL8NG.
0700 A35KB, BY3AE, JT1BR, *KL7HF*, T32LN, *5U7M*
0900 A35KB, *BY8AC*, TT8ZH, V73DO, 5H0ROA, 9M2CW.
1000 *HS1CDX*, KH3AE, T20AA, YI0EB, ZK1RS, 3D2XV.
1400 C9TDM, WR1Z/KH9, V31PC, 9M2JA.
1500 BY4RSA, FR5CB, *TT8ZH*, V63OM, *ZA1M, 7P8SR*
1600 A61AD, BV5AU, *BY1PK*, BY5QW, C9RDM, J5UAI, S79EC, *XU8CW, 3C1EA, 5R8GW*, 9V1WW.
1800 F6BLQ/D2, D68/8R1UN, HS0ZAD, *KH2XK*, S21A, VP8CKP, XU1MM, 4S0UK, 7Q7s JL, RF, RM.

24MHz

1000 *C9RDM*, 7Q7LA.
1100 TY1PS.
1400 J28YC, *VQ9QM*
1500 J5UAI.
1700 XX9AW.

28MHz

0700 *TR8CC*, VK4, VK6, YB0ARM, 5Z4BI.
1000 *TA7I, UA0WGD*, ZA1A, 7Q7CE.
1100 A22MN, *FR5BT*
1500 C9TDM, *FY/ON4ZD, HZ1HZ*, JY5EC, VP8CFM (S.Ork), 5U7M.
1600 S79KMB, TT8ZH, V51BG.
1700 *TU2CI*, 3X0H/LU, 5N0CEP.
2200 FS/KB4VHW, P43TAT, PJ7/K2KTT, ZF2JN.

NINE BAND TABLE NO 3

Call	1.8	3.5	7	10	14	18	21	24	28	Total
G3KMA	144	260	317	210	323	269	323	259	316	2421
G3XTT	163	226	278	161	317	229	311	211	289	2185
G4BWP	126	250	291	140	320	204	317	207	304	2159
G4GIR	116	245	286	139	321	183	317	180	305	2092
G3GIQ	71	213	278	114	323	214	323	199	311	2046
A92BE	58	159	207	-	314	203	299	185	275	1700
G3JXN	49	120	186	102	269	183	275	180	279	1643
GM3PPE	68	164	185	138	256	196	242	157	218	1624
G4OBK	123	155	207	86	278	135	252	151	229	1616
G3TXF	73	180	231	82	297	94	299	67	264	1587
G3NOF	5	103	106	-	321	139	323	191	295	1483
G3JJG	52	103	193	134	231	153	256	137	199	1458
G3YMC	82	123	210	-	259	105	266	77	220	1342
G4NXG/M	4	41	89	-	223	116	241	135	233	1082
Average	81	167	219	93	289	173	289	167	267	1746

Next deadline - scores to reach G3GIQ by 8 October 1992. *Please note that entry level is 600 and that there is no need to work all bands.*

QTH CORNER

C9TDM	OGE, c/o Box 25, Maputo, Mozambique.
S21A	via W4FRU, John Parrott, PO Box 5127, Suffolk, VA 23435, USA.
S79SGA	OE3SGA, Dr Karl Rennerstr 24, A-2486 Pottendorf, Austria.
UI1A,UI1B UI8AA, UI9AWD and UI9BWR	G3SWH, 21 Dickensons Grove, Congresbury, Bristol, BS19 5HQ.
US92KS/MM	PO Box 4962, 290053 Lvov, Ukraine.
5H0ROA	via A47RS, ROARS, PO Box 981, Muscat, Sultanate of Oman.

Two of the world's best known amateurs: Jean Wolff, LX1JW, talking to the late Father Moran, 9N1MM (see *HF News*, July).

three. Copies of rules available - SASE please.

ON CONTEST 1992

0700 - 1100 4 October (3.5MHz SSB)

0700 - 1100 11 October (3.5MHz CW)

Only QSOs with ON and DA (Belgian Forces in Germany) permitted and these count three points. Exchange RS/T plus serial number from 001. ON and DA stations will give their club and each club counts as a multiplier. Send logs to Welters Leon, ON5WL, Borgstraat 80, B-2580 Beerzel, Belgium, within three weeks of the contests.

AWARDS

WORKED ALL BRITAIN AWARDS

Over the next few months Special Event Stations will be set up in towns around the coast where there is a lifeboat station. A certificate will be awarded to those who work or hear ten of these on HF and five on VHF/UHF. Claims should show date, time, band, callsigns, and reports exchanged. Listeners must give the callsigns of both QSO participants. Claims (with a minimum donation of £3) go to A C Keeble, G4HPU, Heater Field, Colchester Rd, Ardleigh, Colchester, Essex, CO7 7PA. All proceeds will go towards the WAB 25th Anniversary Appeal to provide a 'D' Class lifeboat. Existing WAB book-holders are also invited to make donations to the Appeal.

1992 WARC BANDS TABLE

	10MHz	18MHz	24MHz	Total
G4OBK	72	114	**125**	311
G2VJ	70	102	107	279
G3KKJ	65	**109**	82	256
G2AFV	39	45	11	95
G3ING	34	30	28	92
G4NXG/M	-	58	28	86
G4XRV	**77**	-	-	77
G4MUW	-	32	37	69
GM0KMJ	-	-	59	59
GW4RGT	13	21	16	50

PROPAGATION

A MORE DETAILED and extremely interesting report from Smithy this month. It says: "The approach of the 1992/93 DX season is a suitable occasion for taking stock of the current position. Just how steep the fall in solar activity in the first half of 1992 has been can be seen by looking at the three-month averages of solar-flux and sunspot numbers. The average solar-flux centered on January was 225 sfu and by May this had fallen to 134, with the figure for June likely to be be similar. The corresponding three-month average sunspot numbers were 150 centered on January falling to 80 for May with a similar figure likely for June. While this is the stage in the cycle at which fairly sharp declines sometimes occur, this is exceptionally steep; by comparison a similar fall in Cycle 21 lasted around three times as long.

"The first half of July saw a minor recovery with new solar activity causing the daily values to peak at 176 sfu only to fall back later in the month, by which time the 27-day average had climbed from it's 'low' of 115 to 141 sfu. It therefore seems likely that the steep fall has ended, at least for the time being. It should also be remembered that the present levels of activity are by no means low, being similar to those seen at the peaks of some of the cycles in the Nineteenth and early Twentieth Centuries.

"The shape of the present Cycle 22 does not fit well with the 'average cycle' in which the average

continued on page 19 ▶

VHF/UHF NEWS

NORMAN FITCH G3FPK
40 Eskdale Gardens, Purley, Surrey
CR8 1EZ

QUITE A large postbag again this time, so it's gratifying to be able to report on an upsurge in activity. While no auroral events were reported in July, sporadic-E openings were frequent on 50MHz and there was some good tropo propagation at times on higher bands.

PUBLICATIONS

THE JULY issue of *Six News*, the journal of the UK Six Metre Group (UKSMG), contains much news of 50MHz activity in Europe and further afield. G3WOS has a contribution on stacking Yagis. I liked a 'Heard on the band' piece: "I'm running 10W from a transceiver called an FT736R. My antenna has three elements and I think it's made by a firm called Yagi - that's what it said on the box, anyway."

The third issue of Dave Hardy's, G8ROU, *VHF/UHF DXer* includes the usual band reports, some DX news, and articles on the mathematics of aircraft scatter by WA5VJB, the use of cassette recorders for MS reception by GM0HUO and antenna specifications by G8ROU. Pages 11-15 were missing from my copy, so what did I miss, Dave?

REPEATERS

THE JULY *Newsletter* from the Aylesbury Vale Repeater Group includes status information on GB3VA, GB3AV and GB3BV, a brief report on February's AGM and a list of the 160 members. A copy of leaflets *RA178: Transverters and Transverter Drivers*, and *RA169: Receive Only - Scanners etc*, published by the Radiocommunications Agency (RA) were attached.

The Bedford RG sent a press release about the trial linking between its UHF repeaters GB3BL (RB7) in Bedford and GB3BD (RB6) at Ampthill. This is an 18-months experiment approved by the RA, with the assistance of the RSGB's Repeater Management Group (RMG). The leaflet gives brief technical information and operational details. For further information contact Doug Ash, G1BWW, on 0462 711722 or QTHR.

CANCELLATION

ANDY ADAMS, GW0KZG (GNS), wrote to confirm that delays in installing and commissioning complex equipment in the *RRS Discovery* resulted in cancellation of the proposed operation off Spain and Portugal. When ready, the ship will sail to Antarctica for six months, so Andy will be QRV on the HF bands. He hopes to be operating as GW0KZG/MM on 144MHz in home waters again next year.

BEACON NOTES

TWO READERS mentioned the German beacon, DK0WCY, in the 30m HF band. It is on 10.144MHz and broadcasts propagation reports on CW comprising solar and geomagnetic data, and forecasts. If you cannot receive WWV, it is a useful alternative, enabling you to keep a daily record of the important parameters. Its keeper is DK2ZF whose new QTH is Kreutzacker 13, D-3550 Marburg 1, Germany.

From the Lebanon, OD5SIX (KM74) is now QRV running 8W; tune to 50.0785MHz for true FSK copy. It was assembled by Geoff Brown, GJ4ICD, with additional financial and technical support from GJ8KNV and GJ3RAX. It was shipped via Cyprus in early July, with the assistance of G0KOM/ZC4MK. Nevada UK donated an amplifier and SMC Ltd handled internal carriage in the UK. OD5SK is its keeper.

Ted Collins, G4UPS (DVN), reports a new Canadian beacon, VE3UBL (FN03), running 10W to a vertical dipole on 50.059MHz from Brougham, Ontario. Reports should be sent to the South Pickering ARC, PO Box 53, Pickering, Ontario, Canada L1V 2R2. GJ4ICD is building another beacon destined for Zimbabwe. Mal Geddes, Z23JO, has agreed to be the keeper of Z21SIX; more details later.

SCATTER MODES

THERE ARE no significant meteor streams until the Orionids in October. Tony Read, G0GMS (SXW), was in Sweden in June and early July and visited SM5MIX (JO78). He was able to operate Ulf's station as SM/G0GMS and worked G3IMV, G0LBK and G4YRY on MS during the June 6/7 EME sked weekend.

On 8 July at 0930 he worked G3IMV via ionoscatter, exchanging RST429 reports. Tony has since tried the mode from home and has contacted SM5MIX and SM5FRH. The mode is characterized by deep fading and high peak signal strengths. High ERP is essential - you can't expect much with 100W and a 9-ele Yagi - and he thinks it possible to work the EA2 and EA3 areas from southern Britain. He hopes to have tried this before the end of the summer. He found random meteor reflections quite good in July and completed with SM5MIX in twelve bursts over 40 minutes, running only 20W to his two 17-ele Tonna Yagis.

144MHZ MOONBOUNCE

MARK HOLLOWAY, G4YRY (DOR), is still running about 200W to four 9-ele Yagis. After three years of listening, he copied his own echoes at moonset on 3 July and again at moonrise on the 5th. In the 4/5 July sked weekend he completed one with SM5MIX and a random contact with SM5FRH on the 4th. Next day he completed with I2FAK on random. That weekend he heard W8WN, K2LME, EA6FB and I5JUX.

John Regnault, G4SWX (SFK), having been QRT for eight weeks due to antenna damage, was QRV again on 2 July completing with K2GAL and I5JUX in the evening. The following evening brought UZ2FWA (KO04), who runs 1.5kW output to eight DJ9BV, five wavelength long Yagis. He was initial no. 187 and his QSL manager is DK4VW.

New initials - stations worked for the first time - from moonrise on 4 July were OE5EYM (1kW and four 18-ele Yagis) and HB9JAW (ex-HB9RCI, 1.5kW and eight M2 Yagis). Other completions were with IK3MAC, VK3AMZ and SM5MIX. The evening brought QSOs with SM2CEW, LA8YB, N5BLZ, SM5FRH, AF9Y and DL5MAE. W5UN/KL7 was in a "mega pile-up" at 2100.

The morning period on the 5th was ruined by VHF NFD stations replying to his "CQ EME" calls on 144.010MHz. The only station worked was JA4BLC at 1058. At 1330 his sked with EA6VQ (800W and two Yagis) was successful. Only W0HP, K2GAL and W7HAH were heard in the North American window towards moonset. The next sked weekend is 19/20 Sept when the Moon will be near its greatest northern declination and at perigee.

John does not support the suggested alternative EME seg-

ANNUAL VHF/UHF TABLE
JANUARY TO DECEMBER 1992

	50MHz		70MHz		144MHz		430MHz		1.3GHz		Total
Callsign	Cty	Ctr	Cty	Ctr	Cty	Ctr	Cty	Ctr	Cty	Ctr	Points
G4FCD	40	26	-	-	86	23	52	19	37	12	295
G6HKM	66	64	-	-	65	23	25	16	17	9	285
G4LDR	14	19	27	5	49	16	34	10	-	-	174
G0JBA	-	-	23	1	48	17	31	12	13	5	150
GW6VZW	77	63	-	-	-	-	-	-	-	-	140
G0EHV	-	-	29	5	55	15	20	10	-	-	134
G1SWH	8	20	17	5	38	10	21	9	2	1	131
G7EWL	26	24	3	1	54	18	-	-	-	-	126
G8LHT	-	17	20	4	42	18	12	3	4	1	121
G3FIJ	-	-	14	2	47	9	26	5	3	1	107
G8ESB	7	3	15	2	37	9	14	3	7	2	99
G7CLY	10	23	-	-	42	8	2	1	-	-	86
GW0PZT	-	-	-	-	61	25	-	-	-	-	86
GI4OWA	11	24	-	-	27	20	-	-	-	-	82
G0EVT	29	7	2	2	22	10	5	2	1	1	81
G7LIJ	-	-	-	-	54	24	-	-	-	-	78
G4OUT	-	-	27	6	34	9	-	-	-	-	76
G6ODT	-	-	-	-	39	12	11	5	-	-	67
G3FPK	-	-	-	-	52	15	-	-	-	-	67
G7JAF	-	-	-	-	32	10	4	1	-	-	47
GU4HUY	-	-	-	-	35	12	-	-	-	-	47
G0HDZ	2	6	-	-	15	6	-	-	-	-	29
G6AJE	-	-	-	-	8	2	-	-	3	2	15

British counties are those listed on page 65 in the January 1992 *RadCom*; 77 in all. Up to three different stations allowed in all 12 GM regions. Do not include EI counties. Countries are the usual DXCC ones plus IT9. Deadline for the next appearance is **24 September**.

ment - see July *RadCom*, page 16. He points out the incompatibility with the IARU Regions 2 and 3 band plans, the clash with some MS operators who use 144.150MHz plus/minus 10kHz and the problem with splatter from SSB stations - SSB starts at 144.150MHz. He suggests just shifting the EME segment up 10kHz from its present, computer hash-ridden region.

In fact the IARU Region 1 VHF/UHF/Microwave Committee did *not* propose abandoning the existing EME sub-band. Recommendation D only suggests that member societies ". . . . should publicize the use of 144.140-144.160MHz *as an alternative* for EME operation . . . . with the aim of incorporation into the usage part of the band plan *if successful*." (my italics). I interpret that as meaning that if it proves unsatisfactory, or nobody even tries the idea, it will be dropped at a future meeting.

50MHZ

READERS WILL be saddened to hear of the death earlier this year of Gordon Pheasant, G4BPY, from Walsall. He was only in his thirties, which makes his passing that much more tragic. Gordon was one of the 40 British amateurs who were issued with special 50MHz transmitting licences for research purposes in February 1983.

PROPAGATION

In his propagation report for June, Ray Cracknell, G2AHU (HWR), mentions that the rate of decline in solar indices, as reported in the Boulder data, has slowed down. The mean sunspot number was 65.3 - the maximum was 102 on the 12th - and the mean solar flux was 120. He reiterates that Cycle 22 has been full of surprises but reckons that: "Hopes of a recovery through the main DX months of October and November are now rapidly fading."

NEWS

Writing from Rimpar in Germany, Norman Bonnett, G0NNA, says it seems very unlikely that the band will be freely available to all German amateurs in the near future. The broadcasters are tenaciously hanging onto 20MHz of this part of the spectrum. Even though there has been no reported TVI, there are unlikely to be any more permits issued.

G4UPS received several telephone calls on 10 July confirming that 50MHz permits had been issued to eighty Spanish Class A licensees. These are for a one year period on a strictly non-interference basis, 30W ERP, CW and SSB only, 50.000-50.200MHz. The EA prefixes change to EH for 50MHz use. Squares activated include IM67, IM85, IM99, IN81, IN91, JM19, JN00, JN01 and JN11.

On 16 June, the ITU reportedly allocated the 9A callsign block to the Croatian Republic, with amateurs retaining their old YU suffix; eg YT2AQ is now 9A3AQ. I was unaware that the Republic of San Marino had ever been relieved of the 9AA-9ZZ block, though. Slovenia was allocated the vacant S5A-S5Z block on the same date but is said to be trying to have it altered. I've no idea what the ARRL's DX Advisory Committee has decided about the status of these new republics for DXCC purposes. Anyone know?

Following the issue of several special 3Z permits to a few Polish amateurs, there is a meeting scheduled with the PTT on 15 Sept. This might result in the band becoming more widely available. Special permits have been issued to a few Bulgarian stations. The four so far reported are LZ1KDP and LZ1BB in KN12, LZ2JH (KN22) and LZ1MC. Another new country on 50MHz is Latvia. ES5RY and others put YL/ES9C on the air, 17-19 July from KO27ER, working about 450 stations. QSLs go via ES5RY.

ACTIVITY

Eric Parvin, G2ADR (YSN), has received his QSL from UZ2FWA for their QSO at 1037 on 20 June, confirming it was a G/UZ2 first. With several new countries now available, claims for firsts are coming thick and fast. As well as reporting them to this column, you might also like to send them to either GW3KJW or GM4ANB, who have been appointed by the VHF Committee to record such achievements.

Up to the 27th, the only July days when no single or double-hop Es was reported were 1, 14 and 23. Such a vast amount of quality DX was worked by contributors that there is only space to list the best; EH6VQ (JM19), EH9IB (IM85), ID9/IK8HJC (Salina Is/JM78), IH9/IT9FTG and IH9/I2ADN (JM66), IM0/IK2AEQ (JM48), LY2WR (KO24), OY3JE and OY6A (IP62), TA2/OZ1DOQ (KN61), TA5ZA (KM77), UA2F/DK2ZF (KO04), UX1A (KP40), ZA1A (JN91), 4U1ITU (JN36) and 9K2ZR.

Several readers reported QSOs with EA8/DJ3OS (IL18), but I doubt that *any* 50MHz permits have ever been issued to foreigners in the Canaries. I know of nobody who has seen a copy of any authentic EA8 permit issued to non-Spanish nationals, including Gs. Only QSOs with Spanish EH8s made on or after 10 July should be counted.

70MHZ

THE RSGB DCC (Data Communications Committee) has officially requested that 70.3375MHz be designated to packet radio. The VHF Committee has agreed to this proposal. If you are looking for crossband QSOs, 70.185MHz is the SSB/CW frequency, with 50.185 and 144.185MHz on 'the other end'. Don't forget to give your locator when calling.

Eddie Ashburner, G0EHV (TWR), now has an outdoor HB9CV antenna. He runs a Spectrum transverter and QQV07-50 PA, working 27 stations in NFD, but nothing new. Phil Boorman, G0JBA (KNT), was out portable from Dunkirk (JO01LH) on 6 June for the WAB Contest. He ran 100W to a 5-ele Yagi at 15ft AGL, but after 50mins the noise level went up to S9, making further contacts impossible. On NFD weekend from home he used 10W and a 5-ele Yagi at 15ft AGL working many stations.

Ian Cornes, G4OUT (SFD), completed 32 QSOs in NFD working every station heard. He used an FT-290, Microwave Modules transverter with 10W output to an indoor 3-ele HB9CV-type antenna. Best DX was GM3WOJ/P (IO85PS) at 332km and other contacts over 300km were G4ADV/P (IO70PP), GI4TVV/P (IO74AI) and EI7M/P (IO62OM).

144MHZ

ES FEEDBACK

MORE REPORTS of the excellent Es opening on 22 June have arrived. Although the GMs and GWs did very well, Mick Toms, BRS31976 (ESX), logged stations from I3, 4, 6, 8 and 0, IS0, IT9, OE6, YU1, 3 and 7, Y2 and 4N2 from 1830 till after 2000. G0EHV worked 15 squares in central and northern Italy, southern Austria and YU, with DLs as close as JO50 and JN59 contacted.

Robin Hermes, G3YHC (YSN), worked two pages of Italians, plus IT9IPQ and two HAs. Karl Lamford, G6ODT (NHM), worked I3s and YU3s all in JN65, and OE8PCK (JN76). From Kent, Brian Underdown, G7LIJ, made 19 QSOs from 1833 including IK7CMY (JN81), 9H5DM (JM75) and IS0CDS (JM49).

From the Isle of Skye, Calum MacPherson, GM0EWX (IO67), had 3.5 hours of Es working 250 stations in 28 squares. These included 46 Is, 150 DLs, 18 HB9s and assorted F, OE and YU contacts. On 20 June at 1647 he contacted ZB0T (IM76) at 2369km, who was S9 plus 30dB, and eight EAs in the 3, 4 and 7 districts.

On 20 June Mervyn Rodgers, GM0GDL (TYS), worked CT1WW (IN61) at 1735. On the 22nd he had 77 contacts in two hours from 1855, when he started with IC8EGJ (JN70). Gordon Smith, GW6TEO (DFD), left his beam at 110° throughout, working 76 stations in 26 squares between 1823 and 2010. Countries were DL, HG, I, OE, SP, YU and 4N, but surprisingly no OKs. He runs 400W to a 17-ele Tonna Yagi.

For Tim Daniels, GW7KTP (GNS), it was a first Es experience. Using 25W to a 16-ele Yagi he worked 33 stations, but I don't understand what country 'P7' represents, OM. Best DX was 9H1ET. Lyn Leach, GW8JLY (GNS), while beaming between I and YU, was called by four SP2s who were all S9; another example of a way-off beam heading. On 5 July at 0940 he heard SM3BEI (JP81) calling CQ then later working an OH. Unfortunately, Lyn couldn't attract his attention. Between 1511 and 1520 that day he worked five Is in JN52, 53, 61 and 63.

TROPO

Paul Essery, GW3KFE (PWS), was with a group in Shetland for VHF NFD and said that Shetland and Orkney stations wish mainland operators would turn their beams in their direction more often. General opinion was that NFD conditions were disappointing. Ironically the next couple of days saw some excellent tropo propagation. G0EHV worked DL, LA and OZ on 6 July and reminds us that the Scandinavian Activity Contests occur monthly in the evenings of the first Tuesday.

Alec Trusler, G0FIG (SXW), worked EI and GI portables in NFD plus LX/ON4AVJ/P (JN29). The French contest on 18/19 July coincided with good conditions to southern France and HB9; he also worked I2FHW (JN44). G0JBA worked LA, OZ and SM stations on 6/7 July in JO38, 46, 48, 56 and 67.

G4YRY found the EA1VHF beacon very consistent throughout the 13-19 July period; its new 600m ASL site is obviously much better. He worked "the usual"

QSL

RSGB QSL Bureau,
PO Box 1773, Potters Bar,
Herts, EN6 3EP

● Joan Birkby, G0KMU, has written to let me know that the QSL Manager for the Central Lancs ARC, G0FDX, is Brian Birkby, G0NEI, 10 Rankin Avenue, Hesketh Bank, Preston, Lancs PR4 6PA. He is not listed in any callbooks under his own call but is shown under that of his YL - Joan.

● Readers will have seen in July's column that I expounded on the Falkland Islands QSL situation using some guidance from G3AHP. Well I did not get things quite as correct as I would have liked and Stephen Palmer, VP8CIL (G0EQS), has written to tell me so.

The fact that there is no postal delivery service on the islands does not mean the service is any less efficient - because everyone is so well known that any QSL card sent to the wrong box soon finds its way into the right one. Most of the amateurs live on the outlying islands and the postal service is very efficient at getting mail to them.

It is a fact that there are more active amateurs amongst the resident population than in the ever moving military garrison of MPA so I was incorrect to say there are few VP8s active on HF bands except from MPA, in fact the reverse is true. One cannot generalise about the VP8 callsign and one cannot identify whether the user is military or civilian but it makes little difference because I am told a very good relationship exists between the MPA Club and the Falkland Island Radio Association and cards are passed to and fro without any problem. If anyone wants to send a card to a resident then the best address to use is Box 400. Many people do not have a QSL Manager and the Box 400 address is quite sufficient.

To put all this as simply as possible there are two PO Box numbers - one for MPA and one for the local radio association and it really makes no difference which one is used.

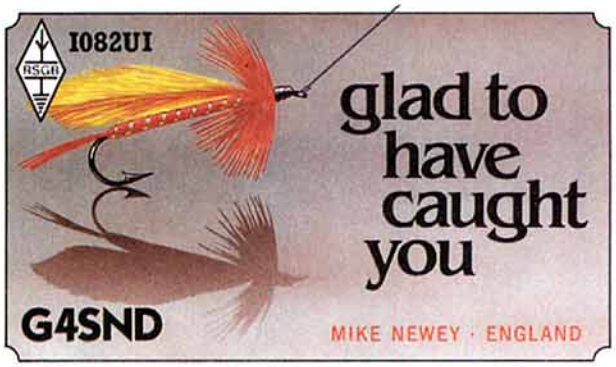
Finally, if any amateur requires detailed help about the transmission of QSL cards within the Falklands then Mario, VP8WA, or Stephen, VP8CIL, c/o PO Box 400, Stanley, The Falkland Islands, will be only too pleased to try and help. I am most grateful to Stephen for the detailed explanation and am happy to put the matter straight but I am more pleased that someone located as far away as that actually reads my scribblings!

● Following the death of Mr R Jobson, G4ZYW, the new QSL Sub-Manager for the G0EAA - EZZ and G4EAA -EZZ series is Mr G W Jenner, G3KIW, Pogles Wood Cottage, Paradise Lane, Chapel Row, Bucklebury, Reading, Berkshire RG7 6NU.

● The new QSL Sub-Manager for the G0S series is Mr J A Anderson, G0DWL, 33 Elphaborough Close, Mytholmroyd, Hebden Bridge, West Yorkshire HX7 5JX.

● Another new QSL Sub-Manager , this time for the G3LAA - NZZ series, is Mr Andrew Giles, G4OJH, 209 New Bristol Road, Western-Super-Mare, Avon BS22 0BJ.

John Hall, G3KVA



This unusual and colourful QSL card was sent in by Mike Newey, G4SAD. No prizes for guessing what his other hobby is!

EA1s - BCB, DAV and TA - and also got EA3DUY (JN12) in the French contest on the 18th. G6HKM found the LAs "end stop" in the late evening of 6/7 July and Ela worked into JO59 and 47. On 18 July, G6ODT contacted GB2MR located on Minquiers (pronounced 'Minkeys') Reef, 15 miles south of Jersey, then had QSOs with F and HB9 in the contest.

Shane Hogarth, G7EWL (NHM), made contact with 92 NFD stations; GM4CXP/P (IO85), GM4ZUK/P (IO86) and EI7M/P were all new. G7LIJ caught the good tropo on 6 July, and then worked down to EA2BLR (IN82) on the 16th. Brian also took advantage of the French contest to add more new ones. On 5 July, during NFD, Arlen Pardoe, GM0HUO (FFE), worked OY6A/P (IP62) and LA1T (JO37), along with GM and EI portables. On the evening of 18 July, GW8JLY worked Fs in JN15, 24, 36 and 37 and portable HB9s in JN36.

430MHZ UP

G0EHV SUGGESTS that 70cm is becoming just another local chat band, only coming to life in contests. He often hears the OZ1UHF and SK6UHF beacons at S9-plus, yet no activity. VHF NFD produced only 14 QSOs. G0FIG worked GB2MR on 70cm on 18 July. Alec worked assorted Fs in the 16-19 July lift.

In the 6/7 July opening, G0JBA worked OZ9IT (JO46) on 70cm but did not complete with LA4WM on 23cm due to deep QSB. Richard Girling, G4FCD (OFE) described NFD as: "... a washout with negative propagation ..." On 6 July on 70cm he worked SM6HYG (JO58), SM6ESG (JO67), OZ1HDA (JO47), OZ1IPU (JO57) and SM7ECM (JO65). Next morning he netted SM6HYG and OZ1IPU again, this time on 23cm.

The best DX G6HKM found on 70cm on 4 July was GM4TXX/P. Ela caught the end of the opening on 6/7 July working OZ9IT, DL1BJG (JO43) and PE1HXD (JO33). On 23cm in NFD her best DX was GD0EMG/P and on the 7th, at long last, she worked LA - 4WN and 6LCA (JO59), then OZ1IPU.

DEADLINES

THE ABSOLUTE deadline for **November** is **24 September** and for **December**, **29 October**. E-Mail can go either via CompuServe (ID 70630,603) or BT Gold (76:MSX021), by telex to 9312111074(CN) or fax to 081-668 5582.

HF NEWS

continued from page 16

downward slope is less than half that of the ascent. Nor do typical cycles have periods of nearly three years during which the smoothed monthly indices are within 88% of the peak values. As a result, the standard prediction methods which are based on the behaviour of past cycles may be running into difficulties. In their latest bulletin NOAA Boulder predict a smoothed monthly sunspot number of around 90 for December of this year though earlier on and before the prolonged maximum developed their prediction was for a most probable value around 60. The available predictions from SIDC Brussels over the past six months point to a smoothed monthly number around 80-130 for December with a downward slope of two to three units per month in the second half of this year.

"If these predictions prove to be correct we shall still have near-peak conditions this winter. It is at least possible, however, that they will prove to have been over-optimistic. Unless the steep decline in the first half of 1992 is followed by a major recovery, the smoothed monthly numbers could continue to fall by six or seven units per month to a value between 50 and 60 by December (though we shall not know until July 1993!)

"Attempting to turn this into practical advice for DX operators who use computer programmes or other means of forecasting HF conditions, for the coming winter it could well be that using the predicted smoothed monthly sunspot number will result in over-optimistic forecasts. In this case better results may be obtained by using the most recent observed (provisional) monthly number (or the average of the last two or three), or the average of, say, the last seven days' solar flux if available. The most recent monthly sunspot number is reported each month at the bottom of the 'Propagation Prediction' tables."

THANKS

ONCE AGAIN to all contributors and to *DX'press* (PA3DZN), *DX-NL* (DL1HBT), the *Long Island DX Bulletin* (W2IYX), the *RSGB DX News Sheet* (G4DYO), and the *Lynx DX Group Bulletin* (EA2KL).

Please send items for the **November** column to reach me by **16 September**.

Novice NEWS

MRS ESDE TYLER, G0AEC
43 Nest Est, Mytholmroyd, Hebden Bridge, W Yorks, HX7 5BH

IF YOU want to have the best Novice signal around, I recommend the book by John Heys, G3BDQ, entitled *Practical Antennas for Novices* (see Book Case page 78). This is a subject that I have always found fascinating - the performance of very expensive equipment may be disappointing if the antenna system is of poor design or construction.

During the Novice training course you will have learned something about propagation and antennas, and the book will help you put this into practice, whether you are new to the hobby or have been licensed for some time. The book does not assume you have unlimited cash, space or expertise, and treats the subject in a very readable form.

Each frequency band is given a chapter in turn with the possible expectations considered - taking into account time of day, season, solar activity and all the other things that affect amateur radio. Then antennas for that frequency are described, with clear instructions and drawings showing how to construct them effectively and safely.

I found the book compulsive reading - and usually, I only make the coffee while someone else scrambles on the roof! I suggest that you either start hinting loudly or buy yourself a present. You won't regret it.

YET MORE NOVICES

NOW, LETS meet some new entrants to the hobby, starting with Ian (age ten) who became 2E1ANK in February and 2E0ACA in April. He works on 70cm, top band and 10m - mostly SSB. His father, G3SGR runs a Novice training course at Ian's school, St Andrews, Eastbourne.

Ian tells me he has found all amateurs helpful and enjoys building equipment - with two Direct Conversion receivers, an SWR bridge and an ATU (all working) to call his own. Next project - a top band transceiver. Who needs expensive equipment when you can build your own!

Then there's Ivan, 2E0AAG, whose success in obtaining a licence inspired his granddaughter Vicky, who is now 2E1AQD. With three other Guides, she too, took the course run by Paul, G0LVV, which she really enjoyed - especially the practical side of it. She is working for the full Novice licence at present, and hopes to try for the RAE in a year or two when she is old enough. Having met Vicky, I am certain that if she puts her mind to anything, she will no doubt achieve it.

Ivan has since taken the RAE and passed the 12WPM Morse test so by the time you read this, no doubt he will be a full 'A' Class amateur. He initially became interested in the hobby through a meeting with Eric, G0DBU, and a shared interest in air traffic control and ground to air communications.

A NEW CONTEST

THE RSGB HF Contests Committee has introduced a new contest with a difference for RSGB members. It could be of interest to all - Novices, the newly licensed, the inexperienced and the nervous. If you do not fall into any of these categories, please do not skip the rest - you are still needed. The rules appear in full in July's *RadCom* (page 64), but I am asked to persuade you to read them, and to consider taking part, either as a contestant or with a sympathetic key to encourage others to discover the pleasure of CW. The Slow CW Cumulative Contest has been devised for just this purpose.

The times are devised so that, even if you regularly spend a set evening each week in an activity that cannot be put off, you can still take part. The contest runs over five weeks, starting on Monday, 7 September and each week advances by one day through to Friday, 9 October.

Power is limited to 3W RF output for Novices and 10W RF output for Class 'A' licensees.

Ian Craig, ZE 0ACA.

Vicky, 2E1AQD, one of three Guides on Paul, G0LUV's, Novice course.

There is a speed limit too. Maximum 12WPM - or slower, adjusted to the speed of the sender. If you are the sender, do not be afraid to ask the other station to slow down (QRS) - this contest is for *you*.

Even if you are experienced, please do not think this contest is not for you. Why not join in! You may help someone to 'bury the mic' and discover the pleasure which you have found. In the meantime look again at July's *RadCom*, and read the rules carefully - then decide if you can take part in one way or another.

KIDLINK '92 REPORTS

AS REPORTED last month, there were at least nine schools taking part in the Kidlink project. Here is the news coming up from some of them . . . .

Peter, G0GTE, worked very hard before the event to try to encourage local schools to visit the Day Centre so that children could see and hear amateur radio in use in a project designed for them, but results were not too encouraging. However Stevenage Novice Hams arrived, and made several contacts using packet and sending messages to GI0RPS and GS4HSG.

Peter also devised a review sheet to get an idea of how each station worked and invited comments. I have copies of four of them and the comments, made at length, demonstrate the commitment the 'Station Commanders' gave to Kidlink. Thanks to all who helped in any way to bring youngsters together for those two days.

Arthur, G1SUJ, at the Alderman Richard Hallam School, reports 327 children listening, and thirty using the opportunity to speak. He is hoping for another 'Kidlink' next year, when GB2ARH will certainly be in operation, and Slow Scan TV may be used alongside HF and VHF phone, and packet.

From Gwyn, G4WYN, at Hinckley C of E Primary School, comes the suggestion that international frequencies for HF working could be set up for wider success. Over a hundred children were involved at this station, with thirty at the microphone.

GS0HSG at the High School of Glasgow was one school to escape me, though I did try! Linda, GM7LMG, wrote a long comment stating first that the younger pupils (eleven-year-olds) were most responsive to the idea, and second that contacts were difficult to make. They had eighty listeners, with twenty-five talking and another using packet radio. She also points out that, with no 'A' Class amateur in school (though she is working on it!) outside help was needed. In the event, Hugh, GM0HSC, supplied this need. The school boasts five Novice and one 'B' class amateur so next time Linda's report may be even better.

The Royal Signals Scarborough Amateur Radio Group organised the station at Scarborough College, using the callsign GX0RCS, with Peter, G3LCG, writing the report. They found no 'Kidlink' stations, but all thirty youngsters involved listened and spoke. As Peter says, time of year is crucial. Exams for older students are the most important aspect of school life, and later in the year, the proximity of JOTA would detract from the 'Kidlink' ideal. The name was not very popular, I gather, but the principle was. GX0RCS will, hopefully, take part again next year.

Only 40m phone was used by Edale CE Primary School (GX4SPA) which had a total of fifteen participants. Peter, G0KLR, deserves a special mention as he had only been at the school for three weeks before the 'Kidlink' project and in that time he had prepared a worksheet for the youngsters. This read:

1) Prepare 'Kidlink' answers.
2) Prepare a crib-sheet for any amateur - about self, hobbies, etc.
3) Collect information about contact (QSL card info).
4) Find, via AA road atlas, WAB square.
5) Design your own QSL card.
6) Write letter to contact, with sketch of amateur behind mic.
7) Prepare envelope with stamp (possibly the first letter ever written).

8) Wait for reply - and *display*.

He also organised a Treasure Hunt within the school boundaries which he intends to extend to the village as a whole at a later date. He is applying for planning permission for a school antenna and a school club licence. The local club was very helpful, but the new proposals would make the school independent. The children were keen to continue with radio activities, so this would be an advantage. The villagers were also interested - perhaps Kidlink '92 will lead to greater things in Edale!

There could be further reports to come. If so, I will pass them on but it would appear that the idea was popular with the participants, and although a year is a long time to wait when you are young, everyone is looking forward to next year.

One final comment. Peter, who collated all this and sent it to me, has added a few other notes, including some of his contacts. The most interesting comment of all is that he managed to contact the Russian Cosmonauts aboard the spacestation MIR and persuaded them to beacon a message of goodwill as they orbited Earth to youngsters using packet radio. MIR had been up there for six years and was approaching orbit number 36,000!

TEMPORARY ANTENNAS

FOLLOWING MY plea on behalf of special event stations for antennas that can be erected at short notice, possibly in poor weather conditions, yet are successful enough to whet the appetite of all visitors to the station, I have had a very helpful letter from Bill, G3NQX.

Remember to prepare in advance! Height is the key to successful operating, the higher the better for the centre of that G5RV, or dipole for 80 metres. In an inverted 'V' configuration, the centre should be as high as possible but the ends can be much lower. Always bear in mind the safety of your visitors.

Bill also suggests that if equipment is available another station could be set up for the other HF bands, 20 and 10 metres perhaps, with the antenna lower if necessary, to give operators the chance to look elsewhere while one group of admiring visitors is being suitably impressed. If nothing is found, of course, they can always move. Contact with a friendly local on two metres is another possibility.

SUMMER CAMP SPECIAL STATION

IF YOU'RE quick this month you'll be able to look for GB4SSR, a special event station run by Stourport and District Scout Amateur Radio Group.

The station will be active between 29 August and 5 September from the group's summer camp. Although six metres and the HF bands will be in use, the Novice parts of the bands will be particularly favoured. Calls from Novices will be especially welcome. There will be other adults and Class A operators supervising of course, but the station will be organised and run entirely by Novices and *they* will be doing most of the operating. Geoff, G0PMF, wonders if Novices have been so deeply involved on other occasions?

I look forward to telling of their success when the reports (and photographs) reach me after the event. For now, I hope that you make lots of contacts and enjoy your Summer camp special event station in brilliant weather.

A HIGH ANTENNA?

ON WHAT used to be called Whit Monday, a local folly was open to the public. Wainhouse Tower is 253ft high. It was completed in 1875 and built as a mill chimney (though never used as such), with stairs running up inside it. It gives a good view of Blackpool Tower on a good day. On the appropriate day, Halifax and District Amateur Radio Club put on a Special Event station at Wainhouse Tower to entertain anyone in need of a rest after their mammoth climb. This year, the Mayor of Calderdale who is an amateur, Bill, G4KQJ, found time to visit the station as you see from the photograph. Seated with him in the 'shack' are Roy, G3NBI, and his grandson Ben.

Roy is at present running a Novice course at a local school and Ben is eagerly waiting for the results of the May Novice exam at the time of writing this feature. Another family with 'radio-active' members.

A TRUE NOVICE REPORT

TALKING OF the Stourport and District Scout Amateur Radio Group (formed earlier this year) takes us to the Gilwell Park station, GB2GP. The group's visit, back in May, gave five Novices and seven Novice trainees a busy time - most of the Novices were making their very first QSOs.

With over sixty contacts made on two metres and thirty plus on HF, (including conversations with amateurs in Norway, Italy, Germany and Sri Lanka plus other countries) you can imagine the excitement.

Those involved were: Daniel, 2E1AJW; Nathan, 2E1AJV; Stephen, 2E1AJD; Adam, 2E1ARF and Dick 2E1AMQ. The trainees are now keen to finish their courses, and the Novices are moving on to the full RAE. The Stourport Scouts are planning another special event in late August / early September so listen for their callsign. Several people visited and were impressed, so another event such as this one may inspire them even more.

My thanks to Daniel, 2E1AJW, for this report - hope to hear from you again with more news!

A NOVICE TALE

HOW DID you become involved with amateur radio? There must be almost as many answers to that question as there are amateurs. Geoff, 2E0ABF, tells his story.

Initially Geoff, considered the full RAE, and being a Maths teacher in a sixth-form college, knew that he was capable of achieving it. He read all about it and understood what he was reading, but being a teacher he realised that theory alone was not enough and that it needed to be backed up by practical experience. So he joined a Novice course last April, run by Peter, G3UJA. He passed the September exam, and the 12WPM Morse test in January (having been taught by Vernon, G0KSH) and became 2E0ABF in February.

