

Radio Communication



The Journal of the Radio Society of Great Britain

November 1990

Serving Amateur Radio



PROJECT YEAR VIDEO IN THE MAKING

THANKS TO YORKSHIRE TV



**Peter Hart Reviews
the TS-790E**



KENWOOD



TS-790E – Just when you thought it was impossible

Impossible to design and produce a multi band VHF/UHF transceiver which would render all others obsolete? But this is what Kenwood have done with the TS-790E, in the same way that the TS-940S set new standards which have not yet been beaten, or the TR-751E 2 metre multimode, which is still without any serious competition. Kenwood have the magic touch which gives the customer what the customer wants, in a package which is easy to use, performs like a dream, and is simply a delight to own.

The TS-790E gives you all-mode operation on 2 metres, 70 centimetres, and with an optional internally fitted section adds 23 centimetres as well. Power output is 45 watts on 2, 40 watts on 70, and 10 watts on 23; and there is little doubt that the receiver performance will better any previous transceiver.

It is fashionable in some quarters to sneer at the microprocessor, but Kenwood write the software in their processors with the aim of giving the user complete control over a wide range of facilities and not confusing the issue. In this respect, the TS-790E adds a new dimension to VHF operating, with its dual (triple) band monitoring, cross band operation, full duplex facilities, and a wide range of features to make life easy for the operator.

John Wilson
G3PCY/5N2AAC

TS-790E £1,495.00 inc VAT (see review in this issue)

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Managing Editor
Mike Dennison, G3XDV

Assistant Editor
Marcia Brimson

Production Editor
Sid Clark

Draughtsman
Derek Cole

Editorial Secretary
Louise Hill

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

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

Tel (Editorial only): 0707 59260
Fax (Editorial only): 0707 49503
E-mail (Telecom Gold):
87:CQ083
N.B. for all other RSGB telephone numbers see page four.

Editorial Board

David Evans, G3OUF
Publisher/Secretary

Peter Chadwick, G3RZP
Chairman, Technical and Publications
Advisory Committee

Mike Dennison, G3XDV
Managing Editor

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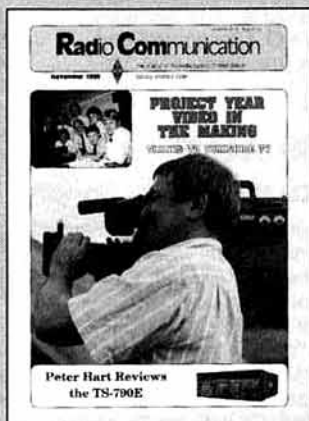
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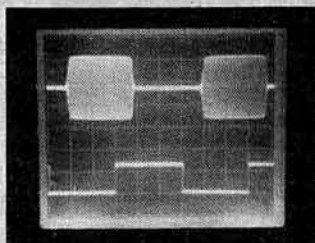
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The Journal of the Radio Society of Great Britain

November 1990



Cover picture:
The RSGB's Project YEAR video
sponsored by Yorkshire TV.
Main photo: Cameraman, Paul Farrar
records the Leeds White Rose Club
NFD.
Inset: Duncan Heathershaw, G3TLI,
with pupils from Longcroft School
taking part in the video. Photograph:
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RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

Founded 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
Telex 9312 130923 (RSGB)

Electronic mail via Dialcom/Telecom Gold: 87.CQQ083

Fax: 0707 45105

Telephone: 0707 49855 — Members' Hotline and book orders

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Secretary: David Evans, MSAE, CPL, G3OUF

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Once-off joining fee: £1.50

Corporate members: UK and overseas (Radio Communication by accelerated surface post): £25.00

UK associate member under 18: £8.50. **Family member:** £9.95

UK students over 18 and under 25: £12.75 (Applications should give applicant's age at last renewal date and include evidence of student status)

Affiliated club or society/registered group (UK): £25.00 (including Radio Communication); £14.95 (excluding Radio Communication) (Subscriptions include VAT where applicable)

Membership application forms available from RSGB HQ

1991 Presidential Installation

The RSGB's 1991 President, John Case, GW4HWR, will be installed at an evening reception and dinner at Cardiff Castle. The date is Saturday 12 January 1991. Tickets for this prestigious event are priced at £16 per head. Any member may attend. Requests for tickets should be addressed to "The Secretary", RSGB HQ, Cranborne Road, Potters Bar, Herts, EN6 3JE.

1989 AGM Minutes

The following amendments have been made to the minutes published in the March 1990 *RadCom*:

Para 13. After "GM3AYR", insert "on why the accountant had been made redundant"; and at end insert "In reply to Mr Crosland, G6JNS, the Treasurer replied that late payments to the Inland Revenue had been cleared up, without any penalty."

Para 14. Replace the first sentence with "Mr Clough, GM0MDD, asked how many late payments were made. The treasurer replied there were several."

After para 14, insert "G6JNS asked why there was a delay in informing Council of the VAT surcharge. The Treasurer replied that F & S had brought it to Council's attention as soon as accurate facts were known."

After para 16, insert "Mr Bailey, GM8BBA, asked for the exact figure for the deficit for the year. The Treasurer replied that the final figure was £25,946 including a provision for tax."

Committee Vacancies

A vacancy exists on the **Membership Liaison Committee**. The MLC oversees RSGB services to the membership; the GB2RS news service, CW practice service and the Society's liaison scheme. Applicants, who must be RSGB members, should preferably have extensive committee experience and have good organising and communication skills. If you are interested in serving on the MLC, please apply as soon as possible to the Chairman, Geoff Smith, G4AJJ, 'Greenacres', Sawdon, Scarborough, N.Yorks, YO13 9DY.

The **Finance and Staff Committee** is looking for members to assist in its work of

directing and monitoring the Society. Familiarity with all aspects of the Society's operations, and experience in business management and finances are required. Membership of this committee is limited to present and past Council members. Anyone interested, who is eligible for the post, should apply to the Chairman, G3YGF, QTHR.

There are currently vacancies for one ordinary member and several corresponding members on the **HF Contests Committee**. Anyone interested should contact Dave Lawley, G4BUO, Carramore, Coldharbour Road, Penshurst, Tonbridge, Kent, TN11 8EX.

QSL Bureau News

Those operating club stations using the new prefixes (GX etc.) are asked to deposit envelopes with the QSL Sub-Manager appropriate to the ordinary club call sign, and not with the GB Sub-Manager who deals only with the GB prefix.

Members using the Bureau are reminded that the envelopes sent to their Sub-Manager should be of the correct size, ie large enough to accommodate cards without folding but not larger than 7" x 5". Envelopes which are too large, or are reinforced or padded are very difficult for Sub-Managers to file properly.

The new QSL Sub-Manager for the G0OAA to OZZ series is Dave Bloomfield, G0KUC, of 8 Sunningdale Drive, Boston, Lincs, PE21 8HZ.

Chief Morse Examiner

The new Chief Morse Examiner is Roy Clayton, G4SSH, who takes over from Neville Ianson, G3GDO. Roy's appointment left a Morse Examiner vacancy in North Yorkshire, which has been filled by Geoff Pritchard, G4ZGP. Geoff has also been appointed Deputy Chief Morse Examiner.

Attention Novice Trainers

Many of those interested in becoming a novice licence instructor have applied for the Novice Licence Training Scheme Booklet. Anyone who has not yet sent back the application form from the booklet should do so without delay in order to be included in the list of approved instructors.

A Message from the President

IN FEBRUARY 1992 the International Telecommunications Union (ITU), which governs all radio services, including the amateur services, will hold a major World Administrative Radio Conference in Spain. This Conference could affect amateur radio as we know it if bands are lost or changed.

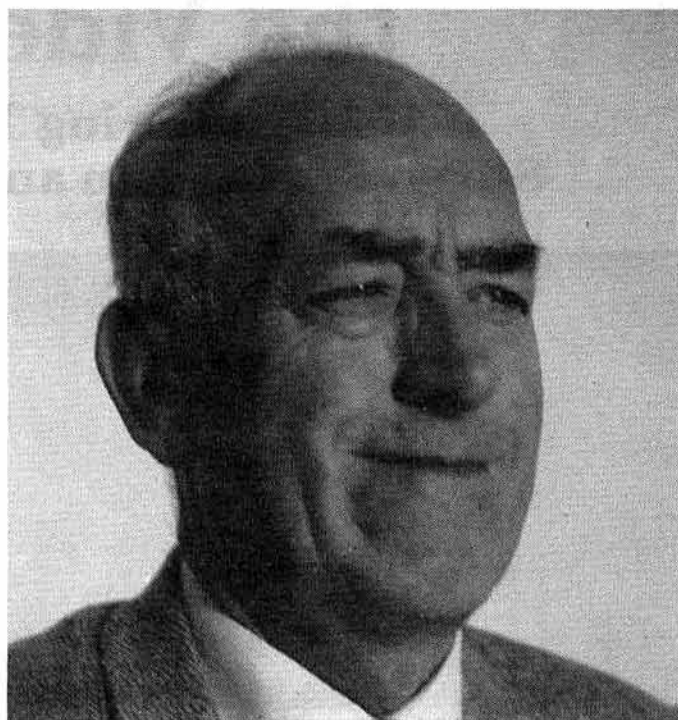
Each of the 130-plus IARU National Societies in the World will be responsible for talking to their respective administrations prior to the 1992 WARC. The RSGB played a major role in WARC 79 when amateur radio gained extra bands, but the situation 11 years later is not the same. Far more people use radio now and many services are expanding rapidly all over the World. More frequencies are needed by these expanding services and it is inevitable that all possibilities, including the use of amateur frequencies throughout the spectrum, will be reviewed.

The agenda for the WARC 92 Conference has only just been published and so the Worldwide amateur community only has some 15 months left in which to prepare. With such short notice, now is the time for all licensed amateurs in every country in the World to solidly support their national Society.

In the UK amateur radio licensing has been very successful over the decades because of the work achieved by RSGB volunteers and staff. Without the RSGB, amateur radio as we know it in the UK would simply not exist. Indeed, the RSGB is the leading and largest organisation in this country which is dedicated to helping all radio amateurs whether they are members or not. At present just over half of the UK population of licensed amateurs are members of the RSGB. This means that just under half of the UK amateur population are being represented free of charge.

Let us face the facts. Things would be very different indeed if more licensed amateurs were members of the RSGB. Not only would the Society carry even more weight when representing amateurs nationally and internationally, but the Society's financial position would be healthier than it is at present. Members will see from the Annual Report published in this issue that the RSGB made a trading loss in its 1989/90 financial year. If every member had contributed another £3 to £4 or the RSGB had another 6,000 to 8,000 members, then the loss would most likely have been avoided.

If the RSGB is to continue all of



If the future of amateur radio concerns you – please read this page

its good works on licensing and continue to put in its powerful and highly respected voice at international level, it must have your full understanding of the position and have your loyalty and support.

The RSGB has grown over the years from a membership of 3 to some 36,000; it has actually doubled its membership in the past 12 years with all of the associated growing pains. However, it needs to expand further if the more complex problems of today's economic and frequency resources are to be faced. The RSGB elected Council and the HQ staff are supported by an ever increasing army of volunteers, but all of this effort, including the voluntary effort, by way of reasonable out-of-pocket expenses, has to be paid for.

Last year's trading deficit is being tackled positively and promptly and this was discussed in depth at an extended meeting of Council in September. As a result, some immediate economies have had to be made at HQ. The staff numbers have been reduced on the one hand as part of these planned economies, while on the other hand with effect from December 1990 the basic subscription rate has been put up to £30 per annum. Council has over the years wanted to

maintain subscription rates as low as possible and, in addition, be as generous as possible to the young, the old and to disabled people. In all, such generosity cost the Society some £65,000 last year; something unequalled by other UK organisations in the amateur radio business. We cannot, at present, afford to be quite so generous, but by any criterion this new annual fee certainly represents remarkable value at some 58 pence per week.

Apart from your continued support as a member, may I appeal to you to help the Society during the present difficult UK economic situation in which thousands of companies, large and small, are going out of business. Firstly, it may not be realised that HQ receives some 1,000 letters and telephone calls each working day. Many of the enquiries received from members could have been answered by reference to our very comprehensive Call Book which currently contains some 130 pages of information in addition to the callsign listings. Many enquiries could be handled by local volunteers or discussed at your local Club. The load on our dedicated, but reduced number of staff is high. Please help by thinking carefully about the letters that you send to HQ, or before

telephoning HQ, and in preference seek an alternative such as *RadCom*, the *Call Book*, other Society publications or local members. Please allow our staff and senior volunteers to concentrate on the main issues within amateur radio and to defend and expand amateur radio horizons.

Secondly, please remember that the RSGB is a Society composed of members. A Society only works if everybody helps one another. We could do with far more volunteers to help out. Have you seriously thought about the pleasure which amateur radio provides for you, and considered putting something back into the hobby yourself?

The various officials of the Society are often aware of criticism that comes from various sources. Quite frankly, those who criticise frequently do not know the true facts and of course instant communication by radio is a wonderful means of passing on information as well as rumours, distorted facts or plain misinformation. Often members think that whatever should be done by the Society is the opposite of what is actually done. Please make no mistake, policy is determined by the elected Council and, as President, I know only too well that pleasing everyone is a very difficult proposition, and answering every detailed question in every single letter an impossible task. While the load on staff can be enormous, bear in mind that the volunteers all have jobs of their own and can only tackle RSGB work in their own free time.

The Council does not claim to have beaten the current financial position in today's difficult economic environment. However, positive action has been taken with respect to the future. The Society has a strong balance sheet, is trying very hard on your behalf and will continue to do so.

Our hobby continues to evolve in many ways and forms. Value for money is what you want at the end of the day. Your subscription doesn't just buy a magazine and a QSL Bureau, it is what makes it possible for the RSGB to work on your behalf and defend and improve licensing privileges. Your active and continuing support is vital to the future of amateur radio. Please do not forget that you may have friends who are not members of the Society but who are gaining the benefits of the work the Society is doing. Please suggest to them that they would be helping amateur radio greatly if they joined our ranks.

Frank Hall, GM8BZX

"This is W00RE on board US Space Shuttle Challenger. You are loud and clear".

EVEN THOUGH IT IS A VIDEO, such a signal report is still guaranteed to send a shiver of excitement through any amateur and the very idea will surely excite the interest of those whose knowledge of amateur radio has been limited to CB and listening around on a short wave transistor radio.

Amateur Radio - The Hobby of the Space Age is the title of part one of the almost completed, RSGB Project YEAR promotional video. As we go to press, there remains just the final editing and voice-over work on this ambitious joint venture between the RSGB and Yorkshire Television.

The programme is in two parts. The first sets out to capture the imagination of the viewer with an exciting presentation of amateur radio as it is today. It portrays our hobby as a pastime that can be enjoyed by anyone, and shows many of the more fascinating aspects that are so often not appreciated by the general public. The aim is to capture the attention and interest of the viewers and to prepare them for the second part of the programme - *How to Become a Radio Amateur*, in which an insight is given on the practical aspects of radio, operating equipment and how to go about getting on the air. Members will readily understand that such a video must set out to entertain, not instruct, the viewer. It is a hard hitting public relations exercise that presents our case by 'selling the sizzle and not the steak'.

The power of Television

IN 1988, THE PROJECT YEAR Team (including David Evans, G3OUF; John Case, GW4HWR; and Hilary Claytons-Smith, G4JKS) realised that the only effective way to reach the prospective Novice Licensees was to harness the power of television. Anyone who has attempted to convey the essence of amateur radio to a totally uninformed audience, regardless of their age, will know just how difficult it is to present a comprehensive picture on the hobby in, say, a half hour talk. Coupled with the fact that so many would-be lecturers are not natural public orators, it was decided to prepare this video as an aid to the presentation of the

Project YEAR — the Video

A Mouthwatering Tale of Steak, Sizzle, Ham and Bacon.



Pupils from St. Paul's R. C. School listen enthusiastically to Mike Fox, G8EWH. Cameraman Duncan Farrar captures the scene for the YTV video.

Project YEAR message. This will allow the experienced amateur to concentrate on the more practical aspect of demonstrations and the teaching of simple theory.

PROJECT YEAR

Youth Into Electronics
via Amateur Radio

Sponsorship

CLEARLY, THE SOCIETY did not possess either the financial resources or the know-how to embark upon the project without outside assistance - even a modest drama involves a huge financial investment in talent, time and technicians.

How then could the desired programme be created, funded and produced? "Impossible!" said the faint hearted. "Not at all!" responded the Team. The answer to the riddle, of course, is now known only too well by *RadCom* readers. Yorkshire Television came forward and made what must have been one of our all time great offers of assistance. They would undertake to make the videos as an in-house project as their company's own contribution to the Project YEAR appeal! As you can imagine, this generosity was received with much acclaim and it should be a matter of record that all of us in the amateur movement recognise the importance of the involvement

of YTV at such an early stage. It made everything else seem attainable and so relatively simple because, make no mistake, without YTV's investment of many tens of thousands of pounds, the rest would have been impossible.

Not to be outdone, next through the Potters Bar front door came ICOM(UK) Ltd bearing a handsome offer that provided the solution to the problem of getting the finished video into the hands of the Society members. ICOM have undertaken the production of the huge quantity of video cassettes that will be sent to every RSGB affiliated society and the various Project YEAR associates.

To all our friends at both YTV

and ICOM, we repeat our heartfelt thanks and deep appreciation of your extraordinary support and for the sheer enthusiasm shown by your people for this production.

Well, that was the 'serious money' taken care of and there remained but one snag to be considered. The YTV offer was conditional upon their production people being given a full television script that was ready to go! The licensed amateurs in Leeds were happy to pitch in on the programme making, but they did not have a TV writer who had the amateur radio experience necessary to convey the Project YEAR story to the uninitiated viewer.

Volunteers

WHAT WE WERE LOOKING for was an unusual specimen! A 'volunteer' who was an active radio amateur, was marketing communications oriented rather than engineering biased, had creative talent and, preferably, had done this kind of thing before. It was at this point that Victor Brand, G3JNB, a long standing volunteer on our public relations side, was asked to step in.

To complete the team we were now looking for an amateur who had professional television experience to act as an anchorman in front of the cameras. Who else but Jim Bacon, G3YLA? Jim accepted the challenge willingly. He came with



L to R: Jim Bacon, G3YLA, Ted Walker, G0KAQ, Jim Cuthbert (electrician), and Paul Farrer, at the White Rose Club, Leeds.

an added bonus - he was an able communicator with the young, and a familiar figure to the not so young, ie the parents. Our thanks to Victor and Jim, and to Anglia TV for releasing their weather guru!

And so work commenced. During the following month, Victor presented an outline plan that called for a two part programme, dividing the sizzle from the steak, and which incidentally provided a natural break in viewing to allow questions from the audience.

Armed with the general agreement, G3JNB got cracking and produced a working concept, storyline and full script for the video, always allowing for the fact that, on the day, participants would need to put the story over in their own words.

At the same time, our author wrote the first book in the new Project YEAR series *Amateur Radio for Beginners* which is complementary to the video. The work done, it was over to YTV and the 'cast of thousands' who have donated their time and their talents to make the whole project a reality.

YTV man Richard Guttridge, G4YTV, has been co-ordinating production at Leeds. He introduced David Evans and Past President Joan Heathershaw, G4CHH, to Peter Smale, Head of Production, who called for volunteers among the resident Directors to take on the making of the programme. Forward came Janey Walklin, who put together a full team including Jane Greaves

(Production), Paul Farrer, Duncan Farrar and Les Flanagan (Camera), Richard, G4YTV (Sound) and Tony Mewse (Assistant Editor). Incidentally, we hear that three members of this group were so struck with the hobby that they intend to sit the RAE! A production schedule was drawn up for the late summer of this year. Filming commenced at a wide variety of locations such as the Lincoln Hamfest, Raywell Park Scouts HQ and the Area Emergency Services Communications Centre. Participating clubs included the Leeds White Rose, Beverley, Hornsea, Keighley and Lincoln. Raynet were 'shot' supporting the Humber Marathon, and Surrey University features strongly in the description of satellites.

PROJECT YEAR

Youth into Electronics
via Amateur Radio

Schools

LOCAL SCHOOLS WERE most cooperative and pupils were filmed at the Harrogate Ladies College, St. Paul's Primary and Longcroft School, Beverley, where Duncan Heathershaw, G3TLI teaches amateur radio and has thirty young ladies just waiting to take the test!

Ted Walker, G0KAQ, the 1989 Young Amateur of the Year,



starred in a number of sequences and a most able demonstration of his gear was recorded by Peter Hopkins, G0LIW from his own shack. Thank you to everyone who gave their time so generously to this project.

The support of the ARRL was forthcoming with permission to use some clips from their own highly successful video series *The World of Amateur Radio*. Again, many thanks.

Coming soon!

WHEN DO YOU GET TO see this epic? Soon, very soon! By the time you read this article, the editing will be finished and the cassettes will be in production. It is anticipated that they will be

ready for circulation on schedule in the New Year. This will be in nice time to help your club prepare the way with prospective Novice Students, youth groups, Scouts and Guides and, not to be overlooked, the older generation of men and women who have always wanted to have a go at amateur radio but felt they had not got the necessary ability to sit for the RAE.

We see a new beginning for amateur radio here in the UK. A resurgence of interest in 'getting on-the-air', a new generation of enthusiasts who may now view electronics as a career opportunity and, above all, an increase in the awareness of the joy of amateur radio as a worthwhile hobby.

Complete your RadCom collection.

Back issues of *Radio Communication* are available by post from RSGB Sales at £3.11 (members), and £3.66 (non-members).

Put RadCom on your bookshelf

Members can buy bound volumes of *Radio Communication* for £21.15 (£22.88 to non-members). These look just like volumes of an encyclopedia and are an ideal way of storing a mine of information in an attractive and compact way. Most years are available from 1977 - 1989.

A cheaper alternative is the Easibinder at £5.09 (£5.99 non-members) which is a clever system for keeping your *RadComs* tidily in book form. Note that the size of the magazine changed in January 1990, so you will need to specify 'OLD' or 'NEW' when ordering.

HF Convention 1990

Over 300 dedicated DXers attended the RSGB 1990 HF Convention held for the first time at the Penguin Hotel Daventry. The Convention has become the foremost gathering of the year for anyone interested in HF DXing, attracting visitors from five continents.

The event began on the Saturday afternoon with an organised trip to BBC Daventry, the antennas of which dominated the view from the hotel. In the evening, a DX Dinner was held where the guest speaker was Lawrence Howell, GM4DMA, of the North Pole '90 expedition. As the evening progressed, a number of impromptu slide shows developed, including a very impressive account by Jim Smith, VK9NS, of his trip to Banaba Island. These ran on well into the early hours of Sunday morning, and it is reported that, by the end of the night, a very well known visitor from Germany was seen running around wearing GM3YOR's kilt!

The more formal side of the

Convention began at 10.30 AM on Sunday when a series of lectures and activities began. SM7PKK gave a talk on his recent island-hopping activities in the Pacific, while G3XTT and G4LJF presented a lecture on amateur software and the DX Packet Cluster system. A new book, the *Amateur Radio Software Review*, was launched at the show, and quickly became a best-seller on the RSGB bookstand as a result of the lecture.

There followed a talk and slide show by LA1 EE on last year's 3Y5X Bouvet Island DXpedition, and a QRP Forum by G4LQP, aimed primarily at newcomers to low power operating. G3PGQ presented a lecture on High Power HF Broadcast Antennas, and G8EUX spoke about Digital Signal Processing.

A packed lecture room greeted Jim Smith, VK9NS, for the talk and slide show on his A51JS Bhutan DXpedition. This was followed by a DX Quiz, a discussion of Direction Finding by

members of the RSGB DF Committee, and a question and answer session on HF and DX matters.

Display stands were spread liberally throughout the convention area, including those for the RSGB's HF, HF Contest, EMC, Propagation Studies, and Planning Committees. There was a continuous crowd of people in the computer software demonstration room, and similar crowds around the CW pile up contest table, and for the RNARS high speed CW tests. It was also possible to meet representatives from RAFARS, Worked All Britain, the Chiltern DX Club, IOTA, and other organisations.

A good time was had by everyone who attended. If you are looking for a chance to meet some of the World's leading HF DXers, you want to improve your DXing technique, or you just wish to be a part of some good, old fashioned, amateur radio comradeship, make sure you make a date for next year's RSGB HF Convention.

Council Election – Don't Lose Your Vote

Each year, members have the opportunity of expressing their views about the running of the Society by nominating members to fill vacancies on Council, and by voting for the members of their choice. This note is intended to help reduce the number of spoilt ballot papers received each year. It is unfortunate that when a member has taken the trouble to submit his vote, it is invalidated by failure to observe the rules.

Only fully paid-up Corporate Members may vote. To enable this to be checked, name and callsign have to be recorded on the back of the ballot envelope. A few members have argued that this destroys the confidentiality of the vote. This is not the case. After the member's status has been checked against Society records, the envelopes are bundled up un-opened, to be handed to the scrutineers on the day of the count. The scrutineers' first task is to open the envelopes and remove the ballot papers. Working at high speed, and dealing with several thousand envelopes, it is well-nigh impossible to associate any envelope with its contents. The inclusion of book orders, etc., with ballot papers may, however, affect confidentiality and will certainly result in delays.

Every effort is made to accept, rather than reject, voting papers. Thus, votes from those who renew their subs by Bankers Order in December are not rejected because information on their payments may not have reached the Society through the Bankers system. Again, it may be that the name and callsign do not agree with Society records. Perhaps an 'A' licence has been obtained recently and has not been notified to the Society. In such cases, the name is checked against DTI records.

The largest number of spoilt papers are those delivered late. Many are postmarked one or two days before the closing date. It is optimistic to expect second class mail to be delivered in that time. Even more optimistic are those members who post their votes on the closing date, or even several days after it! The moral is, 'Post Early'.

Members should note that, this year, the ballot envelope must carry a stamp. Unstamped or underpaid envelopes will not be accepted - Ed.



Special Event station GB0CCW celebrated the wedding of Caroline, daughter of Tony Bull, G3ICB, (left) to Chris Tunbridge. On the right of the picture is Clive Davies, G7ENR. Tony says "We didn't make a lot of QSOs - once the bar opened, radio seemed to go by the board - but it was good fun and generated quite a bit of interest, amongst the kids especially." The photo will feature on the GB0CCW QSL card!

RAE Manual in Top Ten

Apart from being one of the UK's largest electronics retailers, Maplin Electronics also stock over 250 book titles. The RSGB's Radio Amateurs Examination Manual has recently reached ninth position in Maplin's book sales chart.

News from Raynet

Ian Harvey, G6BJJ, has been appointed as Zone 7 Raynet Representative. There were no other nominations for the post. Ian can be contacted at 39 Molesworthy Road, Millbridge, Plymouth, Devon, PL1 5PA, tel: (0752) 561075.

Correction – Martin Lynch

In the advertisement for Martin Lynch (October, page 42), there was a reference to "Bernie and Brenda" (Godfrey). Mr and Mrs Godfrey wish to point out that they are not currently associated in any way with Mr Lynch or his new company, and they are still actively involved with A.R.E. Communications.



David Evans accepts, on behalf of the RSGB, a new trophy from Robert Long, Director of Communications, Marconi Defence Systems.

Microwave Round Table

The next Martlesham round table, courtesy of the Martlesham Radio Society and British Telecom Research Laboratories, will be held on 11 November. The usual range of test gear will be available, as will snacks and refreshments.

Charlie, G3WDG will be talking about the latest 10GHz developments and there will be a live demonstration of 10GHz narrowband equipment. Full details and tickets from Malcolm Bell, G4CXT (QTHR).

News From the HFCC

At a recent meeting of the HF Contests Committee, it was decided to alter the exchange and scoring of the 7MHz CW and LF SSB contests so that UK counties/regions, instead of prefixes, count as multipliers for overseas stations. This is in line with changes made to the 21/28MHz phone and 21MHz CW events.

A new trophy has been donated by the Marconi Company and this will be awarded to the leading individual scorer in the Affiliated Societies Team Contest. The first winner is Neil Graham, G3OAY.

Long-serving Committee member and former Vice Chairman Peter Miles, G3KDB, has resigned due to business commitments. He will continue to administer PO Box 73, Litchfield, the address for overseas entries in RSGB HF Contests. Peter is thanked for the considerable amount of work he has put in for the Committee over the years.

Peter's departure leaves a vacancy on the Committee which needs to be filled. Prospective replacements should be prepared to check one major contest per year, and be able to attend most of the nine or ten Committee meetings each year. These normally take place on Thursdays in London from 5.30 to 8.30pm.

To spread the burden of checking results, corresponding members are also sought who, perhaps because of their location, cannot attend meetings in London, but would wish to assist the Committee. Anyone who may be interested in serving in either capacity is asked to contact Dave Lawley, G4BUO, Carramore, Coldharbour Road, Penshurst, Tonbridge, Kent, TN11 8EX.

RadCom Readers Survey Grand Draw Winners



The 1989 Young Amateur Of The Year, Ted Walker, G0KQA, picking out of the drum the winners of the RadCom Reader Survey Grand Draw.

THE FIRST EIGHT survey forms to come out of the drum at the HF Convention were:

1. Ian Burns, G0AFH, (Kenwood TH26E 2m handheld donated by Lowe Electronics Ltd)
2. HT Falstein, G3KUF, (SMC 70cm handheld, donated by South Midlands Communications Ltd)
3. M Downey, G4AHJ, (Solid Brass Straight Key, donated by RA Kent Engineers)
4. E Robinson, G4ZMH, (VHF Wavemeter, donated by Davtrend Ltd)
5. DA Barry, G3ONU, (Discone antenna, donated by ICOM UK Ltd)
6. CP Knight, RS92010, (Jaybeam 2m groundplane, donated by TV Masters)
7. DG Jones, G0KSG, (ICOM Headphones, donated by Eastern Communications)
8. P Shaw, G8UHT, (Book: Digital Communications with Amateur Radio, donated by ICS Electronics Ltd)

Raycom Expansion

Raycom is set to expand its amateur radio product range. A new department, headed by Tom Crosbie, G6PZZ, (formerly of Navico) has been formed especially for this purpose. Tom's plans for Raycom include re-fitting the shop, expansion of the product range, and improving the service to both trade and retail customers. For more information contact Mrs Kathleen Rudge on 021-544 6767, or by fax on 021-544 7124.

**PROJECT
YEAR**
Youth into Electronics
via Amateur Radio

Young Amateur of the Year Presentation



Steven Spivey, the Head of Mobile Radio at the Radiocommunications Agency, bestowing the title Young Amateur Of The Year on David Martin, G6M0NVE.



The runner-up, Simon Glanville, G7DCY, received a book token from Ian Laybourne of the Mobile Radio Users Association.



RSGB President, Frank Hall, GM8BZX, presented the Young Amateur of the Year with an AMR1000S 2m transceiver on behalf of Navico Ltd.



Phil Bridges (left) of Siskin Electronics and Dennis Goodwin of ICOM (UK) who presented prizes to the winner and runner up.



A TRADITIONAL EVENT at the HF Convention is the presentation of the Young Amateur Of The Year Award. As reported in last month's RadCom, the 1990 winner was David Martin, G6M0NVE.

Steven Spivey, the Radiocommunications Agency's Head of Mobile Radio presented David with the prestigious title, a cheque for £250 and a guided tour of the RA's monitoring station at Baldock. Mr Spivey said he was pleased that the award had reached its third year and spoke of the high quality of entries. He went on to describe the very close liaison between the RA and the RSGB, and emphasised the need for the highest standards of operating.

David received an RC14 transceiver presented on behalf of the RSGB by Ted Walker, G0KQA, the 1989 YAOTY.

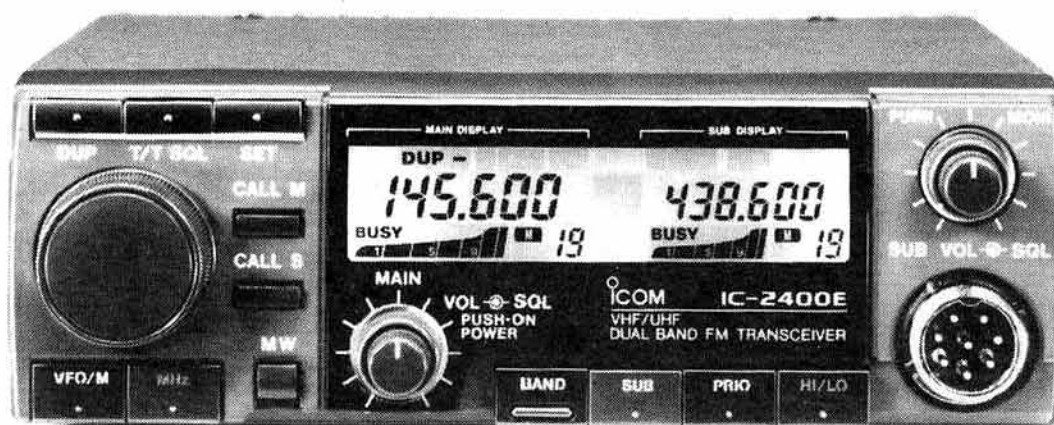
On presenting David with a week at the Wray Castle College of Marine Electronics, Ian Laybourne of the Mobile Users Association spoke of the enormous need for trained engineers which was why the MRUA was particularly pleased to take part in the sponsorship of the Award.

Other prizes were an AMR1000S transceiver from Navico Ltd, and a packet radio controller from Siskin Electronics.

The runner up, Simon Glanville, G7DCY, received a book token from the MRUA. ICOM (UK) presented Simon with a hand-portable and the now traditional 'goodie bag'.

ICOM

DUAL-BAND FM TRANSCEIVERS



IC-2400
144/430MHz
2mts 45W
70cms 35W

These models from ICOM add a new dimension to the mobile scene. Enjoy the freedom of the open road and experience the advantages of simultaneous dual-band operation.

They are capable of receiving on both MAIN and SUB bands at the same time. While operating on one band, you can monitor a second band for activity. It is very easy to switch between the MAIN and SUB bands allowing you to reply immediately to calls received on either bands.

Full duplex operation lets you transmit on one band while receiving on the other for telephone style contacts. Each band can be independently

regulated using separate volume and squelch controls.

Both models incorporate 20 memory channels and a call channel for each band, these memory channels store all the information needed for repeater operation.

For 23cms operation the IC-2500 features a AFC function which automatically tunes the receive frequency to the transmit station frequency. The AFC function eliminates the need to retune if a stations transmit frequency is off centre.

IC-2500
430/1200MHz
70cms 35W
23cms 10W



Icom (UK) Ltd.

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

Count on us!

NEW MULTIBAND IC-970E Base Station



Designed for the serious operator on the 144, 430 and 1200MHz bands, Icom's new IC-970E has up-to-date technology for DX, digital and satellite communications.

The IC-970E is supplied as an all mode dual-bander for 144 and 430MHz bands. Optional units expand its capabilities to 1200MHz or wideband receiving from 50-905MHz.

Communications via satellites has never been easier. The IC-970E automatically tracks uplink and downlink frequencies as the tuning control is rotated also, ten specific memory channels for satellite frequencies.

The dual-band watch allows you to receive both MAIN and SUB band audio simultaneously, multiple scanning systems on the MAIN and SUB bands plus 99 memories, an easy to read central display and Icom's DDS system make this one of the most comprehensive multi-band transceivers available.

For more detailed information on the IC-970E Base Station or any other Icom radio equipment contact your local authorised dealer or call Icom (UK) Ltd.

Icom (UK) Ltd.

Dept RC, Sea Street, Herne Bay, Kent CT6 8LD. Tel: 0227 363859. 24 Hour. Fax: 0227 360155.

Visa & Mastercard: Telephone orders taken by mail order, instant credit & interest-free HP.

Despatch on same day whenever possible.

As from the 1st of September our showroom opening times will be: Mon-Fri 09.00-13.00 and 14.00-17.30.



COMPACT TRANSCEIVERS

TH-77E 2M and 70cm FM HANDHELD TRANSCEIVER

The smallest dual bander in the world — and light too!
It is incredible how many features Kenwood have included in their latest range of handhelds whilst improving ease of use, size and weight.

The TH-77E is an excellent example. You will need to send for full information to appreciate all it has to offer, but here are some of the main features:

Size:

58mm wide, 30mm deep, 141mm high (excl aerial).

Weight:

Less than 1lb!!

RF Output:

From 500mW to a powerful 5W. The battery pack supplied gives 2W output on VHF and 1.5W on UHF.

Receive:

The TH-77E can receive both VHF and UHF at the same time or dual frequencies on UHF. Dual display on the large, easy-to-read LCD displays make operation simple and efficient.

VFO's:

There are two. For added convenience they include frequency step, tone frequency and repeater information and are programmable for a range of frequency steps.

Squelch:

Independent squelch circuit for each band including the Dual Tone Squelch system for opening the squelch when DTMF tone sequences are received.

Other functions:

- Pager Function with DTMF tone groups
- Tone alert to warn of an incoming signal
- Independent volume control on each band
- Repeater Offset and Reverse switches
- 40 Multi-function Memory Channels with Lithium battery back-up

Options:

- Remote Control Speaker Microphone which controls a host of functions
- Battery packs, wall chargers, filtered 12V power cord, soft case, etc

Write or telephone for full and detailed information or, better still, visit one of our shops or approved dealers for a good look and some handy hands-on evaluation! We think you will be impressed.

TH-77E £389

TH27E (VHF)/ TH-47E (UHF)

ULTRA- COMPACT FM TRANSCEIVER

**Size and
styling
unbeatable for
comfort!**



HEAD OFFICE & MAIL ORDER: Chesterfield Road, Matlock, Derbyshire DE4 5LE

Shops in GLASGOW Telephone 041-945 2626. DARLINGTON Telephone 0325 486121. CAMBRIDGE Telephone 0223 311230.

There is a branch near you from KENWOOD

The high impact moulded case is designed with a five degree incline. This simple idea coupled with compact dimensions makes these models the most comfortable handhelds on the amateur market today.

Size:

50mm wide, 38mm deep, 125mm high (excl. aerial).

Weight:

Less than 13oz (360g).

RF Output:

From an Economy Low Power of 20mW to high power of 5W, the output power is determined by a combination of the battery pack chosen and a 4-position power switch.

Battery Power:

The new 7.2VDC/700mAH NiCad battery gives extended operating time.

Scanning:

Both models offer a fully flexible scanning system, including carrier or time operated resume and busy channel scan stop. Every operational scanning need is fulfilled by the comprehensive functions.

Squelch:

The built-in Dual Tone Squelch System (DTSS) provides selective reception using DTMF tones.

Other features:

- Pager function with DTMF Tone Groups
- 40 multi-function split frequency memory channels
- Auto battery saver
- Repeater offset and reverse offset
- DC Input Jack for external power and recharging the internal NiCads
- Programmable VFO.

Options:

- Remote control speaker microphone which operates a whole range of transceiver functions
- Sub-audible tone unit
- External DC power cord
- Battery packs, wall charger, soft case, etc.

The detailed information sheet does these little handhelds more justice, so write, phone or FAX for one and it will be sent immediately. Better still, seeing is believing, so why not drop in on one of our shops or approved dealers and get a feel for what we are talking about!

TH-27E £249
TH-47E £269



TH-26E (VHF)/TH-46E (UHF) COMPACT FM HANDHELD TRANSCEIVER

Size and design ideal for portable/mobile!

A compact handheld transceiver with controls and readout on the top of the unit. Remove the battery pack and use an external power source when mobile and no other transceiver will match this one for small size and all the state-of-the-art features expected in a modern FM transceiver.

Size:

58mm wide, 30mm deep, 136mm high (excl aerial).

Weight:

Less than 14oz (380g).

RF Output:

Economy Low Power of 20mW up to a high power of 5W using the optional PB-8 power pack. The power pack supplied gives 2.5W.

Scanning: 20 Multi-function Memory Channels with Lithium battery back-up record tone status, frequency step, repeater offset and REV(erse) status, DTSS code and status.

Squelch:

Includes the Tone Alert System; when a signal is received, distinct 'beeper' tones sound.

Other features:

- Auto-battery Saving Circuit
- Auto Power Off function
- Repeater Offset Switch and Reverse Switch
- Easy Check Monitor Switch
- Lamp Lock Key for continual illumination of the LCD display when mobile.

Options:

- Remote Control Speaker Microphone controls the most useful functions required by the mobile operator
- Headset with VOX/PTT
- Filtered cigar lighter cord
- Water resistant bag
- Battery packs, chargers, soft case, etc.

A full colour specification sheet is available upon request and both models are in the showrooms of our shops and approved dealers. When you see the transceiver as a handheld, you will find it small. When you see its profile in your car without the battery pack, we think you will be pleasantly surprised at the very small amount of space required to house a fully functional FM VHF/UHF transceiver with all the modern necessities.

TH-26E £249
TH-46E £269

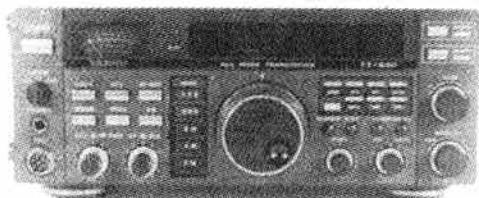
Telephone 0629 580800 (4 lines) Fax 580020 Telex 377482

S. WALES (BARRY) Telephone 0446 721304, LONDON Telephone 081-429 3256 BOURNEMOUTH Telephone 0202 577760

All branches are closed all day Monday.

SMC**South Midlands Co****SCHOOL CLOSE, CHANDLERS FORD IND. EST., EASTLEIGH, HANTS**

FT650 6m, 10m & 12m base/mobile

**MAIN SPECIFICATIONS/FEATURES**

- ★ 24-60MHz Receive Coverage
- ★ 10, 12, and 6m Transmit Coverage
- ★ 100W PEP output (25W Carrier, AM)
- ★ LSB, USB, AM, FM & CW Operation as standard
- ★ Optional internal 240V AC Power Supply
- ★ DVS-2 Digital message storage option
- ★ 99 memories
- ★ Programmable TX Offset

The FT650 is the latest in a long line of acclaimed 6m transceivers from the Yaesu factory. Designed and built using the latest modular construction techniques and components to give great performance in a compact, easy to use package.

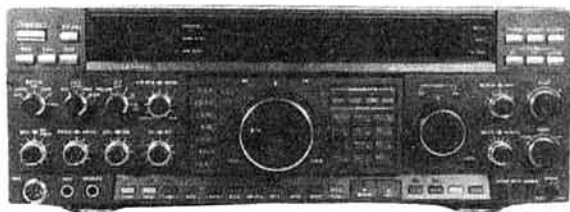
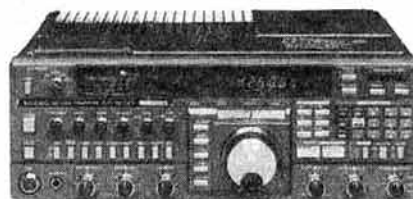
The transceiver covers from 24-56MHz continuous on receive and 12, 10 and 6m bands on transmit, with a full 100W output, ideal for all DX operators.

OPTIONS

- FP-22 Internal 240V AC P.S.U.
 DVS-2 Digital Message Storage Unit
 XF455m CW Filter 600Hz

FT650 £995 FP22 £149

The Yaesu HF transceiver fleet

**FT1000****FT767GX**

Possibly the finest collection of HF transceivers from one manufacturer since the FT101ZD, FT902DM and FT707. Ranging from the flagship of the fleet, the FT1000, through the FT767GX, perhaps the most versatile HF transceiver with the optional VHF and UHF bands, to the ever popular FT757GX2 and finally to the budget FT747GX for the operator who wants an easy to operate convenient sized transceiver. Below are just some of the options available for the Yaesu HF range. (N.B., not all these options are applicable to all the transceivers).

SP5	External Loudspeaker	£109.00	FP757HD	Power Supply 20A (100% duty cycle)	£258.75
DVS-2	Digital Voice Storage System	£149.00	50/767	6m module FT767GX	£179.00
BPF-1	Sub VFO Filter Unit	£69.00	144/767	2m module FT767GX	£179.00
D3000568	FM Unit for FT747GX	£39.99	430/767	70cms module FT767GX	£225.00
FC757AT	Automatic Antenna Tuner	£349.00	SP767	External Speaker	£69.95
FC1000	Automatic Antenna Tuner (Single Wire o/p) ..	£534.75	MD1B8	Desk Microphone	£79.00
FP700	Power Supply 20A (50% duty cycle)	£219.00	MH1B8	Hand Microphone	£21.00

**FT757GX2****FT747GX**

LEEDS
SMC (Northern)
 Nowell Lane
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 Leeds LS9 6JE
 Leeds (0532) 350606
 9-5.30 Mon-Sat
 Closed Sat afternoon

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 New Whittington
 Chesterfield
 Chester. (0246) 453340
 9.30-5.30 Tues-Sat

BIRMINGHAM
SMC (Birmingham)
 504 Alum Rock Road
 Alum Rock
 Birmingham B8 3HX
 (021-327) 1497/6313
 9.00-5.00 Tues-Fri
 9.00-4.00 Sat

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SOUTHAMPTON SHOWROOM open 9.00-5.00 Monday to Friday, 9.00-1.00 Saturday. Service Dept open Mon-Fri 9.00-5.00.

**NOW
BACK
IN STOCK**

HX240 2m to HF TRANSVERTER



**Only
£249.00
Inc VAT**

HX240: 2m to HF Transverter

Frequency Coverage: 80m, 40m, 20m, 15m, 10m

Output power: 30-40W PEP (SSB/CW)

RF Drive: 2.5W/10W Selectable

Rx Preamp Gain: 8-10dB

Power Requirement: DC 13.8V, 7A

Additional features: Carrier operated switching or by remote socket, power output meter, switchable preamp Hi/Lo output selectable, visual indication of antenna mismatch.

ALSO AVAILABLE HX640 for 6m TRANSCEIVERS

A PERFECT MATCH FOR THE FT290R2/FT690R2



What could Yaesu engineers do to improve on the hugely popular FTx90R series? The answer was easy, they designed and built the FTx90R2 series. The FTx90R2 series of transceivers provide high performance and a 2.5W output, when used with 'C' cells or nicads, ideal for serious portable operations, or when combined with matching linears, and easy to use compact multimode mobile or base station. What more could you ask from a transceiver?

FT290R2 RRP £429.00 inc

FT690R2 RRP £429.00 inc

FT790R2 RRP £499.00 inc

ALL THE ABOVE ARE SUPPLIED WITH FBA6, MH10E8, STRAP AND ANTENNA AS STANDARD.

AUTUMN SPECIALS

ON YAESU HANDHELDS



ARE PLEASED TO ANNOUNCE SOME VERY SPECIAL PACKAGE DEALS ON VHF/UHF HANDHELDS. IF YOU BUY ANY OF THE FOLLOWING HANDHELDS WITH AN FNB10 NICAD WE WILL GIVE YOU AN SMC28 WALL CHARGER ABSOLUTELY FREE. A SAVING OF AROUND £14.

FT23R + FNB10 + SMC28 £239

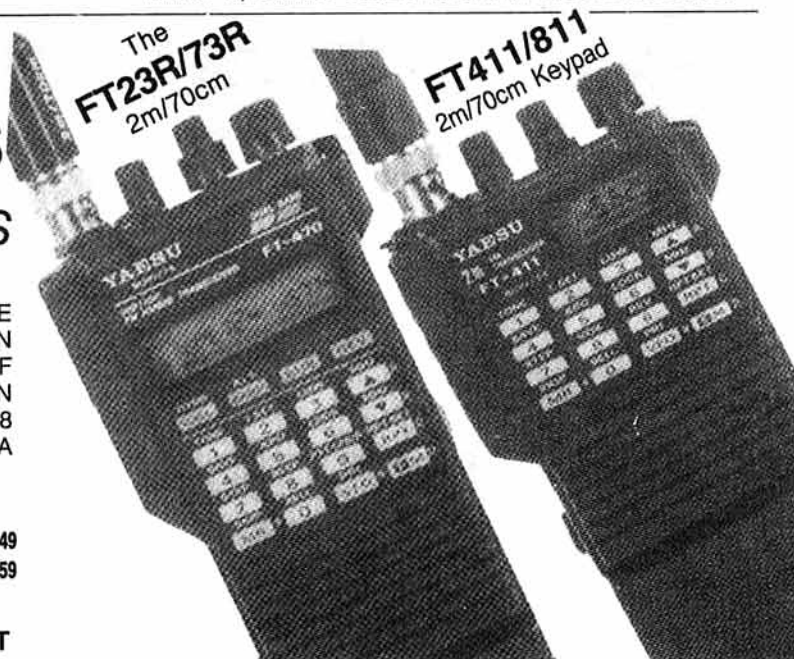
FT73R + FNB10 + SMC28 £249

FT411 + FNB10 + SMC28 £249

FT811 + FNB10 + SMC28 £259

FT470 + FNB10 + SMC28 £384

ONLY AVAILABLE WHILE STOCKS LAST



*FREE FINANCE ON SELECTED ITEMS

On many regular priced items SMC offers Free Finance (on invoice balances over £120) 20% down and the balance over 6 months or 50% down and the balance over a year. You pay no more than the cash price!

Details of eligible items available on request

*Subject to status.

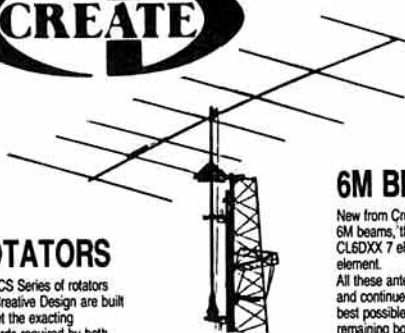
CARRIAGE CHARGES

Carriage is charged on all items. Small items, Plugs, Sockets etc by post £1.75. Antennas, Cables and larger items by LYNX from £5.75. Transceivers etc, next day delivery from £8.35. Overnight delivery can be specified at extra cost for other items. Same day despatch whenever possible.

