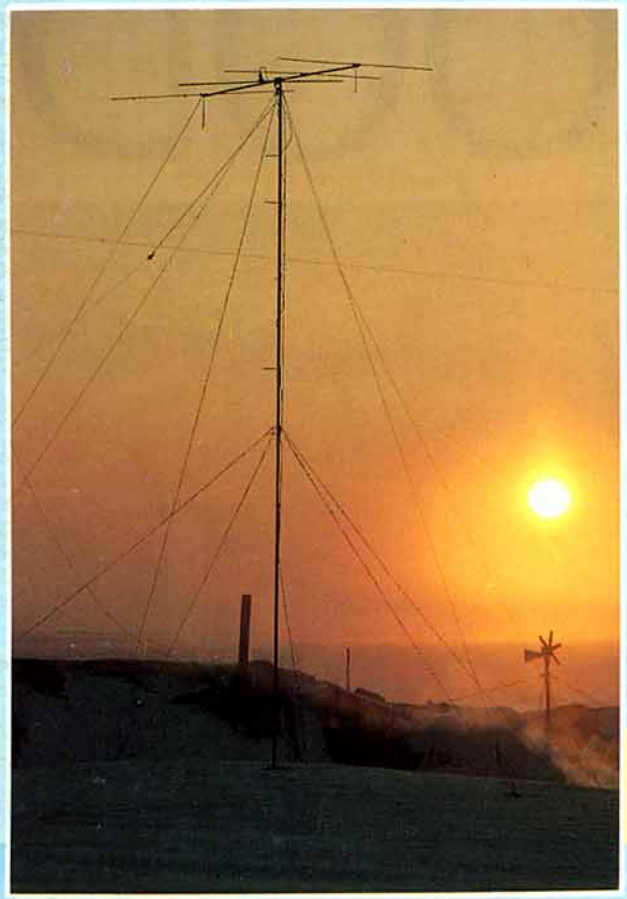
Radio Communication

March 1990



Construction project:

G3TSO HF Linear

Annual Meeting Minutes Supplement

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Radio Communication

VOLUME 66 No 3 MARCH 1990

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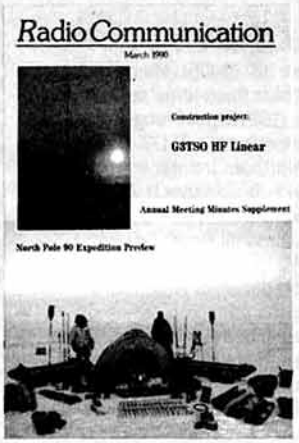

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All contributions and correspondence concerning the content of *Radio Communication* should be posted to:

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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.

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Membership application forms available from RSGB HQ

1990 Executive Vice-President

The RSGB Council has elected John Case, GW4HWR, Executive Vice-President for 1990. In addition to being the zonal council member for Wales, John is Chairman of the Training and Education Advisory Group which is dealing with much of the Society's work on Project YEAR and the Novice Licence.

QSL Bureau news

The new RSGB QSL Manager for the G8 plus three letter series is:- J Purves, G0FWP, 14 Hungerhills Drive, Horsforth, LEEDS, LS18 5JU.

For Northern Ireland amateurs, the new sub-manager is Aemar Higgins, GI3YMT, of 1 Cairnshill Park, Cairnshill Road, BELFAST, BT8 4RG. Aemar extends his thanks to his predecessor Ron, GI3HXV for making the transition easy.

Because of the recent postal rate changes, many sub-managers will be holding envelopes which are either under-stamped or will hold only a small number of cards. Members are recommended to obtain a copy of the UK Letter Rates leaflet from their local post office and to put adequate stamps on the envelopes. As a rough guide, 15 QSL cards weigh about 60g. Anyone active on the air but who does not wish to receive cards should let his sub-manager know so that time and space can be saved.

Membership Liaison Committee

Mrs Hilary Claytonsmith, G4JKS, was elected Vice-Chairman of the MLC at its meeting on January 27.

The MLC, which oversees the RSGB's GB2RS news service, has agreed that the experimental news bulletins transmitted by G3LEQ in Morse code had proved so popular that they should become a permanent feature of the service. The transmissions are on 70475kHz at 10 o'clock on Sunday mornings. They commence with an 18 word per minute pre-amble, followed by texts at 30, 26 and 22 words per minute, and finish at 10.45 with text and closing details at 15 words per minute. Further information is available from Gordon, G3LEQ, to whom any reports should be sent. He is QTHR.

EMC Directive

The Society has recently sent a News Release to its regular advertisers alerting them to the implications of the European Community EMC (Electro-Magnetic Compatibility) Directive which has been described in RadCom's EMC Column. The News Release referred to a DTI discussion document and advised traders concerned about the legislation to obtain a copy and to reply by the DTI's deadline of 9/2/90. The RSGB, in the shape of EMC Committee Chairman Alan Dearlove, G1WZZ, is making its own formal input to the DTI on this matter.

Staff changes at HQ

Dave Bobbett, G4IRQ, the Editor of *RadCom* has resigned. An Editorial Panel is currently running the magazine until a new Editor is appointed. Correspondence should continue to be addressed to "the Editor".

David Simmonds, G3JKB, who joined the RSGB staff last summer was recently appointed General Manager. His responsibilities are primarily towards the day to day running of the Society as a business though, being licensed, he retains a healthy interest in the radio work of the RSGB.

Ever since David Gough, the Society's News Editor, emigrated to Australia last Summer, the GB2RS and RadCom news has been written by a freelance journalist working from home. Several advertisements for an in-house News Editor have appeared in Radio Communication but no-one entirely suitable has come forward. So, with effect from mid-January, the news editing work has been absorbed into the existing Headquarters organisation. Any news items should be sent to RSGB HQ clearly marked "News" using any of the means detailed on page 3. Please do not use packet radio for news items. It is not reliable enough.

Note binder size

RadCom is now A4 size, more for technical reasons than anything else. Members who (understandably) want to keep their magazines safely in a proper binder will need to ensure they have the correct size. Please remember when ordering binders to include an indication of the year and hence size required (e.g. "1989 smaller size" or "1990 larger size").

West Sussex RLO

The RSGB Liaison Officer for West Sussex, Kim Newland, G7AIE, has recently moved. His new address is:- 23 Cissbury Road, Burgess Hill, West Sussex, RH15 8PW, and his home phone number is 0444 247325.

Sorry, Basil!