In his spare time, he had been looking at the equipment on offer and was horrified at the price. Also he could only use limited power and limited frequencies for that price! There was only one thing to do, of course. He built his own transceiver.

He was now the proud owner of an 80m transceiver, with digital frequency display and ATU. On 19 February he switched on and it received; at midnight, he answered a CQ call and it transmitted.

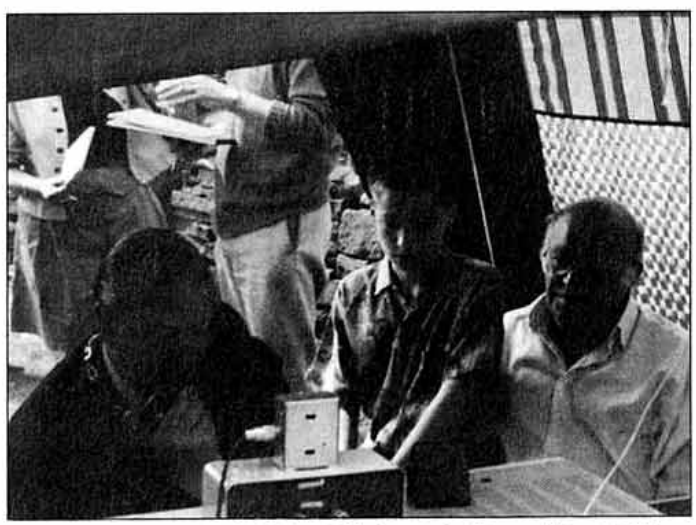
In ten months he had progressed from complete ignorance of all things practical, to licensed Novice with his own home-brew equipment - and a full working knowledge of VFOs, crystal oscillators, SWR meters and the rest. Could all full Class A or B licensees claim as much?

Congratulations, Geoff, and thank you for letting me tell the story. He expects to take the RAE this year. I am sure he will be successful. He recommends the Novice means of entry into the hobby to all those who lack background knowledge and practical skill.

As Geoff says "Would you put a high-powered sports car in the hands of a learner driver, or would you prefer them to learn under the watchful eye of an experienced driver in a smaller car?"

TIME WAITS FOR NO (WO)MAN

THE RAMBLINGS for this column leave me about six weeks before *RadCom* reaches you. In other words, I write for the month-after-next. So if you have items or events that you would like to be mentioned for Novice News, please can you get it to me early. It must be disappointing to open *RadCom* and, there it is - missing! So please send everything in good time. Thank You.



Mayor of Calderdale, Bill, G4KQJ, with Novice student Ben and Roy, G3NBI, on air at the Wainhouse Tower.

HF F-LAYER PROPAGATION PREDICTIONS FOR SEPTEMBER 1992

The time is represented vertically at two-hour intervals 00(00)GMT for each band, ie 00=0000, 02=0200, 04=0400 etc.
The probability of signals being heard is given on a 0 (indicated by a dot) to a 9 scale; the higher the number the greater the probability with 1 meaning 10 to 19 per cent of days, and so on. Additionally 50MHz F-layer and 1.8MHz openings are indicated by a plus (+) sign in the 28 and 3.5MHz columns.

Time / / GMT	28MHz 000001111122 024680246802	24MHz 000001111122 024680246802	21MHz 000001111122 024680246802	18MHz 000001111122 024680246802	14MHz 000001111122 024680246802	10MHz 000001111122 024680246802	7MHz 000001111122 024680246802	3.5MHz 000001111122 024680246802
** EUROPE								
MOSCOW	....122221..	...1344443..	...46777762.	...678888851	424766667996	876533335799	874211112588	+4.....25+
MALTA	....222222..	...15444441.	...37777773.	1..688888962	643876678997	998644445899	997421123589	++4.....2++
GIBRALTAR	.....1...1..	....232122..	....5654562.	...178777861	321687777996	986765445799	998532222589	+++2.....2++
ICELAND	....	.....11.11..	.....333341.	....2565663.	1..167777884	753665555788	887532223467	++52.....235
** ASIA								
OSAKA	....121.....	...1342.....	...36541....	...365322111	...142124453	....1...2573	.........34.	..........2.
HONGKONG	...134431...	...3555531..	...36666642.	...154457741	1...22125885	1.......2686	363	..........3.
BANGKOK	...2454542..	...4566664..	...34666873.	1..124457862	3....1125897	3.......2688	1.........366	33
SINGAPORE	...3555542..	...46666741.	...346668731	1..124457863	4....1125897	3.......2688	366	33
NEW DELHI	...355552...	...4566641..	..144666732.	1.2224457642	531..1125787	73......2689	4.........367	2.........35
TEHERAN	...4555652..	...66667741.	1.2655668742	314423457875	7551..125898	863.....2689	74........367	4.........35
COLOMBO	...4555653..	...56667751.	1.1335668842	311113457875	73....125899	72......2689	5.........367	2.........35
BAHRAIN	...5666662..	...666777521	1.3644668853	425422447886	8651..115899	962.....2689	84........367	5.........35
CYPRUS	...46666641.	...687788731	2.2888889963	524877778986	977644556899	986311224789	8731....1478	+4.........4+
ADEN	...56666751.	1..666778732	313544568975	635312347998	9751...15899	973.....2589	85.......367	52.........35
** OCEANIA								
SUVA/S	.....111....	....1222.1..	...13444241.	...35444472.	..165212572.	...42...25..	...2.....2..	....
SUVA/L	1..11.....52	21.3211..173	33165321.374	123863211662	..374111273.	..151...15..	...2.....2..	....
WELLINGTON/S	.....111....	....2332....	...24544121.	...56544353.	..174212474.	...41...252.	...2.....2..	....
WELLINGTON/L	1.........21	21.21.....43	331531....65	333752...274	.14741..1651	..151...152.	...2.....2..	....
SYDNEY/S	...23443....	...466552...	...67666522.	..1664456451	...342125772	...11...2651	.........33.	....
SYDNEY/L	....1.....11	....2.....32	21.1521...65	2213631...85	..14521.1373	...22...145.	.........22.	....
PERTH	...465532...	...5776541..	..147666631.	2.1254447631	4...21125775	2.......2686	363	..........3.
HONOLULU	.........1..	........12..	....12..352.	...1231.562.	.124421144..	..352...21..	..12........	....
** AFRICA								
SEYCHELLES	...56666431.	1..666776542	312434668875	634212447898	974...115899	961.....2589	83.......367	5.........35
MAURITIUS	...576677521	1..666778743	422544668986	744312447998	974...115899	961.....2589	83.......367	5.........35
NAIROBI	...576677631	2..666688853	522634468987	855412247999	9961...15899	984.....2589	861......367	54........34
HARARE	1..476778742	21.676789864	632744468998	865622247999	9973...15899	995.....2589	872......367	54........34
CAPETOWN	1..377678852	2..577678975	62.765468998	852742247999	99651..14799	9972....1589	884.....267	55........35
LAGOS	1..277778852	32.486678975	752764447998	984842226999	99871...3799	8984.....589	6862.....267	453.......35
ASCENSION Is	1...77557752	22..87667874	652185445997	884473113899	99874....699	89851....389	7762.....167	453.......35
DAKAR	77777851	21.187667983	552485445897	874673223899	99875....599	99852....379	7762......57	453.......24
LAS PALMAS	....5665563.	...178777861	22.388888984	552688778997	997875555799	999643222589	88741....268	++4.....3+
** S. AMERICA								
Sth SHETLAND	4777851	2...16778873	531136668887	864354347788	998641114468	89852...1135	5762......13	253.......
FALKLAND Is	6777751	11.127777873	542346665786	774665343588	99875211.258	89852.....36	7862.......3	4+3.......
R DE JANEIRO	7765651	11.118766773	441336534686	774555312488	998752...169	98852.....38	8762......16	543.......3
BUENOS AIRES	6766751	11...7766773	441226644586	774545322378	9987421...48	99852.....16	7862.......3	553.......
LIMA	654541	11765662	22.132653355	553253431137	8976521....6	89852......3	5862........	2+3.......
BOGOTA	1644541	2755552	21..14643355	542224421137	8875421....6	89852......3	6862.......1	3+3.......
** N. AMERICA								
BARBADOS	6654641	17755662	22..37633475	552255411267	9976521...38	99852.....5	8862.......3	553.......
JAMAICA	......54343.	1654552	21...3643355	431114421136	8864421....6	79852.....3	5862........	2+3.......
BERMUDA	.....253353.	4654652	21...5644575	431125422367	8864421...37	89852.....4	6862.......2	453.......
NEW YORK	......33232.	1544541	1....3554564	42...3442356	87432211..26	79852.....3	5862.......1	253.......
MEXICO	.......3232.	244431	1.....354333	32..1.342124	67433111...2	48852.....	1662........	.33.......
MONTREAL	......22232.	1444441	1....3554564	32...3443366	77422211.136	79752.....3	5762.......1	243.......
DENVER	........111.	.......2322.	1......34332	21....134233	55321.112..2	37742.....	1462........	.23.......
LOS ANGELES	........111.	.......1332.	25431	21.....35322	44321..13..1	25742.....	.362........	..3.......
VANCOUVER	....	.........11.	2221	1......14332	33231..14111	24652...1...	.252........	..2.......
FAIRBANKS	....	....	......11121.	...121122331	222442114432	12452...22..	..22........	....

The provisional mean sunspot number for July 1992 issued by the Sunspot Data Centre, Brussels was 84.5. The maximum daily sunspot number was 159 on 16 July and the minimum was 37 on 25 July. The predicted smoothed sunspot numbers for September, October and November, are respectively: (classical method) 105, 103, 102; (SIDC adjusted values) 128, 125, 122.

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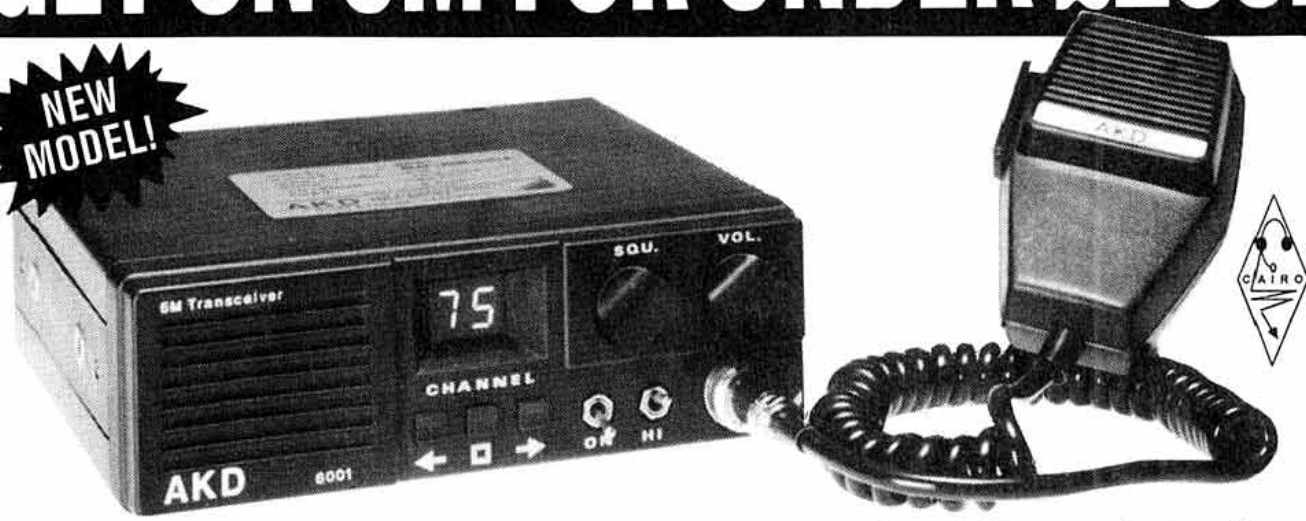

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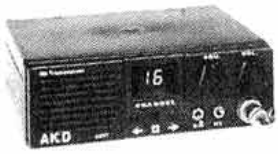

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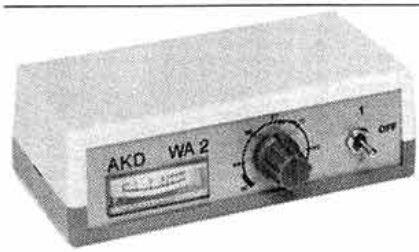

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Our wave absorption meter for the 50 & 70MHz Bands reads fundamental plus up to 210MHz on harmonics. Meets licensing requirements. Can be used as field strength meter within its range. Requires PP3 battery (not supplied).
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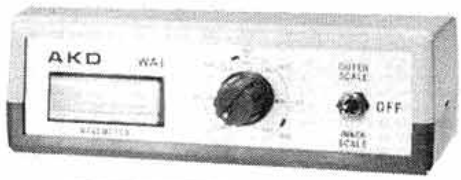

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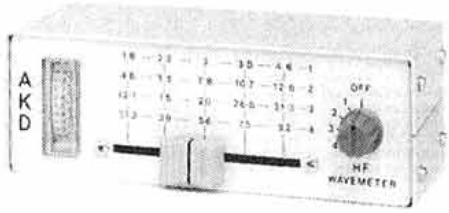

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SWL NEWS

BOB TREACHER BRS 32525
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FIRSTLY, FOR those listeners that have sent direct QSL cards for either 4S0UK or 4S7DGG, cards will not be available until mid-September. Cards sent direct with either return postage or IRCs will be returned direct, others will go via the bureau. The trip netted over 4,000 QSOs so there is a good chance that you heard them. If you did, and want a card, remember that I am handling all SWL cards. If any other DXpeditions wish to deal with SWL reports in the same way, please let me know.

An amateur friend of mine wishes to dispose of an AR88 receiver to a good SWL home. The only proviso is that the 'buyer collects', but my friend insists that no money should change hands. If anyone is interested, drop me a line including a telephone number where you can be reached and I will pass on the details.

HF NEWS

I SHALL START with some news first for a change. The holiday season has affected the mailbag and Robert Small, BRS8841, provided the only detailed report of mid June - mid July conditions. Not much DX was on offer but 7P8EG was heard on 3.5MHz SSB, and South America was well represented on 7MHz with strong signals heard at times. The band opened further north, with some Caribbean stations heard. These included FS/KB4VHW, VP2EY and ZF1GC.

Much was heard on 10MHz, with some interesting short skip in the shape of GW3KFA, HB0/HA0KB/P and OX/DK2OY.

14MHz was again best during evening hours, though some DX was heard during the day. Highlights were KK6ZO on Santa Cruz Is, VE1ST (NA14), LA0FW/P (Donna Is), SV8/IK1EDC (EU113) and XQ0YAF on Easter Island.

18MHz provided RF6FFT, A71CH, OD5/SP1MHV and P4/PA3ECI. Most of the good DX was on 21MHz with OA8AWP, V29PI, 5Z4TT, YI1MH, 4S7DGG, AP/WA2WYR, P29BT and DU9BBF.

Nothing of any note was heard on 24 or 28MHz, although the latter had produced some good Sporadic E conditions around Europe. Robert mentioned that a good deal of his listening time had been spent listening to pile-ups, only to find that they were only stations signing EH92 (from Spain) or 9A (from Croatia). It is worth pointing out that 9A does not count for a new DXCC country . . . . yet.

ACTIVITY

THE CRAY VALLEY RS has been known to sponsor an SWL contest in September. However, as last year's was poorly supported they are not running one in 1992. Instead, I will offer another one of my Challenges. As there is much untapped activity on the WARC bands, the Challenge for September is to see how many countries you can hear on 12 and 17MHz. There are *no* restrictions. Simply log what you hear. So that there is a final score and a winner, there will be a multiplier of one for each DXCC country heard on each band. So the final score will be computed by adding up the number of stations heard on each band and multiplying the result by the number of different countries heard on each band added together. The Challenge is open to British SWLs only. Entries from non-RSGB members will be accepted. If I receive enough logs, I will provide a plaque to the winner.

VHF NOTEBOOK

WITH THE VHF bands capable of providing some sparkling DX during the summer months, I continue to be amazed that there seem to be relatively few SWLs now who turn their attention to these bands. It would be good to know why there are not more. Perhaps they believe that reception at VHF requires a beam - it certainly helps for 144 and 432MHz. Maybe another reason is that a good many listeners still require many DX countries on HF, and would rather stay there.

Whatever the reason, I will whet your appetites again. On 144MHz, a Sporadic E opening provided good DX from YU, OE, HA, I and DL from 1815 through to 2015 for those who wanted to, or were prepared to, stay on that band. I say prepared because 50MHz was also humming with Sporadic E to LA, I, GI, SM, UA2, OE and OK, before some double-hop E gave a good opening to Stateside and Canada from 1850 through to 2200. It really was an incredible night with lots of DX available.

At other times, with the band available to most of Europe now, it can be as lively as 14MHz. Some of the better DX which was on offer during the period included double-hop E openings to 5B4, 4X, ZC4, OD5, 9K2, CN8 and TA, plus the ZA expedition and the first activity from SP and some of the Russian Republics.

The UK Six Metre Group is now a major force and, as mentioned last month, they publish an excellent quarterly Newsletter, *Six News*, which is only available to members. It is packed with interesting items for the DXer, including award news and technical discussion oozing from between its covers. Membership is now £7 per year, and this is extremely good value - take my word for it. Get in touch with the Secretary, G3WOS, QTHR, for more details.

Also please note a small correction to last month's column - the Group's Countries, Squares and Counties contest scheduled for November will not now take place. It is true that cycle 22 is now declining, but all 50MHz enthusiasts hope that the band will provide something in the way of DX this autumn - last year there was DX from W and VE, but DU, VS6, XX9 and VK were also heard.

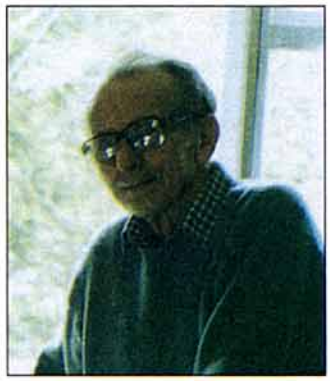
Solar flux levels are low - even as low as 100 - but peaks can occur and with them a hint of DX. If you are put off going on the band because you need a beam, take heart from the fact that my 96 countries have all been heard on dipoles! Entry to the Group lets you find out all there is to know about 50MHz. Join now and you will be in time to get the Autumn *Six News*.

LOOKING FORWARD

WE ARE approaching the winter DX season on HF, and next month I shall start looking at some of the propagation conditions to be expected on the LF bands. DXing on 80 metres used to be a favourite pastime here, so hopefully I might be able to pass on some useful tips. Also, as we head towards October, there will be the usual Challenge to coincide with the major autumnal contest, *CQ* Worldwide. The copy deadline for the **October** column is **9 September**.

LATE NEWS

THE RSGB HF Contests Committee has devised a new contest which should appeal to those SWLs who prefer Morse, but only at a slow speed and who cannot spend much time by the rig. A series of 'slow CW' cumulatives have been included in this autumn's contest calendar as a means of providing training and encouragement for less experienced CW operators. There are five sessions, each lasting only 1 hour - from 1900-2000 - on 7, 15 and 23 September and 1 and 9 October. Full rules are in July's *Contest News*.



The shack of Robert Small, BRS8841 and his father G3ALI (above). This photo, taken by Robert shows Maurice, VO1FG, during a recent visit.

RADCOM NEWS FEATURE

A report by John Forward, G3HTA, on the recommendations made at the RSGB's first ever Strategy Conference, held at Warwick University on 10/11 July, 1992.

Business Strategy Conference

PAGE 5 THIS MONTH details the organisational side of the strategy conference. Presented on these pages are the highlights of the committee (syndicate) recommendations and how the Society intends to discuss and implement them. It is important to stress that these ideas are just recommendations to Council; they are not (yet) RSGB policy.

The Syndicates

Council and Committee Structure

This syndicate had received about seventy pages of widely varying ideas submitted by members while the survey had shown that 79% of members felt that the Society was doing a good job. It was decided that the prime area for attention was sound overall management and close financial control. Recent events had caused Council to take a more direct involvement in the running of the Society. With proper management control, Council should be able to divorce itself from detail and confine itself to monitoring, with priority given to high level issues of policy.

No change was proposed to the method of electing Council Members although it was recommended that the roles of President of the Society and Chairman of Council should be separated as the task for one person had become too great.

Society rules should be of an enabling rather than a disabling nature. An example was the constraint upon the appointment of committee chairmen which required terms of office to be limited, with enforced two year breaks. Society rules would require revision to permit many of the changes recommended by conference. Opportunity should also be taken to revise the Memorandum of Association to redefine the rather broad and dated description of the purpose of the Society which is currently: "to promote the general advancement of radio communication". Circumstances could arise where a more precise description might be of benefit, such as: "advancement of the Amateur Service and Amateur Satellite Service".

The role of the Finance and Staff Committee had changed and there was a need to re-define its duties. It was thought that a more apt name might be the Commercial Management Group and in the best interests of the Society it should consist of both members and non-members of Council in order to provide the commercial experience and necessary expertise.

There was no need for radical change to the system of committees but there was need to make their work more visible and to provide better links for policy and setting of objectives.

Headquarters Administration

An important area discussed was the handling of enquiries made to Headquarters. Because the amateur radio interest is so diverse and complex, it is difficult for staff to cope with the number and range of enquiries. The main difficulty is knowing who, either within Headquarters or in the volunteer field, can or should handle a particular enquiry. A comprehensive, fast and accurate information database is required so that staff can respond quickly and effectively to all types of enquiry.

The processing of orders required a completely new approach along with streamlining services to members including some aspects of the QSL Bureau. The shop, museum, shack and library were very much under-used. Access and publicity for these facilities should be improved.

Book production is one of the Society's principal sources of income and needed to be re-vitalised as a service to amateur radio and to ensure a flow of revenue-earning titles.

Better and more effective utilisation of Headquarters accommodation and a common point of contact for all volunteer officers of the Society were also recommended.

Membership Profile

The declining number of members was a matter of concern and the need to improve the image of the Society, along with an attractive subscription basis, was considered to be essential. It was felt that more could be done by giving affiliated clubs and societies a higher profile along with benefits. Discount schemes arranged with suppliers and block subscription discounted payments via affiliated clubs should be explored. This arrangement could be of advantage in terms of members to both clubs and to the RSGB.

The help and advice available to members from both the Planning and EMC Committees should receive greater publicity.

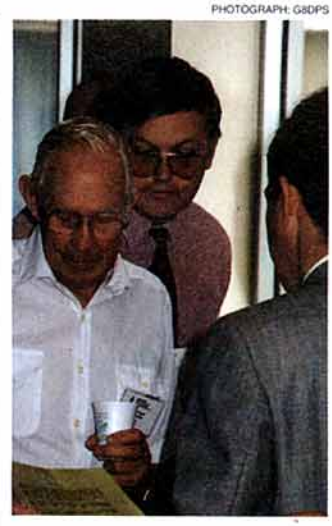
Members in good standing and with a prescribed number of years membership should be invited to apply for Fellowship of the Society.

Information Technology

Matters were considered which applied to both IT at Headquarters and IT applications by members. It was recommended that there should be an annual review of HQ IT facilities. This would ensure value for money, proper budget provision and avoid the situation where IT facilities developed into a problem. The review should be carried out by Headquarters staff along with two other nominated and suitably qualified people.

The use of dial-up electronic mail was recommended on an experimental basis to allow mail to be sent to Headquarters. Committees would be encouraged to use this for inter- and intra-committee business.

PHOTOGRAPH: G8DPS



Council Members confer between sessions: (l to r) John Case, GW4HWR; Peter Shepperd, G4EJP; and Peter Tucker, GU4DWZ.

There was a need for the Society to develop its publications in the area of computers, including review articles in *Radio Communication*. This would help to raise the profile of the Society and bring it into closer contact with non-members. Policy should encourage experimentation in data communication which is an expanding area of the amateur radio interest.

Marketing and Public Relations

A number of syndicates recommended the need for a professional approach to marketing and public relations to improve the image of the Society. This syndicate, dedicated to the subject, provided a most powerful and

Delegates listen to the syndicate reports at the final plenary session.

compelling case to remove the ad-hoc approach and employ the full time services of an experienced professional. Contained in their sixteen pages of reasoning were convincing arguments for wide ranging and impressive benefits to amateur radio and to the financial security of the Society. Their submission included a draft job description for such a person.

PHOTOGRAPH: G0LRS

HQ staff who formed the conference secretariat: (l to r) Justine Coles, Shani Martin, Sylvia Manco and Erica Fry.

Publications, Franchising and *RadCom*

Here again, there was concern about the arrangements for sales and marketing of the Society's publications. The Publications Control Board operates within a limited area of book production and needs to embrace a wider area, from identifying new titles/authors through to pricing, discounts, stock levels and disposal.

The *GB2RS* News Service was perceived as being popular with members and is possibly one source of attracting new members. It could perhaps be made more attractive if permission were obtained for the newsreader to compile the local news; only the main news would be received from HQ.

The survey showed that *RadCom* was considered to be the flagship product of the Society. Clearly, any further improvement would attract new members but at high cost. Additional pages were recommended but for technical reasons the minimum additional number was sixteen; to do this on a regular basis would require an increase in staff. It was important that the content of *RadCom* should take account of all amateur radio interests. The Editorial Board should be reformed to advise and assist the Editor.

Radio Policy and Interests – HF

The value of the work and service available to members from the Electromagnetic Compatibility Committee had developed into a principal function of the Society and additional resources should be made available to assist the committee with their growing task. There was a need for international liaison and for RA help in obtaining improvements in certain MPT specifications.

The time had come for the Society to examine the possibility for a code-free licence for operation on frequencies below 30MHz. This demanded consultation with the RA because it impinged on current ITU regulations.

The Society should investigate the possibility and viability of a volunteer examination system for all licensing with a view to an incentive licensing scheme and the encouragement of self training. The greetings messages facility should be extended to all licensed amateurs in the UK.

The syndicate was not in favour of mandatory band planning although there should be greater publicity given to IARU band plans and the subject should be included in the RAE syllabus. There was concern about data communications on HF and the need for a comprehensive review taking into account band planning, mailboxes, nodes and linking.

Amateurs should assist in self-regulation of their bands. Additional funding was essential to help the work of AROS as well as greater support from RA/RIS.

PHOTOGRAPH: G0LRS

The Radio Policy/Interests - HF Syndicate discuss weighty matters.

Financial Plan

Any detailed financial long term strategy must depend largely upon the objectives set by Council, based on the recommendations made at this conference. However, a financial key objective should be to plan for a strong financial position and a target annual surplus of £100,000 on a turnover of £1.7M (6% margin).

There was scope for an improved budget process where all departments, committees and honorary officers should submit analysed requirements in March of each year with strict budget controls to be enforced.

Improved Headquarters procedures were expected to result in savings and these must receive high priority. All current resources should be reviewed including Lambda House. Sale-and-lease-back or relocation should not be ruled out if it would prove to be of substantial long term financial benefit.

Training

The aim was to review and define a structure to fulfil the training needs of both Headquarters and volunteer members. Little training of HQ staff had taken place and there was a clear requirement for induction training, training in specialisms and for further job development. This would result in improved efficiency in use of staff resources coupled with an improved image for the Society, seen by the amateur radio fraternity, by business and by the general public. A member of HQ staff should be assigned to supervision of staff training and development.

RLOs, Council members, and other volunteers could benefit from training in their role. Consideration should be given to the use of open learning packages, computer assisted learning and testing, video tapes and books.

Radio Policy and Interests – VHF/Microwaves

Of chief concern was the reducing levels of activity on many of the VHF/UHF bands. A number of reasons were considered including fear of EMC problems, other interests like computing, elitism (talking over the heads of newcomers) and more specialisms spreading activity thinner. Strategy should be designed to overcome this in order to defend our bands against erosion by pressure from other services.

There should be constant effort to improve our rights within the amateur licence. Examples were the power levels at 50 and 70MHz and restriction in unattended operation on 432MHz. Band planning considerations should anticipate future development and so establish policies in advance. The Society should adopt a more positive policy toward encouraging home construction by better availability of kits, PCBs, components etc.

The titles used to describe the amateur licence categories should be considered carefully in order to avoid the stigma of being a 'second class licensee'.

Where now?

THE EXERCISE took a great deal of planning and time and it is essential that the enthusiasm and momentum should not now be lost. The papers prepared by the ten syndicates are being carefully assessed to produce a strategy document which will be considered at a special meeting of Council in October. A plan will then be produced which will start to be implemented from then on.

Some of the easily achieved matters will be introduced right away while others will require careful consideration and possibly working groups. Some recommended strategy is dependent upon considerable financial resources and will have to be budgeted for, hence the three to five year strategy period. Obviously, matters of efficient working must come first, together with improved services to members. These relatively straightforward matters of efficiency should release finance to enable more expensive strategy to be implemented.

The limited resources of finance, staff and volunteers coupled with the logistics of introducing change will largely determine how much can be achieved and in what time frame. Clearly, all strategy can not be embarked upon immediately so it is a matter for Council, in consultation with the General Manager and committees, to determine the initial programme. It would of course help greatly if the Society had many more than 50% of the UK amateurs as members of the Society, so it is also up to you to encourage non-members to join. In that way much more can be achieved in a shorter period.

A special thanks must go to Headquarters staff for their hard work in connection with the conference and in particular to the four secretaries from HQ who staffed the conference office, provided an excellent secretariat and made sure that the conference went without a hitch.

The Peter Hart Review

FT-890

Yaesu HF Transceiver

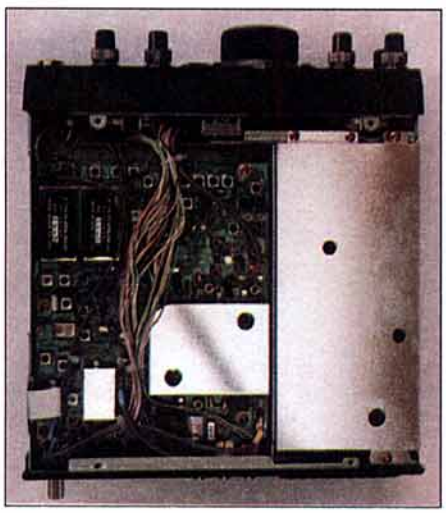
THERE CERTAINLY SEEMS to be no shortage of new HF transceiver models around at the moment. The latest offering from Yaesu is the FT-890. This is a budget priced radio but with plenty of features. It is 12V operated and very small in size, which makes it ideal for mobile and portable as well as home operation.

PRINCIPAL FEATURES

THE FT-890 PROVIDES the usual combination of general coverage receiver with 100W transmitter. The receiver tunes 100kHz to 30MHz and transmit operation is limited to sectors around the amateur allocations. LSB, USB, CW, AM and FM modes of operation are provided. Data modes are covered using SSB or FM with audio tones (AFSK).

UP/DOWN keys select between amateur bands in HAM mode or in 100kHz/1MHz steps in GEN mode with band stores returning the last used frequency, mode and filter setting on each band. Tuning is in 10Hz steps on SSB and CW at 5kHz or 10kHz per revolution of the tuning knob, and in 100Hz steps on AM and FM at 50kHz or 100kHz per revolution of the tuning knob. A FAST key increases all the step sizes and tuning rates by a factor of 10. The usual twin A/B VFOs are provided with split operation and a clarifier (IRT) tuning +/-10kHz in 10Hz steps on all modes including FM and AM.

Thirty general purpose memories are provided plus two which store scanning or tuning frequency limits. Each memory position allows independent storing of two frequencies corresponding to separate A and B VFOs, modes, wide/narrow IF filters where fitted, clarifier settings and split frequency status. It is possible to tune directly from any memory position, change mode, clarifier etc and then either cancel or store the new settings. Full VFO/memory transfer operations are provided and the memory contents may be previewed whilst remaining tuned to normal VFO mode to allow for selection and checking of contents.



Scanning is provided between two preset frequency limits or across the memories and memory positions may be tagged to be skipped in the scanning process. Scanning pauses on any signal strong enough to open the squelch and resumes either when the signal disappears or after five seconds (user selectable). Several features are provided for operation with HF FM repeaters. The repeater offset, normally 100kHz, is programmable between 0 and +/-200kHz and a CTCSS access tone generator is built-in covering 88.5Hz and 32 other tones between 67Hz and 250.3Hz.

The standard FT-890 comes with a ceramic SSB IF filter which is also used on CW. A higher grade crystal SSB filter may be optionally fitted and also a narrow CW filter with 250 or 500Hz bandwidth. The FT-890 also includes a notch filter and IF shift. Other receiver features include a switchable RF preamplifier and 12dB input attenuator, adjustable noise blanker, two speed AGC and all mode squelch.

The transmitter includes an RF based speech processor with adjustable passband shift from -300 to +500Hz (+/-3kHz on AM). This functions in much the same way as the receiver IF shift and enables the transmitted audio signal to be tailored to suit requirements. LSB, USB and AM offsets may be set independently. For CW operation, semi break-in and full QSK are provided together with a built-in electronic keyer. The keyer covers the speed range from less than 12WPM up to 40WPM and has two weighting settings to give either 3:1 or 4.5:1 dash/dot ratio. Other transmit features include variable power output down to a few watts, VOX, thermostatic fan and metering of ALC, power output or antenna VSWR.

The FT-890 has an orange vacuum fluorescent display which gives excellent brightness and legibility. The frequency is indicated to 10Hz or 100Hz resolution with the 10Hz digit being smaller and slightly divorced from the other digits. The display also indicates memory number, clarifier offset and has a variety of status indicators. A HI VSWR indicator shows when the antenna match is poor.

Two auto ATUs are available as optional extras. The ATU-2 is mounted internally and the FC-800 is mounted remotely at the antenna feed. Both ATUs are controlled from the front panel and have 31 memories which automatically store the most recent antenna matching settings for rapid retuning when changing frequency.

The rear panel carries the usual interface connections for power, audio and data I/O, linear control, PTT and key. Four dedicated multipin connectors interface to the DVS-2 digital voice system, FC-800 ATU, band data for auto ATU and QSK linears, and computer interface. The CAT computer interface operates at TTL levels at 4800 baud. There are 26 commands controlling a host of functions including digitised meter output. The VOX controls and CW delay are also located on the rear panel.

To suit individual preferences, a variety of functions may be customised at power-up or

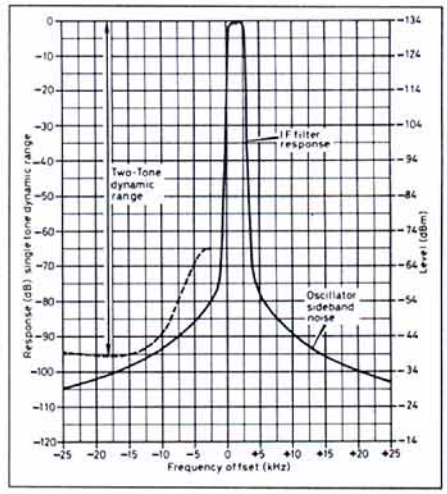


Fig 1: FT-890 effective selectivity curve (SSB).

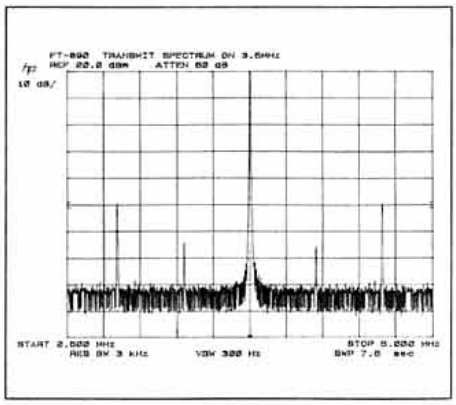


Fig 2: Transmit spectrum on 3.5MHz horizontal span 2.5 to 5MHz, vertical scale 10dB/div.

set as multiple key presses in conjunction with the FAST key. These include tuning rate, display items, TX offsets, CTCSS freq etc.

The radio is provided with a 42 page operating manual. In common with other recent Yaesu manuals, it is very comprehensive and well written as an operating and installation guide. Although a set of circuit diagrams are included, no other service or circuit details are provided.

DESCRIPTION

THE FT-890 IS A COMPACT radio measuring 238mm(W) by 93mm(H) by 243mm(D) and weighs 5.6kg. This is virtually identical in size to the FT757 and FT747 radios and is probably the smallest radio with a built-in ATU. The unit is modular in construction. The upper part of the case comprises a fan blown diecast heatsink containing the PA and output filters. The lower part of the case contains two main PCBs for the RF and local oscillator, and the auto ATU. Metal construction is used with a plastic overlay moulding for the front panel. The top of the case contains the 6.5cm diameter upward facing speaker and the keyer controls.

The receiver adopts a quadruple conversion architecture with three different IFs on SSB, CW and AM. The first IF is 70.455MHz and the second is 455kHz where all the channel selectivity is located. The notch filter is implemented as a fixed frequency crystal notch at 8.215MHz. It is possible to achieve a much better performance from a fixed frequency notch than from a variable frequency notch using crystal resonators. Tuning of the notch is implemented in the same way as passband tuning. The 455kHz IF is mixed up to 8.215MHz, passed through the notch, and then mixed back down to 455kHz using the same oscillator for both conversion processes. By varying the frequency of the oscillator, the effective notch frequency is altered. For operation on FM, the first two IFs only are used. The receiver uses a parallel pair of FETs for the RF amplifier and four FETs in an active double balanced configuration for the first mixer.

On transmit, SSB is generated at 455kHz and mixed through 70.455MHz to final frequency. The first local oscillator drive is provided by a single loop synthesiser in conjunction with a DDS (direct digital synthesiser) and magnetic rotary shaft encoder. One of four VCOs is used to give the required tuning range. A second DDS generates the 455kHz carrier oscillator and a total of five microprocessors are used for various control tasks within the radio. A lithium backup battery retains data in the 16 bit main processor and ATU processor when the power is off.

MEASUREMENTS

ALL THE MEASUREMENTS were made with the transceiver powered from a 13.55V PSU and the auto ATU switched out. Note that the receiver was fitted with the higher performance SSB filter and 500Hz narrow CW filter. The measured performance of the radio is summarised in the table with additional comments as follows.

RECEIVER MEASUREMENTS

S-METER CALIBRATION

The range and linearity were good and the calibration was similar on all modes. On FM, the S meter was 4dB more sensitive across the whole range.

SPURIOUS REJECTION

The rejection of the first mixer image was in excess of 84dB and rejection of all IFs in excess of 90dB. There was a slight response 100kHz above and below the on-tune frequency and a few weak internal spurii. However, the main problem is a spurious response 910kHz above the on-tune frequency at a level only 45-50dB down on the wanted signal. At this level, phantom signals will be heard. This spurious is due to the image response of the second mixer and is most likely due to insufficient skirts or leakage around the 70.455MHz IF filter.

AGC

Slight overshoot was observed in the attack characteristic.

STRONG SIGNAL PERFORMANCE

Considering that the FT-890 is a budget priced radio, some good figures were measured for the third order intercept, close-in dynamic range and reciprocal mixing performance. Indeed these figures are on a par with radios costing twice as much.

The inband intermodulation performance improved markedly with the RF gain control reduced.

Fig 1 shows the effective selectivity curve on USB (higher performance filter fitted).

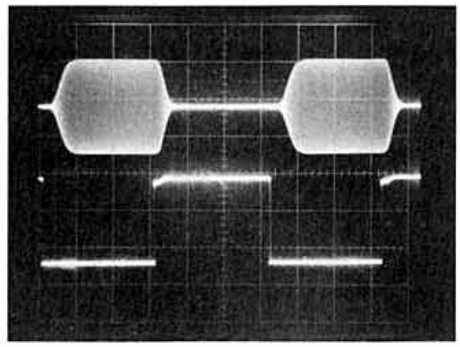


Fig 3: CW keying waveform; 40WPM semi break-in.

FREQUENCY CALIBRATION

When measured at room temperature the receive and transmit frequencies were accurate to within 60Hz. The CW frequency reads correctly for a 700Hz beat note.

TRANSMITTER MEASUREMENTS

POWER OUTPUT

The figures given in the table were measured at maximum output but the power was variable smoothly down to about 2W. With the ATU in circuit, power levels were about 15% less. With a mismatched load, 70-100W was produced into a 2:1 VSWR and 30-35W into a 3:1 VSWR. Into these mismatches, the ATU restored the power to about 80-95W output. The power output reading on the front panel meter was remarkably accurate, within 5%, across the whole frequency and power range.

SPURIOUS OUTPUTS

The second mixer image problem on receive also manifests itself on transmit. Spurious outputs were observed on all bands except 28MHz at +/-455kHz and +/-910kHz. The 910kHz spurii were the more significant, at levels between 50dB and 60dB down on the main signal **Fig 2** shows the transmit output spectrum on 3.5MHz.

SSB PERFORMANCE

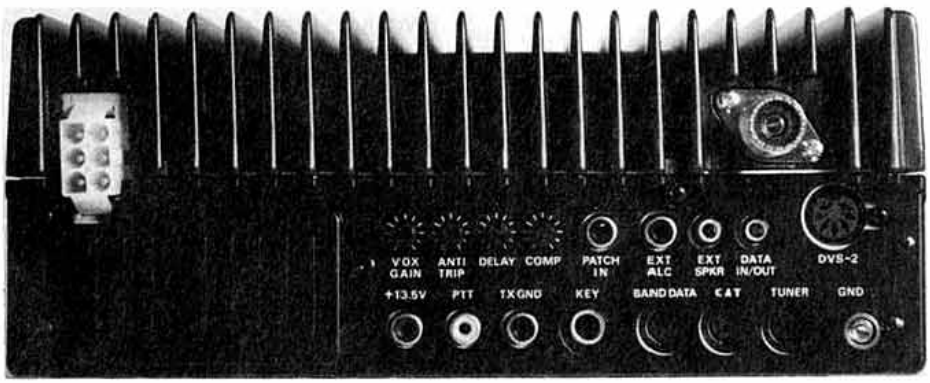
The distortion figures could be improved very markedly by keeping the power down to 100W output or less.