YAESU DISTRIBUTOR WARRANTY

Importer warranty on Yaesu Musen products. Ably staffed and equipped Service Department. Daily contact with the Yaesu, Musen-factory. Tens of thousands of spares and test equipment.

PRICES & AVAILABILITY SUBJECT TO CHANGE WITHOUT PRIOR NOTICE



6M BEAMS

New from Creative Designs are a range of 6M beams, the CL6DX 6 element, CL6DXX 7 element and CL6DXZ 8 element.

All these antennas are the result of long and continued research to achieve the best possible performance whilst remaining both cost effective and extremely robust.

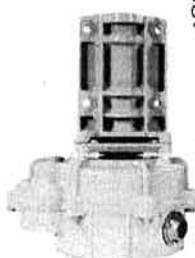
CL6DX 5 ele 13dB* £115.00 P&P £8
CL6DXX 7 ele 14.3dB* £168.99 P&P £14
CL6DXZ 8 ele 14.5dB* £225.00 P&P £14
*Manufacturers figures

ROTATORS

The RCS Series of rotators from Creative Design are built to meet the exacting standards required by both professional and amateur users. A range of methods is available designed to cater for medium to large shed antennas. All the rotators are manufactured with high quality components allowing continued and reliable operation.

RCS-1 £219.00
RCSA-3 £425.00
RCSB-3 £675.00
CK-46 Rotary bearing £34.95

Carriage on:
Rotators £7.50
CK-46 £3.50



COMET & HOKUSHIN ANTENNAS

New from Hokushin, an exciting range of high performance antennas, the WX1 has been a best seller for some time now, available are its bigger brothers the WX2 and WX4. Both are multi section 2m/70cm colinears and the mechanical construction the best we have seen yet. On the mobile front a new mini dual band mobile, the HS-727SS, very similar to the Comet CHL21J, and tests with our network analyser confirm its compatibility with our existing range of gutter and mag mounts. Also available a low profile hatchback mount and cable, the SS-B1, two new dual band antennas, the very slim VM-720SKR and the compact HS-727VMS. Both are suitable replacements for the 70N2M. For the HF enthusiasts a compact 10m HB9CV dual driven element antenna that is extremely light and very cleverly constructed.

WX2	WX4	HS-727SS	28HS-2HB
VHF/UHF Base	VHF/UHF Base	VHF/UHF Mobile	10m 2 ele HB9CV
144/432MHz	144/432MHz	144/432 mini	Dual driven element
6/8dB gain	7.8/10.8dB gain	1/4 5/8 wave	6dBi gain
200W max	200W max	100W max	500W PEP max
£75.00	£99.00	£16.95	£65.00

MOBILE ANTENNAS

20W	2m 1/2 wave	£4.95
2NE	2m 5/8 wave folding	£13.25
78B	2m 7/8 wave	£15.00
78F	2m 7/8 wave folding	£21.50
88F	2m 8/8 wave	£24.10
258	70cm 2 x 5/8	£29.37
358	70cm 3 x 5/8	£33.73
268E	70cm 2 section colinear	£32.80

DUAL BAND MOBILE

CHL21J	Mini dual band mobile	£14.95
CHL23J	Small dual band mobile	£16.90
CA2X4KG	2m 2 x 5/8 70cm 4 x 5/8	£39.95
CA2X4MB	2m 4.5dB 70cm 7.4dB	£37.75
HS-727SS	Dual band mini antenna NEW	£16.95
HS-727VMS	2m 1/2 70cm 2 x 5/8 NEW	£25.95
VM-720SKR	2m 1/2 70cm 2 x 5/8 NEW	£24.95

DUAL BAND BASE ANTENNAS

WX1	2m/70cm colinear	£54.99
WX2	2m/70cm colinear	£75.00
WX4	2m/70cm colinear, high gain	£99.00
CA2X4WX	2m/70cm colinear	£79.00
CA2X4MAX	2m/70cm colinear, high gain	£99.95
CF416MN	Duplexer 1.3-500/400-540MHz	£25.50
HS790DN	Duplexer 1.6-150/410-460MHz	£25.50

ANTENNA MOUNTS

GCCA	Gutter mount and cable	£14.25
HDTMCA	S/S trunk mount and cable	£19.50
SOMM	Mag mount and cable	£12.75
TBR	S/S hatch back mount NEW	£11.25
RS17	Mini hatch back mount NEW	£12.50
RS16	Mini gutter mount NEW	£12.50
SS-B1	Mini back mount & cable NEW	£26.50
CK-3LX	Cable assembly for RS16, 17, TBR	£19.95

CARRIAGE BASE ANTENNA £7.50, MOBILE ANTENNAS £4.00, CABLES AND MOUNTS £3.50

ROTATORS



Superb engineering standards combined with pin sharp setting accuracy means new technology from Yaesu create Kenpro Hygain.

ROTATORS

AR200XL	OFFSET TYPE 3 WIRE	£49.50
G-250	BELL TYPE TWIST/SWITCH CONTROL	£78.00
G-400	BELL TYPE METER CONTROLLER	£139.00
G-400RC	BELL TYPE ROUND CONTROLLER	£189.00
G-600RC	BELL TYPE ROUND CONTROLLER	£219.00
T2X	BELL TYPE METER CONTROLLER	£499.00
G-800SDX	BELL TYPE 450 DEG VAR. SPD	£325.00
G-1000SDX	BELL TYPE 450 DEG VAR. SPEED	£368.00
G-2000RC	BELL TYPE ROUND CONTROLLER	£445.00
G-500	ELEVATION METER CONTROLLER	£149.95
G-5400B	AZIMUTH/ELEV DUAL CONTROL	£375.00
G-5600B	AZIMUTH/ELEV DUAL CONTROL	£435.00
RCS-3	BELL TYPE PRESET	£275.00
RCS-1	BELL TYPE ROUND CONTROLLER	£219.00
RCSA-3	BELL TYPE VAR. SPEED AND PRESET	£425.00
RCSB-3	BELL TYPE VAR. SPEED AND PRESET	£675.00

ROTATOR HARDWARE

AR200AB	ALIGNMENT BEARING AR200XL	£17.50
KS505	ROTARY BEARING 1 1/2" MAST	£19.95
GS-065	ROTARY BEARING 2" MAST	£29.95
GC-038	LOWER MAST CLAMP G-400, 600 etc.	£16.95
9523	CHANNEL MASTER BEARING	£19.95
CK46	ROTARY BEARING 1.5-2.5 MAST	£34.95
MC1	LOWER MAST CLAMP RCS SERIES	£25.00

ROTATOR CONTROL CABLE

RC5W	5 WAY G-400RC, 800, 1000SDX PER MTR.	£0.48
RC6W	6 WAY G-250, 400, 600, RC KR500 PER MTR.	£0.66
RC8W	8 WAY HAMIV, T2X 2000RC RC SERIES PER MTR	£0.72

CARRIAGE:
ROTATORS £7.50, ROTATOR HARDWARE £3.50, ROTATOR CABLE £3.50 UP TO OVER 20 MTS, OVER 20 MTS £5.00

SWR/PWR METERS



FS710V

YS60

FS710V	50-150MHz	15/150W	PEP £107.80
FS300H	1.8-60MHz	20/200/1000W	£53.40
FS210	1.8-150MHz	20/200W	Auto SWR £65.50
FS301M	2-30MHz	20/200W	£42.25
FS301MH	2-30MHz	200/2000W	£42.25
FS711H	2-30MHz	20/200W	Head/Display £43.65
FS711V	50-150MHz	20/200W	Head/Display £43.65
FS711U	430-440MHz	5/20W	Head/Display £43.65
FS711C	26-30MHz	10/100W	Head/Display £24.55
FS600V	50-150MHz	20/200W	£81.95
W720S	130-440MHz	20/200W	Head/Display £52.75
SWR50B	3-5-150MHz		£36.75
FS20DL	3-150MHz	1/10W	£43.65
FS20D	3-150MHz	5/20W	£43.65
SWR3E	3-5-150MHz	20/200/1000W	£28.75
JD110	1.5-150MHz	10/100W	£16.50
T435	144/430MHz	20/200W	£65.00
YMIX	3-5-150MHz	Rel. Power/SWR Twin meter	£31.50
OSCAR-171B	3-5-150MHz	Rel. Power/SWR Twin meter	£26.85
SP425	140-524MHz	5/15/150W	£119.95
YS60	1.6-60MHz	20/200/2000W	£93.15
YS500	140-525MHz	4/20/200W	£81.65

Carriage on all power meters £4.00

MORSE KEYS



MORSE KEYS

		p.p.
HK702	STRAIGHT KEY	£42.75 £1.75
HK703	STRAIGHT KEY	£49.69 £1.75
HK704	STRAIGHT KEY	£26.35 £1.75
HK705	STRAIGHT KEY	£26.25 £1.75
HK706	STRAIGHT KEY	£28.95 £1.75
HK707	STRAIGHT KEY	£25.49 £1.75
HK708	STRAIGHT KEY	£26.45 £1.75
HK710	STRAIGHT KEY	£41.75 £1.75
HK711	STRAIGHT KEY KNEE MOUNTING	£41.75 £1.75
BK100	MECHANICAL BUG	£41.45 £2.00
MK701	SINGLE LEVER PADDLE	£38.35 £1.75
MK702	SINGLE LEVER PADDLE	£41.50 £1.75
MK703	SQUEEZE KEY	£37.00 £1.75
MK704	SQUEEZE KEY	£24.99 £1.75
MK705	SQUEEZE KEY	£32.78 £1.75
MK706	SQUEEZE KEY	£35.00 £1.75
HK802	DELUXE BRASS KEY	£99.95 £2.50
HK803	DELUXE BRASS KEY	£89.95 £2.50
HK804	DELUXE BRASS KEY	£95.00 £2.50

MORSE EQUIPMENT

KP100	SQUEEZE KEYS	£109.25 £2.50
DEWSKEYSTO	STAR MASTER KEYS	£54.69 £2.50
DEWSKEY M	STAR MASTERKEY MEMORY	£94.99 £2.75
D70	MORSE TUTOR	£63.40 £2.50

DATA TERMINAL

PK232/FAX	MULTIMODE DATA TERMINAL	£289.95 £3.50
PK232/MAIL	MULTIMODE DATA TERMINAL	£319.95 £3.50
	C/W Mail Drop	

SOUTHAMPTON (0703) 255111
CHESTERFIELD (0246) 453340
AXMINSTER (0297) 34918

LEEDS (0532) 530606
BIRMINGHAM 021 327 1497
For full addresses see display advert

SPECTRUM ANALYSIS

HF

JOHN ALLAWAY G3FKM
10 Knightlow Road, Birmingham
B17 8QB

Those of us with long memories will be sad to know that one of the pioneers of the modern type of DXpedition, Gus Browning, W4BPD, has died, aged 82. Gus travelled the world on his own and put many countries on the air that had never been activated before. For some years he also produced an excellent DX magazine virtually single handed.

Congratulations to Iris and Lloyd Colvin, W6QL/W6KG, who have just been given a special award by the Board of the ARRL as Amateur Radio Ambassadors of the decade 1980 - 1990 "for their tireless efforts to foster goodwill by means of amateur radio".

CONTESTS

Results of the 1989 CQ World-Wide SSB Contest appeared in September issue of CQ. UK scores were as follows: **Single-operator-All band: GW4BLE** (4,058,880 points), **G3SNN** (2,578,834), **GW0ARK** (1,187,724), **GM3BCL** (766,080), **GOHSD** (464,427), **G4NXG/M** (127,065), **GD4GWQ** (71,628), **GM4OBK** (55,874), **28MHz - G3LNS** (1,005,585), **G4LJF** (620,700), **G6QQ** (12,900 - but a misprint I think), **G4JQL** (20,496), **21MHz - GM0ECO** (354,472), **G3TXF** (154,632), **GI0KOW** (94,282), **14MHz - GJ3XZE** (56,648). In the **Multi-operator single-transmitter** section **GJ6UW** (10,995,216), **GW8GT** (6,171,984), **G3MLY** (4,0102,560), **G3SZA** (910,100), **GM3PXX** (835,083), **GM0IZS** (514,892), **GM4AGG/P** (496,440), **GOCCCH** (364,500), **GB0CSR** (71,736). In the **QRP section** (All-band) **G4ZMK** scored 24,319 points and **GM3RFR** 8,528. On 28MHz **GM4ELV** scored 63,494, and **G3RFE** 23,800. **GW4BLE** and **G3SNN** came second and ninth in Europe in their category, and **GJ6UW** was third European in the multi-operator single-transmitter class.

International All Austrian 160m Contest

1800 17 November - 0700 18 November
1.810 - 1.950MHz CW only.
Single-operator and listener

classes. Send RST and serial number from 001. Austrians will also send a three digit code identifying their Austrian District Locator. Each QSO counts one point. Each call area worked counts as two multipliers and each ADL as one. In addition each prefix worked counts as a multiplier. The standard log (Form 017) and summary sheet (Form 018) are preferred and are available from OVSV HQ, Theresiengasse 11, A-1180 Vienna. Entries must reach OVSV-AOEC 160m at the same address no later than 31 December 1990. I can supply copies of the rules (SASE please).

RNARS ACTIVITY CONTEST

0600 - 1800 17 November (SSB)
0600 - 1800 18 November (CW)
3.5 to 28MHz within 10kHz either side of 3.740, 7.050, 14.225, 21.360, and 28.922MHz (SSB) or 3.520, 7.020, 14.052, 21.052, and 28.052MHz on CW. RNARS members will give their membership numbers, others RS/T plus serial QSO number. Ten points for QSOs with RNARS members, with non-Naval club stations one point. I can supply copies of the rules - SASE please.

AUSTRALIAN LADIES ARA A.L.A.R.A CONTEST

0000 to 2359 10 November. Open to all regardless of sex! SASE for rules please.

FRATERNISING CW PARTY 1990

17 and 18 November.

17th: 1500-1700, 7 and 14MHz; 1800-2000, 3.5 and 7MHz.

18th: 0700-0900, 3.5 and 7MHz; 1000-1200, 7 and 14MHz. (Use frequencies in the segments 3.520 - 3.550MHz, 7.010 - 7.030MHz, and 14.020 - 14.050MHz only).

This is organised by the European CW Association and is intended to bring together members of EU-CW clubs and their friends for a weekend of enjoyable activity. It is open to all - including listeners. A copy of the rules may be obtained by sending a SASE to Tony Smith, G4FAI, 1 Tash Place, London, N11 1PA.

ARRL 160 METRE CONTEST

2200 30 November - 1600 2 December

CW only. Work USA and Canada only. Single and multi-operator sections. Send RST - W/VE will send RST plus ARRL/CRRL section. Each QSO counts five points and the multipliers are the ARRL/CRRL sections plus VE8/VY1 (77 maximum).

Postmark entries no later than 1 January 1991 and send to ARRL 160m Contest, ARRL, 225 Main Street, Newington, Conn, 06111, USA. Official log forms are recommended - apply to ARRL with SASE and IRCs (I do not have any of these.)

DXPEDITIONS

The long awaited expedition to **South Sandwich and South Georgia** is expected to materialise this month. The scheduled departure of the ship from Stanley is 20 November and the journey to S.Georgia is about six days. Allowing one day for setting up would mean that the S.Georgia group may be on the air by the 26th. S.Sandwich is a further three or four days steaming and seven days of activity from there should start by 1 December. Both operations will be on SSB, CW, RTTY, and satellite, UHF, VHF, and HF 1.8 to 28MHz. Kenwood is supplying all the transmitters and much other equipment is being provided by other manufacturers. There are expected to be at least 16 experienced operators involved including WA4JQS, AH2BE, XE1VIC, K0IR, K5VT, K5MM, AD0S, WA3YVN, W6OAT, KO7N, W7KNT, KM4KJ, WS0S, VE3SUN/W6, DJ9ZB, W9ARV, and KH6WZ. The callsigns VP8SGI and VP8SSI have been requested and QSL details will be found in QTH Corner.

Another big expedition - to **Malpelo Is** is now set to begin operation on 3 November and continue until the 7th. This depends on the transport being

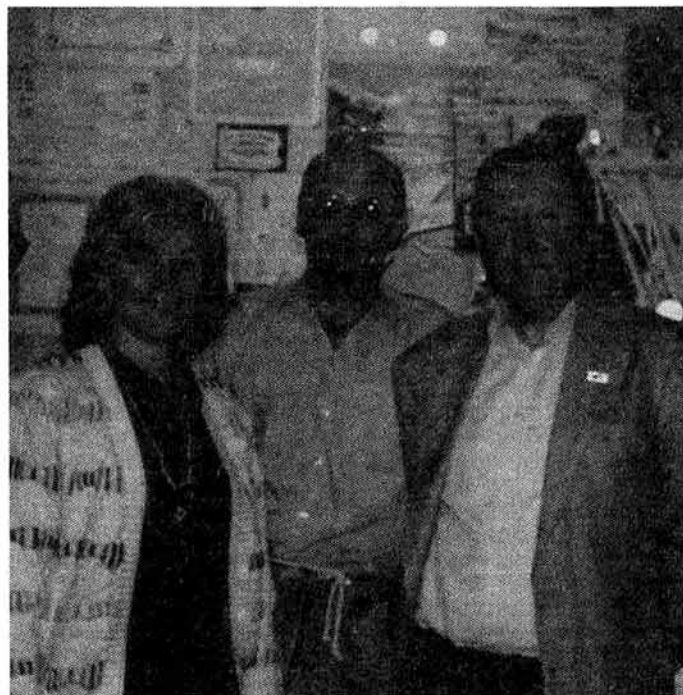
available from the Colombian Navy. The callsign will be HK0TU and there will be 15 operators - all believed to be Colombians. Frequencies to watch include 1.82, 3.505, 7.005, 14.025, 21.025, and 28.025MHz on CW, and 1.835, 3.795, 7.085, 14.145, 21.195, and 28.395MHz on SSB. Listening frequencies will be announced and there will be satellite operation and RTTY as well. Sunrise time will be 1120 and sunset 2310. QSL with IRCs or US \$1.00 and one envelope per QSO to the address in QTH Corner.

The third big event of the month concerns a visit to **Juan Fernandez Is** by CE3BFZ, KB6SL/CE3, F2JD/CE6, and two others. The callsign will be CE0ZZZ, and they will be on the air from 10 to 18 November on all bands 1.8 to 50MHz.

Iris and Lloyd Colvin, W6QL/W6KG appeared rather unexpectedly at the end of August from **Tanzania** as 5H0QL from 5H3TW's QTH and then from Malawi as 7Q7KG. Afterwards they were hoping to go to **Mozambique** and **Madagascar** if able to get licences. The whole tour should last about six months.

Steven Muster, G4UOL, will be in the **Isle of Man** again this year. He will be in Peel (WAB SC28) from 17 November until 1 December as GD4UOL. Contacts will be mostly 'rubber stamp' and skeds may be fixed by calling Steve between 1800 and 2100 weekdays and at any reasonable time at weekends on 0702 334014, or by letter (see QTH Corner).

Terry Langdon, W6/G3MHV,



L to r: Mady, RL0P/KA6ZYF; Alex, UL7PCZ; and Terry, UL7P/G3MHV, at the club station RL8PYL in Temirtau during the recent extensive visit to the USSR by G3MHV and XYL KA6ZYF.

and his wife have just returned from an extended visit to the USSR where they operated as U9W/KA6ZYF and U9W/W6/G3MHV from Ufa, and as RL0P/KA6ZYF and UL7P/G3HV from Temirtau. QSLs can go to the appropriate bureaux or to the address in *QTH Corner*.

DX NEWS

According to *DX News Sheet* there may be an amateur with the relief crew which went to **San Felix Is** in September. If so, he could be there for six months and it is believed that he may be a keen CW operator.

FR0P will be a special callsign from **Reunion Is** from 28 October until 10 November. It will be

operate on all bands (including WARC) on CW, SSB, and RTTY. ST2YD, in **Sudan** is said to be Yannick, formerly T5YD, he hopes also to be able to get on the air from **Southern Sudan** as ST0YD occasionally until he leaves the area in July next year. 9Q5TE will be in **Zaire** until August next year and, according to *DXpress* is to be found every Saturday on 21.315MHz at 1400.

There is now a club station on the air from Kuching, in Sarawak in **E.Malaysia**. This is 9M8MKS and it is said to operate near 14.200MHz from about 0900. XW8KPL in **Laos** is being heard most days at 1430 on or near 21.235MHz. There are several operators and it is important to note which one you contacted if you need a QSL - they each

QTH CORNER	
GD4UOL	S.Muster, Flat 4, 60 Genesta Rd, Westcliffe on Sea, Essex, SS0 8DB
HK0TU	HK3DDD, Box 25827, Bogota 1, Colombia.
RL0P/KA6ZYF, U9W/KA6ZYF, U9W/W6/G3MHV, UL7P/G3MHV	all to P.O.Box 1489, Santa Monica, Ca 90406-1489, USA
VP8SGI	(see VP8SSI)
VP8SSI	via J.Branson, 93787 Dorsey Lane, Junction City, Oregon 97448, USA
ZM2K	c/o ZL2NX via NZART QSL Bureau.
ZL2BNJ	10 Gurney Rd, Belmont, Lower Hutt, New Zealand. (NB Callbook address not correct).
5H0QL	(see 7Q7KG)
7Q7KG	YASME, Box 2025, Castro Valley, CA 94546, USA.

seem to have a different address for cards.

According to *DXNL* DL8FL keeps a sked with several VR6 stations on **Pitcairn Is** at 0630 on Sundays on 14.140MHz. *DX*

News Sheet reports that F6EYG (ex-FK8DH and FW0BF), should be back in **New Caledonia** for a three year stay. The same source

continued on page 20

HF F-Layer Propagation Predictions

Since the Propagation Studies Committee first introduced their HF propagation prediction tables for the UK [1], there has been a number of changes in presentation. These have been mainly to improve and ease the usability of the table but, since recent economies forced the half page limit to the size of the table, improvement of legibility without loss of detail has been a major concern. To this end, a block graphic presentation of the numerical data has been devised and is printed here along with the numerical table as used up to now, for direct comparison purposes. This will be repeated in next month's issue of *RadCom*, with a view to changing solely to the block graphic presentation.

This change is for the benefit of you, the members, so we urgently request your comments and views as users of these predictions on the two presentations offered here (comments to G4AQI - QTHR please). Members who still require the numerical presentation will be able to obtain this from the RSGB on request.

The prediction table provides information on the 'probability' of propagation being possible on a number of overseas routes from, and to, the UK. The 'probability factor', given on a 10% to 90% basis, is predicted for the eight HF bands (10m to 80m) at two-hourly intervals of GMT from the basic ionospheric HPF (Highest Probable Frequency) and LUF (Lowest Usable Frequency) predictions for each route. In the numeric table, these probabilities are indicated by the numbers 1 to 9, with a dot (.) meaning zero probability. Additionally, a plus sign (+) is used in the 28MHz column when a 90% probability of propagation exists on that band,

and at least a 10% probability exists at 50MHz. Similarly, at 3.5MHz a plus sign (+) indicates a 90% probability of propagation on that band and at least a 10% probability at 1.8MHz.

The prediction probability number is obtained from the multiplication of two independent probabilities which exist at any given time; one depending on how far a band is above the LUF and the other on how far that band is below the HPF. This gives rise to a difficulty in practical interpretation, since statistically speaking a number 1, which indicates a probability of signals being audible for 10% to 19% of days in a month, means that good signals could be present on a few days (100 x 10% = 10%), or mediocre signals could be present on half the days (38 x 50% = 19%), or poor signals could be there on most days (15 x 90% = 14%), or any other combination which returns an answer between 10% and 19%. However, the nature of things is that generally the higher the numbers the stronger and more consistent the signal. The predictions are for undisturbed ionospheric conditions, so if a high number is predicted for a certain area and you observe generally weak signals then all predicted numbers for routes in that general direction will require reducing to give a proper picture. This check is best made on signals from areas of high activity, such as W1-4 and UA1-4.

In the new graphics table the height of the block indicates the probabilities, with the maximum height representing 90% and the minimum height 10%. The dot (.) and plus sign (+) are used as before.

The propagation predictions

can be used in a number of ways, by the casual operator, someone making a sked, the DXer, and the contester.

The casual operator who switches on the rig at, say, 10AM, can see for example that 28MHz should be open to most of Asia and hopefully Oceania, while it would be too early to try to contact the USA. However if stateside contacts are desired, 21MHz or perhaps 14MHz would be a better choice. If the casual operator has a beam, the trend of conditions on each of the bands can be used to suggest the best direction to turn the beam. Daytime absorption on the LF bands makes DX contacts unlikely, but it is interesting to see that openings exist on 7MHz to most parts of Oceania around our sunrise and sunset, confirming the considerable enhancement of DX signals when both ends of the contact are near the 'grey line' - the edge of the earth's shadow where day meets night. The particular enhancements which occur along the 'grey line' cannot be included in a 2-hourly presentation. The predictions also show the considerable DX potential of the WARC bands, particularly 10 and 18MHz.

A note of caution: the north-south path, from wherever in the world, is highly reliable and capable of producing very strong signals, but these good paths can, of course, only be exploited if there is a station at the other end to work.

The requirements of someone wishing to keep a sked are very different. Once again the operator must remember that the figures are probabilities, and only an indication of a path. When making a sked, it would be wise to look for a band with a 'run' of high

probability figures (if possible), and choose a time somewhere in the middle. If a sked is to be repeated across several months, the band or the time will need to change, as indicated by the predictions.

The contester is interested in using the predictions for an intense 24 or 48 hour period, and will be interested in the trends of propagation indicating when band changes should be made to maintain QSO rate, or the best time for a quick QSY to pick up multipliers.

The experienced DX operator will have absorbed much propagation information over years of activity, but can use the predictions to highlight unexpected openings and to check his instinct when an important 'new one' is in the offing. As with all users of the predictions, the DXer using the figures over several months can learn whether, for their particular set-up of antennas and transmitter power, the predictions turn out to be optimistic, pessimistic, or about right. It is an interesting exercise at the end of a month to check DX worked during the month against the predictions, and use this 'feedback' to understand exactly how the predictions relate to the particular station. Those interested in monitoring a path to a beacon and relating their findings to the *RadCom* propagation predictions are asked to share their data with the Propagation Studies Committee.

John Spurling, G4AQI
Dave Lawley, G4BUO

REFERENCES

- [1] 'HF Propagation Study', *Radio Communication*, April 1976

HF F-LAYER PROPAGATION PREDICTIONS FOR NOVEMBER 1990

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	...9+++7...	...999991...	...3999994...	...69889971...	321877789963	886655457998	886422235788	+++...25++
MALTA	...898872...	...999994...	...29999971...	...498899941	441877789995	997754457999	888521135889	+++...25++
GIBRALTAR	...488772...	...799884...	...9999972...	...9989994...	22.287778994	886775557999	999742224799	+++...4++
ICELAND	...68871...	...89982...	...399996...	...6999981...	12.88889961	674176668897	888653335788	55542...24++
** ASIA								
OSAKA	...83...	...196...	...3971...	...4873...	2.465433414	1.132135764	...1.13662	...33.
HONGKONG	...2++94...	...499981...	...388831...	...16778641...	2.44468852	2.11136886	...1.136886	...34.
BANGKOK	...4+++7...	...499981...	...2588894...	...3768971...	3.4468965	3.1135886	1.136886	...343
SINGAPORE	...589997...	...579998...	...3588894...	...136689711...	3.4468965	2.1135886	1.136886	...342
NEW DELHI	...5+++81...	...578992...	...347888...	...112678821...	421.3468655	74.135888	61.13677	...344
TEHRAN	...6+++7...	...8889981...	...7568895...	...1.1634689721...	6453.1468976	874.136889	761.13677	...345
COLOMBO	...6+++81...	...5689992...	...23688961...	...1.14689831...	52.1468976	62.136889	4.13677	...345
BAHRAIN	...7+++961...	...7779983...	...64588962...	...212512689842...	7542.358987	873.135889	761.13678	...345
CYPRUS	...5+++93...	...7999995...	...1.888899831...	...321877889963...	875754678998	997421346899	8852.14788	...552...
ADEN	...6+++83...	...76789962...	...21.634689852...	...532411479985...	8751.158999	883.25888	761.13677	...344
** OCEANIA								
SUVA/S	...4884...	...278961...	...588983...	...777895...	...1655686...	...3422354...	...11.31...	...
SUVA/L	11.5531.463	21.76532674	12.387655852	...115865783...	...16633578...	...33.253...	...11.31...	...
WELLINGTON/S	...58864...	...79876...	...888882...	...1877894...	...36556861...	...2422363...	...1.131...	...
WELLINGTON/L	1.1...	21.21...	221.531.222	112264212431	...146323551...	...231.143...	...1.2...	...
SYDNEY/S	...398886...	...5989981...	...5988993...	...48778961...	...16446884...	...3113673...	...1.35...	...2...
SYDNEY/L	...21.11...	...531.22...	...1.7632.354	...1.86532563...	...6434585...	...41.2462...	...1.23...	...
PERTH	...6888651...	...6788872...	...35888961...	...1.136689831...	...3468974...	...1136884...	...3651...	...32...
HONOLULU	...2...	...4...	...1.2...271...	12.4.1.572...	...44.6231751...	...264421252...	...441.2...	...
** AFRICA								
SEYCHELLES	...6678744...	...65688762...	21.323788952	5311.1579985	962.258999	85.25889	72.3667	4.345
MAURITIUS	...57888951...	...566899731...	31.323689974	6311.1479997	861.157999	84.25889	61.2677	3.345
NAIROBI	...588898631...	1.666799852	42.633589986	75141127999	9841.57999	884.25886	761.2677	43.344
HARARE	1.456789852	21.556689974	64.533379997	8713.1158999	9941.27999	883.25889	761.2677	43.345
CAPETOWN	1.167769863	32.366679986	75.543358996	981411.27999	9952.58999	984.25889	762.2677	43.345
LAGOS	11.4+++974	42.187679986	76.474358999	982752127999	99772.58999	8895.27999	7772.478	444.255
ASCENSION Is	1.88778753	32.87667876	651184358999	984371.13899	99874.699	88961.389	7773.157	444.24
DAKAR	...8+++973	21.98768985	552.96336998	874184114899	998661.1799	88973.489	77751.167	4442.34
LAS PALMAS	...8+++83...	...99999961...	12.99889994	442198778997	99758556999	999863224799	888631.1488	+++3...5+
** S. AMERICA								
Sth SHETLAND	...46777763	21.68877785	542.87755677	774186532467	7875632.136	566531.3	23331.1	...
FALKLAND Is	...4888+862	11.78766775	442.88633477	77518641.258	6985641.26	788731.4	57751.1	2442.1
R DE JANEIRO	...38666762	11.58655784	432.87332587	765.851.279	999462.58	88873.27	77751.4	4442.2
BUENOS AIRES	...47777862	1.78765674	332.88532377	665.863.58	999464.27	888731.4	67751.2	3442.2
LIHA	...4+++851	...1976662	112.14742255	434.3561.37	8882643.5	789641.3	57751.1	2442.1
BOGOTA	...4+++85...	...1976662	111.4742365	334.501.147	8782143.17	888631.4	66751.1	3442.1
** N. AMERICA								
BARBADOS	...7+++861	...8866772	112.8732486	434.1751.278	8882442.58	888641.27	77751.4	4442.2
JAMAICA	...4+++85...	...1976661	111.3752364	334.1563.156	8782443.27	888642.27	66751.2	4442.2
BERMUDA	...4+++85...	...6987871	111.8855684	334.27632477	8782543.158	888641.26	76651.4	4432.2
NEW YORK	...18+++84...	...2998861	111.5876783	333.16664576	777145431257	8885421.25	66651.3	3432.1
MEXICO	...18+++83...	...299885...	111.485343	233.3.572124	77716245.4	88854212.1	36751.1	442.1
MONTREAL	...18+++83...	...299885...	1.5887883	332.16676685	777145443367	88854211.136	66651.3	3322.1
DENVER	...4972...	...6983...	1.88651	232.2.177443	676151254125	88854211.2	36651.1	342.1
LOS ANGELES	...871...	...1972...	1.38641	232.2.57432	576152.551.2	478542122	15651.1	242.1
VANCOUVER	...35...	...571...	1.18941	231.2.28752	575.52.46544	478542124212	14651.1	32.1
FAIRBANKS	...1...	...12...	1.1112451	23.33246731	564.64457764	467442235544	23541.2211	...22...

Alternative method of showing predictions: see previous page.

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	+++	+++	+++	+++	+++	+++	+++	+++
MALTA	+++	+++	+++	+++	+++	+++	+++	+++
GIBRALTAR	+++	+++	+++	+++	+++	+++	+++	+++
ICELAND	+++	+++	+++	+++	+++	+++	+++	+++
.....ASIA								
OSAKA	+	+	+	+	+	+	+	+
HONGKONG	+	+	+	+	+	+	+	+
BANGKOK	+	+	+	+	+	+	+	+
SINGAPORE	+	+	+	+	+	+	+	+
NEW DELHI	+	+	+	+	+	+	+	+
TEHRAN	+	+	+	+	+	+	+	+
COLOMBO	+	+	+	+	+	+	+	+
BAHRAIN	+	+	+	+	+	+	+	+
CYPRUS	+	+	+	+	+	+	+	+
ADEN	+	+	+	+	+	+	+	+
.....OCEANIA								
SUVA/S	+	+	+	+	+	+	+	+
SUVA/L	+	+	+	+	+	+	+	+
WELLINGTON/S	+	+	+	+	+	+	+	+
WELLINGTON/L	+	+	+	+	+	+	+	+
SYDNEY/S	+	+	+	+	+	+	+	+
SYDNEY/L	+	+	+	+	+	+	+	+
PERTH	+	+	+	+	+	+	+	+
HONOLULU	+	+	+	+	+	+	+	+
.....AFRICA								
SEYCHELLES	+	+	+	+	+	+	+	+
MAURITIUS	+	+	+	+	+	+	+	+
NAIROBI	+	+	+	+	+	+	+	+
HARARE	+	+	+	+	+	+	+	+
CAPETOWN	+	+	+	+	+	+	+	+
LAGOS	+	+	+	+	+	+	+	+
ASCENSION Is	+	+	+	+	+	+	+	+
DAKAR	+	+	+	+	+	+	+	+
LAS PALMAS	+	+	+	+	+	+	+	+
.....S. AMERICA								
Sth SHETLAND	+	+	+	+	+	+	+	+
FALKLAND Is	+	+	+	+	+	+	+	+
R DE JANEIRO	+	+	+	+	+	+	+	+
BUENOS AIRES	+	+	+	+	+	+	+	+
LIHA	+	+	+	+	+	+	+	+
BOGOTA	+	+	+	+	+	+	+	+
.....N. AMERICA								
BARBADOS	+	+	+	+	+	+	+	+
JAMAICA	+	+	+	+	+	+	+	+
BERMUDA	+	+	+	+	+	+	+	+
NEW YORK	+	+	+	+	+	+	+	+
MEXICO	+	+	+	+	+	+	+	+
MONTREAL	+	+	+	+	+	+	+	+
DENVER	+	+	+	+	+	+	+	+
LOS ANGELES	+	+	+	+	+	+	+	+
VANCOUVER	+	+	+	+	+	+	+	+
FAIRBANKS	+	+	+	+	+	+	+	+

The provisional mean sunspot number for September 1990 issued by the Sunspot Data Centre, Brussels was 124.7. The maximum daily sunspot number was 178 on 14 September and the minimum was 77 on 27 September. The predicted smoothed sunspot numbers for November, December, and January were respectively: (classical method) 135, 133, 131; (SIDC adjusted values) 117, 115, 113.

says that KH6JEB hopes to be on from Kure Is for two weeks early this month.

PROPAGATION

A very comprehensive report from G8KG this time. "Mention was made last month of the high upsurge in solar activity in the second half of August. Data now available shows that the daily sunspot count reached 295 on 20 August, a value not seen since November 1979, while the provisional monthly mean sunspot number of 199.9, if confirmed, will prove to have been the highest monthly value since January '59.

"It would be nice to be able to say that these figures presaged a movement towards a late peak in the cycle at the end of its fourth year but this is not borne out by subsequent data. 27 days after the August 'mini-peak' the daily solar flux had fallen to very acceptable but undramatic values of around 200 sfu, high enough in conjunction with the seasonal

improvement to give world-wide openings on 28MHz though rather few stations seemed to be taking advantage of the improved conditions.

"The end of 1990 is a good time to look back at the progress of Cycle 22 if only because this was the year in which, on past form, the cycle was most likely to reach its peak rather more than three years after its start in September 1986. One can only say 'most likely' since no two cycles are alike and prediction is not much more than intelligent guesswork based on past behaviour. For the first two years, the rise in sunspot numbers and solar flux was very steep, in fact the steepest in the record, pointing to the possibility that the new cycle was heading for a peak of record height. Instead, the steep rise ended in a sharp subsidiary peak in January/February 1989 and when, after the 'great aurora' of March the indices began to recover in June, the rise was much less steep and

ended sooner than expected.

"The classical way of representing the cycle is by means of 'smoothed monthly sunspot numbers' which are slightly modified 12-month averages. Using this method, the curve for Cycle 22 has a rather broad and flat maximum centred on a value of 159 in July 1989 with the smoothed monthly values above 155 from May until November and still above 150 in the first quarter of 1990 - the latest figures available. A plot of smoothed monthly solar flux is very similar with a peak of 213 sfu in June 1989 and values above 205 sfu from May to November. It is interesting to note that the sunspot numbers place the Cycle 22 peak a little below that of Cycle 21 (164) while the solar flux values reverse that ranking.

"A maximum in only 33 or 34 months from the previous minimum is significantly earlier than has been seen in what are generally regarded as the reliable records. If, however, the data are studied in more detail, for example by plotting 3-month means of sunspot numbers or flux, it seems that on this occasion the smoothing process has obscured the physical reality. In fact two nearly equal peaks occurred in Jan/Feb and Oct/Dec 1989 and, since both fell within the same 12-month averaging period, they were smoothed into a single flat maximum. The three months with the highest mean solar flux were September-November 1989 with a value of 223 sfu, while the slightly later sunspot peak was November-January with a mean value of 172. After this, the 3 month mean indices fell away quite sharply so that, in considering its effects on the ionosphere and therefore on radio propagation, the cycle peak can best be regarded as having occurred at the end of 1989, just ten years after its predecessor. Because of the early promise, the height of the peak might be said to have been disappointing - only 'equal-second' in the all-time records! On the other hand, it should not pass un-noticed that the solar indices averaged over the year leading up to the peak were some ten per cent higher than in the corresponding period of Cycle 21, making 1989 an outstanding year."

Many thanks to DXNL (DL3RK), the *Long Island DX Bulletin* (W21YX), *RSGB DX News Sheet* (G4DYD), the *Ex-G Radio Club Bulletin* (WA8GTA), the *Lynx DX Group Bulletin* (EA2JGO), and *DXpress* (PA3CXC).

The last date that I can use news for the **January** issue will be **13 November**, and for **February** by **27 December**.

VHF/UHF

NORMAN FITCH G3FPK

40 Eskdale Gardens, Purley, Surrey
CR8 1EZ

The 50MHz Sporadic-E season virtually came to an end at the beginning of September, with just the occasional opening later in the month. F-layer propagation was not much in evidence, so there are fewer reports this month. To compensate, there were a few reasonable tropo openings on the higher frequencies although they seem to have been rather selective.

MOONBOUNCE

144MHz

With a minimum round trip path loss on 144MHz of 252dB, it might seem that moonbounce, or EME, is well beyond the capability of most stations, but this is not necessarily true. Admittedly, if you want to work more than just a few of the very big stations, like W5UN, VE7BQH and KB9RQ, you won't do it with 100W and a single Yagi.

However, we have come a long way since the days of the 6CW4 nuvistor amplifier and, once we can run 400W at the antenna on CW, it need no longer be just a pipe dream. Nevertheless, it is a considerable challenge to achieve a state-of-the-art receiving system with a very low noise figure, low loss feeder and an efficient antenna.

Graham Daubney, G8MBI, whose 224-element colinear array is pictured, has sent a long account of his experiences in designing, building and operating a potent 144MHz EME station. Unlike some, his prime motivation was not just to work more fields and squares than anyone else; he has never bothered to enter either of the tables.

He wrote: "Much of the enjoyment comes from the off-air radio contact with people in other countries, all really trying to help with technical aspects, skeds, etc. There really is a spirit that I have not experienced in any other facet of the hobby."

The large colinear array was designed by Graham. Initial experiments with smaller groups of the antennas were carried out with Mark Page, G1EGC, who then had the facilities and space to build, erect and test them. Later on, Mark Turner, G4PCS, and Graham assembled the present array at the Suffolk QTH.

For a given gain, a colinear array is probably easier to realize

BAND REPORTS

A special thanks this month to John, G4PDQ, who kindly supplied disks with information from the GB7DXC packet cluster - quite a mine of rare DX! Thank you also to G2's AKK, HKU, GM3CSM, G3's GVV, KSH, LPS, G4's DXW, FRV, GW4KGR, G4's MUW, NXG/M, 4VVP, and G0DUS/M. As always, CW stations are in italics.

3.5MHz

2000 HL1IUA, VK5HB, YB0DB, 7Q7CW
2200 YC6KOS, 5B4ES, 5H3OH

7MHz

0500 AH3C, FJ/FG5ED, FMF2YT, W7WAE

14MHz

0300 TZ6CX
0500 FJ/14IND, KH6IJ, P29BT, VK9NX
0600 A35KB, FK8GJ, T32Z, VK9ND, V51GB, ZK1s DD, TW, XY, 3D2KW.
0700 AH3C, U9W/K6ZFY
0900 YK1AA
1600 WE6V/BV, VK2HD, 7Q7KG
1700 FO5IW, FR5BV, VQ9TB, ZS8MI
1900 FK8FB, ST0YD, UA3A/G0DJF, 3B9FR
2000 FK8GJ, KC6DX, KL7U, V63JC, ZL, 5H0QL
2100 FS/PA0CRA, T5RR, VP8BKX (S.Ork.), 9M2CW
2300 A61AC, FJ/PA0CRA, J5CVF, JY1T, TA1AZ

18MHz

2000 PA0GAM/ST2, TA2AO, 4S7WP, 6W1QJ
2300 V44KJ, 8R1/W1CDC

21MHz

0500 7Q7CW
0600 JI2KLU/JD1, JT1CO, KC6BV, 5H0QL
0800 AH3C, FK/VE0MEA, KH6BS, V29A, ZK1XY
0900 AH3C, BT0KAA, T20AA
0900 BY8AC, XU8DX, U9/W6/G3MHV
1000 FT5XH, HL1AQN
1200 BT0HA, BY5VZ, N6BUV/KH0, P29NMD, T5MF, ZY9KA
1500 HS0E, JY3ZH, KC6GV, Q07JA
1600 BV2FB, KH2/VK2EKY, XW8KPL, ZS8MI, 9M8ST
1800 A22AA, J5CVF, KL7JDI, TR8BY, 7Q7KG
1900 Y90ANT, ZD8Z, ZD9CS, 7Q7s HM, LB
2300 JT1CD, KH6FS, S92LB, VP8QP

24MHz

0800 VK/ZL, 9M2FS
0900 KL7U, 8J90XPO
1300 TI2KD, VU2EMJ, 5H3TW
1500 FS5EJ/FH8CB, VP2E/KT8Y, 7Q7RM, 9V1YB
1800 YB0WR, YN/SM0OIG, 5R8JD
2000 HC2AQ, KH6SB, XE1ENK

28MHz

0600 FR4AE, FT5XH, ZS9S
0700 BY4RA, VU/DJ9KR, ZD9BV
0800 AH3C, TL8WD, VQ9TB
0900 AT0T, BY5RA, TL8WD, TR8DL, V51KC, XU8DX
1000 AP2UR, BZ4RCC, HS0E, XU8DX, ZD9s BV CO, 7Q7KG
1300 A61AD, KH2EO
1800 A22AA, G4RWD/C6A, FH5EJ, HK0EFU, ST2YD, ST0YD, ZD7VC
1700 TZ6VV, 7Q7JA
2200 C6ADC, KP2BL, ZD8BOB

mechanically than a group of long Yagis. The G8MBI antenna is well constructed and braced to maintain its geometry in moderate weather conditions, but during windy periods it can be luffed over. It measures 36ft wide and 21.5ft high, the head load totalling 225lb. The main feeder is LDF5-50.

Graham says the array has come up to expectations, complete EME QSOs having been made with stations using a single Yagi and a pair of 4CX250B valves, and others with small arrays, such as four 7-ele. Yagis, and 150W. SWL reports have been received from people using a single 9-element Yagi. In just over a year, 53 days of operation brought contacts with 52 countries, 255 squares and 28 fields.

In September, SM5FRH (O/O) was worked on the 9th using 40W and on the 15th, W5UN (559/549) testing a new receiving set-up. The 16th produced: OE3UP (O/O), HG2RG (O/O), HG0HO (O/O), F1FLA (529/O), KI3W (O/439), I1ANP (O/O), I1KTC (O/O), VE6JW (O-nc) and VE7BQH (539/429). For the uninitiated, 'O' is sent only when both calls have been positively identified. The reports are in sent/received order.

He included detailed advice for those trying to work the bigger stations off the Moon for the first time, or on a casual basis. Most of them operate one minute periods on random, sometimes transmitting fast; he recommends replying at 12-15WPM and says: "Forget the old EME technique of slow CW; frankly it doesn't work."

He continues: "Whatever you have heard/know about Doppler shift, forget; better just to tune to the received station's frequency and call. If you try to get clever with Doppler shift allowance, it will not help. The operator at the other end will know, more or less, where to look for people calling, so better to let him sort it out."

You may hear tropo signals from European stations so make sure you are tuned to their echoes off the Moon. The tropo signal will be heard first, the echoes about 2.4-2.7s later on a different frequency. If they hear you on tropo you may get the reply 'CQ EME' or 'CQ EME only.' When you are sure you are hearing their echoes, throw in a few 'EME's so they know you can hear them.

If you are hearing the target station when its echoes are strongest, there is a 60% chance your reply won't be heard. This is due to an annoying effect known as Faraday rotation whereby the polarization of the signal changes on its long journey via the Moon. Graham advises: "More often

than not, when you have the weakest received signal and think you have no chance, that is the best chance you are going to get."

Sometimes the target station will call 'QRZ' to signify a weak signal has been heard; if so, reply as it may be yours. It is worthwhile repeating this for several periods. Graham says that in his early EME days with low power and four 9-ele Yagis, getting a QRZ "...gave nearly as much thrill as actually working someone..."

EME operation usually takes place in the bottom 25kHz of the bands, although skeds may be arranged elsewhere. Graham uses 144.009MHz but complains bitterly about local stations who call G8MBI when he is operating in this section and calling "CQ EME." Even at 4AM, some do not respond to "Pse QSY, QRL." Instead, although not invited, they start up a QSO giving name, QTH, report, rig details, and so on.

He also wishes that operators would respect CQ calls to specific areas. It is a waste of time working 'locals' when there is a brief window to another continent, especially if it may not be repeated. Unfortunately this behaviour - pushing and shoving to the front of the queue - is universal in all walks of life.

430MHz

Dave Dibley, G4RGK (BKS), concentrates his EME activity on 430MHz. While the path loss averages 9.5dB more than on 144MHz, antenna gains for a given overall array size can be greater. His 168-ele array comprises four bays of two, stacked 21-ele Tonna type Yagis.

The antenna mount is made from scaffolding tubes and Kee Klamp fittings. The elevation control uses a winch with the readout via a gravity indicator, and the azimuth control is by the 'armstrong method' with a protractor readout. The whole system stands on a base of four tubes and can be dismantled and moved in an hour. The transceiver is an IC-475 driving a much modified K2RIW amplifier producing about 750W into 150ft of LDF5-50 feeder.

Dave suggests the best antenna would be a dish, or failing that a system allowing you to rotate the polarization. He has found that Faraday rotation sometimes locks up to vertical for long periods in which case you will only be able to work stations with dishes or who can rotate their feed. There are compensating periods of perfect alignment when Yagi stations are head and shoulders above the rest.

He reports good activity, with European stations quite often

appearing on the random QRG, 432.010MHz, on weekday evenings. On the evening of 6 September he worked UA1ZCL (439/429) off a rising Moon. Other recent completions were with IN3HER, UA6LGH, N6AMG, W0KJY, K4QIF and JA9BOH.

The second leg of the 48 hour ARRL Worldwide EME Contest is on 3/4 November. The Moon sets at 0745 and rises again at 1630 on the 3rd. It sets at 0915 on the 4th rising again at 1700 to give about 31.5 hours availability. Listen for SM4IVE, who uses a 40ft dish, at Moonrise and set.

Dave hopes these notes will encourage others to listen off the Moon. He sent a sketch of his antenna support system which is quite novel, and you don't necessarily need an expensive telescoping tower to support a 430MHz EME array. He says: "I would be pleased to help anyone who wants to get going."

If any other readers have been using EME mode, please let us know what you have been achieving. I would like to include a regular report on activity and general news, from time to time. Advice from established EME operators would be most welcome so that it can be passed on to newcomers.

SOFTWARE

As regular readers know, I have numerous amateur radio programs for the office computer. However, these CP/M programs are for the Amstrad PCW8256 and 8512 machines which use the 3" floppy disks in hard cases. They will run just as well on the PCW9512 if you have a dot matrix printer. If you only have the supplied daisy wheel printer there will be problems in printing.