Apologies to Basil O'Brien, G2AMV, who was mentioned as contender for the Shambolic Shack Award in December. We were, unfortunately, the victims of a hoax and we can report that Basil has one of the tidiest shacks in the UK.

New callsigns for old?

THE FUTURE OF THE UK'S CALLSIGNS

Well not quite; however, following recent discussions with the RSGB, the DTI have unveiled their plans for future callsigns in the UK after the present G prefix series have been used up.

Since the DTI have asked for comment via the Society on their proposed plans, readers are invited to write to the RSGB Secretary at RSGB HQ. All comments received will be discussed by the Society's Licensing Advisory Committee and the views expressed passed on, as normal, to the DTI.

At present, all UK amateur callsigns begin with the letter G. However, both the present Class A callsign series, G+0+3 letters and the Class B series G+7+3 letters are rapidly running out. All the numbers have been used with the exception of:-

a) 5 which will be used for Class B callsigns when all the 7's have been used up, and

b) 9 which is reserved only for test and development purposes and which will therefore not be issued to the amateur service.

The DTI report that they use up far more Class B callsigns than Class A's so at present no-one quite knows if the available Class B calls will come to an end before the Class A calls or vice versa.

What the DTI intend to do is to go to callsigns beginning with the letter "M" as soon as either the existing Class A or Class B callsigns are used up. Any remaining G prefix A or B calls will not be used when either the existing A or B calls come to an end irrespective of which series ends first. The DTI want a clean break to "M" series callsigns. Clear so far?

When the DTI start to issue "M" series callsigns they intend to change to a system whereby the number in the callsign will indicate the country and the second letter of the prefix the class of licence. The DTI point out that for the future far more callsigns are available using this method, also there is the possibility of using additional numbers as regional designators, if required.

The new "M" style callsign would thus become:-

M	letter	number	+ three letter
	licence class	country indicator	for each individual

The DTI have suggested that the numbers be allocated thus:-

1 Spare	6 Isle of Man
2 England	7 Jersey
3 Scotland	8 Guernsey
4 Wales	9 Spare
5 Northern Ireland	10 Spare

Thus if MA2AAA moved from England to Scotland his/her callsign would change to MA3AAA.

So far as the second letter, which indicates the class of licence, is concerned, no definite plans have been suggested. However, perhaps:

MA — MJ prefixes could be for Class A calls, and
MK — MZ prefixes for Class B stations

with the exception perhaps of:

MB for special event callsigns, and
MC for Clubs.

The DTI point out that, apart from there being more than double the number of callsigns available using their proposed system most countries in the world do in fact use the number in the callsign as a geographical indicator.

In the discussions which the RSGB held with the DTI in January, the subject of Novice Licence callsigns was also discussed. The RSGB Council hold the view that Novice Licensees must be immediately distinguishable on the air, both from a national and international point of view. It was thus proposed that all Novice callsigns begin with the number 2 as this is available to the UK Government. The Novice series could thus go from 2A1AAA to 2Z9ZZZ, again with the letter in the second part of the prefix indicating licence class (Novice A and Novice B) and the number for the country.

The final matter to be discussed concerned special privileges to Clubs to allow them to be used on a permanent basis for greetings messages. Council is especially keen to see this extra privilege brought in as soon as possible so that beginners can go on-the-air at a Club meeting as a way of becoming involved in the transmitting side of amateur radio. A method therefore needs to be found so that when Clubs with existing G callsigns use greetings message facilities they are readily identifiable. The proposal is that Club calls remain as they are for all normal purposes. When greetings message facilities are used the second letter of the callsign be changed. Thus G (England) Club calls would become GX, GM Clubs would become GS, GW Clubs would become GC, GI Clubs would become GN, GD Clubs would become GT, GJ Clubs would become GH and GU Clubs would become GP — note only mandatory for the period during which greetings messages are being sent.

An additional feature of Club callsigns is that since the special Club call would give the same privileges as a GB callsign then it is hoped that Clubs putting on demonstrations of amateur radio to the general public would use their own Club callsign without the necessity to apply for a GB call.

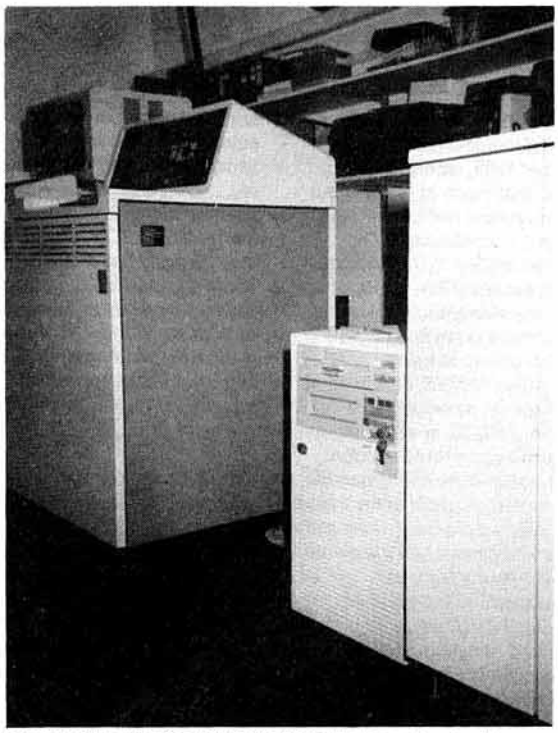
Comments on all of the above will be welcomed as indicated above. The new package from the DTI represents another step forward in licensing.

David Evans, G3OUF

New CPU for old

RSGB HQ has a new computer; at least the computer system has a new Central Processor Unit. The new IBM AS400 cpu was installed at RSGB HQ on 19 January. It replaces the IBM 38 CPU which has been in use for some 7 years.