CW KEYING PERFORMANCE

Fig 3 Shows the keying waveform on semi break-in at 40WPM. The spectrum is narrow, the characters are well shaped but there is noticeable shortening on full break-in at this speed.

ON-THE-AIR PERFORMANCE

THE FT-890 GENERALLY PERFORMED well. I used the radio 'barefoot' and also in conjunction with a TL922 linear. The linear switching contacts via TX GND are rated to switch high voltage relays as are used in the



YAESU FT-890 MEASURED PERFORMANCE

RECEIVER MEASUREMENTS

FREQUENCY	SENSITIVITY SSB 10dB s+n:n NOR	SENSITIVITY SSB 10dB s+n:n IPO	INPUT FOR S9 NOR	INPUT FOR S9 IPO
1.8 MHz	0.21µV (-121dBm)	0.45µV (-114dBm)	105µV	400µV
3.5 MHz	0.15µV (-124dBm)	0.40µV (-115dBm)	95µV	350µV
7 MHz	0.15µV (-124dBm)	0.40µV (-115dBm)	90µV	350µV
10 MHz	0.16µV (-123dBm)	0.40µV (-115dBm)	90µV	350µV
14 MHz	0.14µV (-124dBm)	0.40µV (-115dBm)	80µV	350µV
18 MHz	0.15µV (-124dBm)	0.40µV (-115dBm)	85µV	350µV
21 MHz	0.15µV (-124dBm)	0.40µV (-115dBm)	90µV	350µV
24 MHz	0.15µV (-124dBm)	0.40µV (-115dBm)	95µV	370µV
28 MHz	0.17µV (-123dBm)	0.42µV (-115dBm)	110µV	370µV

S-READING (14MHz)	INPUT LEVEL NOR
S1	2.2µV
S3	4.2µV
S5	8µV
S7	19µV
S9	80µV
S9+20	700µV
S9+40	5.6mV
S9+60	63mV

AM sensitivity (28MHz): 0.65µV for 10dB s+n:n at 30% mod depth

FM sensitivity (28MHz): 0.13µV for 12dB SINAD 3kHz pk deviation

AGC threshold: 1.8µV

100dB above AGC threshold for +1.5dB audio output

AGC attack time: 2-3ms

AGC decay time: 0.3-0.9s (fast), 2-3.5s (slow)

Max audio before clipping: 8Ω-1.5W, 4Ω-2.1W at 2% distortion

Inband intermodulation products: -26 to -40dB (see text)

FILTER	BANDWIDTH -6dB	BANDWIDTH -60dB
SSB, CW(W)	2600Hz	4420Hz
CW(N)	535Hz	1940Hz
AM(W)	6900Hz	14070Hz
FM	6860Hz	16130Hz

FREQUENCY	INTERMODULATION (50kHz Tone Spacing) NOR 3rd ORDER INTERCEPT	NOR 2 TONE DYNAMIC RANGE	IPO 3rd ORDER INTERCEPT	IPO 2 TONE DYNAMIC RANGE
1.8 MHz	-1dBm	87dB	+17dBm	94dB
3.5 MHz	+4dBm	92dB	+17dBm	95dB
7 MHz	+6dBm	93dB	+18.5dBm	96dB
14 MHz	+6.5dBm	94dB	+19dBm	96dB
21 MHz	+6dBm	93dB	+18dBm	96dB
28 MHz	+2dBm	90dB	+10dBm	90dB

TONE SPACING (7MHz BAND)	3rd ORDER INTERCEPT	2 TONE DYNAMIC RANGE
3 kHz	-36dBm	65dB
5 kHz	-30dBm	69dB
10 kHz	-1dBm	89dB
15 kHz	+8dBm	95dB
20 kHz	+8dBm	95dB
30 kHz	+7dBm	94dB

FREQUENCY OFFSET	RECIPROCAL MIXING FOR 3dB NOISE	BLOCKING NOR	TX NOISE IN 2.5kHz BANDWIDTH
3 kHz	76dB	-24dBm	-72dBC
5 kHz	82dB	-24dBm	-77dBC
10 kHz	91dB	-14dBm	-84dBC
15 kHz	97dB	-4dBm	-91dBC
20 kHz	101dB	-4dBm	-95dBC
30 kHz	107dB	-4dBm	-101dBC
50 kHz	113dB	-4dBm	-104dBC
100 kHz	119dB	-4dBm	-106dBC
200 kHz	122dB	-4dBm	-106dBC

TRANSMITTER MEASUREMENTS

FREQUENCY	CW POWER OUTPUT	SSB(PEP) POWER OUTPUT	HARMONICS	INTERMODULATION PRODUCTS 3rd order	INTERMODULATION PRODUCTS 5th order
1.8 MHz	118W	128W	-65dB	-30dB	-40dB
3.5 MHz	115W	122W	-66dB	-30dB	-40dB
7 MHz	115W	120W	-70dB	-26dB	-38dB
10 MHz	114W	120W	-56dB	-22dB	-34dB
14 MHz	111W	120W	-64dB	-22dB	-40dB
18 MHz	116W	120W	-54dB	-22dB	-34dB
21 MHz	118W	120W	-70dB	-20dB	-32dB
24 MHz	117W	122W	-66dB	-30dB	-30dB
28 MHz	111W	120W	-70dB	-24dB	-30dB

Carrier suppression: 55dB. Sideband suppression: 55dB. Transmitter noise: see table above. Transmitter AF response at -6dB: 320-3050Hz. Transmitter AF distortion: 1%. Microphone input sensitivity: 1mV for full output. T/R switching speed (SSB): mute-TX 18ms, TX-mute 3ms, mute-RX 20ms, RX-mute 1ms.

NOTE: In the above table, the receiver NOR setting corresponds to RF amplifier switched in and IPO to RF amplifier switched out. All signal input voltages given as PD across antenna terminal. Unless stated otherwise, all measurements made on SSB with the receiver preamplifier in circuit. All two-tone transmitter intermodulation products quoted with respect to either originating tone.

TL922. As supplied from the factory, these linear switching contacts are disabled but can be simply enabled via a switch accessible through the bottom cover. The ergonomics of the radio are very good, the controls well positioned and all main features are easy to operate. The rotary frequency control is 'silky smooth' with no trace of synthesiser clicks and no roughness when rotated at speed. This is a consequence of adopting direct digital synthesisers.

The receiver performed well under both weak signal and strong signal conditions. On the LF bands it was often advantageous to switch out the preamp but I never found it necessary to switch in the attenuator. The receiver sounded slightly noisier than my Ten-Tec Corsair particularly on 40m, almost certainly due to the receiver spurious problem identified during the measurements. I was never particularly conscious of 'phantom' signals but responses could certainly be found 910kHz away from strong broadcast stations. The notch filter was quite effective considering the high frequency at which it operates, but it was a bit wide.

On SSB transmit with the MH-1B8 hand microphone, good quality reports were received, particularly with tone position 2 on the microphone. Tone position 1 gave rather too much bass. The speech processor gave a little more punch and was nice sounding. The shift facility did not generally improve matters with the MH-1B8 but may be useful with other microphones.

On CW, the transmission sounded good and was narrow with no clicks, and full break-in QSK was very effective. Selecting MOX on full break-in engaged key down which I found convenient for tuning the linear. The blower in the FT-890 is fairly noisy but only comes on for short periods when the heatsink is warm.

CONCLUSIONS

THE FT-890 PROVIDES AN economical and effective transceiver for home, mobile and portable use. Apart from the spurious problem, it has good all-round performance and is easy to use with plenty of useful features.

The current list price is £1075 without internal ATU or £1250 with ATU. The higher performance SSB filter (YF101) and 500Hz CW filter (YF100) each cost £59 and the 250Hz CW filter £76. For mains operation, a 12V PSU is needed, capable of delivering 20A. The matching FP-800 PSU and external speaker costs £249 although other suitable PSUs are available at lower cost. All quoted prices include VAT.

ACKNOWLEDGEMENTS

I WOULD LIKE TO THANK South Midlands Communications Ltd of Eastleigh, Hants for the loan of the equipment.

POSTSCRIPT

A RECENT YAESU SERVICE bulletin describes a modification to improve the second mixer image performance. This involves extra decoupling capacitors, earthing and careful alignment to achieve an improvement of approximately 30dB.

Peter Hart, G3SJX

MARTIN LYNCH . . .

SPONSORING THE HF AND 10TA CONVENTION – 26-27 SEPTEMBER '92

Why the FT-890 sets new performance standards...

– The 16-bit main microprocessor is assisted by four co-processors to provide the simplest possible control interface.

– For clear weak signal resolution, the low noise front end uses the latest FET RF amp, feeding an active double balanced quad FET ring mixer.

– Interference rejection is facilitated by the unique 'up-down-up' conversion scheme, which provides both IF shift and IF notch filter. (An optional YF101 crystal filter can be installed to provide enhanced SSB and AM narrow skirt selectivity.)

– Digitally synthesised local signals ensure clean, low-noise TX output, up to 100w on all HF bands in CW, SSB and FM modes, and up to 25w for AM.

– Two direct digital synthesisers and a magnetic rotary encoder provide silent, silky smooth tuning, pure local signals, and a very fast T/R switching. Frequency accuracy and stability are assured by driving both DDS's from a single master oscillator.

- **Gen. cov RX 100kHz –30mHz/ 10kHz steps**
- **100w SSB, CW, FM and 25w AM**
- **Uses Advanced quad FET ring mixer**
- **2 DDS's and magnetic rotary encoder**
- **Unique IF Shift/Notch circuits**
- **Advanced duct flow cooling**
- **16 bit integral CPU with 32 memories**
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- **External PC control available . . .**

Plus a whole host of options – FP 800 POWER SUPPLY – 2 AUTO ATU'S – YF 101 CRYSTAL FILTER – DVS2 DIGITAL VOICE STORAGE UNIT – EXT. SPEAKERS FOR BASE & MOBILE – TCX03 TEMP. CONTROLLED XTAL OSC. . . . CALL FOR THE LIST!

Yaesu's latest 'MULTI-FEATURE' high performance HF transceiver – from your 'MULTI-FRANCHISE' dealer! IN STOCK NOW AT MARTIN LYNCH!!

FT-890

YAESU'S HAT TRICK!

Read the reviews, see the comments, and see for yourself, Yaesu look set for a hat trick with the latest FT 890.

First, the FT-1000, then the 990, – using advanced high performance digital frequency synthesis techniques – they really stamped their mark as high performance HF 'super-rigs' . . . . And just look what they're saying about the FT 890!

"The FT 890 provides an economical and effective transceiver for home, mobile and portable use." PETER HART

"Considering that the FT 890 is a budget priced radio, some good figures were measured for the third order intercept, close-in dynamic range and reciprocal mixing performance. Indeed these figures are on a par with radios costing twice as much!" PETER HART

"The ergonomics of the radio are very good, the controls well positioned and all main features are easy to operate. The rotary frequency control is 'silky-smooth' with no trace of synthesiser clicks and no roughness when rotated at speed. This is a consequence of adopting direct digital synthesisers . . . the receiver performed well under both weak signal and strong signal conditions" PETER HART

"On SSB transmit, with the hand microphone, good quality reports were received, particularly with tone position 2 . . . the speech processor gave a little more punch and was nice sounding." PETER HART

"It has an extremely versatile performance with features to satisfy most people . . ." CHRIS LOREK

"I was most impressed considering the overall size of the set . . ." CHRIS LOREK

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RADCOM TECHNICAL FEATURE

The final part of our popular series in which the UK's top HF DXers reveal the secret of their success

HF DX
The Inside Story

Part 4 - Operating and Propagation
by Martin Atherton, G3ZAY

PREVIOUS ARTICLES have looked at the equipment and information requirements. To wrap up the series G3ZAY reviews the propagation characteristics of the main HF bands and discusses some of the operating issues raised in our survey of leading DXers.

KNOW YOUR BANDS

TO BE AN EXPERT DXer you need to develop a good understanding of propagation, in order to know which bands are likely to be open for DX, and what signals to be waiting for at various times. The HF amateur bands from 1.8 to 30MHz cover a very wide range of frequencies, so each band has its own particular characteristics. We'll begin by surveying the 'traditional' HF bands of 160, 80, 40, 20, 15 and 10m, and then return to the newer 'WARC' bands that are interleaved between them.

160 METRES

A tough and challenging band, and really one for the night-owls as it only supports DX from late evening through to sunrise. Conditions tend to be best at sunspot minimum but can vary enormously from day to day. Openings can be as short as a few minutes along the 'grey line' when the sun is just rising or setting along as much of the path as possible.

The typical propagation pattern is of signals arriving from the east during our evening time, peaking at their local sunrise and then fading rapidly. Africa may be heard throughout the night. US signals appear at around their sunset before fading out and reappearing just before our sunrise.

Quite amazing DX is possible with patience; VK6HD has been worked by many G stations in the evening and even ZL comes through for a few days each side of the spring and autumn equinoxes.

80 METRES

Remember that this is a band where there is little competition from beams. Almost every UK DXer is using some form of vertical or dipole and it is not too hard to be competitive, though a linear amplifier is very useful. The problem, from a DXer's viewpoint, is that 80m is also a popular band for local and European QSOs and many operators fail to respect the 'DX Window' from 3775-3800kHz. If you aren't a DXer, please remember that whenever the band is open to DX from anywhere in Europe, this segment is reserved for intercontinental DX QSOs and not for club nets looking for a quiet spot. And if you are a DXer, bear in mind that the DX Window isn't the place for ragchewing about what you worked last night!

In winter this band comes into its own; wonderful DX is possible in December and January. From mid-afternoon onwards signals pour in from the east, with VS6, VK, BY, JA and even long-path W7 audible on many days. The UK tends to be on the fringe of this activity as the eastern and northern Europeans have even better propagation, but much DX is workable if you're prepared to be patient. There tends to be a peak in signal strength at our sunset and again later on at sunrise for the DX stations. A computer program to warn you of these times is an invaluable DXing aid.

As the evening wears on, propagation moves first to the south and finally around to the west. Results southwards are limited by high static noise levels during the African and South American summer but signals arriving from the west around sunrise can be quite outstanding, with W6, KH6 and long-path VKs, ZLs and JAs workable. Sunrise is a very good time for UK stations as the rising sun has already killed the propagation for the rest of Europe, so for about half an hour we have a clear shot at the DX!

The DX curtain falls at about 0900 in winter but our Northern Scandinavian friends have it even better for a few days around the turn of the year, when they can work 80m DX around the clock. This of course means that we must keep the 80m DX Window clear *all day* to avoid QRMing them.

Even in summer, don't neglect 80m as it can yield some great DX to the south (where winter conditions mean low static levels) but E-W openings are restricted by the shorter night here in the northern hemisphere.

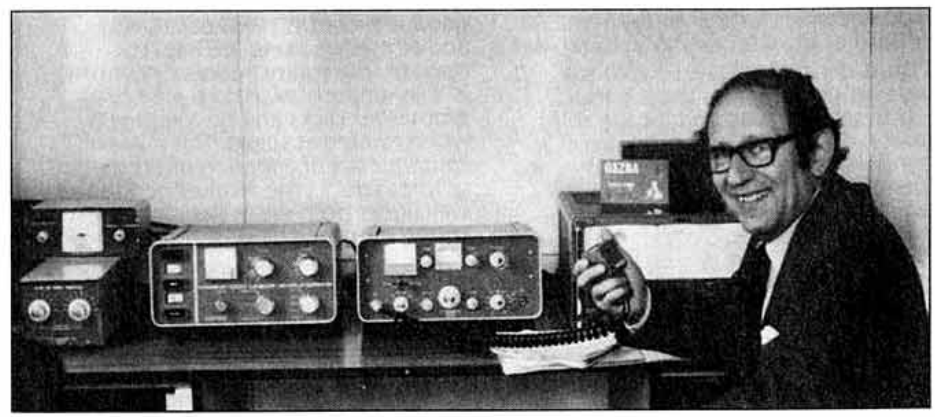
40 METRES

In propagation terms this band is broadly similar to 80m, though DX openings start earlier in the afternoon and finish later in the morning. Also there is less emphasis on winter as the peak time for propagation. In a recent CQWW SSB contest in October, GU6UW worked into KH0 (Marianas Is) and KH2 (Guam) at around 1400z despite heavy QRM from local ragchewers. Long-path openings to W6 are possible in the late afternoon, and paths to East Africa and the Indian Ocean are very reliable in the early evening. Don't write off 40m as a local band; during the winter it can be almost as good as 20m.

20 METRES

This is the 'bread-and-butter' band for HF DX and at the right times of the year 20m is open to DX around the clock. In winter it tends to shut down in the early evening, though owners of beams may still find it possible to work South America until midnight. In summer, by contrast, the band may be open all night to the Americas and the Pacific. It is almost impossible to summarise 20m propagation because it varies considerably with the time of year and the sunspot cycle. Furthermore, so-called 'anomalous' conditions are almost as common as normal ones!

Action starts in the early morning when signals arrive via the long path (ie from the west) from Australia, the Far East and the Pacific Ocean. Central and western America may also be heard at this time. During the morning propagation tends to be within Europe only but by mid-morning East Coast US stations are peaking up as the sun rises over there. In the afternoon there is a reliable long-path opening to California, Hawaii and French Polynesia, and as the afternoon moves on the band opens up first to the Far East, Australia and Africa, and then later to South and North America.



G3ZBA in 1971. His station, typical of that era consists of KW transmitter, linear and ATU. The receiver was an Eddystone.

John D Kay, G3AAE, has adopted a two-tier layout to give extra desk space.

15 METRES

In winter this is a daytime band only. During summer it may be open like 20m for most of the night. The mornings produce signals from the Far East and Pacific, both short-path and long-path. During the afternoon Eastern signals die out (though equatorial regions such as the East Indies may come in until the European evening) and Western signals build in strength. When conditions are good the Pacific can be worked in the late afternoon or early evening.

10 METRES

Highly sensitive to incoming solar radiation, this band tends to be fairly dead at sunspot minimum with only propagation modes such as sporadic E creating much activity. During daytime at sunspot maximum, however, it is by the far the best DX band with low noise levels allowing even the weakest signals to be heard.

In good years the general pattern is for the Far East and Pacific signals to come in shortly after dawn, to be followed by Africa and around mid-morning by the Eastern parts of South America. US signals arrive around lunchtime and propagation may extend westward as far as Hawaii or across the pole to Alaska. In winter the band will become dead shortly after sunset, but in summer both South American and Pacific stations may come through until late in the evening.

THE WARC BANDS

In propagation terms, each of the newer WARC bands of 10, 18 and 24.5MHz can be considered as mid-way between the adjacent bands already described. For the DXer the WARC bands offer a wider choice of frequencies to increase our chances of finding good propagation, and above all they are less hectic than the traditional HF bands. DXing on the WARC bands can thus be an easier way to get started, and you can work a surprising number of DX stations who prefer to take their own operating a little easier too.

OPERATING TIPS

BEING THERE - ON ALL MODES

The most important requirement for a budding DXer is spare time. Our survey respondents were firm on that point. If you aren't in the shack you aren't going to work anything, however wonderful your station might be. Roger Balister, G3KMA, took the theme further with the rather awkward advice: "Don't go away on holiday - ever!" And Bill Ricalton, G4ADD, likewise advised cancelling any holiday that clashes with a new DXpedition.

To make the most of the odd spare minute an anonymous respondent recommends locating the equipment as close as possible to the living areas of the house, and we know of several others who have a rig next to the bed for those early morning skeds - CW of course, so as not to wake the XYL . . .

The mention of CW is important because top DXers use all modes. If you ignore all CW activity your progress up the DX tables will be slowed. But don't be put off by any thought that vast competence is required. To be honest, all you need in many cases is the ability to read the DX callsign, recognise your own and send 599! For large split-frequency pileups you will have to develop the ability to recognise other calls in the QRM (as discussed later) but this will come with practice.

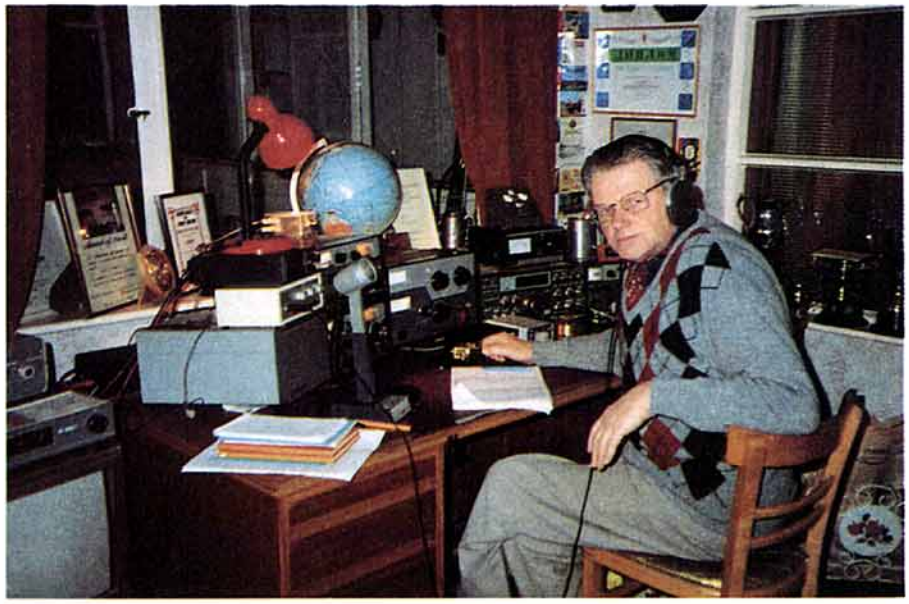
STATION LAYOUT

Since you're going to be spending of lot of time in the shack, the way you set out your station is just as important as the equipment itself. As mentioned in an earlier article, the main receiver tuning knob needs to be positioned correctly and the same applies to the microphone and the Morse key. Add the requirement for a comfortable chair and you can lay out the rest of the station around these human-engineering essentials.

G3AAE's station (see photo) is an example of the classic two-level layout. The main tuning knob and the keyer paddle are readily to hand. Above the main transceiver are the rotator control, the ATU and the standby transceiver. At the right on the lower level is the VHF equipment for the local DX spotting net on 144.525MHz. Also note the Great Circle map and countries lists, easy to find under the sheet of glass that forms the main writing surface. Although G3AAE does not use a linear, shack photos from other survey respondents show a preference to have this almost equally close to hand.

Al Slater, G3FXB, spends many hours DXing and contesting at his operating position, as shown in the next photograph. The desk is wide and deep enough to accommodate the linear and most of the other equipment in an arc, so everything is in easy reach. Al's desk is deep enough to allow him to use the keyers with his whole forearm resting on the table, while G3AAE uses a chair with arms and rests only his wrist; it's a matter of available space and personal preference.

If your own operating layout leaves something to be desired, why not go back through the station photographs in this series and pick



Station layout is usually dependent on how much equipment needs to be within easy reach. Al Slater, G3FXB, uses a large desk with equipment arranged in an arc.

up a few ideas? It's no coincidence that most successful DXers use a very similar layout - because that's what works the best.

THE NEED TO LISTEN

Last month's section by G3XTT 'Information and Software' stressed the need to tune the bands to find out what's happening. But what are you listening for? How do you separate the unusual from the commonplace?

- Check around the standard DX frequencies: 5 and 25kHz up from the band edge on CW; 3795, 14195, 21295, 28495 and 28595kHz on SSB. Don't forget the IOTA frequencies (14260, 21260 and 28460kHz) as many islands are also DXCC countries. Fred, G3NSY, has all of these frequencies programmed into the memories of his transceiver to simplify the search.
- DX stations often sound 'different': weak, fluttery, or with some wobble on the transmission as a result of local power supply problems. They are often heard working pileup-style, giving quick reports to get as many QSOs in the log as they can.
- Get to know the names of active DX operators. For example Cav is probably V63JC in Micronesia, and Tom, VR6TC on Pitcairn Island, Antoine might have been 3D2AG on Rotuma; and Martti is probably OH2BH who could be almost anywhere rare - or soon will be.
- Watch out for an unusual accent. An American voice when the band is not open to the States indicates something different, perhaps Hawaii or Guam.
- An operator talking about his QSL manager is normally somewhere interesting.
- Listen to the snippets of conversation as you tune across the band. You should be able to tell in seconds if it is a normal ragchew or an exotic DX station stopping for a chat. Obvious giveaways include remarks about postal delays, supply ships, missionaries, coral atolls, etc. In the run-up to a major expedition you will also hear all sorts of rumours, some of which may have a useful basis in fact!
- Check out the pileups. You will generally find the DX station on the same frequency but underneath all the callers, or about 5kHz lower, or on a standard DX frequency.

THE INFORMATION TRADE-OFF

Those of us with families, jobs, and other commitments can fortunately make use of other sources of information besides hours spent listening on the bands. If you know exactly when the stations you need will be active, you only have to fire up your rig at the right moment, work them, and get back to watching TV. Peter Wallis, G3YJI, and many others listed "good information" as the principal requirement for DXing success.

So how do you find out what's happening? Don Field, G3XTT, covered this in some detail last month, but to recap:

- Get on the DX PacketCluster network, a wonderful development which enables all active DXers to share each other's ears.
- Take out a subscription to the RSGB's weekly *DX News Sheet*. This has the latest news on expeditions, DX stations, frequencies to listen, and a survey of recent DX. A bargain at £24 a year.
- Use the RSGB Voicebank system.
- Make sure your friends know what countries, islands, zones, or oblasts you still need and get them to call you on the phone if they hear one of them. This can generally be set up as a group activity, perhaps based around the most enthusiastic members of your local club.
- Ask a local. Bob Whelan, G3PJT, comments that "If you need KH7 then ask the KH6s, who will probably know of any planned activity".

LISTS, NETS AND PACKETCLUSTER

Armed with all the latest intelligence, you show up at the precise moment to work the DX . . . . and find that a list of 500 callsigns was taken the previous day! Of these, you can be reasonably certain that 25% will no longer be on frequency, another 25% will not have propagation, and some of the remainder will guess their report once their call has been relayed to the DX station by a net controller. Thus the obvious objections to list operations are that the process is time-wasting and inefficient, and that many of the QSOs seem to owe more to telepathy than propagation.

Our respondents' attitudes to lists and nets varied from grudging acceptance to outright hostility - nobody had anything positive to say about them! Says G3PJT: "Time wasted in a list cannot be regained". Tom Austin, G3RCA: "They are a waste of time where you spend hours listening to 'No call thanks' all night".

My personal view is that they have a place for the less rare DX and can sometimes help the novice DXer who would not be strong enough to crack a pileup. I strongly reject the notion that net QSOs are 'always less valid' than freestyle QSOs; quite often a lot more information is passed between stations in a net than in a pileup. Only too often one hears the comment after a pileup battle "I think he came back to me but I couldn't really tell through the QRM so I'll send off a QSL and see if I get a card back" - so much for the sanctity of pileup QSOs! In the end, it's always between yourself and your own conscience.

Of course, DX stations are entitled to operate as they wish and some really do prefer the more relaxed atmosphere of a DX net to a full-scale pileup. In rare cases there may even be good reasons for the list technique. For example, if the DX station's only source of power is a small battery it makes sense to minimise the amount of transmitting by allowing the net controller to organise the callers and put them through one at a time.

The G3ZBA shack of the 1990s. Note that the KW1000 linear appears to have survived 20 years of DXing.

If you use DX nets and lists then you may be interested in a regular publication by Dieter Konrad, OE2DYL which gives the meeting times and frequencies of all such operations worldwide. Write to him at Rosengasse 1, A-5020, Salzburg, Austria, for the latest price. And one final tip: if you do use lists, never miss a chance to get on one! You can always duck out if it doesn't seem worth the wait. You never know what other DX may join the net, even while a list is running for something you already have confirmed.

In spite of the dubious practices that have grown up around lists and nets, they all began with the innocent wish to help one another work DX. Since the PacketCluster is starting out with exactly the same aims, it's as well to remember that it too can be misused. Some people in the survey believed that the Cluster is encouraging laziness: "Why search the bands when all you have to do is wait for your PC to beep?". Others, like Dennis Andrews, G3MXJ, pointed out that with much of Western Europe connected into the one cluster, a vast pileup develops soon after the 'beep'. It's much better to be the one who *inputs* the 'DX spot' into the Cluster because you tuned around and found the DX *first*.

CRACKING THE PILEUP

Pileups come in two flavours: single-frequency and split-frequency. A single-frequency pileup usually means that the DX operator was just looking for an ordinary QSO and things sort of got out of hand . . . Since you have only one frequency to call on it's all down to timing. Try to call during a lull or out of sync with the others, and don't give up too quickly. An inexperienced DX station may take five minutes to get a complete callsign into the log. And do listen very carefully to make sure you're not still calling when the DX station has already started a QSO with someone else!

In a split-frequency pileup the DX station transmits on one frequency (eg 14195kHz) and listens across an announced range (eg 14200-14210kHz). Top DXers again stress the need to *listen* in order to work out if the DX station is operating to a pattern. Perhaps he is tuning slowly from the bottom of the range to the top, perhaps sticking to a single frequency inside the announced range, or even listening somewhere completely different. A few DXpeditioners make a habit of listening below their transmit frequencies when they've

announced "Listening up" and *vice versa*. It is also worth checking whether the listening frequency changes after each QSO or whether the DX operator pauses in one place until everybody discovers that frequency and the rising QRM forces him to tune elsewhere.

Another reason to listen before calling is that DXpeditions frequently limit the pileup by asking only for stations with a particular number or letter in their callsign. To take advantage of propagation they may even ask for particular regions or countries only. For example "European 1s only" or "North American 5s call now". Failure to observe these restrictions may result in your call being added to a blacklist of people who find it difficult to get a QSO or a QSL card from that expedition.

Once the DX tuning pattern has been established, opinions differ on the best technique. G4ADD recommends finding the quietest in-range frequency and sticking to it, while others like Pat Gowen, G3IOR, suggest anticipating the tuning direction and always trying to be next in line. Chris Eyles, G3SJH, reminds us that an instruction to the pileup to "Spread out" is often a cue to call at the extreme ends of the announced listening range. The famous DXpeditioner SM0AGD likes to program up to 10 discrete listening frequencies into his transceiver and, randomly or predictably, to hop between them. The frequencies are usually publicised in advance or announced on the air. If you're trying to be next in line for the DX, you first have to find the frequency of the station he's currently working. Then make your call either on that frequency or a bit further in the direction that the DX station seems to be tuning. You may have only 2-3 seconds to find the other station in the QRM of the whole pileup, and you probably won't have propagation to all callers, so even highly experienced DXers may only track down 25% of the stations being worked in a big pileup. There is no time to stop on each signal; you have to identify calls as the dial is turning and develop a mental 'map' of those present. With time and experience you develop a sixth sense about your competitors' habits and can go immediately to their frequency if you hear the DX pick up one of their calls. When you get everything right and the DX station comes straight back to *your* call the thrill is indescribable!

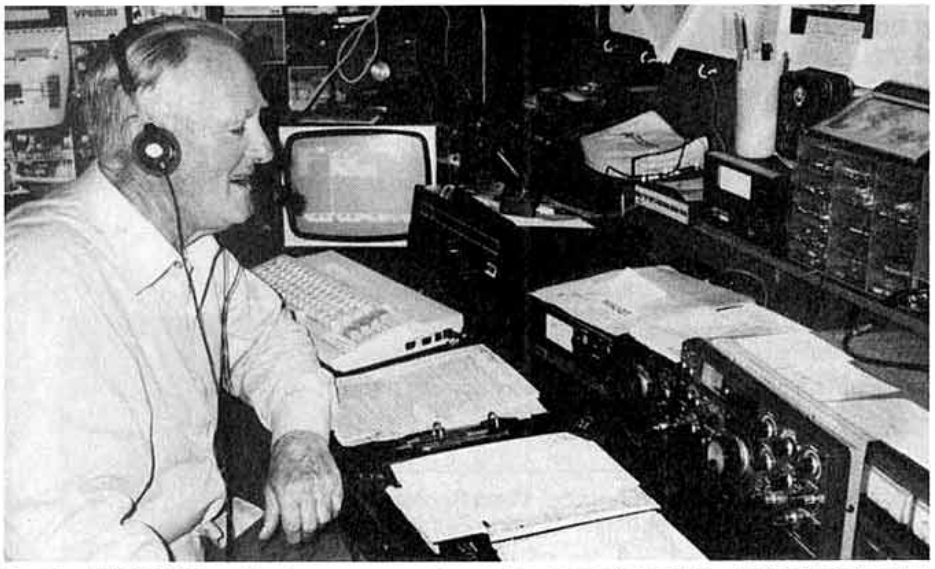
MORE PILE-UP TIPS

What more is there to do? Well, G4ADD advises paying lots of attention to your audio quality so that your voice stands out from the pack and others suggest you make sure your voice and your call are well known to DXpeditioners. Faced with a mass of signals the familiar voice or call is much more likely to be recognised by a tired DXpeditioner. Language skills can help on the occasions when listening frequencies are announced in a foreign language - but some techniques defeat even the best prepared. For example, BT's Directory Enquiry service had a sudden surge of calls when a DXpeditioner announced he was listening on the frequency given by the last three digits of his phone number! In addition to their publicised frequencies, most DXpeditions have unannounced frequencies for contact with members of their home clubs; identifying these by careful tuning can be an easy way to avoid the main pileup. You can usually tell when they are in use because the DXpedition will suddenly, and quickly, work a run of calls from the same country or town.

A controversial pileup point is whether you should spell out your whole callsign (in my case "Golf Three Zulu Alpha Yankee") or just repeat the last two letters "Alpha Yankee, Alpha Yankee". My own view is that the full call is better. If the DX station hears you clearly he won't want to waste time establishing your full callsign (especially as you may not be in the clear on the second go round). If he is only going to catch a fragment then "Golf Three Zulu" is probably as useful to him as "Alpha Yankee", and when the last two letters are repeated he may come back to "Yankee Alpha Yankee" and get hopelessly confused.

Before leaving the subject of pileups I must stress a point which stood out from our survey: *never, ever* transmit on the DX station's frequency in a split-frequency pileup. Don't ask "Where's he listening?". And don't ask "Who's his QSL manager?" while other people are still trying to work him. In most cases it's the failure to *listen* that leads to unnecessary interference. However, it's also possible to call on the DX station's frequency by cancelling or inverting the split settings on the transceiver - so please take care!

Perhaps total immersion in a wild 20m weekend pileup is not the best way to start your DXing career. So it's worth remembering that weekdays are more relaxed on all bands, and the WARC bands are still oases of tranquillity where a barefoot transceiver and a simple dipole can crack most of the embryo pileups that occur..



The latest RSGB *DX News Sheet* means you can be one step ahead of the others – like GW3CDP (above).

RSGB HF AWARDS

DX LIsteners Century Award	(DXLCA)
Commonwealth Century Club	(CCC)
5 Band Commonwealth Century Club	(5BCCC)
28MHz Counties Award	
Worked ITU Zones	(WITUZ)
5 Band Worked ITU Zones	(5BWITUZ)
Islands On the Air	(IOTA)
IARU Region 1 Award	
Worked all Continents	(WAC)

For further information, see the *Amateur Radio Awards Book* by G4FAM (RSGB) - see Book Case pages 78 and 79, or contact RSGB Awards Manager, see *RadCom* page 5.

GOALS AND TARGETS

Take some advice from GW4BLE and G3NLY, and set yourself some realistic targets to aim for. Perhaps this year you will aim for 150 countries on 20m. Or perhaps focus on 10 and 15m while the sunspot count is high. In the longer term you may go after five-Band DXCC or Worked All Zones, or tackle some of the RSGB's own HF awards programmes (see above).

Remember, your DXing will bring a greater sense of achievement if you have a goal in mind. Don't forget the RSGB's G5RP Trophy (June *RadCom* p5) awarded annually for the greatest *progress* in DXing rather than any absolute standard of excellence. It's specially devised to encourage newcomers to HF DX - so why not aim to win it next year?

ACKNOWLEDGEMENTS

THANKS ONCE AGAIN from the RSGB HF Committee to all the experienced DXers who have given freely of their time, knowledge and interestin

Finally to put the record straight: Tom Higginson, GW3AHN, shares with G3AAE the leading UK position in the Phone/CW Honour Roll, and for some time Tom has been one of the top Europeans in the Phone-only section. And in case you're imgining some millionaire's mega-station, this was achieved with home-made beams and just 25 watts!

HF CONVENTION, 26/27 SEPTEMBER 1992

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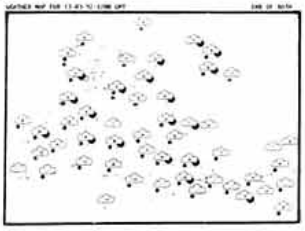

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Pat Hawker's Technical Topics

MAINS TRANSFORMERS - ARE THEY HAZARDOUS?

THE OTHER EVENING I had an unpleasant surprise when I went back to the 'shack' after a meal break. My ancient valve transmitter (LG300) - long past its 'use by' date but easy to keep running when the occasional fault materialises - has a separate PSU for the built-in VFO. Since this takes some 20 minutes or so to reach thermal stability, I often leave the VFO running while out of the shack for a time.

To cut a long story short, when I opened the door I found evil smelling smoke pouring out of the VFO PSU and it was clear that the transformer was close to going up in flames (Note; perhaps one should one consider putting a smoke detector in the shack?). Subsequent examination showed a considerable area of charred windings and both primary and secondary short-circuited to the screen foil. What had brought about the fault, and in what order, remains uncertain. The transformer, although many years old, was an apparently well-built component with a large core and was running well below its design loading. There was no question of the core over-heating (at least until the fault occurred) and I can only presume that the enamel insulation on the primary winding had failed and connected the mains supply to the screen without blowing the mains fuses.

Over the years, I have had a number of mains-transformers go down, although not with a comparable fire hazard since the PSU of a Whaddon MkIII transmitter similarly came near to catching fire at Eindhoven in early 1945. The recent incident was a timely reminder that enamel-insulation can deteriorate over the years, particularly in humid conditions.

It also recalled a debate that emerged recently in the 'Forum' column of *Electronics Australia* (Feb and May 1992). Originally, a correspondent suggested that the use of toroidal mains transformers should be avoided in constructional projects. This was rebutted by later correspondents representing firms manufacturing or selling toroidal transformers who insisted that toroidal types, if of reputable make, were as safe as those based on the older type E-I cores.

The difference, apparently, is that there is normally no 'screen foil' between primary and secondary windings in toroidal transformers and they cannot meet the more-stringent Australian 'fail safe' or 'inherently short-circuit protected' standard (nor for that matter do most transformers with E-I cores).

A British transformer-manufacturer got dragged into the debate, with Terry Monaghan, a designer at Antrim Transformers, commenting: "It is unfortunate that some constructors have a tendency to have cheapness, rather than safety as their main criterion for choosing a particular power transformer. Like your correspondent, we have seen a fair share of badly constructed power transformers over the years (E-I types included). Even our bulk standard toroids are double insulated; some are even triple insulated. At the crossover point, where the primary windings pass through the secondary, not only are the leads double insulated, but a high creepage distance is maintained between the windings.

"There are several options available to further improve the safety aspect of the transformers if deemed necessary. These include: (1) Triple insulation between primary and secondary to comply with AS3108 requirements. (2) Thermal cutouts or thermal fuses to limit temperature rise under fault conditions. (3) Copper foil earth safety screens between the primary and secondary windings. Regarding mounting: a large dished steel washer is used to spread the pressure on the windings, plus neoprene washers and polymeric insulation are used to absorb any stress that could damage the windings . . . Alternative mounting arrangements are available - eg potted inserts in the centre or totally potted construction. It must be said however, that thus far we have not seen any evidence of transformers damaged due to the mounting arrangements."

Back in the early 1950s, when I was editing the massive *Radio and Television Engineers' Reference Book*, I recall including an item on 'Heat-operated or Temperature Fuses' as follows: "The primary purpose of a temperature fuse is to reduce fire risk by breaking a circuit when the temperature of a component such as a transformer exceeds a certain limit. **Fig 1** illustrates a typical temperature fuse fitted to a mains transformer. A copper strip, B, is well insulated and fixed between the HT and heater windings, the order of winding being: primary, screen, HT, heater and rectifier heater. It projects at both ends of the coil, having a lug at one end to which the start of the primary winding is soldered, and at the other end is jointed to a phosphor-bronze spring, A, by a fusible alloy of low melting point (95°C). The other end of the spring is secured to the insulated tag jacket of the transformer by a tag which also serves as connection to one mains lead.

"If the temperature of the transformer rises sufficiently to cause the heat conducted along strip, B, to melt the fusible alloy, the spring A, separates from the strip, thus breaking the mains circuit. This arrangement has been arrived at after experiments to ensure that whichever winding or part of a winding be short-circuited, the temperature rise of the hottest part of the transformer cannot exceed 135°C when measured two minutes after the fuse has opened."