The PCW monitor default is 32 lines by 90 columns whereas most other popular computers are 24x80. These PCW programs have been 'massaged' to run on

the CPC6128, for example, but it is a very fiddly business to reorganize them to suit smaller screens.

If you want a copy of the current PROGLIST, send an SASE to the Purley address. Some readers have been requesting it from John Allaway, G3FKM, whose HF contribution to Spectrum Analysis precedes VHF/UHF. He has kindly forwarded these inquiries to me, even though they are not his concern. Thanks, John.

METEOR SCATTER

The Leonids stream, whose parent body is comet Tempel-Tuttle, is an interesting one. According to the British Meteor Society's *Radiant Catalogue*, it has produced strong periodic meteor storms for nearly 2000 years. In 1966, a ZHR of 155,000 was recorded. The Right Ascension is 152 degrees, the Declination +22 degrees and the retrograde orbit inclination is 163 degrees with a period of 33.3 years.

The stream velocity at atmospheric encounter is the highest of any listed in the catalogue - 71.7km/s. The radiant is above a mid-UK horizon from 2230 to 1430 and reflection efficiencies exceed 50% as follows: NE/SW 0130-0700 and around 1100; E/W 0400-0900; NW/SE around 0200 and 0600-1200; E/W 0030-0500 and 0800-1300. The peak should be on 17 November.

50MHz

In the Commentary on his August report, Ray Cracknell, G2AHU (HWR), reports quiet conditions in the first half of the month with the solar flux below 200 and good Es propagation. From the 18th, the flux rose to above 300 and there were eight days when auroras were reported. Ray wrote: "It is



The 224-element colinear array used by G8MBI for 144MHz moonbounce.

interesting to note how closely the local K-index figures define auroral activity and conversely the lack of Es."

Neil Carr, G0JHC (LNH), reports that the only F-layer signal heard in the four weeks to 23 September was the V51E beacon on the 5th. However, stations in southern G were heard working into Africa quite regularly. Es propagation occurred on 11 September to TF3SIX, the 21st to OE and I, and the 22nd to IV3. Neil was heard in Jordan at RST559 at 1705 on 9 July calling ZC4MK by JY5CI (JE3TXU).

John Hunter, G3IMV (BKS), has enjoyed the time he has spent on the band this past year. During the Es season he worked all the squares on the Italian mainland, the best being JM79 and JM99. Martyn Jones, G4TIF (WKS), spent most of the summer working the Es.

Ela Martyr, G6HKM (ESX), worked GW3JXN (IO72) for a new square on 2 September followed by some Es QSOs with OZs and SM7THS (JO76). Steve Damon, G8PYP (DOR), also worked OZs and SMs on the 2nd.

Paul Baker, GW6VZW (GWT), made Es contacts on the 2nd, too, and on the 22nd he reports QSOs with OE5NEL (JN78) and DJ1ZU and OE5OLL (JN68) in an hour long Es opening from 1725. Paul is looking for SWL reports from anywhere and would like to work anyone in Counties Fermanagh and Tyrone.

70MHz

At the meeting on 15 September the VHF Committee agreed on the final version of the new band plan, taking into account comments and suggestions from members. The main differences from the proposals on page 24 in the August *RadCom* are that the All Modes section is now 70.25-70.30MHz; 70.15 is MS calling; 70.185 the crossband activity centre and 70.3125 is an additional packet radio channel.

The plan will come into effect on 1 March 1991 and should be published in full in *RadCom* early in 1991. Thanks to the following members for their valuable input: G1SMD, G3s LVP, NKS, RLY and ZPF, G4s AJJ, JCP, JHA, LRS, LRT, MWO, WND, VVZ and ZFQ, G8s DDY, MFV, NSS and POC, G18MNK, GW4ALG and GW4HBK. There is no other 70MHz news this month, not even a comment on the Trophy contest on 16 September - cries of "Shame!"

144MHz

UB5KY and the phantom QSO saga continues; Jim Carter, G0LHZ (BRK), sent a copy of Anatoly's QSL for another non-QSO in the aurora on 13/3/89,

Callsign	50MHz		70MHz		144MHz		430MHz		1.3GHz		Total Points
	Cty	Ctr	Cty	Ctr	Cty	Ctr	Cty	Ctr	Cty	Ctr	
G1SWH	51	33	32	6	85	18	41	8	12	5	289
G6HKM	60	34	-	-	71	23	34	13	27	10	272
G0IMG	47	29	44	4	51	13	32	4	-	-	224
G0NFH	40	20	21	3	48	9	11	2	2	2	158
G0CUZ	-	-	-	-	88	31	30	6	-	-	155
G8PYP	27	29	2	1	48	18	21	6	-	-	152
G4XEN	-	-	-	-	71	27	34	7	3	2	144
G1WYC	16	18	-	-	53	14	25	8	-	-	134
G8ESB	8	4	15	2	42	6	30	4	9	4	124
GW6VZW	77	43	-	-	-	-	-	-	-	-	120
G8XTJ	13	24	-	-	60	13	-	-	-	-	110
G0EVT	21	23	-	-	36	14	5	1	-	-	100
G3FPK	-	-	-	-	81	18	-	-	-	-	99
G4OUT	-	-	26	5	55	9	-	-	-	-	95
G1OWA	29	7	-	-	43	14	-	-	-	-	93
G7CLY	-	-	-	-	60	9	-	-	-	-	69
GM0JOL	-	-	-	-	47	17	-	-	-	-	64
G6MXL	3	12	1	1	25	5	7	2	2	2	60
G6ODT	-	-	-	-	35	6	15	4	-	-	60
GM0GEI	29	22	-	-	-	-	-	-	-	-	51
GW7EVG	-	-	-	-	37	6	-	-	-	-	43
GM1ZVJ	1	9	-	-	2	1	-	-	-	-	13

British counties are those listed in the January 1990 *RadCom*, but excluding IOS; 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.

allegedly made with 10W and four 16-ele. Yagis. Other QSLs I have been sent for the same period mention just a single 16-ele. antenna - most odd.

G3IMV wonders what has gone wrong with the troposphere? John describes recent conditions as abysmal. He wrote: "We used to get fairly frequent openings to northern EA and good sustained ones into the Continent spreading up to Scandinavia, but they all seem just a dream now."

Since Andy Adams, GW0KZG/MM, began regular operation from the *RRS Challenger*, he has given G3IMV 11 new squares. John praises his excellent effort and knows Andy has gained valuable experience in the process. Other recent new ones included EI4VLE/P (IO55), SM6CMU/2 (JP76), LA5JEA (JO18), G4PIQ/TF (IP03), UV1AS (KO59), GM0GTU/MM (JO07) and W5UN via the Moon on 22 September.

There was a period of reasonable, if selective, tropo in the 13-15 September period. On the 15th, Peter Atkins, G4DOL (DOR), worked DJ6RN/P and DK2GR (JN59) and OK1IBL and OK1FFD (JN60) between 1931 and 1950. The signals kept coming and going and were mostly quite weak.

John Palfrey caught the aurora on 23 August and his best DX were SP7BCA (KO01), a new square, and SP7DCS (JO91); some DLs were also worked between 1430 and 1520. He operated in the contest on 1 September working GJ3XBY/P for the first Jersey QSO of 1990.

Mark Holloway's, G4YRY (DOR), letter covered the period to mid-August and he reported much EA activity including EA2AWD/MM in wet squares. This operator is apparently willing to make skeds though all Mark's QSOs so far have been acciden-

tal. The summer Es brought ZB0T, for a new country, and a 10min chat with EA2/OZ2BQ.

He was on holiday in France during the Trophy Contest. From JN33JT, in the Alpes Maritimes 50km north of Nice, he worked IK5JWQ (JN52), IN1QBJ (JN34), TK5EP/P (JN41), EA3BNB (JN12) and others. He heard a beacon signing HB9H on 144.850MHz making QRO and QRP transmissions and asking for reports.

G6HKM found activity in the Trophy Contest better than last year but lacking any exceptional DX. In the tropo lift on 15 September, Ela worked GJ3YHU, and GM1YOA/P and GM0CDA/P (BDS) and "...a welcome batch of OKs." These included OK1VEI/P and 1U2G (JO70), 1KPU/P, 1DXT/P and 1IBL (JO60) and 1KPA/P and 1VVP/P (JN79). Next day she contacted HB9STY/P (JN36).

G8PYP mentions the 'whistlers' on 144.300MHz who give a few loud whistles on the calling frequency without identifying themselves or calling CQ, (sounds reminiscent of CB to me). Steve found the Perseids very good this year with some very strong and long bursts. The most productive day was 13 August, after the main peak the previous day when there were so many stations on the random SSB QRGs.

Colin Smith, GM0CLN, moved to East Lothian in February, his QTH (IO85OU) being 15 miles SE of Edinburgh, 670ft ASL with a clear take-off in all directions except the south-southeast. He usually leaves his beam pointing NE to monitor beacons GB3VHF, DL0PR, SK4MPI and OY6VHF for signs of auroral activity.

His station comprises a TR9130, MM 100W amplifier and MET 14-ele. Yagi; a Dressler

D200S amplifier is undergoing repair. He operated in auroras on 21, 23, 26 and 30 August, the best being the 23rd and 30th. He mentions that G7GIP/MM is another station to listen for in the North Sea.

Gary Nicholas, GW7EVG (CWD), operated in the Trophy Contest to work a few more counties for the table including G8LNC/P (IOW). On 10 September he contacted GM8OEG (TYS). At G3FPK, domestic commitments have severely curtailed operating opportunities. The tropo on 15 September did not produce the OKs others were working; it was certainly very selective.

There was an ATV contest on 9 September and some stations were using 144MHz for talkback. I assume the rules state that participants adhere to the band plans, so I was surprised to find G4DVM/P using SSB for talkback on 144.131MHz in the exclusive CW section. Hopefully in future the organizers will remind participants about this?

430MHz

Very little input this month. G3IMV is contemplating EME on the band and has been in touch with G4RGK to pick Dave's brains. G4XEN worked G0KTD/P on the Lizard (CNL) on 8 September for his first new square on the band since November 1989.

DEADLINES

Sorry for the shorter than usual column this month and the omission of the Squares Table due to pressure on space. The deadline for **January** is **22 November**. For **February** it is **27 December**, but I suggest you should aim to get copy to me before the Christmas break.

SWL

BOB TREACHER BRS 32525
93 Elbank Road, Eltham, London
SE9 1QJ

DXTV

My piece on DXTV in the September issue appears to have been well received. A number of amateurs and listeners wrote to provide information or comment on how good it was to see DXTV in *RadCom*. Those who provided the most worthwhile comments were BRS93013, G8PG, G0GIR and G0FDT.

Firstly everyone congratulated GM1DSK on his results, and I hope that next year, when we have Sporadic E propagation to provide the pictures, he and others will find time to let me have their results. Unfortunately, I have nothing fresh from GM1DSK to tease readers with this month, and my own activity has been rather sparse apart from some good pictures from Sweden around 1025 on 27 August when the "Kanal 1 - Sverige" testcard was P5 on E2, 3 and 4. As far as I am aware, nothing materialised from Scandinavia on 50MHz.

Readers will recall that I reprinted a caption from Soviet TV. G8PG informs me that it says "Lost Property Office". T H Beedle BRS93013 said that to see DXTV mentioned revitalized his interest, while G0GIR was delighted that someone had actually given some time to DXTV in this magazine. He is very keen on Band 1 and has a very good location at Strood in Kent.

Mike G0FDT provided a log of the DXTV signals he had received through to June. He reported very little activity during July and August although there were occasional openings to Spain, Russia and Yugoslavia. He has been keen on TV DXing for about eight years mainly because of his proximity to Europe at Lowestoft. All his early DX was via tropo. After faring quite well, he decided to do things properly and bought a Triax Twin Grid Bowtie antenna, a masthead preamp and a Salora multi-standard TV. After that he ventured onto Band 1 and acquired a two element Band 1 antenna and a JVC CX50GB colour TV. He can receive NED1 from Lopik on E4 most of the time. He has been active for the last three summers and has received signals from almost every country in Europe, including Albania and Greece, but he has still to see any pictures from Africa or the Middle East.

UK 6 METRE GROUP CONTEST

Norman, G3FPK, referred to this event in the September issue of the magazine. There is an SWL section, and the Turner Trophy will be awarded to the most outstanding SWL entry. Full details can be obtained from Ted Collins G4UPS, who is QTHR.

50MHZ NEWS

Since I penned the last column, 50MHz had been very quiet. David Whitaker BRS25429 caught an opening on 16 August when he heard EA3EHQ/M and FC1EAN/EA (both in JN01). I also caught the same opening but as well as these two stations, I heard I2CSB/7 (JN71), 9H5AA and two CT1's. The opening here started at 2059 and ended at 2142. The only other opening noted in the log was on the morning of 27 August, when 9H5ET and 9H5AA were both heard at 0825, with I0AMU heard at 0835.

David had turned his hand to collecting QSL cards for the band and at the time of writing he had cards from 93 squares in 36 countries. Some of the more impressive have been direct cards from IK2DMF/7 (operating from a boat, some 2 miles of the Italian coast), SV1OE (KM17), SV1DH (KM27), ON1KBU (JN29), SM3JGG (JP71), I7VYU (JN80) and IT9TVF (JM68). I have been rather lax in my QSLing habits of late, so David must be the leading SWL on 50MHz as far as confirmations are concerned as my haul only stands at 61 in 28. Perhaps other 50MHz SWLs can let me know their heard and confirmed totals on the band and I will reproduce them here. With the band capable of so much, it will be interesting to see how the scores are building.

Last November, of course, 50MHz provided some really fine F2 propagation to America and the Caribbean. Predictions are that similar openings will occur this November (I already have a weeks leave booked!). It is impossible to predict with any certainty, but for those keen on the band it is worth checking for African DX at around 1000z and

for USA and Caribbean openings at around 1145. It is also worth mentioning 28.885MHz for Solar news and figures which are so important in determining whether 50MHz is likely to open. If any SWL hears any real DX on the band, write and let me know.

HF NEWS

The Autumn DX season appeared to have started rather early this year, as 28MHz was wide open during the weekend of the WAE SSB Contest on 8/9 September. Once again, 21MHz provided much of the better DX with strong Stateside signals being heard well into the night. The WARC bands also provided some interesting activity, but the LF bands still have their best to come.

Let us start our look at the bands on 14MHz where conditions through August had been quite good in the early morning and evening, but quite poor during the day. My reporters have offered the following as the best DX around on this band - BV5OC, DU1AU, FO4NR, FS/PAOCRA, HC8/HC1LT, HK0EFU, J5CVF, RW0F/UZ90WM (Shikotan Is.), ST0YD, V85JM, YK1AA, ZD7ZY, ZK1TW, ZS9S, ZY8EA (Caviana Is), 4K4/EK0AQ (Gusmp Is), 5H0QL and 7Q7LA.

21MHz had been generally good. In my opinion, the best from some rather long lists were - A61AD, AH3C, BV2FB, BZ4RBC, DU6JS, FR5DX, HZ1AB, J28TY, N6BUD/KH0, OD5SK, P29NMD, PJ6/KV4AD, TG9G1, TL8WD, XU8DX, YB5NOC/P (Tanberlan Is), 3DA0AJ, 4K4/UA6WCG (Andrea Is), 5H0QL, 5Z4TI, 7PBED, 9M2SH and 9X5HG.

28MHz had opened up well both to the East and North America, with South America DX still available at 2100. The best noted this month included BY8WR, FH5EJ, FT4XG, FT5XH, J28RQ, OD5SK, S79MX, VP8BTR, XE2XA, XU8DX, ZS9S (Walvis Bay), 3DA0AY and 7Q7RM.

The WARC bands had provided listeners with some interest. 18MHz had provided CO2CG, FR5EL, S79MX, VP2EXX and XE3AAF. 24MHz had delivered A92BE, V47KTG

and VP2EXX again.

On LF, 3.5MHz had provided VK2AVA, YB0DB, ZL2ANR, JT1CO, FP5DX, RH0E, ZD8Z and 5H3OH. The ZD8 gave Albert Tideswell BRS48462 his 291st country on the band, while 7MHz had netted FP/G3TKN, HR1RMG, OA4CSF/6, OH1RY/OJ0, PJ2WG, ZP5PX, 3VB/C31WW 6Y5IC and 9Q5TE.

DX NEWS

I have noted from a recent issue of *QRZ DX* that there is a Radio Operator's World Atlas available from W0CP. It is a compact desktop reference Atlas which measures 5" x 7" and contains 215 hardbound pages of colour maps and statistics. The price is \$23.95 and it can be obtained from Walt Stinson, W0CP, 4150 East Quincy Avenue, Englewood, Colorado 80110, USA.

Also in *QRZ DX* it seems listeners still have two months in which to qualify for the Linz 500 Award. This Award is available to SWLs who hear stations signing OE5***/500. 500 points must be amassed and each OE5***/500 station heard counts 100 points, stations signing OE5***/500 are worth 40 points, while other OE5's are worth 20 points. If you are lucky enough to hear enough stations, send an extract from your log and 6 IRCs to RACL, PO Box 18, A-4041 Linz, Austria.

DXers will probably know that a big DXpedition is to be mounted to South Georgia and South Sandwich late this month. It is likely that the callsigns will be VP8SSI and VP8SGI. Tentative dates are Nov 20 - Dec 13 for South Sandwich and Nov 24 - Dec 9 for South Georgia. Many listeners need these exotic Antarctic Islands and it is hoped that the trip will happen and that many of us will be able to gain a few new 'band countries' from the expeditions.

Any listener needing Reunion is should look about now for FR0P which was to be aired from the island until 10 November, including the WARC bands. Malpelo Is might well be active early in November. At the time of writing it all hinged on the Columbian Navy providing transport. This is not a country that is activated very often and there must be SWLs who will be looking forward to ticking that one off their wanted lists. Usual DXpedition frequencies will be used.

FINALE

A reminder to let me have your DX news no later than Monday 6 November for the January 1991 issue.

1990 HF Table

Station	DXCC	28	21	14	7	3.5	1.8	Total
BRS25429	269	188	211	242	180	117	53	991
BRS8841	259	192	213	221	141	109	49	925
BRS25209	-	76	110	121	126	83	43	559
BRS1066	158	67	105	125	91	43	37	468
BRS52543	165	66	68	79	120	96	34	463
G1VDW	136	38	83	92	42	20	1	276
BRS32525	122	73	34	64	36	23	-	230
BRS40292	-	29	17	31	33	24	8	142
BRS92755	75	-	-	75	-	-	-	75

With CQWW just passed, I am sure that all listeners in the country must have improved their yearly scores. Why not submit an entry for the table just to show that you support SWL activities?

Do You Have a Query?

● General advice and details on local clubs, or don't know who to contact:-

Your RSGB Liaison Officer. See the *Call Book*, May *RadCom* page 59 or your membership card (if recently renewed).

● RSGB Policy Matters (Zonal Council member):-

Zone A (North of England):

Geoff Smith, G4AJJ, "Greenacres", Sawdon, Scarborough, North Yorks, YO13 9DY.

Zone B (Midlands):

John Allen, G3DOT, 4 Philip Avenue, Waltham, S. Humberside, DN37 0QD. Tel: 0472-825899.

Zone C (SE England and East Anglia):

John Greenwell, G3AEZ, "Eastfield", Henfold Lane, Beare Green, Dorking, Surrey, RH5 4RW. Tel: 0306-77236.

Zone D (SW England):

Peter Chadwick, G3RZP, "Three Oaks", Braydon, Swindon, Wilts, SN5 0AD. Home: 0666-860423.

Zone E (Wales):

John Case, GW4HWR, 2 Abbey Close, Tyrrhiw Taffswell, Mid Glam, CF4 7RS. Tel: 0222-810368.

Zone F (Northern Ireland):

Terry Barnes, G13USS, 95 Crawfordsburn Road, Bangor, Co Down BT19 1BJ. Home: 0247-473948.

Zone G (Scotland):

Ian Suart, GM4AUP, 37 Meldrum Mains, Glenmavis, Airdrie, Lanarkshire., ML6 0QG. Home: 0236-65937.

● Awards:

For contest award winners, please refer to the appropriate contest committee.

For other awards, enquiries and applications go to either:

HF Awards Manager - Steve Emlin-Jones, GW4BKG, P O Box 20, Bridgend, Mid Glamorgan, CF35

IOTA (Islands on the Air) Awards Manager - Roger Balister, G3KMA, La Quinta, Mimbribe, Chobham, Woking, Surrey, GU24 8AR.

VHF and Microwave Awards Manager - Ian Cornes, G4OUT, 6 Haywood Heights, Little Haywood, Stafford, ST18 0UR

Who do you contact for an answer? In most cases there is no need to consult anyone, as 90% of the answers to your questions are to be found in the 130 page Information Directory which forms part of the 1990 *RSGB Call Book*

However, if you feel a letter is the only way to get a definitive answer, are you writing to the best person? To ensure an improved response, we suggest you contact one of the following:-

● Band Plans and operating practices:

See the *Call-book* or Feb 90 *RadCom* for latest bandplans. For policy, contact the appropriate spectrum committee chairman:

HF - Martin Atherton, G3ZAY, 41 Enniskillen Road, Cambridge, CB4 1SQ

VHF - Peter Burden, G3UBX, 18 Langley Road, Merry Hill, Wolverhampton, WV3 7LH.

Microwave - Mike Dixon, G3PFR, Woodstock, Gazebank, Norley, Warrington, WA6 8LL.

● Beacons:

HF - Alan Taylor, G3DME, QTHR.

VHF - John Wilson, G3UUT, QTHR.

Microwave - Graham Murchie, G4FSG, QTHR.

● RSGB Contests:

First contact the contest adjudicator (see the contest rules). For policy, contact the respective Committee Chairman:

HF Contest Committee - Dave Lawley, G4BUO, QTHR.

VHF Contest Committee - Bryn Llewellyn, G4DEZ, 110 South Avenue, Southend-on-Sea, Essex, SS2 4HU. Home: 0702-460747.

Direction Finding Committee - Brian Bristow, G4KBB, QTHR.

● EMC:

Advice on solving breakthrough and other electromagnetic compatibility matters:

EMC Coordinator (see Dec 89 and June 90 *RadComs*)

Committee Chairman: Bob Peace, G8SOZ.

National helpline: 0537-593449.

● Exhibition & Rally Committee:

Organises trade shows at NEC, VHF Convention and Woburn Rally.

Chairman: Norman Miller, G3MVV, "Avon", Gardiners Lane, Crays Hill, Billericay, Essex, CM11 2XA.

● Intruder Watch:

Non-amateur service operation in exclusive amateur radio bands.

Acting Co-ordinator - Martin Atherton, G3ZAY, 41 Enniskillen Road, Cambridge, CB4 1SQ

● Licensing:

RSGB Policy - John Bazley, G3HCT, "Brooklands", Ullenhall, Solihull, Warwickshire, B95 5NW

Government policy/licence conditions and interpretations - Amateur Radio Section, Room 613, Radiocommunications Agency, Waterloo Bridge House, Waterloo Road, London, SE1 8UA. Tel: 071 215 2316.

Renewals and payments - Radio Amateur Licensing Unit, Post Office Counters Ltd, Chetwynd House, Chesterfield, Derbyshire, S49 1PF. Tel: 0246 217555/217699.

● Membership Liaison:

Committee Chairman - Geoff Smith, G4AJJ (see above).

● Morse Practice Transmissions (GB2CW):

Co-ordinator - Mike Thayne, G3GMS, 14 Tynedale Avenue, Monkseaton, Whitley Bar, Tyne & Wear, NE26 3BA. Home: 091 252 6138.

● Novice licence:

John Case, GW4HWR (see above).

● Packet Radio:

Mailboxes - Neil Lasher, G6HIU, 40 farm Road, Edgware., Middx, HA8 9LT

Nodes - Dave Hough, G4WRW, 1 Foxe Rd, Frampton, Cotterell, Bristol, BS17 2AE.

General enquiries - Ian Suart, GM4AUP, 37 Meldrum Mains, Glenmavis, Airdrie, Lanarkshire., ML6 0QG. Home: 0236 65937.

● Planning

Need for permission and how to apply - booklet free to members from Membership Services at RSGB HQ.

Planning application refused - RSGB Planning Panel, via RSGB HQ.

● Project YEAR:

Encouraging youngsters into amateur radio.

Co-ordinator - Hilary Claytonsmith, G4JKS, 115 Marshalswick Lane, St Albans, Herts, AL1 4UU. Tel: 0727 59318.

● Propagation Studies Committee:

Chairman - Geoff Grayer, G3NAQ, "Bagatelle", 3 Southend, Brightwalton, Newbury, Berks, RG16 0BE. Home: 0235-446511

● QSL Bureau:

Outgoing cards - RSGB, PO Box 1773, Potters Bar, Herts, EN6 3EP

Incoming cards - your QSL sub-manager (see p44 June *RadCom*)

● Raynet:

Group Information - Mike Barker, G8CAC.

Zonal Co-ordinator & Talk-through permits - Ian Jackson, G8RWH.

Emergency Planning & Vice Chairman - John Witts, G6BBW.

Press Officer - Ronald Cowan, GM4SRL.

Public Relations - Trevor Emery, G3KWU.

Chairman - Philip Howarth, G3YAC, 1 Clay Close Lane, Impington, Cambridge, CB4 4NE.

● Repeaters:

All repeater enquiries should be referred to the Repeater Zonal Co-ordinator in which the repeater is sited, as follows:-

North of England - Phil Coates, G0COA, Tel: 0924 848803.

Midlands - Alan Marwood, G8SSL, Tel: 0602 202562.

SE England and E Anglia - Mike Hastings, G8ASI, Tel: 0923 265734.

SW England - Fergus McGilp, G8URB.

Wales - Dave Brown, GW4NQJ, Tel: 0686 640814.

N Ireland - Dr David Hutchinson, G14FUM, Tel: 0849 464672.

Scotland - Colin Dalziel, GM8LBC, Tel: 0698 281847.

Special Projects - Dave McQue, G4NJU, Tel: 0908 378277.

TV Repeaters - Graham Shirville, G3VZV, Tel: 0525 290343.

Chairman - Geoff Dover, G4AFJ, 31 Newbold Rd, Kirkby Mallory, Leics, LE19 7QG. Tel: 0455 823344.

● Spectrum abuse:

Amateur Radio Observation Service Co-ordinator - Geoff Griffiths, G3STG, 11 The Grove, Asfordby, Melton Mowbray, Leics, LE14 3UF.

● Technical queries:

Peter Chadwick, G3RZP, "Three Oaks", Braydon, Swindon, Wilts, SN5 0AD. Home: 0666-860423.

● Trophies:

Mrs Hilary Claytonsmith, G4JKS, 115 Marshalswick Lane, St Albans, Herts, AL1 4UU. Tel: 0727-59318.

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In *TT* (January 1989) I wrote: "In so often advocating a KISS approach to amateur radio generally and home-constructed equipment in particular, I am acutely aware of the paradox presented by the increasing availability of medium, large and very-large scale integrated circuits (MSI, LSI, VLSI). These often provide extremely complex circuitry yet represent to the constructor relatively simple devices requiring a minimum of external passive components."

This view was expressed with specific reference to an article "Simple receivers from complex ICs" by Bill Parrott, W6VEH which dealt with the Signetics/Philips NE602-series of ICs. These with their double-balanced mixer, built-in oscillator and buffer devices could be used, inter-alia, in the construction of simple, reasonable-performance direct-conversion and superhet HF receivers, including single-band receivers forming part of compact, low-power transceivers. As described, for example, in "An NE602-based QRP transceiver for 20-meter CW" by Rick Lit-

TOPICS

PAT HAWKER G3VA

tlefield, K1BQT, *Ham Radio*, January 1989 and briefly noted in *TT*, April 1989, using three NE602 devices.

As reported in *TT*, September 1990, pp30-31, some amateurs have expected too much from the NE602 when used as a front-end device; it does have a strong signal performance appreciably worse than that now offered in some high-cost factory receivers and transceivers with their claimed 100dB-plus dynamic ranges. Yet (*vide* W7SX): "Because of its very high performance/power ratio, the 602 is an ideal choice for portable, MF direct-conversion and superhet receiver designs... it offers outstanding performance (80dB-plus dynamic range) when you consider its simplicity, power requirements, size and cost." The dynamic range will be further extended when the drop-in replacement NE602A becomes available but that should not deter us from using the current device, which I note was advertised in the September issue by The Chip Shop, priced £2.84.

One of those who have been attracted by the facilities offered by this device is Mike Grierson, G3TSO. His attention was first attracted by its use in the simple spectrum analyser unit for which Al Heltrik, K2LBA won an RF Design

Award; *RF Design*, January 1988, *TT* April 1988 with subsequent notes in *TT* July, August, September, November 1988 and with the NE602 retained by Roger Blackwell, G4PMK, for his improved design fully described in *RadCom*, November 1989.

G3TSO writes: "I have experimented with the NE602 as a receiver mixer and whilst many may scorn its performance, it is exceedingly useful in the construction of simple receivers giving very satisfactory results. When combined with the Plessey SL6700 it is possible to make a very simple superhet receiver, far simpler and superior in performance to many of the direct-conversion receivers which appear so popular, especially amongst the kit constructors. The addition of a suitable audio IC makes possible a three-chip receiver capable of about 1 μ V sensitivity and able to drive a loudspeaker.

"Fig 1 shows the circuit of a simple 3.5MHz receiver which draws very little current, the audio IC could be changed to a 6V type for battery operation. In my case the receiver forms the receive side of a miniature transceiver using a second NE602 as the transmit mixer, with the VFO contained in the receive NE602 buffered by an external FET and fed to the transmit NE602 via pin 7.

"The major limitation of this design is the 455kHz IF, making image responses a problem at higher frequencies; however, it is perfectly satisfactory for 3.5 or 1.8MHz. The use of a relatively cheap 2.4kHz ceramic filter gives good sideband performance and excellent (communications) quality if used on transmit. The receiver

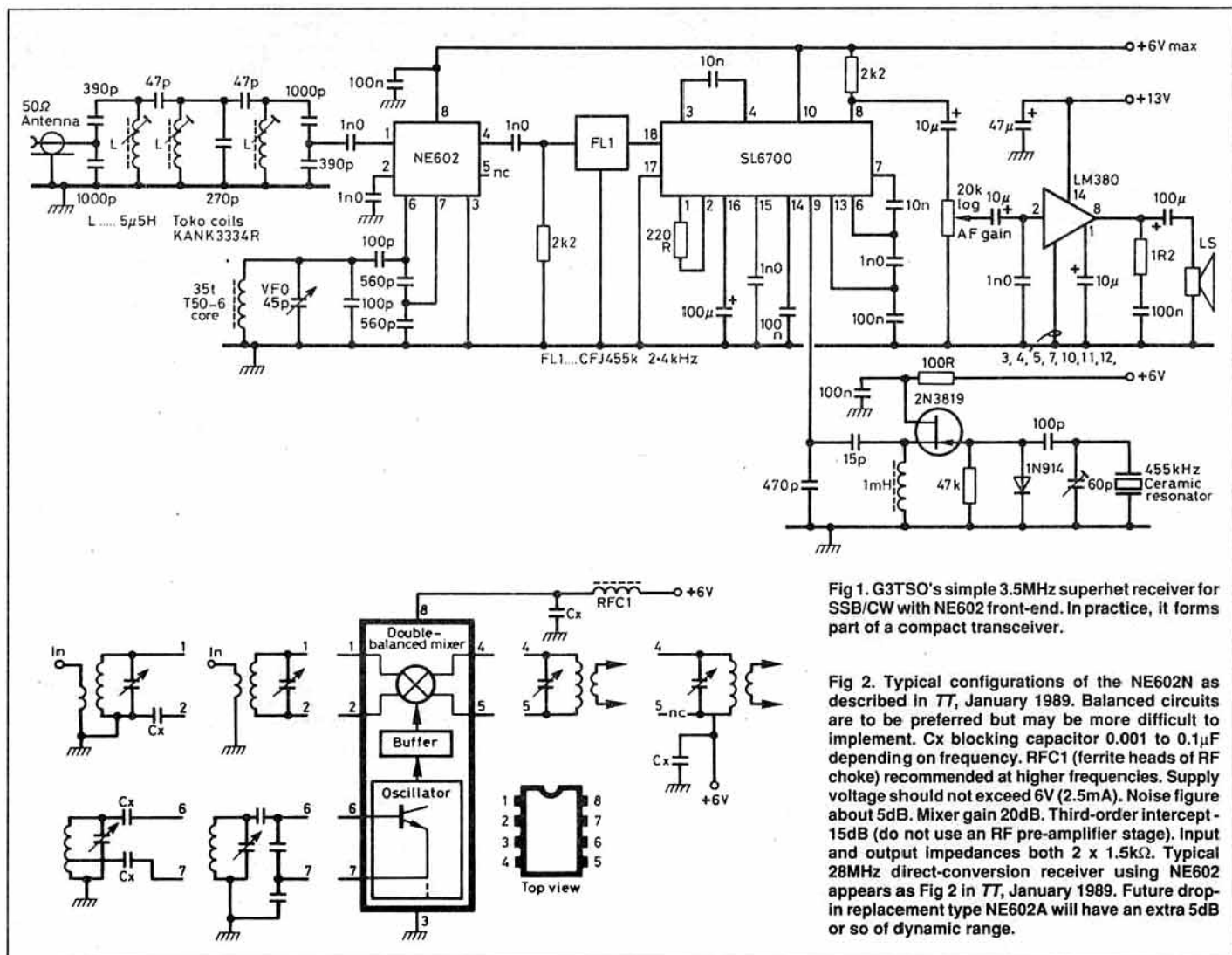


Fig 1. G3TSO's simple 3.5MHz superhet receiver for SSB/CW with NE602 front-end. In practice, it forms part of a compact transceiver.

Fig 2. Typical configurations of the NE602N as described in *TT*, January 1989. Balanced circuits are to be preferred but may be more difficult to implement. Cx blocking capacitor 0.001 to 0.1 μ F depending on frequency. RFC1 (ferrite heads of RF choke) recommended at higher frequencies. Supply voltage should not exceed 6V (2.5mA). Noise figure about 5dB. Mixer gain 20dB. Third-order intercept -15dB (do not use an RF pre-amplifier stage). Input and output impedances both 2 x 1.5kΩ. Typical 28MHz direct-conversion receiver using NE602 appears as Fig 2 in *TT*, January 1989. Future drop-in replacement type NE602A will have an extra 5dB or so of dynamic range.

has RF derived AGC, and AM output is available from the SL6700 if required (see Plessey Application Notes). The input RF filter is broadband using three Toko inductors and polystyrene capacitors. A ceramic resonator is used for the 455kHz carrier-insertion/BFO oscillator.

Others have found that although the simple 'kit' DC receivers are surprisingly effective they do suffer from serious disadvantages including the absence of suppression of the unwanted sideband on SSB channels and the corresponding 'audio image' on CW. This does not mean that direct-conversion is inherently inferior to the superhet approach since a phasing-type demodulator can be used, but this does involve considerable additional complexity. Phasing-type SSB demodulators capable of good sideband suppression over the full audio bandwidth (eg 300-4000Hz), with its performance maintained over a wide range of temperatures, are not constructor-friendly circuits, although a number of practical circuits have been described in *TT* and elsewhere: see for example the use of several op-amps as all-pass phase delay elements in *TT*, September 1988.

Surprisingly little attention has been given in the past to the considerable simplifications possible when the accurate quadrature (90°) phase difference needs to be maintained only over the relatively small audio bandwidth involved in CW reception. Tim Walford, G3PCJ has been developing a direct-conversion CW phasing receiver as part of a 7MHz CW transceiver. Although not as yet at a stage to go public he has measured a 54:1 (35dB voltage) suppression over the whole of a restricted audio bandwidth of 750 +/- 300 Hz using a phasing-type arrangement based on two NE602 ICs with relatively simple lead/lag networks, involving about two extra chips and one transistor compared to the usual form of DC receiver.

Incidentally, Tim Walford, G3PCJ has put together a kit (price £35) for the Mk II power-FET amplifier, using four VN88AFD devices capable of giving up to about 50W PEP output up to 30MHz. This amplifier attracted a number of enquiries and the availability of a kit should ease the problem of acquiring the components. His address is Upton Bridge Farm, Long Sutton, Langport, Somerset TA10 9NJ; telephone Long Sutton (045 824) 1224.

MORE ON STABLE OSCILLATORS

DR MIKE KING, G3MY, was interested in VK5QG's Q-Gate FET oscillator (*TT*, January and March 1990) as some years before he had developed a basically similar oscillator for use in a remote VFO in a mobile SSB transceiver that he built at the time. He writes: "In my version (Fig 3) there is a low-value resistor between source and the coil tap and this enables the oscillator to be run at normal drain voltage. With 9V on the drain, output at the source is about 4V pk, more than adequate to feed a conventional two-stage feedback buffer amplifier. I have since used this arrangement in a number of my QRP transceivers. The output of the buffer amplifier is quite sufficient to drive a heat-sinked VN10KM VMOS to 2.5 - 2W output on various bands from 3.5 to 14MHz."

On the general topic of stable, variable frequency LC oscillators, it has been emphasised many times in *TT* that no matter what form of oscillator is used, the final limit to stability is the tank circuit. In the June *TT*, S M Dyke, G3ROZ, commented on the difficulty of constructing LC oscillators really suitable for SSB reception above 20MHz: "With the temperature variations found

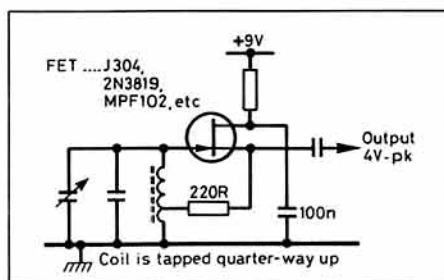


Fig 3. G3MY's version of the Q-Gate FET variable oscillator developed many years ago is suitable for use from 9V supply. Coil wound on T37-6 toroid core in G3MY's portable QRP transceiver.

in a garden-shed shack it is very difficult; for mobile operation near impossible." It was then pointed out that much depended on the selection of materials used as coil formers and their mounting. It was pointed out that KW Electronics had made effective use of formers fashioned from Belling-Lee electronic-fire element material.

One of the most detailed accounts that I have come across of precautions taken in developing accurately stabilised band-switched oscillators for use at the temperatures involved in hermetically-sealed, valve-type communications receivers dates back to an article by JA Knight of AT & E (Bridgnorth) Ltd. This described the development of the Services HF Receiver, type R210 (which still turns up as a useful 'surplus' receiver), and was published in the *ATE/BICC* journal of the early 1960s. The R210 is a single-conversion superhet (IF 460kHz) covering 2-16MHz in seven bands, enclosed in a hermetically sealed (dry air) robust aluminium alloy die-cast panel and case. Although not designed for SSB reception, great care was clearly taken in stabilising the local oscillator, based on a CV850/6AK5/EF95 pentode valve. The R210 calls for a local oscillator covering roughly 2.5 to 16.5MHz, in its seven bands.

J A Knight wrote: "Development then turned to a stable free-running oscillator. Investigation into the temperature coefficient of various variable capacitors showed that one commercially available type gave a small and consistent positive drift with increase in temperature of approximately 5 to 10 parts per million. It is interesting to note that this is a straight-line capacitance unit with the rotor plates forming a true semicircle about the driving shaft. There is no unbalanced overhang of the plates and no bonding strip, which in some capacitors is of dissimilar materials. The capacitor is all brass with a simple ball race at each end, and it has the added advantage of being quite small . . . by splitting the frequency coverage into seven bands it was possible to use a reasonable amount of parallel capacitance in addition to the trimmers and switch 'strays'. Providing this capacitance has a consistent temperature coefficient it adds to the stability, by swamping valve and other capacitances.

"To obtain consistent results all the compensating capacitors had to be in one unit of say -30ppm/°C. This gave better results than a large mica capacitor of +5 to +50ppm shunted with a small capacitance of large negative temperature coefficient, say -750ppm.

"This receiver uses -150+/-20 ppm/°C capacitors to compensate the three low-frequency coils. The four high-frequency coils have in addition -30+/-20ppm/°C capacitors. On the HF band, which in practice appeared to be the least difficult to compensate, the parallel capacitor is 180pF.

"The third important factor is the oscillator coil

itself. Not only had it to be a stable inductance, but a number of coils had to fit neatly round the waveband switch, with trimmers in accessible positions. The coil-formers required tags to support rigidly both the wires of its own turns and those to the switch. The capacitance trimmer also had to be supported.

"In many receivers the RF coils are designed to screw on a metal dividing screen, with their tags passing through it. Since it is quite unnecessary to screen the coil from its own switching circuit this only adds to the stray capacitance. Any movement of the wires near to this screen will cause extra uncontrolled drift.

"The coil-former has an extended base, which carries both the tags and capacitance trimmer. Two tapped holes in the side of this base mount it so that the axis of the coil is parallel to the screen. The capacitance trimmer mounts through a hole in the base, and solders into a raised earth tag underneath . . . seven of these formers are mounted round an Oak type of switch with short and rigid connections . . .

"The coil-former is moulded in Nylon-loaded Bakelite, and has the anchor ring that has been incorporated in coil-formers made at Bridgnorth for the past ten years. This consists of a washer punched in high-grade Bakelite sheet, with a projecting key that locates in a slot moulded into the former. By passing wire through holes in this ring it is possible to secure it at any point on the former and obtain a good winding tension with no fear of it slipping when stoved for drying and varnishing. The four holes in this ring are always in line with the tags moulded in the former so that the wires go directly from the tapping point over the ring to the tags. This keeps the coupling and stray capacitance consistent. A thin version of the ring is used for tapping to the middle of a coil, and another (normal) one for terminating it . . . Bands 6 and 7 are threaded at 16 turns per inch and have a positive temperature coefficient of 12 ppm/°C. Bands 4 and 5 at 32 tpi and have a positive temperature coefficient of 26 ppm/°C. Bands 1, 2 and 3 have a plain former with a positive temperature coefficient of 55 ppm/°C. All coils are adjusted with a 6mm threaded dust-core. They have concentric-type trimmers. The antenna, mixer and oscillator sections are each mounted on a common metal pressing, which also forms the valve platform. The individual sections are wired before being fitted with gang mounting bracket and screens. The three right-angle cross braces make the unit into a very rigid box section . . .

Most high-performance communications receivers of that era used double-conversion, often with a crystal-controlled HF oscillator and with the second oscillator spanning only a small range of frequencies without band-switching. With the precautions taken in the R210, it was claimed that "the frequency drift compares favourably with that of crystal-controlled oscillators. The specially selected variable tuning capacitor and the sealing of the receiver with dry air also contribute to a thermal drift of less than 0.002% per °C."

While few home-constructors would expect to undertake a similar degree of development work, it does show that switched-oscillators can provide excellent stability at least up to 16MHz and cope with a wide range of temperatures. But clearly great care is needed.

SQUARE AND DELTA LOOP ANTENNAS

TT SEPTEMBER described some of the useful, multiband properties of closed square loop antennas with sides of 0.25λ, mounted in horizontal

or vertical plane. It seems worth adding some follow-up comments applicable to HF, VHF and UHF designs.

A basically similar antenna to that described by W1FB (77, September Fig 2) is discussed in 'The full-wave 80-metre loop antenna - revisited' by Paul D Carr, N4PC in CQ, August 1990. He uses a 272ft perimeter ('almost square') horizontal loop suspended at about 50ft from pine trees. He concludes: "There are only three antennas for any amateur - the one you had, the one you have presently, and the one you plan to build. This antenna has helped to postpone the one I plan to build."

N4PC reminds us that the virtues of horizontal loops were described by Dave Fisher, W0MHS in 'The Loop Skywire', QST, November 1985, an article sub-headed 'Looking for an all-band HF antenna that is easy to construct, costs nearly nothing and works great DX? Try this one!'. W0MHS suggested that: "There is one wire antenna that performs exceptionally well on the HF bands, but relatively few amateurs know about it or use it... what one user has described as the 'best kept secret in the amateur circle'.... Since 1957, I have used this antenna (Fig 4) in many locations with great success every time." He dismisses the idea, held by some, that the horizontal loop is basically a high-angle radiator. In fact, the vertical angle of radiation, like that of other horizontally polarized antennas, depends on the height of the loop and even a 25ft high loop should prove effective as a DX antenna above 14MHz. It is worth looking at the vertical radiation patterns shown in the September 77, Fig 3.

W0MHS used a co-axial cable rather than open-wire transmission line, providing some useful constructional hints and showing also how the antenna could be used effectively on the 1.8MHz band as a top-loaded vertical antenna: Fig 5.

Dr Mike King, G3MY is another advocate of closed loops. He writes: "Over the years I have used nothing but closed loops on the HF bands, having a great liking for the low-Q characteristics of this type of antenna. This interest started in 1963 while on holiday in Cornwall. I was using an end-fed 3/4 wave antenna tuned against a 1/4 wave counterpoise and realised that the end of the bent wire and of the counterpoise were in phase, so I decided to see what would happen if I joined the ends together. I will say only that on my return home that triangular loop went up, supported by two trees and the house. It stayed up for more than twenty years.

"More recently, I developed what I call the HOVER loop which I described in *Sprat* (issue Nr 54, Spring 1988). I hope that Fig 6 makes the format and feed method clear. Suffice to say that it has been used effectively on all bands from 1.8MHz to 28MHz and has given me 85 countries in 6 continents using QRP (3W or less).

"Hover" comes from HORIZONTAL/VERTICAL, and the *Sprat* description makes its operation a little clearer:

The HOVER loop is basically a full-wave wire loop antenna cut to the usual loop formula $L = 1005/f$ where f is the frequency in MHz and L the length in ft. The physical form is an inverted V with the apex at 60ft. Each leg of the V is about 60ft long with an apex angle of about 110°. The rest of the length comprises a low horizontal V at some 12 to 15ft above the ground. The feedpoint is at the apex of the inverted V. The feeder comprises two equal lengths of low-loss UHF TV coax cable, giving a screened balanced 150Ω feedpoint. Measurements have shown that the loop has a feedpoint resistance of about 110

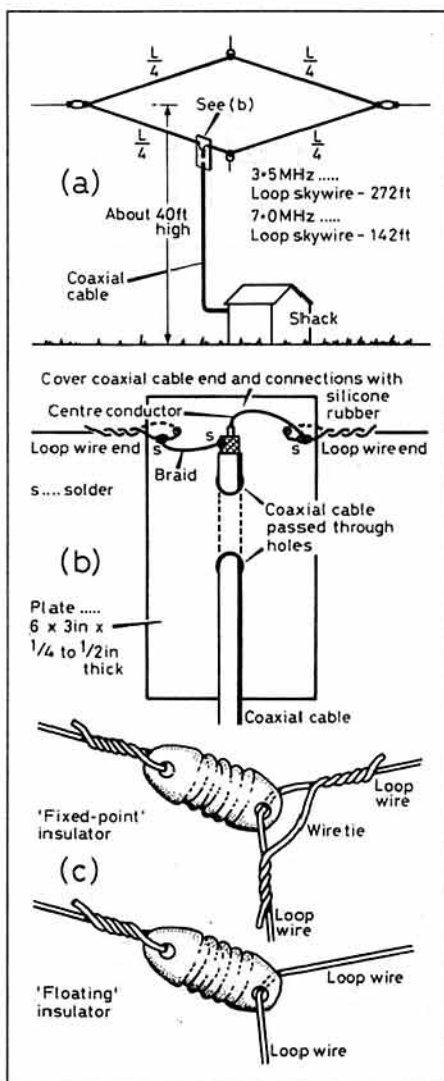


Fig 4. The W0MHS "Loop Skywire" horizontal loop antenna as described in QST, November 1985.

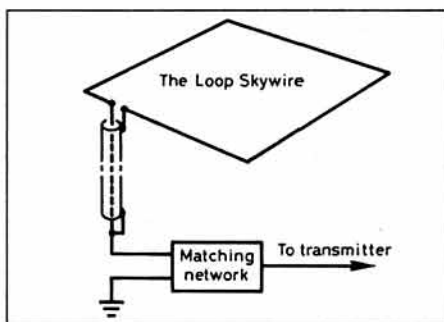


Fig 5. Feed arrangement for the loop as a top-loaded vertical antenna on lower frequency band.

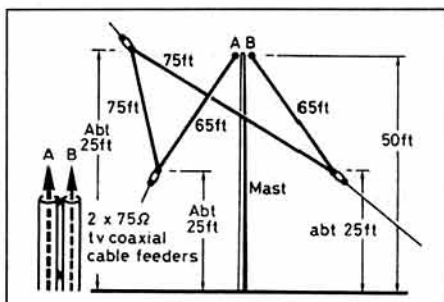


Fig 6. G3MY's 'HOVER' loop effective on 1.8 to 28MHz. Two equal lengths of 75Ω coaxial cable provide a 150Ω balanced screened feed to the apex (A-B) of the inverted-V section of the loop. Use a balun at the ATU, or an ATU with balanced output.

ohms on 3.5MHz, rising to around 220-250Ω on 28MHz. If a valve-type power amplifier is used, the two feeders can be brought into a simple 1:1 balun on the back of the transceiver, and the pin-network will then match it satisfactorily. When using a solid-state PA, I use a small QRP Z-match to tune out the reactance on higher frequency bands.

On 1.8MHz it is possible to use the antenna in one of two modes: (1) As a 'fat' quarter-wave against earth with the two feeders in parallel to give a 37.5-ohm feeder; or (2) The lines can be tuned at the bottom end to give a voltage feed to the two free ends of a half-wave antenna. Although this puts a high SWR on the line, the losses do not seem excessive.