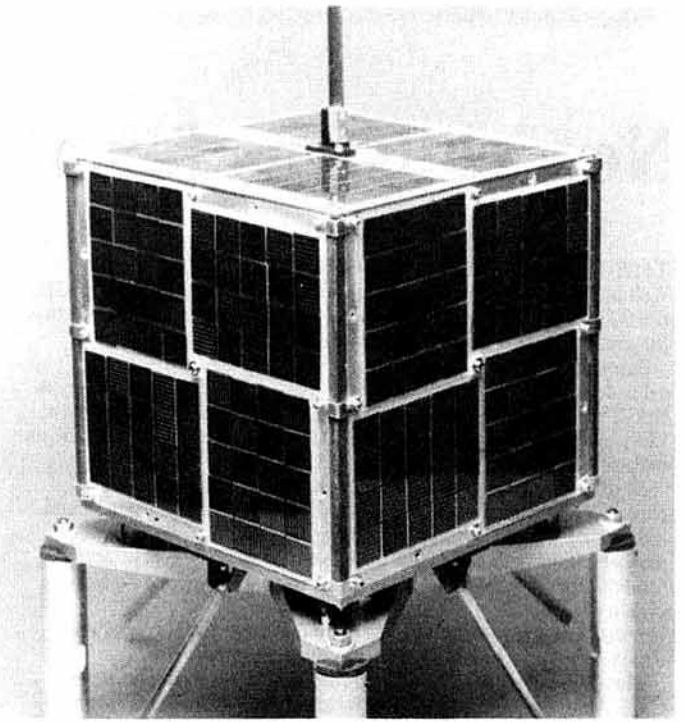
The new equipment allows staff to gain access to information much faster and has also enabled the Society to install and operate a new integrated accounting system which is at present being installed and tested.



The small box in the middle (AS400) replaces the two boxes on either side!

NEWS & REPORTS

Seven new satellites launched



In the early morning of 21/1/90 an Ariane rocket with a commercial satellite, SPOT-2, was successfully launched. It also carried no less than six new amateur satellites. Two are UoSATs (D and E) built at the University of Surrey and four are Microsats developed by AMSAT-NA in conjunction with AMSAT-Brazil, AMSAT-Argentina, and Weber State College of Ogden, Utah. All combine educational, radio amateur, experimental and scientific missions.

Telemetry is available on the following frequencies. LUSAT is on 437.150MHz with a straight PSK transmitter, LUSAT CW sends a modified CW character set on 437.125MHz. PACSAT and WEBERSAT transmits PSK from raised cosine transmitters on 437.025MHz and 437.075MHz respectively. Lastly look on 145.825MHz for the DOVE transmissions which are 1200Bd FM packet radio receivable with a standard TNC. Signals are described as "colossal" so this looks like a very easy way for packet radio operators to learn something about satellites. Care must be taken, though, not to transmit morse or packet beacons whilst monitoring. This is causing a number of problems and packet operators must ensure there is no possibility that their transmitters will key up on this frequency.

The Microsats are not likely to be in service as transponders until some time in March and anyone trying to use the uplinks during commissioning may well delay this further. Telemetry using FM speech will be available on 145.825MHz in due course. This frequency is deliberately shared with the UoSats and from time to time they will interfere with each other.

The bad news is that UoSAT E, also known as OSCAR 15, has not been heard by the University of Surrey monitoring team since the 23rd at 2330 GMT. Anyone who has heard telemetry after that time is asked to contact Jeff Ward of the UoSAT Project at the University of Surrey.

The seventh satellite is the Japanese Amateur Radio League's JAS-1b which is now OSCAR 19 after being successfully launched on February 7th. More information on these satellites next month.

AMSAT-UK has recently donated £25,000 for the development and building of the packet transponder on OSCAR 14 (UoSAT D). They have also given £2,500 to AMSAT-DL towards their work on RUDAK Mk II and £5,000 to AMSAT-NA for Microsat software development.

Romanian revolution and amateur radio

Following the quite remarkable events in Romania during December 1989, reports were received that much of the amateur radio equipment had been destroyed or confiscated. The RSGB has written to the Romanian national society (FRR) wishing them every success and asking whether there is anything RSGB members can do to help.

Alec Allen, GM5VS, of Amcomm has passed on an emotional letter from Mar, YO3CD, in which he says *"we gained our right to freedom, democracy and decent human life .... I have lost a couple of my friends but at least we are free ... I am still excited and cannot find the words to explain all my feelings".*

In an appeal to the world's amateurs, YO3CD says *"As with other fields, amateur radio has been totally neglected by the old dictatorial regime. Only the passion and endeavours of some of us have maintained the presence of Romania on the air! We thus call to all those who can by any means help amateur radio activity development in Romania. We don't have anything: neither decent quality equipment, nor spare parts, nor antennas etc., etc. ... If you will search your attic you will find something which you don't need any more i.e. used or second hand equipment, used emitting tubes, capacitors, switches, coax cable etc. ... On behalf of the Romanian amateur community, the appeal is addressed by YO3CD - the one who over 25 years has dedicated his youth and passion to this noble hobby which has no borders around the World. Lot of thanks."*

In an extremely generous response to this appeal, GM5VS has offered to use Amcomm's premises (373 Uxbridge Road, Acton, LONDON, WR3 9RH) as a central collection point but it is *absolutely essential* that any contribution comes already securely packaged and contains a QSL card from the sender to allow a return card offering receipt and thanks. Loose items cannot be handled or sorted through; all packages will be passed on unopened. Most usefully, Alec is able to arrange transport of the equipment to Bucharest. He is to be congratulated on this fine example of the amateur spirit.

Gentlemen please

In order to allow the maximum number of people access to the 10.1MHz band, which is only 50kHz wide, there is a gentlemens' agreement that it should be used only for narrowband modes such as Morse, RTTY and AMTOR. Unfortunately there is a small number of amateurs, even a few in this country, who regularly use SSB on the band. Readers are reminded that the agreement is for the good of all radio amateurs and even though the UK licence may permit all modes it would be gentlemanly to stick to narrow modes.

Amateurs honoured

An MBE was awarded in the New Year's Honours List to RSGB member Alexander Anderson, GM4VIR, for his work with Raynet at Lockerbie. He has been controller for the Dumfries and Galloway Raynet Group, in whose area the disaster happened, since the formation of the group in 1985. Alex emphasises that he considers the award to be for all the many Raynet Groups and members who helped in the operation.

Another MBE recipient was GB2RS news reader Captain Jack Hargreaves, G5VO, in recognition of over forty years service with the Bridlington School Combined Cadet Force.

Famous names

Three well known figures in the history of radio died recently. Max Grundig passed away on December 7th aged 81 and Harold Leak, of valve amplifier fame, died aged 82. Another recent loss at the age of 87 was the author M G Scroggie BSc MIEE, who was well known both under his own name and under the pseudonym "Cathode Ray" which he used for his many contributions to Wireless World.

WW2 rigs in Jersey

Jack Brown, GJ4ICD, has been asked to arrange the disposal of thirty receivers from the 2nd World War, unused and in the original wooden crates. Anyone interested should write to him and he will put them in touch with the owners. They are free of charge but the snag is that the recipient must go to Jersey to collect. Is this a sneaky move to boost the Jersey tourist trade?