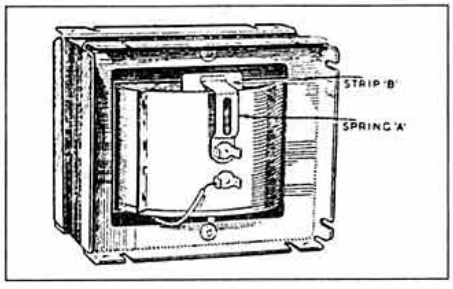


Fig 1: Temperature-fuse as fitted to a mains transformer in the early 1950s. (*Radio & Television Engineers' Reference Book*).

I have never come across this type of thermal fuse in practice, but glass encapsulated thermal fuses for various temperatures are marketed (for example by RS, who also supply resettable sub-miniature thermal circuit breakers in a plastic case with a reset button) and could be taped to a transformer core etc.

Transformers are normally impregnated to prevent moisture from entering, but where a winding operates at a positive potential with respect to the core and/or another winding, electrolytic action may remove copper from any bare places on the wire such as 'pin holes' in the enamel, provided something in the nature of an electrolyte exists. Corrosion occurs, eventually resulting in a break in the winding. This type of problem is not common with AC mains transformers but used to affect audio output, modulation and IF transformers in the valve era resulting in a 'green spot' at the point of the break. Impregnation alone is useless in preventing this type of fault.

It does appear that both toroidal and E-I transformers need to be chosen and used with care in order to minimise hazards. And, if my experience is anything to go by, even what appears to be a robust, well-made, varnish-impregnated transformer with a generously sized core run under derated conditions may eventually fail for no obvious reason! I must admit that in my case the component, acquired ex-equipment some 20 years ago, was probably about 40 years old.

Incidentally, a good deal of information on power transformers, both with toroidal and E-I cores, most of it stemming from John Brown, G3EUR, appeared in *TT*, March 1986. There is also a detailed article 'Toroidal transformers' by Terry Monaghan in *Electronics & Wireless World*, March 1987, pp225-258 that reviews their advantages, disadvantages and applications.

HRO VARIANTS & THE HAMMARLUND SUPER-PRO

THE APRIL *TT* ITEM 'HROddities' recalled some of the impressive background to the HRO receiver which was manufactured by National in various versions from 1934 for some 30 years until the mid-1960s, plus models using the same basic tuning arrangements made in Germany and Japan. This has prompted Barry Kirkwood, ZL1BN, to add to the saga - recalling that at least two lines of HRO-clones were produced 'down under' in the 1940s when there was a desperate shortage of communications receivers. He writes:

"Two close relatives of the HRO were the 'Kingsley' AR7 which closely resembled the HRO and which was manufactured in Australia to a very high specification - arguably superior to the original; and the Collier & Beale Model 949 manufactured in New Zealand. Both closely followed the HRO concept and used the famous PW4 ganged capacitor and dial from the National factory, plus trays of plug-in coil assemblies fitting through the front panel. Valve line-up and circuitry were also similar to the HRO.

"The Model 949 was widely used for many years after the war by the New Zealand Post

Office and also by the NZ Civil Aviation Department. I have an almost mint example, and Jock White, ZL2GX, has a collection of variants of the 949 including some documentation on them. An interesting feature of the 949 is that, save for the gang and dial, it was built around components used for domestic broadcast receivers rather than purpose-built components. The IF transformers are standard, and the front-end coils are wound on half-inch-diameter bakelised paper forms, supported by leads of 18g bus-bar in the middle of the spaces in a rugged die-cast catacomb. Very efficient, very inexpensive, works better than the original!

"The set has no AGC or crystal filter, but most sport a full-wave diode detector which is very linear. Transformer coupling gives a degree of audio selectivity. The cathodes of the RF and IF amplifiers are unbypassed, reducing gain and Miller effect, and usually eliminating any need for realignment when valves are changed. The unit is designed to run on 180V HT and valves last a long time.

"I feel fortunate to be the owner of an almost mint 949 and find it a superb CW receiver by any standards, especially on the lower bands."

A receiver which, in various 'marques', was actually manufactured over an even longer period than the HRO is the 'Super Pro' a top-of-the-range communications receiver introduced by the Hammarlund Manufacturing Company of New York City in 1936 (later production at Mars Hill, North Carolina). This superseded their 'Comet Pro' (one of the very first general-purpose superhet communications receivers introduced in 1932). The SP-10 model of 1936 was followed by the SP-110, and then in 1939 the SP-210 series which formed the basis of a large number of US military receivers under such designations as the BC779, BC794 and BC1004. Two Super Pros were normally fitted in the famous American SCR299/SCR399 signals vehicles alongside a BC610 high-power transmitter based on the Hallicrafters HT4 transmitter designed for amateur radio. Super Pros were also used on some of the earliest military RTTY HF links in North Africa.

The line-up of the SP-200-X was impressive: Two 6K7 tuned RF amplifiers; 6L7 mixer; 6J7 HF oscillator; 6K7 1st IF amplifier (with six-position crystal filter); two 6SK7 IF amplifiers; 6H6 and 6N7 noise limiter; 6SJ7 BFO; 6SK7 AGC amplifier; 6H6 diode detector; 6C5 AF amplifier; 6F6 driver; and two 6F6 push-pull output; plus PSU.

Some of the wartime models, such as the BC-779B, were low-frequency plus HF (to 20MHz) receivers, but when these were sold as surplus to amateurs a number were converted by removing the 100 - 200 - 400kHz coils and inserting in their place 1250 - 2500kHz and 20 - 40MHz coils although Hammarlund did not recommend this since an entirely different tuning unit was employed in the BC-779B than was employed in receivers that tuned to 40MHz.

Post-war Super Pros included the SP-400 series introduced in 1946 and the still-highly regarded SP-600 series that came along in 1950 and continued in production until about 1973, although the original Hammarlund company was sold to the Giannni Scientific Company in the 1960s. The Super Pro was thus in production for almost 50 years, almost ten years longer than the HRO.

Some of the above information comes from Raymond Moore's *Communications Receivers*. There are still quite a few SP-200 and SP-600 receivers in the UK - although since it was never, as far as I know, used widely by the British Services it is far less well-known here than the HRO, but a number of amateurs still speak highly of these receivers and a number are still in use (a product detector can be fitted). Some of the features of the Super Pro were used in the lower-cost HQ-120-X of 1938 and the HQ-129-X of 1945 (I still have one of these in working order), with only one tuned RF amplifier but including switched-selectivity similar to the Super Pro and based on an effective crystal filter. The firm was started by Oscar Hammarlund in 1910 and became a major supplier of HF components in the 1920s when as Hammarlund-Roberts it manufactured broadcast receivers. Unusually for a communications receiver, the early Super-Pros had a push-pull output stage (2 x 42 or later 2 x 6F6). The SP-150 was even fitted in a console type cabinet with a 15-in high-fidelity loudspeaker!

FISHING FOR ANTENNAS WITH MONOFILAMENT LINE

AS NOTED RECENTLY IN *TT*, a whole battery of weapons can be used to shoot a thin line over a high branch of a tree: bow-and-arrow; catapult-sling (Nov 1991); even a blow-pipe (July 1992). They form an alternative to the usually less-effective method of attaching a weight to the line and throwing it over a suitable branch.

A less warlike approach is suggested by Bill Glung, KC3XO (*QST*'s 'Hints and Kinks'): "If you are a proficient fisherman with the ability to cast a line, a fishing rod and heavy sinker is an excellent way to throw a line where you need it. I pulled a nylon line over with the fishing line, then a rope with the nylon line - result a newly erected 3.5 and 7MHz sloper antenna."

Sounds easy - but Norman Bonnet, G0NNA/DL, warns that any method involving monofilament fishing line can result in a nasty tangle unless care is taken. He writes:

"Monofilament fishing line is a truly wondrous material *but* it needs a little forethought in use:

(1) You need to buy the strength of line you want. 50kg line will give a truly strong support but will bring its own problems. A better weight is in the range 5 - 15kg depending on what you are going to heave or pull.

(2) Take the length you want and (exactly as for copper wire) put one end in the vice and stretch the line. This helps to defeat the desire of fishing lines to form themselves instantly into coils. The working strain of the line is marked on it so there should be no breakages as can happen with copper wire.

(3) *Wearing a strong pair of gloves* start at the vice end and run the whole length of line through your fingers to remove finally any remaining coils.

(4) Normal 'Boy Scout knots' are of little use with fishing line as there is too little friction for them to hold. It is better to use a knot as shown in **Fig 2** which has never lost me a salmon or trout!

(5) While buying your line at a tackle shop, you can also buy very neat beachcasting weights.

(6) Small cut-off pieces of fishing line are deadly to small animals and birds, so ensure that you remove all such pieces which should then be destroyed.

(7) When throwing (or casting) the line do not lay it on the grass and hope it won't snag the grass or small twigs. Instead, lay it on a large sheet of plastic and then coil it in as concentric a circle as you can manage.

(8) Do not be tempted into thinking that fishing line is inert. You will find it has a mind of its own and will try to form itself into a bird's nest. If this happens, years of fly-fishing have taught me not to attempt to unravel it, but to replace and destroy it painlessly indoors.

"Use the above tips and problems should disappear!"

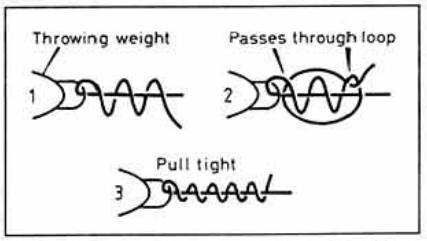


Fig 2: G0NNA's recommended knot for fixing sinker to monofilament fishing line.

LETRASET ON METALWORK - AN ALTERNATIVE VIEW

A CLEMENTS, G4KDZ, NOTED the item 'Front panel lettering' in the July *TT*. Here, G8DZU offered advice on a non-destructible form of lettering that cannot be damaged or fall off just after equipment has been finished. G4KDZ is not convinced that G8DZU's method is the easiest or best method of preparing metal work for eventual Letraset or similar finish. He offers the following procedure:

(1) First, cut out and drill any necessary holes that may be required.

(2) Wash the aluminium workpieces with hot water and Fairy Liquid, rubbing the panels down with wire-wool to remove any surface grease.

(3) Dry the workpieces and fill any major cuts or dents with car cellulose filler where necessary. At this juncture it may be necessary to spray the panels with a cellulose putty filler to fill in any minor cracks or scratches on the metalwork.

(4) When dry, rub down with fine wet-and-dry paper until you obtain the required finish.

(5) Apply an undercoat to the metal work (Car spray primer: light colour if top coat is to be light; dark if top coat is to be dark). Allow to dry and then apply a top coat - gloss (car spray) colour of your choice.
(6) When dry, apply a light coat of clear lacquer (spray) such as Aerosol lacquer (RS Components 567-496) or 101 Letraset spray or similar product.
(7) When this is dry, you can apply your Letraset lettering, removing any laid in error by the use of masking tape.
(8) When entirely happy with the application finish add a final spray of clear varnish over the lettering and allow to dry. The panels will now be well protected against normal handling. Depending on your art work, the finish will look professional too.

G4KDZ adds: "I find that people let their projects down by being rather indifferent in this area. They tend to put their project in the first box or enclosure they find. Similarly, few go to the bother of re-calibrating meter faces using Letraset. Yet it is quite simple and does give the finished project a touch of class. I remove the existing meter face (very carefully) and mark the outer perimeters of the existing arc using a light touch from a centre punch at these points. The meter face is then rubbed down with a fine grade wet-and-dry paper and Fairy Liquid, dried and sprayed with a white primer.

"Usually, either side of the meter face can be prepared. When this is dry a new arc is drawn to the meter using a compass and sharp soft pencil. The small punch marks made earlier form an arc guide. The scale is then divided into the respective divisions, marking each with a Letraset marker, and the whole is finally finished with appropriately sized numbering on the scale. No varnish spray is needed as the meter will be protected when re-assembled. Needless to say, it is important to be careful during re-assembly since with one wrong move the meter could be damaged beyond repair."

MAKING NON-REVERSIBLE LOW-VOLTAGE CONNECTORS

TT HAS BEEN RUNNING for over 34 years and it is not surprising that occasionally a previously described idea turns up in a new guise. But since there are always new readers as well as old-timers, occasional repetition seems justified.

SA (Dick) Fox, G0MZI, for example, points out that non-reversible low-voltage connectors seem hard to find. He writes: "A simple solution is to use 'choc blocks' of appropriate size. Fit the 'live' block with a prong for the negative connection and the 'fed' block with a prong for the positive connection: see **Fig 3**. The screws holding the prongs should be tightened and made 'blind' or 'capped' with Araldite or Blu-Tack. The standard small size block takes wire up to 3mm in diameter, the next size takes prongs from old round-pin 5A mains plugs. Cut the prongs the same length as the block. Mate the two and tighten the socket screws."

The idea seemed familiar and a little searching unearthed an item 'D-I-Y general-purpose connectors' (*TT*, October 1977, p785) in which Les Mitchell, G3BHK, described home-made connectors made from off-cuts of the widely-used terminal blocks, with 'plugs' formed from brass or copper nails of suitable size with the heads cut off. G3BHK wrote: "By using these connectors (**Fig 4**), which (then) cost around 10p each, you can match any cable to any other. I mark the screws to be loosened or tightened by dabbing a hot soldering iron on the side of the terminal block adjacent to the screw involved. Perhaps an even better system would be to cut off some of the plastics sleeves above these screws in order to indicate the ones needing a screwdriver to make or break the connections. The only safety point to watch is that on the output connector from a power unit the positive side ends in a 'non-nail' connection, with the nail making the negative connection.

"I have found this a most useful dodge; for instance if you have a pair of headphones with a large jack plug that will not fit a receiver having a small socket, it is possible just to break this connector and fit the lead to a small jack plug in a matter of seconds. Or again, one power unit will connect to any of a number of units each with their own different socket arrangements - a real boon to the experimenter."

At the time, I did add a comment that, from the viewpoint of safety, it may not be advisable to use the same type of connector for low and high voltages. Such connectors are best restricted to low-voltages.

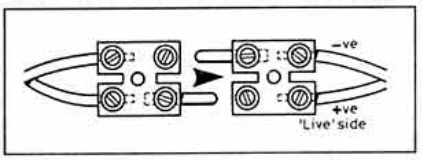


Fig 3: G0MZI's non-reversible low-voltage connectors using 'choc blocks'.

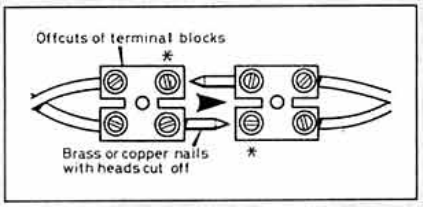


Fig 4: G3BAK's 1977 version of the non-reversible connectors made from terminal strips. The screws marked * indicate the ones to be loosened or tightened.

FEEDBACK

NOTE THAT THE 3SK88 source resistor for the GW0GHF MOSFET pre-amplifier (Fig 9, *TT* August, p41) should be 470Ω and *not* the 47K shown. GW0GHF has supplied details of the input coil, L1, to tune about 45-75MHz: 10 turns, about 22SWG enamalled wire on 5mm former with slug, spaced about one-wire diameter. Antenna coupling link is one and a half turns wound over the 'cold' end of **L1**. He finds his varicap tuning pot needs resetting a few minutes after switching on, but then stays put; cause unknown.

MORE ON USING 7MHZ HALF-WAVE DIPOLES ON 21MHZ

ROBIN MOSELEY, WA3T, WITH REFERENCE to the March item 'The 7MHz dipole on 21MHz' points out that there are two methods of forcing a dipole antenna to be simultaneously resonant at any two desired frequencies: one in the 7MHz band and the other in the 21MHz. He writes: "One solution is to use capacitive loading as described by NJ2L in *QST*, June 1991. Another is to use a small amount of inductive loading, positioned approximately at the centre of each of the 'outside' halfwaves of the 21MHz 1.5-wave dipole. The inductors should be positioned near the maximum-current points in the 21MHz dipole. When operating at 7MHz they carry only half the maximum current. Taking this and the frequency difference into account, the inductors present about six times more loading effect on 21MHz than they do on 7MHz. Thus they increase the electrical length correspondingly more on 21MHz.

"In a practical antenna, the two design and adjustment variables are the inductance of the loading coils, and the overall length of the dipole. Rather than worry too much about putting the inductors at the exact maximum-current points for 21MHz, I suggest they be positioned 20ft from the centre, and the final length adjustment made in the outer section without changing the position of the inductors.

"A good value for the inductors is 0.5μH, corresponding to four turns on a 1.5in plastic tube, spaced over about 1.3in. A good starting point for the overall length is 66.5ft.

"For an antenna height of 30ft, MININEC predicts a 21MHz resonant impedance of 82Ω, giving an SWR of 1.65 on a 50Ω line. A 75Ω quarter-wave section could be used (as suggested by W2XM in the March item) to reduce this mismatch to about 1.3. The 'ideal' antenna impedance when this arrangement is used would be 112Ω, but the good news is that over-compensation at resonance will widen the SWR bandwidth, somewhat offsetting the inevitably narrower bandwidth of a long antenna. Note that these inductors are not 'traps' merely slight loading to adjust the electrical length. The bandwidth of the antenna is not significantly affected by their presence."

CONSTRUCTIONAL HINTS AND KINKS

A SERIES OF INTRODUCTORY ARTICLES 'Build it yourself from QST' by Bruce S Hale, KB1MW/7, has been running in *QST*. Part 2 in the May, 1992 issue, has some interesting notes on the use of 'ground-plane construction' - the technique that has been advocated many times in *TT* under its colloquial name of 'ugly construction'. It has been suggested that such construction is more suitable for one-off, home-built projects and for experimental prototypes than the commonly used home-etched printed circuit board.

KB1MW/7 introduces ground-plane con-

struction as follows: "Ground-plane, sometimes call ugly construction, is simple: You build the circuit on an unetched piece of copper-clad circuit board. Wherever a component connects to ground, you solder it to the copper board. Ungrounded connections between components are made point-to-point.

"Once you learn how to build with a ground-plane board, you can grab a piece of circuit board and start building any time you see an interesting circuit. It's easy to trace and modify a ground-plane circuit. Ham designers generally also find that building on a large copper ground plane makes most MF/HF circuits more stable than building them on a PC board - at least until the PC board version goes through several iterations to cure circuit instabilities.

"Building a ground-plane board is fun, and I think it's more rewarding than simply stuffing and soldering a PC board. Ground-plane construction is something like model building, connecting parts using solder almost - but not exactly - like glue. Because you build the circuit directly from the schematic, ground-plane construction can help you get familiar with a circuit and how it works much better than etched-PC-board construction can.

"Ground-plane construction is very flexible because you can build subsections of a large circuit as small ground-plane modules and string them together into a larger design .... Don't be bashful about how your ground-plane projects look. It probably won't look as slick as an etched-PC-board circuit or factory produced rig .... Part of the philosophy behind ground-plane construction is that you don't have to build 'pretty' to build radio gear that's first-rate in ruggedness and performance .... Building is supposed to be fun."

One of the problems facing home-construction as well as factory-produced HF equipment is the ever-rising cost of specialised high-voltage components. A useful trip for keeping the cost of high-voltage variable capacitors (of more than about 150pF maximum) within reason is given by Sherman L Lovell, WY7F, in *QST's* 'Hints and Kinks' May 1992, p74. WY7F points out that some TUs etc require 350pF capacitors with the plates spaced great enough to handle high voltages - difficult to find in boot sales or rallies and now horrendously expensive new.

His solution is to cut glass microscope slides (purchased at his local college bookstore) to the correct length with a common roller-type glass cutter, and slipping the cut slides into the gaps between the plates of a 100pF or 150pF high-voltage capacitor. The high dielectric constant of glass will about double the maximum capacitance while improving rather than reducing the voltage rating of the capacitor (provided that this is limited by the inter-vane spacing). A quick application of general purpose silicone sealant serves to secure the slides. Its rubbery texture provides some isolation from mechanical shock. The glass chosen should fill the air gap between the vanes as much as possible to assure maximum capacitance increase. Barry Kirkwood, ZL1BN, mentions that the 'Dr Gary Bold' credited in the June *TT* (p37) as the author of the 1972 IEEE Trans Ant & Prop paper on the focussing of HF signals at the antipodes is ZL1AN who now writes a regular column ('The Morseman') in *Break-in*, and who has also developed an excellent computer-aided learning system to teach Morse.

ALUMINIUM DRINKS-CAN BATTERIES

JOHN BEECH, G8SEQ, NOTED the recent items on solar power and lemon juice batteries with interest. Normally he uses a foot-square solar panel to float charge the 7Ah nicad battery that runs his QRP rig. This allows several hours operation at up to 10W output on 50 or 144MHz.

But he considers that lemon-juice batteries too juvenile an approach. In 1972, in an era of power cuts, he investigated ways of providing a little light without resorting to candles or other smoky fuels and overcoming the shortage of batteries. He writes:

"The batteries I made used aluminium film cans and stranded copper wire as electrodes. For electrolyte I first tried salty water. The cells generated plenty of voltage but didn't last long due to lack of a depolarizer. It was then I realised that there was a cheap, readily available depolarizing agent in the house - bleach!

"I have since then demonstrated at a special-event station how to run a 2W 144MHz transceiver using a battery of aluminium drinks-can cells to recharge the nicad pack in the transceiver at about 50mA. After recharging the nicad for about an hour I could monitor continuously at low volume (squelched receiver) and transmit at 100mW or 2W for brief periods. If I had recharged the nicad overnight I could have had several hours of normal operating.

"More recently (June 1992) I have repeated the experiment in order to show a Novice-pupil how it is done. Using a drinks can with the internal coating scratched off and bits of plastic and gravel as separators I constructed a cell which would deliver 30mA at 1.25V *continuously* and with a short-circuit current of some 300mA peak settling to 80mA at a terminal voltage of about 0.15V. I suspect that even higher currents could be achieved by burning off the internal coating of the can and using more concentrated electrolyte (I added about a tablespoon of salt to 500ml of bleach). **Fig 5** shows details."

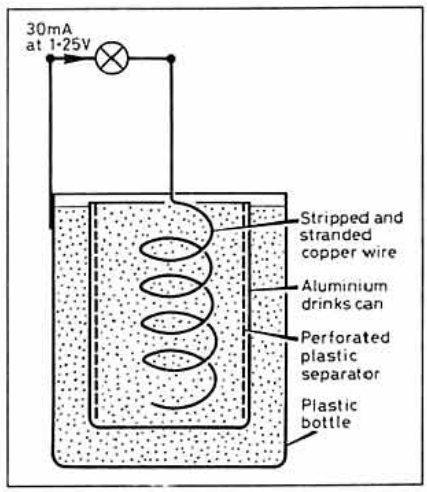


Fig 5: G8SEQ's home made battery using aluminium drinks cans (empty first!) inside plastic bottle. Two in series provide enough power to light to full brightness an 'ultra bright LED' (no need for a series resistor). The aluminium and the bleach become used up. A carbon electrode (Barbecue charcoal) might give a higher output voltage.

TIPS AND TOPICS

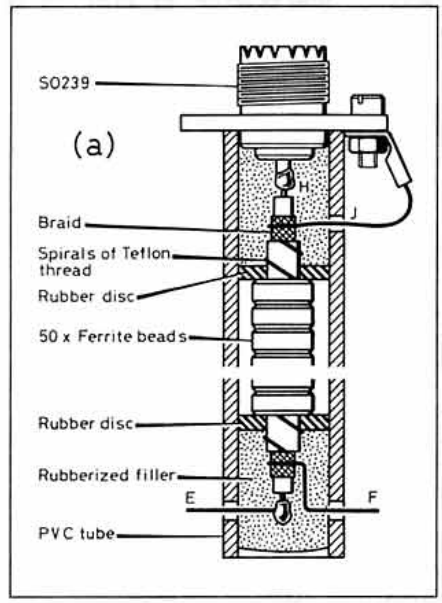
In the November *TT*, I raised the question of the performance of the Canadian VHF D/F loop with internal sensing (*TT*, June 1991). However even before this note appeared, Dave Lauder, G1OSC, reported his experiences. Incidentally, these seem to bear out some of the November *TT* comments on the problems associated with unbalanced loops. It also highlights other difficulties that seem to reduce the value of this design other than for fixed-frequency operation for which it was evidently designed. G1OSC writes: "I built one of these loops and found that the length of the coax has to be an electrical half-wavelength before half the screen is removed. I found it impractical to tune by trimming the cable, even using a spectrum analyser with tracking generator and directional arrangement which can cover 145MHz plus/minus 1.3MHz: see **Fig 6**. "Even when tuned, it did not stay precisely tuned as the URM43 coax I used was not phase-stable enough. I also found that it has a very narrow bandwidth and while it may be suitable for fixed frequency operation, it can only cover a small portion of the 144MHz band (about 200kHz) without retuning. Within this range I found the direction of the null varies significantly with frequency, so each time it is used it needs to be tuned, then calibrated with a signal in a known direction on the same frequency that is to be used for direction finding!

"Another problem is that the counterpoise for the unscreened omnidirectional part of the antenna appears to be the feeder cable. When I fitted a quarter-wave coaxial sleeve balun to suppress currents on the outside of the feeder coax, I could no longer get a cardioid response. The only use I can see for it is as a sense antenna to resolve the 180° ambiguity of another antenna such as an ordinary D/F loop". G1OSC wonders whether others have been successful.

Sheer nostalgia: George Young, ZS1Y, in a two-part *Radio ZS* article on 'when radio was fascinating' writes: "In the 1990s with everybody from delivery boys, traffic cops, doctors to sports referees spouting into portable R/T, and the ham bands 90 per cent SSB, and QRL every weekend with CQ TEST which switches everybody else off, the romance has gone. What Morse we hear is canned stuff from a machine - a dying talent in an age of satellite communications and telex.... After 55 years of punching the same (manual) Morse key it will have to see me out .... The six spare 6146 tubes will keep me on the air since those now in my transmitters have been going for 20 years and still emit the same signal strength. ***G3VA***

W2DU-TYPE CURRENT BALUN

CONSTRUCTIONAL DETAILS of a wide-band W2DU-type choke-balun for minimising outer-braid current on coaxial feeders connected to dipole-type balanced elements over the range 2 to 30MHz are given in "Reflecties door", PA0SE, (*Electron,* April 1992, p189) reproduced from "Le Balun W2DU" by Maurice Limes, F6ELM (*Radio-REF,* October 1991): **Fig 7**. The 50 ferrite beads are Amidon type FB-73-2401 (outer diameter 9.7mm, inner diameter 5mm, length 4.8mm, permeability about 2500) and are slipped over a length of RG141 (50ohm) coaxial cable using two spirals of Teflon thread to secure them. This is then sealed (waterproofed) into a length of PVC tubing with an inner diameter of 16mm, using a rubberized adhesive filler given as Dow Corning Silastic 7338 (or UK equivalent). Impedance of this choke balun is stated to be more than 800Ω throughout the range 2 to 30MHz, peaking to about 1500Ω between 7 and 10MHz.



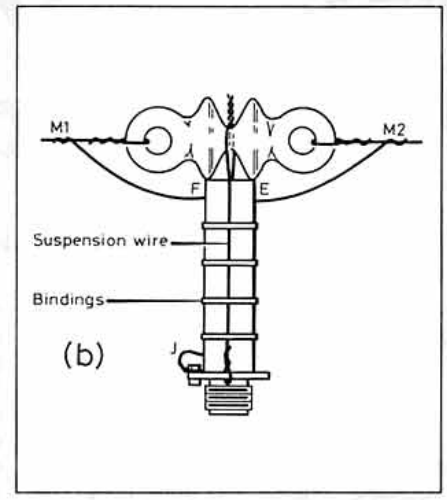
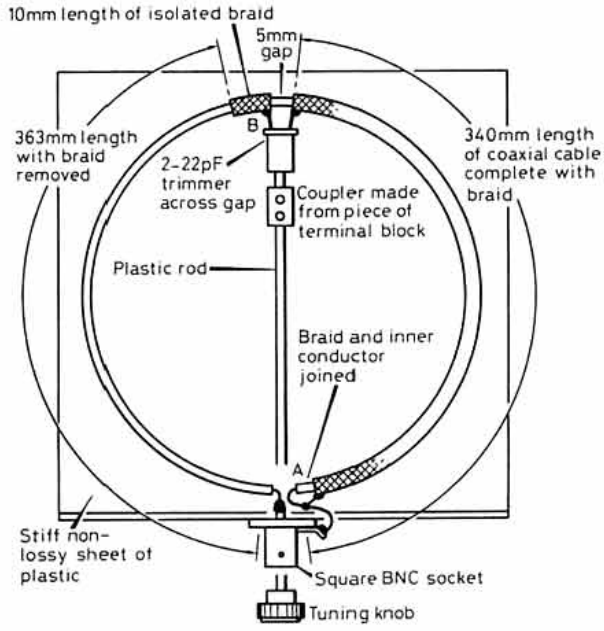


Fig 7: (a) Mechanical details of the W2DU-type wideband choke balun as constructed by F6EIM. (b) The balun suspended to feed a dipole-type wire element.



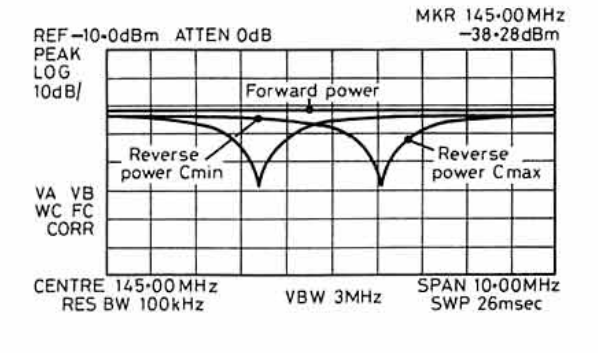


Fig 6: G1OSC's modified form of tuneable Canadian D/F loop but still presenting the need for calibration of the null at the specific frequency use. The critical factor proved to be the length of the coax with the braid on. This appears to need to be an electrical quarter-wave so that it transforms the short-circuit at point A to a high impedance at point B. Coax is URM43 with good quality woven braid. Cheap RG-58-type cable with sparse braid does not work.

Book Review

AN INTRODUCTION TO AMATEUR TELEVISION

THIS SLIM VOLUME with its unassuming title is the latest from the British Amateur Television Club. Edited by those two stalwarts of the British Amateur Television Club (BATC) Mike Wooding, G6IQM, and Trevor Brown, G8CJS, Editor and principal contributor to CQ-TV respectively.

The principles of Fast Scan TV are succinctly covered in chapter 2. For newcomers, this will bear much re-reading but, as pointed out in the foreword, can be skipped over at first. Chapter 3 describes how to set up a station with much valuable info on the various video connectors. Chapter 4 deals with video sources and switches for which circuit boards can be obtained from the BATC (ATV is a constructors' hobby). Also included are the use of several popular computers as video sources.

Chapter 5 describes a 70cm band Up-converter to enable reception on a broadcast (UHF) band TV (to confuse, this is called a Downconverter) together with a Double Side Band TX for monochrome pictures - all that band allows.

Chapter 6 takes us on to the 23cm band where FM reigns supreme for ATV and full colour is the norm. Much of the material is novel and bang up to date. Chapter 7 covers the latest BATC project for an advanced remote controlled ATV station which will involve an enthusiastic constructor for many happy hours. Chapter 8 shows how easy it is to make a simple ATV repeater controller based on a ZX Spectrum computer. Chapter 9 deals with ATV operating practice. Finally there are four useful appendices. Although the circuit diagrams display a multiple of sources rather than a consistent style they are easy to follow. In all a book no self respecting ATVer would be without - I'm keeping mine!

See *RadCom* Book Case pages 78 and 79.

G4NJU

RADCOM TECHNICAL FEATURE

An Effective DX Vertical for 80m

by Ron Stone, GW3YDX

IN THE CONSTANT SEARCH for a good DX aerial for the 80m band, anything was tried except for a vertical. Delta loops, high dipoles, half and full slopers all gave reasonable results but did not seem to match the results enjoyed by users of big verticals on the band. The reason for avoiding verticals was pure sloth. The thought of ploughing in miles of radials had always put the author off, but one weekend, in an unusual fit of enthusiasm, out came the spade to dig a hole for the ground post for a vertical and to slit the soil for a system of radials.

To judge the effectiveness of all this work, an 80m delta loop (lower corner feed) [1] was used as a reference aerial. Because of uncertainty about the eventual results, the vertical had to be a low-budget exercise, using on-site materials, costing less than £50. In the event the project cost just £1 - the cost of a suitable scrap piece of steel section from a local scrapyard.

A full size quarter-wave vertical for 80m is about 68ft high at the CW end of the band. Such a structure, made out of 2in tube, would need two sets of guys as a minimum. Although there are no neighbour problems at my country QTH, XYL opinion meant that only one set of guys was acceptable, so a design about 45 to 50ft high seemed indicated. Experience with shortened yagis over the years had shown that a mixture of capacity hat and inductive loading seemed to give the best results in terms of retaining usable bandwidth whilst physically reducing the size of the structure.

Experimentally, the design shown at **Fig 1** was evolved. The capacity hat above the loading coil is formed by 6 ft long steel wires that form the top section of the three guys. The wires used should be stranded, galvanised for protection, and not less than 0.125in diameter. They are electrically connected to the vertical just above the coil at about 33ft from the ground. The remainder of the guys consist of 5mm diameter polypropylene or nylon rope down to ground level, where they are made off to galvanised steel pickets which should be set into the ground so that at least 3ft of the picket is underground. The three guys thus fitted have held the aerial up for five years now with no problems.

Physical construction of the ground post and the radiating element posed few difficulties. The ground post is an 8ft length of T-section steel, 3in across the top of the 'T', and made out of 0.25in thick material. Anything will do provided it is reasonably strong and is wide enough at the top of the 'T' to take 2.5in exhaust clamps. The post was drilled at one end and at the midpoint to take exhaust clamps. A hole was dug and the post hammered in so that the drilled holes at the midpoint were about 3in above ground level.

The bottom 20ft. of the radiator is a 2in OD dural scaffold tube. The next 13ft is 1.5in OD tube - 16SWG - which is a good fit into the scaffold tube. Tubing shims were then cut so as to accommodate 1.125in OD fibreglass tubing into the upper tube. A good source of high quality fibreglass tube is Sandpiper Communications [2]. The fibreglass section is about 18in long. Six inches of it goes into the lower part of the aerial, a coil is wound on the central portion and the upper portion fits into the tubing which makes up the rest of the vertical element. Above the coil the remaining 20ft of the element is made out of telescoping sections of 1.25in and 1in OD alloy tube. The loading coil is 50 close-wound turns of 16SWG enamelled copper wire, the turns being held in place by three coat of marine varnish. If the antenna is to be used on both 3.5 and 7MHz, a 7MHz parallel resonant trap could be used instead of a simple coil thereby giving the configuration of 'half a trap dipole fed against ground'. All assemblies are held secure by either self tapping screws or hose clamps as appropriate. All hardware should be stainless steel and it is particularly important to use stainless steel washers in screwed connections between copper and aluminium to avoid corrosion caused by the cathodic process.

A triangular plate was made up out of 16SWG alloy scrap, with three 0.25in holes drilled at the apex points, and a 1.25in hole at the centre. This plate was slid over the end of the uppermost tubing sections and positioned to rest on a hose clamp on the tubing just above the coil. Braid from RG58/UR43 cable was fitted as a short strap to ensure a good electrical connection between the loading wire assembly and the upper part of the radiator. This strap should not be omitted as the contact between the plate and the radiator is not in itself sufficient to assure good electrical continuity. A bad or intermittent contact at this point may give rise to intermodulation products from the transmitter or RFI. The loading wires and guys are made off to steel plated thimbles and attached to the triangular plate with galvanised shackles. All physical connections should be checked for physical integrity and given protection against the weather by a liberal coating of a proofing compound such as Maplin Flexible Rubber Sealant.

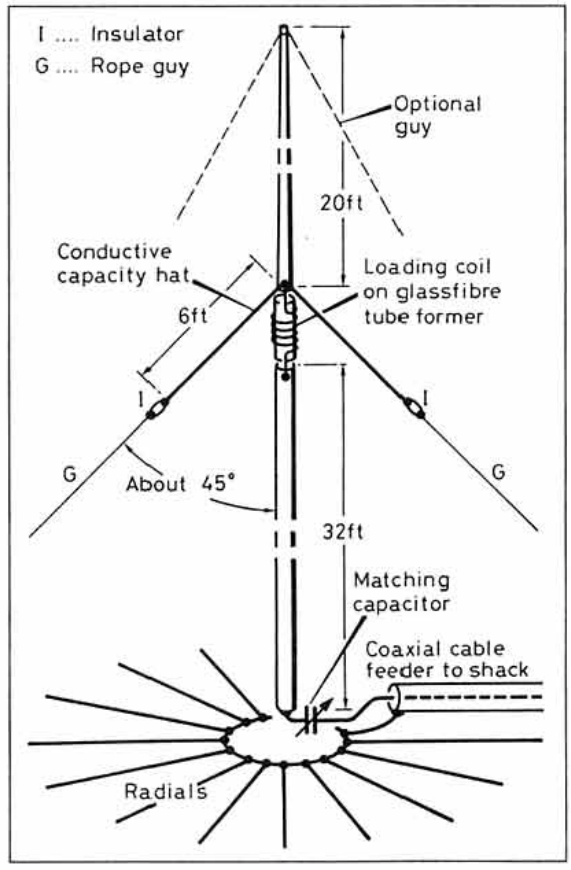


Fig 1: The final design for the DX vertical.

RAISING THE ANTENNA

HAVING PUT A BRICK at the base of the ground post so that the mast radiator would be kept an inch or two from the ground, the mast was raised. Exhaust clamps were inserted into the prepared holes in the ground post, and the mast attached temporarily to the post. The mast needs to be insulated from ground and to achieve this, 3in lengths of PVC drainpipe were slit along their length. The insulators thus formed were folded around the scaffold tube to go between it and the exhaust clamps. As the exhaust clamps are tightened, so the PVC will overlap. That doesn't matter. PVC tube as used has a puncture voltage of many kV, and as the insulators are at a low RF voltage point, they are more than adequate.

With the exhaust clamps tightened, the supporting brick can be removed, and the guys made off. The general configuration is shown in Fig 1.

SAFETY RULES FOR ERECTING LARGE ANTENNAS

THE MAST IS a heavy structure and before and during its erection the following safety rules *must* be observed [these could be usefully applied to other large antennas - *Ed*]:

1) A rigorous check should be made that there is no risk of the mast coming into contact with any overhead electricity distribution wiring. All possible directions of toppling should be considered.
2) Before erecting the mast, the job must be carefully planned. Planning will include consideration of where each part of the structure will be at each stage of the lifting process. There should be no possibility of tripping on ropes or any lifting equipment. Enough personnel should be available, and all should wear boots, gloves, and safety helmets during the mast raising process. The operation should not be attempted in strong winds or when it is getting dark. Also sufficient guiding ropes should be provided.
3) Prior to raising, all components used in construction of the mast should be double checked for being fixed firmly and safely, as should any extra equipment provided for the lifting operation.
4) The base of the mast must be firmly fixed to prevent slippage.
5) Everybody shall have their role specified. Those not needing to assist should be kept clear. This rule applies especially to children. If any children are nearby, a person should be 'detailed' to keep them clear of the operation or anywhere the mast may fall. Animals should be kept under control.
6) One person (preferably with experience of such operations) should be in charge, and not given any part of the lifting operation proper. Instructions given by the person in charge shall be clear and concise. eg "Up, Down, Inch up, etc", and not long sentences.
7) Risks must never be taken, - there is always enough time for safety. A First Aid kit should be available, together with someone who knows how to use it. All those involved should be familiar with the procedures for summoning emergency assistance.
8) The observance of safety precautions as above must be continued until all the mast fixings and guys are secure, and until the temporary ropes etc are safely coiled and stored away. All those who normally have access to the site should be reminded of the presence of the new structure, and not to touch any part of it, as RF energy may be present.
9) After erection, the mast should be regularly inspected for tightness of bolts, physical and electrical continuity, and for the integrity of any weather protection coverings.The static leakage resistor should be tested with a meter, and the spark gap adjusted if necessary. Every three years (more often in seaside locations) the mast should be lowered in a safe manner and all connections checked.

DOWN TO EARTH

NOW COMES THE HARD work. The radial system was put down 'in instalments', as set out below. The type of wire used is not critical. Gauge is not a significant factor if many wires are used, as the ground currents are shared between them [3]. The wire is preferably copper or aluminium. Even steel is acceptable, but corrosion will be worse than with the other materials suggested. Insulated wire is best as corrosion is much reduced.

The length of the wires is not critical, but the longer they are, the better. However, many short radials are better than a few long ones. Current suggestions are that elevated ground planes of resonant radials give a better performance than most amateur buried radial systems. However, elevated radials would have caused an unacceptable obstruction and were not tried. In this design, 40 radials were laid, varying in length from 50 to 80ft. The need to bury the wires is a myth. On the surface will do, but in this installation the wire is buried down about three inches so that the goats on the land (curious, nosey animals) do not chew the wire and destroy it.

To put the radials in - and it is long, hard work, the ground is slit with a spade, and the wires pushed in. A useful tool for this is an old screwdriver with a 'V' notch filed into the end of the blade. It is a lot better than using the fingers. All the radiators are brought together at a common point at the ground post and weatherproofed with compound. The next step is to fit the 50Ω feedline, matching system (see below) and static / lightning protection assemblies to the aerial. Protection against receiver damage by static build-up is afforded by a 1MΩ, 5W resistor (five 4M7 Carbon film 1W resistors - eg Maplin C4M7 - in parallel) from the base of the mast radiator to ground. Lightning protection is implemented by an adjustable spark gap with the gap adjusted to 2mm. The spark gap is implemented by a simple lock-nut and bolt arrangement at the base of the mast radiator.