Large single-turn resonate loop antennas mounted in the vertical plane have a long history. Some interesting work was reported in the 1930s by L S Palmer and D Taylor (University College, Hull) in *Proc IRE*, January 1934, pp93-114. They noted that:

"When a frame or loop aerial is tuned, the current produced in it by a passing wireless wave will be increased many hundred-fold compared with the current produced in an untuned frame of the same dimensions. With wavelengths which are long in comparison with the dimensions of the frame, the only other method of increasing the current is to increase the area of the frame. If the length of the wave is of the same order as the dimensions of the frame then it is found that the current, even in a tuned frame may be still further increased by many hundredfold not by increasing the area of the frame, but by critically adjusting the ratio of the frame dimensions to the wavelength. In a previous communication this process was described (Palmer & Moneyball, *Proc IRE*, August 1932, pp1345-67) and a theory outlined which accounted for the experimental values of the critical ratios of frame-height/wave-length (H/λ) and frame-width/wavelength (W/λ) for which the received current became abnormally large."

In effect, this adjustment resulted in the two vertical wires being in phase resulting in a directive antenna in the plane of the frame. The 1934 paper extended the work to transmitting loop antennas, using a VHF transmitter on about 5-6 metres with an adjustable framework that allowed rectangular loops of differing aspect ratios to be investigated. To quote again from the paper:

"For the particular case of radiation along the earth's surface in the plane of the frame, both of the (above) equations are satisfied simultaneously only by a frame of dimensions $H = 0.40\lambda$ and $W = 1.0\lambda$ and for no other dimensions (less than 1λ). If the radiation be as great for the same applied electromotive force. If the transmitting frame receives reflected waves from the ground there will be another set of critical dimensions, namely $H = W = 0.47\lambda$ for which the radiation (or re-radiation in this case) will be a maximum."

RUSTY-BOLT/PASSIVE INTERMODULATION PRODUCTS

ARE YOU BOTHERED by PIMPs? Don't get me wrong, as music-hall comedian Max Miller might have said. I am referring, of course, to passive intermodulation products (PIMPs) generated by non-linear materials and metallic contacts, commonly termed the 'rusty-bolt' effect. This subject was dealt with at some length in 77, May 1989, page 33 'Rusty-bolt TVI' and page 35 'Tracing rusty-bolt and diode interference'. The

second of these items included details of an RF sniffer used by W6BUY to trace a difficult case of TVI which ultimately proved to be caused by overlapping lengths of wire mesh buried between the plaster and the boards in his house walls. Fortunately, only rarely is TVI caused by harmonics generated in such non-linear external junctions, not necessarily connected directly to the transmitter or antenna system. But, as noted then, this problem is much more common and more important for professional mobile base stations or other multi-transmitter installations where a single mast may support the antennas of half-a-dozen transmitters liable to be operating at the same time; in such circumstances rusty-bolt rectification can result in even two transmitters generating literally hundreds of intermodulation products any of which can seriously affect reception of incoming signals.

Bob Anderson, G4AEV draws attention to a recent ten-page article 'Passive intermodulation interference in communication systems' by Pak-Leng Lui (The University, Canterbury) in the IEE's *Electronic & Communication Engineering Journal*, June 1990, pp109-118. This deals exhaustively with this topic, including references to a large number of previous investigations.

This paper is introduced as follows: "In multi-frequency communications environments, such as land mobile radio sites, satellite earth stations, ships and surveillance aircraft, passive intermodulation products (PIMP) generated by nonlinear materials and metallic contacts can cause serious radio interference. This problem is well known and a wide range of coaxial cables, connectors and materials have been investigated. This paper gives an overview of passive intermodulation interference in communication systems. It describes briefly the theory of intermodulation, types of passive non-linearities, mechanisms responsible for the generation of PIMP, guide-lines for minimising PIMP generation and techniques for locating PIMP sources. Previous investigations of PIMP are summarised and the design of PIMP measurement systems is discussed. An example of PIMP measurement is also included."

It would be foolish to attempt to summarise in a few words this very detailed paper. It does, however, note that there are three main areas where intermodulation can occur: in transmitter output stages due to the non-linearity of power amplifier circuits; in the receiver input stages, due to the non-linearity of the mixer and RF circuits; and in nonlinear materials and nonlinear metallic contacts, such as corroded and/or loose contacts in coaxial cables, waveguides, connectors, multi-couplers, wire fences, tower and mast assemblies.

Suggested guide-lines for minimising PIMP generation include:

- nonlinear materials should not be used in or near the current paths. If for some reason they have to be there, they should be coated with linear materials.
- keep the current densities low in the conduction paths by using larger conductors or having bigger contact areas between metals.
- minimise metallic contacts, especially loose contacts and rotating joints. If these cannot be avoided, then provide insulators or alternative current paths at the contacts or joints. Also minimise the exposure of loose contacts, rough surface and sharp edges to radiated signals.
- keep thermal variations to a minimum as the expansion and contraction of metals and materials can create nonlinear contacts.
- use bonded joints if possible, but make sure that these joints are good and have no nonlinear

BAND-SWITCHED DIP METER

Doug DeMaw, W1FB (*QST*, July 1990, pp18-20) describes 'An experimental band-switching dip meter'. This has a cable-plus-probe designed to make resonance testing and wave-meter measurements less awkward than with the usual technique of holding the dipper coil close to the circuit concerned. Band-Switching eliminates the need for a set of plug-in coils which tend often to be missing when wanted. The range of the unit shown in Fig 7 is about 2 - 20MHz, but W1FB points out that with two extra switch positions this could be extended to cover 1.8MHz and up to 30MHz. He also recommends the use of a

shorting-type band-switch rather than as shown. Similarly, UHF JFETs such as the 2N4416 could be used instead of the two dual-gate MOSFETs with their gates tied together. The design is presented "purely as an experimental gadget" based on W7ZOI-type 'ugly construction' (components glued to board). It includes provision for attaching a frequency counter to provide more accurate readings than the direct calibration of the slow-motion tuning dial.

R1, shown as 8.2K, needs to be selected to limit the meter sensitivity and to prevent the pointer hitting the peg when the sensitivity control (R2) is turned up. This value may need to be increased if a 12V supply is used or a more sensitive meter fitted.

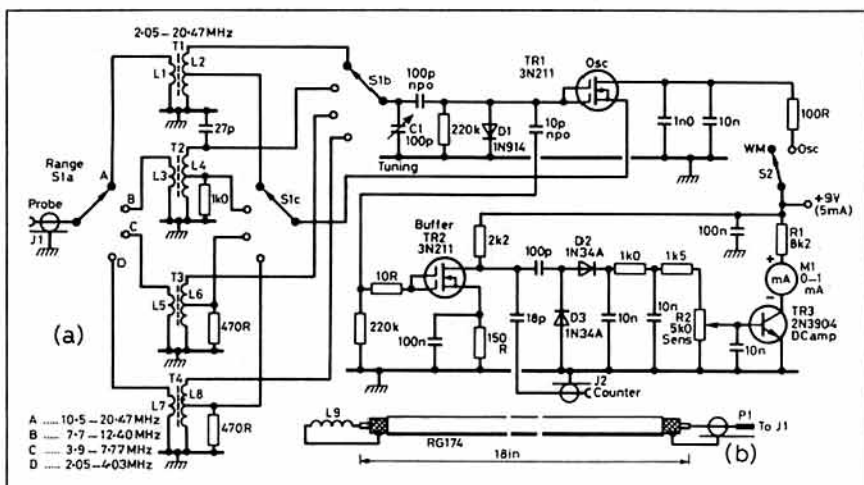


Fig 7. W1FB's experimental band-switched dip meter with probe (b). Fixed capacitors are disc ceramic. C1 10-100pF air variable. L1 2t, No26 enam. over earthy end of L2 21t, No26 enam (1.8μH) on T-50-6 toroid with tap 5t from earthy end. L3 2t No26 enam over earthy end of L4 28t No26 enam (2.8μH) on T-50-6 toroid with tap 5t from earthy end. L5 4t No26 enam over earthy end of L6 49t No26 enam (16μH) on T-68-2 toroid with tap at 12t from earthy end. L7 3t No22 over earthy end of L8 36t enam (90μH) on FT-82-61 toroid with tap 8t from earthy end. L9 (probe) 8t No22 bare or enam wire spaced one wire diameter between turns 3/8-in ID. Coil can be close-spaced if enamelled wire is used. TR1, TR2, 3N211 or 40763 or JFET (see text). R2 linear-taper 5K carbon-composition. S1 three-pole, four-position ceramic rotary two-wafer switch. S2 SPST toggle switch.

materials, cracks, contamination or corrosion. ● avoid having tuning screws or moving parts in the current paths. Keep all joints and contacts clean and tight, and if possible keep them free from vibration.

● cable length, in general, should be minimised and the use of quality and low PIMP cables is essential.

● minimise the use of nonlinear components, such as lumped dummy loads, circulators, isolators and some semiconductor devices.

● achieve good isolation between the high-power transmit signals and the low level receive signals by filtering and physical separation

● frequency planning should take account of the higher-order products as they can be potential interference signals in some communication systems.

In addition to these general guide-lines, P L Lui stresses the need for careful planning, good workmanship, stringent quality control and a high standard of maintenance.

It will be appreciated that few amateur radio installations, with a single transmitter and single receiver used sequentially, would need to adopt fully such stringent guide-lines in normal circumstances, but they form a useful check list when problems are encountered.

On the other hand, PIMP problems may read-

ily affect the operation of repeaters, particularly those located on shared masts where it is important not to add to the problems that may already exist, affecting reception of both amateur and professional users; in this case the guidelines may need to be studied carefully and rigorously observed, especially those relating to co-axial cables and their connectors.

Recently, D A R Naylor, G3GHI (4 Cullisden Road, Kenley, Surrey, CR8 5LR) queried whether there is any available information on the benefits (or disadvantages) of the different finishes available for N connectors, plugs and sockets etc. While I imagine that he was thinking mainly of the weather aging effects on signal losses, incoming and outgoing, I suspect that the different characteristics would affect also the generation of PIMPs. P L Lui provides a large number of references to previous papers reporting studies of PIMP interference as it relates to components and materials, including coaxial cables and connectors. On cables, he notes that RG-58C/U is a good choice among many types of coaxial cables because of its linearity, light weight and low cost: "However, if cost is not an important factor, then the double-screened, silver-plated RG-214U may be considered. Silver-plated steel cables should not be used because the nonlinear hysteresis effects in steel can generate a significant level of PIMP."



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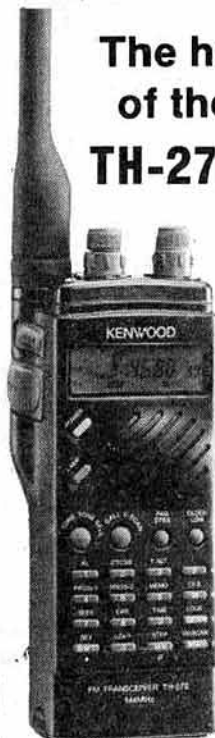
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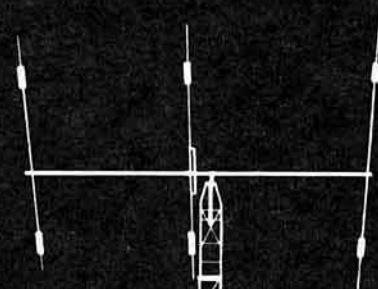
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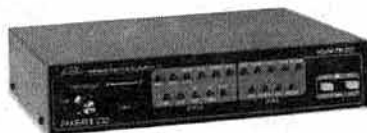
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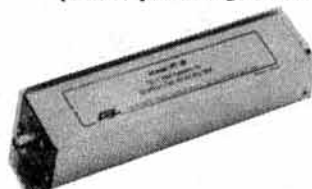


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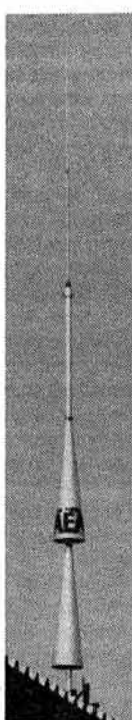
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A Wideband Monitor Receiver for Top Band to Two Metres

The conclusion of a two part article by Ian Braithwaite, G4COL

CONSTRUCTION

THE PHOTOGRAPH SHOWS the construction of my receiver. Rather than producing printed boards, I used "colander ground plane" prototyping board, details of which are given in the component list. It has copper ground plane on one side, a matrix of holes on a 0.1 inch pitch, and square pads on the other side. Despite its fairly high cost, it is very useful for prototyping RF circuitry and very neat results can be achieved quite quickly. Do not apply the soldering iron to the pads for too long, otherwise they can detach. Layout should follow the circuit diagram, using short lead lengths. Connections between the pads can be made with fine tinned copper or insulated wire. a wiring pen is very handy for this job.

Alternatively the circuitry can be built so-called "ugly" fashion [2] over a piece of plain copper-clad board, ground connections being taken directly to the copper. Despite appearances, very effective circuitry can be made this way.

The local oscillator needs careful construction to achieve good stability over at least a few minutes. This means good mechanical stability and avoidance of air currents. Circuitry up to and including Tr3 should be built into a diecast box. Toroidal inductor L1 can be mounted on a tap washer and sandwiched firmly parallel to the board with a fibre washer and nut and bolt. All board-mounted components should be pushed firmly to the board to avoid vibration. The variable capacitor is secured to the box wall and connections to it made with heavy gauge wire. The oscillator box can be mounted on pillars, care being taken when drilling the front panel and base to align the capacitor spindle and reduction drive so that the bearing is not stressed.

Fig 7 shows toroidal transformer T1. The necessary close coupling between the wires of the trifilar winding can be achieved by giving them a few twists per inch using a hand drill, with a vice to clamp the free ends.

TESTING

AN OSCILLOSCOPE AND frequency counter can be very useful, but this section is written for those with just a reasonable multimeter. A diode probe RF detector (Fig 8) is also well worth the few minutes taken to build it.

Set S2 to 'internal oscillator' and check for oscillation in the VFO, indicated by a negative gate voltage on Tr1 due to rectification by D1. A 10K Ω resistor in series with the multimeter may be helpful in reducing its effect on the oscillator, but should not be necessary as the impedance is quite low at this point. The diode probe should give about 0.5 volt at Tr3 collector. The level here is not critical provided IC1 is being switched properly, when pins 3 & 4 should be at about 2.5V DC rather than 0 or 5V, as should IC3 pins 3, 12 and 13.

The sampling pulse generator can be tested and even a rough estimate of pulse width obtained by a very simple technique illustrated in fig 9, provided a voltmeter is available which can read down to a few millivolts. First, the DC coupled peak detector is used to check that IC3d

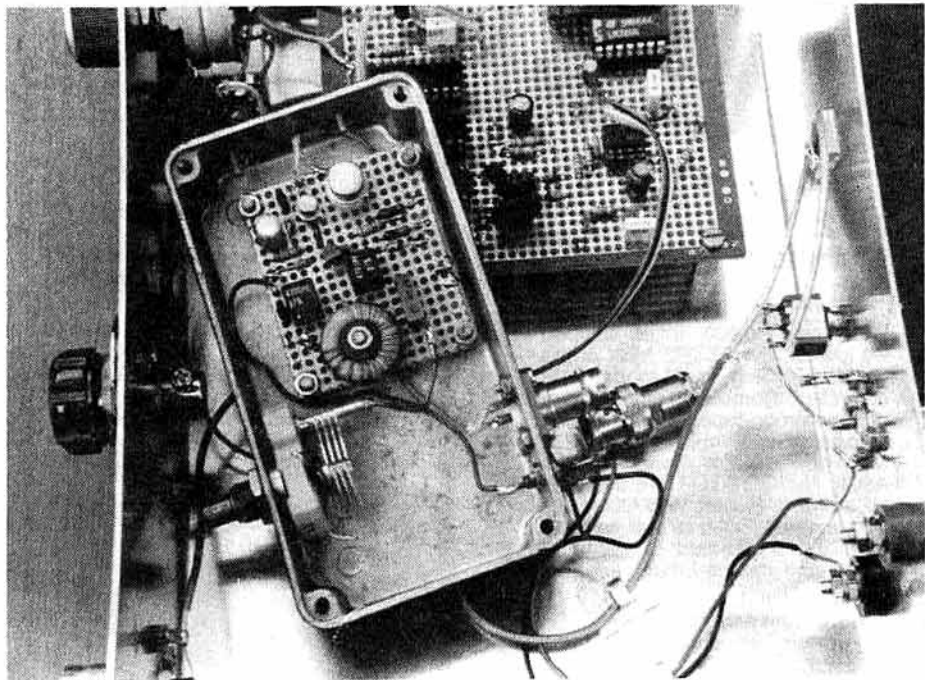


Fig 6: Some views of the author's monitor receiver

pin 8 is reaching close to 5V at the peak of the pulse. Then the average voltage is measured with the low-pass filter. This should be in the low mV region. I measured 2.5mV which gives a pulse width at 50KHz of 10 nanoseconds (cf 8nS with the spectrum analyser). Even if the meter is not accurate at low voltages, a large difference between peak and average readings indicates likely success.

IC4 output should be close to half the 12V supply rail. A hiss should be heard in the headphones with the volume control advanced and when dabbing a finger on IC4 pin 3 mains hum should be heard.

If a low level continuous CW signal from, say, a crystal oscillator, is connected to the receiver input, it should be possible to tune for an audible beat note. The higher the input frequency, the faster the tuning rate, and the more points on the dial at which beats occur. For instance, a 10MHz signal should give beats at four or five points on the dial. This provides a rough check on VFO frequency coverage.

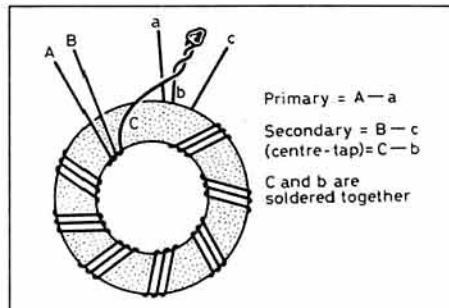


Fig 7: Toroidal transformer construction

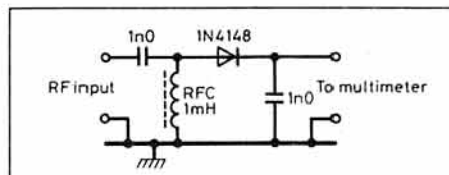


Fig 8: RF detector or diode probe

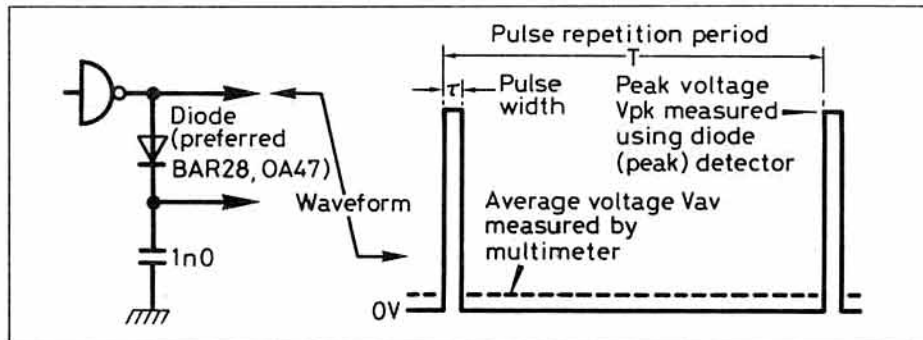


Fig 9: Estimating sampling pulse width

COMPONENT LIST

Signal Generation

Resistors (1/4 watt 2% tolerance metal film or similar):

R1	100k	R7	100R
R2	1k	R8	100k
R3	220R	R9	100k
R4	3k3	R10	220R
R5	22R	R11	51R
R6	100R		

Capacitors:

C1	25p air-spaced variable (Jackson C804A series)
C2	470pF polystyrene
C3	4n7 polystyrene
C4	4n7 polystyrene
C5	33µF (or 47µF) 16V miniature electrolytic
C6	10nF ceramic disc
C7	100pF ceramic plate
C8	10nF ceramic disc
C9	100nF ceramic disc
C10	100µF 16V miniature electrolytic
C11	10nF ceramic disc

Diodes:

D1	BAR28 Schottky diode
D2	BZY88C5V6 zener diode

Transistors:

Tr1	J310
Tr2	2N2219
Tr3	2N2369

Integrated Circuits:

IC1	74HC390
IC2	78L05 voltage regulator
IC3	74HCOO

Switches:

S1	Single pole toggle (or part of switched volume control)
S2	Single pole change-over switch

Ferrite Bead: FX115

Diecast box: suggested size 120 x 65 x 40mm

Feedthrough capacitor: for 12V supply to VFO in diecast box;

InF screw-in type (not shown on circuit diagram)

IC Sockets: For IC1 & IC3 (if desired), 16 and 14 pin respectively.

Board material: colander ground plane board (from Verospeed, Boyatt Wood, Eastleigh, Hants. SO5 4ZY. Tel 0800 272555, stock no for 100 x 160mm board: 03-2990F)

RF Socket:

SK1 BNC chassis socket.

RF Input and Audio

Resistors (1/4 watt 2% tolerance metal film or similar):

R12	51R
R13	47k
R14	47k
R15	47k
R16	1M
R17	100k
R18	1k
R19	100k logarithmic potentiometer.

Capacitors:

C12	10nF ceramic disc
C13	100nF ceramic disc
C14	33pF ceramic plate
C15	33µF (or 47µF) 16V miniature electrolytic
C16	100pF ceramic plate
C17	100nF ceramic disc
C18	33µF (or 47µF) 16V miniature electrolytic
C19	100pF ceramic disc
C20	100nF ceramic disc
C21	100nF ceramic disc
C22	47µF 16V miniature electrolytic
C23	1000µF 16V miniature electrolytic

Diodes:

D3	BAR28
D4	BAR28

Integrated circuits:

IC4	LF351 or TL071
IC5	LM380

IC sockets: for IC4 & 5 (if desired) - 8 & 14 pin respectively.

Transformer T1:

10 turns trifilar on high permeability toroid such as FT 37-61 (from SMP [TMP Electronics], Unit 27, Pinfold Works, Pinfold Lane, Buckley, Clwyd.)

Sockets:

SK2	BNC chassis socket
SK3	Headphone jack

Miscellaneous:

Vernier dial

Knob for volume control

Terminal post (2 off) for 0 and 12 volts

Case (eg J14, 204mm wide, by 153mm deep, by 76mm high) from Minford Engineering, Sun Street, Ffestiniog, Gwynedd, LL41 4NE

Unless otherwise indicated, components should be available from Maplin Electronic Supplies or Circuit Holdings.

USING THE RECEIVER

FOR OFF-AIR USE, a small, inefficient antenna such as a short whip can be connected to the receiver input. There is some leak of local oscillator pulses from the receiver input every 50KHz to beyond 200MHz. Because the energy is spread among so many frequencies, the power in each one is very small and depends to some extent on sampling mixer balance. In my model, the worst component measured 40µV (-75dBm) so the risk of interference is slight.

Monitoring with antenna can result in distant stations being picked up, so a more direct connection to the transmitter is desirable and RF pickoff as shown in fig 10 can be used. Keep the receiver input below about 100 millivolts (-7dBm) to avoid receiver distortion. This may need additional attenuation. I made up a switched attenuator [2 & 3], which is also useful in its own right so I did not build it into the receiver. For example, if the pickoff with its 30dB attenuation is used with a 10W (40dBm) transmitter, at least 17dB of additional attenuation is required. You can check for distortion by introducing extra attenuation. If no change in sound quality results, apart from more noise when the volume control is advanced to restore the sound level, the receiver is almost certainly not being over-driven.

The receiver can also be used to assess the frequency stability of a transmitter or oscillator. For best results, use a crystal oscillator at around 5MHz as the external local oscillator, and apply the source under test to the input socket, tuning it for a low beat note. Drift can be heard directly as a change in note. Although this does not give the numerical results, it has the advantage of simulating operation on the air, and can provide the pleasant surprise that while stability of a few Hertz per hour is attainable, it is generally unnecessary. Also, short term jitter, which is very apparent to the ear and must be dealt with, may be missed on a counter with a long gate time.

The receiver can be used with a return loss bridge [2] to tune an antenna system for minimum VSWR (fig 11). First tune the receiver for an audible beat and then adjust the antenna tuner for a null. Very low power can be used, so other band users are not disturbed.

The crude indication of frequency provided by tuning rate can be used to identify harmonics and spurs. Harmonics give weaker responses than the fundamental, at intermediate tuning points, the second appearing at the mid point, and the third giving two equally spaced intermediate points. Use an attenuator to check that the harmonics are not generated by the receiver. Receiver generated harmonics will decrease rapidly with a small increase in attenuation.

Spurious signals can often be distinguished by their instability which produces an unsteady audio note.

Monitoring the audio quality of one's own SSB transmissions, which might be thought a non-starter, is perfectly practical using headphones, the voice seeming quite disembodied. Be prepared for shocks - you may not be too impressed with the narrow signal processing bandwidth, and you may find that your normal gain setting and speaking position a bit over the top!

REFERENCES

- 1) *Sideband slip-ups* by "Eavesdropper", RadComm, July & September 1988.
- 2) *Solid State Design for the Radio Amateur* by Hayward & DeMaw, ARRL.
- 3) *Radio Data Reference Book* by G R Jessop, RSGB.

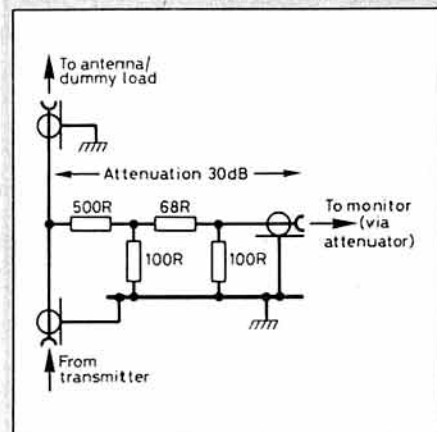
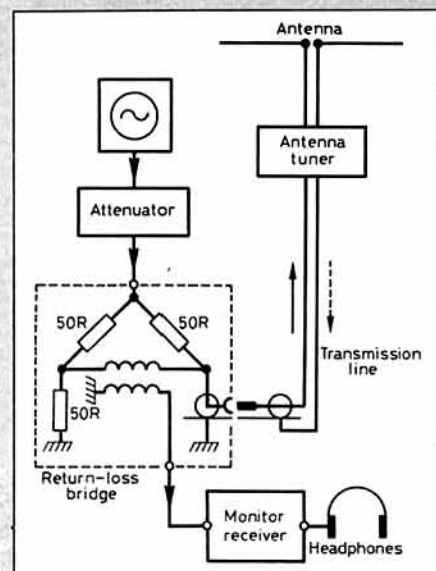


Fig 10: RF Pickoff

Fig 11: Using the receiver to tune up an antenna



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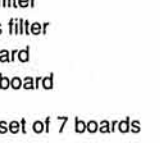
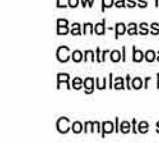
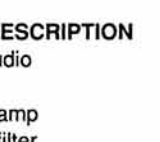
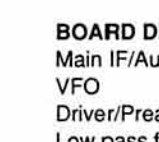
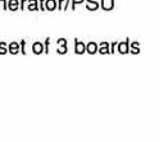
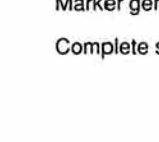
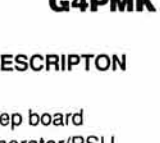
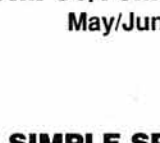
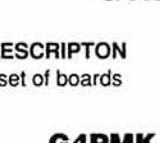
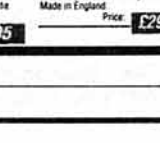
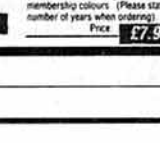
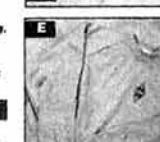
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November 1989

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Marker generator/PSU	118947b	£4.49
Complete set of 3 boards	1189SSA	£14.38

G3TXQ TRANSCEIVER

February/March 1989

BOARD DESCRIPTION	CODE	PRICE
Main IF/Audio	028945	£11.50
VFO	028946	£5.46
Driver/Preamp	028947	£6.33
Low pass filter	028948a	£7.48
Band-pass filter	028948b	£4.60
Control board	038942a	£5.18
Regulator board	038942b	£2.30
Complete set of 7 boards	0289TXQ	£27.03

All prices include postage and packing.

Please note these PCBs are not available from RSGB HQ, but direct from Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield B74 4JF. Tel: 021-353 9326

REPORT AND ACCOUNTS AND THE YEAR IN REVIEW

for the year 1 July 1989 to 30 June 1990

RADIO SOCIETY OF GREAT BRITAIN

(COMPANY LIMITED BY GUARANTEE)

LAMBDA HOUSE, CRANBORNE ROAD, POTTERS BAR, HERTS EN6 3JE

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§ Retired 31 December 1990

Solicitors - Douglas-Mann & Co.

Bankers - Barclays Bank PLC

Financial Report of the Radio Society of Great Britain for the year ended 30th June 1990

The financial year has been a very difficult one for the Society due to the large number of changes which have taken place in connection with Society operations: some have been within the control of the Society, like the installation of the new computer, but others have not and much effort has been expended in performing damage limitation. Apart from having to deal with increasingly severe effects due to inflationary changes in the economy, the Society has had to overcome disruption in three of its departments as a result of staff changes. As in any organisation, large changes in personnel incur disproportionately high expenditure during the transition phase and this unfortunately has been borne out by events.

The annual accounts show a deficit of some £126,282 before the tax provision of £5,000. This unsatisfactory result has arisen due to an unexpected shortfall in income coupled to an expenditure fuelled by a high inflation rate. The Society is particularly dependent upon subscription income and this fell in real terms due to increasing numbers of eligible members taking reduced subscriptions, an overall reduction in numbers and a sub which has not kept pace with inflation. Advertising was moderately successful despite a difficult market and book sales improved but with much lower margins due to higher processing costs. Bank interest, yard rental, exhibition space and donations make up other income which was satisfactory despite reduced cash reserves.

Overall expenditure was particularly unsatisfactory being above budget in most departments. It should be noted however, that significant items of expenditure which were not fully provided for in the previous year have had an adverse effect on the accounts. Substantial extra costs were incurred in the RadCom department during the first six months of the year especially since the change of Editor in October. The imposition of strict financial controls resulted in the resignation of four members of the RadCom team including the Editor. Fortunately, a new editorial team which was recruited from within HQ has been able to produce RadCom in a cost effective way.

As reported previously (February 1990 RadCom) the internal Accountant was made redundant and an external Accountant was appointed to supervise the accounting functions of the Society and, in particular, to produce accurate monthly management accounts in conjunction with the HQ Accounts Manager. This achievement was dependent upon the installation and integration of a number of software packages on the new AS400 computer; due to the interlinked nature of the in-house software this task has proven to be a very complex one. Although a number of procedures are now fully operational, the efficiencies which were expected from a fully integrated system have yet to be realised. In these circumstances, management accounts were inevitably produced late leading to poor financial control during the year. Action has now been taken to alleviate these effects but not in time to materially affect the annual accounts. Members will be pleased to hear that the problems experienced early in the year concerning late VAT, PAYE, staff pension and insur-

ance payments were easily resolved by the new Accountant and have not re-occurred.

The cost of operating from Lambda House increased during the year but, in many respects, these charges are still lower than might be expected for this size of property. Following the retirement of Ted Allen, the General Manager supervised the installation of the QSL Bureau in Lambda House where its operation has been streamlined and its cost effectiveness improved. Despite this additional activity, the building and yard are not fully utilised by the reduced size of the HQ operation and, as a result, part of the yard has been leased to generate income. It was during these negotiations that it was apparent that Lambda House was under-valued.

Council has agreed that the Balance Sheet should indicate the true worth of the Society and several items have been re-assessed to that end. Firstly, the freehold land at Potters Bar has been revalued to the benefit of the tangible fixed assets (note 2 refers). Secondly, our accounting policy on subscriptions has been changed from an accruals basis to a cash basis, which reduces the current liabilities. Thirdly, the amounts due to Lambda Investment have been waived and the debt cancelled. The net effect of these changes is to show a true worth for the Society of just under £840,000.

This strong balance sheet position could quickly be eroded if deficits continue year upon year. Council is determined to put the Society back onto a sound financial footing but this will obviously involve some element of sacrifice by all; staff, members and volunteers alike. A number of staff, including the General Manager, have been released during the year but further economies will be required to contain expenditure. As pointed out in last year's report, the failure to maintain our membership levels inevitably means that the many, many services provided free to our members (and in some cases non-members) will either have to be reduced or individually levied. Subscription rates will have to increase and the differentials for those on reduced subscriptions may have to be reduced.

The topic of voluntary donations is regularly raised at the AGM and those amateurs who value the Society's successful attempts to look after their interests at UK level and worldwide may like to contribute in this positive way, perhaps to a Building Fund, to help to maintain and develop the Society's most precious fixed asset, Lambda House.

The next financial year will present Council with its most difficult challenge in recent times. The Society must operate first and foremost as a successful business, providing only those services which it can afford. At a time when Project YEAR and the Novice Licence show promise for increased interest in amateur radio, a determined effort by members to recruit amongst new and existing amateurs could rapidly make the Society as successful and benevolent as it was in recent times.

RADIO SOCIETY OF GREAT BRITAIN

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 30 JUNE 1990

			1990		1989
	Notes	£	£	£	£
INCOME					
Subscriptions (inc Newsletters)	(1) ...		658,975		649,345
Advertising	(1) ...		219,739		205,707
Book Sales			308,567		281,712
Other Income	(5) ...		81,114		74,127
TOTAL INCOME			<u>£ 1,268,395</u>		<u>£ 1,210,891</u>
EXPENDITURE					
Cost of Sales					
Cost of printing & distribution (Books etc)		204,262		172,064	
Cost of publishing & despatch staff		69,322		66,541	
Cost of printing & distribution (Newsletters)		32,239		28,062	
Morse Tests		8,395	314,218	9,760	275,827
Headquarters					
Rates, lighting, heating & cleaning		33,589		29,175	
Repairs & maintenance		8,908	42,497	4,969	34,144
Administration					
Cost of administration staff/accounting		305,580		262,912	
Telephone, postage, printing & stationery		72,122		67,481	
Insurance		8,162		4,070	
Hire & maintenance of equipment	(7) ...	45,573		38,257	
Depreciation of fixed assets	(1) ...	35,501		23,566	
Audit fees		5,000		10,100	
Audit fees - 1989 underprovision		9,200		—	
Legal fees		12,666		7,557	
General expenses		3,216	497,020	3,886	417,829
Finance					
Bank charges		14,662		9,532	
Credit card charges		4,826		4,240	
Bad debt provision		1,398		—	
Exchange differences		—		(2,119)	
Finance Lease interest charges		3,146	24,032	—	11,653
Membership services					
Radio Communication	(8) ...	416,054		369,116	
Certificates, awards, trophies, etc		8,191		2,925	
QSL Bureau		21,873		21,637	
Beacons, repeaters, satellites & Intruder Watch		7,443		8,331	
IARU Region 1 contribution & levy		14,585		13,005	
Rallies, exhibitions and publicity	(9) ...	(600)		4,911	
Cost of committee, regional & Council meetings		33,383		36,954	
Cost of international meetings & conferences		7,078		2,146	
Cost of Annual General Meeting		8,303	516,109	10,572	464,686
TOTAL EXPENDITURE			<u>£ 1,394,677</u>		<u>£ 1,204,139</u>
(DEFICIT)/SURPLUS ON ORDINARY ACTIVITIES BEFORE EXCEPTIONAL COSTS			(126,282)		6,752
Exceptional costs of 75th Anniversary			—		(29,698)
DEFICIT ON ORDINARY ACTIVITIES BEFORE TAXATION			(126,282)		(22,946)
Less provision for corporation tax	(9) ...	(5,000)		(5,000)	
Release of deferred taxation provision		—	(5,000)	2,000	(3,000)
DEFICIT FOR YEAR			<u>£ (131,282)</u>		<u>£ (25,946)</u>
Overprovision for corporation tax in prior year			6,226		—
Investment in subsidiaries written off			(200)		—
DEFICIT TRANSFERRED AGAINST RESERVES			<u>£ (125,256)</u>		<u>£ (25,946)</u>

RADIO SOCIETY OF GREAT BRITAIN

BALANCE SHEET AS AT 30 JUNE 1990

	Notes	1990 The Society £	1989 The Society £	1989 The Society and subsidiaries £
FIXED ASSETS				
Tangible assets	(1)(2)	860,185	434,713	434,713
Investments	(3)	—	200	—
		<u>860,185</u>	<u>434,913</u>	<u>434,713</u>
CURRENT ASSETS				
Stocks, at lower of cost and net realisable value		100,441	103,609	103,609
Trade debtors		113,912	90,002	90,002
Prepayments and accrued income		18,372	99,264	99,264
Cash at bank and in hand		10,605	33,336	35,335
		<u>243,330</u>	<u>326,211</u>	<u>328,210</u>
CREDITORS: AMOUNTS FALLING DUE WITHIN ONE YEAR				
Obligations under finance leases		(19,874)	—	—
Bank Overdraft		(18,041)	—	—
Trade creditors		(41,470)	(95,710)	(95,710)
Amounts due to subsidiary companies		—	(215,117)	—
Corporation tax		(5,000)	(4,000)	(4,000)
Other taxation and social security		(18,996)	(10,998)	(10,998)
Other creditors		(21,503)	(9,442)	(10,559)
Accruals and deferred income		(16,699)	(34,639)	(34,639)
		<u>(141,583)</u>	<u>(369,906)</u>	<u>(155,906)</u>
Subscriptions in advance		(50,000)	(307,222)	(307,222)
		<u>(191,583)</u>	<u>(677,128)</u>	<u>(463,128)</u>
NET CURRENT LIABILITIES		<u>51,747</u>	<u>(350,917)</u>	<u>(134,918)</u>
Total assets less current liabilities		<u>911,932</u>	<u>83,996</u>	<u>299,795</u>
CREDITORS: AMOUNTS FALLING DUE AFTER MORE THAN ONE YEAR				
Corporation tax payable 1 July 1991	(9)	(5,000)	(5,000)	(5,000)
Obligations under finance leases	(7)	(67,906)	—	—
PROVISIONS FOR LIABILITIES AND CHARGES				
Deferred taxation	(1)(9)	—	—	—
		<u>£ 839,026</u>	<u>£ 78,996</u>	<u>£ 294,795</u>
ACCUMULATED FUNDS				
Income and expenditure account				
Balance at 1 July 1989 as previously stated		78,996	120,952	336,751
Prior year adjustment		—	(16,010)	(16,010)
		<u>78,996</u>	<u>104,942</u>	<u>320,741</u>
Deficit from Income & Expenditure Account		(125,256)	(25,946)	(25,946)
		<u>(46,260)</u>	<u>78,996</u>	<u>294,795</u>
Revaluation Reserve	(2)	350,000	—	—
Special Reserve	(10)	317,946	—	—
General Reserve	(11)	217,340	—	—
		<u>£ 839,026</u>	<u>£ 78,996</u>	<u>£ 294,795</u>

(The notes on pages 42 and 43 form part of these accounts)

Approved by Council on 22 September 1990
and signed on its behalf by:

F. Hall GM8BZX, President
W. J. McClintock G3VPK, Hon. Treasurer

NOTES ON THE ACCOUNTS

1. Accounting policies:

- (a) Subscriptions - cash received in respect of subscriptions for the year has been apportioned on a time basis from the actual dates subscriptions were receivable, after deduction of VAT, but see note 10 below for a change in accounting policy for 1990/91 onwards.
- (b) Advertising income is the net amount receivable, after deduction of VAT, for advertisements in *Radio Communication*.
- (c) Depreciation - tangible fixed assets, except freehold land, are written off using the straight-line method over the estimated useful lives at the following rates, based on cost:
 - Freehold building - 2 per cent per annum
 - Furniture - 10 per cent per annum
 - Equipment - 20-25 per cent per annum
 - Computer - 20 per cent per annum
 - Leased Assets - over the lease period
- (d) Deferred taxation is provided, using the liability method, in respect of timing differences which are not expected to continue for the foreseeable future.

2. Tangible fixed assets

	Leased Assets Computer Equipment and Programmes	Freehold Land and Buildings	Furniture, Equipment and Computer programmes	Total
Cost	£	£	£	£
At 1 July 1989	—	417,572	106,093	523,665
Additions	96,644	—	14,329	110,973
Revaluation	—	350,000	—	350,000
At 30 June 1990	£ 96,644	£ 767,572	£ 120,422	£ 984,638
Depreciation				
At 1 July 1989	—	44,457	44,495	88,952
Charge for the year	7,596	6,080	21,825	35,501
At 30 June 1989	£ 7,596	£ 50,537	£ 66,320	£ 124,453
Net book value				
At 30 June 1990	£ 89,048	£ 717,035	£ 54,102	£ 860,185
At 30 June 1989	—	£ 373,115	£ 61,598	£ 434,713

Freehold land included above amounts to £450,000 (1989: £100,000)

The freehold land was professionally valued on 19th June 1990 and the increase reflected in the accounts. A transfer of £350,000 has been made to re-valuation reserve in respect of this increase. The freehold buildings have not increased in value and the Balance Sheet figure is considered an accurate reflection of their value.

3. Fixed asset investments

	1990	1989
Shares in group companies at cost	—	£ 200

The subsidiaries were Lambda Investment Company Limited (an investment company) and RSGB (Raynet) Limited, (which has been dormant since incorporation), both Registered in England. The share capital of both companies comprises ordinary shares which are wholly owned by the Society.

Both subsidiaries were struck off the live register at Companies House during the year due to an administrative error. Lambda Investment Company Limited has subsequent to the Balance Sheet date, been reinstated and the inter-company debt extinguished. The Balance Sheet reflects the cancellation of the debt and the investment in subsidiaries.

4. Legacy fund

	1990 £	1989 £
Balance at 1 July 1989	—	326
Transfer to RSGB Legacy Fund Trust	—	(326)
Balance at 30 June 1990	—	—

The Balance held on the Legacy Fund was transferred to the Trustees of the RSGB Legacy Fund Trust during the year ended 30th June 1989.

5. Other income includes bank interest of £2,731 (1989 £8,879)

6. Total staff costs

	1990 £	1989 £
Wages and salaries	327,448	338,180
Social security costs	29,996	31,142
Pension costs	7,288	8,016
	£ 364,732	£ 377,338

The average number of persons employed by the Society was 28 (1989:31) divided into the following categories:

	1990	1989
Headquarters	21	25
Radio Communication	5	4
QSL Bureau	2	2
	28	31

7. Obligations under Finance Leases

	1990 £	1989 £
Gross obligations under Finance Leases	119,419	—
Less: Finance Charges allocated to future periods	31,639	—
	<u>£ 87,780</u>	<u>—</u>
Due within twelve months	19,874	—
Due between the second and fifth year	67,906	—
	<u>£ 87,780</u>	<u>—</u>

8. Radio Communication expenses comprise the whole of the costs of printing, distribution and the cost of editorial staff.

9. The Society is liable to pay corporation tax on its investment and trading income. No provision for tax deferred owing to the effects of capital allowances is necessary at the balance sheet date. The potential taxation liability, not provided for in these accounts, in respect of capital gains rolled over is £37,500.

10. Special Reserve

Subscriptions in advance at the year end have been transferred to the credit of Special Reserve to take account of a change in accounting policy, the Council of the Society having agreed to change from an accruals basis of accounting to a cash basis for subscriptions only. £50,000 has been left in subscriptions in advance as this relates to monies received as a result of moving to a common renewal date and will be credited to the Income and Expenditure Account in the year ended 30th June 1991.

11. General Reserve

The amounts due to a wholly owned subsidiary company, Lambda Investments Company Limited, has been waived by the directors of that company and the debt cancelled.

12. The Society operates a defined contribution pension scheme. The costs of the scheme are held separately from those of the Society in an independently administered fund. The pension cost charge represents contributions payable by the Society and amounted to £7,288 (1989 £8,016). All contributions due for the year had been paid to the fund at the year end.

STATEMENT OF SOURCE AND APPLICATION OF FUNDS FOR THE YEAR ENDED 30 JUNE 1990

	1990 £	1989 £
SOURCE OF FUNDS		
(Deficit) for the year before taxation	(126,282)	(22,946)
Donations received (less payments made) from legacy fund	—	(326)
Corporation tax refund	6,226	—
	<u>(120,056)</u>	<u>(23,272)</u>
Adjustment for items not involving the movement of funds:		
Depreciation	35,501	23,566
Waived debt due to subsidiary company	217,340	—
Total funds generated from operations	132,785	294
APPLICATION OF FUNDS		
Purchase of fixed assets	(110,973)	(23,860)
Corporation tax paid	(4,000)	(5,559)
	<u>£ 17,812</u>	<u>£ (29,125)</u>
MOVEMENT IN WORKING CAPITAL		
Stocks	(3,168)	(132)
Debtors, prepayments and accrued income	(56,982)	20,174
Creditors, accruals, deferred income and subscriptions in advance	118,734	27,962
	<u>58,584</u>	<u>48,004</u>
MOVEMENT IN NET LIQUID FUNDS		
Cash balances less bank overdraft	(40,772)	(77,129)
	<u>£ 17,812</u>	<u>£ (29,125)</u>

REPORT OF THE AUDITORS TO THE MEMBERS OF THE RADIO SOCIETY OF GREAT BRITAIN

We have audited the accounts set out on pages 40 to 43 in accordance with auditing standards. In our opinion the accounts, which have been prepared under the historical cost convention, give a true and fair view of the state of affairs of the Society at 30 June 1990 and of the deficit of income and its source and application of funds for the year ended on that date and has been properly prepared in accordance with the Companies Act 1985.

"Goddards"
London Road
Sunningdale
24 September 1990

PETER GODDARD & CO.
Chartered Accountants

The Year in Review - Secretary's Report

Highlights of the Activities of the Society - 1 July 1989 to 30 June 1990

This year's report will serve to highlight the positive work which the RSGB has achieved during the year.

On the amateur radio front the Society has again gone from strength to strength. Excellent work has been done with respect to Project YEAR - which represents the future of amateur radio. Liaison with the Radiocommunications Agency - formerly the DTI - has advanced the status and privileges of UK radio amateurs.

As mentioned in last year's report, the financing of the Society's ambitious programme of membership services has been a problem. New facilities such as the new HQ AS400 computer and a better *RadCom* have contributed to the financial year deficit, as has the increasing level of inflation in the UK. However, measures have been taken by Council to address the difficult economic situation in which very many companies and indeed the UK itself are in. Inevitably, with inflation now at some 10% per annum membership fees have to rise as well as the necessary economies within the Society itself. The generosity of Council in wanting to help the young and the old also has to be reviewed in the light of the present UK economic situation.

Looking to the future, RSGB has begun work on preparing for the 1992 World Administrative Radio Conference which could affect the future of amateur radio.

Project YEAR

Visits to clubs, questions at exhibitions and rallies, letters to HQ and much other feedback indicates that the Project YEAR momentum is increasing. The awareness of the message that, to survive, amateur radio needs more young licensed amateurs is capturing the imagination of more and more people.

The main focus of Project YEAR work during the year under review has been on the Novice Licence. On 20 July 1989 the Immediate Past President, Sir Richard Davies, G2XM, presented the Minister with the RSGB's Novice Licence Proposals, on the occasion of the Society's very first Industry Conference which was jointly hosted by the DTI and RSGB. These events were reported in the September 1989 edition of *RadCom*. This event in itself gave rise to good press coverage in *Electronics Weekly* and *The Independent*, as well as a programme on Capital Radio.

On 17 August 1989 the RSGB met DTI officials to discuss the Novice Licence. A number of further meetings followed and in April 1990 the DTI issued a Press Release giving details of the Licence document itself.

Other aspects of Project YEAR are progressing well. The recruitment video being made in conjunction with Yorkshire TV (reported elsewhere in this issue) has progressed well and should be available in early 1991. Project YEAR books are also well in hand. A second pilot edition of *DIY-Radio* was produced in April 1990 which has maintained the standards and interest set by the first pilot edition. On the equipment front, the Society discussed basic standards with the DTI in March 1990 and has since held an initial meeting at RSGB HQ with manufacturers.

Most of the Project YEAR work will come together in the Spring/Summer of 1991 when it is anticipated that the first Novice Licences will be issued using the '2' prefix callsigns; an exciting prospect indeed.

Licensing and RA liaison.

Progress and activities can be summarised as follows:-

- Full privileges on 18 and 24 MHz granted on 1 July 1989.
- Many more countries have granted 50 MHz facilities following the lead provided by the RSGB/UK administration.
- More countries have joined the CEPT licensing agreement - TR61-01.
- RSGB has negotiated a much expanded list of countries to which greetings messages can be sent during 'JOTA' and 'Thinking Day on the Air'.
- The amateur community has been consulted on the question of future UK callsign series. The RSGB has fed back much information to the RA through a series of meetings.
- Novice callsigns have been agreed.
- The RSGB has been closely involved with meetings to address the harmonisation of exams for radio amateurs. This will eventually help to achieve better reciprocal licensing privileges.
- The first series of HF packet mailboxes were licensed in March 1990 and arrangements for packet radio in general have remained under discussion.
- At the invitation of the RSGB, the RA sent a representative to the IARU Conference in April 1990.