Amateur radio at Gilwell Park

Part of the GB2BP station

Richard Burrows, G8ASO, shows the demonstration station to Mike Coolican of the DTI (centre) and 1989 RSGB President, Dr Julian Gannaway, G3YGF

A press release from the Scout Association carries the comprehensive title of "New Amateur Radio Demonstration Station Opens For Scouts - Hands On Experience Of Radio Helps Overcome National Skills Shortage Problem". It goes on to explain that the UK's half a million Scouts now have their own amateur radio demonstration station at the Gilwell Park camp site near London. The station gives young people an opportunity to learn about radio communication and also to talk to people throughout the world, including some of the 16 million Scouts to be found in over 150 countries.

The licence to operate the station, GB2GP, was handed over to the Scouts by Mike Coolican, Head of the Radio Communications Division of the Department of Trade and Industry, when he declared the station open on Saturday 21 October, 1989.

Gilwell Park is a national camp site visited by over 30,000 people a year. It also is the Centre for the Scout Movement's Adult Leader training programme. Located 15 miles from Central London, its historical connections with the growth of the Scouting worldwide attract many overseas visitors.

Amateur radio and Scouting have connections going back for over seventy years. During this time thousands of young people have been introduced to the technology of radio communications and have also been shown how the hobby crosses international boundaries. The new station will continue this work.

The Scout Association is fully supporting an initiative by the RSGB designed to introduce more people to the world of radio communications. Called Project YEAR, it aims to encourage and educate young people to participate in the hobby of amateur radio and so enhance their potential for employment in the world of electronics. This initiative has been warmly welcomed and supported by industry and the Department of Trade and Industry as Britain faces up to the problems of the rapidly growing skills shortage.

The station at Gilwell has been equipped with modern radio transmitting and receiving equipment capable of operating round the world. It is also being equipped with systems to send and receive messages via amateur satellites and packet radio.

A number of companies and organisations have played a key role in setting up the station. These include the DTI, the RSGB, British Telecom, Lowe Electronics Ltd., and Maplin Electronics.

Sparing no expense, *RadCom* has commissioned its own intrepid junior reporter to sample the delights of Gilwell Park during May. We will report in due course on whether the amateur station held its own against the numerous other attractions at the camp.

Earthquake

The USSR national Society RSF has recently issued a report on the amateur radio contribution to the 1988 Armenian earthquake relief work.

Following the enormous destruction in many cities and villages of Armenia, communication with the disaster region broke down. Radio amateurs with their own equipment were the first ready to restore communications. UG7GWO operated on a 24-hour basis and was soon joined by UG7GWA, UG7GWB, UG7GWK, UG6GG and UG6JJ. The Krendel Central Radio Club station and the station of the "Komsomolskaia Pravda" newspaper in Moscow also operated round the clock.

There was a good response to the appeals for help and rescuers, builders and radio operators left for the disaster area from all parts of the Soviet Union. One of the first groups to arrive was from the Krenkel CRC equipped with self powered HF and VHF stations. Reliable communication with Erevan and Moscow was established immediately and all urgent messages were passed using this network.

Simultaneously Soviet radio amateurs organised three special nets for assisting the rescue and for passing welfare traffic about the fate of the inhabitants of the settlements which had been destroyed. Six thousand messages were passed during the first week! All types of links were provided; between the disaster area and Moscow, between coordinators and rescue parties, between rescue parties and within rescue parties.

Help was offered from all over the world. RSF thanks the World Radio Amateur Service and National Amateur Radio Societies.

RSF has analysed the events and has concluded that the amateur service should be able to respond promptly to diverse natural disasters, large scale industrial emergencies and catastrophies. It intends organising the exchange of national societies' experiences of similar situations in order to cope with future disasters in the most efficient way.

Better licence conditions in Europe

- Effective from the 25th of January, radio amateurs in West Germany have been granted full privileges on the 18MHz and 24MHz bands.
- It is reported that amateurs in East and West Germany can now operate in each other's countries without having to apply for a reciprocal licence. Only three months ago, West Germans could not even obtain a reciprocal licence for the East!
- Polish amateurs are now permitted to use packet radio. A limited number of permits have been issued and more are expected after an experimental period.
- Amateurs in Denmark have joined the increasing number of Europeans permitted to use 50MHz. It is understood that this also applies to the Faroe Islands and that OY9JD is likely to be active.
- Another new country on 50MHz is Belgium. From 1/1/90, their PTT will issue permits for 50MHz operation during 1990 on application. Fixed operation only is permitted with 30 watts maximum on all modes. The band is 50.000MHz to 50.450MHz with Secondary status. Operation must cease if interference is caused to the Primary User. Applications must be accompanied by complete schematic of the transmitter. These facilities are also available to foreign amateurs holding ON9Bxx and ON9Cxx callsigns, but it is unlikely that it will apply to visitors operating under the CEPT agreement.
- The OVSV, the Austrian national society, reports that from 1/2/90, initially for twelve months, all Austrian amateurs may use 50 - 52MHz. Only narrow band modes are permitted and there is no unattended operation, mobile or portable. Maximum power is 25 watts. Transmitting antennas must be horizontal and have a maximum beamwidth of 100°. Most OE3s, all OE1s and OE4s and some OE6 stations may only operate between midnight and 0900 local time as they must avoid TV. hours.

IARU Region 2 Conference, September 1989

Left to right: PA0LOU (R1 Chairman); G3OUF (RSGB Secretary); 9V1RH (R3 Chairman); G3FKM (R1 Secretary); CX9HS (Uruguay IARU Liaison Officer)

IARU Region 2 covers North and South America and this Conference was held in Orlando, Florida during the 75th Anniversary celebrations of the American Radio Relay League.The RSGB delegation to the Conference comprised the President, Julian Gannaway, G3YGF, the Secretary, David Evans, G3OUF, and the IARU Liaison Officer, Tim Hughes, G3GVV.

The Conference was opened by Ralph Haller of the FCC. He spoke of the five fundamental principles of the amateur service in the USA: as a voluntary communication service for providing emergency communications; as an area where amateurs can extend their ability to contribute to the development of radio; to improve the amateur service by providing incentives to advance to higher-grade licences; to expand the pool of trained operators, technicians and electronics experts and to continue and extend international goodwill.

There were further speeches by the Honourable Patricia Diaz Dennis, Commissioner of the FCC, who spoke of telecommunications developments in the next decade; Larry Price, W4RA, President of the ARRL, who welcomed delegates; and Michael J Owen, VK3KI, G3ZML, the Vice-President of the IARU, who emphasised the threats and opportunities posed by the WARC in 1992 where our HF bands and our microwave bands are particularly vulnerable.