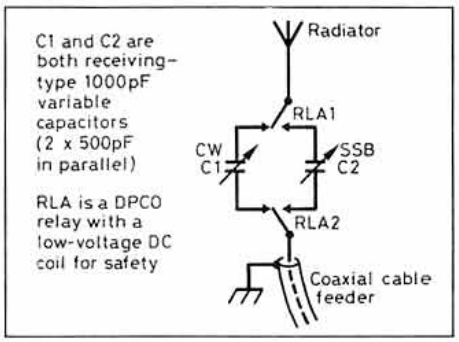


Fig 2: Both ends of 80m can be covered by using remotely controlled switched capacitors.

FINAL ADJUSTMENTS

WHEN CHECKED WITH A GDO, the aerial system resonated at about 3.2MHz, ie it had an electrical length of about 80ft or 0.3 wavelengths. To match the system to the feedline all that was required was a capacitor to tune out the excess inductive reactance at the desired operating frequency. As the capacitor is present at a low voltage point, a receiving variable is quite up to the job, even at full legal power output.

The author mainly uses CW, but now and again goes up the band to 3.8MHz on SSB. Using the aerial at both extremities of the band was a design requirement. The aerial did not have enough bandwidth to work over the entire band with a low VSWR, so to make operation possible on both 3.5 and 3.8MHz, a simple switching arrangement was used. All that is required is a relay and two variable capacitors in a weatherproof box at the base of the aerial, the relay being remotely energised from the shack.

The circuit is shown at **Fig 2**. There is a slight amount of residual VSWR using just a capacitor. A neater solution would have been an L-match network [4], but the ice-cream box used to house the relay and capacitors was not big enough. In any case the VSWR of the system is less than 1.5:1 at the operating frequencies, which is quite low enough.

COMPARISONS AND CONCLUSIONS

AS FAR AS RESULTS and comparisons with the delta loop were concerned, as an experiment the radials were put down in instalments, tests being made at each stage. Initially, only four 60ft. radials plus a single 3ft earth spike were used. After a week of testing the general conclusion was that the vertical was, on average, one S-point down on the delta loop to DX. The 'break-even point' came at the 16 radial level. At that stage the two aerials were giving roughly the same results to distant parts, with the vertical responding less well to European signals, in itself quite a benefit.

At the 40 radial level, (some 2,500 feet of wire) the author's back was sending S9 signals that it was time to stop, and reports from the vertical were usually one S-point better, and sometimes even more, compared with the delta loop. When you consider that the apex of the delta loop was over 90ft from the ground, that was a very rewarding result.

REFERENCES

[1] 'Loop aerials close to ground' L Mayhead, G3AQC, *RadCom* May 74.

[2] Sandpiper Communications, Unit 5, Enterprise House, Cwmbach Industrial Estate, Aberdare, Mid Glamorgan CF44 0AE.

[3] 'The W2FMI ground mounted short vertical' J Sevick, W2FMI, *ARRL Antenna Anthology*.

[4] 'The Apartment Dwellers Dilemma' McCoy, W1ICP, *ARRL Antenna Anthology*.

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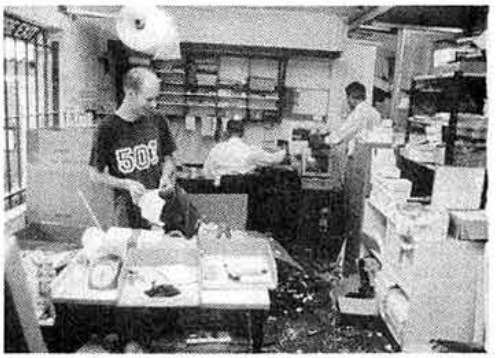

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D-130N	Discone 25-1300 MHz 50 FT cable	84.95
CP-22E	2m 2 x 5/8 6.5dB gain omni directional	49.00
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X-700	2m/70cms 9.3/13db gain 7.2m long	219.00
V-2000	6m/2m/70cms 2.15dbi/6.2db/8.4db 2.5m	99.00
X-5000	2m/70cms/23cms 4.5/8.3/1.7db 1.8m	109.00

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NR-790	2m/70cms 4.5/7.2db gain 100 Watts	48.00
SG-7900	2m/70cms whip 5.0/7.5 db supergainer	68.00
DP-2HE	2m 1/4 wave whip PL259	6.95
M-285	2m 5/8th whip PL259	16.95
EL-2E	2m 7/8th deluxe whip PL259	33.95
NR-07C	70cms mobile whip PL259	25.00
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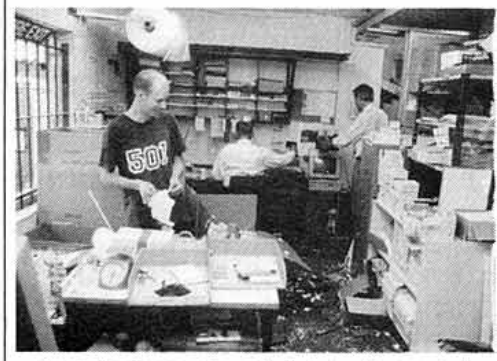

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Peter Waters G30JV/G0PEP

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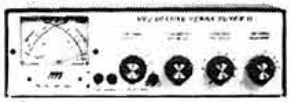

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CP-6	6-10-15-20-40-80m vertical with radials	219.00
D-130N	Discone 25-1300 MHz 50 FT cable	84.95
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D-707	Active rx. 1.5-1300 MHz/12V	99.00

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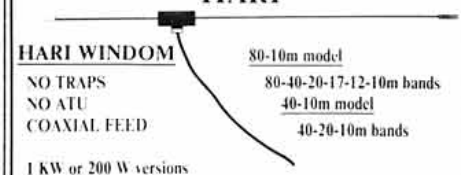
M-285	2m 5/8th whip PL259	16.95
EL-2E	2m 7/8th deluxe whip PL259	33.95
NR-07C	70cms mobile whip PL259	25.00
AM-1	Gutter mount fold over type	12.95
EC-H	PL259/SO239 cable kit for DP-GI	9.95
SP-M	Heavy duty magnetic mount with cable	25.95

"HARI"



40-Wind-LP 40/20/10m 200W 21m	£49.95
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- Wind survival – 100mph
- Virtually indestructible
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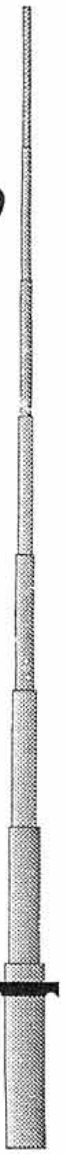
- Basis for many aerial systems
- Project guide supplied free

£59

The Flexi-Mast is constructed of a carbon compound that makes it virtually indestructible. Ten telescoping sections quickly lock together automatically. The mast can be used as the basis for many different DX vertical systems for the HF bands or can be used to carry lightweight VHF antennas and inverted "V" systems. The great thing about this mast is that it is "bomb proof!" If it falls down it won't be damaged and it won't damage you! What is more, there are no metal parts to rust and its size means it can be easily transported in any vehicle or aircraft. Its telescopic portable nature means it probably won't even contravene planning regulations.

Constructed of non conductive material it has the wonderful advantage of acting like a giant coil former. A complete vertical system can be made by taping wire elements along its length, a quarter wave on 40 metres perhaps, or a 5/8th wave on 20 metres. You can directly wind coils onto it to make a base loaded or trapped HF system. What is more, because of its length it will be more efficient and have a better bandwidth than any of the shorter commercial systems advertised at many times the price. The possibilities are endless! We made a vertical system for 40 metres by taping a wire element to its length and immediately worked across the Atlantic! You'll find it great for expeditions, portable work or where space is lacking. It truly is a remarkable product that is offered at a remarkable price. p&p £5



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DR-119E 2m Mobile 50 Watts £289

RX: 135-174MHz

The latest 2 metre mobile from ALINCO now offers superb value. No larger than a car radio it boasts 50 Watts output and extended receiver coverage. Completely re-styled it offers all the usual features including memories, scanning etc, and comes with microphone, mounting kit and full warranty. For more details send or phone for brochure.

NEW! ALINCO

DR-599E 2m/70cm Dual Band Transceiver £549

RX: 130-174MHz
AM: 108-143MHz
420-470MHz

Just arrived, this is the replacement for the DR-590E and has been radically updated. It now includes the AM VHF airband and extended receive capabilities. Also included is the automatic remote repeater function enabling you to operate your own cross-band repeater. Power has been increased to 50 Watts per band and we have the full colour brochure available for the asking.

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Carriage £5 extra

DR-112EM 2m 25 Watts

Money back guarantee if not fully delighted upon receipt!

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- 6 programmable steps
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- 4 scanning modes
- High/low power output
- Rx130-174MHz

If you know a bargain when you see one you will surely be on the phone to our mail order department immediately. This special offer from ALINCO puts the DR-112EM at the top of any shopping list. These are brand new factory fresh radios direct from Japan with full UK warranty. There's absolutely no catch. Check our earlier adverts and you will see we were selling them for £50 more a few months ago! The price is right and these are real bargains. But the stocks are limited to what is in our warehouse. Once they are gone there is no more. To really convince you, we are offering a full, no quibble, refund if you are not absolutely satisfied when you receive your DR-112EM. That's confidence!

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Ramsey — USA P-IBM

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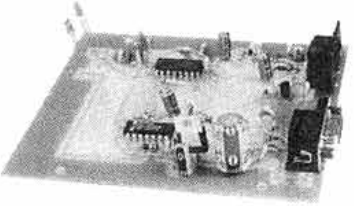

This is a truly amazing kit for all those who want to get into Packet radio without committing themselves to a large outlay. The complete kit of parts is provided with circuit, board layout and comprehensive manual. It can be put together in an evening. All you need is an RS-232 lead to your computer and cable connection to your transceiver mic socket. You'll be receiving and sending Packet signals in no time at all. If you haven't tried Packet radio, here's your chance to do so with minimum outlay and guaranteed results.

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RADCOM TECHNICAL FEATURE

4m/6m Interference Reduction System

by Trevor S Day, G3ZYY

THE APRIL 92 EDITION of *RadCom* described a 2m Interference Reduction System capable of reducing or eliminating virtually all forms of local QRM. This article describes the modifications for operation on either the 4m or 6m band.

CONSTRUCTION

FIG 1 SHOWS THE CIRCUIT of the new version. A more detailed description of operation and construction appears in the earlier article, and this should be followed closely when constructing the 4m or 6m version. The circuit is similar to the 2m version, the main differences being in the design of the preamplifiers. Also, the fine phase control is not required for 4m and 6m.

The coils which form the drain load for MOSFETs TR1 and TR2 on the original circuit, have been replaced by resistors. Each has a ferrite bead as shown. See **Table 1** for the changes to the original circuit. The variable 180° phase change switching configuration is identical to the 2m version except for the length of each cable loop.

Most components are not critical. The circuit will work with any pre-amplifier design provided a variable gain control is included. If preferred, the diode switching at S2 can be achieved using a manual switch. The critical components are in the RF combiner and of course the lengths of co-axial cable in both delay lines.

The original PCB layout is suitable for either the 4m or 6m versions. Reference to the original circuit as well as the new one will ensure that all the components are correctly located. Note that most of the component reference numbers have been changed (eg R7 becomes R8). Also, the original PCB layout contained an error, resulting in a short circuit across C14. The track should be etched to remove this.

ALIGNMENT

SETTING UP IS quite straightforward:

a) With the sense antenna disconnected, tune to a suitable signal and adjust VC1/L1 for best signal to noise. Adjust RV1 for optimum signal level at the receiver. This does not mean greatest S-meter deflection, but to a level similar to that obtained with the unit out of circuit.

b) Disconnect the main antenna and re-connect the sense antenna. Using any local signal source adjust VC2/L2 for maximum signal.

c) Re-connect the main antenna and use as described in the original article. RV2 now becomes the balance control.

TRANSMIT/RECEIVE SWITCHING

THIS MAY BE ACCOMPLISHED using a standard relay switching circuit (**Fig 2**). Alternative arrangements for Push-to-Talk (PTT) circuits are shown in **Figs 3 and 4**. Note that in both cases, the relay is activated when power is applied to the unit. The PTT action disables the relay. A little experimentation or consulting the transceiver circuit diagram will show which is most suitable. In Fig 3 a high impedance source supplies current to bias the transistor - this is removed during 'transmit', and the relay will release. In the alternative arrangement of Fig 4, R1 provides the bias which is short circuited by the PTT switch. The transistor is a general purpose switching type, with a collector current rating to suit the relay used.

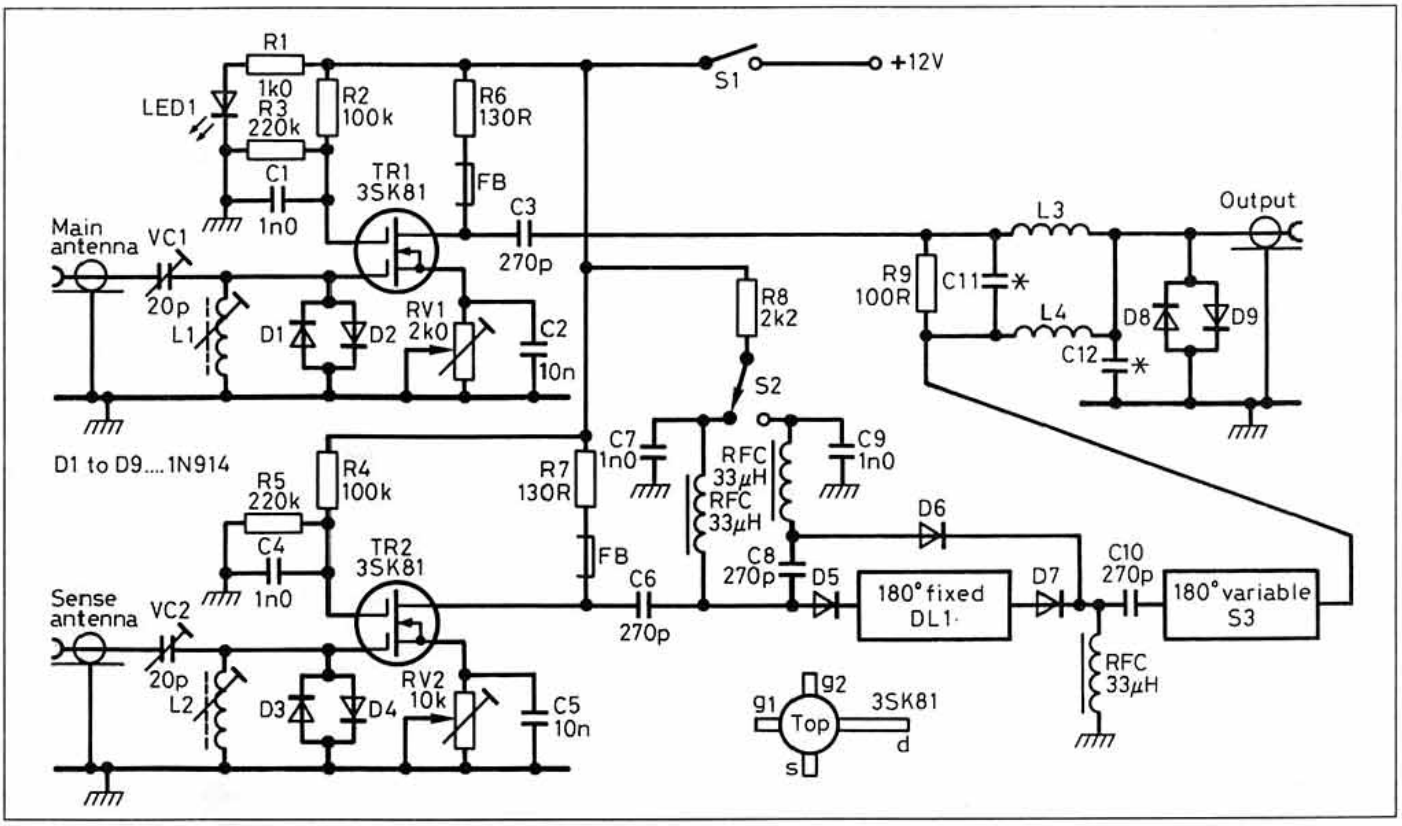

Fig 1: Complete circuit of the modified system. See Table 1 for values of C11, C12 and coils.

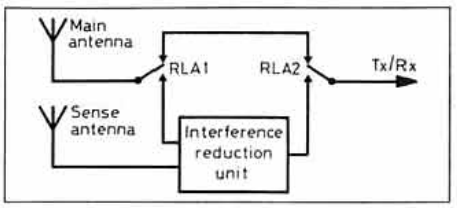

Fig 2: RLA switches the unit in or out.

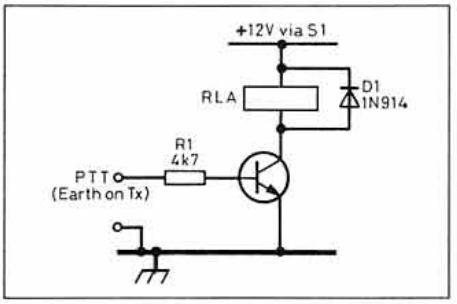

Fig 3: For Tx/Rx with 12V on PTT line on receive.

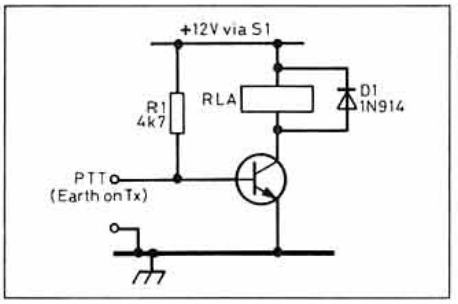

Fig 4: For Tx/Rx with floating PTT line on receive.

MODIFICATIONS FOR 4 METRES

C11	22pF
C12	47pF
L1/L2	7t 22SWG 4mm slugged former (dust iron core), close wound.
L3/L4	5t 22SWG 4mm inside diameter, air core, self supporting, close wound.
DL1	180° fixed delay line; 140cm RG174U (braiding to earth).
S3	180° variable phase shift; 11 sections 12.7cm RG174U. See 2m version, *RadCom*, Apr 92, for construction details.

MODIFICATIONS FOR 6 METRES

C11	33pF
C12	64pF
L1/L2	10t 22SWG 4mm slugged former (dust iron core), close wound.
L3/L4	8t 22SWG 4mm inside diameter, air core, self supporting, close wound.
DL1	180° fixed delay line; 198cm RG174U (braiding to earth).
S3	180° variable phase shift; 11 sections 18cm RG174U. See 2m version, *RadCom*, Apr 92, for construction details.

Table 1: Changes to the original circuit.

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G4PMK SIMPLE SPECTRUM ANALYSER (November 1989)

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Control board	038942a	£5.30
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G4WIM	Dual Band Project	POA
G4PMK	Spectrum Analyser	£53.00
G3RVM	Ultimate Keyer	£13.90
G3TDZ	White Rose Rx (Main Board)	£18.50
G3TDZ	White Rose Con Fundamental*	£7.10
G3TDZ	White Rose Rx Conv SS O/T Osc*	£9.20
G3TDZ	White Rose Rx Conv SS O/T Osc and mult*	£10.95

* Converters exclude crystals which must be ordered as a separae item from our catalogue selection

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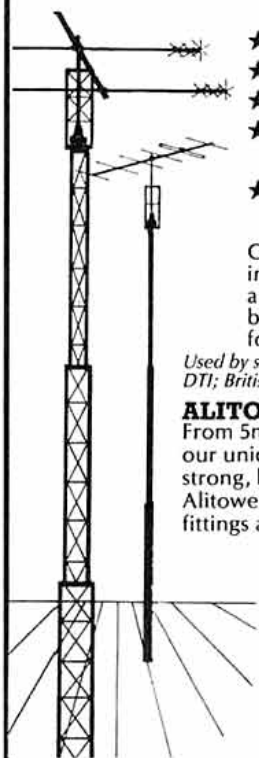

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IDEAS FROM ABROAD

TRANSLATED AND EDITED BY ERWIN DAVID, G4LQI

The **VHF/UHF Antenna Test Event** of the **Meppel** (East-Central Netherlands) section of the Dutch IARU Society *VERON* was one of the attractions at their tenth annual flea market on 28 September 1991. PE1IHU organized the event. PA3CPD and PA3AYQ did the testing and the latter wrote the report in *Electron* (NL) 1/92.

TRADITION DEMANDS that an antenna test event be held at the annual Meppel flea market. Last year we had to cancel because of rain and this year the met-office promised no better. We decided to take a chance and were rewarded: the early hours saw cars and trailers with masts, tents and electronic gear rallying to the site in perfect 'antenna weather'.

THE TEST RANGE

FROM TRANSMITTERS several kilometres away we provided signals on 50.475 (horizontal polarization), 144.4 (hor), 144.885 (vert) and 432.4MHz (hor). This distance assured us of a homogeneous field at the receiving site where we had, side by side but several wavelengths apart, the test mast and an auxiliary mast with a reference antenna (a cubical quad, aimed at the transmitters and polarized at 45°).

The electronics consisted of an HF receiver with converters for 6m, 2m and 70cm and an audio voltmeter calibrated in dB. [A receiver with its AGC switched off and an RF input signal well above the noise but below saturating any stage, produces an audio output that is reasonably proportional to its RF input. This output can be read on the audio voltmeter - *G4LQI*].

First, a standard dipole is installed on the test mast and its output is compared with that from the reference antenna. Next, the dipole is replaced by the antenna to be gain tested, and its output is compared with the same reference antenna. The difference between the two comparisons now represents the gain of the antenna under test with respect to the dipole. This indirect method allows the same feeder to be used for the standard dipole and the antenna under test [and also, by allowing rapid switching between reference and antenna under test, eliminates errors due to changes in transmitter power or receiver gain, eg due to power supply variations, and propagation; yes, QSB over 5km! 'Measuring Antenna Gain with Amateur Methods' is described by Dr Wayne Overbeck, N6NB, in the *ARRL Antenna Anthology* - *G4LQI*].

Enthusiasm for the event was as high as in previous years, also from beyond the Dutch borders.

To celebrate the tenth anniversary of this rally, our Fleamarket Team had sponsored a prize to be awarded for the 'best' home-brew antenna; 'best' was not to be based on RF measurements only, but also on mechanical design, choice of materials reproducibility and finish. The Antenna Test Crew was to act as a jury.

THE MEASUREMENTS

THE FOLLOWING COMMENTS represent a selection from the day's work:

- First on the test mast was an X-Yagi which was badly corroded; its owner wanted to know if it still worked. It did indeed, though a good cleaning and polishing may squeeze out another dB or two of gain.
- A well-constructed 11-element 2m antenna with a 4m boom did not meet its forward gain expectations. A faulty balun was to blame; with a gamma match it performed properly. A 21-element 70cm beam of the same length and construction and a gamma-match also worked fine: 14dBd.
- A quagi can be a very effective antenna. The model entered here had a double-quad radiator, two stacked 3.60m booms with seven directors on each and a back plane with seven reflectors. Its gain remained below par, probably because its bazooka balun had the wrong length.
- VHF/UHF radios have been sold for a long time, but few matching dual-band beams are being offered commercially [two models were mentioned in the HamRadio'91 report in *Eurotek* 10/91 - *G4LQI*] We were curious how PA0WAH's log-periodic would perform. The results encourage further experimentation: 6dBd on 2m and 3dBd on 70cm. The F/B ratio was excellent on VHF, not good on UHF.
- Magnetic loop antennas are well-known for HF but we looked forward to measuring one on VHF. It worked as advertised. Tuned to resonance at 145.00MHz, it was 3dB down at 144.885MHz for a total of -7dBd. With a diameter of only 16cm it can be plugged straight into a hand-held and used for DF.
- A 'Big Wheel' or 'Cloverleaf' is an omnidirectional horizontally polarized antenna. It is reasonably wide-band, so, generally, ideally suited to home construction. Our 2m sample worked as expected but a 70cm version was all-but omnidirectional. We found that the three elements were not of equal length.
- For 50MHz there was a V antenna. This was supposed to be an TV beam for US channels 2-3-4, but that seemed unlikely considering its low gain and figure-of-eight pattern. [US channels 2-3-4 cover 55-72MHz; it is surprising there was any gain at 50MHz - *G4LQI*]. Two home built 3-element 50MHz Yagis worked very well, though the radiation pattern of one was skewed.
- After an adventurous six-hour drive, DB2SBV arrived with the biggest antenna ever offered up for testing here. The true ham spirit! It was 10.35m long with 20 elements, later to be extended by another 3.90m with four more directors. This antenna was to show that a successful 70cm design could be scaled up to 2m. It took auxiliary masts, ropes and a whole hour of hard work to get the monster up on the test mast; even the reference mast had to be tilted out of the way. The results only confirmed what was already known: that there is a point of diminishing return beyond which a longer boom does not produce more gain but disproportionate mechanical problems. In fact, the addition of 3.90m more boom with four more directors resulted in somewhat less gain! Better results might be obtained by stacking two shorter antennas.
- PA3DFR brought a so-called phase-linear antenna in which two closely spaced tubes serve as both, boom and phasing line. Successive elements are connected to the phasing line in opposite sense and bent in a special manner [as per Landstorfer, I suppose; see *TT*, 12/91 - *G4LQI*].

THE WINNER

THE JURY HAS AWARDED the prize for the best home-made antenna to PA3DDY. His portable 3-element 6m Yagi was assembled of standard materials, was beautifully finished and met expectations on test. On a 1.80m boom, it had 5dBd forward gain, a -3dB beam width of 80° and a 16dB F/B ratio. This combination of design, selection of materials, finish, performance and ease of duplication carried the day; the editors of *Electron* hope that a description will be made available.

CONCLUSION

TECHNICALLY, THERE WERE no surprises. The interest of participants and spectators shows the demand for an event of this type. The next one is on 26 September 1992.

THE MOST IMPORTANT TEST LOG ENTRIES

Call	Type	Ele	Band MHz	Long m	Gain dBd	F/B dB	Beam degr	Remarks
PA3DDY	Yagi	3	50	1.8	5	-16	80	portable
PA0KMS	V	2	50	1.1	3	-1		fig-8
PA3FTL	Yagi	3	50	2.5	7	-16	72	skewed
PA3BCC	X-Yagi	10	144		8			corroded
PA3BRC	Yagi	11	144	4.0	10	-17	32	gamma match
PA0EMO	Quagi	22	144	3.7	10	-23	55	7 directors
PA0WAH	Log-per	7	144	1.0	6	-21	80	
DB2SBV	Yagi	20	144	10.4	14	-20	25	4 reflectors
DB2SBV	Yagi	24	144	14.3	13	-20	37	see text
PD0NRK	Mag loop	1	144	0.16	-7			off resonance
PA3DFR	Phase-lin	2	144	0.5	2	-13	85	
PA3BRC	Yagi	21	432	4.0	14	-28	24	gamma match
PA0WAH	Log-per	7	432	1.0	3	-3	30	

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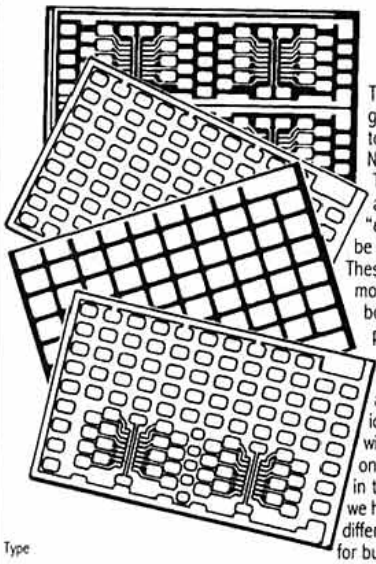

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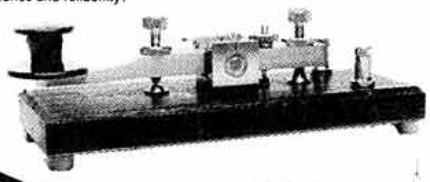

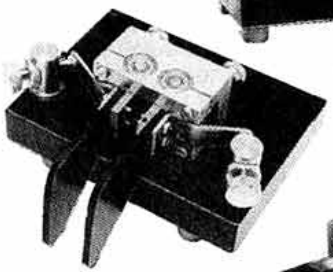

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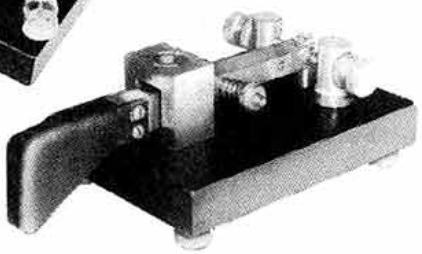

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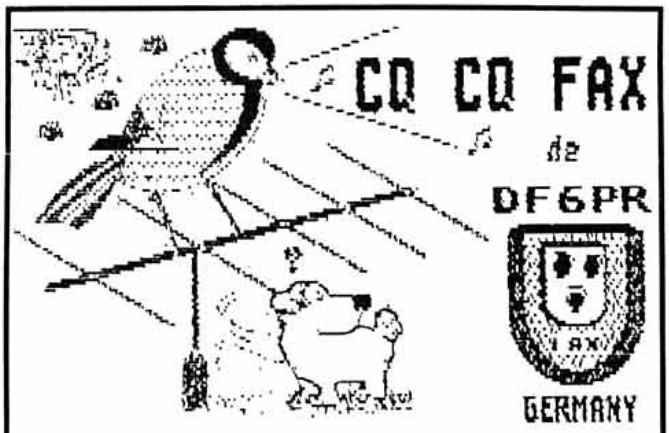

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RADCOM TECHNICAL VIEWPOINT

Stop the Packet Racket on HF!

Abridged from an article by Colin Richards, 9M2CR, first published in *Amateur Radio*, the journal of the Wireless Institute of Australia

AMATEUR PACKET AX25 is a straight steal from Telecom's X25 landline packet, designed to operate on quiet and clean telecom channels, not on radio links. Amateur Radio VHF/UHF paths offer a reasonable facsimile of a clean landline channel - hence the success and attraction of AX25. Early kit-built TNCs were primarily aimed at VHF/UHF users and the modification to run 300 baud with 200Hz shift was an experiment by TAPR (Tucson Amateur Packet Radio Group) to see how packet worked on HF. When ready-made TNCs appeared on sale each one boasted HF facilities as if this were automatically assured, but those who expected more microprocessor magic soon found that packet radio performed badly on the HF bands. You don't have to look far for the reasons.

Even the shortest packet frame is 152 bits long - leading flag (8 bits) + destination call (56 bits) + source callsign (56 bits) + control field (8 bits) + frame check sequence (16 bits) + trailing flag (8 bits) - more if 'bit stuffing' takes place - and more again if you wish to digipeat. We haven't added a single word of communication or data yet - so that 19 bytes (152 bits) is a fixed overhead for each packet sent.

80 bytes represents a single line of type. This adds 640 bits giving a packet of at least 792 bits long. It needs just one of these bits to be corrupted for the whole frame to be discarded. At the HF packet speed of 300bps this packet will take 2640ms to send. This means we need 2.64s of perfect propagation to get the packet through unimpaired - no fading, no QRM, no static. What a hope! The result can be seen when you watch the struggling traffic on 14MHz - retry after retry after retry.

THE AMTOR ALTERNATIVE

IN CONTRAST, AN AMTOR data block is only three characters (21 bits) long. At 100bps it takes only 210ms to send the block against the 2640ms required by our packet frame. In other words the AMTOR block gets through in just one twelfth of the time taken by the packet frame and the chances of interference are thus greatly reduced. Even if the packet station tries to improve the odds by setting PACLEN to 40 (half a line of type) this shorter packet will still take 1573ms to send - seven times as long as an AMTOR block. Remember, too, that AMTOR retries are much quicker and very much shorter than Packet.

The packet user starts his first HF QSO and is delighted to see how quickly he gets connected. At this stage he probably doesn't know that the CONNECT packet is one of the shortest and therefore one of the easiest to send. The trouble starts when he tries to send a message.

STATION GETS RESTLESS

THE FIRST RUDE SHOCK is to see that even when he gets a packet through, it will only be a short piece of a sentence. He may have to send three packets before it makes sense. In the meantime, the distant station gets restless, so he starts sending. In comes a piece of his opening sentence and Station one is surprised to see this jumbled in with the message he is trying to send.

They pause and consult the 275-plus pages of the TNC manual and decide to send the command LC OFF. Incoming messages are now displayed in upper case, while outgoing messages are in lower case. Great, until they realise that at one command they have destroyed one of packet's claims to fame - the ability to send both upper and lower case.

ONE-WAY CONVERSATION

LETS FACE IT - packet on any band is *not* a conversation mode. If you're a one-way talker or simply want to send messages, good enough. AMTOR on the other hand is a 'human dimension' mode with its 66WPM maximum speed neatly matching that of a reasonably competent keyboard operator. It is robust and friendly - with the sender seeing exactly and immediately what the distant station receives. No irritating chore of watching for a ACK signal on a jumble of TNC LEDs.

What about packet's other major claim to fame? In the jargon - 'time domain multiplexed carrier sensed multiple-access digital communication'. In other words, several QSOs simultaneously on a single channel. Monitor any 20m Packet channel and take a real look at what is happening.

Certainly there are callsigns galore - many appearing at odd and distant intervals, much noise, scrappy bits of sentences, mostly repeated again and again because the other operator didn't get it - earlier callsigns vanish as they time out in exasperation - endless rubbish scrolls up the screen.

ENTER THE PBBS

THE PACKET SOLUTION on 20m has been to give up over-crowded 14103kHz and start another channel 2kHz up, and then another and another. Bang goes the second claim to fame - the single channel where everyone can be found. And, of course, the inevitable is happening; packet QRM is spreading LF, too.

Enter the PBBS - easy because the system is portable - an XT clone and a cheap diskette. The PBBS is a sure-fire guarantee of bedlam because the operator is barely in the shack to monitor its antics.

POSSIBLE SOLUTIONS

MIKI NAKAYAMA, JR1SWB, (JAMSAT design team) says that even if HF Packet were run at 100bps the 5dB increases in power per-bit would produce no significant improvement because noise on HF bands is not gaussian in nature. Current HDLC coding (ie AX25), he says, can never be supported on a link with an error-rate between $10e^{-2}$ and $10e^{-3}$ (typical of HF) since there would be one bit error in even the shortest frame which would kill the packet immediately. The only solution, says Miki, would be to employ redundant coding (for error-correction coding) such as that used for the emergency communications link for phase-3 satellites. Remember that packet, and AMTOR for that matter, is an 'error-detection' system only.

Karl Meinzer, DJ4ZC, (DARC Phase 3 design team), agrees that current modulation method for packet radio are inefficient. He suggests that much of the attraction of packet stems from the link-up of radio with computers, via the black-box magic of the TNC. In a way, he says amateur radio has been led up a blind alley with AX25, which does not lend itself to redundant coding. There is now a vested interest, he says, in sticking to a dubious performer, since there is little chance of another TAPR/Vancouver-type campaign being mounted to design a better system.

CONCLUSIONS

THE LESSON TO BE LEARNED is that packet radio may be fun for sending messages on VHF/UHF. It is not a real QSO mode and is grimly inefficient on HF, where AMTOR is ten times faster at getting messages through. Packet stations have now grudgingly agreed that AMTOR is the only way to send messages long-distance, hence the emergence of packet/AMTOR gateways.

What is disturbing to regular AMTOR users is that gateway systems such as +APLINK+ are trampling on accepted AMTOR protocol by using mongrel packet-type commands and a CR/LF handover in place of the normal (and official) +? This is the result of trying to impose a Packet solution on an already established AMTOR mode - the packet tail trying to wag the AMTOR dog! A genuine AMTOR answer to the problem was set out with customary clarity and thoroughness by Peter Martinez in his description of the G3PLX AMTOR Gateway Mailbox in the Autumn '89 issue of BARTG's *Datacom*. Lets hope that +APLINK+ and others follow this good example.

Finally, you will find most AMTOR Mailboxes have friendly, conversational commands bearing little resemblance to packet's esoteric mumbo-jumbo. And when in doubt, HELP+? will soon put you right!

DataComms

RICK STERRY G4BLT
1 Wavell Garth, Sandal Magna, Wakefield,
West Yorkshire WF2 6JP

I MENTIONED SOME NOVEL technology at a car hire depot in Los Angeles, back in the Nov 1991 column. Well, several people contacted me to confirm that it was indeed a 'fancy' form of packet. Martin, VE7CGM/G4EZG, tells me that data rates and modulation techniques vary depending on the application, and the data can use a dedicated channel, or share with voice. Apparently such technology is also used within the UK, in industry and warehousing for example, often in conjunction with barcode readers.

I had hoped to devote a substantial amount of column space to packet satellite gateways this month. However, I shall have to hold this over until November. The SysOp of GB7LAN has been very helpful in providing information, but if anyone else has any contribution to make, I would like to hear from them.

Recently, I sent a packet message 'down South', and was astonished to receive a reply within about an hour. Apparently, my message went from GB7WRG in West Yorkshire to GB7RDG in Berkshire, via four intermediate BBSs, in just 17 minutes. Now that's how the network ought to work all the time! (No, it wasn't due to errors in the realtime clocks, hi!)

MINI-PAK REVIEW

I DON'T NORMALLY INCLUDE reviews in this column, due to lack of space. However, I have been unable to find time to write this as a full-blown separate review, so here it is.

Mini-Pak from Siskin Electronics is a licensed version (1•50a) of the well-known German Baycom, (pronounced "bi-comm"), packet program for IBM-compatible PCs, together with a miniature modem. The package comes in a neat plastic case, complete with 5.25in 360k or 3.5in 720k DOS disc, modem, connecting cable, and 9-way to 25-way 'D' serial adaptor.

The modem uses surface-mount components, and is fitted inside a slightly elongated 9-way connector housing, with a short lead terminated in a 5-way DIN socket. The main connecting lead has a DIN plug on one end, and either bare wires or the appropriate connectors on the other; the signals provided are Audio In, Audio Out, PTT and Ground. Thus, the modem can be wired directly to an FM transceiver, without the need for a TNC, though there is no indication in the manual as to how much current the PTT line can handle. The Audio Out level is adjusted by means of a tiny potentiometer in the modem, accessed through a hole in the casing.

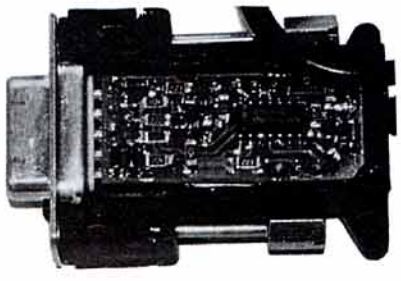
The first problem was, as is so often the case, the manual. This had been painstakingly translated from the original German (an unenviable task), but the problem was that it was almost a literal translation. Thus, things that were explained badly in German were also explained badly in English, and the rather strange German phraseology was retained in some cases. Also, the index left much to be desired. I understand that the manual has since been substantially rewritten to make it much more readable.

The software is very easy to install on hard disc, (or on a working floppy), and is invoked with the command 'GO'. After a delay, depending on the speed of the machine in use, the user screen appears. The screen is split into three horizontal windows. From top to bottom these are the sending window, the receiving window, and the monitoring window. Between the upper and middle windows there is a general status line, and between the middle and lower ones there is a line showing the connect status of all ports. The port is selected by means of the function keys, and it is very simple to conduct several QSOs/sessions at the same time. When fresh traffic comes in on another port, or a fresh connect appears, the corresponding callsign on the port status line starts to flash. Pressing the appropriate function key then displays the sent and received traffic on that port; you can flip between ports freely without losing any of the traffic. In fact, if you wish, all traffic can be saved automatically onto disc, so that it is retained even after you have switched off.

SOFTWARE CONFIGURATION

The manual explains how to configure the program to customise it to your own requirements. This can be a lengthy and tricky task, as a very long configuration file must be altered. However, to be fair, configuring a conventional TNC isn't a very easy task for the beginner either. In effect, the software is a TNC emulator plus a driver program, so the commands are split into two categories, just as if you were running an external TNC.

There are far too many features of the software to describe here, and anyway, the existing popularity of the Baycom software speaks for itself. Some features are very good, such as the automatic logkeeping, but in one area the software is curiously deficient: it does not support the usual personal mailbox (PMS) commands. Text files can be saved to disc, using syntax // WRITE <filename> and //WRITE OFF for example, and binary files can be saved using WPRG instead of WRITE. However this is very clumsy, and there is no Help facility for connecting stations, other than as a customised welcome message. At the top of the 'wish list' for future versions must surely be the use of SP <callsign> for personal messages.



Internal view of the Mini-Pak modem.

The package runs on most IBM-compatible machines, though not under PC emulators, as found on certain Acorn, Atari and Commodore machines for example. Also, the manual does warn that some specific machines, including some laptop/portables, are not suitable, and neither are 'exotic' comms cards (I can vouch for the latter!). I ran the package on an original IBM XT, which is as basic a PC as you can get, and apart from being rather slow to boot the package up, it worked perfectly. The display on the review XT was monochrome, and though the screen display was perfectly clear, a colour adaptor does make it much more attractive.