- The RSGB reformed its Amateur Radio Observation Service in May 1989 under the co-ordination of Geoff Griffiths, G3STG. The importance of this service in tackling the abuse of repeaters and packet radio by a tiny group of very vocal people is appreciated by the Society; as is the full co-operation of the Radio Investigation Service.
- From 1 June 1990 all RSGB slow morse transmissions utilised the callsign GB2CW.
- On 2 April 1990 the Radiocommunications Division of the DTI became the independent Radiocommunications Agency.
- Full privileges for part of the 160m band were discussed.

WARC 1992

In 15 months time there will be another major ITU Conference which could well affect some of the bands which we all enjoy using. It is a time for all radio amateurs to unite behind their national radio societies and together make whatever representations are necessary to protect the future. Project YEAR has a most positive role to play because, if the number of radio amateurs does go down, national societies will be less able to defend the status quo.

The 1992 World Administrative Radio conference has the power to expand HF broadcasting, make room for future mobile telecommunications systems, introduce a telephone system for airline passengers, create a digital broadcasting system via satellites and earthbound transmitters, provide a high definition TV system via satellites, accommodate low earth orbit mobile satellites and other new satellite services and to make changes to international allocations to accommodate the above if necessary.

It will be the task of the major societies in the world to field the expertise and experience to influence IARU policy which in turn will shape the way in which all national societies address this important conference. This will take hard work, funding and the support of all licensed radio amateurs and SWLs. During the year under review, WARC 92 work commenced at the IARU triennial conference which took place in April 1990. If the future of the bands which members operate on is of concern, then this can be demonstrated by the continued support of the work of the RSGB.

Other highlights

- The RSGB held the first ever Annual General meeting to take place in Scotland.
- Discussion took place with the DVLC regarding the use of amateur callsigns for vehicle registration - further news should be available soon.
- The RSGB formed its first ever Direction Finding Committee under its first Chairman, Brian Bristow, G4KBB.
- The incoming section of the QSL Bureau was transferred to HQ in August 1989. In April 1990 the outgoing section of the Bureau was transferred to HQ by the then General Manager, David Simmonds, G3JKB, following the retirement of Ted and Aileen Allen.
- The RSGB's first joint meeting with the Meteorological Society took place on 28 October 1989 at Imperial College.
- RSGB installed a new telephone system at HQ.

Membership

During the year under review, RSGB membership fell by 1.8% from 35,865 to 35,225 members. Though this is a relatively small overall reduction, it emphasises that a reducing membership is one indication that Project YEAR and an awareness of the need to recruit more people as licensed amateurs is essential.

Council and Volunteers

At the end of 1989, Julian Gannaway, G3YGF, stood down as the Society's President. His place was taken by Frank Hall, GM8BZX, who in doing so created a vacancy for Council for Scotland. This vacancy was filled by Ian Stuart, GM4AUP who joined Council on 1 January 1990. The Society was also pleased to welcome back to Council John Bazley, G3HCT, who was the RSGB President in 1979.

As always, we end this year's brief annual report with a very special thank you to the volunteers and those staff members who freely give up much of their own free time to help the members enjoy their own particular facet of this marvellous and unique activity.

COMMITTEE AND OFFICER REPORTS

ARDF

Committee: G4KBB, G3JIX, G3JLE, G3TFA, G3TRY, G3WIZ, G3WMM, G6ZYT, G1MPJ

The Committee held its first meeting in June 1990, and intends to hold only four per year to keep Society costs low.

HF DF (160m): This year has once again been very successful with its qualifying events reaching north to Ripon and west to Torbay, with the Final held in the Chester area organised by South Manchester RC.

VHF DF (144MHz): It is our intention to draft a National Rule Book regarding contests and eventually run some form of event.

In General:- A loose leaf folder giving a guide to all aspects of Direction Finding should be available in the new year.

May I thank all those on and off the Committee who have helped in achieving the foundation of ARDF within the Society.

Brian Bristow G4KBB, Chairman

EMC

Committee: G8SOZ, GM3WIL, GM4HYF, GM8KPH, GU3YIZ, G0KCT, G0MEG, G1OSC, G1WZZ, G3AEZ, G3BLE, G3GVM, G3GVV, G3HCT, G3JWI, G3VWK, G3ZCV, G4DXA, G4FWM, G4HFX, G4IWS, G4JKS, G5HD, G6JR, G8KLH, G8NLY

During the past twelve months the world of EMC has changed. With the increase in EMC problems the chairmanship is almost becoming a full-time job.

Each investigation of breakthrough is requiring more time to solve, and manufacturers are increasingly asking for help in solving EMC problems with their products.

There are twenty-seven coordinators throughout the UK to assist in EMC problems.

The EMC Directive is awaiting comments from the commission in Brussels, we may have them by the time this is published.

It is hoped that an EMC Manual will be well on its way to completion in the next twelve months.

R A Peace, G8SOZ, Chairman

EXHIBITION AND RALLY COMMITTEE

Committee: G5HD, G3MVB, G3SZJ, G3TDR, G4HHB

The Committee met each month during the year under review. Organisation of the National Amateur Radio Convention at the National Exhibition Centre, Birmingham occupied a large amount of the Committee's time. Attendance of 7,000 and the lecture rooms overflowing made it again one of the best attended radio events of the year.

Our National Rally at Woburn grows in attendance each year. Again blessed by a warm sunny day, it was enjoyed by the ladies as well as the OM's. A vote of thanks to the Dunstable Downs Radio Club for the stand erecting team and excellent talk-in as usual.

The VHF Convention at its usual home in Sandown Park brought forth a full house as far as the trade exhibition was concerned.

The support of HQ staff at a number of events throughout the country is greatly appreciated by the Committee.

Norman Miller, G3MVB, Chairman

FINANCE AND STAFF COMMITTEE

Committee: G3RZP, G3VPK, G6JP, G3YGF(IPP), GM8BZX(President), GW4HWR(EVP), G2AMV, G3DVB, G3FKM, G3OUF (Staff)

We welcome G3RZP to the committee as minutes secretary and, as an interim measure, G3VPK has taken on the post of Hon. Treasurer. A large number of additional working group meetings have been held to liaise with the external accountants and plan the budget. A number of steps have been taken to improve the financial control of the Society - a more modern computer, new accounting software, and the employment of external accountants. The software has, however, taken longer than was expected to implement. The number of staff has been reduced considerably over the year to make economies, but it is clear that we are still trying to provide more services than our present income can support.

Julian Gannaway, G3YGF, Chairman

HF CONTESTS

Committee: G4BUO, G3AEZ, G3FKM, G3GVV, G3HCT, G3KDB, G3KKO, G3LET, G3MCX, G3OZF, G3PDL, G3SJJ, G3UFY, G3ZAY, G4DEZ, G4DJX, G4DRS, G4IFB, G4IQM, G4JKS, G6LX, RS20249, RS32525

The Committee met on eleven occasions in the year under review. In addition, all members put in many hours at home adjudicating contest entries. The submission of contest rules and results for publication in *RadCom* has been greatly improved and streamlined by channelling it all through G3UFY. Rule changes for the following year's events are finalised much earlier, allowing more time for publicising our contests overseas. Also on the publicity front, the ARRL's National Contest Journal now has an overseas contest column, giving us important access to the international contest community.

In July 1990, Ron Glaisner, G6LX, stood down as Chairman. I am sure all UK contesters join with me in thanking Ron for his service over more than seven years. Ron remains a full member of the Committee and provides an important link with IARU through his position as Region 1 Contest Coordinator. For the future, the Committee must respond to the increasing use of computers for real-time contest logging, and international contacts have been established to work towards standards for the submission of logs on disk. Another aim of the Committee is to increase UK participation in the major contests such as CQ WW, and at the other end of the contest spectrum, John, G3MCX, has drafted amendments to the cumulative contests to provide for

novice licensees to participate in the cumulatives which have always been intended as training events for beginners. Also for beginners, G4IFB has written the HF Contest Guide, which gives guidance to those wishing to get started in contesting.

Finally, a challenge to all experienced contesters: how about acting as an 'elmer' and making your station available, perhaps just once or twice a year for newcomers to contesting to gain some experience?

Dave Lawley, G4BUO, Chairman

HF COMMITTEE

Committee: G3ZAY, G3FKM, G3HCT, G3KMA, G3PJT, G3RZP, G3VTT, G3XTT, G4JVG, GW4BKG, G3DME, G3GQI, G3GVV, G3TMA, G8GOJ, G4BK1, G4DYO, G4FLQ (Staff)

Work this year focused on the preparation of RSGB papers for the IARU Region 1 Conference at Torremolinos, and the review of papers submitted by other national Societies. Our papers were all well received, especially those covering QSLing practice, operating ethics, and equipment standards.

Other work included the expansion of the Islands on the Air award administration to cater for the vast increase in activity, preparation for the 1990 HF Convention, and liaison with the Packet Working Group on the HF forwarding experiments.

For the future, the packet band planning issue needs to be addressed on a global basis and the RSGB will be playing an active role in the process. Input from members on this or any other issue will be most welcome via the Chairman G3ZAY at 41 Enniskillen Road, Cambridge CB4 1SQ.

Martin Atherton, G3ZAY, Chairman

IARU

Committee: G3GVV, G3BYW, G3HCT, G3PFR, G3ZAY, G3ZNU, G6LX, G3AAJ, G3DME, G4ASR

The Committee met on six occasions, much business being carried out by telephone and post to save costs - some 200 documents being dealt with.

The main task was the preparation of Papers for the Region 1 Conference and the analysis of Papers from other societies; details appeared in June and July *RadCom*. Here, as at the Region 2 Conference (attended by G3GVV, G3OUF and G3YGF), the prime topic was the forthcoming 1992 WARC. It is only by concerted and unanimous support for the IARU that amateur frequencies can be protected.

R J Hughes, G3GVV, Chairman

LICENSING ADVISORY

Committee: G3HCT, GM8BZX, G3FKM, G3GVV, G3OUF (staff), G3STG, G3UBX, G3WDG, G3YAC, G3YGF, G4AFJ, G4ASR, G4JKS, G8OGO

The early part of the year was mainly devoted to formulating the final draft of the Novice Licence, taking into account the observations from the Membership and other committees.

During the past twelve months we have had several meetings with the RA, covering amongst other items the annual licence review, the release of full facilities for 18 and 24MHz, the future call sign series, Geoloc and guidelines for Packet Radio.

The Observation Service has been re-activated under the control of G3STG.

It is hoped that the propagation beacon will be operational by the end of the year, transmitting data just above 3.8MHz.

Reciprocal licence information is being updated and approaches are being made to other countries to widen the scope of these facilities.

John Bazley, G3HCT, Chairman

MEMBERSHIP LIAISON

Committee: G4AJJ, G1USS, GM4AUP, GM8BZX, GW4HWR, G0LAE, G3AEZ, G3DOT, G3RZP, G4JKS, G4TUO, G3OUF (ex-officio), G3GVV (corres/liaison), G4FLQ (staff)

The Committee met three times during the year. Recommendations for full RLO Elections in 1990 and for Article 15 to be suspended were put to Council and ratified. Proposals for an experimental GB2RS transmission service on Top Band were cleared with other committees and the DTI, these will commence on a test basis shortly from HQ. Zonal Meetings of RLOs were held in zones 'A' and 'D' and plans agreed for similar meetings in the other zones during 1990/91. Details were agreed for RLOs to take on some work previously undertaken by Regional Repeater Representatives (RMG) and to undertake VHF NFD station inspections (VHFCC).

Geoffrey Smith, G4AJJ, Chairman

MICROWAVE

Committee: G3PFR, G3JVL, G3PHO, G3WDG, G3YGF, G4DDK, G4ELM, G4FRE, G4KGC, G8AGN

Corresponding members: G3JHM, G3XDV, G4FSG, G4KNZ, G3UBX

Liaising members: G3GVV, G3RWL, G3VZV

The Committee met five times during the year. The special objectives for the year were as follows:-

1. Continued promotion/expansion of 24GHz operation - achieved.
2. Frequency planning for IARU and WARC '92 - achieved 89/90 objectives but necessarily ongoing.
3. Work towards the Novice Licence - achieved, but technical work ongoing.
4. Technical support for 2.3GHz - achieved by publication

(and success) of the G4DDK-004 oscillator/multiplier. Following directly on this have come the G3WDG 10GHz designs, 001 (multiplier/amplifier), 002 (receive converter) and 003 (transmit converter), each representing a new approach to 10GHz in the UK.

5. John Rouse Memorial Trophy and Premium for home design and construction - not achieved, not awarded, no entries!

6. Volume 1, *Microwave Handbook* - successful. Volume 2 currently being typeset for publication towards the end of this year. Volume 3 is almost complete and should be publishable in the first half of next year.

7. Video presentation - held over until such time as the Novice Licence development program requires input.

The special objectives for 1990-1991 will be generally similar, particularly in those areas where achievement was incomplete or is necessarily ongoing, such as frequency planning. Other, more routine matters will continue to be dealt with as the need arises.

May I once again thank all those individuals, both Committee and non-committee who have contributed to the successful work outlined here.

Mike Dixon, G3PFR, Chairman

PACKET WORKING GROUP

Committee: GM4AUP, G0EOJ, G0K8KA, G3VPF, G3XDV, G4CCC, G4WRW, G6HIU, G8IMB, G8LWY

The past twelve months has seen a considerable number of nodes and mailboxes licensed on the VHF and UHF bands with a limited number of HF mailbox ports licensed on an experimental basis. Extra frequencies on 4m and 70cm have been added to those available under an NoV. Network management has been undertaken by analysing routings and transferring the data to maps. Liaison with the Microwave, HF, VHF and other specialist committees has continued. A stand at the 1990 RSGB Convention was manned by members of the Packet Working Group.

Ian Stuart, GM4AUP, Chairman

PLANNING ADVISORY

Committee: G8GG, GW4ZXG, G0IID, G3GJW, G3GVV, G3PVH, G3TZZ, G3YRZ, G4CTO, G4GJB, G4LYX, G4OIG, G4OVX, G4SHF, G4XHF, G4YRS, G5HD, G6IZN, G8XNU, RS39901

Currently, have 9 full, 15 corresponding members - 22 undertaking 'casework' for members with mast/aerial problems with councils. Two volunteers resigned - two temporarily unavailable - 10 new recruits. Volunteers still required, especially in Scotland and the Midlands. Casework continues - mostly 'post refusal' - many leading to appeals to Secretary of State - not all successful.

Recently updated brochure *Planning Permission - advice to members* may require further update in view of possible future legislative changes.

Society now one of bodies consulted by Department of Environment, re changes in regulations/advisory material bearing on radio matters - not all directly amateur. Current example concerns 'permitted development' status of satellite television dishes under attack from 'amenity conscious' quarters.

H Fenton, G8GG, Chairman

PROPAGATION STUDIES

Committee: G3LTP, G3BYW, G3DIP, G3DME, G3HTF, G3JVL, G3NAQ, G4AQI, G4KCC, G6GRA, DJ5DT, G2AHU, G2FKZ, G3USF, G4XMX, RS87676

Twelve months of mixed fortunes to report this time. The bad news is that the Committee was unable to hold any meetings between November 1989 and the following July because a mid-term change in the Society's financial policy cut money available for repayment of Propagation Studies Committee expenses by an unexpected 60%. The good news is that members of the Committee nevertheless managed to maintain the momentum of all the routine work, which included the monthly ionospheric predictions, the solar and geophysical data summaries for GB2RS and the various ongoing study projects. Perhaps the best news is that the way now seems clear to set up our solar/geophysical data station and we hope to be able to begin test transmissions from a temporary site in the south-east of England in the near future, pending clearance in respect of the permanent site, which will be in a more favourable location.

R G Flavell, G3LTP, Chairman

RAYNET

Committee: G3YAC, G4MDD, GM3RFA, GM4SRL, GW0KWY, G0HII, G3FKM, G3GVV, G3KWU, G3STG, G3WDG, G4ASR, G4EAN, G4FLO (staff), G4FSS, G4IWA, G4MWO, G4YMU, G4ZWQ, G6BBW, G6BJJ, G6EUO, G6FHM, G8CAC, G8RWL

The work of RAYNET throughout the UK (and internationally) continues to gain much praise from our User Services. Membership numbers have remained static at about 5,000. International work, though involving few members, attracts particular attention. Major activities this year included Hurricane Hugo in Montserrat and the California earthquake. Recognition by other emergency groups continues to expand. Committee members have attended numerous high-level meetings with the DTI, Home Office, etc, laying further groundwork for improved liaison at all levels. Major thrust of work aimed at enhancing the organisation in terms of plans and arrangements so that we can continue to adapt to the ever increasing expectations of our users.

Philip Howarth, G3YAC, Chairman

REPEATER MANAGEMENT GROUP

Committee: G4AFJ, G3JUE(+), G3VZV(\$), G3XDV(\$), G4CCC, G4DAX(+), G4EFO, G6LMR(+), GM8LBC, G8SSL, G4NJU, G4MDC(\$), G8ASI, G3UBX(+), G3PFR(+), G4ASR(+), G0COA, GW4NOJ, G8URB, G4FUM(+), G3T2M(+), G3LEQ(+)

Repeater licences continue to be issued without undue delay. The reading of GB2RS over repeaters experiment has progressed. GB3OC is experimenting with direct reading of the news on the input of the repeater. A proposal for linking the Bedfordshire UHF repeaters is in the pipeline, with one or two other groups finalising their proposals.

The reform of RMG with zonal managers has improved administration although there is a tendency for groups to talk to the Chairman who usually has to refer the matter to the Zonal Manager!

I would like to express my thanks to all members of the Committee for their support and the repeater groups for their forbearance. Dave McQue, G4NJU, deserves our thanks for assisting in clearing the backlog of repeater matters which built up during the first half of 1990. I would like to thank the staff at HQ and in particular, Mike Dennison, who despite becoming Editor of RadCom, has continued to help and advise us. Finally, thanks to all those individuals in repeater groups whose work keeps the repeater network running.

* = corresponding member

+ = resigned during the year

\$ = changed from full to corresponding member

Geoff Dover, G4AFJ, Chairman

TECHNICAL AND PUBLICATIONS ADVISORY

Committee: G3RZP, G3CCB, G3GVV, G3JWI, G3MRX, G3SEK, G3SJV, G3YGF, G3ZVW, G4BWE, G4FZH, G4CQI, G4SWX, G6JUR, G6XM, G8DPS, G8EZE, G8ONH

The year has been a difficult one, in so far as there have been major staff changes at HQ, and staff sickness has taken its toll. As a result, the hoped for rapid turn around of article reviews has not always been attained, a problem compounded by the failure of some ex-members of the Committee to do the necessary work. Nevertheless, by dragging other committees into giving their applicable expertise at very short notice, article reviews have been done and no major shortage of expertise exists. The Committee is able to do the job by correspondence and the delegation of actual reviewing and author liaison to individual members, rather than to work in committee with all the problems and costs that this produces.

Peter Chadwick, G3RZP, Chairman

TRAINING AND EDUCATION ADVISORY GROUP

GW4HWR, G3FVC, G3PFR, GU3MBS*, G3BHK*, G3FKM*, G3YGF*, G3ZAY*, G4AJJ*, G4ASR*, G4FLQ*(Staff)

The year has been almost completely dominated by the Novice Licence. Several meetings were held in conjunction with the RA (DTI) in order to produce a final version of the course syllabus. The draft version of the Training Manual was edited and camera ready copy prepared for the printers.

A booklet containing an application form to become an instructor was written and sent out to almost 400 volunteers. A little less than 200 have been received to date.

At the NEC details of the training scheme were discussed in a lecture and the talks continued during the weekend at the committee stand.

John Case, GW4HWR, Chairman.

VHF

Committee: G3UBX, GM4ANB, G2AHU, G3FPK, G3FZL, G3GVV, G3OSS, G3PFR, G3RKL, G3RWL, G3SEK, G3UUT, G3ZVZ, G3YAC, G3ZNU, G3ZVW, G4ASR, G4CCJ, G4DEZ, G4OUT, G4TDL, G4VXE, G5UM, G8GOJ

The main activities of the VHF Committee have been preparation for the IARU Conference, band planning on 50 and 70MHz and establishment of the VHF Frequency Register. The Committee has also been involved in the NEC and Sandown Park Conventions. The IARU Conference preparation required the consideration of some 50 papers submitted by various societies. The 50MHz band plan has been revised to meet the requirements of novices and the 70MHz plan has required alteration to reflect the arrival of packet radio. The VHF frequency registration scheme is being developed to enhance the flexibility of use of the VHF and UHF bands.

Peter Burden, G3UBX, Chairman

VHF CONTESTS

Committee: G4DEZ, G4KIS, GM8MJV, G2HIF, G3GVV, G3ZXX, G4KGC, G4OUT, G4PIQ, G4UJS, G4WAD, G6LX, G8HHI, G8TFI, G8XVJ, RS32525

The past year has seen many changes in the composition of VHF Contests Committee membership. It is now a standing rule that no committee member can operate contests in conjunction with any other member. My aim is to make contests fun and to enable the small station to compete on equal footing with anybody else. Any station, big or small, who is caught cheating will be dealt with severely, to this end. Inspections will be carried out on all contests a random, and not necessarily by RLOs or VHF Contests Committee members. I am always open to suggestions regarding contests so please keep in touch.

Bryn Llewellyn, G4DEZ, Chairman

* Corresponding committee members

REPORTS FROM THE ...

... Amateur Radio Observation Service

The emphasis of the observation service is to provide helpful and constructive advice to amateurs to help awareness of problems which might eventually bring them into conflict with the licensing authorities or, where this fails, to assist with the preparation of evidence for other action.

Great care is taken to ensure that the Amateur operator is supported wherever possible in his relationship with the RIS and DTI, with whom extremely close day to day contact is maintained.

Much of the work this year has been involved with regrouping after the sad loss of Bob Osborne, the late organiser, and in maintaining and improving the liaison with the Licensing Authorities. This has been done successfully, and despite the difficulty of the task, it is hoped that AROS will continue to make an increasingly effective contribution to the improvement of our bands.

Geoff Griffiths, G3STG, Organiser.

... Audio Visual Library

Reg Auckland, G2PA, has been the custodian for most of this period. Unfortunately he has been forced to resign due to ill-health and the new custodian is David Simmonds, G3JKB, who composed this report.

Records indicate that the Library continues to provide a much desired service to clubs and others, as evidenced by the 168 hirings which compares with 147 in the previous year.

The Library contents have been reviewed and catalogued and some out-of-date material deleted. A new catalogue is now available which lists all material, approximate origination date and types of recordings. We wish to expand the library and new items are actively being sought - all offers welcome!

David Simmonds, G3JKB

... HF Manager

The year included the IARU Region 1 Conference in April. There were in fact not many matters of great importance relevant peculiarly to the HF bands and these have already been reported in *RadCom*. Under-use of the 10, 18 and 24MHz and the more orderly spread of data transmissions and their content seem to be the main topics of interest to HF users just now. WARC '92 coming soon and preparations for the retention and possible (but perhaps unlikely) expansion of the HF bands are being made.

John Allaway, G3FKM

... HF Awards Manager

Since the last report, 254 awards have been issued which reflects something of a reduction from the previous year.

The IARU Region 1 remains the most popular award with 102 certificates issued. The USSR again has contributed the most applications.

Applications for Worked All Continents included 19 for 50MHz and the first received by the Awards Manager was from G Brown, GJ4ICD.

UK amateurs obtained the following:-

Commonwealth Century Club: G3VOF, G3SJJ, G4OBK, G4NXG

5 Band Commonwealth Century Club Class 2: G4GIR
5 Band ITU Zones Class 2: G4GIR, G3SJJ

A special mention should be made of A Birch, G4NXG, who made all his contacts whilst operating Mobile.

S Emylyn-Jones, GW4BKG

... Historian

A variety of queries continues to be received. These range from early holders of call signs, identification of early equipment, discovery of possible WW2 spy aerials.

Some assistance has been given to interested contractors of replica crystal sets by the supply of galena crystal, carborundum detectors and other early components.

There is something of a shortage of very early variable condensers, such as those made from component parts as supplied by Kate Raymond or Ormond Engineering.

Occasional requests for circuit details of early equipment by persons' wishes to compile and develop a lecture or club talk.

G Jessop, G6JP

... Morse Practice Co-ordinator

GB2CW has been introduced this year for all authorised slow morse transmissions made by approved RSGB morse practice volunteers.

Thanks mainly to the 'help' postcard in *RadCom*, volunteers have been recruited and some local groups formed to give coordinated practice sessions. More volunteers are still needed for many areas.

Progress has been made to concentrate on VHF transmissions on band plan frequencies, and the use of time slots during the popular hours are helping better management of these frequencies. HF transmissions increase and continue to be popular. Many volunteers look forward to the introduction of the Novice Licence and are eager to help.

Mike Thayne, G3GMS

... Trophies Manager

This year the G3RPE Memorial Trophy was awarded for the first time at the VHF Convention. This trophy is presented in memory of Dr Dain Evans to the leading station in the 10GHz cumulatives and replaces the old Alpha Cup.

Two new trophies have been offered to the Society and are awaiting terms of reference before being put to Council for ratification. The G8KW Trophy donated to the RSGB by Rowley Shears to encourage the art of morse communication will be under the auspices of the HF Contests Committee. The Ex-G Club have suggested a trophy in memory of Reg Chernill, W3HQO, who died earlier this year. Reg founded the Club which keeps expatriate amateurs in touch with each other and their home country.

As ever, thanks go to John Cattermole, G8NPK, for engraving the trophies throughout the year.

Hilary Clayton-Smith, G4JKS

... VHF Manager

The Region 1 IARU Conference in April provided the opportunity to review 50MHz, 144MHz and 432MHz band planning. Other areas included packet radio, 12.5kHz channel spacing, beacon standards, contests and preparation for WARC '92. I am particularly pleased that the 70MHz band has been included in the WARC Implementation Plan seeking a possible allocation in Region 1.

Nationally, work has been progressed regarding relaxations in 50MHz licensing conditions. The 70MHz band plan has also been under review with the aim of creating additional communication space by reducing the beacon sub-band.

I would like to thank members of the VHF, VHF Contests, Repeater Management Group, Packet Working Group and other committees of the Society, Council and HQ staff for their dedicated work and commitment in the past year.

David Butler, G4ASR

... VHF/UHF Awards Manager

This year has seen the first applications from overseas amateurs who are not members of the RSGB as provided for in the rule change earlier in the year.

There has been a significant increase in the number of awards issued this year when compared to the previous year; the biggest increase being in the 50MHz awards which continue to be popular.

Two Supreme Awards were achieved, the first being to John Hunter, G3IMV and the second to Howard Staddon. Very few applications were received from Listeners, a group from whom I would welcome an increase in the number of claims.

Award details to the 30 June 1990 are as follows:-

Four Metres and Down Certificates

(Last year's issues in parentheses)	
70MHz Standard Transmitting	1 (3)
70MHz Senior Transmitting	0 (5)
144MHz Standard Transmitting	7 (12)
144MHz Senior Transmitting	2 (9)
432MHz Standard Transmitting	5 (3)
432MHz Senior Transmitting	2 (0)
1.3GHz Standard Transmitting	3 (2)
1.3GHz Senior Transmitting	1 (2)
2.3GHz Standard Transmitting	0 (0)
Supreme Award (qualification: three Seniors or two Seniors plus one 1.3GHz)	2 (3)

Microwave Distance Award for Initial

Contact Beyond Specified QRB

1.3GHz 600km	6 (1)
2.3GHz 500km	0 (2)
3.4GHz 400km	0 (0)
5.6GHz 300km	0 (0)
10GHz 150km	2 (4)
24GHz 25km	3 (1)
24GHz 75km Intermediate Class	0 (2)
24GHz 150km Advanced Class	0 (0)
Total FMD certificates issued during the year	34 (49)

RSGB Squares/Countries Awards

70MHz	5 (10)
144MHz	44 (50)
432MHz	23 (18)
Total RSGB Squares/Countries Awards	72 (78)

Microwave Squares Awards

1.3GHz	15 (17)
2.3GHz	3 (4)
3.4GHz	1 (0)
5.6GHz	1 (0)
10GHz	2 (0)
Total RSGB Microwave Squares Awards	22 (21)

RSGB 50MHz Awards

Two-way Countries Award	52 (21)
Squares Award	50 (23)
DX Award	16 (5)
Total 50MHz Awards	118 (49)

OVERALL TOTAL OF AWARDS ISSUED 246 (197)

In addition to the FMD, squares and 50MHz awards issued, some 368 contest certificates were sent on instructions from the VHF Contests Committee. Anyone who has not received a certificate to which they are entitled please contact G4OUT by letter including all of the relevant information. Full details of the various awards may be found in the UK Callbook or by sending an SAE to the Awards Manager, G4OUT.

Ian L Cornes, G4OUT

The Peter Hart Review

Kenwood TS-790E

Multi-mode Multi-band VHF Transceiver

INTRODUCTION

YAESU WAS THE FIRST to launch a multimode multiband VHF base station transceiver, the FT726R, some seven years ago. Indeed, it wasn't until fairly recently that the other two members of 'the big three', Kenwood and Icom, released models for this market. The TS-790E is the Kenwood model and was launched towards the end of 1989. The transceiver is a 12V operated multimode base station for 2m and 70cm with 23cm as an option, and with capabilities for full duplex operation (simultaneous transmit and receive) between any two different bands.

PRINCIPAL FEATURES

The TS-790E covers the frequency ranges 144-146MHz, 430-440MHz and, with the optional UT-10 23cm module fitted, 1240-1300MHz. Operation is on USB, LSB, CW and FM modes or on Auto. With Auto, the appropriate mode is selected for the frequency in use according to the standard band plan. The US model, the TS-790A, has a different frequency coverage, auto-select break points and other variations.

The radio may be used in full duplex mode, receiving on one band and transmitting simultaneously on a different band. It is not possible to operate duplex on the same band. The receiver may also be used to receive two signals simultaneously on different bands. This is the main receiver and sub-receiver function. The two receiver paths also use separate AF gain and squelch controls and can also feed the audio into separate external speakers. The main and sub receive frequencies may also be tracked (locked together) via the trace function.

The rotary tuning knob has two modes of operation. It can either function as a smoothly rotating knob primarily for SSB/CW operation or a mechanical click step mechanism can be engaged for channelised FM, rapid frequency changes and memory select operations. In the smooth mode, tuning is in steps of 20 or 100Hz on SSB (100Hz on FM only). This corresponds to 10 or 50kHz per revolution of the knob. When the tuning knob is rotated above about 3 revolutions per second, the tuning rate increases in relation to the speed of rotation. In the channelised mode, tuning on SSB is in steps of 1 or 5kHz and for FM in steps of 12.5kHz on 2m and 25kHz on 70/23cm with a second programmable step size which may be different for each band. These step sizes may be set to 5, 10, 12.5, 20, 25 or 50kHz. The frequency may also be stepped in 1MHz increments or entered directly from the keypad. Twin VFOs are incorporated per band with the usual split functions. With both the main and sub receivers active this gives access to four separate frequencies.

59 battery-backed memories are available, storing 30 simplex frequencies, 20 split frequencies and one each of programmed scan limits, priority alert and call channel per band. The memories store frequencies, mode, repeater

shift and tone data, and may be scrolled/pre-viewed using the tuning knob without altering the receive frequency. The usual memory/VFO transfer facilities are provided including the ability to transfer the contents of one memory location to another. There is no provision for direct VFO from memory without first transferring the selected memory to the selected VFO.

The call channel, selected by a single key press, and priority channel checking at 5 second intervals, are both separately programmable for each band.

Scanning functions are provided, either as a memory scan or between programmed frequency limits. Unwanted memory channels may be skipped. Scanning will stop when the squelch is tripped by a signal, and resume either after a 5 second interval or when the signal disappears.

Repeater operation is provided with programmable transmit-receive frequency splits of 0.6, 1.6, 5, 7.6, 12, 20, 33 and 35MHz. The default settings are 0.6MHz on 2m, 1.6MHz on 70cm and 35MHz on 23cm. Positive and negative splits are provided with reverse split checking and a 1750Hz tone burst.

A satellite mode has been incorporated which enables the TS-790E transmitter uplink frequency to be rapidly set to give the correct downlink frequency. The sum of the uplink and downlink frequencies of any particular transponder in most amateur satellites is a constant number. Up to ten such numbers may be stored in the TS-790E for operation with up to ten transponders. When the SAT key is pressed, the transmit frequency is set relative to the receive frequency according to the selected transponder data.

Receiver functions, not already described, include fast/slow AGC switching, noise blanker, RIT (main RX only), switchable narrow CW filter (main RX only), IF shift (main and sub RX), switchable input attenuator on 2m/switching for

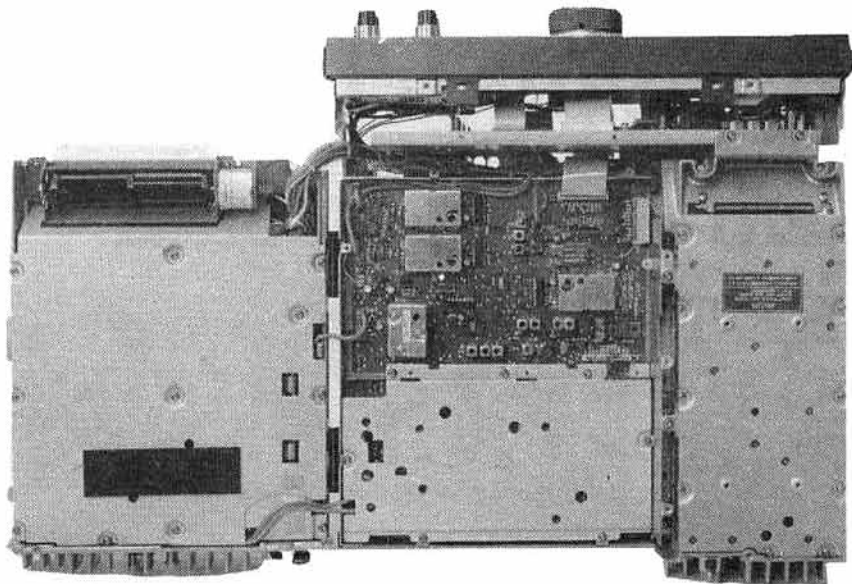
external preamp, and an AFC system for the 23cm unit. The RIT functions on receive only, over a range of ± 1.9 kHz on SSB/CW or ± 9.9 kHz on FM.

The transmit power output on FM is nominally 45W on 2m, 40W on 70cm and 10W on 23cm. The SSB powers are somewhat less. Transmit functions include speech processor, semi break-in on CW, variable power and metering of ALC/relative power output. There is no VOX or transmit button other than the microphone PTT.

Key presses are confirmed by 'beep' tones or morse characters and the displays indicate both main and sub receiver frequencies simultaneously to a resolution of 100Hz. The main display is a blue fluorescent panel showing frequency, memory number, RIT offset and a variety of red and yellow status messages. The sub receiver display is a particularly bright multicolored LCD panel giving sub frequency, bar type S meter for the sub RX, and status messages. Note that the main receiver uses the moving coil S meter. An optional voice synthesiser unit may be fitted (VS-2) to announce frequency and offset.

The rear panel carries separate antenna connectors for each band, key jack and CW delay control, separate external speaker jacks for the main and sub receivers and a total of five accessory connectors. Very comprehensive interfacing facilities are available through these accessory connectors. Separate linears for each band may be controlled with independent ALC circuits together with power and control for masthead preamplifiers. A 13 pin connector interfaces to data terminals of all types for packet, AMTOR, RTTY, SSTV etc providing audio, squelch and S meter outputs from both main and sub receivers as well as transmit audio and PTT functions. Extensive remote computer control facilities are provided by a 4800 baud full duplex serial interface. A total of 33 separate com-





mands provide control of all frequency, memory, mode and tone functions including digitised S meter output and voice synthesiser!

A separate connector provides control for fast scan amateur TV equipment on 23cm. The TV signal must be generated at the first IF of 287.175MHz and routed to the IF connector on the rear panel. Similarly the TV receiver must operate at this frequency. The TS-790E functions solely as a converter to 23cm.

A 72 page instruction manual is provided with a separate 24 page external control manual. I found the manual somewhat disappointing. Although well written in some areas, many of the functions are inadequately described and in some cases there are errors in the description. Block and circuit diagrams are included.

DESCRIPTION

The TS-790E is a nice size for a base station, measuring 34.2 (W) by 13.4 (H) by 36.9cm (D) and weighing 9.2kg. The usual steel frame and PCB construction is adopted with a plastic overlay front panel and an upward facing 8cm diameter speaker. The 2m/70cm TX/RX front end unit is contained in a fully shielded diecast assembly which has a small blower fitted. This unit unhinges to gain access to the PCB underneath (see photo). The 23cm unit is also a fully shielded diecast assembly.

On SSB/CW, the receiver is single conver-

sion on 2m with an IF of 10.695MHz, double conversion on 70cm with IFs of 75.925 and 10.695MHz and triple conversion on 23cm with IFs of 287.175, 41.415 and 10.695MHz. On FM, an extra IF at 455kHz is used. The sub receiver employs a similar conversion system although the IFs are slightly different. The main and sub receivers use a common signal path down to the final mixer and then separate circuitry downstream for the IF amplifiers, noise blankers, demodulators, FM and audio circuits.

The transmit modulated signal is generated at 10.695MHz and mixed to the final frequency via the various IFs as used for the receive path.

MEASUREMENTS

The measurements are detailed in the table with additional comments as follows.

RECEIVER MEASUREMENT

Sensitivity

The receiver sensitivity was excellent. The figure on 23cm is almost too good to be true, possibly the signal generator output calibration was inaccurate on this band.

S-meter calibration

The measured results are for the main receiver S meter. There is no real standard for VHF/UHF S meters but this rig is fairly typical. S3 to S9 represents only 14dB and S9 to S9+20 some

34dB with S9+40 never being reached on SSB. The range on FM was cramped as usual, with S3 to S9+40dB covering only 22dB.

Spurious rejection

The rejection of all spurious responses was amazingly high. On 2m, the image was totally undetectable, well in excess of 120dB.

Strong signal performance

The third order intercept and dynamic range was not too good; there are many other VHF/UHF radios with a better intermodulation dynamic range. However, the blocking performance was excellent on all bands and also the reciprocal mixing figures.

A widening of the receiver IF filter skirts below about -65dB was greater than normal and this prevented measurement of the reciprocal mixing performance closer than 20kHz. The adjacent channel FM performance was very good and fully useable with 12.5kHz spaced channels.

TRANSMITTER MEASUREMENTS

Power output

The front panel power control varied the output power over a range of about 10 to 1.

SPURIOUS OUTPUTS

The non-harmonic spurious output level was very low on all bands, below -90dBC inband or -75dBC out of band. Fig 1 shows the clean output spectrum on 70cm between 430 and 440MHz.

SSB PERFORMANCE

The output powers on SSB, driving to the maximum recommended metered ALC level were about 20% lower than on FM. On 23cm, with the unit supplied for review, the ALC function was not operating and it was easy to overdrive to 15W output and generate high levels of intermodulation products. According to the suppliers, this was a fault on the installation of the 23cm unit.

Pressures of a looming editorial deadline ruled against returning the radio for repair. Intermodulation products on the other two bands, 2m and 70cm, were reasonable, with products at +/-10kHz around -65dB and at +/-20kHz better than -80dB. The speech processor degraded the intermodulation performance by about 5dB.

CW KEYING PERFORMANCE

Fig 2 shows the keying waveform at 40WPM. There is negligible distortion but the rise and fall times are a little sharp.

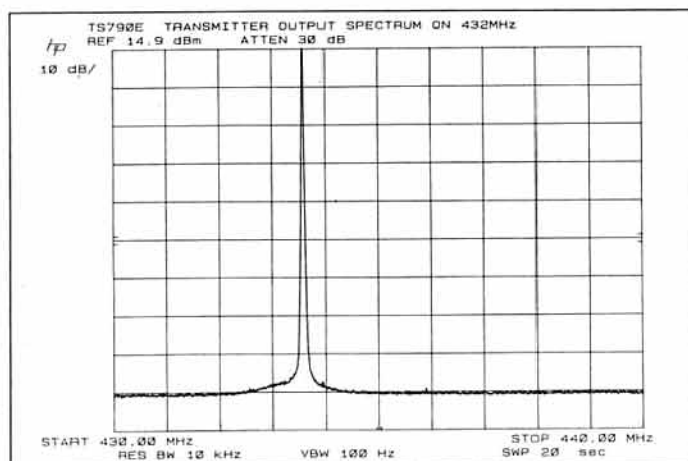


Fig 1: Transmitter output spectrum on 70cm. Vertical scale 10dB/division. Horizontal scale 1MHz/division.

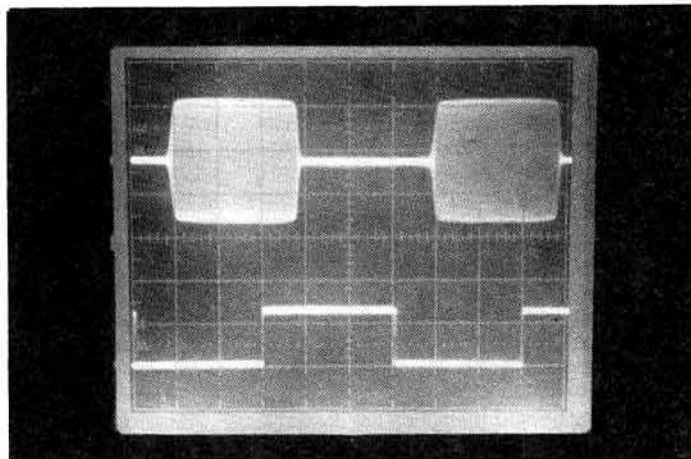


Fig 2: CW keying wave form (bottom) and RF envelope (top) at 40WPM. Horizontal scale 10ms/division.

KENWOOD TS-790E MEASURED PERFORMANCE.

RECEIVER MEASUREMENTS

	2m	70cm	23cm
SSB sensitivity for 10dB S+N:N	0.09uV (-128dBm)	0.09uV (-128dBm)	0.06uV (-131dBm)
FM sensitivity 12dB SINAD 3kHz dev	0.18uV (-122dBm)	0.18uV (-122dBm)	0.11uV (-126dBm)
S-METER sensitivity on SSB			
S3	0.63uV	1.6uV	0.67uV
S5	1uV	2.5uV	1uV
S7	1.8uV	4.5uV	1.7uV
S9	3.5uV	8.9uV	3.2uV
S9+20	180uV	350uV	160uV
First IF image rejection	unmeas	102dB	>120dB
First IF rejection	unmeas	>120dB	>120dB
Third-order intercept	-23dBm	-20dBm	-25dBm
Two-tone dynamic range	77dB	79dB	77dB
Reciprocal mixing at offset			
10kHz	99dB		
20kHz	104dB		
>50kHz	109dB		
Current consumption: 1.7-2.3A depending on band, audio level etc. Max audio before clipping: 1.3W into 8ohm at 1% distortion			
Receiver bandwidth:	SSB -6dB -60dB	CW N 2380Hz 4380Hz	FM 550Hz 2260Hz 13.76kHz 18kHz
Adjacent channel rejection:	25kHz with 3kHz dev. 12.5kHz with 3kHz dev. 12.5kHz with 1.5kHz dev.		>80dB 40dB 65dB

TRANSMITTER MEASUREMENTS

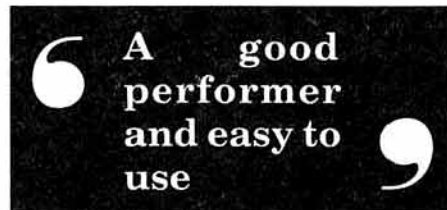
	2m	70cm	23cm
Power output CW/FM	4-51W	4-39W	1.2-13W
Supply current (max FM O/P)	11.5A	13A	7.6A
Harmonic output	-67dB	-65dB	not meas.
Power output SSB (max PEP)	38W	32W	see text
3rd order intermod products	-24dB	-26dB	see text
Intermod products at +/-10kHz	-65dB	-60dB	-60dB
Intermod products at +/-20kHz	-80dB	-80dB	-80dB
Carrier suppression:	>60dB		
Sideband suppression:	>70dB		
SSB Audio bandwidth (-3dB):	330-2700Hz		
SSB Audio distortion:	<0.5% (1% with processor on)		
FM peak deviation:	4.2kHz		
SSB mic input sensitivity:	<1mV for full output		
FM mic input sensitivity:	4mV for full deviation		
T/R switching speed (FM):	mute-TX 15ms TX-mute 4ms mute-RX 20-25ms		

NOTE: All measurements made with a 13.8V supply
All signal input voltages given as PD across the antenna terminal
All TX two-tone intermod. products given WRT either originating tone.

ON-THE-AIR PERFORMANCE

The TS-790E was used from home on 2m, and on all bands during VHF Field Day in July from Ivinghoe Beacon in Bucks. Some big signals were around during Field Day and, particularly on 2m, considerable splatter was experienced from a couple of the stronger signals. This appeared to be due to dirty transmitted signals rather than receiver overload. The receiver functioned well on all bands and modes and seemed very sensitive. On transmit, good quality reports were received on SSB and FM. The transceiver was also used for packet operation in conjunction with a Tiny-2 TNC and interfacing was straightforward and trouble free.

The transceiver is very easy to use with well configured controls and a clear display. The dual mode tuning knob providing either a smooth analogue control or a click-step mode depending on context is a particularly nice feature.



A major feature of this transceiver is the facilities provided for satellite communication. Operation in satellite mode is not described fully in the manual and was largely worked out by trial and error. To illustrate, take as an example operation through Oscar 13 mode B. The uplink band (435.420-435.570MHz) tunes in the opposite sense to the downlink band (145.975-145.825MHz) such that the sum of the uplink and downlink frequencies is a constant 581.395MHz. This number is stored in the TS-790E satellite memory. The sub-receiver is set to the downlink frequency (USB). Pressing the SAT key, will set the transmitter frequency to the uplink frequency (select LSB) and enable the RIT on the sub-receiver to allow for doppler shift, mistuning etc. Keeping the SAT key pressed whilst tuning the receiver will track the transmitter frequency appropriately. The ability to switch out the sidetone on CW or reducing the level would be helpful when listening for your returned signal. This is not provided directly, although the sidetone amplitude is variable by an internal adjustment. Alternatively, the speaker output is available on the rear panel for the sub-receiver which does not have the sidetone.

CONCLUSIONS

I found the TS-790E a good performer and easy to use. It is a true multiband, multimode, multi-purpose radio with some very good ergonomic features. Very comprehensive interfacing to peripheral units is provided and some excellent features for satellite operation. The receiver performance is good although a higher dynamic range is desirable for serious contest operation.

The current list price is £1495 with an extra £379 for the UT-10 23cm unit. In addition, for AC mains operation, a suitable PSU is required such as the PS-31 at £186.

ACKNOWLEDGEMENTS

I would like to thank Lowe Electronics of Matlock, Derbyshire for the loan of the equipment.

Peter Hart, G3SJX

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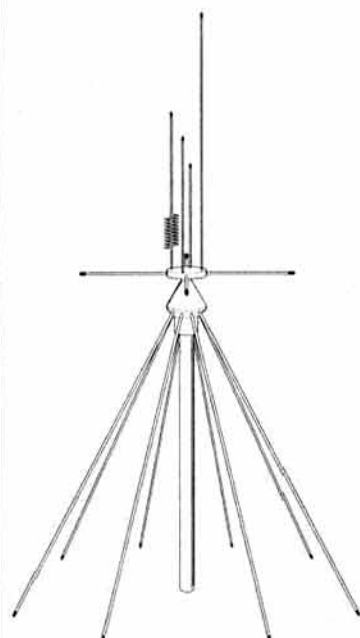
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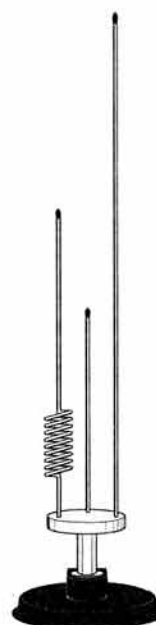
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STR11	HF6V Radial Kit	33.50
MPS	Mounting Post HF6 & HF2	6.00
20MRK	HF2V 20M Add on Kit	33.50
30MRK	HF2V 30M Add on Kit	33.50
TBR160S	160M Add on Kit for HF6 & HF2	64.48
SC3000	30-512MHz Scanner Vertical	63.99
2MCV	3dB 2M Colinear	53.99
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124WB	Cushcraft 124WB VHF Beam Antenna	37.08	4.00
153CD	Cushcraft 15-3CD 3EI 25M Beam	140.06	8.00
154CD	Cushcraft 15-4CD 4EI 15M Beam	181.57	8.00
203CD	Cushcraft 20-3CD 3EI 20M Beam	238.91	—
204CD	Cushcraft 20-4CD 4EI 20M Beam	328.70	—
215WB	Cushcraft 15EI 2M Yagi Antenna	98.99	8.00
4218XL	18 Element 2M Boomer	121.90	8.00
A3SS	Cushcraft 3 Ele Tribander SS	324.02	—
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T100	Toyo 100W 1-500MHz Dummy Load	45.00	2.00
T200	Toyo 200W 1-500MHz Dummy Load	64.00	2.00
DL1	Texpro 1.5KW 160-10M Dummy Load	75.00	2.00
K52	Koyo Coaxial Switch 2 way 1.0KW	28.89	2.00
S20N	Koyo Coaxial Switch 2 way 1.0KW 1-1000MHz 'N'	32.86	2.00
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SA450N	Toyo Coaxial Switch 2 way 2.5KW 1-500MHz 'N'	26.00	2.00
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IC-228H	2M FM Mobile 45W 20 Memo 12V	385.00
IC-290D	2M SSB/FM/CW 25W 5 Memo 12V	559.00
IC-275H	2M Transceiver SSB/FM/CW 100W 12V	1,039.00
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IC-4GE	70CM FM Handportable inc Nicad/charger	299.00
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TT562	Omni V HF Transceiver CW/SSB/FM 200 9 bands	1,900.18	—
TT585	Paragon General Coverage HF Transceiver 200W	1,839.00	—
TT961	Power Supply for Omni, Paragon	215.00	—
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SWL

BOB TREACHER BRS 32525
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SE9 1QJ

WHITE ROSE CONTEST

G4UZN HAS TAKEN OVER the running of this event for 1991 after its disappearance from the 1990 SWL Calendar. There have been some rule changes in an attempt to generate some interest because, like the Cray Valley event mentioned in recent columns, the White Rose Society wants a good number of entries so it can be restored to its rightful place in the SWL Calendar.