Region 2 was represented by 90 delegates from 19 countries. Also present were the Chairman and Secretaries of IARU Regions 1 and 3 (PA0LOU, G3FKM, 9V1RH, and JM1UXU), the Director of Region 3 (9M1DD) and representatives from the RSGB, DARC and JARL.

G3GVV was a member of Committee A which dealt with Administration and WARC preparation. This body endorsed the IARU training programme designed to inform developing countries of the value of amateur radio, and to assist them. It was noted that the IARU President was at the time attending the African Regional Telecommunications Conference in Lusaka on this very matter. Turning to the 10MHz band, the Committee said that only narrow band modes be used, that there be no contests and that incentives which could cause harmful interference should be avoided. The automatic operation of packet mailboxes resulted in extended and wide ranging discussion.

A special working group (including G3FKM and G3GVV) was set up to discuss preparations for the 1992 WARC. It noted that the frequency ranges potentially in jeopardy were 3 - 30MHz, 500 - 3000MHz and above 12.7GHz, and urged members' societies to appoint a suitably qualified member to whom all WARC matters could be referred. Spectrum allocation needs, already discussed at the 1988 Region 3 Conference at Seoul (in which G3GVV took an active part), were endorsed, and thus form an internationally coordinated plan.

Committee B, which included G3OUF, covered HF technical and operational topics. This included emergency communications, which proved topical as a hurricane coincided with the Conference and local TV stations urged viewers to ensure they had fresh water, canned food, and torch batteries. The need for the HF Monitoring System was reaffirmed. HF bandplanning for packet radio produced extended discussions. It was recommended that VHF/UHF links, and systems for packet, should distinguish between RTTY and packet. On 28MHz, a new segment for satellite downlinks was agreed; 29.30MHz to 29.51MHz.

G3YGF, who was part of Committee C (VHF/UHF/Satellites/ Digital), saw the endorsement of the RSGB's proposal for common frequency allocations at VHF, UHF and microwaves for international working. Also endorsed was the UK and USA view that the retransmission of messages originated by, and intended for, radio amateurs is not treated as Third Party traffic. The Canadian recommendation for a 50.105MHz to 50.115MHz DX window was agreed. The possibility of an IARU International Satellite Fund was to be looked into.

A report such as this can only indicate a small number of the issues covered by the hundreds of Conference documents. Important as these are, it is the informal conversations with representatives of countries many miles from our shores which contribute to the unanimity of amateur radio.

The host society was the ARRL. Their preparation and their facilities contributed to the smooth running of this 10th General assembly. Their efficiency was only equalled by their hospitality. At the final dinner, delegates had the opportunity to congratulate the ARRL on their achievements during the previous 75 years. A presentation to ARRL President, W4RA, was made on behalf of the RSGB by G3GVV.

VHF/UHF Round Table

Dedicated VHF/UHF DX-chasers will want to set aside Sunday 18 March 1990 for the 'VHF/UHF Round Table' to be held at the British Telecom Research Laboratories at Martlesham Heath, Suffolk. Andy Cook, G4PIQ, told us that the event would be "...loosely based upon the lines of our successful microwave round tables but biased towards the DC bands. Kick-off will be around 10am and there will be three talks during the course of the afternoon. Two are yet to be confirmed but they will hopefully be about EME and 50MHz. The one we are sure about is by Bryn, G4DEZ, who'll be talking about contests and the like."

Andy added that "There will be the usual test-equipment facilities available, consisting roughly of the following:

1. Preamp and converter noise-figure measurement.

2. Insertion loss, isolation, return-loss measurements on relays, amplifiers, etc and anything else you can think of to do with a network analyzer.

3. Small-signal two-tone measurements for receivers, amplifiers, transverter dynamic range, etc.

4. Usual spectrum analyzer-type purity measurements.

5. Power amplifier power/gain compression measurements to 1kW.

"In connection with the above, it will be useful if anything to be measured can use N, BNC, SMA, SMC or (urgh) UHF connectors.

"There will be a refreshment facility serving hot drinks and filled rolls and there is also a pub ten minutes away.

"Now for the slightly bad news. In order to meet BT's security requirements, numbers are limited and admission will be by ticket only. These can be obtained on a first-come first-served basis by sending an SAE before the end of February to Malcolm Bell, 50 Avocet Lane, Martlesham Heath, Ipswich, Suffolk."

Sounds excellent - is *your* preamp as good as you think...?

Beware the elements!

The violent storms which swept across Britain on the 25th of January damaged many amateurs' aerials and put repeaters, beacons and packet radio mailboxes off the air. Widespread and sometimes prolonged mains failures contributed to the chaos. Particularly badly hit were stations in the South-West who took the brunt of the gales and had no electricity for several days. The packet radio network in the area was reported to have broken down completely owing to loss of aerials or lack of power.

Were you insured?

Most of the aerial farm on the flat roof at Potters Bar took on a distinct permanent lean to leeward and the satellite tracking antennas were badly damaged. Fortunately we were insured. However, of the hundreds of members who have reported damage to their antenna systems during the storms, many may now be wishing they were similarly covered. RSGB members can take advantage of special insurance rates under the RSGB insurance scheme. This can include equipment, aerial systems and even the cost of carrying out repairs. For full details contact:- Amateur Radio Insurance Services Ltd, 4a Russell Hill Road, Purley, Surrey, CR2 2LA. Tel 01 660 0280.

New DXCC Countries

The ARRL Awards Committee has added Conway Reef (3D2) and Banaba (T33), formerly known as Ocean Is, to the DXCC Countries List. QSL cards may be submitted on or after March 1st 1990.

VHF Convention

Eagle-eyed readers may have spotted that this year's RSGB VHF Convention has had a variety of projected dates. Those equipped with calendars or RSGB Diaries (still some left at a bargain price - plug!) may have noticed that the latest date, the 12th of May is a Saturday. Now, everyone knows that the VHF Convention is held on a Sunday so it must have been a mistake. Well, no. After much negotiation between those VHF committee members who organise the event and the Sandown Park people, the final final date had to be Saturday 12th May. The usual full lecture programme and trade stands are planned. More details on page 27.

More callsigns on a plate

The DVLC at Swansea has asked that amateurs do not bombard them with enquiries about the issue of special registration plates bearing amateur callsigns. The only information currently available appears on page seven of the January edition of *Radio Communication*. The DVLC will not be in a position to issue callsign number plates for *at least* 6 months. Please do not contact the DVLC or RSGB HQ as no further information is yet available. The Society is to have further meetings with the DVLC and as soon as more details are to hand they will appear in RadCom and on GB2RS.