DISADVANTAGE

Unfortunately, the review modem did not seem very robust mechanically, and problems were experienced with intermittent connections internally. This, I am assured, has been rectified in current versions. For most purposes, a slightly larger modem using conventional components might be more practical, and I understand that one will be offered in the future as an alternative. However, for a really portable packet station, using a laptop PC and a handheld transceiver, the surface-mount modem must be a very attractive item, subject to the above exceptions.

The fundamental disadvantage of a package such as this, compared to a separate TNC with built-in mailbox, is that the computer must be left running all the time for the package to function. This is perhaps why a PMS facility has not been included, though I believe that many users are indeed prepared to leave their machines on for long periods, perhaps even for 24 hours a day. The TNC emulator can be left running in the background while the computer is used for other tasks, but obviously not if the power is switched off.

FULL AFTER SALES SUPPORT

The price has recently been reduced to £69.00, including VAT, which is about half the price of a TNC with Public Domain software. This may still seem slightly expensive for what appears to be a Shareware program, plus a very simple modem. However, what the user gains is full after-sales support, for which Siskin has a very good 'track record', and many users will consider this of great value. I understand that future software upgrades will be available at nominal cost.

Furthermore, a substantial share of the proceeds is fed back to the Baycom/Digicom team to enable them to continue to enhance the packet network in Southern Germany. Sadly, many users of Digicom and Baycom have been content to use the package without sending a contribution, despite the effort put in by the team. Also, there has been unlicensed commercial exploitation in some countries, with none of the proceeds reaching Germany. This co-operation with Siskin in the UK is, apparently, an attempt to re-establish some control. It's all in a good cause, you might say.

I am grateful to Siskin Electronics (2 South Street, Hythe, Southampton SO4 6EB; tel 0703 207587) for the loan of the Mini-Pak package, and to Dave Ramsden, G4YPV, for the loan of the PC XT.

Microwaves

MIKE DIXON G3PFR
'Woodstock', Gazebank, Norley, Warrington, Cheshire WA6 8LL

SO FAR IN THIS FEATURE, I've described several simple pieces of test gear essential for the testing and alignment of transmit and receive equipment for the 1.3GHz band. I've also outlined the G4DDK-001 crystal-controlled microwave oscillator source, suitable for use in the 1,100 to 1,300MHz range. The emphasis has always been on designs as simple as possible, consistent with reliable performance, reproducibility, low-cost construction and ease of alignment.

Every now and again what promises to be a 'classic' design appears in the amateur press. This usually means a simple, technically sound, reliable and, above all, reproducible design which can be successfully built, aligned and used with a minimum of skill, experience - and cost! Such designs usually transform amateur attitudes from being 'too difficult, not for me!' to being 'looks interesting, I'll have a go!' I could quote many examples, especially above 1GHz.

Some of the things which come readily to mind are W2CQH's interdigital converter designs, various designs in DJ9HO and DC0DA's many publications, DL6WU's long Yagis and, nearer home, G3JVL's image-recovery mixers, filters, loop-quad and Alford slot antennas, G4DDK's crystal controlled oscillator sources and G3WDG's recent 10GHz designs. The list continues to grow!

The next question you might ask after building a simple, low power transmitter could be 'What do I do for a receiver and are there simple receive or transmit/receive converter designs, suitable for beginners with only simple test equipment'? The answer to this two part question is "Make one" and "Yes, there is"! It is a design from the USA which promises to be a 'classic' for the 1.3 and 2.3GHz bands (and possibly the 3.4 and 5.7GHz bands as well).

Sam, G4DDK, reminded me that the basis for a no-tune 144MHz/1.3GHz transverter design, by Rick Campbell, KK7B, was outlined in various ARRL *Microwave Updates* from 1985 onwards. The complete design layout was published in the 1990 *Update* and as a 'standard' design in the 1992 *ARRL Handbook*. The design has been around for a while and boards/kits have been available in the USA, from 'Down East Microwave' for some time.

Although this design may not be compact in size or offer the ultimate performance in terms of receive noise figure or transmit power output, these 'disadvantages' are more than offset by virtue of very easy construction and no alignment. The design gives beginners the opportunity to build an inexpensive, basic transverter whose performance is good enough for all but the most demanding needs. It can be enhanced by the later addition of low-noise receive preamplifier(s), transmit amplifiers and other possible refinements. It probably represents the simplest and most cost-effective 144MHz/1.3GHz transverter available at the moment.

Fig 1 is a block diagram of the circuit. The extensive use of 'no-tune' (printed) bandpass filters and inexpensive silicon MMICs (Monolithic Microwave Integrated Circuits) as unconditionally stable 50Ω broad-band amplifiers in both the receive and transmit converters, on a single PCB, greatly simplifies construction. It also keeps cost to a minimum, consistent with very adequate, basic performance. KK7B's original design specifications are given in **Table 1**.

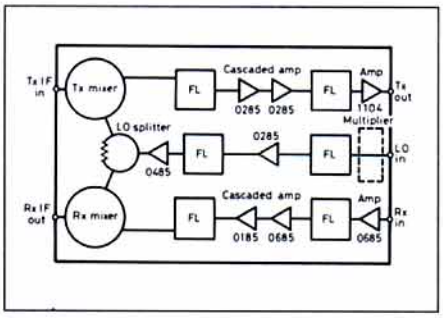


Fig 2: Layout of the KK7B transverter.

The transverter board uses the now-familiar 'ground-plane and surface mount' technology and is laid out roughly as shown in **Fig 2**. In the centre of the board is the local oscillator (LO) chain, designed to use LO input from an external source at 230.4, 288, 384 or 576MHz and multiply (simple diode multiplier), amplify (two or three stages, according to the multiplication factor) and filter the LO output at 1152MHz. Alternatively it is possible to use 1152MHz LO input: the G4DDK-001 source can more than fit the bill here, as will be seen later!

The LO chain output is fed to a 3dB splitter to produce two outputs, each at about +5dBm (7mW). These outputs are then fed into two hybrid ring balanced (Schottky diode) mixers, one for transmit and one for receive. The transmit mixer is driven by the LO and about 1mW of 144MHz and is followed by two bandpass filters and three MMIC amplifiers to give the required output. On receive, the mixer is preceded by two bandpass filters and three MMIC amplifiers to provide the specified gain and noise performance, with output at 144MHz.

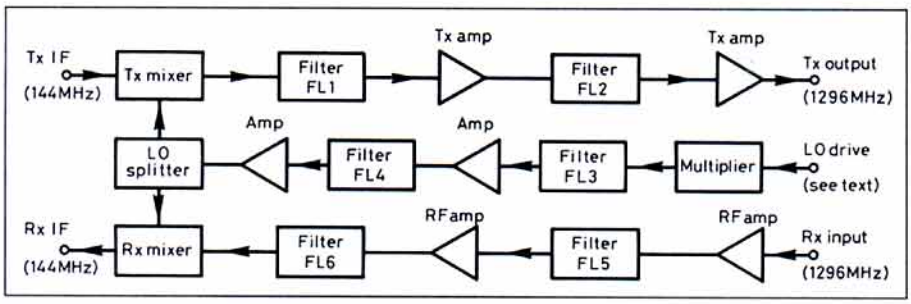


Fig 1: The KK7B 144MHz/1.3GHz transverter has been updated and is now a 'standard' design.

Specification of KK7B's 144MHz/1.3GHz transverter

Input/Output Frequency range	1240 - 1300MHz
LO frequency range	1120 - 1180MHz
IF frequency range	120 - 180MHz
Spurious outputs	> 45dBc
Image rejection	>> 45dB
Tx power output	+13dBm (20mW)
Rx noise figure	4dB
Tx IF input power	0dBm (1mW)
Rx conversion gain	>25dB
Dimensions	5in (127mm) x 7in (178mm) on double clad G10 epoxy board.
Parts cost (US$)	< $30
Construction time	< 4 hours

Table 1

The other essential external circuitry needed to complete a basic transverter would be suitable input/output and DC switching, together with an attenuator to reduce the level of the 144MHz transmitter drive to 1mW. Further refinements could be the use of a low-noise GaAsFET preamplifier before the receive converter (eg page 14.8, *Microwave Handbook*, Volume 3) and the G4DDK-002 1W linear amplifier after the transmit converter (page 8.21, *Microwave Handbook*, Volume 2).Sam had plainly done his sums on LO power levels and suggested several modifications to the LO section of the KK7B board to get the right levels of drive to the two mixers when using the optional single +13dBm 1152MHz output of the G4DDK-001 board.

The original LO chain is shown in **Fig 3a**. The input circuit and multiplier is replaced by a 10dB pi-attenuator. The MMIC amplifier, following filter FL3, can be an Avantek MSA0404, followed immediately by a 3dB pi-attenuator coupling the MMIC output to filter FL4. The MMIC amplifier driving the splitter can be another MSA0404. Using the modified circuit shown in **Fig 3b**, the mixer drive levels are just right - whilst it might seem a waste to use attenuators in the LO chain, it does ensure isolation, excellent matching and stability!

If you are interested in building such a transverter, then more details, boards and kits can be obtained from one of the following UK sources: Mainline Electronics, PO Box 235, Leicester LE2 9SH or Specialist Antenna Systems Ltd., Radfords Field, Maesbury Road, Oswestry, Shropshire SY10 8EZ. Similar complete transverters are also believed to be available from RN Electronics, 1 Arnolds Court, Arnold Farm Lane, Mountnessing, Essex CM13 1UT. Boards and other components for the G4DDK-001 LO source are, of course, still available from the RSGB Microwave Committee Components Service, c/o Mrs P Suckling, G4KGC, 314A Newton Road, Rushden, Northants NN10 0SY.

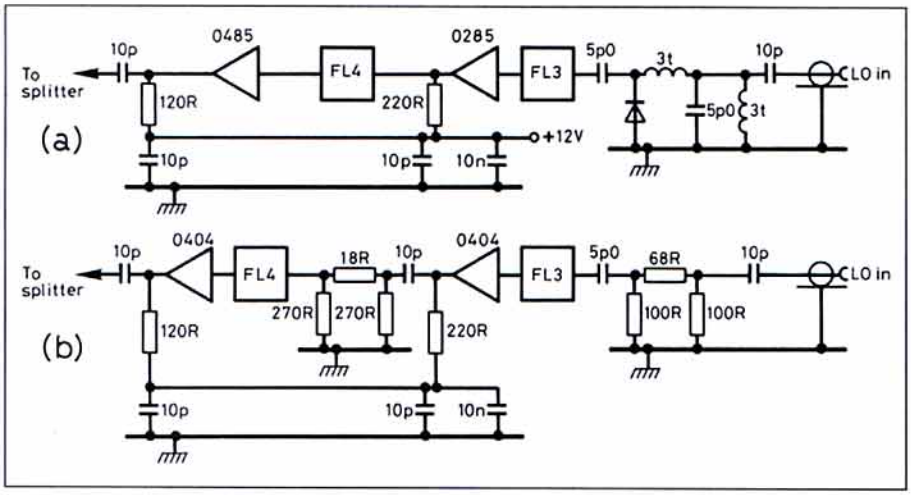


Fig 3: Sam, G4DDK, has incorporated a number of modifications to the original transverter design (a). The new circuit is shown at (b).

1000KM+ ON 10GHZ - NEW UK RECORD SET

AT LAST THE 1000km BARRIER in the UK has been broken on the 10GHz band, appropriately by G3WDG who, of course, designed the equipment now used by many stations. It seems that between about 2130 on 6 July and at least 0200 on 7 July, there was a quite phenomenal 10GHz opening between parts of Essex (Brentwood), Bedfordshire (Luton) and Northamptonshire (Rushden and Brackley) and parts of Scandinavia. 70cm talkback was also described as 'good'. Charlie's log recorded the following:

> 2140: worked SM6ESG (JO67) 58/59 at 977km (by the end of the evening he had worked 9 Gs), 2211: worked SM6HYG (JO58) at 1008km (best own DX), 2240: worked OZ1PU (JO57) at 902km, 2259: heard OZ1UHF beacon (100mW), 2307: worked OZ1HDA (JO47) at 874km, 2355: tried with LA8AK/P, nil results.

Charlie's comment was "Everyone we spoke to thought this was one of the best openings to SM/OZ that had been observed. I think we may have held the G 10GHz record for a short time, but think that QSOs from G3BNL, G4FCD, G3ZFP or G4FUF, made later on, were further. Anyway, we have broken the 1000km mark at last!" For the record, Charlie's 'statistics' are (all from a fixed, home station) 43 stations worked, 19 squares, 6 countries, best DX 1008km. Equipment? 3W in the shack, 1.5W at the antenna (3dB feeder loss), 3dB NF (in shack) and a 60cm offset dish at 10m. Any more reports of this exciting opening will be most welcome.

A FEW CORRECTIONS

NEXT, A FEW ERRORS have inevitably crept in – my sincerest apologies!

The Operating Ladder headings (July column) got a little mixed-up in translating from computer disk to text. To make sense, shift the headings km(A), (B) and (A x B) one column to the right, so that the headings read as follows: Best DX (A), Stations worked (B) and Multiplied Score (A x B).

In the May column, Dirk Koopman, G1TLH, rightly pointed out that the maximum error in using the extended Locator reference is approximately 7km, not 14km as stated. Thus the directional inaccuracy at 200km becomes 2°, not 4°. This is still too big an error for those of you whose large dishes have a 3dB beamwidth of 0.5°, so the argument for an extended Locator system is still valid! Following that write-up, John Morris, GM4ANB, one of the LOC system's most ardent protagonists has prepared a paper on the topic, which the Microwave Committee is submitting to the next IARU meeting, recommending that the system be formally adopted for use where the higher accuracy is needed, - ie by microwave operators - particularly over shorter distances where the angular accuracy can be vitally important.

Slightly more serious, there is a transcription error in the redrafted circuit diagram for the G4JNT TWT power supply in Volume 3 of the *Microwave Handbook*. It concerns the switch-on delay and over-ride switch part of the circuit. The correct circuit is shown in **Fig 4**. Thanks to Andy, G4JNT, himself for spotting this one!

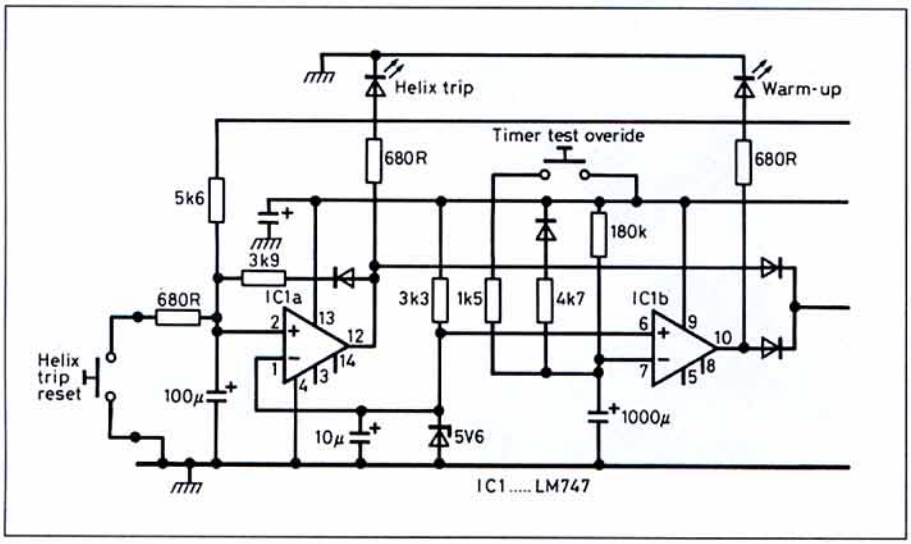


Fig 4: Corrected circuit for the switch-on delay/over-ride switch used in the G4JNT TWT power supply (see *Microwave Handbook* Vol 3).

1992 Operating ladder
Ranked on highest multiplied score

Band (GHz)	Posn	Callsign	Best DX km (A)	Stations worked (B)	Multiplied score (AxB)
2.3	1	G4PMK *	720	13	9360
	2	G4EQD *	900	9	8100
	3	G4DDK *	211	2	422
3.4	1	G4PMK *	661	5	3305
	2	G4EQD *	110	3	330
5.7	1	G4EQD *	61	2	122
	2	G4PMK *	60	2	120
10	1	G3BNL *	599	25	14,975
	2	G3PHO/P	338	35	11,830
	3	G4PMK *	739	13	9,607
	4	G8AGN/P	338	26	8,788
	5	G4JNT/P	279	28	7,812
	6	G3ZME/P	246	31	7,626
	7	G4DDK *	434	15	6,510
	8	G3PYB/P	362	17	6,154
	9	G3FNQ/P	330	12	3,960
	10	G8LSD/P	245	16	3,920
	11	G3JMB/P	245	14	3,430
	12	G3JMY/P	211	16	3,376
	13	G4EQD *	311	10	3,110
	14	G0API/P	179	12	2,148
	15	G8DKK *	186	11	2,046
	16	G3GRO *	143	10	1,430
	17	G4JNT *	215	5	1,075
	18	2E1AJE *	205	5	1,025
	19	G4BRK *	125	6	750
	20	G3JMY *	112	3	336
	21	G8AYY/P	84	3	252
	22	2E1AIZ *	70	3	210
24	1	G4KNZ/P	90	4	360

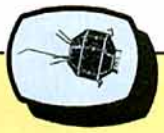
* = Fixed (home) station operation

Table 2

OPERATING NEWS

WHEREAS LAST YEAR'S (FINAL) operating ladder was given in the July column, this month's ladder (see **Table 2**) shows the position between 1/1/92 and 30/06/92. It is looking very healthy, although including some of the results outlined above will make it look even healthier! It is less likely that /P operators, mainly operating in the Cumulatives (though not always), will catch these more spectacular conditions, even though it is known that such openings are more likely, more frequently on the higher bands.

Again, a warm welcome to the Novice operators and particular congratulations to Alice, 2E1AIZ, who has won the first Microwave Distance Award, for a 1.3GHz contact with LA8OJ, at 720km.



Satellites

ARTHUR GEE G2UK
21 Romany Road, Oulton Broad, Suffolk
NR32 3PJ

I HAVE DEVOTED THIS MONTH'S column to reproducing an article which appeared in the International Short Wave League's *Monitor* magazine, which I think expresses most evocatively the attraction of 'going satellites'.

DXING THROUGH THE OSCARS

By Josef Maier, OE-20074/OE3JIS

When I obtained my Amateur Licence three years ago, I had to decide what my future activities would be in order to determine the equipment I should buy and develop. I had heard something about satellite operation, but there was not much information on the subject in the Austrian Amateur Association publications that were available to me. As a technician, I was always interested in innovations and new developments leading to a new future concerning amateur radio, so I made the following list of my likes and dislikes:

1) I like to contact stations all over the world, and I initially regarded this as being achieved by the use of the HF Bands. However, this can also be done via satellites on higher frequencies (VHF, UHF) and I now know better.
2) I do not like to have conflicts with my neighbours due to TVI or BCI and there is a particular problem with regard to unprotected feedlines, cables, video recorders etc.
3) My antenna must not be a monster which will disturb everybody in the neighbourhood.
4) I like to work with computers, but not with digital modes like CW. There are many modes which can be practised, why only CW? And for HF bands, is CW really necessary? The use of a personal computer makes satellite operation much easier, as I have learned during the past few years.
5) The output power necessary to reach distant countries should not exceed 70 watts. If I used batteries and solar panels my equipment would be independent of the national power grid. After all, satellites are not connected to power lines!

I started by obtaining a 2m and a 70cm all-mode mobile transceiver and a cheap TV antenna rotator, making my first experiments from our house 20km outside Wien, having local QSOs on both bands. I used horizontally polarized antennas which I could buy very cheaply in an amateur radio shop, and I had to learn how to correctly assemble N-connectors in the feedlines. This was the reason why I had to climb onto the roof of my house several times.

The next exercise was the installation of pre-amplifiers nearer to the antennas. The first one I bought had no automatic receive/transmit switch-over protection, and during a local contest I killed my first 70cm preamp because I forgot to manually switch over from the shack. I got another from 'SSB' (a German manufacturer) which was protected against such failures. At that time I was far from ready to make my first satellite QSO because I had no knowledge of the frequencies which should be used, or the techniques of operation.

To obtain more information, I bought books and enrolled as a member of the AMSAT-NA, AMSAT-UK and AMSAT-DL organisations. I rapidly learned about satellites and the technical details that were involved and, as a result of this new-found knowledge, completely changed my antenna system. The following notes might be helpful:

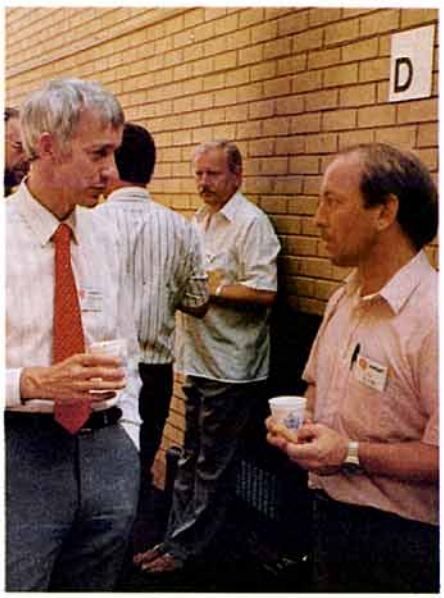
1) It is a big advantage to have crossed-Yagis in order that the polarization can be changed. For most of the time in space communication, right turning polarization is best in order to avoid QSB.
2) In order to present good signals to the receiver, an antenna should have a minimum gain of 14dB, and the gain of the preamp should be 20dB.
3) I added to the horizontal rotator a vertical azimuth rotator. It was not necessary to change the horizontal one and I used fibreglass booms.
4) I used better quality cables in order to reduce the losses in the feed lines.

I learned how to track the satellites AO-10 and AO-13 with the help of my little C-64 and my Apple IIe PC and I also discovered which modes are active on the satellites:

Mode

B: 70cm uplink 2m downlink
J: 2m uplink 70cm downlink
L: 24cm uplink 70cm downlink
S: 70cm uplink 13cm (2400MHz) downlink

A milestone in the whole development was my first QSO with G6WDF at 1600GMT over Oscar 13 on 9 June 1990. I had a great deal of trouble in obtaining the correct antenna direction, and due to my cheap horizontal rotator I could not adjust the azimuth exactly, so I added a 'flux gate' compass to the vertical boom with an indication in the shack to an accuracy of one degree! That solved my problem completely. To improve my signals (the output was only 10W) I added a power amplifier to both bands, and installed additional 2m and 70cm preamps in the shack.



Technical discussions continue into the tea-break at the 1992 AMSAT-UK Colloquium held at the University of Surrey. In the foreground James Miller, G3RUH, (left) talks to Mark Shepherd, ZL1TRE. Behind them is Andras Gshwindt, HA5WH.

In the months since then, I have been in an amateur's heaven working through the satellites. I am completely happy! Up until today I have had 1800 QSOs with foreign countries; I have worked 110 DXCC countries, with 105 confirmed with QSL cards and I have a lot of SWL QSL cards as well. It has been a pleasure to contact people all over the world in English, French and German languages, and to learn a lot about satellites and their function. At the moment DXing over the satellites is still as amateur radio was in the early days. The USA has about 500,000 licensed amateurs, of which only 6,500 are interested in satellite communication and who are members of AMSAT-NA. In Austria there are 5,800 licensed amateurs, but I have found only 30 stations active on the satellite bands, and perhaps only eight regularly.

The satellites are sponsored by the amateurs themselves, with contributions from large companies and sometimes the interested industries. The membership fees are contributions to the next satellite projects. At the moment a group of German and US amateurs are at work preparing the next Phase 3D Oscar which will be launched into orbit during 1996. This will be the best amateur satellite ever built.

Because of the eliptical orbits which are inclined (approx 60°), the Phase 3D Oscars give great DXing opportunities, independent from the effects of propagation. The farthest distances that I have worked have been from Austria to the Pacific Ocean - Hawaii, French Polynesia, New Caledonia and Guam. The greatest distance was 10,000 miles, and this with 50W output from the transceiver plus PA and over half of the globe, during a time when the propagation was completely down!

There are no contests on the Oscars, and there are no operators who work with 5000 watts (HI!) as is common on the HF pile-ups!

Packet radio HF gateway stations handle a great deal of international packet radio traffic. Unfortunately, band conditions sometimes create a problem in getting the messages through to their destinations. This year an Oscar link was used to handle messages from Australia to the USA, and from Israel to the USA.

In the spring I will improve my 24cm antenna so that I will have better uplink signals in L mode. I have already had an L mode QSO with AL7JM in Alaska, and have received QSL cards from Short Wave Listeners which I answered promptly.

Last year I had a contact via Oscar 13 with ISWL member Steve Roberts G6ZMD which resulted in him winning the 1st prize of three bottles of Austrian wine. Who will be the next ISWL member? Are there some others who will be on the satellites in the future?

Having had so many enjoyable experiences, I will remain DXing over satellites and I hope to hear you on these bands one day.

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J. Hall
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CONTEST NEWS

All rules should be read in conjunction with the General Rules published in *Contest News* January 1992

HF RULES

7MHZ CW CONTEST 1993 RULES

TRANSMITTING SECTIONS

1. General: The General Rules for RSGB Contests, published in the January 1993 issue of *RadCom* will apply to UK participants.

2. Eligible entrants: Overseas (including EI) - all licensed amateurs. British Isles - as per General Rules. Single- and Multi-operator entries will be accepted in all transmitting sections.

3. When: 1500GMT Saturday 27 February to 0900GMT Sunday 28 February 1993.

4. Sections: (a) British Isles **(b)** Europe including EI **(c)** North America **(d)** South America **(e)** Africa **(f)** Asia **(g)** Oceania.

5. Frequency/Mode: 7.000-7.030MHz CW only.

6. Contest Exchange: RST and serial number, commencing with 001. UK stations must also send their County Code as printed in the January 1993 edition of *Radio Communication* and other current RSGB publications.

7. Scoring:
British Isles stations contact only overseas stations for points. Each completed contact with a station in section (b) will count 5 points, in sections (c), (d), (e) and (f) fifteen points and in section (g), thirty points. Multipliers as per General Rules.

Overseas stations contact only British Isles stations. For each completed QSO, stations in section (b) score five points, in sections (c), (d), (e) and (f) score fifteen points, and in section (g) score thirty points.

Multipliers: One for each British Isles County worked.

The **final score** is the total of QSO points times the number of Multipliers worked.

8. Logs: Overseas entrants are invited to use the stationery provided by their National Society. British Isles entrants are referred to the General Rules. Checklists ('Dupe Sheets') are requested where more than 80 QSOs are made and please don't forget the list of multipliers.

9. Address for logs: RSGB HF Contests Committee, c/o S V Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey, CR7 7AF, ENGLAND.

10. Closing Date for logs: British Isles entrants, 22 March 1993; Overseas entrants, 19 April 1993.

11. Awards:Single-operator:- The Thomas (G6QB) Memorial Trophy to the leading British Isles station. Certificates of merit to the second- and third-placed British Isles stations, and to the leading entrants in each overseas section.

Multi-operator:- Certificates of merit to the leading groups in each section.

Additional certificates may be awarded at the discretion of the HF Contests Committee.

RECEIVING SECTION

Single-operator entries only will be accepted. Rules as for the transmitting section except where specified below. Holders of transmitting licences for frequencies only above 30MHz may enter the receiving section.

7. Scoring: British Isles SWLs should log only overseas stations in contact with British Isles stations participating in the contest. Overseas SWLs should log only participating British Isles stations in contact with overseas stations. Scoring and multipliers as for the transmitting section.

8. Logs: Columns to be headed: time GMT; callsign of station heard; report and serial number sent by that station; County Code sent by that station (if applicable); callsign of station being worked; multiplier (if new); points claimed.

NOTE. In the column headed 'station being worked' the same callsign may only appear once in every three contacts except when the logged station counts as a new multiplier.

11. Awards: Certificates of merit to the leading entrants in each section.

HF RESULTS

7MHZ CW CONTEST 1992 RESULTS

Congratulations go to Fred, G4BWP, who has taken the Thomas Trophy with a clear lead, and to all the certificate winners.

There is still some confusion about the scoring of the contest. All overseas stations should note that the multiplier is now the county code and not the prefix. Those logs that were incorrectly scored were rescored by the adjudicator. It is also interesting to see the number of new county abbreviations that some entrants were able to come up with!

Once again unmarked duplicates made their mark on a number of scores. A total of 24 were found. One station even had enough to produce a negative score! It is surprising that stations will spend 18 hours in a contest and go without a night's sleep, then not spend 30 mins thoroughly checking their logs for any unmarked duplicates. An increasing number of stations are now using computers to prepare their logs and this is helping to remove the number of unmarked dupes.

For those stations that are only able to stay on for shorter periods of time it is worth trying to optimise the operating periods, to try and maximise the multipliers available from the reduced number of QSOs, and picking times when the contact rate will be highest.

It may also be worthwhile to put up an extra antenna to improve performance in one direction to increase the contacts and multipliers available from, for example, the US.

Beams seem to be the order of the day for the leading stations but G3SJJ showed what could be done with a pair of phased HF2V verticals and displaced at least one beam from the top five, (he might even have been one place higher had he not gone to sleep for two hours), whilst G4ODV only had three slopers with a top height of 40 feet. So a beam may be useful but it is still possible to be well placed with more modest aerials.

There were comments from entrants regarding the lack of publicity in the American magazines leading to lack of activity. The rules are sent to other societies but are not, sadly, always published. Despite this the leading station achieved 54 QSOs and 1 multiplier more than last year. One entrant commented: "superb - pity the stamina gave up". Hopefully the stamina will keep up for next year and more stations will make it through the night!

G4HTD

UK

Posn		Call	QSOs	Mults	Points
1	+	G4BWP	550	75	415125
2	*	G3FXB	496	67	317580
3	*	G3VHB	457	60	257700
4		G3SJJ	402	63	230958
5		G4ODV	397	60	212400
6		G0IVZ	397	52	158610
7		G3HEJ	340	57	151620
8		G0JNZ	333	52	135660
9		GM3YOR	311	52	125320
10		G3TBK	310	57	113202
11		G5MY	213	48	75024
12		G3VYI	223	43	64285
13		G4OFR	262	43	59469
14		G2QT	183	40	50000
15		G2AFV	194	40	46920
16		G3MPB	228	34	42874
17		G0IDE	194	35	42560
18		G3XTT	142	39	41340
19		G3GLL	195	36	39420
20		G4BUO	133	39	38610
21		G3TXF	140	36	32400
22		G4CZB	172	30	28440
23		G3GMS	130	39	27690
24	#*	G0ORY	145	27	21465
25		G3ZDW	105	32	20832
26		G3NOM	148	27	20520
27		G3KSH	121	30	20190
28		G3PJT	99	30	16965
29		G3UFY	90	24	12120
30		G3NKS	70	25	10375
31		G0LZL	57	24	8040
32		G3GMM	64	20	7920
33		GW4HBK	64	19	6365
34		G0KJV	69	18	6228
35		G0HSD	36	15	2925
36		G3ZGC	20	12	1200
37		GW3SB	23	9	990

EUROPE

Posn		Call	Points
1	*	EA6ZY	25116
2	*	UA6HPW	20746
3	*	DF2KK	20056
4		EI4HM	19176
5		LY3BA	17908
6		ON4AMC	17329
7		HA8RC	16338
8		LA1IE	16170
9		OK1FSM	14840
10		EI5DI	14600
11		HA6VA	13416
12		DL1ZQ	12276
13		DL1EFO	12173
14		HB9DX	11700
15		EI7GY	11304
16		DL2GBB	11268
17		LA8NC	11116
18		DL3BRA	10824
19		YU4DNO	10360
20		Y21TO	10080
21		DJ5GG	9090
22		HA5MY	8877
23		DJ1YH	8773
24		DF4QW	8587
25		Y66YF	8580
26		PA2REH	8525
27		HB9AGH	8401
28		DL0ROE	8215
29		DL4XU	7772
30		DK3LM	7582
31		RW3AI	7254
32		UT4JWJ	6990
33		PA0VLA	6440
34		YU7SF	5220
35		UA4YG	4725
36		DL8DWW	4632
37		LY1BC	4347
38		HA2UI	4320
39		YU7KM	4070
40		OZ1JLX	3806
41		Y24KE	3762
42		YU1SB	3519
43		OK2PAW	3150
44		OK1OPT	2970
45		OK2BBQ	2392
46		PA0UE	2210
47		YO3CR	2040
48		SP5GKN	1840
49		DL1DQY	1760
50		EA2CR	1575
51		RB5QW	1020
52		YO9FJW	780
53		UB5AFI	530
54		Y49ZL	20

DX

1	*	UH8EA	84000
2		UZ9MXM	44895
3	*	ZD8LII	13680
4	*	VE3YBH	5610
5	*	VK3APN	2430
6		UA9MEK	1440

LISTENER

1	*	ONL383	2640

Checklogs gratefully received from: G2HLU, G3IGW, G4IQM, GM3UM, GW3SYL, DJ1FH, FD1RVL, HA7UL, RA3DGP, SP4AVG, SP5NOG, UA3AFH, UC2WG, Y23FG, Y24UK/A, and ZL1MH.

\+ - Trophy Winner
* - Certificate Winner
\# - Multi Operator

HF RESULTS

FIRST 1.8MHZ CW CONTEST 1992

Top Band was crammed with signals during this contest. In addition to the RSGB event both the PACC and WSEM contests were in full swing, although many Gs complained that Russian stations refused contacts.

In all, 47 logs were received from the UK, and their standard was very good. No unmarked duplicates were found and a total of only 31 points was lost by the leading 10 stations. Computer logs seem to be on the increase and the checklists produced by these come in very useful.

G3KDB is to be congratulated on submitting an error-free log with 175 scoring contacts and 60 Bonus QSOs to take first place and the Somerset Trophy. G4BWP and G3SJJ were 2nd and 3rd with 175/57 and 163/57 respectively. GM3YOR was the runaway winner of the Maitland Trophy .... how about some more entrants from GM?

The overseas section attracted reasonable support with top honours going to the Emerald Isle. EI4HM (G3HZL) had a clear lead over EI9FK with DJ3XD taking 3rd place (displacing the claimed score of OK1DRU, whose log contained an unmarked duplicate and was duly penalised).

The SWL section was disappointing, with only ONE log received .... where *are* tomorrow's contesters?

The concurrent Bingo contest had 18 entries with G4BWP squeezing G3HEJ into 2nd place by just 2 minutes! That man G3KDB completed no less than THREE 'Houses'! Many potential entrants just failed to qualify for the table; some, like G3MCX, were unable to find a station with the same last letter as their own call - frustrating! Nevertheless, judging by the comments received, this section seems destined to grow in popularity.

There were no great surprises in the equipment or antennas in use - commercial transceivers and dipoles or loops were the order of the day, although G0IDE is to be commended for running home-brew gear.

Finally, apologies for the late publication of these results. Thank you for your patience.

G4IQM

UK SECTION

Posn		Call	Pts
1	+	G3KDB	825
2	*	G4BWP	794
3	*	G3SJJ	768
4		G3FXB	764
5		G3MXJ	739
6		G3WGV	722
7		G3TBK	683
8		G3HEJ	668
9		G0NAA	660
10		G3XTT	659
11		G0IVZ	651
12		G3UFY	648
13	#	GM3YOR	609
14		G3KHZ	584
15		G3YAJ	582
16		G3ZGC/P	575
17		G4RFR	565
18		G3TXF	556
19		G3VYI	555
20		G3JJG	527
21		G3KAF	505
22		G0JNZ	495
23		G4HUP	491
24		G2HLU	480
25		G4OGB	466
26		G4CZB	455
27		G3GLL	451
28		G5MY	448
	=	G3MCX	448
30		G3GMM	437
31		G0EBW	430
32		G0LZL	427
	=	G3GMS	427
34		G2AFV	424
	=	G0IDE	424
36		G0JQN	419
37		GW3JI	416
38		GM3UM	41-
39		G3IQF	403
40		G3JSR	393
41		G3KNU	380
42		G4BUO	376
43		G3RSD	363
44		G3ZBU	341
45		G3WRR	231
46		GW3SB	148
47		G0AIZ	114

OVERSEAS SECTION

1	*	EI4HM	407
2	*	EI9FK	357
3	*	DJ3XD	326
4		OZ2RH	322
5		DF2KK	315
6	@	OK1DRU	290
7		OK3TLO	288
8		OK1OPT	248
9	@	DJ9WH	215
10		OK1FFC	212
11		OK2BWM	198
12		DL4VAD	175
13		LZ2CW	158
14	@	OK3CW	153
15		OL1BUY	138
16		OK2PBG	110
17		Y23HE	94
18		UV6LIP	47

SWL SECTION

1	*	ONL383	70

Checklogs gratefully received from: G3VFD, GW3SYL, OK2PSZ, RA4NDM and SP5NOG.

BINGO TABLE

Posn		Call	Time Completed
1	*	G4BWP	2148
2	*	G3HEJ	2150
3		G3KDB	2203
4		G3WGV	2206
5		G3UFY	2215
6		G3YAJ	2220
7		G0NAA	2226
8		G3ZGC/P	2232
9		G3KDB(2)	2244
10		G4RFR	2309
11		G3KHZ	2313
12		GM3YOR	2319
13		G3TXF	2351
14		GW3JI	0006
15		G3JJG	0011
16		G3KDB(3)	0012
17		G3KAF	0018
18		G3IQF	0031

\+ Somerset Trophy
\# Maitland Trophy
* Certificate of Merit
@ Unmarked Duplicate(s) found

HF CONTESTS CALENDAR - 1992.