Whereas the Contest used to be for LF enthusiasts, next year's event also includes the 18 and 24MHz bands for those entering the SSB leg, or 10, 18 and 24MHz for CW participants. The event takes place from 1400 on 12 January until 1000 on 13 January.

The WRARS has a novel idea to keep you scouring the bands for new countries. Listeners may log only five stations from any one country, and there are no call area multipliers either. This means, for instance, that you will only be able to log five stations from Germany and five from Italy. It will be interesting to see what sort of support the event gets. For those who want the full rules, send an SASE to Anthony Quest at the White Rose Radio Society, PO Box 73, Leeds, LS1 5AR.

RSGB CONTEST RULES

WHILE ON THE SUBJECT of new ideas, have you written and told me how you would like to see Society sponsored SWL contests improved? Malcolm Harrington BRS20249 and I have agreed something new with G4BUO, the HF Contest Committee Chairman, but I will keep our plans under wraps for a little longer to see if the readers come up with some good ideas which we can look at too. Watch this space.

ILA NEWS

TREVOR, GW4OXB, HAS provided a copy of the latest International Listeners Association's magazine *Just Listening*. Once again it is packed with interesting items of news for the SWL. Featured in the latest issue is an article on "Magnetic Loops" (reference to the October 1986 *Radio Communication* is given), a conversion of the Pye Pocketphone to receive 432MHz repeaters, together with features on Airband, a Rally Round-up and Satellites.

Trevor also spends some time on my pet subject, preparing worthwhile reports to send to amateurs. If all who write for the SWL dwell on the subject long enough, eventually we will be rid of the worthless report!

As usual, if anyone wants to join the ILA, or has any questions for its organiser, GW4OXB, send an SASE to the ILA at 1 Jersey Street, Hafod, Swansea SA1 2HF.

LISTENER REPORTS

HARDLY A MONTH goes by without some Class A licensee drawing my attention to an SWL report he wished he had never received. This month is no different. To save embarrassment, I will not give either the G3's callsign or the SWL's Receiving Number. But the report I have been sent is for the reception of the G3's CW transmission on 7MHz. Nothing wrong so far. The date was right, so was the time, even the callsign of the station being worked was correct, and the report was not a stereotyped "599". So nothing wrong with the report itself. The listener even sent an SAE for the return card. So what was the problem? The SWL's report was for a QSO which his Telereader had read!

Rather unusual to say the least. It is one thing using devices such as Telereaders to read your morse, indeed it may even help in verifying what the SWL had actually copied in readiness for a Morse Test, but I'm afraid that we have to draw the line somewhere, and sending a QSL card to report what your Telereader has copied is, as far as I am concerned, stretching the imagination about what you actually "heard" a little too far.

HEARD ALL BRITAIN

DENNIS, GW6JNE, HAS written with the latest news on the 'Heard All Britain' Award scheme. He started with some wonderful news about the support which WAB had after the column on their Guide Dog Appeal. The Appeal reached £5,000 and a cheque was presented to the Guide Dog Association at the WAB AGM at Drayton Manor in May. Dennis wishes to say a very big "Thank you" to everyone who forwarded a donation.

Also at the Drayton Manor AGM of the Group, a milestone in SWLing was reached with Frank Parkhurst BRS10663 receiving recognition for logging over 4,000 WAB areas. Well done, Frank! Others who deserve a "Well Done" are Hedley Falkinder and John Wainwright who both received Diamond trophies. A WABEMA Diamond (awarded for activating areas) was awarded to Anne Hauge. That brings back a few memories as I was awarded a WABEMA Award many years ago for assisting with the logging, navigation, and mast erection in some squares, in 100 WAB areas activated by G3VLX. How many current WABers remember the eagerly anticipated mobile jaunts of G3VLX on a Sunday back in the seventies? How many can boast a QSO with G3VLX/P in TQ91 Kent.

The latest listing which Dennis provided shows a good amount of HAB activity amongst Britain's listeners. A number now have certificates to show for their dedication. Dennis' list shows SWL G Hurrell receiving a Basic HAB Award, M Rodgers collecting Gold and Platinum, E Brown also collecting enough areas for a Platinum, while C Gibbs and G Ridgeway qualified for Sapphire Awards. In addition to these Awards, Brian Russell and Hedley Falkinder joined the Honour Roll for having heard 3,400 and 3,800 areas respectively. Other Awards which stand out are an Island Award to C Gibbs for having heard 160 islands on HF, and a Winter Activity Award for M Rogers.

The aim of the Winter Activity Award (like the one won by M Rogers) is to accumulate WAB/HAB activity during the months when most mobileers prefer to sit in front of the fire.

Stations must be logged between 1 December and the last day of February the following year. The Award is based on a points system, with 250 points required for a certificate and stickers available for each further 260 points. Points can be gained as follows: 1 point for a WAB area (each area can only be claimed once); 1 point for a County (each County can only be claimed once); 1 point for each District (each District can only be claimed once); and 1 point for each bookholder, irrespective of how many books are held. I am advised that the Awards Manager is G4VID, 5 Braemar Close, Kettering, NN15 5DD.

Any SWL interested in information about the Heard All Britain Award Scheme should write to Dennis Sartin GW6JNE at 7 Penrhos Crescent, Rumney, Cardiff CF3 8PB.

SELF-ADHESIVE LABEL SERVICE

I RECEIVED DETAILS from Steepleprint Ltd recently of their self-adhesive label service. They offer 500 printed black on white labels for only £5.75 inclusive of postage and packing. These are ideal for using on the back of your outgoing envelope for that rare QSL or for adding to your envelope when sending your winning contest entry. It is a good way of ensuring that your letters are returned if they should go astray for whatever reason. For further details write to Steepleprint Ltd, Earls Barton, Northampton, NN6 0LS.

BRITISH POSTCODES AWARD

G3XWK WHO PROVIDED last year's 'Alternative Xmas Quiz' (another one next month!) sent details of the Civil Service Amateur Radio Society's new Award which is to be awarded to SWL's for hearing radio stations in either 75, 100 or 120 of the Postcode Areas of the UK. Brief details of the Award appeared in the magazine last month, but the CSARS is particularly keen that SWLs should know that applications for the Award will be entertained.

The starting date for loggings is 6 May 1990. The first 120 to claim Gold Awards (for hearing or working all 120 areas) will be issued with an additional Award of the special Miniature Sheet issued by the Post Office to commemorate the 150th anniversary of the Penny Black. Only stations with a postal address can be counted for the Award, which means that portables will not qualify.

The Society has arranged for the Club stations (GX3CSR and G1CSR) to control the first few nets, which they have arranged to get the Award 'off and running'. These will be held on the first Monday in each month at 1200 on 7.080MHz and at 1630 on 144.375MHz. It is hoped that the Award will be a success, and amateurs and listeners alike will enjoy collecting something new.

Further information, and a fact pack on the Award, is available by sending a large SASE to Civil Service Amateur Radio Society, Civil Service Recreation Centre, Monck Street, Westminster, London SW1P 2BL.

FINALE

THE DEADLINE FOR the January 1990 issue is early because of Christmas and the New Year (the Editor sets the deadlines, not me!), so your letters to me please, no later than Monday 6 November.



DataComms

NEIL LASHER G6HIU

40 Farm Road, Edgware, Middlesex HA8 9LT
Telephone: 0836-379275

FIRSTLY, MY APOLOGIES to all regular readers and contributors for not having provided a column through the summer. This has been due to circumstances beyond my control.

NOTICES OF VARIATION

THE RADIOCOMMUNICATIONS AGENCY has approved a request by the Society to be allowed to 'licence' mailboxes on 70 and 430MHz by the popular method of NoV (Notice of Variation). The demand to change applications has been immense and the network has benefited a great deal from the changes. Moves are now afoot to apply for further frequencies near to the top of 430MHz so as to allow enough separation in frequency for mailboxes to have fast linking as well as a user access port on the same band.

At the same time, the RSGB's Packet Working Group (PWG) is working with other RSGB committees and the RA to allow applications for Nodes to be processed in the same manner as Mailboxes which will allow GB7+2 letter calls to be issued under the NoV scheme. This is likely to take some time but hopefully not as long it did for mailboxes.

DX CLUSTERS

THERE ARE NOW FOUR licensed DX Cluster Mailboxes using GB7 callsigns, with applications pending for another two. All DX Cluster mailboxes at this time have the prefix GB7DX. Access to them is via a variety of frequencies, but all reside on 70.325MHz. It was agreed at the last Packet Working Group meeting (8 September) that certain DX Clusters will be allowed 144 MHz user ports depending on their location and local terrain.

First reports from around the country show vast numbers of users registering with the Clusters and very good live on-line information seems to be available.

THE FUTURE

DURING THE PWG MEETING, discussion took place as to what part packet radio would play in the future of amateur radio. The question posed was to look into the future and see where we would be in ten years from now.

Views were extremely different but all agreed that the future of data communications was definitely going towards the idea of large on line databases, access through gateways to other existing electronic mail systems and very fast live links, possibly worldwide through fast satellite repeaters. Stay tuned, it sounds like being a very interesting ten years.

If you feel we may be going in a different direction, drop me a line. Discussion through this column about the future of data

communications may become a regular feature.

SOFTWARE

NEW VERSIONS OF BOTH British mailbox software programs have been released since my last column: one from G1NNA, the other from G4YFB. I have seen both running and was most impressed by the new additions and great performance of both packages.

COMPUTERS, DATA AND YOUR TRANSCEIVER

COMPUTER-INTERFACED TRANSCEIVERS are opening an exciting new dimension to on-air operations. Many manufacturers are now offering their latest rigs with this facility, but most seem rather difficult to put into operation. For this reason, over the next couple of months, I will try to give you some tips to help you control your rig direct from your computer. Thanks this month to ICOM of America who have supplied me with as much information as they had available.

What can interfacing your computer and rig do for you? To start with, packet operation at various times of the day on different bands becomes a possibility. Many users with personal mailboxes can, for instance, monitor their local group and node, then switch during the night to download their mail from a local mailbox, finally leaving the busy mailbox frequency to return to monitoring, all controlled from within the computer's software. You could control more than one rig, switching bands, antenna and, of course, TNC or modem to change data rate.

For contests, the computer could become your personal assistant. Using readily available shareware software, you can use the computer as your log. The computer will, in turn, log the QSO using the computer's date and time, plus your transceiver's frequency and operating mode. There are many more facilities including duplications and antenna heading directions; it could even turn your beam or track a satellite.

Two logical questions during station planning are: which computers and transceivers are good candidates for interfacing, and what exactly is involved in that procedure? Readily available programs supporting ICOM rigs are written for most IBM compatible computers, and all of ICOM's multimode/base station transceivers are easily computer controlled.

Interfacing consists of using their optional CT-17 level converter to mate your transceiver's TTL and the computer's RS-232 voltage levels, loading rig-controlling software into the computer, then ensuring software selectable parameters agree with transceiver interface switch settings. Baud rates must be set equally to exchange data, and specific rig code numbers must be set so that each piece of equipment knows where to send its data.

Some of the ICOM range also need an optional UX-14 parallel to serial data converter unit and the switch settings also need to be set for the rig in use.

Your computer's RS-232 I/O port and your transceiver's TTL remote control terminal are then connected to the CT-17 adapter. The CT-17's purpose is to convert your computer's RS-232 voltage levels of + and - 12V to TTL level +5V and 0V.

47 Linear



LA-30 HF Linear Amplifier

Designed to provide reliable, stable, high RF output power, AEA's LA-30 class AB2 linear amplifier is rated at 1200 watts PEP input, ready to handle the UK legal limit with ease. The LA-30 is a self contained table top unit with built in power supply and pressurised plenum cooling system. The LA-30 covers all amateur bands from 1.8 to 29.7 MHz and is capable of continuous duty in CW and SSB. A quiet squirrel cage blower cools the unit for extended tube life and reliability.

A fast heating, high performance 3-500Z triode requires no warm up time so you can get on the air as quickly as possible. Inrush filament current protection is provided.

A Pi network input for each band provides a good match for all solid state transmitters. A Pi-L output network, heavy duty rotary band switch with silver plated contacts and high quality loading and plate tuning capacitors contribute to the LA-30's reliable design.

Make yourself heard, and work the DX with AEA's new high quality, economically priced HF linear.

**LA-30: £799.95 inc. VAT
(£5.00 post and packing)**

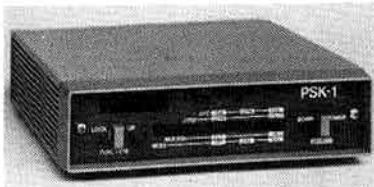
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**ICS Electronics Ltd.
Unit V, Rudford Industrial
Estate, Ford, Arundel,
West Sussex BN18 0BD
Telephone: 0903 731101
Facsimile: 0903 731105**



Satellite



PSK-1 Satellite Data Modem for the PK-232MBX and PK-88

OSCAR satellites 13 to 20 are now in orbit to provide store and forward data transmission to and from anywhere in the world.

The new OSCAR 16, 19 and 20 MicroSat packet satellites use a 2 metre uplink with Manchester modulation and a 70 centimetre downlink using PSK modulation. The PSK-1 supports both modulation methods. PSK can be used in transmit and receive for terrestrial use. The inbuilt microprocessor also supports decoding OSCAR 13 type 400 Baud telemetry.

The PSK-1 is controllable from a computer via a built in serial port, and uses menus for function selection. It is designed to interface to the Kansas City Tuner. The combination of the PSK-1 and the Kansas City Tuner can automatically tune each satellite frequency and track the downlink frequency for perfect reception.

The PSK-1 can be used directly with the AEA PK-88, but requires the use of the TAPR modem disconnect kit for use with the PK-232MBX. We also stock the TAPR State Machine DCD modification kit for the PK-232MBX.

PSK-1: £189.00 inc. VAT

Modem Disconnect: £25.00 Inc.

DCD Modification: £25.00

Post and packing extra.

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Satellites

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

FREQUENCY ALLOCATIONS

IT DOES NOT SEEM to be widely realised that our satellites enjoy their own officially recognised Amateur Satellite Service frequency allocations. Perhaps one ought to say *should* enjoy! Back in 1971, the ITU World Administrative Radio Conference for Space Communication created a new radio communications service specifically for the use of the amateur radio satellite systems which were then coming into use. It was to be called the **Amateur Radio Satellite Service**.

It is interesting to see from the recently issued *Amateur Radio Licence (A) or (B) Terms and Limitations Booklet BR 68*, that the Schedule to the Booklet, specifically differentiates between **The Amateur Service** (Column 2) and **The Amateur Satellite Service** (Column 3) as it is now designated. From the Schedule it will be seen that satellite activity has Primary rights in the bands 7.0 - 7.1MHz, 14.0 - 14.25MHz, 21.0 - 21.45MHz, 28.0 - 29.7MHz, and 144.0 - 146.0MHz. Satellites have Secondary rights in the bands 435.0 - 438.0MHz, 1260 - 1270 MHz (Earth to Space only), and a variety of allocations in the bands above. All this puts the Amateur Satellite Service into a privileged position as it is put alongside the Amateur Service in the booklet and should not therefore be regarded as just another frequency division of the Amateur bands as voluntarily agreed by various amateur radio organisations.

In view of all this, it is not asking too much for users of the Amateur Service to avoid causing QRM to the Amateur Satellite Service. Without being elitist, one must claim that the very nature of satellite communications does make it impossible to make adjustments to the satellites once they are launched so they do deserve special protection.

INTRUDER

UNFORTUNATELY, NOT everyone keeps to regulations agreed by the majority of nations, and this applies to amateur radio (IARU) agreements. The latest problem in this sphere is the BADR-1 satellite launched on 16 July by SUPARCO - the Pakistani Space and Upper Atmosphere Research Commission. It is said to be a UoSAT-2 type satellite and has two transmitters (145.825 and 144.028MHz). These frequencies do not appear to be used for amateur communications and the latter frequency is not in accord with IARU band plans. Two ground stations provide tracking and tele-command facilities, one being at Karachi and the other at Lahore.

Its objectives are to test performance of satellite sub-systems in the space environment; to perform experiments in voice data communication between the two ground stations and to educate the country's

academic, scientific and amateur community in the tracking and use of low-earth orbiting satellites. Its apogee is 982km and perigee is 198km at the time of writing, but these are expected to drop to 900km/125km by November, so it looks as though it will be short lived. Its orbit is such that it is unlikely to be audible in the northern hemisphere though it has been heard by PY2BJO on 144.028 MHz transmitting single tones and a female voice.

SATELLITE ROUND-UP

MORE NEWS IS AVAILABLE about the French satellite **ARSENE** which stands for **Ariane Radioamateur Satellite pour l'Enseignement de l'Espace**. It will be mounted inside the Ariane rocket's separation collar on the Sept 92 flight carrying the Telecom 2B payload. The expected orbit is 36,000km apogee and 20,000km perigee. Period about 17 1/2 hrs. Visibility in the UK will be unusual with a longest pass of about 31hrs, with gaps of 48 hrs between passes occurring from time to time. A solid fuel motor will be used to raise the perigee after launch into a geostationary transfer orbit. This spin-stabilised satellite will carry three deployable solar panels and be earth-pointing using nitrogen gas for attitude control; lifetime is expected to be around five years. The six-sided body will measure 900mm diameter, 880mm high and weigh about 140kg before kick motor firing. The communication payload will have a 70cm uplink and use 145 and 2445 MHz for downlink; the two modes, B and S, will not operate simultaneously. Mode B will be FSK packet radio and Mode S will be a linear transponder.

At the time of writing, **OSCAR-10** is receiving sufficient solar panel illumination to support Mode B transponder operation so the satellite is available for general use. It should not be used if the beacon signals are FMing.

UoSAT - 3: OSCAR 14 is functioning well and is being used as a test bed for various projects involving software compatibility. With its 9600 baud uplink in use, software up-loading can be done in two passes compared to the eight needed for the microsats. With O-14's separate computer system for the PCE, it means that if the BBS crashes, the satellite will still operate normally. O-14 can run six programmes simultaneously such as sampling telemetry; collecting data from the Cosmic Particle Experiment; providing a multiple-connection TNC; broadcasting a point to multipoint protocol and full-duplex binary transfers. Including DOVE and WEBERSAT, six programs in two continents and four time zones have collaborated to bring this together.

No progress has been made in re-contacting **OSCAR 15**, so it looks as though it will have to be officially abandoned soon.

DOVE has been operating to schedule and is well received at my QTH, but only data and no voice transmissions heard so far.

WEBERSAT has had a third version of its imaging software up-loaded recently which improves the focusing ability of the camera, thus improving the contrast of the camera images.

AMSAT-ISRAEL has announced that it is to follow the example of universities abroad and launch a satellite project. The team plan to build a small store-and forward spacecraft which will also carry out scientific experiments. They hope to have it launched from an Ariane launch vehicle.

Microwaves

MIKE DIXON G3PFR

'Woodstock', Grazebank, Norley, Warrington,
Cheshire WA6 8LL

PRODUCT BRIEFS

MITSUBISHI HAVE RECENTLY introduced a range of new microwave devices consisting of a range of power FETs and MMICs, all in GaAs technology. The FETs have been designed for the frequency range 500MHz to 3GHz and are N-channel Schottky gate types with about 10dB gain and output ratings between 37 and 40dBm. They are intended for Class A operation at efficiencies typically in the range 37 to 40% in L-Band. There are five devices in the MGF0900A series.

The MGF70xx series of GaAs MMICs are designed for operation from a 4V DC supply (300mW maximum dissipation) and offer typical broad-band performance, from 0.2 to 1.8GHz, of gain = 15dB and $N_f = 3.5$ dB at a current consumption of 20mA. Details of both ranges are obtainable from Mitsubishi Electric.

A range of small, light-weight, phase-locked dielectric resonator stabilised oscillators (DROs) made by Resotech is available from Oakbury Components. These devices cover the range from 5.5 to 12GHz but are also available down to 2.8GHz. The designs comprise an inherently stable, electrically tuned fundamental oscillator whose frequency is "bandset" by a dielectric resonator (DR). They also contain an SMD phase-locking circuit which enables the low phase-noise oscillator to be locked to a crystal reference source. It is claimed that the phase noise level at the output, at offsets up to 100kHz, is determined by the reference oscillator noise content, whilst beyond 100kHz it is primarily that of the DRO itself. The reference source required is in the range 60 to 120MHz and the claimed phase-noise at 100kHz offset is -115dBc/Hz. The devices operate at about 75mA from a 15V dc supply. Candidates for 10GHz amateur "intermediate" technology - midway between the simple Gunn technology and the recent hi-tech 'WDG approach'?

A reminder that the same supplier (Oakbury Components) also stocks a very useful range of low, medium and high-Q ceramic resonators, by Siemens, covering the spectrum from 900MHz up to 25GHz. Similar devices up to 40GHz will also be available soon.

UPDATE ON THE G3WDG 10GHZ MODULES AND 10GHZ BEACONS

THE G3WDG-001 x4 multiplier/amplifier for the 10GHz band was released on time in August and most of the boards made for the launch have now been sold via the Components Service. Apart from the feedback from the original 'beta testers', Charlie, G3WDG (QTHR), has not yet had feedback from other builders and, in a letter to both the Column and the Newsletter, made a plea for such feedback. Comments would be gratefully

received - if it works first time (which it should!), please let Charlie know. He has also offered help to anyone needing it.

Before releasing the design, some 10 or more prototypes were built with great success in each case. However, Charlie mentioned that there had been a few 'bugs' in the first production run of boards. In particular some holes had been drilled the wrong size and had to be drilled out by hand. Also, the clearance of the groundplane around the filter coupling pins was too small, and the board was slightly too big to fit into the recommended box without some trimming. None of these minor faults is insuperable. A second run of boards has been organised and will be available by the time you read this. The circuit pattern will not change, however, and the performance should be unchanged from the original version.

The next board to be released will be the receive converter, the G3WDG-002. This is somewhat more complex than the G3WDG-001 and is taking slightly longer to get ready than had been hoped. This has now gone through three design iterations, the third being a re-layout to reduce the pcb size to the same as that of the G3WDG-001. The latest, and hopefully final, version will be distributed to the 'proving panel' during September (as I commit these words to disk!) and the current target for having the board in the Components Service is November (as you read this!). A 'short' kit similar to the G3WDG-001 has already been approved for inclusion in the Service.

Thanks are due to Charlie, G3WDG and Sam, G4DDK, for the above updates.

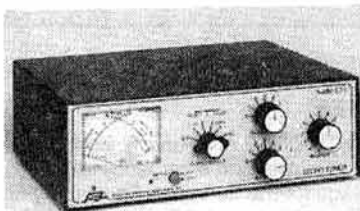
COMMITTEE BUSINESS

MUCH OF THE MICROWAVE Committee's time in recent weeks has been taken up by preparing a review paper for the Radio Frequency Spectrum Review, Stage 2: 3.4 to 30GHz. This review is, perhaps, quite timely, since it has caused us to focus our minds on what is (or isn't) going on - and what might be going on in the future in the four allocations in this frequency span. The assembled review may serve the additional purpose of homing in on a 'shopping list' for WARC 1992, since the bands below 3.4GHz and the bands above 30GHz have already been reviewed for other purposes.

It is an unfortunate fact that both the 3.4 and 5.7GHz bands tend to be rather neglected in the UK, whereas both bands get quite a lot of use in, for instance, Germany. Now that some effective designs and devices are starting to become more accessible, we'd like to hear of your progress on these two valuable bands. One sign of relative under-use is that the bandplans for both of them are somewhat skeletal, especially when compared with 1.3 and 10GHz, both of which are now beginning to look like real bandplans, despite frequent moans from operators and the Committee about low activity! So you may gather that much of our business is still concerned with planning, allocations, standards and allied topics - as well as trying to produce viable, reliable equipment designs, to encourage a return from 6m!

Further formal beacon proposals were considered and approved and the progress on the Microwave Handbook, volumes 2 and 3 discussed.

Tuners



ET-1 Low Cost Antenna Tuner

A quality, economical antenna tuner at a very attractive price, the Econo-Tuner is designed to match virtually any receiver, transmitter or transceiver from 1.8 to 30 MHz with up to 300 watts of RF power.

Compatible with almost any antenna, including verticals, dipoles, inverted Vs, beams and mobile whips which are fed by coax cable, balanced lines or a single wire. For easy connection to balanced lines, a 4:1 balun is built in.

A front panel switch control allows you to switch between two coax fed antennas (direct or through the tuner). You can also switch to a balanced line or wire antenna.

The ET-1 features a precision dual movement meter to simultaneously monitor power and SWR.

Unique engineering designs have made AEA one of the leading innovators in the amateur radio industry. That same quality makes the ET-1 your best deal for an antenna tuner.


**ET-1: £99.95 inc. VAT
(£5.00 post and packing)**

ICS brings you quality and value.

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RAYNET

RONALD M COWAN, GM4SRL
 516 Clarkston Road, Netherlee, Glasgow
 G44 3RT

EUROPEAN SPECIAL OLYMPICS GAMES

ONE HUNDRED AND twenty eight Raynet volunteers provided emergency radio coverage for the European Special Olympics Games which were held in Strathclyde from 20 to 27 July. Some, owing to work commitments, came for just two days, others managed to stay for the whole week. Nobody, however, went away without a glowing feeling of admiration for all of the athletes from 30 countries, who strove to win, but above all, no matter what the result, took part. During the week, volunteers could be seen shedding the occasional tear when an athlete was overcome at his or her successful efforts. The opening ceremony was held at Celtic Park, Parkhead, in the presence of HRH Prince Philip, Duke of Edinburgh. It was an emotional affair, with the athletes marching proudly behind their own country's flag. Raynet provided all the communications on the buses which lifted the athletes from their Halls of Residence, ensuring that the correct bus was in the correct place and the right time (almost!)

RAYNET's original job had been to provide communications between the Games HQ at the Scottish Exhibition and Conference centre in central Glasgow and the 60 or so buses running between the other centres in Glasgow, Lanark sub region and Ayr sub region. An elaborate crossband talk-through system, engineered by Crawford, GM8HBY, ensured that the whole area was workable on the buses with 2m handhelds. A 70cm link to the SECC brought the wide area system from a crossband unit, which was completed just before the event by Jack, GM4COX.

The Olympics gave it a good soak test, and it came through with flying colours. This unit linked with the other crossband units sited in Glasgow, Airdrie and Ayr. Despite field trials before the event, the Glasgow talk-through unit had to be moved on the third day owing to interference to the 70cm signal when local commercial traffic started on the Monday morning. (The tests had all been done in the evenings.) A site was quickly found on the other side of the city, and this worked well for the rest of the week. During the time the Glasgow site was off, the city was still covered by the direct signal from the Games HQ (the antenna being on a 50ft mobile mast kindly lent by Messrs. Tennamast of Beith). I was concerned that the mast was to be left unattended each evening, and asked the SECC security staff to wheel clamp it, the first time they had had a request for clamping they assured me!

At the preliminary meeting held last year, Raynet had offered to provide the Games Centres with communications but it was felt at the time that assistance would only be needed on the buses. In the event, however, there

were not nearly as many vehicles out on route as had been planned, and Raynet offered to man the PMR communications centres at each venue. This was quickly and eagerly accepted and our spare operators were assigned to communications rooms duties. This had the advantage of additional Raynet links between all the centres themselves.

Raynet received a lot of help enabling the members to carry out their task. The Scottish Office and the CAA were delighted to give access to their masts, Councillor Bernard Scott moved heaven and earth (or at least a lot of red tape) to ensure that accommodation was available at no cost to the volunteers. The WRVS ("nobody has ever asked us to do this before!") sent a team of four to Motherwell at 4.45 each morning to provide breakfasts for 40 RAYNET members. Additional beds had to be provided, and the Regional Emergency Planning Officer arranged delivery and collection from the Red Cross. Employers, too, played their part, either giving paid leave, or at least not looking too closely at the duties of their staff that week!

One of the highlights of the week was a civic reception given to Raynet by Councillor David Sanderson JP, Convener of Strathclyde Regional Council. This enjoyable evening, held in the Regional Headquarters in Glasgow, not only fed and watered the volunteers and their families, but also gave everyone present a chance to talk about Raynet in their own area. Owing to travelling difficulties and time constraints this is not often possible, and many ideas were exchanged during the evening. Councillor Sanderson paid tribute to the work of Raynet locally, and also congratulated groups from elsewhere in Britain who had given their time in the past to help the community.

The closing ceremony came only too quickly, and after track suit swapping and tearful goodbyes the athletes and the volunteer helpers, including the Raynet team, made their way back to their own corners of the world. All had gained from the encounter; all would remember their own small part in the huge venture; all would no doubt want to do it again. It had been different from Leicester, the next one will be different again, but always the underlying reason, the commitment to help the athletes take part, will be there. That's what

makes one feel the need to be there; if only we could model ourselves on the athletes, wouldn't life be so much richer, and so much more rewarding.

RAYNET AT RADIO CONVENTIONS

IT IS HOPED THAT the Raynet Committees can provide a manned display stand at conventions etc. throughout the country. Owing to costs, it is likely that only one such stand can be provided at a main rally in each zone but Zonal representatives wishing further details should contact G3KWU or GM4SRL who are both QTHR.

SCOTTISH ZONE MEETING

THE AYRSHIRE RAYNET Group is hosting a Scottish Zonal meeting in the Halfway House Motel, Symington, on Saturday 10 November. Speakers will include John MacVicar, Strathclyde Region's EPO, and Bill Parr of The Search and Rescue Dogs Association. There will be a talk on event planning followed by a question and answer session in the afternoon. Further details from GM0BKK who is QTHR.

999 SHOW

EARLIER THIS YEAR the Banbury (North Oxfordshire) Raynet Group took part in a multi-service display of the emergency services available to Oxfordshire residents. The 999 show was the biggest event of its kind ever staged in the Thames Valley area, the general public having the chance to meet and talk to the people providing emergency assistance and care.

The Raynet display area included six radio equipped cars with rooftop Raynet signs, and the largest Raynet display boards which featured photographs, charts, posters and maps. Two 30ft high antenna masts were erected and the RAYNET control caravan was fully equipped and manned throughout the day, as it would be during a real callout.

JANUARY COLUMN

ITEMS FOR INCLUSION in the January column should reach GM4SRL by Saturday 10 November.



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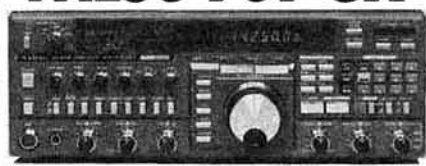


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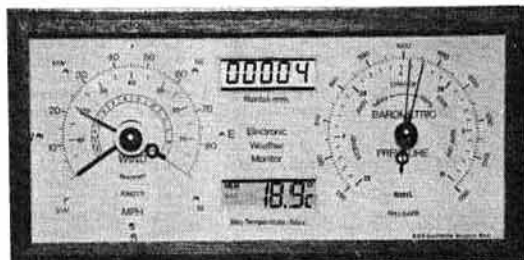


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C O N T E S T N E W S

RULES

AFFILIATED SOCIETIES TEAM CONTEST 1991 - RULES

1. General: As in 1990, provision of a checklist is a request rather than a requirement, but it is hoped that all groups will comply and thus greatly ease the burden on the adjudication team. Extra time has been allowed this year for the preparation of logs before submission. The top 20kHz of the allocated band is dedicated as the 'QRS Corral' - operators less experienced in CW and contest techniques should be able to make contacts here in a more relaxed environment. Experienced contesters using the segment are asked to play fair and keep their speed right down. Contestants are reminded that those who operate in a manner not within the spirit of the event render themselves liable to disqualification, as do those who breach the rules.

2. When: 1300GMT to 1700GMT on Sunday 13 January, 1991.

3. Teams: Teams comprise up to five stations. Each team represents a society or group which is affiliated to the RSGB, and each society may enter as many teams as they wish. Which stations make up which team is determined by the society entering the event. Team placings will be determined by the total of the scores made by each station in the team, after checking. Club secretaries are held responsible for the entry, and must include a summary sheet (see 'Entries') for each team entered by the club.

4. Eligible Entrants:

(a) Each entering society must be affiliated to the RSGB.

(b) Each operator of a team station must be a member of the club he or she represents. The operator is not required to be a member of RSGB.

(c) All stations representing a club must be located within a radius of 50 miles of the normal meeting place of the club. Where a society has 'branches', eg RNARS, each team may define a separate branch meeting place, and the team(s) entered by that branch will be considered to be entirely separate from those entered by other branches, other than in respect of affiliation.

(d) Each station may be single or multi-operator, as best suits the club, but no station or operator may represent more than one affiliated society, or branch.

5. Contacts: CW (A1A) only in the band 3.510 - 3.590kHz, with 3.570 to 3.590kHz reserved for slower-speed contacts. Any stations, including overseas, may be worked for points.

6. Contest Exchange: RST and serial number, commencing with 001. No points will be lost if a serial number cannot be obtained from a non-competing station, but any contest exchange sent by that station should be logged.

7. Scoring: Each completed contact scores 10 points. Points may be deducted for errors or illegibility. Entrants are reminded that each unmarked duplicate contact for which points are claimed will be penalised at 10 times the claimed score, plus the score for the duplicate itself, a total of 110 points. Groups having a total of more than five unmarked duplicates in their logs may be disqualified.

8. Logs and Entries:

(a) Logs must be typed or clearly written on one side only of RSGB HF contest log sheets (form HFC1) or on A4 size paper, using blue or black ink. Standard fan-fold paper, which differs only slightly in size from A4 is a satisfactory alternative. Computer-generated or hand-drawn log sheets are acceptable provided they correspond with the HFC1 format, ie 40 contacts per A4 page, divided into groups of ten, and with the same columnar arrangement - see (b) below. Logs which are incomplete or illegible, or which differ from the correct format may not be adjudicated.

(b) Logs must show, for each contact, the following information, tabulated across the page:

Time of QSO in GMT

Callsign of station worked

RST and serial number sent

RST and serial number received

Callsign of operator making the contact

Points claimed

Duplicate contacts must be clearly marked as such, and not claimed for points.

(c) Each individual log must be accompanied by an HF Contest summary sheet (form HFC2), properly completed, with the declaration signed by the person responsible for that station.

NB. Sample copies of Log and Cover sheets are available from RSGB HQ on receipt of a stamped/addressed envelope. Larger quantities may be purchased. Examples of both forms have been printed in RSGB publications, viz *Call Book*, and may be photocopied for use if so desired. **Please note that contest adjudicators do not normally carry stocks of these forms.**

(d) Entrants are requested to include with every log where more than 80 QSOs appear, a checklist comprising the callsigns of all the stations worked. These should be sorted into order, either fully alphanumerically, or by the first letter of the suffix. The serial number sent to each station should be shown after the callsign. The object of the checklist is twofold - to assist the entrant in spotting duplicate contacts, both during the event, if the list is completed as contacts are made, and during log transcription; also to aid the adjudicator in locating specific contacts for checking without having to search through the whole log. Club secretaries wanting advice or assistance with any paperwork problems (in respect of AFS only, please) are invited to contact the adjudicator at the address shown below.

(e) Each team entry must be accompanied by a Team Summary Sheet, which must contain the following information, and be signed by an officer of the affiliated society:

Name of team (eg RNARS Copenhagen 'B')

Callsign of each station in the team

Individual claimed score for each station in the team

Claimed score for the whole team

The normal meeting-place of the club/branch

Declaration that each operator is a member of the affiliated society.

(f) All entries from each competing society are to be sent in one package to RSGB HF Contests Committee (AFS), c/o S. Knowles G3UFY, 77 Bensham Manor Road, Thornton Heath, Croydon, Surrey, CR7 7AF. Packages must be postmarked no later than Friday 1 February 1991. Entrants must ensure that logs are well packed to avoid

loss or damage in transit. Packages which are underpaid will be refused.

9. Awards:

(a) The Edgware Trophy will be awarded to the leading affiliated society.

(b) The Marconi Trophy will be awarded to the individual station having the highest checked score. (This is a new and truly outstanding trophy and, for the first ten years that it is awarded, the winner will also receive an engraved miniature keepsake.

For this reason, a particular operator will be eligible for the award only once in any period of five years; if the leader is ineligible he or she will receive a certificate of merit, the trophy passing on to the next highest scoring entrant who is eligible.)

(c) Certificates of merit will be awarded to the second and third-placed affiliated societies.

(d) A certificate of merit will be awarded to the highest-placed Scottish affiliated society.

RESULTS

1.3GHZ AND 2.3GHZ TROPHY RESULTS 1990

Conditions were basically average for this contest unless you happened to have been on the East coast when you could take advantage of the usual summer water path into PA. However, even if you were in the right place at the right time, it seems not to have made a huge impact on scores since the activity from PA & DL was very low - G4DSF/P complained that on 2.3GHz he couldn't extract a report and serial number from any of the German beacons! In fact there was not a single German call in any of the logs. There were several requests for the event to be moved to a date better coordinated with European contests, and also one for the timing to be changed so that advantage could be taken of any good conditions either at dawn or in the late evening. As usual, your comments on these suggestions are most welcome.

Equipment used seems to continue to improve, with several people generating useful amounts of power on 13cm. On 23cm, G4IEV/P declared a full 400W at the antenna from a single TH328. Both G8OPR and GD0EMG/P reported amplifier problems, but I can't say that it seems to have done either of them any harm!

Congratulations and certificates go to the winners and runners-up in all sections and, subject to council approval, the Northern Lights carry off both the G6ZR Trophy and the VHF Contests Committee Cup to their bulging trophy cabinet!

G4PIQ.

1.3GHZ RESULTS

OPEN SECTION

Pos	Callsign	Total	QSO	Loc	Pwr	Ant	DX Call	km
1	GD4XUM/P	631	53	74QD	250	16 x 23Y	PE1GHG	659
2	GW4HWA/P	566	68	83KB	200	16 x 23Y	PA0WWM	520
3	G4IEV/P	245	29	02QV	400	1.8m	GD4XUM/P	420
4	G3NAT/P	94	25	91XG	45	65QLY	GW4HWA/P	289

SINGLE OPERATOR, FIXED STATION SECTION.

Pos	Callsign	Total	QSO	Loc	Pwr	Ant	DX Call	km
1	G8OPR	272	36	91FE	70	55Y	PA0EHG	459
2	G4DEZ	246	32	01IN	15	4 x 55Y	GD4XUM/P	458
3	G4LU	236	34	82LT	150	4 x 23Y	G3GIM	349
4	G4ZFJ	227	30	01IN	10	55Y	G1KDF	333
5	G6HKM	162	26	01FT	10	43Y	GD4XUM/P	428
6	G4EQD	162	22	93QN	70	27QLY	PA0WWM	373
7	G8GDZ	159	29	92AK	100	4 x 23Y	G3GIM	262
8	G4NBS	147	23	02AF	4	4 x 23Y	GD4XUM/P	376
9	G1KDF	146	27	83NN	90	4 x 23Y	G4ZFJ	332
10	G6PHJ	105	19	92LO	80	27QLY	GD4XUM/P	293
11	G3UVR	95	20	83KM	150	23Y	G4ZFJ	328
12	G8ZOB	94	18	92JN	40	27QLY	GD4XUM/P	286
13	G3MEH	67	21	91QS	8	1.05m	GW4HWA/P	220
14	G3KZR	58	12	91SE	10	47QLY	G8LEU	336
15	G8DQK	57	13	83RK	2	55Y	G4ZFJ	307
16	G4FOH	6	4	83QC	0.7	23Y	G1KDF	51

FOREIGN SECTION

Pos	Callsign	Total	QSO	Loc	Pwr	Ant	DX Call	km
1	PE1EWR	97	9	11SL	50	23Y	GW4HWA/P	486

2.3GHZ RESULTS

OPEN SECTION

Pos	Callsign	Score	QSO	Loc	Pwr	Ant	DX Call	km
1	GD0EMG/P	3113	13	74QD	15	2m	G4DSF/P	419
2	G4DSF/P	2811	13	02QV	10	1.8m	GD0EMG/P	420

SINGLE OPERATOR, FIXED STATION SECTION

Pos	Callsign	Score	QSO	Loc	Pwr	Ant	DX Call	km
1	G4ZFJ	1848	8	01JN	5	44QLY	PA3EQK	274
2	G8OPR	1665	8	91FE	35	25Y	GD0EMG/P	389
3	G6PHJ	971	7	92LO	15	51QLY	GD0EMG/P	293
4	G8GDZ	748	6	92AK	34	1.2m	GD0EMG/P	260
5	G4EQD	703	5	93QN	15	49QLY	GD0EMG/P	270
6	G3UVR	252	4	83KH	0.5	25Y	GD0EMG/P	135
7	G1KDF	239	4.5	83NN	3	2 x 39QLY	GD0EMG/P	131
8	G8ZOB	182	4	92JN	3	27QLY	G4EQD	118

53RD COMMONWEALTH CONTEST, 1990 - RESULTS

Well, the case is proven, CW DXers are certainly not extinct! The 53rd Commonwealth Contest was a great success with all those who took part and once again entries were up on last year (130 vs 128) in spite of severe QRM from a contest organised by a Japanese radio magazine and the usual crop of last minute equipment failures. Your adjudicator was particularly pleased with the increased numbers of typed and carefully rewritten logs - thank you.

Having failed to meet his past ambition of an outright win from the UK, Al Slater, G3FXB, resorted to mounting a DXpedition this year. He put in an excellent winning log from ZC4ESB, using a TB3, long-wire and TS830. Al wins the Senior Rose Bowl for his efforts, and my thanks for his assistance with contest publicity (along with VK3ZC, ZL3GQ, ZL1AAS and other willing assistants worldwide). Lee Sawkins, VE7CC, using no less than seven beams including a 2-element Delta on 80m, had to settle for second place and the Junior Rose Bowl - a very creditable performance nevertheless, scoring around 900 points more than last year. Third place went to Nigel Hoyow, GY5HN, who could not quite match last year's score.

In the UK, Dave Lawley, G4BUO, took advantage of G3FXB's absence to win the Col Thomas Rose Bowl - though in fact his score would have exceeded Al's 1989 effort so he was clearly on good form. Entries from Dennis Andrews, G3MXJ, using a TH6 and slopers, and Peter Hobbs, G3LET, using a ground plane and long wire, were closely matched for second and third UK places. Comparing the leader's stations demonstrates that operator skill and luck are of major importance - in other words, entrants without the resources to erect large aerial arrays need not be discouraged but should try even harder to maintain impetus throughout the 24 hours.

Single band winners were: VO1NA (80m), ZL1AZE & G3DYY (40m), VK6AJ & G4BVH (20m), ZB2EO & G4BK1 (15m) and VE3HX & G3PJT (10m). Certificates of merit go to each of them.

In the receiving section, "Brad" Bradbury (BRS1066) was the lone entrant. His log was faultless and should serve as an example to other SWLs - indeed the HF Contests Committee would be more than happy to assist other listeners to enter (please write to the HFCC at RSGB HQ for more information). Brad wins the Receiving Rose Bowl.

A fair sprinkling of exotic DX was active, though of course never enough to satisfy everybody, and it was gratifying to see participation from Africa, the Pacific, Caribbean and India. Local conditions were generally difficult, and all credit to the operators for doing so well with often relatively modest stations. 1990 was the first year that additional bonus points were available for working Commonwealth society HQ stations; a total of nearly 900 contacts were made with VK3WIA, ZL6A and GB5CC. We hope that further society stations will be active next year in the spirit of international friendship which is at the root of this contest, and once again we urge all Commonwealth amateurs to publicise the event on-air and in print wherever possible.

Comments received: "An enjoyable holiday" (G3FXB); "My logging program thrice lost about 10 QSOs" (ZL3GQ); "A hard slog on Sunday morning" (G4BUO). "Capital fun" (VE2KN); "Best CW event of the year" (G3JJG); "Antennas damaged in ice storm 3 weeks before contest" (VE6OU/3); "Had 200mm of rain" (P29PL); "HF condx disappointing on Sunday morning, LF condx dismal" (GW4XXF et al); "Didn't intend to participate but got carried away" (VE1AAY); "Called CQ BERU to avoid JA QRM"; (GW3SB et al); "Thank goodness for liquid paper!" (VK6AJ).

G4IFB

Posn	Callsign	Total	80m	40m	20m	15m	10m
1 *	ZC4ESB	6755	240	755	2250	2065	1445
2 *	VE7CC	6590	428	1213	1982	1697	1270
3 *	GY5HN	6225	425	1215	2220	1495	870
4 *	VK6LW	6190	325	1050	2045	1705	1065
5 *	G4BUO	5352	420	910	1470	1592	960
6	G3MXJ	5145	410	750	1671	1354	960
7	G3LET	5117	360	974	1543	1385	855
8 *	ZL3GQ	4809	579	950	1390	1310	580
9 *	VK4XA	4785	425	770	1730	1120	740
10	G3OZF	4500	325	690	1345	1350	790
11	VE7UZ	4470	200	960	1200	1340	770
12 *	VK2APK	4410	350	865	1575	965	655
13 *	VE1ZZ	4401	814	1347	995	705	540
14 *	VE2KN	4290	365	820	1410	875	820
15 *	VE3ST	4262	329	640	1691	873	729
16 *	ZM1AIZ	4140	665	845	1350	820	460
17 *	9J2BO	3820	25	360	1187	1200	1048
18	G2QT	3758	223	585	1155	1250	545
19	GM4OBK	3720	225	425	1195	1095	780
20	G3TBK	3575	150	460	1020	1135	810
21 *	VE5ZX	3450	0	425	1345	1180	500
22 *	VE6BF	3390	0	530	1465	1000	395
23	VK2AYD	3327	350	780	1305	625	267
24	G3NKS	3285	225	535	905	1000	620
25	GW3HGJ	3115	225	410	1145	810	525
26	ZM1HV	3021	198	533	930	885	475
27 *	VK3ZC	2905	525	830	810	515	225
28	VE3JKZ	2904	150	340	1055	680	679
29 *	VK5GZ	2870	405	300	1135	760	270
30	G3YEC	2815	150	475	1010	820	360
31	VK5BN	2790	300	575	860	630	425
32	G3EBH	2780	75	355	890	1000	460
33	G3GLL	2775	150	150	895	1055	525
34	G3JJG	2710	100	300	980	845	485
35	G3PEK	2620	200	300	625	920	575
36	G3OXC	2600	150	275	1000	715	460
37 *	VE4JB	2595	0	635	1225	735	0
38	G3KSH	2565	180	390	945	625	425
39	VE6OU/3	2510	285	410	460	610	745
40	GM3CIX	2495	75	150	955	870	445
41	VK2DID	2470	300	810	810	525	25
42	G3SWH	2410	75	275	740	755	565
43	VK3DQ	2400	500	525	840	435	100
44	G3MPB	2390	200	355	825	635	375
45 *	P29PL	2385	325	400	995	340	325
46	G3EFS	2375	250	325	860	730	210
47	VK6RU	2350	0	100	930	695	625
48	VK4XW	2315	380	550	905	380	100
49	G5MY	2260	150	150	1015	590	355
50	VK6HQ	2183	0	0	1243	865	75
51 *	SZ4FN	2155	25	180	335	810	805

52	=	GW4XXF	2110	50	125	915	595	425
52	=	G3ESF	2110	0	275	840	555	440
54	=	GM3NAN	2100	0	150	795	785	370
55	=	G3GC	2050	50	225	830	680	265
56	=	G3VDL	2035	175	320	685	580	275
57	*	VK8HA	2025	0	0	1025	810	190
58	*	C56/G3XWK	1980	0	0	945	595	440
59	=	VE1AAY	1955	160	620	570	605	0
60	=	G3NKC	1923	125	225	668	555	350
61	*M	VK6AJ	1880	-	-	1880	-	-
62	*	VO1CA	1810	255	240	535	780	0
63	*M	G4BVH	1735	-	-	1735	-	-
64	=	GW3JI	1725	75	275	550	440	385
65	=	G2HLU	1715	100	175	655	380	405
66	=	G3JKY	1685	0	150	740	525	270
67	M	VK5AGX	1675	-	-	1675	-	-
68	=	G3AWR	1670	0	75	675	720	200
68	=	G2AFV	1670	0	200	725	385	360
70	=	VK3MJ	1655	0	200	875	505	75
71	=	VK2EL	1605	175	325	675	405	25
72	=	G3HKO	1580	0	150	590	470	370
73	=	G4KGK	1575	0	0	690	560	325
74	=	G2BLA	1525	75	175	480	520	275
75	*M	ZB2EO	1510	-	-	-	1510	-
76	=	G3BPM	1485	100	225	555	430	175
77	M	VK4TT	1480	-	-	1480	-	-
78	*	G2DLJ	1465	0	150	585	380	350
79	*	VK7RY	1405	300	235	645	150	75
80	*M	ZL1AZE	1400	-	1400	-	-	-
81	=	VK3DNC	1365	0	250	680	335	100
82	=	VE4MF	1355	0	0	565	520	270
83	=	VE1EP	1310	180	250	480	175	225
84	*M	G4BK1	1295	-	-	-	1295	-
85	*M	G3PJT	1270	-	-	-	-	1270
86	=	VK4OD	1218	350	460	408	0	0
87	M	VK3XB	1195	-	-	-	1195	-
88	M	G4AZN	1120	-	-	-	1120	-
89	=	G3WKL	1115	0	0	225	370	520
90	*M	VE3HX	1100	-	-	-	-	1100
91	M	VK3JI	1078	-	-	1078	-	-
92	=	VK3KS	1060	0	0	285	775	0
93	=	VK2AIC	1030	0	125	530	245	130
94	=	VK5HO	975	225	175	475	75	25
95	=	G0LZL	955	0	100	200	395	260
96	M	Z23JO	895	-	-	-	-	895
97	=	VE2BLX	886	0	205	420	261	0
98	=	VK3XF	880	200	275	405	0	0
98	*	VU2UR	880	0	0	75	480	325
100	*	V2/G6QQ	865	0	0	545	220	100
101	=	GW3SB	845	0	0	350	330	165
102	M	VK3FC	823	-	823	-	-	-
103	=	G6NK	820	0	0	175	380	265
103	=	VK5RG	820	0	75	520	225	0
105	=	VE1ALJ	810	0	120	430	135	125
106	=	VE3NXX	731	0	100	261	315	55
107	=	VK3BDH	730	0	0	430	200	100
108	M	G3ICH	655	-	-	-	655	-
109	=*M	VO1NA	645	645	-	-	-	-
109	=	G3ILO	645	0	75	200	95	275
111	M	G3DYY	595	-	595	-	-	-
112	=	ZL3BJ	550	100	165	285	0	0
113	=	VE3/W8VSK/M	505	0	0	110	100	295
114	=M	VO3AW	485	-	-	-	485	-
114	=M	G3CQR	485	-	-	485	-	-
116	=	G8QZ	450	0	0	250	100	100
117	=	VE2HN	420	0	25	130	125	140
118	=	VE3TPB	400	0	50	140	95	115
119	M	G0IDE	355	-	355	-	-	-
120	=	VE3TEE	330	0	100	230	0	0
121	M	G4CZB	235	-	-	-	-	235
122	M	G5LP	225	-	225	-	-	-
123	=	G5ZK	175	0	25	150	0	0
124	M	GW4HBK	100	-	100	-	-	-
125	M	G4QTY	50	-	50	-	-	-

* = Certificate of merit. M = Monoband

RECEIVING SECTION

1 *	BRS1066	3430	200	410	1045	1100	675
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Checklogs received from: VK3WIA*, ZL6A*, GB5CC*, GM3UM, GM3CSM, G4UOL(ORP), G3WP, VE2AQP.
Disqualified: VE1AUU (excessive unmarked duplicates).