Meanwhile, radio amateurs living in New South Wales have been able to obtain "custom" amateur callsign number plates for their vehicles for some years. However, not many amateurs have availed themselves of this facility, possibly because of the high annual cost. After decades of submissions by the Wireless Institute of Australia, the Victorian Road Traffic Authority has recently advised that they will now accept orders for 'custom' registration plates which can take the form of an amateur callsign. These plates will be available in various colours at a once-only cost of $260.00.

ITU news

The International Telecommunications Union (ITU) is the branch of the United Nations which deals with communications, including radio. One of its main roles is the setting of rules and planning the use of all frequencies in the radio spectrum. From time to time, general and specialist conferences are held by the ITU, the most important of which from an amateur radio point of view are the World Administrative Radio Conferences (WARCs) where our bands could easily be reallocated to other users.

In 1992, a WARC will be held in Spain on frequency allocations in the following bands. 2MHz to 30MHz for additional allocations to the broadcasting service. 500MHz to 30GHz for allocations to the land mobile, mobile - satellite, direct broadcasting satellite, space research and space operation services. 11.7GHz to 23.0GHz for allocations to the high definition broadcasting satellite service.

At last year's ITU Plenipotentiary Conference in Nice, amateur radio was well represented and French amateurs provided an IARU stand. Although this was a professional conference, there were radio amateurs in over 30 countries' delegations and they could operate the special station TV6UIT. The stand was visited by representatives from about 140 countries contributing to the better understanding of amateur radio.

The new Secretary General of the ITU is Dr Pekka Tarjanne of Finland. He took office on 1 November 1989 having been elected by the Plenipotentiary Conference in Nice.

Repeaters, beacons and packet radio

- UHF repeaters GB3LT in Luton and GB3BK near Reading suffered severe aerial damage during January's storms. Also damaged was the roof of the building housing the Cornish beacon, GB3CTC. To prevent it getting wet, the gear has been removed pending building work.
- The Guernsey packet repeater, GB7GP, on 144.650MHz, has gained a 4 metre port on 70.4875MHz. More details from Chris, GU4YMV.
- MacPAC, the Scottish Packet Group, report the theft of the equipment which ran their 144MHz and 430MHz digital repeaters (GB7SP). Any information concerning their whereabouts should go to Ian Suart, GM4AUP.
- GB3PO, the Ipswich VHF repeater, has moved from the Martlesham Heath PO Research Labs which has housed the machine for the last 16 years. It will be co-sited with the group's UHF repeater GB3IH and will change frequency to R2. Details from Dave Cawley, G4FZZ, or Mike Watson G8CBH.
- The Rugby ATV repeater, GB3RT, has been closed down pending a site change. It is likely to be off the air for some time. Further info from Mike Wooding, G6IQM.
- GB3WS, the West Sussex VHF repeater, moved to its new site at Handcross on 3/1/90. The channel is still R6. Details from Mike Senior, G4EFO.

Jim, G6TYB, and Glenys, G4WDC, at Arrow's new North-West showroom

Arrow name change

Arrow Electronics Ltd, has changed its name to Arrow Radio Ltd. Managing Director, Peter Clarke, G3LST, says "We started business in 1964 selling semi-conductors ... Since 1976 we have specialised in Radio, Amateur Radio in particular, and this year we feel it is about time our name reflected what we do now". Arrow Radio Ltd has three showrooms and holds franchises for "all the major amateur radio brand names". A new catalogue is promised and we will tell you all about it should a copy find its way to the News Editor's desk. Also from Arrow is news of a new showroom in the Greensway Arcade, Gerrand St, Ashton-in-Makerfield, Wigan.

Offers of help pour in

Members are thanked for the large number of postcards returned in the Society's search for volunteers. All those who have sent in the cards will be contacted as soon as possible. Any member who still wishes to respond to the survey which went out with the December edition of Radio Communication, is invited to do so as soon as possible.

More nicked gear

Over the Christmas holiday the GEC-Plessey Telecoms' Sports & Social Club's shack at Beeston, Nottingham was broken into and two items of equipment were stolen. These were a Trio TS515 HF transceiver, s/n 650355 and a Yaesu FT221R 144MHz multimode, s/n 6N081998. Buyers and dealers beware - and no doubt Chris Archer, G4VFK, hon. sec. of the amateur radio section would like to know about it.

G6UV is alive and well

Mr J Brown has, with the help of the Society, managed to obtain the re-issue of his old callsign G6UV which had not been used for some 50 years. In a call to HQ to convey his thanks, Mr Brown says "the DTI said the holder of the licence was now deceased. I was amused because I was the holder of it and I don't feel deceased!". Now, what was it Mark Twain said...?

EI Activity Day

Saturday, March 17th, is St Patrick's Day and has been declared EI Activity Day by the Irish Radio Transmitters Society. It is not a contest but a number of rare EI counties are likely to be activated.

Attention rally organisers

In order that we can give your rally the best possible publicity in *Radio Communication*, it would help if rally organisers would let us know the date of their event as soon as possible. This will also help other rally organisers plan their events, avoiding clashes.

Membership Application Form

With this month's issue of *RadCom* we enclose a Membership Application Form. Please pass it on to a friend!

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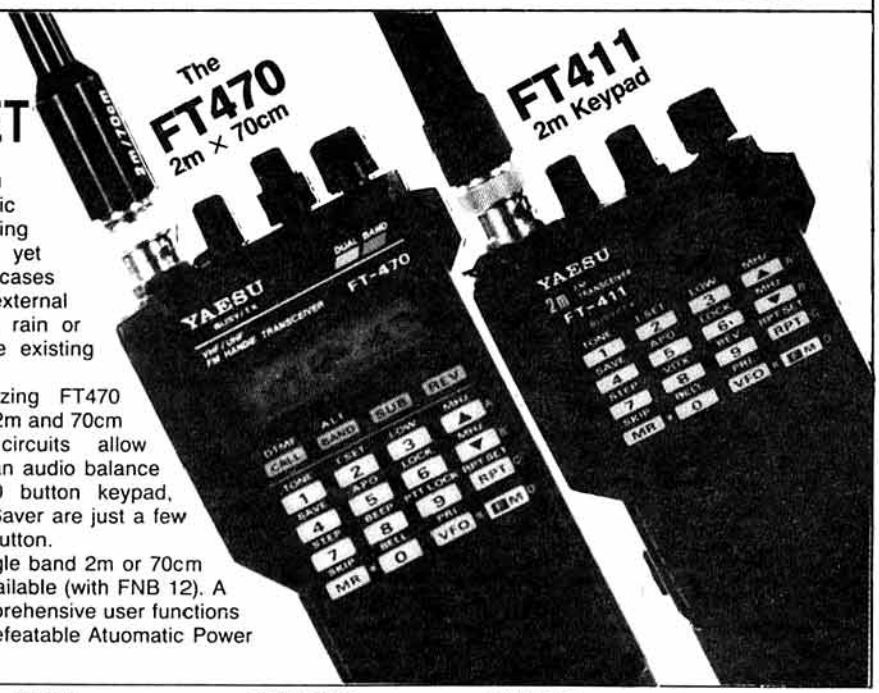
LIGHT IN THE HAND AND ON THE WALLET