5/6 Sep	SSB Field Day (Jun 92)
5/6 Sep	*JARL AA SSB*
6 Sep	*LZ DX CW (Aug 92, p15)*
7 Sep	QRS Cumulative (Jul 92)
12/13 Sep	*WAE SSB (Sep 92, p14)*
15 Sep	QRS Cumulative (Jul 92)
19/20 Sep	*SAC CW*
23 Sep	QRS Cumulative (Jul 92)
26/27 Sep	*SAC SSB*
26/27 Sep	*CQ WW RTTY*
1 Oct	QRS Cumulative
3/4 Oct	*VK-ZL SSB (Sep 92, p14)*
9 Oct	QRS Cumulative
10/11 Oct	*VK-ZL CW (Sep 92, p14)*
11 Oct	21/28MHz Telephony (Apr 92)
18 Oct	21MHz CW (Apr 92)
24/25 Oct	*COWW DX SSB*
14 Nov	Club Calls (CCC) (Aug 92)
14/15 Nov	*JARL Int'l DX*
14/15 Nov	*WAE RTTY*
15 Nov	*OK DX (Mixed)*
21/22 Nov	2nd 1.8MHz CW (Aug 92)
21/22 Nov	*All Austria CW*
28/29 Nov	*COWW DX (CW)*

VHF CONTESTS CALENDAR

21/16 Sep	144MHz CW Cumulative (Jun 92)
5/5 Sep	144MHz Trophy/SWL (Apr 92)
20 Sep	70MHz Trophy/SWL (Jun 92)
3/4 Oct	432MHz-24GHz (Jun 92)
3/4 Oct	2.3GHz and 1.3GHz Trophies (Jun 92)
3/4 Oct	SWL Contest and IARU (Jun 92)
1/16 Oct	144MHz CW Cumulative (Jun 92)
6/21 Oct	1.3 & 2.3GHz Cumulative (Jun 92)
14/29 Oct	432MHz Cumulative (Jun 92)
1 Nov	2nd 1296MHz Fixed/SWL (Jun 92)
2 Nov	144MHz CW Cumulative
6/19 Nov	1.3 & 2.3GHz Cumulative (Jun 92)
7/8 Nov	144MHz CW Marconi/RSGB 24-hour (Jun 92)
8 Nov	144MHz RSGB CW 6-hour (Jun 92)
13/30 Nov	432MHz Cumulative
6 Dec	144MHz AFS/Fixed/SWL
7 Dec	1.3 & 2.3Ghz Cumulative

VHF RESULTS

MAY 432MHZ - 24GHZ CONTEST 1992

The fairly flat band conditions experienced at the beginning of the event improved somewhat on the Sunday and yielded a reasonably steady flow of contacts into Europe.The DX was there to be worked by the persistent few, even on the microwave bands. On 432MHz, G4LIP/P lost their position to G4VIX/P due to silly logging errors. All entrants commented on the lack of activity from G and wondered what could be done to improve the situation. There was a dissappointing lack of entries on some of the microwave bands, even though an increasing number possess the capabilities. Activity should not always be determined by areas of high pressure! A magnificent effort by the Windbreakers CG who won on all bands. Congratulations to all band winners and runners up. *G4DHF*

432MHZ SINGLE OPERATOR FIXED SECTION

Pos	Call	Pts	QSO	Loc	Pwr	Ant	Best DX	Km
1	G8FBG	905	101	IO91SG	400	4X21	DD4QT/P	751
2	G3XDY	188	15	JO02OB	200	21	DF6NA	664
3	G4PMK	117	15	IO93GT	70	19	ON7EG	479

432MHZ ALL OTHER SECTION

1	G4VIX/P	2965	217	JO01PU	400	8X21	DF0WD/P	817
2	G4LIP/P	2957	216	JO03BF	400	8X21	DL0UL/P	844
3	G3UHF/P	1235	142	IO93EH	300	8X23	DK0BN/P	747
4	GW4BVY/P	963	103	IO81NV	350	4X21	DJ9DL	697

Check logs G4DSP/P, PE1EWR

1296MHZ SINGLE OPERATOR FIXED STATION

1	G3XDY	175	18	JO02OB	100	4X23	DJ6GK	543
2	G4EQD	77	15	IO93QN	80	27QL	G4PUB/P	229
3	G4PMK	35	9	IO93GT	50	23	G0JPF	180

1296MHZ ALL OTHER SECTIONS

1	G4PUB/P	623	61	JO01PU	250	2MD	DL0UL/P	698
2	G4HWA/P	346	41	JO03BF	400	16X23	DC8VJ	539
3	G8SMR/P	173	34	IO93EH	80	8X23	PA0BAT	564
4	G8LMW	145	33	IO92JP	350	23	PE0MAR/P	370

Check logs G4DSP/P, PE1EWR

2320MHZ SINGLE OPERATOR FIXED SECTION

1	G4EQD	616	6	IO93QN	10	49QL	G4PUB/P	229
2	G4PMK	232	4	IO93GT	4	.6MD	G0EMG/P	88

2320MHZ ALL OTHER SECTION

1	G4PUB/P	4103	20	JO01PU	75	2MD	LX/PA3FPS/P	392
2	G8LMW	507	6	IO92JP	15	.6MD	G4PUB/P	192
3	G3ZDM/P	490	5	IO93EH	4	.6MD	G0EMG/P	139

3456MHZ SINGLE OPERATOR FIXED SECTION

1	G4PMK	175	3	IO93GT	.8	.6MD	G3ZTR/P	87
2	G4EQD	61	1	IO93QN	.5	.6MD	G4PMK	61

3456MHZ ALL OTHER SECTION

1	G4EZP/P	805	4	JO01PU	7	1.2MD	PA3FPQ	308
2	G8LMW	14	1	IO92JP	.8	.6MD	G4LRT	28

5760MHZ SINGLE OPERATOR FIXED

1	G4PMK	382	6	IO93GT	4	.6MD	G4CBW/P	123
2	G4EQD	189	3	IO93QN	4	.6MD	G3PHQ/P	64

5760MHZ ALL OTHER SECTION

1	G4EZP/P	556	4	JO01PU	.3	1.2MD	PA3FPQ	308

10GHZ ALL OTHER SECTION

1	G4EZP/P	1757	13	JO01PU	75	1MD	PA3FPQ	308
2	G4CBW/P	1038	7	JO03BF	—	.6MD	PE0MAR/P	303

24GHZ ALL OTHER SECTION

1	G4EZP/P	13	1	JO01PU	7mw	Dop Mod	G4BUW/P	13

OVERALL POSITIONS SINGLE OPERATOR FIXED

Pos	Call	432	1296	2320	3456	5760	10GHz	Norm Tot
1	G4PMK	3	3	2	1	2	1	3671
2	G4EQD	-	2	1	2	1	2	3283
3	G3XDY	2	1	-	-	-	-	1208
4	G8FBG	1	-	-	-	-	-	1000

ALL OTHER SECTION

Pos	Group	432	1296	2320	3456	5760	10	24	Norm Tot
1	Windbreakers CG	1	1	1	1	1	1	1	7000
2	Parallel Lines CG	2	2	-	-	-	2	-	2143
3	Sth. Manchester RC	3	3	3	-	-	-	-	813
4	G8LMW	-	4	2	2	-	-	-	372

G4DHF

144 MHZ TROPHY SEPTEMBER 1991 CONTEST

Due to this contest being run in conjunction with the IARU contest there was plenty of activity and many DX contacts, which were even worked by low power stations. However logging errors of the last digits of QTH locator cost several stations their best DX. Propagation conditions slowly deteriorated as the weekend progressed. The single operator portable section was almost a local GM contest! Congratulations to the Northern Lights Contest Group for retaining the Two Metre Trophy for yet another year and to all certificate winners for their efforts in this well supported contest. *G8HHI (Now G0RAW)*

OPEN SECTION

Pos	Callsign	Score	QSOs	Loc	Pwr	Ant	Best DX	km
1	GU4APA/P	18156	1184	IN89	400	8X17+4X9	DL4EAU/P	917
2	G4DSP/P	10868	747	JO03	400	100	OK1IBL	896
3	G8LNC/P	10710	772	IO90	400	4X19	EA1DVY	1015
4	G4VIX/P	10365	808	JO01	400	2X14	OK1JKI/P	1008
5	G4ZAP/P	9939	707	IO94	400	160	DF8FG	907
6	G3CKR/P	9455	709	IO93	400	120	EA1DVY	1291
7	G4ERG/P	7745	623	IO94	400	2X16+4X11	DL4EAV/P	797
8	G3EFX/P	7369	656	IO91	400	3X17	EA1DVY	1094
9	G0KEG/P	5787	499	IO91	400	2X17	F6EVA/P	1024
10	G4CRA/P	5682	485	JO01	200	2X14	Y35O	811
11	G2XV/P	5431	464	JO02	300	4X17	DC3FK/P	829
12	G8SMR/P	4692	426	IO93	200	2X14	EA2AZW/P	1153
13	G3WRS/P	4604	418	IO94	400	—	FD1LRC/P	1000
14	G0NOW/P	3804	453	IO83	100	2X7	EA2AZW/P	1182
15	GW1VDF/P	3762	418	IO81	300	19	DF0WD/P	797
16	G8DMR/P	3754	386	IO91	270	9	EA1DVY	1094
17	G6WVG/P	3670	387	IO84	350	2X9	DF0OL/P	794
18	GI0MXT/P	3459	261	IO74	300	2X9	PE0MAR/P	734
19	G4MEL	2758	276	IO91	400	18	FF6KNB/P	909
20	G6ARC/P	2628	338	IO92	400	19	EA2LU/P	1033
21	G6CTU/P	2504	313	IO91	400	2X17	GM4YXI	689
22	GW7GXV/P	2372	245	IO83	20	13	DF0OAA/P	799
23	G3PIA	2248	290	IO91	250	16	———	—
24	G7EAR/P	1700	207	IO91	80	2X9	EA2LU/P	915
25	G6FRS/P	1554	206	IO91	200	9	GM4AFF	651
26	G3NTS	1071	140	IO91	250	17	GM4ZUK/P	620
27	G1ORC/P	865	141	IO83	100	9	EI5DD	470

SINGLE OPERATOR FIXED SECTION

Pos	Callsign	Score	QSOs	Loc	Pwr	Ant	Best DX	km
1	G4PIQ	8088	661	JO01	400	4X15+19	EA2AZW/P	1033
2	G8TFI	4276	404	IO81	400	4X9	EB1EUW/P	1065
3	G6HKM	4068	404	JO01	160	15	HE7MM/P	709
4	G8FBG	1847	211	IO91	400	2X16	EA2LU/P	899
5	G1GEY	1451	157	IO94	300	9	FC1ARR	671
6	G3YVR	1219	117	IO91	150	13	GM4ZUK/P	666
7	G8ZQB	1101	154	IO92	120	8	DL4WU	593
8	G0GLB	1010	132	IO91	100	17	EA2LU/P	940
9	G4DEZ	988	105	JO01	200	17	Y41CI/P	658
10	G8ZRE	982	146	IO83	100	8XY	ON7WR/A	574
11	G6MXL	786	77	IO80	65	9	FF6KNB/P	954
12	G1NRM	739	113	IO91	80	10XY	EA2LU/P	934
13	G8FKP	504	59	IO91	35	9	PA3FPS/P	762
14	G6HXU	471	53	IO83	20	6	F6HPP/P	599

SINGLE OPERATOR PORTABLE SECTION

Pos	Callsign	Score	QSOs	Loc	Pwr	Ant	Best DX	km
1	GM4ZUK/P	7417	428	IO86	400	19	HE7GT	1326
2	GM8ORG/P	4188	351	IO74	80	16	DF0RW/P	810
3	GM8DOH/P	2987	208	IO75	8	8	EA1TA	1326
4	G6KUI/P	800	130	IO92	25	8	ON7WR/P	484
5	G6GAU/P	304	53	IO83	25	10	TW1C/P	473

SWL SECTION

Pos	Callsign	Score	QSOs	Loc	Ant	Best DX	km
1	BRS52543	621	77	IO83	12	TW1C/P	514

Check log received with thanks from G4IDF.

70MHZ CW CONTEST 1992 RESULTS

By 70MHz standards, this event attracted a healthy entry in spite of the unintentional clash with HF NFD. Sporadic-E raised the noise floor for some time, but also brought some good QSOs between GM and the South of the country. Logging accuracy was patchy with several stations losing a high percentage of their points, resulting in a significant shift in position at the top of the tables, but congratulations to G3UKV, GM4AFF and G0AEV for their perfect logs. Certificated congratulations go to Chris Tran, GM3WOJ; Stewart Cooper, GM4AFF; Bill Somerville-Large, EI9FK/P; and Roger Dixon, GW4BVY/P; as the winners and runners-up in their respective sections. A certificate of merit is awarded to Stephen Reed, G0AEV for the highest single operator fixed station score with 25W or less and a single antenna. *G4PIQ*

SINGLE OPERATOR FIXED SECTION

Pos	Callsign	Points	QSOs	Loc	Pwr	Ant	Best DX	km
1	GM3WOJ	229	12	77WS	30	5Y	GJ3YHU	959
2	GM4AFF	150	8	87VA	40	7Y	GJ3YHU	866
3 =	G0AEV	100	14	81WL	10	5Y	GM3WOJ	711
3 =	G3UKV	100	14	82RR	75	5Y	GM3WOJ	569
5	G3TCU	71	10	91QE	50	6Y	EI9FK/P	478
6	G4FOH	64	11	83QC	25	5Y	GM3WOJ	525
7	G4OUT	54	10	92AT	10	3Y	EI9FK/P	279

ALL OTHERS SECTION

Pos	Callsign	Points	QSOs	Loc	Pwr	Ant	Best DX	km
1	EI9FK/P	173	17	62WV	100	5Y	GM4AFF	609
2	GW4BVY/P	141	18	81NV	100	2 x 7Y	GM3WOJ	658
3	G2XP/P	107	14	91VH	20	5Y	GM3WOJ	761

ERRATA: VHF RESULTS IN JUNE 1992 *RADCOM*

The top scores for the Single Operator Section (entitled Fixed Station Section) in the December 144MHz Fixed and AFS contest, and the Fixed Station Section in the 144MHz CW Contest 1992, were inadvertently truncated. This did not affect the table positions.

The correct scores are shown on the right:

DECEMBER 144MHZ AFS & FIXED CONTEST 1991

SINGLE OPERATOR SECTION

Pos	Callsign	Score
1	G4HUP	4369
2	G4DHF	2580
3	G3XDY	2454
4	G1LSB	2370
5	G4NBR	2307
6	G4TZM	2223
7	G3NAQ	1908
8	G4ZTR	1695
9	G4UXC	1651
10	G4WKN	1478
11	G3JRM	1442
12	G0NYL	1385
13	G8XFY	1167
14	G0HFX	1164
15	G4EQD	1068
16	G1OGY	1026
17	G0HAS	1022

144 MHZ CW CONTEST

FIXED STATION SECTION

Pos	Callsign	Score
1	G4PIQ	52000
2	G4ASR	28152
3	G4WKN	22489
4	G0AFH	17518
5	G4HUP	15164
6	G4OUT	12210

THE TYPEFACE in Contest News has been reduced at the request of the HF Contests Committee in order to do justice to the large amount of contest information requiring publication, whilst retaining the same page allocation

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15-3CD	15m 3 element Beam
10-4CD	10m 4 element Beam
TEN-3	10m 3 element Beam
A4S	20-15-10m 4 element Beam
A3S	20-15-10m 3 element Beam
A3WS	17-12m 3 element Beam
D40	40m Rotary Dipole
D4	40-20-15-10m Dipole
D3	20-15-10m Dipole
D3W	30-17-12m Dipole
R7	40-10m H/W Vertical
R5	20-10m H/W Vertical
AP8	80-10m Vertical
AV5	8 Band HF Vertical
AV3	20-15-10m Vertical
A50-6S	6m 6 element Beam
A50-5S	6m 5 element Beam
A50-3S	6m 3 element Beam
AR-6	6m Ringo Vertical
17B2	2m 17 element Beam
13B2	2m 13 element Beam
124WB	2m 4 element Beam
A144-7	2m 7 element Beam
A144-11	2m 11 element Beam
A144-20T	2m 10 element X Oscar
AR-2	2m Ringo Vertical
ARX-2B	2m Ringo Ranger II
AR-270	2m/70cm Vertical
424-B	70cm 24 element Beam
A430-11	70cm 11 element Beam
416TB	70cm 8 element X Oscar
ARX450B	70cm Ringo Ranger II

MIRAGE/KLM

COMMUNICATIONS EQUIPMENT

40M-2	40m 2 element Beam
20M-4	20m 4 element Beam
15M-4	15m 4 element Beam
10M-4	10m 4 element Beam
KT34-A	20-15-10m 4 element Beam
KT34-XA	20-15-10m 6 element Beam
6M-7LD	6m 7 element Beam
6M-5	6m 5 element Beam
2M-20LBX	2m 20 element Beam
2M-16LBX	2m 16 element Beam
2M-13LBA	2m 13 element Beam
2M-22C	2m 11 element X Oscar
2M-14C	2m 7 element X Oscar
432-30LBX	70cm 30 element Beam
432-20LBX	70cm 20 element Beam
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103BAS	10m 3 element Beam
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TH5MK2S	20-15-10m 5 element Beam
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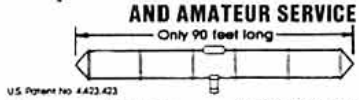

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PORTABLE aluminium mast: £20. Wall brackets 18": £15. 2m mag mount 5/8 whip: £20. OKI microline 80, dot matrix printer: £70. Peter G4HEB QTHR (Guisborough) 0287 610139

QUARTZ synthesised comms Rx. 'Receiver' model DX-302, 10kHz to 30MHz: £100 Mr Kightley (Bovey Tracey) 0626 833367

RACAL RA17 outstanding condx with manual and spare valves. 15 yrs in CH room but little used, hence: £275. Barlow Wadley XCR30 Rx, ptble in lovely bxd cond with h/book & manual. 500hz to 30MHz ATU, SSB product detector, AM/FM detector: £90. 2" alloy scaffolding (used) 75p/ft. Used TV aerials from 50p. Recon HiFi aerials from £5 3el to 6el plus multiple reflector. Aluminium VHF elements 10 - 50p. (Ilkley) 0943 600737

RACAL RA17 two available. One vgc Racal Cabinet, manual. Other for spares but believed wking: £225 for the two. Peter Lepino (Great Bookham) 037 245 4381.

RACAL RA17L Communications Rx 500KHz and RA98 SSB adaptor with handbooks and spares: £195. Buyer collects. (Ipswich) 0473 689982.

RACAL RAI7L gen cov Rx table model in Racal cabinet. Ex condx, C/W Manual Circuits and some spare valves: £200. Also ICS-FAX2, displays superb weather fax pictures. Requires IBM-PC. Includes Navtex RTTY Fec: £80 post paid. G3RDG QTHR (NW London) 081 455 8831

SATELLITE 9ele crossed 2M 17ele crossed 70 CW with elevation rotator: £40. New 20M HF Zepp: £40 G40QM QTHR (Rotherham) 850517.

SILENT key G5LF. RW. Atlanta tcvr shure Mike 201 PSU model 4A VFO: £220ono: NC300 Rx: AVO model 8: AVO test bridge: Admiralty type R502 Wavemeter: BC221Q frequency meter: National HF Rx HRO-Mx: Morse Keyer: AVO signal generator 50kHz - 80MHz 1952: 45ft guyer mast: Oscilloscope telequipment type 543: reasonable offers: buyers inspect and collect: contact G3XDU QTHR (Nr Bedford) 0234 781652.

SILENT key sale G4QL. Icom 725 + mic: £550. ICOM 701 + PSU + desk mic + RM3 Remote Control + SWR Meter. Complete station for: £450. G4SLT (Reading 0734) 478729

SOMMERKAMP FT277(101)ZD FM board, WRAC bands, mic, fan, manual, orig boxes. VGWO. Spare new GE6146B's and 12BYTA valves: £525. Any test. Kenwood TS440S with auto ATU SSB Filters, mic leads, manual, orig boxes, VGWO immac condx: £950ono. Test before collect. (Macclesfield) 0625 420835.

SSB Lt23S Trnsvrtr: £200. MV1296S Gasfet preamp plus control unit: £130. MV4325-01 Gasfet preamp plus control unit: £120. Mutek 70cm Gasfet preamp: £80. 4 x 23 Tonna plus stacking frame (23cms): £60. Altron AT32 Tower: £150. Daiwa DR7600R H/D rotator: £120. Apple III computer complete with all s/ware: £120 (High Wycombe) 0494 534471.

STANDARD C 500E, case, extra nicad pack, headset, manual, 12V lead, packing, VGC: £265ono. John G3XLL QTHR. (Diss) 0379 652043. 1930 L+.

TELEREADER model CWR 685E cost new: £800 complete with keybd, all leads, manual. Offers around: £375 inc P&P or buyer collects. (Redhill) 0737 242976.

TEN-TEC Paragon/1.8KHz filter. Ten-Tec power supply, ex working condx: £1,100ono. Call after 6pm. (Leicester) 0533 674112.

TET HF vertical antenna: £25. 4 element quad 144/145 antenna: £12. PSU 24V 1.25 amp: £5. Buyer collects. G8XNG QTHR (Swindon) 0793 537622.

TL922 HF amplifier. Spotless. All leads, connectors, manual and boxed: £1150. G0HSD (Princes Risborough) 08444 2422 (evenings).

TOWER 60ft wall mount, winch, homebrew versatower, requires cleaning painting etc offers? John G4HGT (Leeds) 0532 873874.

TOWER Telescopic 15'-40', head unit, very sound structurally, pulleys, cables need attention. Bargain at £100. Buyer collects. (Edinburgh) 031 445 1102.

TRIO 9130 2M m/mode Tx bxd with mobile mount h/book power cable scanning mic: £310. G4RHR QTHR (Nr Ipswich) 03948 654.

TRIO AT120 ATU: £45. DFC 230 controller: £30. No offers (Manchester) 0942 886594.

TRIO TL922 Linear ex cond: £1000ono with spare valve. Heathkit SB303 Rx 10-80m with 2m & 4m convers: £100 G3NAS QTHR (Lichfield) 0543 255992.

TRIO TS130 WARC bands. 100W HF tcvr VGC with mic, h/book: £385ono. Peter G0NYV (Wokingham) 0734 783827.

TS1805 HF tcvr, VGC. Fitted with DFC (split) Fox Tango 250Hz Cw Filter. 308 countries worked. 1990 G winner CQWW. Bargain: £395 no offers. PS30 PSU: £95. Both £450.

Katsumi EK150 Iambic keyer: £65. Call G0HSD (Princes Risborough) 08444 2422 (evenings).

WIRELESS World Nov-Dec 1953. Jan-Dec 1954-1955-1956-1957-1958-1959-1960-1961-1962. Mar-Dec 1963. Jan-Oct 1967. Practical Wireless Jan-Dec 1955-1956-1957-1958-1959-1981-1982-1983. Various 1970-1980. (Nantwich) 0270 585052.

YAESU FL2000B HF linear: £375. FC102 Antenna tuner: £160 in gd condx. G4YMS QTHR (York) 0904 768686.

YAESU FRG7700, FRT 7700 ATU, FRV 7700 VHF converter (118-150 MHz). Excellent condition with manuals: £275ono. Kay Sonagraph (to record sound spectra of birdsong etc.) GWO with manual. Surely somebody wants this magnificent equipment?: £150ono. G3MFW QTHR (St Austell) 0726 73608.

YAESU FT1012 VGC. Yaesu FC902 ATU VGC. Yaesu SP901 speaker. The lot: £500ono. (Doncaster) 0302 859451.

YAESU FT101ZD, FC902, HFATU, FTV901R, 2m/70cm Trsvtr and SP901 matching spkr: £800. KW2000B with spare valves: £200 and AR88: £60. (Reading) 0734 572600.

YAESU FT102 A.T.U FC102 orig bxs manuals exc cond. Used CW only: £700ono. G4ELY (Woodley) 0734 594367.

YAESU FT102 AM/FM CW filter good cond: £500 MDI mic: £40. Mike G4VQH QTHR North Shropshire (Whitchurch) 880460.

YAESU FT212RH 2 metre mobile. Still under guarantee. Any sensible offer. ICOM IC735 HF tcvr, still under guarantee. Any sensible offer. ATU SPC 300D offers. (Tiverton) 0884 257148.

YAESU FT480R 2m m/-mode: £250. 7/8 whip: £10. 6amp pwr supply protected: £20. M/wave Modules 10m trsvtr 2m IF: £70. 15amp pwr supply: £35. 10m beam: £10. Delta loop BKTS: £5 pair. Frank G41YP QTHR (Chorley) 0257 275876.

YAESU FT707, FP707, FC700, VGC: £400. Icom IC290D bxd, manual. VGC: £275. SEM noise blanker MK1: £40. Collectors item ex-RIS RX No40. Rare: £100. Solartron scope CD1400. Plugins CX1571, CX1442, CX1449. needs attn: £30. Three 3-500Z used offers. G4KDV (Otley, W. Yorks.) 0943 463083.

YAESU FT790 70cm m/mode, nicads, chrgr, case: £225. 4CX1000 2M linear amp 1KW o/p working but needs finishing - Offers? GOCZD - Martyn (Crewe) 0270 505930.

TRIOTR9500 70cm m/mode 10W output. As new: £250. G4NTY QTHR (Manchester) 061 790 7673.

WANTED

AP1086 Issue 1 (RAF radio stores Ref nos) Also air publications relating to radio, radar equipment, ex prices offered. Would purchase post-war to current Magnetrons, Klystrons, T/R cells, TWT's, Photo-multipliers, Microwave and Special CV types. Required static or rotary cnvrtr AC or DC input with output of 80/115v 1500/2000 cycles, also R/x type R1355 10D/13032 unmodified. Please phone anytime (London) 071 511 4786 OR 071 790 2846.

ARMY RADIOS PRC 320 and PRC 351/2 wanted any condx. Please phone G4OFO 081 949 2317.

CIRCUIT diagram for KW 2000A tcvr for cash or photocopy. G3JKZ QTHR. 2 Sunnyside, Field Assarts, Minster Lovell, Witney, Oxon OX8 5NQ.

CIRCUIT manual for 2M Sommerkamp TS240FM. Mr Gardiner, G0OLM, 8 Elm Grove, Nayland, Colchester, Essex, CO6 4LL (Colchester) 0206 262582.

COLLINS 516F-2, PM-2. Spares for KWM-2, MIC gain, Exciter ferrite cores. PSU CCTS. Handbooks. WHY? G4KDV (Otley) 0943 463083.

COLLINS KWMI 75A4 KWSI 32V3 51J4 51S-3 30-SI amp 312B5 VFO DLI DX Engineering processor. Any Collins equipment considered. Any Collins information eg h/books, manuals, adv lit, technical articles, history. 70cm module for FT726R. G3ZIG QTHR (Dereham) 036288 430.

CRYSTALS Top band and 80, 1/2 inch pins. G41MT QTHR Bernard Litherland. Tel 0225 891254.

DISC program for BBC. A Copy of Your Amateur Radio Programs 80 format; I will supply disc and post. (Aldershot) 0252 331069

EDDYSTONE 730/4 front panel assy or scrap Rx. Books - Newnes Complete Wireless, Early 'Trader' service sheets or similar. G4XWD QTHR (Kidderminster) 0562 823674

FOR Holmfirth Air Training Cadets use. Details and info please on Dymar 980 h/helds low-band, Europa UHF, Burndept UHF base 19" rack no number! All postage and copying costs paid. Please check your files! Call G0BTA, not QTHR. (Huddersfield) 0484 854310.

HANDBOOK wanted for Hewlett Packard calculator HP41C. Purchase or loan for photocopying. G3IKL QTHR (Rugby) 0788 571835.

HF linear amplifier at reasonable price. Must be in good working condition. (Ammanford) 0269 826357.

HF linear FL2100Z. Must include WARC. Non working or without valves OK if price is right. G3NDC QTHR (Stanmore, Middx) 081 954 1309.

ICOM IC240 in GWO. Mobile mount for Alinco ALR22E. Manual for realistic PRO2001 scanning Rx. Phone Paul (Isle of Wight) 0983 78756.

ICOM IC290E. Trio TR 751E, TR 9130. 2 metre multimode tcvrs, must be mint, unmod, mic, manuals, boxes etc. Phone eves. GW4RLP QTHR. (Caermarfon) 0286 5264.

ICOM SP20 Spkr complete with audio cable, also Icom LIT-36 voice synthesizer. (Kenilworth) 0926 54556.

PRACTICAL Wireless microwave dish or similar. Also 5m relays. Will collect. G3BEX QTHR (Bucks) 0494 675097.

RACAL 1792 Rx type ST80730 Pre Bite Micro CPU PCB Assy A6A2 part STo8203 marked DA80771 without chips. Standard 9442/12. Willing to purchase scrap part Rxs for bits. Also require Racal Auto Preselector MA1011 and 1792 size Racal case. Any info on RA2273B wide band Rx. RA1781 handbook. Pwr unit MS685 ST77047. Filters 1.6MHz IF 13kHz and 1.2kHz. Thanks (Shrewsbury) 0743 884858.

REDIFON R408, R551, Marconi, IMR or Eddystone Marine HF communication RX's. GM4CAM QTHR. (Ayr) 0292 45200.

REQUIRED urgent copy loan photostat KW2000B power supply cct. Expenses refunded. GW2BFD, 22 Brynffrwd Close, Coychurch, Bridgend, Mid Glam, CF35 5EP. (Bridgend) 0656 662942.

RETRACTABLE wall mounted tower (Altron S332, S342 or Versatower W40). 3 ele 10m Yagi. Ten-Tec Corsair CW filters. David, G4ERW (Surbiton) 081 399 0922

SHORT loan of technical information/manuals for modem SB2426D and sig gen HP 616B. John G7HQ1 (Spalding) 0775 724259.

SIX metre module for FT726R G8KXM QTHR (Stoke on Trent) 0782 535316.

TNC WANTED. Tiny 2, PK-88, with or without mailbox. Others considered. Will pay cash and collect. Also require FT290-MK1. (Abingdon) 0235 532653.

TRIO VB2300 amplifier for TR2300 2m tcvr. G4BDB QTHR (Bristol) 0272 738664.

YAESU FT290 MK1. Any reasonable condx. Prefer working, may take faulty unit. Steve (Abingdon) 0235 532653 (eves).

YK-88SN, YK-88CN or YK-88C IF filters for TS-130S. Also Eddystone EC10 Rx. David G4DMP QTHR (Leeds) 0532 860439

EXCHANGE

ALTRONICS superscaf audio filter in ex condx. Exchange for Ten Tec Desk Mike in 1st class condx. G0GPO QTHR (Canterbury) 0227 711261.

TH75E Dualband h/held with accessories, mint, bxd, manual. Would like HF linear. MC85 base mic: £65. Howes 80m CW Tx/Rx in Howes case, unfinished but all boards made up: £40. Alphacom printer, PSU for Spectrum: £20. Collect or pay P&P. Patrick (Dereham) 0362 821125.

TR751E 2M m/mode, 1 yr old, mint cond with all accessories for late model Trio 930S in really gd condx. Will add cash for matching spkr and extra filters. Save on a dealers trade-in. Ring now. (Neath) 0639 813431.

YAESU 902 ATU + SP901 spkr for 6m rig. Also Kenwood 9500 70cms m/mode wanted Kenwood TS770 or TS780 VHF/UHF rig. Also wanted scaffold tube size rotator head and Weltz HF/vHF/uHF meter 300. Eves/wknds (Norwich) 0603 745512.

YOUR Tait T198 highband FM for my T196 low UHF 70cm. 25kHz IF filter. Plse call 6-8pm. (March, Cambs) 0354 741168.

CLUB NEWS

DEADLINE - Items for inclusion in the November 1992 issue must be sent to HQ marked "Club News - DIARY", to be received by 18 September latest. If news is received by the published deadline, it should appear in the listing. It is your responsibility to ensure that items are sent DIRECT to HQ in good time. News items should be sent in writing, preferably typed or written legibly, and be signed by the club secretary or the person responsible for publicity.

NOTE: This is primarily a service for clubs affiliated to the RSGB, to whom priority will be given.

AVON

BRISTOL ARC - 10,24, construction with Dave, G4ZBT. Details 0272 721744.

RSGB CITY OF BRISTOL GROUP - 28, talk 'First Aid with reference to Electric Shock by Cyril Tippins. Details 0275 855123.

SOUTH BRISTOL ARC - 2, Annual General Meeting; 9, reviewing the Rally; 16, mystery . . . come and find out; 30, Summer snaps - show us all; Oct 7, exhibition 'History of SBARC'. Details 0275 832222 on a Wednesday evening.

WESTON-SUPER-MARE RC - 7, talk 'Electronic Warfare' by Peter Chadwick; 21, social and constructors night; Oct 5, quiz night. Details 0934 415700.

BERKSHIRE

BRACKNELL ARC - 9, talk 'Amateur Radio in the 90s'. Details from G4AUC.

BURNHAM BEECHES RC - 21, surplus equipment sale. Details 0628 25720.

MAIDENHEAD & DARC - 3, talk 'Computer Logging' by John, G3WGV, the author of 'Turbolog'; 20, quiz v Burnham Beeches RC; Oct 1, junk sale. Details 0628 25952.

NEWBURY & DARS - 23, talk 'Boscombe Down Airshow Communications' by Roger Beck, G6IBI. Details 0635 63310.

READING & DARC - 10, Autumn junk sale; 24, talk 'Digital Telecommunications' by Trevor Gill, G8IBO; Oct 8, club internal quiz. Details 0734 722489.

BUCKINGHAMSHIRE

AYLESBURY VALE RS - 2, RSGB video evening; 16, talk 'EMC and its Cures' by Dave Lauder, G1OSC; Oct 10, talk 'Digital Audio Broadcasting' by Peter Jackson. Details 044 282 6651.

CHESHAM & DARS - 2, HF SSB NFD Contest planning; 16, technical topic TBA; 30, silly contest! Details 0923 283911.

MILTON KEYNES & DARS - 14, equipment clinic with Dave, G8EOW; Oct 12, AGM. Details 0908 611005.

CAMBRIDGESHIRE

CAMBRIDGE & DARC -4, contest preparations; 11, talk 'TVI Filters and Other AKD Products' by John Armstrong of AKD; 18, talk by a representative of the British Antarctic Survey; 25, talk 'Physics of Radio Waves' by Tony, G0OEG. Details 0763 243570. Details 0763 243570.

CHESHIRE

CHESTER & DARS - 8, talk 'Support Structures' by G6IFA; 15, talk 'Introduction to Computers in Amateur Radio' by Chris, GW0PJK; 22, surplus sale of members' equipment; 29, talk 'Computer Hardware' by G1LML and G3TPY. Details 051-355 2833.

STOCKPORT RS - 9, talk 'Instrument Landing Systems' by Harry Arnfield, G3LX; 23, surplus equipment sale; Oct 14, talk 'Spectrum Analyser' by Bill Shaw, G3SHW and Harry Arnfield, G3LX. Details 061 439 4952.

CLWYD

CONWY VALLEY RC - 3, talk 'The Effects of Lightning on the Human Body' by Dr Ieuan Jones; Oct 1, junk sale. Details 0492 530725.

DELYN RC - 8, open night; 22, talk 'UFOs' by Steve, G1HAW; Oct 6, ladies' night. Details 0244 819618.

RHYL & DARC - ***CHANGE OF VENUE*** club now meets at the WRVS Centre, 116 Vale Road, Rhyl. 21, Annual General Meeting. Details 0745 338276.

WREXHAM ARS - 1, talk 'Magnetic Loops' by John, GW3RBM; 15, talk 'Slow Scan Television' by Mike, GW0HWK; Oct 6, talk 'Worked All Britain' by Ian, GW1MVL. Details: 0978 845858.

DERBYSHIRE

BUXTON RA - 8, talk by G4YZO of Badger Boards; 22, discussion night - JOTA/Foxhunt; Oct 13, home-brew night. Details 0298 25506.

DERBY & DARS - 2, junk sale; 9, illustrated talk 'Lightning Protection' by Furse & Co; 16, talk 'Crime Prevention' by Sergeant Wood of Derbyshire Police; 23, talk and demonstration 'Pyrography' by Bob Neil; Oct 7, junk sale. Details 0773 852475.

SOUTH NORMANTON & ALFRETON DARC - 7, open night - all welcome.

DEVON

BIDEFORD BAY ARC - ***NEW SECRETARY*** Mike Hammond, G3PGA, 47 Yelland Road, Fremington, Devon EX31 3DS, tel: 0271 860930.

EXETER ARS - 14, talk 'RSGB'. Details 0392 78710.

TORBAY ARS - 18, talk 'CQ World-Wide '89'. Details 0803 526762.

EAST SUSSEX

SOUTHDOWN ARS - 7, talk 'Contest Operating' by G3MXJ.

ESSEX

BRAINTREE & DARS - ***NEW SECRETARY*** Mr E Sherer, RS93500, 21 Maysent Avenue, Braintree, Essex CM7 5TZ.

CHELMSFORD ARS - 1, talk 'Moonbounce/ New Satellites' by Pat Gowen, G3IOR; Oct 6, Annual General Meeting. Details 0245 260831.

FIFE

DUNFERMLINE RS - 10, Packet clinic - hints, tips and advice from Les, GM7KHQ; Oct 8, AGM. Details 031 331 4340 (evenings).

GLOUCESTERSHIRE

GLOUCESTER ARS - 2, Annual General Meeting; 9, construction group; 16, Packet self help group; 23, home-brew clinic; 30, construction group. Details 0452 528533, extn 4734.

GREATER LONDON

ACTON, BRENTFORD & CHISWICK RC - 15, discussion on QSL cards, with G0JRY. Details 081-749 9972.

BROMLEY & DARS - 15, Radio Investigation Service/Baldock Radio Monitoring Station - Alan Betts. Details 081-462 2689.

COULSDON ATS - 14, talk 'Packet Radio for Beginners' by Peter Burton, G3ZPB. Details 081 684 0610.

EDGWARE & DRS - 10, talk 'Radio Data Systems' by Chris, G0LZV; 24, part one - Autumn session 'Morse Training Evening' by John, G3SJE. Details 081 953 2164.

KINGSTON & DARS - 16, surplus equipment sale. Details 081-398 1128.

SOUTHGATE ARC - 10, talk and show 'Model Aircraft' by R A Davies, G0MEO; 24, re-scheduled talk 'RadCom' by Mike Dennison, G3XDV; Oct 8, junk auction. Details 081-360 2453.

SURREY RCC - 7, talk 'Packet Radio' by Peter, G3ZPB; Oct 5, surplus sale. Details 081 660 7517.

THAMES VALLEY ARTS - 1, talk 'Oscillators' by George Cripps, G3DWW. Details 04865 4279.

WIMBLEDON & DARS - 11, inter-club quiz night; 25, general activity evening; Oct 9, desert island radio. Details 081 397 0427.

GREATER MANCHESTER

ECCLES & DARS - 1, demonstration 'Avoiding IMD in Linear Amplifiers' by G6MEI; Oct 6, talk 'My Visit to Japan' by G4UOT. Details 061-773 7899.

SOUTH MANCHESTER RC - 4, contest preparations; 18, surplus equipment sale. Details 061-969 1964.

GWYNEDD

DRAGON ARC - 7, vintage radio - bring along the oldest thing in radio that you possess; 21, talk 'VHF Pick and Mix' by Tony Jones, GW4VEQ; Oct 5, AGM. Details 0248 600963.

HAMPSHIRE

HORNDEAN & DARC - 3, talk 'Surplus Two-way Radio Conversions' by Chris Lorek; Oct 1, AGM. Details 0705 472846.

THREE COUNTIES ARC - 9, talk 'The History of Witchcraft in the Three Counties' by Jeremy Ross; 23, talk 'Computer Prediction of HF Radio Propagation' by Nigel Gerdes, G7CAW, Oct 7, illustrated talk 'Steam Engines' by M J Mason. Details 0420 83091.

WINCHESTER ARC - visit by Peter Chadwick, G3RZP. Details 0962 89550.

HEREFORD & WORCESTER

BROMSGROVE ARS - 8, PME earthing; 22, technical topics. Details 0527 54607.

BROMSGROVE & DARC - 11, talk and slide show by G4AAL; Oct 9, talk 'Loop Antenna' by G0KIN. Details 0562 710010.

REDDITCH RC - 10, talk on RSGB Topics and Novice Licence by Dave Gourley, RSGB Liaison Officer. Details from G3EVT.

TELFORD ARRG - 13, Telford Rally at Telford Conference Centre. Details 0952 770922.

HERTFORDSHIRE

CHESHUNT & DARC - 2, talk 'Computerised Logging' by John Linford, G3WGV; 16, members' forum; 30, talk 'Computer Imaging' by Simon Phillips, G4EYR. Details 0992 464795.

HODDESDON RC - 3, social evening; 17, talk on WAB by Robert, G4OBE. Details 081-804 5643.

HUMBERSIDE

GRIMSBY ARS - 17, talk 'Hobbies for all Organisations' by Brian, G4KAL; Oct 1, AGM. Details 0472 825899.

KENT

DARENTH VALLEY RS - ***NEW SECRETARY*** Len Lawrence, G0HRD, 119 Ladywood Road, Lanes End, Dartford, Kent DA2 7LP. - 23, construction night; Oct 14, Packet radio demonstration. Details 0689 876733.

MAIDSTONE YMCA ARS - 1, dummy Morse test; 4, open night; 12, RSGB Morse tests; 18, talks on 'Antennas' by G3ORP. Details 0622 670936.

RADIO CLUB OF THANET - ***NEW ADDRESS*** Radio Club of Thanet, Hoverspeed Social Club, Manston Village. Club meets 2nd and 4th Wednesday in the month.

SEVENOAKS & DARS - 21, talk 'Amateur Satellites' by Bob Phillips. Details from The Secretary, c/o Sevenoaks District Council, Argyle Road, Sevenoaks TN13 1HG.

SOUTH EAST KENT (YMCA) ARC - 2, Novice orientated amateur activities evening; 9, talk by Kent Repeater Group or an RSGB video; 23, check your gear with the Spectrum Analyser, plus initial meeting of Course 3 Novice trainees; Oct 7, NOAA evening; 14, Winter project, discussion - what do you want? Details 0304 372656.

SWALE ARC - 7, talk and demonstration 'Broadcast Satellite Television, Theory & Experimentation' by Steve Ralph, G7EIA. Details 0795 876091.

WEST KENT ARS - 18, construction contest. Details 0892 664960.

LANCASHIRE

CENTRAL LANCS ARC - 7, club quiz with G0KMU; Oct 5, inter club quiz with G0KMU. Details from G0KMU QTHR.

FYLDE ARS - 10, RSGB video screening VU7 Laccadive DXpedition and construction of the 'ONER'; Oct 8, equipment sale. Details from R J Bourn, G7CUL.

MAKERFIELD ARS - ***NEW ADDRESS*** 113 Marlborough Avenue, Spring View, Wigan, Lancs WN3 4PR.

PRESTON ARS - 3, talk 'Test Equipment' by Mr Grimes, Darwen; 17, talk 'Novice Licence' by Mr Williamson, Senior Instructor; Oct 1, talk 'RSGB - Zone A' by Mr Sheppard, G4EJP. Details 0772 686708.

LEICESTERSHIRE

CHARNWOOD ARCC - 5, Sked with P20 and BBQ evening. Details from G4RVW, QTHR.

LEICESTER RS - 21, talk 'KISS' by Jack, G3PVG. Details Leicester 762241.

LOUGHBOROUGH & DARC - 1, arrangements for Sutton Bonnington Show; 8, DF 160m or 2m; 15, aerial experiments HF; 22, 2m DF; 29, talk 'Power Amps' by G0LCU. Details 0509 218259.

LINCOLNSHIRE

SPALDING ARS - 11, talk 'Vintage Radio' by G7HCR; Oct 9, talk 'Building a HF Transceiver' by G4EMK. Details 0778 425367.

MERSEYSIDE

LIVERPOOL & DARS - 1, open night; 8, inquest SSB Field Day; 15, talk by G3XCP; 22, surplus sale; 29, pre-AGM. Details from Gordon, G4VYR.

WIRRAL & DARC - 9, surplus equipment sale; 23, The Great Egg Race III with Chris, G0DVV and Eddie, G6XHG. Details 051 648 3859.

NORFOLK

NORFOLK ARC - 2, Town & Country Show final briefing; 9, talk 'Flying Radio Controlled Models' by Geoff Agness, G4ODC; 16, talk 'Make a Rig Night' by Jim Bacon, G3YLA; 23, informal; 30, talk 'AC Op-amp Circuit Design' by Mike Harris, G3YIA; Oct 7, talk 'Circuit Simulation by Computer' by Alan Wright, G0KRU; 14, talk 'Buffers and Doublers' by Dick Bacon, G3WRJ. Details 0603 747992.

NORTH YORKSHIRE

HAMBLETON ARS - ***CHANGE OF VENUE*** West House, Allertonshire School, Northallerton. - 17, talk 'GB3HG Repeater' by Dave, G4DAX; 24, RAE Course commences. Details 0609 776608.

NOTTINGHAMSHIRE

ARC OF NOTTINGHAM - 3, forum; 10, talk 'Foreign Language QSOs' by Walter, G0OMO (postponed from 9 July meeting); 17, Foxhunt No 5 (last of the series); 24, talk 'Oscilloscopes' by Dave, G3YUT; Oct 1, construction; 8, forum. Details 0602 232604.