CONTESTS CALENDAR

RSGB HF CONTESTS

10 Nov	Club Calls Contest (Aug 90)
17 Nov	2nd 1.8MHz Contest (Sep 90) 1991
5 Jan	7MHz LF Cumulative (Oct 90)
6 Jan	3.5MHz LF Cumulative (Oct 90)
7 Jan	1.8MHz LF Cumulative (Oct 90)
12 Jan	3.5MHz LF Cumulative
13 Jan	7MHz LF Cumulative
13 Jan	Affiliated Societies
15 Jan	1.8MHz LF Cumulative
19 Jan	7MHz LF Cumulative
20 Jan	3.5MHz LF Cumulative
23 Jan	1.8MHz LF Cumulative
26 Jan	3.5MHz LF Cumulative
27 Jan	7MHz LF Cumulative
31 Jan	1.8MHz LF Cumulative
2 Feb	7MHz LF Cumulative

3 Feb	3.5MHz LF Cumulative
8 Feb	1.8MHz LF Cumulative
23-24 Feb	7MHz CW Contest (Sep 90)
9-10 Mar	Commonwealth Contest (Nov 90)

RSGB VHF CONTESTS

2 Nov	432MHz Cumulatives (Aug 90)
3-4 Nov	144MHz CW 8-hr Marconi/RSGB (Aug 90)
10 Nov	1.3 & 2.3GHz Cumulatives (Aug 90)
11 Nov	144MHz CW Cumulative (Aug 90)
2 Dec	144MHz AFS/Fixed/SWL (Aug 90)
4 Dec	432MHz Cumulatives (Aug 90)

There will be an SWL section in every VHF contest even if not mentioned in rules.
Dates of publication of rules in *RacCom* are shown in parentheses.

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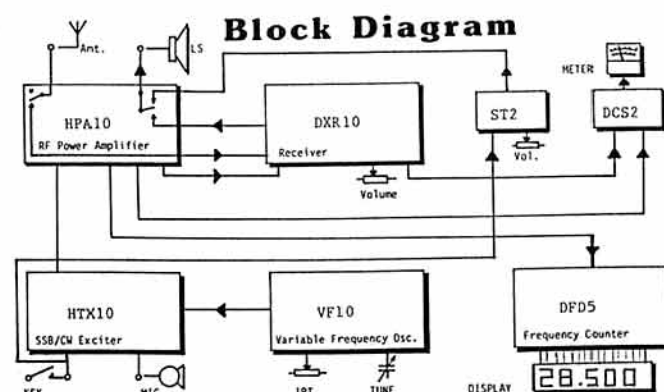
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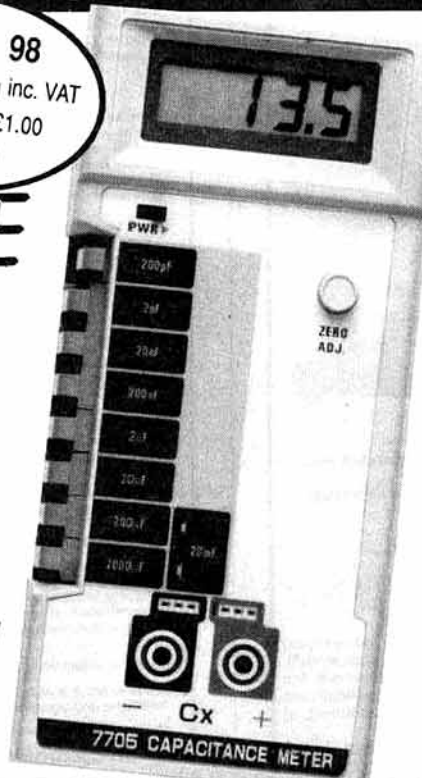
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20µF	10nF	+ (0.5% + 1 digit)
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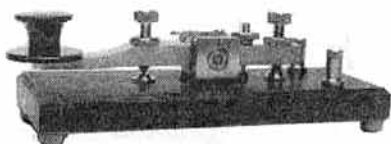
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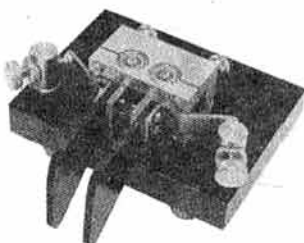


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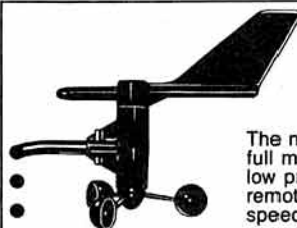


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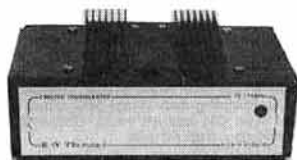
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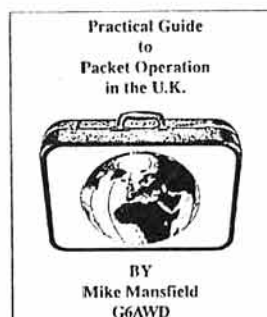
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● 2M 8877 amp with spare valve. Mutek TVVF 144A 28/144 trvtr. SSB Electronics LT2S 28/144 trvtr. SSB electronics PM1300 pwr meter. SSB Electronics DX144 unswitched preamp. (Ballywalter) 02477 58425.

● 2M h/h, lcom IC2SE, with spare batt pack, spkr/mic, case and off-rig chgr. RX 88-250MHz, brand new; £235. (Redditch) 0527 401853.

● 2M standard C5800 all-mode trvtr, boxed, complete; £350 plus p+p. No offers. (Aldershot) 0252 25076 after 6pm or w/e.

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● ALINCO DJ120E 2m h/h c/w nicads, chgr, case, 6mths old VGC; £140. Met 50-3 6m ant, unused; £25. G4TIF QTHR. (Leamington Spa) 0926 313669.

● ALINCO DJ160 2m h/h extended RX; £175. AR1000 h/h scanner 8-1300MHz; £200. Icom M5 marine h/h; £150. (London) 081-961 5375. (Coven-try) 257409.

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● AURORA QTH sale. GMOEXN offers his QTH for sale. Consisting of 5 acres coastal pasture and beach (boat slip use), with semi rock stack and 150ft cliffs. Have a ground plane 150ft long into the sea bed! Beam over the sea for VHF Aurora! The residence is a smallholding so no domestic planning restrictions. Part of the property is a tearoom/restaurant and earns a good established living in 6mths. So 6mths holiday. The private accommodation has 2 beds, living room etc. Plus outside barns. All is for sale as a going concern. Offers from: £89,000. Health forces sale. Alternative phone no. as may be in Australia, America, Spain, wherever when this ad comes out, 0908 368148. 73 John. (Dunnet Head) 084785 774.

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● BNOS 12V/25A PSU; £150. BNOS LPM144 10-10 linear/preamp; £150. Datong ASP speech processor; £50. Mint cond, orig boxes. G8GNI QTHR. (Milton Keynes) 0908 568955.

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● BUTTERNUT HF5B 5-band beam ant covering 10/12/15/17/20. Exc. cond; £80. G0GWP QTHR. (Nottingham) 0602 434457 day.

● CAMBRIDGE Z88 computer. Mains unit, serial lead, parallel printer, i/face lead, 128k Rampack, s/case. Good cond, boxed; £175 incl p+p. G0ABI QTHR. (Eggesford) 0769 80700.

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● CLANDESINE radio set, MK123 TX/RX with DC ivtr, spare valve set, all leads etc. In orig. wooden

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● CLEARANCE. Icom 1050 10FM; £25. Eddystone 380X spares/repair; £20. 2 Bantams spares/repair; £10. 3BPI tube and base; £15. R210 RX, no PSU; £30. TUSB; £25. G4JTK QTHR. (Eldersmere Port) 051-356 1757.

● CLEARING SHACK, many attractive items must go cheaply, incl HF5 vert ant and Epsom RX80F/T-printer. G3XKT QTHR. (Nottingham) 0602 392554.

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● COMPLETE HF base station 101ZD Mk3. New bands, fan, filters, SEM Transmatch. Welz SP250 swr/pwr meter. Toyo T100 dummy load. 3-way ant switch. All leads, manuals. V. little use. Exc. cond. Get straight on the air. Will meet genuine buyer 50 mile radius of Hull or buyer pay carr. No offers, no splits. G0EAA QTHR. (Hull) 0482 657853 any respectable time.

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● CUSCRAFT RS vert. VGC; £200. AMTOR AMT1 terminal unit with s/ware, manual, for Commodore 64; £80.00. JSM Digiprom data modem; £35. 10m FM; £30. G4SSX QTHR. (Eastcote, Pinner) 0895 630627.

● DATONG ASP; £50. Morse tutor; £35. Shure 444; £50. FS/swr tester, Microtra; £15. All VGC. 2x Andrew LDF450 N-type plugs, pair 6146B, GEC. All new, unused. Collins PM2 AC PSU, unused xmr; £50. G3ONU. (St Albans) 0923 676344.

● DATONG auto speech processor; £50. D70 Morse tutor; £38. MF4J28 Grandmaster mem keyer; £50. Kenwood SP430; £25. MC60A mic; £60. All immac cond. Prefer buyer collects or carr. extra. G0JUV QTHR. (Blackpool) 0253 22987.

● DATONG universal RF speech clipper; £20 plus post. Owner gone CW. Why use a linear? G3EVP QTHR. (Boroughridge, Yorks) 993 323277.

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● FL2100Z 1200W ip linear amp 160-10m incl WARC bands. Prefer buyer to collect; £500. FRG7 gen. cov 500kHz-30MHz RX; £100. G3TKN QTHR. 0705 265101.

● FL2100Z HF linear ex silent key, average cond; £465. Jaybeam glass fibre 2m colinear (the big one) type CF5/2m, gain 4.8dB, list price £105, offered working cond; £55. Carr. extra on both but poss of delivery. G3LSD QTHR. (Plymouth) 0752 561245.

● FT101EE with CW filter and all accs; £275. Matching FV101 ext 2nd VFO; £30. Trio R1000 gen. cov rcvr SSB/AM/FM; £175. All exc. cond. G3ZLS QTHR. (Solihull, W.Mids) 0564 770235.

● FT200/FP200 HF trvtr; £150. Buyer inspects/collects. David G0IKV. (Southport) 0704 232991.

● FT290 multimode, nicads, chgr, s/case, no mods, plus 30W MM amp and PSU; £300. G6GAU QTHR. (nr Ipswich) 047387 430.

● FT290R2, case, batt, chgr. FL2025 linear amp 25W m/mount plus 5/8 wave ant, mint; £350. RN Electronics trvtr 3-25W, mint; £110. Alan QTHR. (Royston, Herts) 0763 262443.

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● FT77GX VGC, boxed; £485.00. Tokyo HT180 80m SSB/CW mobile trvtr; £450. FT1750n. HF linear, parts; £50. G4GZS QTHR. (Rugby) 0788 815506.

● FT77 100W HF trvtr and FP700 PSU, with CW narrow filter, FM board, mic, boxed; £450. No split. Ivan, G0BON QTHR. (nr Windsor) 0784 482832.

● FT790R2 with FL7025 linear; £350. Lcom 4SE handy; £199. FT727 dual-band handy with base chgr, case, m/mount, spare nicad; £275. Icom M5 marine handy with spkr/mic, 2x nicads and pukka waterproof case; £250. All boxed and with manuals. G3TUX. (Haslemere) 0248 61501.

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● IC471E, 70cm basestn in good cond. 25W o/p, mains or 12V operation; £595. Dave, G0FHF QTHR. (Leamington Spa) 0926 452085.

● IC735; £700. IC290D; £350. FT726R 2m/70cm/sat; £750. Pakrat 232MBX; £275. Dressler D70; £525. 23cm 160W twin amp; £200. 6m 4CX250B amp; £200. 2m nag amp; £200. Usual

- bits incl paddle key, keyer brass straight key, meters, heliax cable, preamps, mobile whips, others, ant. top cond. Icom AT500: £400. Full list available on request. GOAHO QTHR. (Stoke-on-Trent) 0782 721888.
- IC7511 with extra filter histab oscillator. VGC, boxed: £1100. Trap 10/15/20 vert: £60. 3ele 10m beam: £45. Brother EP44 port typewriter/terminal: £50. Amstrad PC1512 with hard disk: £500. Plus Star L24-10 high quality printer: £250. GW3FKO QTHR. 0874 2772.
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- ICOM AG35 preamp 70cm for models IC471H, IC475E and H. Good cond: £35. G6NBE QTHR. (Halifax) 0422 370374.
- ICOM IC475H 70cm all-mode basestn, 75W, 500Hz CW narrow filter, high stability xtal unit: £890. IC900E 70cm/10m mobile with 100W 10m linear: £600. AOR AR2002 scanner 25-550MHz, 800-1300MHz, PSU, telescopic aerial: £300. All as new with orig. packing. All one. Bruce, G4VWX not QTHR. (Bucks) 0628 664415 anytime.
- ICOM IC725 5m FM CW filter, as new, still in warranty: £695. Alan, G0KMC QTHR. (Aylesbury) 0296 29342 eve-w/e.
- JRC NRD 525 HF rcvr with matching ext spkr NVA88. Boxed, mint cond: £650. G8PYC. (Thame, Oxon) 084421 5857.
- JST 135 tvtr, BWC option NBD520 PSU/spkr, mic, manuals, boxes. New Jan. Mt: £1290. FT980 tvtr, mic, manuals, boxes, mint: £1100. Would pt/ exch either above for Icom IC740/5 + cash. GW4RLP QTHR. (Caernarfon) 0286 5264 eve.
- KATSUMI MK1024 electronic keyer with mem. As new, cost £185. Accept: £80. G3YPS QTHR. (Gainsborough) 0427 811160.
- KEN PK202 6ch 2m h/f, S18, S20, S22, R2, R3, R4 fitted plus xtal for S18, 144.85 (Raynet). Exc cond with manual, case, nicads, chrg, heliax: £90. G6ZLM QTHR. (Oxford) 0855 66075.
- KENT electronic keyer factory built, brand new. A1 class keyer: £38 incl post. G2BGG QTHR.
- KENWOOD 520SE tvtr. CW filter fitted, approx 30hrs on TX. Unmarked. 2 new spare valves: £375. Yaeu 290R, nicads, chrg, carrying case, rubber duck. Spotless: £250. M/M linear 144/30LS, perfect order: £70. All with insts and orig. packing. G4REY. (Blackpool) 0253 811162.
- KENWOOD R1000 rcvr 200KHz-30MHz AM/SSB/CW, dig readout, timer, 240VAC. Manual, boxed: £1700. Peter, G0KLR QTHR. (Sunbury-on-Thames) 0930 782628.
- KENWOOD SP230 spkr with filters: £45. Edystone EB35 3c BC RX, boxed, mains and batt PSU: £50. G3ACB QTHR. (Seaford) 0323 897145.
- KENWOOD TMB21E, as new with orig. packing etc: £210 cash. Also many items of hi-fi and photographic equip available. G3GYX QTHR. (Stapleford, Nottingham) 0602 396387.
- KENWOOD TR751E 2m multimode tvtr. 25W o/p, p.e.c. cond, little used. 9mths old, voice synth, VS1 fitted. Moving house reason for sale: £475. Neil, G1JWS QTHR. (N. London) 081-443 3285.
- KENWOOD TR9500 70cm multimode. V. little used: £300. TM411E 70cm FM 25W mobile, dual VFOs: £180. BBC-B computer Cumana 40r d/drive, Philips mono monitor: £140. (Ferdown) 0202 895027.
- KENWOOD TS120S. VFO120. ATU130. Complete station: £460. PSU430: £100. SP430. 3ele Moseley Mustang tribander: £100. (Stoke on Trent) 0782 395017.
- KENWOOD TS430 FM, wide AM, narrow SSB filters fitted: £575. PK888 TNC c/w Commodore 64 computer: £125. G0CRP QTHR. (Crawley) 0293 782910.
- KENWOOD TS680, PS430 PSU, CW filter, immac: £850. AEA PK232MBX multimode TNC, new with mailbox: £285. Yaeu FT480R 2m multimode: £500. Watford Aries PC/XT 40MB hard disk, twin 3.5in 5.25in floppies, EGA colour with monitor: £750. Ham-4 rotor control box (no rotor): £40. Marconi TF995A sig.gen: £40. Marconi FT1065 pwr meter: £15. G3VMM QTHR. (Wetherby) 0937 844510 after 6pm.
- KENWOOD TS830S, WARC bands. Mint cond, orig. packing, fist mic, service manual: £7000. G0CZO QTHR. (Liskeard) 0579 62831.
- KW 1000 linear amp, recent overhaul, new valves etc. V. clean cond: £450. G3YNC QTHR. (Romford) 0708 79175.
- KENWOOD-Trio TS430S, exc. cond, all options fitted: £650. AOR2001 scanner 25-512MHz, no gaps AM/FM/FMW: £2500. 23cm Gaslet i/e higher o/p, v. stable, exc. performance: £2000. Multimetre V/A/C/DC/ohm USA-made, h/d steel case, ideal service work: £25. 1/2HP single phase 240V motor USA-made: £25. Philips FM321 70cm Australian-made: £135. Kenwood BO/3 base for use with TR9000/9500: £25. 2m Kenwood band-pass filter: £25. Yaeu FR9600 scanner 60-950MHz, no gaps SSB/AM/FM: £375. Adonis
- compressor mic model AM503: £40. Scanner HF cvtr 0-60MHz: £25. Ant switch HF 2-way: £5. Kenwood M60A mic: £65. G-whip 10-160m ext/rodball joint: £65. (North Norfolk) 0328 710641.
- KW207L Supermatch ATU, int 300W dummy load, 80-10m, 2 coax ant sockets, 2 pairs of terminals for twin or open wire feeders, handles 150W to input, new cond: £90 plus p+p. G3UVE QTHR. (Bexhill-on-Sea, E. Sussex) 0424 215983.
- LDF450, plugs, 25m, new: £100. Can travel Lancs/Cheshire. Tony G4NGV. (Kings Lynn) 0553 671065.
- LINEAR amp G2DAF mode, prof built, 2x 813, switched 400W or 800W. Size 14x14x8 self-contained, spare 813s: £250. G3PTN QTHR. (Leeds) 0532 654644.
- LINEAR. Hammarlund HXL-ONE 1500 IP uses 572 valves. Good order: £250. Take Olympus A2200/Canon zoom XL/Similar pt/exch. G4OLI. (Kettering) 0536 522482.
- M/M 144/100LS linear amp with preamp and 1W/3W vtr. VGC and little used: £110. Carr. extra. Chris. (New Milton, Hants) 0425 615143.
- M/M 432MHz MMT432/144R vtr 2m IF c/w 6dB attenuator suitable for use with FT290. All modes: £95. John G0GDU. (Thurgarton, Notts) 0636 830687.
- M40FM converted to 29MHz FM, exc. cond: £45 plus p+p at cost. RA17, GWO with some spare valves: £150. Buyer must collect. G3ADZ QTHR. (Rugby) 0788 815222.
- METEK 144MHz tvtr TVVF144A. As new in box: £150. No offers. Mick, G6OWX QTHR. (London) 081-691 2040 eve.
- MINOLTA 5000 camera 35-70mm lens, 70-210 sigma lens, Cobra flash, skylight filters, boxed, exc. cond: £275. Consider swap for 2m multimode ex FT290 plus 20-30W linear. G1JTY not QTHR. (Liverpool) 051-263 3660.
- MINT FT726R 2m multimode, mic, 6m module, HF module, sat board: £950. Could separate. FDK Multi-750E 2m multimode: £220. 70cm expander: £150. Both: £350. Datong multimode filter FL3, mint: £70. TR2300 2m FM portable: £85. K. Greenough, G8BEQ QTHR. (Glossop) 0457 855468.
- MUTEK SLNA144S 2m preamp: £25. M/M 432/28 cvtr: £20. HRO coilboxes 7/14MHz, 14/30MHz: £50. G3ZUM QTHR. (Birmingham) 021-747 5077.
- NATIONAL HRO reception set R106 comms rcvr 0-30MHz using 9-coil packs supplied, c/w operating manual PSU and spkr: £850. Also Yaeu MH18B fist mic, unused: £12. Chris. (Derby) 0332 701247 after 4pm.
- NATIONAL NCX5 Mk2 HF TX/RX, new PA valves: £150. Hy-gain TH3JNR HF beam: £50. Creed 444R/P with S76 terminal unit and spares: £50. Marconi FT801B s/gen 12-48MHz: £30. Avo sig 50KHz-80MHz: £20. Pye Vanguard 4m, 3ch fitted: £20. Pye handle Cambridge 4m with built-in chrg, 3ch fitted: £30. Pair of 28.5MHz Sommerkamp h/h: £20. G3TGF QTHR. (E. Sussex) 0435 830484.
- NEW boxed Pye PF85 vehicle adaptor: £25. New label spkr mic for PF85: £15. Belt clip and mounting bezel for PF85: £8. Icom BP3 batt pack: £8. PFXXII hi-band with TC35, VGC: £175. (Cambs) 0354 741168 8-9pm.
- NEW heliax 50ohm, attenuation 2.24dB per 100m: £2.30m, £99 per 50m. All carr. paid. G3CRH QTHR. (Midlands) 05436 6363.
- NICAD batts AA. 3/4c £1. 3.3 & 4Ah: £0.70ea. 14in green screen monitor: £30. PSU suitable for disk drive: £4. Phones type DLR: £2. Don G4KXW. (Dronfield) 0246 416988.
- NRD515 HF rcvr 0.01-30MHz, all filters fitted. Exc. cond: £575. Free delivery. Mike, G4FBK QTHR. (Northwood) 09274 22766.
- NRD515 practically unused: £650. NR525 well used but perfect working order: £725 or both for: £1300. (Northampton) 0604 718707.
- OFFERS for 1989 Klingenfuss Guide to Utility Stations. Nearly 500pgs, good info. Last year's but still useful. Briggs, 57 Charlton Dr, High Green, Sheffield, S30 4PA.
- OMNI-D, Ten-Tec complete stn with PSU, ATU, mic, 200W i/p. Fine CW/SSB stn: £5000. G4PKB QTHR. (Norwich) 0603 501939.
- PACKET radio TNC. Kantronics KPC2 HF/VHF with WelaX. Boxed with manuals: £95 or exch for scanner ICF7600D. G6IGW. (Crewe) 0270 60062.
- PANASONIC SW rcvr DR49, 8-bands, top-band through to 30MHz, VGC: £1200. GW8YJN QTHR. (Haverfordwest) 0437 781265.
- PORTABLE sectional alum masts. 42lx2lx2m c/w guys, stakes, top/bottom fixings. All in canvas bag: £135ea. Unused 50m reel 3x6mm mains cable: £150. Complete but needs attn: £85. 10kV 1600/500pF ceramic caps: £5ea. Roller Coaster precision made: £35. 50Hz hourmeter: £6. Would exch with 2m mobile rig. G3SWC. (Horsham) 040372 2444 eve.
- PSION Organiser II model CM plus mains adaptor. Unwanted gift: £65. Post at cost. G0LTM QTHR. (Bradford) 0535 23891.
- PYE PFX low-band with TC35 and batt: £110. Vehicle adaptor for PFX, new: £30. Dymar 585 AF pwr meter with standby batt: £25. Tat 1199 low-band FM 2-way radio. GWO: £130. (Cambridge-shire) 0354 741168 8-9pm.
- PYE PFX working on 2m c/w nicad: £185. PF85 hi-band with TC22 nicad, case: £150. Cleantone BC2 chrg: £10. Tat 1199 low-band FM 2-way radio: £125. 0354 741168 8-9pm.
- QTH for sale. 3 bed semi, part dble glazed partly built operating console construction workshop. 13V/45A stabilised receiver PSU. Loads compo-
- nents incl linear HT transformer: £75 or offer for quick sale. G3AFC QTHR. (Dartford) 04747 2691.
- QTH sale. 3 bed det bung, SFCH, lounge, kitchen, b/room with shower, ice gdn fully enclosed. 5mins walk from sea, 10mins from eastern comms, fitted shack 10x7, 12ele 2L special plus GSRV. Quiet estate, parking for 4 cars, 2 6x4 sheds: £38,000. Free to buyer, FT902DM, pristine cond, all filters fitted, new tubes, DC/DC cvtr, just serviced. G7HXX not QTHR. (Stalham, Norfolk) 0692 81663.
- RA17 MkII. GWO, clean cond. Manual, some spare valves: £125. Steve Mallison G6AMO. (Rickmansworth, Herts) 0923 775373.
- RACAL freq. counter type 9911, 7-digit 10Hz-120MHz: £65. Racial freq. counter type 9822 10Hz-60MHz: £45. Both in GWO. QTHR. (Crawley Down) 0342 714402.
- RACAL RA17 comms RX 500KHz-30MHz. VGC with h/book. Prof tested. Buyer inspects/collects: £160. Dave. (Swansea) 0792 795517.
- RACAL RA17 in case. Lovely cond plus h/book: £150. Drake 2B with Homebrew Q multiplier plus h/book. Also in lovely cond: £100. G4ILR QTHR. (Aylsham, Norfolk) 0263 761612.
- RACAL RA17 rcvr: £80. Sony ICF5W1S rcvr package: £145. Icom IC735 tvtr, PS55 pwr unit: £800. G4VMJ QTHR. (Andover) 0264 53843.
- RACAL RA1217 HF RX 200KHz-30MHz, SSB/CW/AM, filters 200Hz-8KHz switched. Good cond with circuits and service info: £250. The orig 6m Meon tvtr, 10m IF with M5735 PA 20W PEP cvtr interface available if reqd: £1000. Advance OS15A scope with circuits etc: £35. A3 size light box of tape-ups etc. Hardly used: £30. G4HUP QTHR. (Ipswich) 0473 641710 day 0473 37320 home.
- RCA AR8516L 80KHz-30MHz 18-bands, 1kHz readout, manual: £150. R1155 RX with PSU: £25. Inspect and collect. (Glasgow) 041-649 2328.
- REDIFON HF tvtr 100W USB LSB channelled 12V with ATU: £120. RAF key type-D: £25. Sig. Corps key RAF: £12. B2 key: £10. B44 complete Redifon HF synth 100W military radio complete USA clandestine TX/RX and PSU. Mike. (Brighton) 0273 058573.
- ROLLS Royce tvtr Swan Astro 102BX. Exc. cond, 2 VFOs, if gain, AGC decay, p/b tuning, n/filter, solid state, 100W 80-10: £475. G3KXF. 0296 611428.
- RSGB Bull/RadCom, bound vols, complete years 1953-83: £150. Short Wave mag Do, 1955-70: £75. E8V 500V bridge megger: £30. Ericsson H12 phones. BBC-stamped, orig. lead and jack plug: £15. All carr. paid, one. Ian, GM3LUG QTHR. (Dunoon) 0369 87341.
- SCANNER PRO200A + disc. £2500. Codemaster CW tvtr, RTTY decoder: £50. Scope Hamv 20MHz dual trace: £2500. (Washington, Tyneside) 091-415 1550.
- SCANNER SX200 c/w mains PSU. Good cond. From 26-512MHz with few breaks: £145. G8ALO. (Sutton Coldfield) 021-353 7867 eve.
- SCOPE CD1400 working plus one spare not working. Plus spare amps etc: £50 the lot incl manual. G3TOL. (Bournemouth) 0202 432506.
- SCOPE Solartion Solarscope CD1014.2 dual-beam with manual: £50. G8ANT QTHR. (Sutton, Surrey) 081-644 9564.
- SILENT key G4PYE. Yaeu FT707, FP700, FC707, mic, GWO: £550. Datong UC7 cvtr: £50. Tristar 3-band vert c/w radials: £75. Altron 30ft telescopic mast, collect: £250. Spectrum 48k with recorder printer: £50. Altron 6/20 multiband beam, used: £125. Solid brass key, marble base: £50. Near offers considered. Post/carr. extra. Equip Basingstoke, ants Seaford, G3OAZ QTHR. (Basingstoke) 0256 465126.
- SILENT key sale. Trio TS530S, recently serviced: £440. Kenwood AT230: £125. Kenwood hand mic MC35S: £15 or: £525 all 3. Datong multimode filter FL2: £60. Datong morthr D70: £38. Carr. extra. G3IER QTHR. (Cheltenham) 0242 583664.
- SOMMERCAMP TS288 180W tvtr. Cond as new: £275. Galvanised lattice tower plus rotator and control with top bearing: £100. B34 Admiralty rcvr, cond as new, all coils, PSU, orig h/book, spkr: £175. Tektronics scope trolleys, VGC: £35. (Halifax) 0422 842229.
- SOMMERCAMP FT277ZD (FT101ZD) 9-bands, fan, mic, narrow CW filter: £400. Tektronix 545A scope, inst manual: £50. G0AGC. 0952 242306.
- SOMMERCAMP FT277ZD (FT101ZD) MkIII, CW filter, DC/DC cvtr, 9-band, new final tubes, VGC: £400 no offers. 2m single 4X250B amp plus PSU, 19in rack plus spare tubes: Offers. Buyers collect. G0GMS. (Horsham) 0403 55011.
- SPECTRUM +2 with 128k RAM and 48k power-bu, joystick, PS2 etc. Regular UHF modified or p for colour TV. Cassette built-in to main body of machine. Immac cond. Offers around: £150. Richard/Mary. (Hitchin) 0462 700178.
- STANDARD C5800, C7800, both mint cond with manuals, mics, m/bkts. Sad to see go: £400 the lot. Andrew, G1W1V QTHR. (Rhondda) 0443 670195.
- STC RXU11 permeability tuned rcvr 2.4-30MHz intact, good cond no PSU: £40. Clark pump-up mast heavy vehicle variety: £20. 3 dial units, 1 Edystone type: £8ea. HV 1000V trans: £5ea. High voltage 10kV and Mors caps. G4RWL. (Carlisle) 0228 513227.
- SURPLUS keyer, Mizuho MX2 2m SSB walkie talkie 1W o/p: £600. Zetagi 2m linear 10W in 100W out: £1000. M/M 50MHz cvtr 28-30MHz IF: £400. All equip in GWO. Will consider exch for 2m FM h/f or 6m TX/RX gear of similar value. Sent 2nd cl post at not extra cost. Graham QTHR. (Nottingham) 0602 632841.
- SWAN PSU 5A, 15A cont 20A surge, used to run FT707. Exc. cond throughout, built-in spkr: £75. John. (S. London) 081-857 8096.
- TEN-TEC Corsair 2, 1.8MHz, 500Hz, 250Hz filters, ext VFO, matching PSU/spkr. All little used and in mint cond: £12000. Prefer buyer collects. (Edinburgh) 031-665 7287.
- TEN-TEC Corsair II plus 500Hz filter and King-shill fully protected PSU. V. little used: £925. G3UFZ QTHR. (Brixham, Devon) 0803 845304.
- TEN-TEC Corsair, 500Hz and 250Hz filters, with PSU: £625. RN 144/50MHz tvtr with switched attenuator: £155. G3NKS QTHR. (Cheltenham) 0242 241099.
- TEN-TEC omni dig with ext VFO, 160-10m, WARC. All filters, QSK, superb cond. Full manuals. Offers: £590. Matching £45 Ultramatic keyer: £65. All above can deliver Essex, Kent or London. Will split. (Malden) 0622 39936.
- TH2 Mk3 2ele beam with assy insts: £70. Buyer inspect and collect. Not QTHR. (Bournemouth) 0202 579115.
- TONNA 55ele long yagi for 129MHz. Brand new, assembled but never installed. Complete in orig. packing: £40. John G0HAT. 081-888 2165 eve.
- TRIO 1000 comm RX and Mizuho Sky coupler KX2. All good cond: £150. G4HAU QTHR. (Wirral) 051-645 5139.
- TRIO 530S unmarked, v. little used: £550. Yaeu FRG7000 rcvr: £220. 1st class equip. Buyer collect. G3HQH QTHR. (New Mills, Stockport) 0663 744008.
- TRIO 830S, CW filter fitted, assy DFC230 VFO, ML50 desk mic, spare unused 146B8s. All boxed in exc. cond: £675. Used only lightly, 1/2 logbook. Buyer to inspect and collect or carr. extra. Andy G4TFE. (Hastings) 0424 428487.
- TRIO R2000, VGC: £375. ICS Fax 1 with RTTY and all leads, compatible printer: £260. All boxed with manuals. Howitt. (Hornchurch) 0708 748817.
- TRIO TM201A FM 5/25W mobile. Full scanning facilities, mem, boxed, with mounting brkt. Genuine reason for sale: £175. John G0JUG QTHR. (Stratford-on-Avon) 0789 740511.
- TRIO TM201A, 2m mobile tvtr 5/25W: £170. Azden PC5000 2m mobile 5/25W tvtr. Manufacturer RX spec. Aircraft and marine bands 118-174MHz incl. All equip mint cond. M/mounts, insts, boxed. Delivery extra. No time wasters please. G6XRL QTHR. (Macclesfield) 0625 876192.
- TRIO TS140S HF tvtr. With all orig. equip: £600. Drae 24A PSU: £100. PK232 multimode data controller with Navtex: £160. All in mint cond, with all manuals, cables and boxes. Also Homebrew Z-Match with swr/pwr meter: £30. G0LFX. (E. Sussex) 0825 762756.
- TRIO TS711E 2m multimode basestation. Immac cond, orig. packing: £600. Prefer buyer inspects/collects. G4JUN QTHR. (Hereford) 0432 266588.
- TRIO TS820 fitted dig display. HF tvtr with mic, manual, good cond: £340. 14E 2m yagi: £15. G0LSS QTHR. (Bishops Cleeve) 0279 870903.
- TRIO TS930S AT930 auto ATU, MC60 stand mic with built-in preamp: £1175. MMT 144/28MHz linear tvtr wired for use with TS930S: £75. Datong FL3 multimode audio filter with auto-notch: £95. Fine cond, manuals, orig. packing. G4HHH QTHR. (nr. Whitby) 0947 880245.
- TRIO TS930S, mint with CW filters. Trio TR9130 2m multimode, Kenwood AT230, mint, Kenpro KR600RC, G4ZPY paddle key and box. RN Electronics 6m tvtr. UHF Pye Westminster with xtal. HF 3ele beam. Wind-up mast. Homebrew 5A PSU. QRT sale. (Nottingham) 0602 277941.
- TRIO TS9500 70cm multimode, little used c/w orig. packing plus all attachments: £3100. No incl p+p and ins. J.A. Mullin, PSA, Fillingbostel, BFPO 38.
- TRIO TV4000A 2m/70cm tvtr. Voice synth. Duplexer. Remote safety mic: £300. Mapin TV1000 RTTY terminal. CBM 64/128 vface. FT290 cables. Needs G4BMK s/ware: £40. Okimate 20 colour printer. Amiga ROM, new, unused. Ribbons, paper: £140. Yamaha DD10 dig drum bank. Amiga midi i/f face. S/ware: £80. Cumana 3.5in ext disk drive for Amiga, disk box. Perfect: £60. Prefer buyer sees/collects. G6UPO QTHR. (Witney) 0993 775241.
- TS520 and VFO520. GWO: £350. Prefer buyer collects. G3YJH QTHR. (Tamworth, Staffs) 0827 284211.
- TS520, VFO520 CW filter, spare valves: £325. FT290 MMT144/30: £260. Standard C146G h/h tvtr, spare nicads: £65. Heathkit Mohican fair: £25. BC221 orig. cond: £15. Prefer buyer inspects/collects. G4AWY QTHR. (Reading) 0734 482559.
- TS520SE, mic, manual, GWO: £320. G-whip multimode with 80m/40m coils. Used once: £60. TS510, mic, manual, GWO: £15. Ideal 1st HF rig. Morse keys, MkII: £5. MkIII: £5. RF adapter 2A full scale: £5. G4ILA QTHR. (Lymington) 092755 2388.
- TS680S as new. Orig. packing: £750. G3ANO QTHR. 081-987 4756.
- TS770 2m/70cm multimode basestation. GWO: £400. At 20m 20m VGA or mono. Exch for FT736 TS790 etc. Nick G4FAT. (Malvern, Worcs) 0684 564854.
- TS830S plus DFC230. Exc. cond, manuals, boxes. No mic: £6500. FT290, Mutek, nicads, chrg. VGC: £2900. GM1TNU QTHR. (Glasgow) 041-777 8037.
- VHF tvtr SSM Europa 10-2m tvtr 200W PEP with 3 spare valves. GWO: £850. G3BXI QTHR. (Trowbridge, Wilts) 0373 830804.
- VIBROPLEX key c/w. Regulating trans 130V primary 0-150V, secondary 4.5A: £10. GWS8ZDV. (Montgomery, Powys) 05885 548.
- WESTERN Westower, Western ant DX33, Kenpro KR600RC controller and rotor. Some

damage to ant. Buyer must make a reasonable offer as I know nothing. Also he must dismantle and remove. (Chorley) 02572 79798.

● WIRELESS World bound copies, Mar 50-Dec 72 incl. 23 vols. Radio Constructor bound copies Aug 51-Jul 70 incl. 19 vols. Admiralty h/b of Wireless Telegraphy 1938 Vols 1&11. H/b of Wireless Telegraphy Operators, pub HMSO 1929. G4HHH QTHR. (nr. Whitby) 0947 880245.

● YAESU 790R Mk1, Mutek, c/case, nicads: £220. H/s scanner AOR90, boxed: £120. 934MHz tcvr with colinear: £160. (Birmingham) 021-745 3429.

● YAESU FR101 rcr, all-mode, all filters fitted incl 2m/6m, spkr. VGC, manual, orig packing: £150. Trio TS130V + PS6 PSU/spkr, VGC, manual, mic: £340. Yaesu FT101E new PA valves, VGC, CW filter: £290. BBC-B as new, unused, in box, data recorder: £180. Mitak IBM compatible 10MB hard disk WPP, RTTY, and Log s/ware: £280. Dragon 64k incl G4BMM RTTY: £50. 2m linear, Electronic Developments fan, spare valve. 100W o/p, manual: £90. Sharp AZ80K computer, VGC c/w WPP, machine code manuals, s/ware, games etc + printer: £95. Not QTHR. (Portsmouth) 0705 695165 ansaphone.

● YAESU FRG7 HF RX, mini cond, unmodded, boxed with manual. Little standby use only. Buyer collects or pays carr: £115. Would consider exch BBC-B computer. G3DND. (Leiston, Suffolk) 0728 830951 eve.

● YAESU FR8800 fitted VHF 118/174MHz FRV8800. Little used, exc. cond. Selling because trading up: £595. G4JOC QTHR. (nr. Stalbridge, Dorset) 0963 62028.

● YAESU FT101E, 10-160m tcvr, 1 owner. H/b, h/mic, pwr leads, spare used valves, CW filter unused. VGC: £300. G4HIJ QTHR. (Ashbourne) 0335 43241.

● YAESU FT101ZD Mk3, all bands, FM, fan, mic and manuals. Matching ATU F902. Both in exc. cond.: £550. G4NLL QTHR. (nr. Darlington) 0325 720783.

● YAESU FT101ZD, boxed c/w operators, w/sop manuals. Good cond.: £400. G4LJO QTHR. (Wimborne, Avon) 093484 3507.

● YAESU FT102 tcvr, recently calibrated, narrow CW filter, VGC: £495. Marconi TF2300 AM/FM modulation meter, 4-1000MHz, GWO: £35. Tektronix L-C meter, 10 ranges up to 300uH/300pF: £10. Buyer collects or carr. extra. (Devon) 0297 20680.

● YAESU FT209RH handle, with chrg, boxed: £225. FT790R2 boxed, bargain at: £350. Yaesu FTDX401, int spkr, fitted CW filter, spare valves, manual etc. GWO: £195. G8FXG. (Holsworthly) 0409 241548.

● YAESU FT290R built-in 20W linear. Mutek preamp: £200. Bob. G8EPQ QTHR. (Milton Keynes) 0908 687878.

● YAESU FT290RiL, mint cond, boxed with manual: £280. Icom IC02E, BP3 nicad, s/case, DC/DC cvtr, Diamond 1/2 wave whip ant, mint cond with manual: £170. Martin G0HRZ. 081-590 5490.

● YAESU FT707 HF 100W tcvr with SMC FM board and YD148 desk mic: £350. FT690R 6m tcvr: £250. Both with manuals, boxed. Belcom 2m h/h, covers 140-169m/c, with spkr/mic, case, chrg: £395. G1BWW QTHR. (Hitchin, Herts) 0462 711122.

● YAESU FT757: £575. G3TMA QTHR. 0775 87464.

● YAESU FT757GX Mk1 in orig packing. GWO with matching mic: £500. G3LWA QTHR. (Romford) 04024 7025.

● YAESU FT757GX, VGC, used mainly ORP. h/b, book: £550. FT102, little used, h/b, mic: £500. Haggie carr. GWO/GH QTHR. (Brecon, Powys) 0874 3815.

● YAESU FT767GX, fitted 2m/6m/70cm, SP767 spkr, MD1 mic, KR600RC rotor. All boxed. Afton telescopic tiltover mast, baseplate, rotor head, 6m 5m beam. For sale as one lot. Bargain: £2100. Goring QTHR. G1HKK QTHR. (Wantage) 02357 68855.

● YAESU FT777, 100W, 8-band, FM board, marker, boxed: £420. Trio R2000: £370. SEM VHF cvtr: £30. Adrian G0KSB. (Telford) 243839.

● YAESU FT790Mk1: £180. BNOS LPM 2m linear 3W in 180W out: £200. Standard C500 2m/70cm h/h. Many accs: £450. Tagra 12V/40A PSU: £70. Datong speech processor: £60. Small ant rotor: £20. CA-2x4max 2m/70cm colinear: £80. Jaybeam 70cm 88ele multibeam: £20. 16ele ZL special 2m beam: £20. Loopquad 23cm 48ele: £50. Tonna 2m 19ele beam, broken: £10. 6m/4m dual-band beam: £20. ATV 70cm RX kit: £10. ATV 70cm TX kit 1W: £30. ATV electronic test card colour: £30. ATV 23cm RX kit: £30. ATV TX kit 1W 3ch PLL: £60. HT PSU for valve linear 1500V kit, part-built: £150. Colour video camera: £100. Trio HF lowpass filter: £15. Coax H100 25m length, 60ft: £15ea. Ant bearing G5065: £20. Televerta CM7122 VHF in UHF out: £30. P. Haworth G6OWI, 120 Ormerod St, Accrington, Lancs. BB5 0QG. 0254 382423.

● YAESU FT790R 70cm multimode with extras. Yaesu FL7010 UHF linear, 1 in 10 out. Both boxed, as new: £390. G0DWS QTHR. (Gravesend) 0474 357795.

● YAESU FT901D, CW filter, spare RF board, ATU, h/b, w/sop manuals, swr meter, built-in ATU: £350. Frank. G8AV QTHR. (Leicester) 0533 313405.

● YAESU FTV707 and FTV107 tvtrs, 6m/2m/70cm modules. FTV107 has ext relay-box to match with 700 series. Icom 290E 10W 2m mobile with scanning mic. Would consider selling FT77 100W HF rig with FTVs. All in exc. cond. (Lancs) 0253 864136.

● YAESU GT747GX, fitted FM, inst book and mic: £400. Buyer pays carr dailed r.a.e. Bill. (Granton-on-Spey) 04792034.

WANTED

● 1-0-1 Ma pen recorder. Please write stating make, model, est age, cond and price. All offers acknowledged. G4FAS QTHR.

● 2M h/h FT202 or similar. Service manuals for Starphones and Pye T460/R460. Martin, G1SEO not QTHR. (Reading) 0734 441473.

● ACCS for Trio TR3500 or 2600 h/h tcvr, ie batt case BT1, mobile stand MS1, soft case SC4 or any nicad packs dead or alive to fit this rig. G0FXL QTHR. (Tamworth) 0827 281095.

● AMATEUR Ant Tests and Measurements by H.D. Hooton, Pubs - Sams 1977. Ham Radio Nov 1975 WHY? G3REP QTHR. 0903 879083.

● ANT tuning unit for Yaesu FT70 HF manpack tcvr, FC70M model preferred but FC70P considered. Yaesu dealers - any new ones still in stock? Also Rascal synth sig. gen and/or PMR test set. Bob. (Redditch) 0527 64885.

● ANTENNA Engineering Handbook by Jasic, pub by McGraw Hill. Please advise price req'd. Briggs, 57 Charlton Dr, High Green, Sheffield, S30 4PA.

● ANY reasonable cond sig gen +10-500MHz with high o/p: RF only req'd for ant experiments other func can be US RF sensor, pref HP 8484A plus any associate parts. G3MMJ, Bag End, Ditchley Rd, Charlbury, Oxford, OX7 3QT. 0608 811156.

● AR88D comm. rcr in good cond, preferably with manual. (Manchester) 061-432 8849.

● BC348 knobs, o/p transformer, back plugs, R1155 BFO box, odd bits or scrapper. Early Halcrafters, like SX24, S30. Also orig. spkrs. Manual with clear component location pages for SX42. Buy or borrow to copy. Eddystone 358X B34 for spares, chassis and knobs needed. Any spares for Halcrafters knobs. Scrapper. Rebuilding is the hobby. Any valve set considered. 52 Bramble Lane, Mansfield, NG18 3NR.

● COLLINS 75S3B rcr req'd. G0GGI QTHR. (Kirkby, Cumbria) 0229 89635 anytime.

● COLLINS CW filters for 755-3B RX. Spare valves 6DC6, 6EA8, 6BA6, 6AT6, 6UBA, 6CB6, 6AL5, 12AT7, 12AX7. G3NOH QTHR. (Ealing) 081-997 4756.

● DEFUNKED KW2000 models for rebuild projects and KW204 TX. Also accs wanted. Clive, G0FBO QTHR. (Browhills) 0543 370663.

● EARLY wireless sets wanted. Also horn speakers, xtal sets, valves, clandestine radios. Any cond, will collect. Jim G4ERU, 5 Luther Rd, Winton, Bournemouth, Dorset. 0202 510400.

● FL7010 linear for FT790. Must be in full working order and good cond. Brian, G4TYS QTHR. (nr. Retford) 0777 848080.

● FOR Avo valve tester 160 the 10k log wirewound neg grid volt pot, and characteristic book for TEK 526 Vectroscope the precision phase helipot L197 119-0056-00. Grundig reel-to-reel recorders TK9, TK12 and spares for any model. Mike G8CTJ. (Hincley) 0455 250570.

● FT290 and FT690 PA comm or good Homebrew. KW107 Capco SPC, 300D, 3000D WHY. BBC sideways RAM WHY. G4INX. (Chester) 0244 678679.

● FT707/FT77 not working? Sitting unused on shelf? Any cond considered but must be cheap for pensioner. Bob. (Leatherhead) 0372 57837.

● FT77 working or not, must be cheap. G8FXG. (Holsworthly) 0409 241548.

● GOOD quality HF SSB TX for amateur bands. Must be in good working cond. Prefer valve equip. (St. Ives, Cornwall) 0736 795948 after 7pm.