The newest range of handhelds from Yaesu have all the very best in current electronic circuit technology combined with outstanding ergonomic design to produce a powerful yet extremely compact family of radios. The cases have rubber gasket seals around all the external controls and connectors to keep out dust, rain or spray and are fully compatible with all the existing FT23R accessories.

Top of the range must be the amazing FT470 Dualbander with a full 5W RF output on both 2m and 70cm (with FNB12). Dual independent IF circuits allow simultaneous reception on both bands with an audio balance control. Forty-two memories, 4 VFO's, 20 button keypad, defeatable Automatic Power Off and Power Saver are just a few of the functions available at the touch of a button.

Next in line are the FT411 and FT811, single band 2m or 70cm transceivers. Up to a full 5W RF output is available (with FNB 12). A 16 button keypad gives access to all the comprehensive user functions including forty-nine memories, dual VFO's, defeatable Atuomatic Power Off and Power Saver to name but a few.



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ADDITIONAL FEATURES

Other features include adjustable IF width, IF shift, IF notch and APF controls. AGC presentable for fast, medium and slow + defeat, on/off selectable, preamp + adjustable attenuator -6dB, -12dB, -18dB,. Adjustable — mic gain, RF power o/p, processor and drive controls. Built in electronic keyer with adjustable speed control. Twin independent frequency displays with mode indication + much more.

OPTIONS

SP5 external L/S with audio filter
DVS-2 Digital voice message storage system
BPF-1 Sub VFO filter unit
YH-77ST Headphone for stereo or mono dual receive
TCXO-1 High Stability oscillator unit

BRIEF SPECIFICATIONS

- ★ General Coverage Receiver 100kHz-30MHz
- ★ Ham bands TX 160-10m
- ★ Modes CW, USB, LSB, AM, FM, RTTY and PACKET
- ★ D.D.S. Direct Digital Synthesiser
- ★ Power output up to 200 watts P.E.P. 50W AM
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- ★ UP TO FOUR BAND CAPABILITY
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FMP-1	AQS Message Processor c/w display	£189.00	MD-1B8	Desktop Microphone	£79.00
FTS-8	CTCSS Tone Squelch Unit	£60.38	MH-1B8	Hand Scanning Microphone	£21.00
FVS-1	Voice Synthesiser Unit	£33.00	FIF232Cvan	CAT/TNC Interface for Packet & CAT	£125.00
D3000535	Keyer Unit B	£15.95	FIF232C	CAT Interface for RS232 O/P	£75.00
D3000534	Fast Scan TV (ATV) Unit	£159.00	FIF65A	CAT Interface for Apple II series	£60.00

FT736R RRP £1359 C/W 2m & 70cms and full duplex

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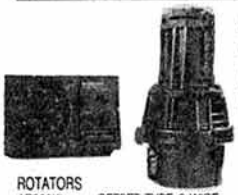
ROTATORS



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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
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AR200AB	ALIGNMENT BEARING AR200XL	£17.50
KS505	ROTARY BEARING 1½" 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 RC5 SERIES	£25.00
ROTATOR CONTROL CABLE		
RC5W	5 WAY G-400RC, 800, 1000SDX PER MTR	£0.48
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YS60

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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
FS50V	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
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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
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Carriage on all power meters £4.00

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New from Hokuskin, 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

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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

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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
7ON2DX	2m 6/8 70cm 3 x 5/8	£37.75
HS-727SS	Dual band mini antenna NEW	£16.95
HS-727VMS	2m 1/2 70cm 2 x 5/8 NEW	£25.95
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CA2X4WX	2m/70cm colinear	£79.00
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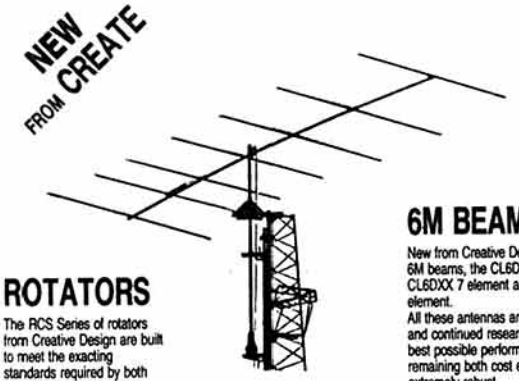
CARRIAGE BASE ANTENNA £7.50, MOBILE ANTENNAS £4.00, CABLES AND MOUNTS £3.50



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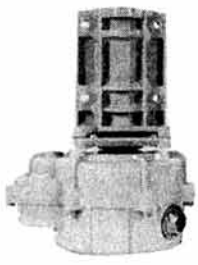

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North Pole 90

This month radio amateurs again have the opportunity to contact a polar expedition. North Pole 90 is the name of the latest attempt by Sir Ranulph Fiennes to reach the North Pole unsupported by mechanical or animal help. This attempt differs from Fiennes' previous expeditions in that it will be setting out from Siberia with an Anglo-Soviet team in support.

The "ice team" of Sir Ranulph Fiennes and Dr Mike Stroud will set out in early March from Cape Arktichesky on Severnaya Zemyla Archipelego. This point is about 525 nautical miles from the Pole as the crow flies. Unfortunately it is impossible to go in a straight line because of the landscape, and the two explorers are likely to have walked 900 miles by the time they reach the Pole. They will be pulling a sledge each weighing about 250lbs which includes all the food, fuel and shelter they need for the journey of 45 days. If they are delayed they could make the supplies last a further 10 days. Because of the nature of the landscape the journey is arduous. As Fiennes says, "Due to the extreme temperatures the sledges do not slide, they need to be hauled every inch of the way. The effect is that of dragging three six foot men over 900 miles of sand dunes. This could be why it is the only polar challenge still to be overcome." The team does have one thing in their favour. By setting out from Siberia they will be going with the ice flow rather than against it. This should mean that they will be going forward most of the time and not being pulled back by the ice drift. "Should" is the operative word here as the Arctic Ocean is highly unpredictable.