MANSFIELD ARS - 3, talk 'Narrow Band TV' by Doug. Details from G0NZA, 0623 755288.

SOUTH NOTTS ARC - 4, open forum; 11, construction (Fairham College); 18, talk 'Shack Safety Part 2' by Martin, G7FRA; Oct 2, open forum, 9, construction (Fairham College). Details 0602 841940.

NORTHAMPTONSHIRE

KETTERING ARS - 15, visit from The Radio Communications Agency - it is hoped that they will bring along the checking gear so members' radio equipment can be examined; Oct 13, talk by The Royal Signals. Details 0536 514544.

OXFORDSHIRE

OXFORD & DARS - 24, talk 'Computer Viruses' by Dr R Ford. Details from G0RFS, QTHR.

SHROPSHIRE

TELFORD & DARS - 2, Rally preparation. Details 0746 761203.

SOMERSET

YEOVIL ARC - 3, talk 'Protecting Multiple Earthing' by G4XKK; 10, talk 'Breakthrough' by a member of the Radiocommunications Agency; 17, club construction project; 24, committee meeting and construction; Oct 1, talk 'Tuned Circuits' by G3MYM. Details 0300 20975.

TAUNTON & DARC - 4, talk '80m Propagation' by Rob Micklewright, G3MYM; 18, visit to ITV Station at Stockland. Details from G3WNI QTHR.

SOUTH GLAMORGAN

CARDIFF RSGBG - Oct 12, AGM. Details 0446 773212.

SOUTH YORKSHIRE

BARNSLEY & DARC - 14, junk sale; 21, talk (provisional); Oct 5, talk 'CTCSSV 1750' by Dave, G8OWN (provisional). . . . Details from G4LUE, QTHR.

SUFFOLK

FELIXSTOWE & DARS - 7, talk 'Police Dog Training' by PC Ken Backhouse, G4RHR; 21, talk 'Maintaining User Service Radios' by John Gee, G4BAV; Oct 5, quiz. Details 0473 642595 (daytime).

IPSWICH RC - 9, talk 'Computer Aided Design' by G0OZS; 30, 21/28MHz Contest planning. Details 0473 742072.

LEISTON ARC - talk 'IBM PCs and Compatibles' by Andy Nunn, G8AXO. Details from G3DBJ QTHR.

SURREY

HORSHAM ARC - 3, talk 'Antennas' by Al Slater, G4CLF. Details 073784 2150.

WEST GLAMORGAN

SWANSEA ARS - 3, final preparations for HF SSB Field Day. Details 0792 403527.

WARWICKSHIRE

STRATFORD UPON AVON & DARS - 14, opening evening - Mike Webb award; 28, visit from Castle Electronics; Oct 12, talk 'Work of the EMC Committee' by Bob Peace, G8SOZ. Details 060 882 495.

WEST MIDLANDS

WOLVERHAMPTON ARS - 8, talk or visit TBA; 22, junk and surplus equipment sale. Details 0922 475057.

WEST YORKSHIRE.

HALIFAX & DARS - 15, Annual General Meeting. Details Halifax 202306.

KEIGHLEY ARS - 10, visit to Royal Mail, Bradford - 6.30pm; 16, quiz at Northern Heights; 24, talk by G3TDZ (White Rose Tx fame); Oct 8, talk 'Microwaves the Easy Way (10 & 24GHz)' by G0DJA. Details from Kathy, tel: 0274 496222.

LEEDS & DARS - ***SECRETARY*** Mr E Howdon, G0IBU, 36 Moseley Wood Green, Cookridge, Leeds LS16 7HB.

NORTHERN HEIGHTS AR&ES - 2, mini talks (Home-brew Test Gear); 16, entertaining KARS quiz night. Details 0274 673116.

WAKEFIELD & DARS - 1, 144MHz CW Cumulative Contest; 22, talk 'Electricity in Animals' by John Bailes, G0MVA; 29, talk 'From the Power Station to Your Door, Just Like That' by David Ackrill, G0DJA; Oct 6, annual junk sale. Details 0924 240577.

RALLIES AND EVENTS

This is a list of all rallies, hamfests, exhibitions and conventions notified to HQ (as at press date). Items are given in detail for the next three months inclusive and in brief thereafter. Please send detailed information, including contact call-sign and telephone numbers direct to HQ and marked 'Rally News - DIARY'.

6 SEPTEMBER

BRISTOL Radio Rally - Brunel's Great Train Shed, Bristol Old Station, Temple Mead. 5 minutes from M32. Opens 10.30am. Admission £1, concessionaries 50p, free for young persons under 14 accompanied by adult. Traders; club stands; computer supplies; bring & buy, ATV demonstration, Packet Radio demonstration. Refreshments. Talk-in on S22. Details from G4WUB, QTHR, 0275 839855.

MILTON KEYNES & DARS Car Boot Rally - Cranfield Airfield (South Side), Cranfield, Bedfordshire MK43 0AL. Off J13 or J14 of M1. Talk-in on S22 G8MKC. Details from Ray, G1LRU 0908 660798.

PRESTON ARS Mobile Rally - University of Lancaster. Opens 11am (10.30 for disabled visitors). Trade stands; Club/Repeater groups;

EVENTS DIARY

bring & buy. Free prize draw. Free parking on campus. Details from G Earnshaw, 0772 718175.
VANGE ARS Rally - The Laindon Community Centre, Laindon High Road/Aston Road, Laindon, Basildon, Essex. (Short walk from Laindon Station (BR) on the Fenchurch/Shoeburyness line. Doors open from 10.30am to 4.30pm. Admission 75p. Traders, bring & buy, refreshments, free raffle. Talk-in on S22. Approach roads will be signposted. Details from G4NVT, 0268 543025 or Doris Thompson, 0268 552606.

12 SEPTEMBER

BALLYMENA Amateur Radio Rally - Ballee High School. Opens 12 noon. Usual trade stands; RSGB bookstall; QSL bureau; bring & buy stand; refreshments; free car parking. Details GI4HCN QTHR, 0266 659769.
RSGB SCOTTISH NATIONAL ARC Convention - Fife Institute of Physical and Recreational Education, Viewfield Industrial Estate, Glenrothes, Fife. Opens 11am (10.30am early entry) - 5pm. Details from John Hardwick, GM4ALA, 0506 410677 (day) 0592 742763 (eves/wkends).
WIGHT WIRELESS Rally - National Wireless Museum, Arreton Manor, Newport, Isle of Wight. 11am to 5pm. Details from G3KPO, QTHR, 0983 67665.

13 SEPTEMBER

BARTG Rally - Sandown Park Exhibition Centre, Esher, Surrey. Well signposted; 10 min drive from jnct 10 of M25. Over 250 tables including top companies; special interest groups. Free parking. On-site catering; licensed bar. Details from Peter Nicol, G8VXY, tel: 021 453 2676.
LINCOLN SWC Hamfest - Lincolnshire Showground and Exhibition Centre, 4 miles north of Lincoln on A15 Lincoln/Scunthorpe Road. Open 10.30am. All usual trade stands; large bring & buy stand. Refreshments inside and outside; real ale bar. Lots of attractions for the whole family. Admission £1 by lucky programme. Free parking; caravans welcome by arrangement. Talk-in by West Lincs Raynet Group on 2m. Details from Sue Middleton, 0522 531788 or QTH G8VGF.
MADLEY SATELLITE EARTH STATION ARG Annual Amateur Radio Car Boot Rally - Sports ground, Satellite Earth Station Complex. Located 7 miles south-west of Hereford. Gates open 9.30am. All normal attractions including a Bring & Buy stand. The cost per boot is £5. There will also be a segregated conventional car boot sale for all the family. Ample room for free parking and picnicking. Special parking for disabled visitors. Talk-in on S22 via G7BTI. Details from David Butler, G4ASR, tel: 087 387 679.
TELFORD Amateur Radio Rally - The Telford Exhibition Centre, Telford, Shropshire. Opens 10.30am. This is 30 mins earlier than before. Talk-in on S22 and GB3TF (RB8). Get to Telford and call in. Admission £1. New for 1992 Bring and Sell sale. See our advert in this issue. Details G7BWQ QTHR, 0952 770922 or Richard, G4AZV, 0743 791570.

20 SEPTEMBER

CENTRE OF ENGLAND Autumn Radio Computer & Electronics Rally - National Motorcycle Museum, Bickenhill, near NEC, Jnct 6 M42. Opens 10.30am (10am for disabled visitors). Admission £1 (reduction for RAIBC members). Over 60 traders; free parking; bar & restaurant facilities. Concessionary rates for those wishing to visit the museum. Talk-in on S22. Details F Martin, G4UMF, 0952 598173.
EAST OF ENGLAND Radio Rally (Peterborough R&ES) - ICI Building, East of England Showground, Peterborough. Opens 10.30am (10am for disabled visitors - toilet facilities available). Admission £1. Traders Main Hall with bar and catering. Traders Marquee with Bring & Buy, separate outside area with flea market plus radio and electronic car boot. Details Mike Bowthorpe, G0CVZ, tel: 0733 222588.

26/27 SEPTEMBER

RSGB HF AND IOTA CONVENTION - ICL Beaumont Conference Centre, Old Windsor. Everything for the HF amateur; DX dinner; Young Amateur of the Year; lectures; Contest forum, software demos; DX Cluster; HF trophies; raffle. General enquiries and contact for all overseas visitors - Roger Balister, G3KMA, La Quinta, Mimbridge, Chobham, Woking, Surrey GU24 8AR, tel: 0276 858224. Tickets for the DX Dinner £18 from Bob Whelan, 36 Green End, Comberton, Cambridge CB3 7DY, tel: 0223 263137.

27 SEPTEMBER

34TH HARLOW AR Rally - Harlow Town Sports Centre, off Fifth Avenue, Harlow. Easy access off M11 jnct 7 A414. Signposted. Opens 10.30am. Admission £1; children/concessionaries 50p. Traders; Special Interest Groups in a room solely for their use. Free car park; on-site parking with full facilities for disabled visitors. Talk-in on 2m S22 and 70cm SU22 by G6UT. Catering and licensed lounge bar facilities. Details 0279 432306 (day) 0279 722569 (eve).
NORTH WAKEFIELD RC Radio Rally - Outwood Grange School, Outwood, Wakefield (1 mile from the M1 and M62). Doors open 11am. Fully licensed bar.; raffle; bring & buy; electronic and computer dealers; Repeater groups and Novice stand; Talk-in on S22. Details from John, G4RCG, 0924 362144.

4 OCTOBER

BLACKWOOD & DARS Rally - Oakdale Community College, Blackwood, Gwent. Doors open 10.30am; admission £1. Traders; bring & buy; videos; raffle; Talk-in on S22. Details from Norman Davies, GW0MAW, 0495 227550.
GREAT LUMLEY Radio Rally - The Community Centre, Great Lumley, Nr Chester-le-Street, Co Durham. Opens 11am (10.30am for disabled visitors). Trade stands; refreshments; bring & buy. Entrance fee: £1 includes a programme; children under 14 accompanied by an adult free. Details from Barry, G1JDP, 091 388 5936.
WINCANTON Radio and Electronics Rally - Wincanton Racecourse, Somerset. 10am to 4pm. Under cover. Trade stands; car boot sale; refreshments; free parking. Talk-in on S22. Details from Norman, G4YXX, 8 Fair View, North Brewham, Bruton, Somerset BA10 0JT or tel: 074985 432.

9-11 OCTOBER

WACRAL CONFERENCE - High Leigh Conference Centre, Hoddesdon, Herts. Details from G4EZU, QTHR, 0474 533686.

11 OCTOBER

ARMAGH & DUNGANNON & DARC Rally - Gosford House Hotel, Markethill, Co Armagh. Doors open 12 noon. Usual traders; bring & buy; refreshments. Talk-in on S22. Details GI8RLE, 0762 870423.
HORNSEA ARC Rally (ELHOEK) - Floral Hall, Hornsea. Opens 11am (10.30am for disabled visitors). Trade stands; tombola; raffle; bring & buy. Ample car parking. Details from G4IGY, 0964 533331.
SOUTH DEVON RC Computercations 92 Computer & Radio Rally - Hillhead Camp Site, Dartmouth Road, Brixham. Opens 10am. Trade stands; car boot sale (weather permitting); bring & buy; raffle; refreshments. Talk-in on S22 G7FDC & G4SSD; SES GB4CPU. Unlimited free parking; overnight camping. Details from W T Trezise, G6ZRM, 0803 522216.

23/24 OCTOBER

LEICESTER ARS Show - Granby Halls, Leicester. All usual facilities. Details from Frank Elliott, G4PDZ, 0533 871086.

31 OCT/1 NOV

6TH NORTH WALES Radio & Electronics Show - Aberconwy Conference & Exhibition Centre, Llandudno. Entrance fee: £1 adults, 50p children under 14. Details from GW7EXH, 0745 591704.

1 NOVEMBER

TWELFTH NORTH DEVON Rally - Holsworthy Memorial Hall. 10.30am to 5pm. Bring & buy etc. Details from K J Nicholls, G8MXI, QTHR.

8 NOVEMBER

BARNSLEY & DARC 2nd AR Rally. Details from Ernie, G4LUE, 0226 716339 (6pm-7pm please).
MARS/STOCKLAND Mobile Radio Rally - Stockland Green Leisure Centre, Slade Road, Erdington, Birmingham. Trade stands; bring & buy; free parking. Admission £1. Details from Norman, G8BHE, 021 422 9787.
TYNE & WEAR REPEATER GROUP Auction - Fencehouses Community Centre, Fencehouses, nr Chester-le-Street, Co Durham. Doors open 10.30am for booking in goods. Auction starts at 12 noon. Details from Ian, G4OCQ QTHR, 091 3840827.

15 NOVEMBER

BRIDGEND & DARC Rally - Bridgend Recreation Centre (jnct 36 M4). Doors open 11am (10.30am for disabled visitors). Bring & buy; swimming pool; 2 cafeterias; bar; toner etc. Details from GW3RVG, 0656 860434.

22 NOVEMBER

BISHOP AUCKLAND RAC Radio & Computer Rally - The Spennymoor Leisure Centre, Spennymoor, Co Durham. Under new management team this year. Catering and bar facilities plus other amenities of a top class leisure facility. Details from Mike, G0PRQ, 0388 766264.
WEST MANCHESTER RC Winter Rally - Bolton Sports & Exhibition Centre, Silverwell St, Bolton. Doors open 11am (10.30 for disabled visitors). Admission £1, children free. All usual trade stands, societies, bring & buy etc. All at pavement level with facilities for the disabled. Details from Dave, G1IOO 0204 24104 (eves).

13 DECEMBER

LEEDS & DARS Annual Rally - Pudsey Civic Centre, Dawsons Corner, Pudsey, Leeds (jnct of the Leeds Outer Ring Road with the Bradford Road). Doors open 10.30am. All usual facilities. Details from John, G0FWP QTHR, 0532 589652.
VERULAM ARC Christmas Rally - University of Hertfordshire (formerly Hatfield Polytechnic). From 11am to 5pm. Usual traders; bring & buy; raffle. Trade enquiries 0923 211643.

7 FEBRUARY 1993

SOUTH ESSEX ARS Radio Rally - Paddocks Long Road, Canvey Island. Details from Ken Hendry, G0BBN, 0268 755350.

14 FEBRUARY 1993

CAMBRIDGE & DARC Radio and Computer Rally. Details from G6UGI, 0763 243570.
2ND NORTHERN CROSS Rally - Rodillian School (jnct M1/M62). Details from Dave Gray, 0532 827883.

28 FEBRUARY 1993

6th TAW & TORRIDGE Rally - Bideford Halls. Details 0271 860930.

6 MARCH 1993

VHF Convention - Sandown Park Exhibition Centre. Stand bookings to Les Hawkyard, G5HD, tel: 0409 281 342. Details from Geoff Stone, G3FZL, tel: 081 699 6940.

21 MARCH 1993

NORBRECK Amateur Radio, Electronics & Computing Exhibition. Details from Peter Denton, G6CGF, tel: 051 630 5790.

29 MARCH 1993

PONTEFRACT & DARS 13th Annual Components Fair & Spring Rally. Details from Colin Wilkinson, 0977 677066.

4 APRIL 1993

WHITE ROSE ARS Radio Rally - Change of venue to: Allerton High School, King Lane, Leeds 17. Detail from A A Bartram, G7ELS.

9 MAY 1993

MARS/DRAYTON Mobile Rally. Details from Peter, G6DRN, 021-443 1189. Traders bookings Norman G8BHE, 021-422 9787 (eves).

6 JUNE 1993

25th SPALDING Mobile Rally. Details from Mr T Kettlewell, G4TWR, 0775 722940.

13 JUNE 1993

24th ELVASTON CASTLE Mobile Rally. Details from John Robson, G4PZY, trade enquiries to Peter Neal, G3WFU, 0332 700265.

27 JUNE 1993

36th LONGLEAT AR Rally. Details from Shaun, G8VPG QTHR, 0225 873 098.

25 JULY 1993

COLCHESTER Radio & Computer Rally. Details from Frank, G3FIJ, 0206 851189.

22 AUGUST 1993

WEST MANCHESTER RC Summer Rally. Details from G1IOO, 0204 24104 (evenings).

GB CALLS

The list below shows all special event stations licensed for operation during this month and up to 30 September. It was taken from the HQ computer on 4 August. These callsigns are valid for use from the date given but the period of operation may vary from 1-28 days.

1 SEPTEMBER

GB4CSC	Cub Scout Challenge
GB0LAG	Linksfield Anniv, Gomel

3 SEPTEMBER

GB0WB	Wethersfield Base
GB92APG	Army in Preston Guild

4 SEPTEMBER

GB1NAR	National Ambulance Rally
GB2ACA	Air Crew Association
GB2BHF	Bryngals House
GB2CDY	Coastal Defence Yarmouth
GB2NAR	National Ambulance Rally
GB2NM	Gerald Marcuse, G2NM
GB4GDB	Guide Dogs for the Blind

5 SEPTEMBER

GB2CPS	Chigwell Police Show
GB2NRF	Nestle Rowntree Family Day
GB4MS	Moulsford Show

6 SEPTEMBER

GB4VMR	Vange Mobile Rally

10 SEPTEMBER

GB2GAF	Gloucester Air Force

11 SEPTEMBER

GB2CVS	Cleveland Venture Scouts

12 SEPTEMBER

GB0RAF	Royal Air Force
GB2HCD	Hoddesdon Carnival Day
GB2RAY	RAYNET
GB4ATG	Amateur Teledata Group
GB4ONY	North Yorkshire
GB4TRG	Telford Rally Group

13 SEPTEMBER

GB0DPP	Dyfed Powys Police HQ
GB2IPA	International Police Association

15 SEPTEMBER

GB0RAF	Royal Air Force

16 SEPTEMBER

GB1BOB	Battle of Britain

18 SEPTEMBER

GB0CDC	Coastal Defence 'C'
GB0YDC	Yarmouth District Camp
GB100BMC	Bowes Museum Centenary
GB100SBC	Southend Borough Council 100th
GB1BMC	Bowes Museum Centenary
GB2NTS	National Trust for Scotland
GB2NTU	National Trust Ulster
GB400CA	Crathes Anniversary

19 SEPTEMBER

GB0HCC	Highbank Community Centre
GB0RPS	Radley Primary School
GB0SCA	Stakes Community Association
GB8BS	Bicnacre Scouts
GB0RCC	Rawtenstall Cricket Club

21 SEPTEMBER

GB6WB	West Bridgford

23 SEPTEMBER

GB2RCC	Radio Caravan Club

26 SEPTEMBER

GB0BDA	British Diabetic Association
GB2RNL	Royal National Lifeboat

27 SEPTEMBER

GB4YCS	York Cub Scouts

30 SEPTEMBER

GB6SS	Sandwell Show

SILENT KEYS

WE HAVE BEEN advised of the deaths of the following radio amateurs:

G0BTM	Mr G Gair	Mar 92
G0EIE	Mr J King	
G0IPM	Mr P J Murphy	
G0KJE	Mr R Young	10.6.92
GI0JOB	Mr J O Beresford	27.4.92
GW0DMX	Mr E Allen	Nov 91
G1GRR	Mrs E Smith	22.6.92
G1NOE	Mr R P Wilson	
G1WPV	Mr J W C Hunt	04.6.92
G1WPW	Mr D M Tasker	22.6.92
G2AOB	Mr G W L Jobling	
G2BUR	Mr E T Edleston	15.4.92
G2FCI	Mr A J White	26.6.92
G3ANK	Mr A Swindon	02.5.92
G3AWL	MrT Luxmore	
G3BMK	Mr J H Duxbury	
G3COV	Mr G B Woffinden	
G3EES	Rev G T Haigh	28.2.92
G3FME	Mr J C Scott	30.5.92
G3IBO	Mr B G Barnard	12.7.92
G3OUX	Mr G Reid	31.5.92
G3PPK	Mr M B Everley	23.2.92
G3RAZ	Mr P B Gaunt	
G3SBQ	Mr G J Smith	31.5.92
G3TBT	Mr R Hodgson	
G3XPV	Mr R J Speed	10.2.92
GW3PPS	Mr A E Cook	
GW3SSJ	Mr R F Farley	19.7.92
G4BPY	Mr G M Pheasant	
G4IC	Mr R A Clarke	30.5.92
G4NKH	Mr B Smith	12.7.92
G4OSE	Mr P Bookbinder	08.4.92
G4OSZ	Mr E G T Greenwood	Feb 92
G4QL	Mr L J Fitzgerald	05.5.92
G4WNS	Mr J Begbie	
G4WUC	Mr W Salt	Jan 92
G4ZHJ	Mr S W Jones	
G4ZYW	Mr R C Jobson	28.6.92
GM4DJS	Mr D J Smillie	17.5.92
GM4VDI	Mr J Wilson	13.5.92
GW4DCA	Mr R J J Atkin	
G6MTO	Mr J P Rose	Nov 91
G6OYS	Mr R H Shaw	10.1.92
G6PDB	Mr G D Brown	
G6WO	Mr L G Watts	30.6.92
G7FRK	Mr H F Fowler	
G7JFW	Mr G A Craddock	
G8SM	Mr A Mears	08.3.92
GM8FM	Mr J H Shankland	
RS24502	Mr H W Neal	
RS43157	Mr D A Elphick	11.5.92
ZL1AGG	Mr J E Jarman	

60th Anniversary Diamond Jubilee Issue

DIAMOND JUBILEE 1932-1992

practical Wireless

DIAMOND JUBILEE 1932-1992

To celebrate 60 years of continuous publication, *Practical Wireless* is publishing a bumper-sized issue. Our Diamond Jubilee October issue takes a nostalgic look back over the last six decades, to see just how much the radio hobby has changed.

The founding editor of *PW* tended to be overshadowed by his aircraft designer brother Sydney. Sir Sydney Camm was honoured for his famous designs including the Hawker *Hurricane* and the *Harrier* jump-jet. As a fitting tribute, *Practical Wireless* takes the opportunity to redress the balance, by featuring the history of Fred Camm and his many achievements.

Read about the Three Shilling Valve Radio. *PW* looks back at a typical project from the 1930s, and how difficult and expensive it could be too!

Remember those 'magic eye' tuning indicators? Well, they're still available and you can still use one to advantage with our special dip-meter project this month.

Radio amateurs go to war. Radio enthusiasts took up important roles during the Second World War, and *PW* takes the opportunity to give credit where it's due to the many amateurs who used their technical knowledge and skills during the conflict.

A magazine is nothing without its readers, and *PW* regulars rallied to our calls for memories, whether they be from 15, 25 or even 60 years ago. So, you too can share our history, your memories and much more by reading the Diamond Jubilee issue of *Practical Wireless,* published on 10th September.

PETER RODMELL COMMUNICATIONS

G3ZRS

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AKD 2m, 4m, 6m, FM 5/25w Transceivers, TVI filters and Wavemeters in stock.

Alinco, Microset, Yupiteru, Diamond, Tonna, Revex, MFJ, Sagant, Zetagi, Global, Adonis, Components, Malsor and Spectrum kits.

Amateur Radio Equipment Purchased or part exchanged.

Send 8x6 SAE for lists. VISA - MASTERCARD - CHEQUE

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RG213U, (UR67), Mil spec, 50 ohm low loss	70p/m		
UR43, 5mm dia, 50 ohm, single centre	30p/m		
RG58CU, 5mm dia, 50 ohm, stranded centre	30p/m		
RG174U, 2.3mm, 50 ohm, miniature coax	30p/m		
UR95, 2.3mm, 50 ohm, mini nylon coax	30p/m		
UR111, 2.3mm, 75 ohm PTFE mini coax	40p/m		
UR57, 10.3mm, 75 ohm low loss coax	70p/m		
UR70, 6mm dia, 75 ohm transmitting coax	30p/m		
Double screened, 75 ohm coax, 8mm dia	40p/m		
UHF low loss TV downlead, 75 ohm	25p/m		
75 ohm twin balanced feeder, 400 w PEP	20p/m		
300 ohm standard ribbon	20p/m		
RG62AU, 6mm dia, 95 ohm coax	50p/m		
Single core screened cable, 2.3mm dia	12p/m		
Two core screened cable, 5mm	30p/m		
3 core mains, 5 amp, cable	25p/m		
6 core rotator cable, heavy duty	45p/m		
8 core rotator cable, heavy duty	65p/m		
14 SWG HD copper	25p/m	16 SWG HD copper	20p/m
PVC coated AE wire, light duty	8p/m		
Red/black DC power cable, 8 amp	30p/m		
Red/black DC power cable, 15 amp	45p/m		
PVC coated AE wire, heavy duty	12p/m		
NEW UR67 50 ohm HD with robust outer sheath	90p/m		
NEW 75 ohm HEAVY DUTY TWIN Balanced feeder	60p/m		
NEW 300 ohm HEAVY DUTY SLOTTED Feeder	60p/m		
NEW 16swg stranded copper aerial wire	30p/m		
NEW 450 ohm ladder ribbon feeder	65p/m		

Postage on cables up to 20m £3.00, over 20m £5.00

CONNECTORS

N plug, 10.3mm, GREENPAR	£2.60	ditto for 5mm	£2.60
N line socket, GREENPAR	£2.50	only in 10.3mm size	
N4 hole sq chassis socket	£2.00		
BNC plug, GREENPAR 5mm	£1.20	ditto 10.3mm	£4.00
N SKT to N SKT line adaptor	£3.00	ditto N plug to N plug	£3.50
N socket to BNC plug adtr	£3.00	BNC plug to N socket	£3.00
PL259 plug, GREENPAR, PTFE/silver	£1.20	(P/P on connectors	75p)
Special N plugs for W103	£5.80	Polyprop egg insulators	70p
Self amalgamating tape	£3.80	4" dog bone insulators	70p
Dipole centre boxes	£2.50	Half kilo multicore solder	£5.00

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Last month I wrote it was 30°C in my office, this month there is 3in of water outside and you can't hear yourself thinking for the sound of rain drumming on the roof. The wonderful British summer is with us. Well this has nothing to do with computers or amateur radio but it has given me some time to work on some new products for the autumn and I hope shortly to have available realistically priced interfaces for controlling your rig from a PC, so keep reading my ads.

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A phone call will get you an estimate for repair and a quote or advice on second user equipment. I look forward to speaking to you. 73s John G3TLU

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The Last Word

FEWER BUT BETTER

As the originator of the letter 'Radioless Rallies' (*The Last Word*, July) I purposely omitted to offer any possible causes or solutions to the perceived problem of mobile rallies. I was therefore pleased to see G6DLJ's reply (August), which articulated very well the personal sacrifices made by dealers to attend rallies as well as highlighting the major problem facing us today . . . . just too many rallies. In the UK I could probably attend twenty rallies a year without too much effort, but I could not afford the time or the money to make it worthwhile for the dealers and myself.

The dilution of rallies can be overcome as G6DLJ suggested, by clubs grouping together and putting on one good show a year. My experience in the USA bears this out, where I was lucky if could attend as many as four rallies a year that were within reasonable travelling distance. Although there were several active clubs in my local area, they appreciated the benefits of cooperation. It takes effort to organise such an event, but the results speak for themselves. The dealers have smiles on their faces from the roaring trade, and the hams get a good show with lots of bargains. So come on, why not try it? You never know, it might put the 'radio' back into rallies.

By the way, can anybody tell me why hardly anyone ever displays their callsign at rallies these days?

Brian Burke G4HIY

WAY OF LIFE

John, G4LSI, writes (*The Last Word*, August) suggesting transferring contests to the "much under-used WARC bands". May I suggest instead that he joins the considerable number of operators who have moved to the WARC bands to escape these contests. He will find that they are far from under-used at weekends. A check of my log over the past 18 months shows over 2000 QSOs with 110 countries on 10MHz alone, operating at weekends only. Amateur radio can become almost a way of life, and I found the inability to operate enjoyably at weekends due to contest QRM so frustrating that I seriously considered giving up the hobby. It was only the discovery of the contest-free WARC bands that saved the day.

It is unrealistic to think that contest operators would be satisfied with the use of the WARC bands only, particularly as 24MHz will be increasingly unreliable over the next seven years. The danger is that we could end up in a situation where the contesters occupy all bands for most weekends and normal operation would be impossible anywhere. I suspect that would mean the end of involvement in amateur radio for many operators, myself included. We need more radio amateurs, not fewer. At all costs, let us keep the WARC bands contest free.

Mike Birch G0KDZ

WEEKEND BLUES

The letter from Phil Bridges re rallies (*The Last Word*, August) prompts me to come out of my amateur radio business 'retirement' in strong support of his views. I spent (with colleagues) more weekends than I would perhaps care to remember 'waving the flag' for our own manufacturing company at rallies and exhibitions the length and breadth of the country, often for little tangible reward. More often than not we were unable to justify the cost of overnight accommodation, and the day of the rally would frequently start in the early hours with a long drive, sometimes ending in the early hours of the following day. It was certainly very hard work, and definitely not at 'overtime rates'!

This is not 'sour grapes'. I am these days far removed from the commercial side of the hobby, and I have no axe to grind. I do however have every sympathy for those people trying to make a decent living within amateur radio business - it ain't easy!

Stephen J Prior G4SJP

CODE BOOK

Travelling home by train from the RSGB '92 Show, I read G0KKL's letter (*The Last Word*, June) which asked for more details of the number codes such as 73 & 88. Only an hour earlier I had been looking at a list of the codes in a book which I have seen on sale at two rallies since: *The Railroad Telegraphers Handbook* by Tom French, published by Maynard of Massachussetts, USA.

Keith Orchard G3TTC

NO DOUBTS

Any doubts that I may have had about the Novice Licence were firmly disposed of last night. DX conditions being somewhat on the low side of terrible, I tuned up the 80M band from my usual haunts around 3505, to find a CW QSO in progress on 3575. It turned out to be two Novices conversing about a wide range of subjects, naturally, competently, and at a speed that would put many Class As to shame!

What really impressed me, though, was the understanding of amateur radio that their conversation conveyed. Knowledge of operating procedures, Morse abbreviations, courtesy on the air; it was all there. I was left in no doubt that the Novice Licence is a marvellous mechanism to get aspiring radio amateurs on the air, and provide both the vehicle and the incentive to progress in our wonderful hobby.

Let us look to the day when the experiment in structured licensing and meaningful Morse code testing which has been started with the Novice Licence is carried through into other licence classes. I wish we'd had this sort of thing when I was 15 years old and just starting in the hobby!

John Linford G3WGV

MORSE NOT FOR TONE DEAF

Morse (as a G8 I wish to spring to the defence) is the most wonderful, simple and efficient means of communication ever devised. But not for me.

I always loved music (real music): Russ Conway (who was a fast CW op), Acker Bilk the clarinetist etc. In my young days before ever thinking of becoming a ham, I decided that being an Acker Bilk was for me. I bought a clarinet, took lessons etc. After many moons and visiting my family in the local looney bin it dawned on me that I had the musical talent of a dying yak. So I sold the clarinet at a loss and gave up, but still listened to Acker Bilk & Co in complete envy.

Many years later the amateur radio bug bit me: RAE, a complete doddle, learnt everything out of the RSGB manual, passed first go. But when I came to learn Morse I bought records, tapes etc, Datong Tutor, spent half an hour a day for months/years. It went in through one ear and out the other.

I listened to CW on the HF bands in envy. With a little effort and a sympathetic tester I could probably struggle through the Morse test, but if a doctor or dentist struggled through their exams and did not improve would we like to place our bodies in their care? When I hear of hams who pass the test or the RAE, who say "I thrown away my Morse key or soldering iron", it makes my blood boil.

Personally I think that I have come up with a solution. I have made a ticker-tape machine using an ancient tape recorder (bought at a boot sale) and a graphic equaliser plus a schmitt trigger circuit in tobacco tin, biro pen etc and, to read the result, a shaving mirror. CW has brought a new delight. I can't use a computer; don't know one end from the other. But I can imagine the same result can be obtained from a suitable programme. So when I think that I am suitable for the HF bands no doubt will struggle through the Morse test and I won't be throwing away the key that's for sure.

Sandy Pimlott G8IDE

Please note that the views expressed in *The Last Word* are not necessarily those of the RSGB. We reserve the right to edit letters for publication. All letters are acknowledged and may be passed to the relevant department or committee.

PIRATE STATION

When reading the *GB2RS* news script on 12 July, I was greatly surprised at the publicity accorded to the special event callsign GB2JPJ - to commemorate the 200th anniversary of the death of John Paul Jones, and to celebrate (sic) the opening of his cottage as a museum. Since when have the RSGB been in favour of issuing special event callsigns to honour slave traders, smugglers and enemy naval officers?

John Paul (to give his correct name), a British merchant seaman, was at one time master of a brigantine slave ship and was later employed as a smuggler in and around the Solway Firth and the Isle of Man. In 1775 he committed treason by joining the Revolutionary Navy of the American Colony and subsequently cruised the shipping lanes that he knew around the UK, attacking British merchant and naval vessels. During the battle of Flamborough Head in 1779 he attacked a British merchant fleet. During the course of this battle he took British prizes and sank *HMS Serapis* with the consequent death of many British seamen.

Perhaps it would have been more diplomatic to issue a special callsign to honour John Campbell, the flag officer of Lord Hawke at the battle of Quiberon Bay in 1759, who was born in the same village as John Paul.

I wonder, should anyone apply, if the RSGB would issue a special event callsign to celebrate the anniversary of the death of Admiral Lutjens, the commander of the 'Bismark' or Vice Admiral von Hipper's exploits at the Battle of Jutland in 1916. Both of these men, like John Paul, were responsible for the death of many British seamen.

There again - who cares?

P E W Allely GW3KJW

[Occasionally, applications for special event callsigns ***have*** *been rejected - Ed]*

SPELL CHECK

I am becoming concerned at the increasing use of American spellings for English words in the articles and advertisements appearing in radio and electronics magazines from British publishers. A recent example was on page 23 of the August 1992 edition of *Radio Communication* wherein the sub-headings UK SIX METER GROUP and LISTENING ANTENNAS appeared.

From my professional IEE pupil-advisory involvement with a local high-school it appears as though the spelling-check facility on Word Processors could be the culprit, perhaps via software originating from the USA?

E Chicken MBE G3BIK

[The reference to 'meter' was a typographical error but we always refer to antennas; insects have antennae. Other acceptable Americanisms are 'disk' and 'program' when referring to computers; disc and programme are for music. We will also use the original spelling in a proper noun like 'DXCC Honor Roll' - Ed]

THANKS CHRIS

We would like to express our gratitude to Chris Parnell, G0HFX, our sole tutor for the RAE Course which was held at a local Village Hall. Without his enthusiasm, dedication (3 hours every Thursday for the past year) and professional approach to amateur radio, many of us may not have passed.

We all sat the exam in May this year, have received our City and Guilds Certificates (all 14 of the group passed) and are now waiting our licenses. The group had mixed abilities with ten members having no electrical/electronic background.

Reg, Kevin, Gillian, Aidan, Bob, John, Sharon, Bill, Leo, Hugh, George, Michael, Richard and David.

SOAP BOX

I have just ripped up my first letter in response to Mr J P Reeve's comments (see 'Weekend WARC', *The Last Word*, *RadCom* August) as I feel some of my comments were rather harsh and not in the spirit of amateur radio.

After reading the letter in the bath I now feel more relaxed and in a more mellow mood and realize that his comment about contests on WARC bands are similar to a crank up tower - just a good wind up! If not, Mr McEnroe would sum up "you cannot be serious".

Roger David G4RUW

RSGB BOOK CASE

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These special offers are for RSGB members only and are valid until 30 September 1992.

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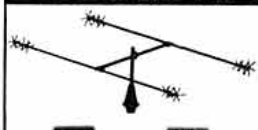

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ADVERTISERS INDEX

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The display advertisement copy date for our November 1992 issue will be **14th September 1992.**

MOBILES IN MOTION

IC-229E/H
144MHz FM transceiver
IC-449E
430MHz FM transceiver

- Ultra-compact body.
- One-touch access functions.
- 20 memory channels.
- Illuminated switches and controls for night driving.
- 140(w)x40(H)x105(D) mm.

Photograph shows U.S.A. version

IC-3230H *NEW!*
144/430MHz Dual-band FM transceiver.

- Simple dual-band operation.
- Optional remote control capabilty, tone squelch and voice synthesizer unit.
- 30 memory channels.
- Full duplex QSO.
- 140(W)x40(H)x165(D)mm.

IC-1201E
1200MHz FM transceiver

- High sensitivity receiver.
- Stable 10W output power.
- Convenient AFC, RIT and VXO functions.
- 20 memory channels.
- Priority watch.
- Programmable call channel.
- 140(w)x40(H)x200(D) mm.

IC-901
144/430MHz dual-band FM transceiver

- Detachable remote controller.
- 6 band capability: 28, 50, 144, 430 and 1200MHz.
- Simultaneous dual-band reception.
- Optional wideband receiving unit.
- 150(w)x50(H)x191(D) mm.

ICOM mobile transceivers give the performance and power you need when 'on the road' and will enable you to operate a flexible and therefore more useful system.

For further information about ICOM products and your nearest authorised dealer please contact:
Icom (UK) Ltd. Dept RC Sea Street Herne Bay Kent CT6 8LD
Telephone: 0227 741741 (24hr). Fax: 0227 741742

ICOM

Same Again Sir?

In the battle of the stations, the FT-990 all-mode HF transceiver is the clear winner. Based on the same remarkable performance, ease of operation and the features of the FT-1000. The FT-990 is an extraordinary achievement, compare the advantages yourself. Feel the silky smooth tuning, hear the dual digital SCF (Switch Capacitance Filter) provide unsurpassed reception quality never before obtained. Be heard with the CPU controlled RF FSP (RF Frequency-Shifted Speech Processor) for the extra pile-up "PUNCH." See the lightweight and compact FT-990 with built-in AC switching power supply. The FT-990 is a true champion HF rig without compromise. Leave it only to Yaesu to offer powerhouse performance that leaves the rest far behind.

FT-990
HF All-Mode Transceiver

- ✔ **Dual VFOs With Direct Digital Synthesis (DDS):** Two ten-bit DDS plus three eight-bit DDS.
- ✔ **High Dynamic Range:** 108dB. RF circuit design with quad FET first mixer similar to the FT-1000 as only Yaesu's unsurpassed tradition can provide.
- ✔ **CW 500Hz Crystal Filter (Included).**
- ✔ **Dual Digital SCF Filter and IF Shift, IF Notch:** Superior interference reduction.
- ✔ **Automatic Mode- Dependant AGC Selection.**
- ✔ **Full and Semi-Break In CW Operation:** With built-in iambic memory keyer with BFO offset and CW spot. Key jacks on both front and rear panels.
- ✔ **6 Function Multimeter.**
- ✔ **Adjustable RF Power Output:** With internal heatsink and whisper-quiet temperature switched squirrel cage blower.
- ✔ **Adjustable Level Noise Blanker:** For a wide variety of noises and woodpecker.
- ✔ **CPU Controlled RF FSP (RF Frequency Shifted Speech Processor):** For better intelligibility and pile-up "PUNCH" for competitive situations.
- ✔ **High Speed Automatic Antenna Tuner:** With 39 memories.
- ✔ **50 Memories:** Independant ATU and mode/IF filter memory.
- ✔ **Multimode Selection on Packet/RTTY:** Switchable FSK tone, RTTY shift and CW pitch.
- ✔ **Front Panel RX Antenna Selection:** Allows quick switching.
- ✔ **Digital Voice Storage (DVS-2):** Option provides instant playback of 16-second receive memory, plus two 8-second or 4-second "CQ contest" messages on transmit.
- ✔ **Built In Switching AC Power Supply:** Reliable performance with significantly reduced size and weight.
- ✔ **Band Stacking VFO System:** Each VFO register memorises your most recent operating frequency, mode, bandwidth and clarifier information for instant return to your favourite frequency and mode.
- ✔ **Accessories/Options:** TCXO-2 (Temperature Compensated Crystal Oscillator), XF-10.9M-202-01 (2nd IF SSB Narrow 2.0kHz), XF-445C-251-01 (3rd IF CW Narrow 250Hz), SP-6 (External Speaker), MD-1C8 (Desk Microphone), YH-77ST (Headphones).

Performance without compromise

YAESU

UK Sole Distributor
South Midlands Communications Ltd, S.M. House,
School Close, Chandlers Ford Industrial Estate,
Eastleigh, Hants S05 3BY.
Tel: (0703) 255111.