● IKGAMI video recorder using 5/8in tape, reel-to-reel type. Also any other early interesting VTRs, tapes and service manuals. G8UDJ QTHR. (Oxford) 0865 735821.

● KW1000 linear amp. Trio SM220. Monitor Electronics I/e and IF. G3PJX QTHR. (Manchester).

● LARKSPUR equip C11 TX R210 ATU PSU. C42 B47 B48. C45 cables brkt for R209 WHY. G4WZU QTHR. (Grantham) 0476 74047.

● Leicamer MR. Donald, GM10IN QTHR. (Inverkeithing, Fife) 0383 414283.

● MEDIUM to heavy duty rotor and high gain 2m beam. Will travel. G0HET QTHR. (Charmouth) 0297 60556.

● ORIGINAL manual for Teleguipul D67A scope, to buy or borrow for copying. All expenses paid. Also mains pwr lead and replacement chassis mounted mains pwr plug req'd. G0BII QTHR. (Oxford) 0865 880229 after 7pm.

● PARMEKO or Woden HT transformer, 400 or 450V, 150mA. Not WD. Bernard Litherland, G4IMT QTHR. (Chippenhams) 0225 891254.

● PENSIONER desperately needs Heath 240V i/p mains pwr unit type HP23B to get HW100 tcvr working again. Funds strictly limited so realistic offers please. G3KUL QTHR. (Bristol) 0272 642101.

● PROP pitch motor or similar worm gear v. strong low speed motor/gearbox. Req'd for Homebrew mega rotor! G4KUX. 0388 710070.

● PYE Pocketfone PF70, batts and/or batt chrg. Any cond. GM4MHE not QTHR. (Lilleshall) 0506 844149 eve.

● QV06.40, QV03.20A, 4X150, 12V cvtr for 2m, Pye Ranger valve equip, 11.5MHz xtal. Some odd valves available. G3OWB QTHR. (Cambridge) 0223 358601.

● QTH req'd. Area roughly Glos, Somerset, Wits. Preferably with mast or planning permission and large plot. Also good HF/VHF/DX potential. Price

up to brown, grey, yellow. G3VXZ QTHR. (Maidenhead) 0628 27350.

● QUALITY audio timer for hi-fi stack. (Rochford) 0702 258530.

● R1155 U/L or N models for repairs & use on 160m. Reasonable prices please. Eddystone S640, BC348, AD108. C. Collins G3THX, 60 Alexandra Rd, Skegness.

● R1475 and PSU bench mounting trays. Your price. All letters answered. Dick Fixter G0DIC, 18 Linley Dr, Boston, Lincs, PE21 7EJ.

● RACAL private collector needs someone with equipped RF w/sop to repair and realign 3 Rascal RA1217 RXs. Manuals and spares available. Payment will be made for work undertaken at good rate. Paul Wynter. 0273 674942 6-10pm.

● RACAL RF sig display unit, type RA1766. Also desktop cabinet for RA1770 series rcrs. Will collect. Morris. (Bolton) 0204 40629.

● RAF air publications relating to H25/ASV radars, navigation equip ie Babs, Oboe, Loran, Gee etc. Also ex-RAF stores index pubs AP1086 Sec. 10 Issue 1 1938-48. Exc. prices offered. Would purchase post-war magnetrons, klystrons, T/R cells. TWTs, thyristors and special types of M-OV/EEV valves and CV types. Many thanks. Will buy an inst manual for CT160 Avo valve tester (service type). M. Gee, 6 Verbona Ct, Pretoria Rd, Canning Town, London, E16 4NU. 071-511 4786, 071-790 2846 or 071-254 9083.

● RAF radar equip H25 Gee. Indicator units 182/184 jnt boxes, PSUs, case and rcr for WS18. G4XWD. (Kiddminster) 0562 823674.

● ROTATOR Ham-IV or CD45. Linear SB230 or similar. Tcvr TS120 or TS130. All in working cond. (London, SW5) 071-373 3949 after 6pm.

● RTTY prog on CP/M 5.5in disk. Alan, G1INA QTHR. (Chelmsford).

● SK800 valve socket for 4CX1000A. Also high voltage caps for 3.5kV PSU. Fisher, G0IVZ QTHR. (Plymouth) 0752 262826 day 340946 eve.

● STORNO inst mic MC606, complete or fixed mics. Also spkrs LS601. G3JAU QTHR. 0202 514078.

● T28 Codar top-band RX or similar. Must be clean and GWO. (London, NW1) 071-486 4376.

● TRIO R1000 with h/b, must be in 1st class cond. G3AJD QTHR. (Barnet, Herts) 081-449 0877.

● TRIO TS130S in good cond please. G0FFZ. (Southampton) 0703 738399.

● TRIO TX310 with manual or cir. diag. Any cond. Just passed RA6. Needed to match JR310. (Melton Mowbray) 0664 65855 after 6pm.

● TS950S or TS950SD. Would consider exch for my TS940S with cash. Also wanted WS22 and WS19 with w/sop manuals, headsets for 19set and any other WWII surplus equip for collection. Tim Price G4YBU, 4 Purbury Gr, Ewell, Surrey, KT17 1LU. 081-393 9691.

● VALVES TT21 (CV8286) as spares for existing pwr amps. G3AZ QTHR. (Taunton) 0823 461417.

● WELL-made old Morse key. Must be in good working cond and capable of fine adjustment. G0MIG QTHR. (Hawick) 0450 88206 after 5pm.

● WIRELESS set No.19 equip and info such as manuals, anecdotes etc. Especially looking for pwr amp and operators pocket-watch. Thank you. Chris Bisailion V5CBK, c/o Whiskeytown Wireless Collection, 1324 Old Carp Rd, RR no.1, Kanata, Ontario, Canada, K2K 1X7.

● WS19: rack. R1082/T1083: motor gen type C, smoothing unit type A, starter type A, amp type B. Gee-H: switch type 220, indicating unit 237, drive unit 114. Al MkVIII: scanning unit type 4, aerial system 196, junction box 67, 10cm flexible waveguide. Any info on Al MkVIII aeriels. Buy or exch 1155 B2 etc. Phil, G6MCJ QTHR. (Guildford) 0483 572653.

● WWII spy sets, also later models wanted or exch for German WWII equip. Write G.Huetter, Box 2129, D-8990 Lindau, W.Germany. 010 49 4223 2856.

● YAESU FT221R. Must be in good working cond and complete. Will collect. Steve G7HEP. (Fareham, Hants) 0329 663673.

● YAESU FT70G manpack tcvr. Can travel Lancs/Cheshire. Tony G4NGV. (Kings Lynn) 0553 671065.

● YAESU FT730R UHF, Icom IC24G VHF tcvr. Must in good cond c/w h/b, book. Mike Watson, G8CPH QTHR. (Ipswich) 0473 831448.

EXCHANGE

● COMMODORE 64C, 1541 d/drive. TIFI i/face with RTTY/CW/ASCII/AMTOR modes. Full insts. For HF linear. Norman, G0IRK QTHR. (Surrey) 081-390 2650.

● HAVE Masui MR4099 gen. cov rcr, covers 150kHz-29999Hz. Bought June 88, extra cover until June 92. Would like a BBC computer and accs or WHY. John G0NYD. 0524 733212 after 6pm.

● JRC JST125 HF TX/RX, NBD500 PSU, NFG97 ATU, MD1 desk mic, SP102 spkr. Wanted prod equip. Dave. (Dunstable) 0582 608152.

● KORG Trident prof synth and Roland Cube 60W amp, for 45W 2m rig, Kenwood, Yaesu or similar. Progressive disability forces disposal. Would sell for cash: £350 and £100 respectively, but really need 2m RX/TX WHY? John Evans, G7CEC QTHR. (Rochdale area) 0706 874055.

● STEREO Rock-Ola 4SRPTT jukebox in fine overhauled cond. Swap for modern HF tcvr, Trio or similar. G4XWD. (Kiddminster) 0562 823674.

HELPLINESHELP!

BATTERY INFORMATION WANTED

Can anyone assist Mr Reg Newman, G6XO, by lending or selling him an instruction manual or other information for the sub-standard multimeter Model 44 made about forty years ago by Electronic Instruments Ltd of Richmond? This has retained its accuracy for all those years, but he cannot understand the auto cut-out which needs an unknown battery to make it work. Reg can be contacted QTHR or tel: 0494 783190.

OPERATOR'S GUIDE SOUGHT

Steve Wilkinson, G0HMN, is looking for an Operator's Guide/Instruction Manual for a "Star-SR550" communications receiver - Eagle Products - manufactured by Star Co. Ltd. This is a valve received made in Tokyo covering the bands 160-10+50MHz, but the re-set is giving him problems and may need re-alignment. He can be reached on tel: 0482 707965.

SOFTWARE REQUEST

Is there any amateur radio software specifically for the Acorn A3000 computer available. If so, please contact Mr G Middleton, G6EER, QTHR.

8-TRACK TAPE CARTRIDGES

Alan Croft, G8CJM, is trying to find some 8-track cartridges, which were available in the 1970's but are now obsolete. He only requires the plastic cartridge so condition of the tape is not important to him. If anyone can help he can be found on 0634 847280 (after 6pm).

R1155 MAIN LABEL

A request for an R1155 main label, any model (under the tuning knob) has been received from Mr E Holmes, G4TLY. He will reimburse all costs, and his telephone number is 0666 822935.

RESTORATION PROJECT

Two Military communication receivers are being restored by Andrew Humphris, RS34368, and he is anxious to obtain the Cannon 12-way female plug for the power input of the TCS12 receiver, and the aerial terminal, or parts of both might be sufficient. Also he requires the Marconi logo badge which he believes was bolted to the lid of the cabinet of the CR100 receiver. Please write to him at 'Polperro', 21 Gould Road, Hampton Magna, Warwick, CV35 8TU.

FT980 AND SINCLAIR?

Can anyone tell Mr E Dahle, GM3UWO, whether it is possible to operate his FT980 through - or with - a Sinclair Spectrum+ computer. Any information will be welcomed by him QTHR.

MAINS TRANSFORMER REQUIRED

Dave Chalmers, G3WQG would appreciate help in locating and obtaining a mains transformer for his GEC, BRT400 series receiver (GEC part No. R802866). Also a voltage regulator valve No. S130P. He can be contacted QTHR or tel: 06285 22973.

MICROLINE PRINTER

Don Nappin, G3MLS, recently purchased an OKI Microline 83A Printer model 8223A.

Unfortunately this did not have a manual and he would be interested to obtain any information regarding this printer. He is attempting to interface it to a Nascom 1 without much success as he is experiencing problems setting up the DIP switches and links. He also has the programs NASPEN and TOOLKIT in Eprom, but no information on how to use them. Any advice would be welcome and he can be contacted QTHR.

BRIGHT AND LARGE LED DISPLAYS

This request comes from Mr Robinson, G0HTR, who is looking for a source of supply of an HF frequency meter with a bright and large LED display. He is reached QTHR or tel: 0827 898024.

CIRCUIT INFORMATION REQUIRED

Ron Kemsley, G3FUN, is trying to obtain circuit and data for a linear on line UPS type Vestale 1500, made by Electronic System Products of Amsterdam. Information will be greatly appreciated on tel: 0795 532608.

Helplines is designed to help put people in touch with each other. If you have a problem, it's more likely there's someone out there who has the solution; if you are looking for an old colleague or amateur friend, there could be a reader who has some news of their whereabouts; if you have solved a particular problem, write and tell the rest of us. 'Helplines' is there to help you and to give you the opportunity of helping others. Write to us marking your envelope 'Helplines' and we'll do what we can to get the message out.

CLUB NEWS

DEADLINE - Items for inclusion in the January 1991 issue must be sent to HQ marked "Club News - DIARY", to be received by 18 November latest. If news is received by the published deadline, it will 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 RSGB Group - 26, home construction contest. Details Bristol 513573.
- Gordano AR Group - 28, talk "The Right Weather For Propagation". Details 0272 653849.
- South Bristol ARC - 7, 10m activity evening; 14, talk "Simple Computer Programming"; 21, free ice cream evening; 28, 20m DX receiving evening. Details Whitchurch 832222.

BEDFORDSHIRE

- Maidenhead & District ARC - 1, talk "Clandestine Radio"; 20, talk "History of MADARC"; 6 Dec, Christmas Social. Details GBXYN, 0628 25952.
- Dunstable Downs - 2, junk sale; 16 talk "Components and their Characteristics"; 30, ERG Race (Constructors Contest). Details G1NWZ, QTHR.

BERKSHIRE

- Reading & District ARC - 8, talk "The Art of HF Contesting"; 22, Construction Contest and Alignment night. Details G0MZN 0734 874870.

BUCKINGHAMSHIRE

- Aylesbury Vale RS - 7, Shack slides and talk; 21, talk and demonstration "Fast Scan Colour TV on 23cms"; 5 Dec, G6NB Construction Contest. Details 0280 817496.

CHESHIRE

- Chester & District RS - 6, Committee Meeting; 13, talk "Cairo System"; 27, surplus equipment sale.

CLWYD

- Conwy Valley ARC - 1, talk "Packet". Details Merlyn Jones, GW4NNL, 0492 530725.
- Wyllyn Radio Club - 6, Packet Radio User group demonstration; 20, talk by the local Fire Prevention Officer; 4 Dec, talk and demonstration "Amateur TV". Details 0244 819618.

CORNWALL

- Cornish RAC - 1, Bring and Buy; 6, Radio constructors workshop; 12, Computer Club;

CUMBRIA

- Eden Valley RS - 22, BBC Club. Details Culgaith 260.

DERBYSHIRE

- Buxton Radio Amateurs - 13, AGM. Details G4IHO, 0298 25506.
- Derby & DARS - 7, junk sale; 14, visit by SMC; 5 Dec, junk sale. Details 0773 852475.

DEVON

- Axze Vale ARC - 2, talk "Recent trip to USA"; 7 Dec, Christmas Dinner. Details G0GHH, QTHR.
- Torbay ARS - 23, talk "I've got you on Tape". Details G3LHJ, QTHR.

DORSET

- South Dorset RS - 6, talk "Experiences of a young RAF Wireless Operator".

EAST SUSSEX

- Brighton & DARS - 7, Construction Contest; 21, AGM. Details G3WR, 0273 501100.

ESSEX

- Chelmsford ARS - 6, junk sale. Details 0245 260831.
- Vange ARS - 1, junk sale; 8, talk "Nuclear Power"; 15, talk "Packet Radio"; 22, video. Details G3PLF, 0268 524453.

GRAMPIAN

- Aberdeen ARS - 2, junk sale; 9, AGM. Details 0224 780519.

GREATER LONDON

- Crystal Palace & DRC - 17, junk sale. Details G3FZL, QTHR.
- Edgware & DARS - 8, talk "Transverters v Black Boxes" and RSGB questions; 10, RSGB Club Calls Contest; 2 Dec, RSGB 144MHz Affil. Societies Team Contest. Details 081-205 1023.

- Sutton & Cheam RS - 15, talk "EMC and the World of Kenley Laboratories". Details G0BVW, QTHR.

GREATER MANCHESTER

- Eccles & DARS - 6, talk "Rugby Football", 4 Dec demonstration "Repairing Christmas Tree Lights". Details 061-773 7899.

HAMPSHIRE

- Basingstoke ARC - 25, DF foxhunt. Details G1JTO, 0256 64756.
- Itchen Valley RC - 9, open meeting; 23, talk "Why buildings do not fall down". Details 0703 736784.
- Fareham & DARC - 7, talk and demonstration "Data Modes". Details Rod, G0ERS, 0705 373572.
- Three Counties ARC - 7, film night; 21, Mountaineering, 5 Dec, Quiz Night. Details 0428 723415.

HEREFORD & WORCESTER

- Bromsgrove & DARC - 9, talk "Radio Investigation Service". Details from Trevor, 0527 33173.
- Bromsgrove ARS - 13, talk "Baluns"; 27, night on the air. Details 0527 503024.

HERTFORDSHIRE

- Cheshunt & DARC - 21, Annual General Meeting. Details 0992 464795.
- Stevenage - 6, talk "GB3HN Repeater"; 13, practical - "Sausage Balloons"; 20, "Fish Flashing - sonar radar"; 27, HJF night on Air to Twin Towns; 29, Committee Meeting. Details 0438 724991.
- Verulam ARC - 27, talk "Packet Radio". Details 0923 262180.
- Welwyn-Hatfield ARC - 5 Nov, Construction contest; 3 Dec, Annual General Meeting. Details 0707 324958.

HUMBERSIDE

- Goole R&ES - 2, discussion - contest linear design; 9, talk "On Camera"; 16, Morse night; 23, contest discussion; 30, Novice Licence evening. Details Goole 769968.

ISLE OF WIGHT

- Binstead ARS - surplus equipment auction first Monday each month; quiz night third Monday each month.

KENT

- Bromley & DARS - 20, junk sale. Details 081-462 2689.
- Medway AR & TS - 13, EMC presentation. Details G4EYV, 0634 716463.
- West Kent ARS - 16, Construction competition. Details G3OHV, QTHR.

LANCASHIRE

- Fylde ARS - 8, equipment sale. Details 0772 635464.
- Preston ARS - 1, Apollo-Shuttle-Ariane; 15, talk "Electricity Safety"; 28, slide show.
- Thornton-Cleveleys ARS - 12, talk "Plugs, Sockets & Cables"; 19, video; 26, Auction of surplus equipment. Details G4BFH.

LEICESTERSHIRE

- Leicester RS - 5, HF/VHF night on the air; 12, Committee Meeting; 19, talk; 26, VHF & HF-Amor night. Details 0533 878561.

LOTHIAN

- Lothians Radio Society - 14, junk sale; 28, talk "Underground Radio". Details GM4DTH, QTHR.

MERSEYSIDE

- Wirral ARS - 7, talk; 21, talk "DX Antennas"; 5 Dec, talk "Old Time Radio". Details G3FOO, 051 644 6094.

NORFOLK

- Fakenham ARC - Details G8FTP, QTHR.
- Norfolk ARC - 7, talk "Real Radio"; 14, surplus equipment auction; 21, talk "Introduction to Power Supplies"; 5, talk "FETs and MOSFETs Made Easy". Details 0362 850591.

NOTTINGHAMSHIRE

- ARC of Nottingham - 1, talk "Using Oscillators"; 8, Forum; 15, Grand surplus equipment sale; 22, talk on the Morse test by local examiners; 29, talks "Magnetic Loop Antennas"; 6 Dec, Forum. Details 0602 733740.
- GPT ARC - Now back after recent burglary. Meetings Thursdays, 8pm. Details 0602 226321.

SHROPSHIRE

- Salop ARS - 8, Equipment sale; 22, JANDEK kits and a talk "Novice Licence". Details G3NSY, 0743 790457.
- Telford & DARS - 7, 6m on air; 14, TV project & 3cm TV cine; 21, talk "Contests - The Art of Success"; 5 Dec, HF station on air. Details Telford 616166.

SOMERSET

- Mid Somerset ARC - 2, Open evening; 16, talk "Antennas & How They Work"; 30, talk "Packet Radio and the future of Digital Communications". Details 0749 345975.

- Yeovil ARC - 8, talk "A Simple ATU"; 15, "HF Propagation this Winter"; 22, "Ideas for Club Events"; 6 Dec, "Low Pass Filters". Details 0935 28341.

SOUTH GLAMORGAN

- Cardiff RSGB Group - 12, talk "Two-Tone Generators". Details 0446 773212.

STAFFORDSHIRE

- Stafford & DARS - 13, night on the air; 20, Northern Lights Contest Group; 27, Construction evening. Details 0785 662350.
- Stoke on Trent ARS - Change of venue. Until further notice the club will meet at the Sacred Heart RC Church Hall, Jasper Street, Hanley, Stoke on Trent at 7.30pm every THURSDAY.

STRATHCLYDE

- Telegraph RC - New club meets Longriggend each Tuesday 7.45pm. Details GM4LDU, QTHR.

SUFFOLK

- Ipswich RC - 14, bring and buy sale; 28, talk "Useful Test Equipment". Details 0473 42072.

SURREY

- Coulsdon ATS - 12, talk "Fox Hunt Map Reading"; 25, Bazaar at HQ 4th Purley Scout Group, Coulsdon, 10am admission 30p; 10 Dec, AGM. Details G6HC, 081 684 0610.
- Reigate ATS - 20, Science Reference Information Service (British Library).
- Surrey Radio Contact Club - 5, Colloquium. Details 081-647 9301.
- Wimbledon & DARS - 9, Meet the Committee; 30, talk "Design of Direct Conversion Receivers". Details 081-330 2703.

TAYSIDE

- Dundee ARC - 6, construction. Details GM4FSB, QTHR.

WARWICKSHIRE

- Mid Warwickshire ARS - 13, programme discussion for 1991; 27, antenna analysis. Details Kenilworth 513073.
- Stratford-Upon-Avon RS - 12, talk "The Radio Investigation Service"; 26, talk "Antennas and Baluns". Details 0608 82495.

WEST MIDLANDS

- Coventry ARS - 2, Bangers 'n' mash supper. Details 0203 523629.
- Midland ARS - 20, rally debrief; 4 Dec, Christmas party. Details 021 443 5157.
- Solihull ARS - 15, surplus sale. Details 021-783 2996.
- Stourbridge - 19, winter surplus sale. Details G0HTJ, QTHR.
- Wolverhampton ARS - 6, Committee Meeting; 13, pre-planning for Children in Need; 27, talk "Capacitors their development over the Year with Power Factor Correction"; 4 Dec, Committee Meeting. Details G4WAS, G6AKN, G4RVK, QTHR.

WEST YORKSHIRE

- Bradford ARS - 8, Used Equipment Sale; 22, AGM. Details 0274 494694.
- Keighley ARS - 1, Junk sale; 15, films; 29, talk "The Sun". Details Bradford 496222.
- Leeds & DARS - New Committee; Chairman, Mr D Nicholson G4ZHW, Secretary, Mr JK Powell, Treasurer, Mr J Purvess G0FWP.
- Pontefract & DARS - 8, talk "How to Pass the Morse Exam". Details 0977 792654.
- Spen Valley ARS - 1, talk "White Rose Transmitter"; 15, talk "Air Supply"; 6 Dec, Christmas social. Details 0274 875038.
- Todmorden & DARS - 5, junk sale; 19, talk "Radio Reminiscences"; 3 Dec, Annual Christmas Lecture. Details Halifax 882038.
- Wakefield & DRS - 13, talk "DX TV"; 27, Radio Quiz; 4 Dec, Call my Bluff. Details G0MVA, QTHR.
- White Rose ARC - 7, visit by Birkett's Component firm; 28, talk and slides "QRP". Details Leeds 435948.

WILTSHIRE

- Trowbridge & DARC - 7, Judging entries for Constructors Cup; 21, Club Progress Meeting. Details 0380 830383.

MOBILE RALLIES

This is a list of all rallies, 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".

11 NOVEMBER

- MARS Birmingham Mini Mobile Rally - Stockland Green Leisure Centre, Erdington, Birmingham. Details from Norman, G8BHE, tel: 021 422 9787.

17 NOVEMBER

- Carrickfergus ARG Rally, Downside Community School, Downside Road, Carrickfergus, from mid-day to 4pm. Details 09603 66109.

18 NOVEMBER

- Bridgend & DARC Annual Rally - Bridgend Recreational Centre. Details from Don, GW3RVG, tel: 0656 860434 after 5pm.
- West Manchester RC Winter Rally at Bolton Sports and Exhibition Centre, Bolton. Details from Dave, G1ICO, tel: 0204 24104 (evenings only)

25 NOVEMBER

- Bishop Auckland Radio Rally - Sunny Dale Leisure Centre, Shildon, Bishop Auckland, Co Durham. Details from Ernie, G4TYF, tel: 0388 607500.

20 JANUARY 1991

- Oldham ARC Rally - Queen Elizabeth Hall, Civic Centre, Oldham. Details from Kathy, G4ZEP, tel: 061 624 7354.

9 DECEMBER

- Leeds & DARS Christmas Rally, Civic Hall, Dawson's Corner, Pudsey. From 10.45am. Details 0532 585801.
- Verulam Christmas Rally - Hatfield Polytechnic, 11am - 5pm. Details from Steve, tel: 0923 249456.

27 JANUARY 1991

- University of Lancaster ARS & Central Lancs ARC. The Lancasterian Rally - Lancaster University. Details from Sue Griffin, G10HH, tel: 0524 64239 or Mike Sherlock, G4ZYN, tel: 0257 452287.

3 FEBRUARY 1991

- South Essex ARS Mobile Rally - The Paddocks, Canvey Island, Essex. Details Dave Speechley, G4UVJ, 0268 697978.

24 FEBRUARY 1991

- 4th Taw & Torridge Rally - BAAC Halls, Bideford, North Devon. Details John, G0GFK, 0237 476402.

3 MARCH 1991

- Welsh Mobile Rally - Barry Leisure Centre, off Holton Road, Barry. Details from Ceri, GW0JCB, tel: 0446 721304.

24 MARCH 1991

- Magnum Rally - Magnum Leisure Centre, Irvine, Ayrshire. Details Peter Reid, GM0FC1, 0294 72253.
- Pontefract & DARS Components Fair, Carleton Community Centre, Carleton, Pontefract. Details 0977 615549.

31 MARCH 1991

- Centre of England Easter Amateur Radio Rally - Motorcycle Museum, Bickenhill, nr NEC Birmingham. Details from Frank Martin, G4UMF, tel: 0952 598173.

7 APRIL 1991

- Launceston 5th Amateur Radio Rally - Launceston College. Details Maggie 040921 219 or Rodney and Joe, 0566 775167.
- White Rose ARC - 24th White Rose Rally, Leeds University. Details Tony, G4DXA QTHR.

14 APRIL 1991

- Trafford Rally "The Great Northern Rally" - G-Mex, The Greater Manchester Exhibition and Events Centre, City Centre, Manchester. Details from Graham Oldfield, G11JK, tel: 061 748 9804.

12 MAY 1991

- Yeovil ARC "The QRP Convention" - Preston Centre, Monks Dale, Yeovil.

9 JUNE 1991

- 22nd Elvaston Castle Mobile Radio Rally - Elvaston Castle Country Park, near Derby. Details from John, G4PZY, tel 0332 767994 - Trade enquiries to Peter, G3WFL, tel 0332 700265 (evenings).
- Royal Naval Amateur Radio Society Annual Mobile Rally - HMS Mercury, Nr Petersfield, Hants. Details Cliff Harper, G4UJR, QTHR, 0703 557469.

30 JUNE 1991

- Longleat Amateur Radio Rally. Longleat House, near Warminster, Wiltshire. More details from Shaun, G8VPG, tel: 0225 873098.

7 JULY 1991

- York Radio Rally - Tattersall Building at York Racecourse. Details Dave Moreland, G7FGA 0904 790079.

14 JULY 1991

- Sussex Amateur Radio and Computer Fair - Brighton Racecourse. Information and booking details contact Ron Bray, G8VEH, QTHR on 0903 763978, or 0273 415654 office hours.

14 SEPTEMBER 1991

Wright Wireless Rally - CEM Wireless Museum, Arretton Manor, Nr Newport, Isle of Wight. Details from G3KPO, QTHR or 0983 67655.

15 SEPTEMBER 1991

Bristol Radio Rally. Brunel's Great Train Shed, Temple Meads Station, Bristol. Details from David Farr, G4WUB, 0272 839855.

22 SEPTEMBER 1991

Centre of England Autumn Amateur Radio Rally will be held at the British Motorcycle Museum, Bickenhill nr The NEC, Jct 6 M42. Details from Frank Martin, G4UMF, tel: 0952 598173.

29 SEPTEMBER 1991

Harlow AR&E Mobile Rally - Harlow Sports Centre. Details from - weekdays: Alf, G7FNY on 0279 418392; evenings & weekends: Mike, G7BNF on 0279 722569.

OTHER EVENTS

8 DECEMBER 1990

RSGB Annual General Meeting - Bristol.

24 MARCH 1991

VHF Convention - Soudown Park. Details G3ZL, QTHR.

GB CALLS

The list below shows all special event stations licensed for operation during this month and up to 29 November. It was taken from the HQ computer on 10 October. These call signs are valid for use from the date given but the period of operation may vary from 1-28 days.

23 OCTOBER

GB2GH Granby Halls G4PDZ

25 OCTOBER

GB2UBB Ulster Boys Brigade G13YS

26 OCTOBER

GB2AA CQWW SSB Contest G4TNB

27 OCTOBER

GB0DX Long Distance Radio Comm. G4BUE
GB2KSS Kive Space Science G4JBH
GB4VSB Venture Scout Ball G4ZHW

1 NOVEMBER

GB4BTS British Telecom Stone G4TMD
GB4RN Royal Navy GW3IVX

2 NOVEMBER

GB4BRC Banff Rotary Club GM3DZB

3 NOVEMBER

GB8CA Cultural Station "A" GM0HRT
GB8CP Cultural Station "P" GM0KTO

4 NOVEMBER

GB0NP National Power G3PRD

7 NOVEMBER

GB2QPH Queens Park High G0IYG

9 NOVEMBER

GB1RSG Royal Star & Garter G1DDR

11 NOVEMBER

GB0GW Gower Wales GW0KPD

16 NOVEMBER

GB2PNF Poulner New Forest G3SOF

17 NOVEMBER

GB2NAW National Astronomy Week G3WVO

23 NOVEMBER

GB2WRA Wordsley Radio Amateurs G0ADW
GB4KID Children in Need G0EVU

24 NOVEMBER

GB5ACF Audley's Close Fayre G7APY

25 NOVEMBER

GB2MSC Mercat Shopping Centre GM0MMN

26 NOVEMBER

GB2VGG Original Club Callsign G4IVJ

29 NOVEMBER

GB2VGG Original Club Callsign G4IVJ

EI4FO	Mr J Murphy	03.09.89
G0BDH	Mr E Brown	20.12.89
G0BHF	Mr C Kendal	Nov. 1989
G0DWK	Mr AG Glover	03.11.89
G0FAP	Mr B Wilson	04.08.90 18 yrs
G0FYT	Mr DN Snelling	10.06.90
G0GFO	Mr RC Newman	15.12.89
G0GGK	Mr F Harrop	
G0IIH	Mr B Harris	March 90
G0ILI	Mr G Runalls	10.03.90
G0IQJ	Mr V Reeves	06.01.90
G0JIP	Mr WJP Rank	05.01.90
G0JLN	Mr JC Hurrell	29.09.89
G0JXE	Mr J Almeida	14.04.90
G0LLV	Mr BA Barker	22.02.90
G1AWW	Mr J Adamson	March 90
G1ILP	Mr RJ Brooks	16.09.89
G1JKU	Mr JV Wiltshire	
G1LSW	Mr EW Saint	02.03.90
G1NCV	Mr J Reed	12.08.90
G1OGN	Mr LF Penny	
G1SIZ	Mr BG Tomlins	
G1TNQ	Mr IH Teear	
G2ANT	Mr WG Law	17.02.90
G2AOK	Mr H Heath	05.12.89
G2BZK	Mr JM Knott	
G2CWR	Mr LG Mays	11.08.90
G2FAS	Mr S Chambers	10.04.90
G2FUX	Mr F Fletcher	26.11.89
G2FXA	Mr GD Davies	30.10.90
G2HDJ	Mr CW Touch	26.12.89
G2IG	Mr RH Hamman	08.02.90
G2OX	Mr GW McDonald	Nov 89
G2XY	Mr H Littlewood	92yrs
G3ACK	Mr J Hogarth	17.01.90
G3AQO	Mr VF Lucas	05.08.90
G3ART	Mr EA Thorne	
G3ATQ	Mr GF Heath	Nov. 89
G3BDW	Mr LR Brown	01.10.89
G3BLZ	Mr T Turvey	25.06.90
G3BZJ	Mr B Woodward	13.01.90
G3CDG	Mr DH Bearcroft	
G3COX	Mr FW Bennister	
G3DMJ	Mr AEG Roth	02.07.90
G3DVM	Mr JJ Payne	20.05.90
G3EGG	Mr WL Middlemiss	
G3EWP	Mr AB James	24.09.89
G3FU	Mr DAW Ball	20.11.89
G3GZM	Mr L Dyke	02.12.89
G3HDB	Mr JH Whitby	
G3HVV	Mr JL Roberts	10.04.90
G3HZC	Mr FL Brown	24.12.89
G3IAK	Mr FS Miller	12.03.90
G3IGY	Capt WMP Dellar	
G3JAK	Mr W Wilson	03.06.90
G3JCV	Mr WA Hawkins	25.05.90
G3JJH	Mr J Harris	21.08.90
G3JKH	Mr NJ Storrs	
G3KFW	Mr GF Ripley	26.11.89
G3KMW	Mr TR Parry	October 89
G3MTB	Mr TR Parry	09.11.89
G3MTB	Mr GWB Parish	25.03.90
G3NLF	Mr C Young	
G3NT	Mr R Oliver	03.05.90
G3OOJ	Mr AT Baskcomb	14.12.89
G3PVZ	Mr DJ Bagwell	02.02.90
G3RYM	Mr TJ Money	28.06.90
G3RZN	Mr EN Hurle	09.11.89
G3TC	Mr B Cooper	07.04.90
G3TKX	Mr LCW Links	25.06.90
G3UPO	Mr A Withers	08.04.90
G3VKG	Mr E Haycock	11.03.90
G3WL	Mr S Rance	27.04.90
G3WS	Mr F Jenkins	15.10.89
G3XBJ	Mr D Bethune	
G3YAK	Mr WB Wilson	
G3ZEE	Mr G Hood	01.10.89
G3ZN	Mr FB Hobb	16.03.90
G4IH	Mr CLS Cooper	23.06.90
G4BIV	Mr F Bedford	04.02.90
G4CP	Mr R Perks	March 1990

G4DBI	Mr L Pryce	Nov 1989
G4DGR	Mr E Lomax	12.11.89
G4DWY	Mr J Cole	25.10.89
G4ESF	Mr JW Munn	
G4FKZ	Mr A Newton	16.04.90
G4FST	Mr GD Gibby	
G4FSW	Mr F Woodward	Mar. 90
G4FXS	Mr H Whitaker	06.12.89
G4GIN	Mr J Manion	23.04.90
G4HKL	Mr LG Ouseley	
G4HLH	Mr RF Hill	
G4HW	Mr RC Wilkinson	13.01.90
G4HYE	Mr P Whatmough	
G4IH	Mr CLS Cooper	25.04.90
G4JFQ	Mr PJ Wedge	April 90
G4KQB	Mr CJW Lowe	
G4LHG	Mr JWA Underwood	
G4LV	Mr BM Selby	March 1990
G4MRV	Mr L Shelley	22.11.1989
G4MT	Mr AF Trinder	22.09.89
G4OIO	Mr TA Simpson	28.05.90
G4OTP	Mr DC Casson	20.06.90
G4PCU	Mr D Monger	04.04.90
G4PJM	Mr GW Hunt	18.05.90
G4PPV	Mr JH Etherington	
G4RDX	Mr KE Goodman	28.09.90
G4RPS	Mr R Wander	10.06.90
G4UDS	Mr SG Hackett	11.04.90
G4UKT	Mr A Jones	Feb 1990
G4VJK	Mr JHJ King	Jan. 1990
G4WML	Mr GP Parish	29.07.90
G4WYS	Mr R Guilmant	25.04.90
G4XFI	Mr PJ Russell	13.05.90
G5IG	Mr C Babbs	28.05.90
G5KG	Mr C Babbs	17.02.90
G5LH	Mr GW Slack	18.02.90
G6AS	Mr F Thompson	08.01.90
G6DNC	Mr GA Swinnerton	15.02.90
G6EGW	Mr FA Culling	24.08.89
G6GT	Mr S Nichols	27.06.90 69 yrs
G6HBL	Mr WAT Allen	April 90
G6IAG	Mr EJ Davies	
G6IED	Mr LRJ Watts	
G6KI	Mr PW Richman	02.02.90
G6SIL	Mr RW Kidner	Jan. 1990
G6STX	Mr NG Belcher	27.11.89
G6SVG	Mr ST Jackson	
G6WIN	Mr WE Hepton	30.05.90
G7AKE	Mr AW Field	28.02.90
G7AMQ	Mr RC Willis	05.01.90
G7CGD	Mr J Cura	10.01.90
G7CMV	Mr VR Nelson	13.06.90
G7EKQ	Mr F Clough	19.12.89
G7FJQ	Mr J Brown	Dec 1989
G7FQN	Mr M Butler	02.02.90
G8AKG	Mr R Dodsworth	04.04.90
G8BWU	Mr GH Gardener	
G8DYC	Mr R Dowson	08.04.90
G8FLY	Mr FW Munslow	15.10.89
G8GGK	Mr WJ Timmins	
G8IAW	Mr KS Miles	28.11.89
G8JLI	Mr SJ Philips	19.05.90
G8KBQ	Mr AR Atherton	Sept. 89
G8NH	Mr J Moxham	22.11.89
G8PB	Mr HG McIntock	
G8PMO		27.02.90
G8XBM	Mr P Tremaine	04.12.89
G8XXW	Mr SG Longhurst	Nov. 89
G8YMJ	Mr LW Green	26.07.90
G9DQZ		66 yrs
G9JMW	Mr T Davies	06.01.90
G9JMI	Mrs M Roberts	09.01.90
G9JMI	Mr GA Bayford	
G9JMI	Mr RT Mills	April 1989
G9JMI	Mr WH Holding	
G9JMI	Mr SP Gillespie	13.12.89
G9JMI	Mr GCL Campbell	
G9JMI		22.02.90
G9JMI	Mr S Nicholson	23.06.89
G9JMI	Mr B Simpson	Jan. 90
G9JMI	Mr AC McCrindle	

GM6YRH	Mr D Smith	03.12.89
GM8JTX	Mr JW Macvey	23.06.90
GMIVV	Mr P Jaffrey	20.01.90
GW0AIK	Mr M Prytherch	
GW0BIC	Mr AD Phillips	June 89
GW0EQO	Mr S Rosenstock	22.07.90
GW3DWY	Mr BD Carr	
GW3ILZ	Mr TEI Bromham	
GW4ANO	Capt B Smith	26.08.90
GW4NAH	Mr JE Fielden	19.09.89
GW4SHR	Mr FT Jones	
GW7BUJ	Mr RA Worcester	04.05.90
GW8FII	Mr WT Davies	
GW8WJ	Mr P Evans	28.08.90
ON8IS	Col BC Complin	22.04.90
RS7687	Mr GA Peck	24.05.90
RS10878	Mr G Hepworth	07.05.90
RS20185	Mr K Skethaway	
RS24892	Mr FJ Hutchings	Aug 89
RS27925	Mr GS Pooley	05.01.89
RS31551	Mr JDG Osborne	
RS37401	Mr CH Starr	05.06.90
RS38096	Mr GG Livesey	04.04.89
RS41566	Mr JG Tye	
RS4187	Mr FH Wright	04.06.89
RS45564	Mr B Cowhurst	
RS5829	Mr S Cant	07.12.89
RS6069	Mr HW Tancock	
RS87930	Mr K Barton	14.06.90
RS88817	Mr G Douglas	14.12.89
RS91573	Mr HC Thomas	19.08.90
RS91852	Mr DE Thomas	09.06.90
RS91996	Mr B Gilpin	12.08.90
VE3JFH	Mr EW Shields	24.05.90
VE3UK	Mr JE Edmunds	15.12.89
VE7GBW	Mr WAG Davidson	May 1989
VK4KT	Mr KT Robertson	
W2PF	Mr D Talley	
ZS5YF	Mr PJ Sawyer	

Dain Evans, G3RPE

In our special obituary on the late Dr Dain Evans, G3RPE, published in the November 1989 edition of *RadCom*, we unwittingly omitted a reference to Dain's first wife, Pam, and their three much-loved children, Jeremy, Gareth and Sarah, all of whom supported Dain's amateur radio activities. Gareth had a very close association with the Society working as its Programmer and later DP Manager until the end of 1987.

Reg Patrick, G2BBX, well known amateur and President of the Guildford and District Radio Society, died on the 13 December 1989 after a short illness. We was 85 years old and for most of his life was a senior engineer in BBC Radio.

'Pat' as he was known to the local amateur fraternity was a founder Member of the GDRS and was involved in the experimental underground transmissions in Guildford Caves in 1923.

He joined the BBC in 1925, in the days of 2LO, as a battery boy, was soon promoted to the post of assistant engineer and, in the 1923, was involved with the team that equipped Broadcasting House when it first opened. After the war he became assistant head of BBC recording and later superintendent engineer in the BBC's Overseas Service at Bush House.

Following retirement in 1964 Mr Patrick was involved with Guildford Rural District Council and Clandon Council's Housing Committee.

Pat was an excellent choice for President of the GDRS which he held from 1984-85 and 1987 to the time of his death. (G4YPC)

the last...

MODEL ANSWER

You may remember (it was more than 2 years ago) a Mr DC Money, through *Helpline*, wanted to know how to get a few watts for his QRP transceiver from a car alternator driven by his model steam engine at low RPM, without needing a 12V battery to supply the alternator's field coil. A complete solution is shown in the G3TWS booklet *Where There Is No Telephone* which shows how a common Lucas alternator can be controlled with a little electronics providing current when pedalled at low RPM.

The booklet is A4 size and Mr Money can get a copy direct from John Corbett by sending cheque or PO for £2.50 plus a large SAE to G3TWS (QTHR, but only in the current callbook).

Graeme Reffell G0EEA

160 = QRP?

After reading a recent item in *RadCom* about the impending exclusivity for amateurs in part of the 160m band, I think it would be very unwise of us to propagate the notion that the operation of this QRP band would be improved by allowing high power.

Top Band is traditionally a training ground on which many of us have tested and developed our first Home-Brew HF rigs, having obtained our call-signs. It is also a local 'chat' band, much in the same way the 2m FM allocation is used. Allowing high power in this part of the spectrum will not benefit us in the slightest, inevitably ending up as a cacophony of electromagnetic incompatibility in the same way as some other amateur bands have become.

Keeping Top Band QRP has, amongst others, the following definite advantages. * It causes less interference to other spectrum users.

* It demands more skill to make DX contacts, something which, as it says on our licenses, would encourage more self training in Wireless Telegraphy.

* It would encourage younger less experienced and less well-off operators to build their own, less complex rigs knowing that they wouldn't have to compete with high powered stations.

I am in the process of building my own 160m DSB transceiver and I fervently hope that my 5W will be heard on the band in years to come. Keep top band QRP!

Chris Ranedall G4RBR

[Top Band will continue to have a large amount of QRP operation as it will be available to Novice A licensees - Ed]

BATTERY CHARGING

I have recently had to replace the Lithium Cell in my Standard C500 Transceiver. Replacement is a very simple operation in practical terms but a very expensive operation in cash terms.

In my innocence, I thought that the obtaining of the cell would be the easy

part of the operation; how wrong can one be? After making no less than seven phone calls to all the dealers that I was aware were supplying Standard Equipment, including my supplier in the North-West, I discovered that no-one kept a supply of the cells so necessary if one wants to carry on using the equipment. I received a multitude of excuses but finally made contact with Communique in London (the importers) and, hurray, they had them in stock! Then came the crunch. The cost of this 3V coin cell lithium battery - £13.90. At this I retreated to consider the situation further. I finally decided to remove the original cell for examination and, on inspection, felt sure that I had seen a similar cell in a catalogue. Sure enough, there it was in the Farnell Catalogue (part No CR2032), cost £1.50 at the one off rate, plus VAT and postage.

So, for the benefit of anyone else needing to replace the cell in the Standard C500, don't be ripped off by the importers or their dealers, purchase a CR2032 and save yourself a lot of money. Note that this cell is also fitted to some XT computer boards so may be available at computer shops....

.... Further to my recent letter, shortly after writing to you I received a suitable cell from A.R.E. Ltd which was supplied at £4.45 inc VAT, and P&P.

This charge is much more in line with the price I would have expected to have been quoted by the importers, and the goods were despatched within a week of my call.

Well done A.R.E., maybe other dealers will now take a leaf out of their book.

D Kitson G3TRK

FOR-EVER READY

While moving some equipment in my 'Shambolic Shack' I found an American made 'C' size (U11) Ever Ready battery with printing on the side saying: "For best results put into service before MARCH 1943"! This battery still read 1.463v on a digital voltmeter - is this a record?

JK Eley, G3LMR

(Shambolic Shack winner)

CONDEMNED CELL

I wish to congratulate Mr E Chicken for introducing a useful piece of test gear that can be built by most amateurs with comparatively little effort.

The article, however, throws up one point that has become very topical here in Austria over the last few years. The use of batteries, in particular primary cells, is a major source of rare metal pollution, and as such should be discouraged.

A simple solution is to provide every battery powered device with a socket that can accept a 'battery eliminator'. Such small units are available at reasonable prices, and suitable sockets can be built

into home-built gear at (almost) no extra cost. Safety is guaranteed, as the high voltages are contained within the power supply.

When independence from mains supplies is necessary, then secondary cells (rechargeable) are to be recommended.

The future of amateur radio depends on the existence of mankind.

SJ Banner G8FPG

MAD BY CALL...

RF Byrne's *Unpublished Masterpieces* - superb! I was glued from cover to cover. Laugh? I nearly worked Top Band! I mean, if we can't mock ourselves..... It's bound to cause upset in the 'tweed jacket & valve bore' department (Byrne's expression), who may feel that anyone reading this matter is mad! Well I am!

Paddy O'Reilly GW4MAD

[This really is Mr O'Reilly's call - Ed]

VISUAL MORSE

It is a simple matter to show the dots and dashes of morse code on a CRT display and the "A" licence test does not stipulate that it must be taken aurally. Visual recognition of signals is just as easy and fast as listening to sound.

Ancients like myself read morse code from lamps, heliographs and flags - I learned the code as a boy from my father, a 1914-18 war signaller on the flag.

In the Corps of Signals during the 1939-45 war we read tape punched in dots and dashes by machine and typed out the signals - with a good touch typist, speeds of over 40 wpm were achieved.

We should do all we can to help deaf people enjoy our hobby. Perhaps *RadCom* could ask for a simple design for a sound-to-CRT converter and the RSGB could arrange visual tests for deaf people.

Frank D Shaw, G4HYJ

HARMSWORTH'S

Whilst browsing around a local second-hand book shop recently, I came across the complete three volumes of the Harmsworth's *Wireless Encyclopedia* (c1933/34), and purchased them on the spot. They are of course full of very interesting information about the early development of wireless and contain many references to 'amateurs' with photographs of some of the stations of the day.

However, what is perhaps more interesting is that in the first volume is what could be called a 'mini RSGB Call Book', being six pages of amateur callsigns in the series 2AA-2ZZ, 5AA-5ZZ, 6AA-6ZY and some French callsigns 8AA-8AY. These lists were compiled by Leslie McMichael, the then Honorary Secretary of the Radio Society of Great Britain, and contain apart from the callsigns, the names and addresses of the licence holders of that time.

What is striking, however, is that most of the calls listed bear no relation to the names and addresses of the present day two-letter callsign holders (but with the G/GM/GW, etc, as the prefix), ie, G2MI, G5AA or G6AG, I did not realise that so

Please note that the views expressed in 'Last Word' are not necessarily those of the RSGB.

We reserve the right to edit letters and regret that we can no longer acknowledge them individually but will pass them on to the relevant department.

many of these old two-letter callsigns had been re-issued, presumably when the prefix was added some time during the 1930s, I believe. Like myself I am sure there must be many readers of *RadCom* who are not aware of the circumstances by which so many calls came to be re-issued, as I had always been under the impression that the two-letter calls in most instances dated back to the original holders. Could it perhaps be explained in an article in *RadCom* the criteria required for the re-issue of these old calls? These lists might make interesting reading if they could be published in *RadCom* with the agreement of Harmsworth or their successors.

Mike Pavely, G3GWD

PS: Could you please thank all those readers who responded to my *Helpline* appeal and sent me information on the Grundig TK tape recorder, for which I was very grateful. Congratulations on this feature.

IT'S ALL IN THE SUN

Like GD3ESV (*The Last Word*, August 1990), I thought the HF bands have been poor this year - I had been looking forward to working wall-to-wall 10m DX on my first sun spot peak.

Has there been a fundamental change to the sun to give us these poor radio conditions together with the recent record-breaking storms, earthquakes, droughts, etc, and now, circles in corn fields?

Maybe it is "only" the ozone layer.

Bill Wright, G0FAH

UNACCEPTABLE

How it saddened me to read that G E Cripps, G3DWW, had scrapped a passive pre-selector 'Acceptor Unit ZA54916' for the sake of making a VFO (*RadCom*, August 1990, page 30).

This unit is much to be sought after, for precisely what it is intended for, as a pre-selector. So many modern rigs have very little in the way of tuned circuits before the RF amplifiers, and these units supply them, and the benefit they bestow, in very good measures. Only today I was pestered by a high-noise level on 21MHz and switching in this unit completely eliminated it for me. The specification I understand states that the insertion loss is not over 6db and mine has indeed a low loss "on tune". The unit covers Top Band (high end) to 10 metres with two tuned circuits coupled by some form of broad-band arrangement (with no amplification). It is constructed similarly to a valve communication receiver coil box and condenser, and so is ideal in rejecting powerful adjacent out-of-band signals that can cause cross-modulation troubles and similar disorders.

The unit's main fault is its size - but this I feel is to build in a measure of isolation for the coil box as it is extensively screened to avoid stray signal pick-up.

Many modern broad-band front-end rigs would benefit from one of these, and for every one scrapped I am indeed saddened.

I am rather surprised that G3VA of all people would countenance such vandalism of one of the relics of the valve age which is as useful now as it ever was.

Allan L Taylor, G3JMO

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