During their journey Fiennes and Stroud will be conducting experiments into physiological adaptations to cold and severe exercise, measurement of energy expenditure, and investigation of mechanisms of body weight control. They will also take measurements of geophysical phenomena such as snow depth, ridge formation and direction, height of pressure ridges and the size of open water.

The communications support will be provided by *RadCom's* old friends Laurence and Morag Howell, GM4DMA and GM0MUV. They will be joined by Leonid Labutin, UA3CR, and Sergei Malysher. The base camp will be at Sredniy Island in north Siberia and it's from there that communications will be controlled for the early part of the walk. When Ranulph and Mike are about two-thirds of the way to the pole, Morag and one of the Soviets will fly to a forward base closer to the Pole. The purpose of this station is to maintain good communications to the ice team. Morag and her companion will also perform a number of important experiments for the Scott Polar Research Institute of Cambridge. The work is hard and stressful and they will work in shifts of 12 hours on and 12 hours rest, although Morag says that rest is difficult. "When you're sleeping you're always scared that your partner keeping watch has nodded off." When working outside Morag finds the need to have every inch of her body covered unpleasant. "It feels eerie. All you can hear is the rustling of the jacket and you have limited vision due to the hood. You keep wanting to look behind you. I have a bad habit of taking my hood off but its not long before my ears start to hurt and then I have to put it back on."

It is important for members of the team to be disciplined and resourceful. During the attempt last year, which was abandoned due to severe weather, HF communications were badly disrupted by the enormous March solar flare. "We were unable to contact our base at Resolute directly. However, we were able to contact BTI at Portishead. They were able to link us to Resolute so that we could tell them we were ok. We had to go over 8,000 miles to get to somewhere 700 miles away." says Morag.

She adds; "We are also very good at following clear instructions for doing experiments. Last year Laurence had the task of taking 10m bore holes of ice. The temperature was minus 60 degrees. It takes a long time to drill through 10 metres of ice in those conditions and you get it right first time because you definitely do not want to have to go out and do it again."

At base camp Laurence Howell will continue to investigate propagation effects on HF and VHF signals via Arctic or Auroral E refracted/reflected layers. A bonus is that this will be done during the current reversal of the Harang discontinuity period of an auroral event. They will monitor the radio propagation beacons on 28 and 50MHz on a 24 hour basis, keeping records on the solar flux, K and A indices. In addition a log will be kept for solar noise, and reductions and enhancements of radio signals between 100kHz and 145MHz. Satellite signals in the 28, 145 and 435MHz bands will also be studied as their signals pass through and across the auroral oval, causing scintillation, echo and phase anomalies. Laurence states "Our continuation of auroral propagation research will be enhanced by the move from Ward Hunt Island (83N 74W) to Sredniy Island (79·33N 95E). Comparisons between these two locations will be a useful addition to our knowledge of the mechanisms involved in this propagation mode."

Amateur radio operations will be an important part of the base teams' activities and Laurence and Morag want to hear from you. As an inducement to get as many contacts as possible, the expedition has received special permission to operate a UK special event callsign in Soviet territory. This is the first time that this has happened and so is a unique occasion. The Sredniy base camp will have the callsign GB4MSS/UA0 and the forward camp GB4ICE. GB4MSS should be active in the first week of March and GB4ICE sometime in April. Both stations will be active on the HF bands and Sredniy base will also be available via Oscars 10 and 13, and RS10/11 with voice, CW and crossband. It is also hoped to use UoSAT Oscar 11's digitalker and digital communications experiments. Packet radio operation is also likely on HF into the UK via GB7LDI gateway and also via satellite. More details of the satellite operating is given by Arthur Gee in his column on page 55.

Another first for the expedition is that the Soviet authorities have given permission for the Sredniy base camp to operate on 50MHz. Laurence will undoubtedly relish the pile up. Amongst the equipment they will be using is the Yaesu FT757 GX mk1 which was used on last year's expedition, two FT747s and Laurence's own trusty FT726.Special QSL cards will be available via QSL manager Ian

Multiple Sclerosis Society Research Chair Appeal

One of the aims of the North Pole 90 expedition will be to raise money for the Multiple Sclerosis Society's Research Chair Appeal. The aim is to raise £2 million to establish a department at a UK university which will concentrate on MS research and liaise with others working in the field. Multiple Sclerosis is the most common disease of the central nervous system. It affects more than 80,000 families in the UK alone. The symptoms of the disease range from speech and vision impairment to total paralysis. Considerable progress has been made in the search for the cause of MS and scientists are more confident than ever that a cure will be found, although research is complicated because it is now believed that there are a number of factors which are involved in causing damage to the central nervous system. John Walford, general secretary of The Multiple Sclerosis Society, said "It is appropriate and gratifying that an expedition which is attempting the world's last great physical challenge should have decided to play such a positive part in helping beat one of the great medical challenges of our time. The establishment of the MS Research Chair will enable us to push forward the frontiers at a significantly greater pace".

The Radio Society of Great Britain is pleased to help the appeal by acting as a distribution point for sponsorship forms for the expedition. If you would like to have a form please send an SAE to RSGB HQ marking your envelope "MS Research Chair Appeal".

Part of the North Pole 90 team (l to r): Sir Ranulph Fiennes, Dr Mike Stroud, D'mitriy Shparo, Morag Howell, Laurence Howell

Crockford, GM1AUZ. The card contains information on the expedition and how amateur radio is helping the MSS Research Chair Appeal. If you make contact and receive a QSL card please do make a donation to the appeal if you have not already done so.

Morag and Laurence are looking forward to talking to old friends and making new ones. Morag stresses how important the support of radio amateurs is: "they really keep you going" she says. Among the people who she is looking forward to contact is Fred from Honduras who has been a regular on expeditions for some time. "Last time I contacted him he told me it was 30 degrees outside his shack, I pointed out it was minus 40 degrees outside mine!" There are also the amateurs who live near the Howell's home in Aberdeenshire who promise to phone Morag's mum to tell her she's all right. Morag also would like to take the opportunity to thank all the sponsors of the trip, particularly Damart who have done everything asked of them. She would also like to thank two amateurs from her area who coaxed, persuaded and cajoled her into practising morse with them every night for 10 weeks so that she could take and pass the morse test: Peter Coull, GM4GLD, and Bob Gall, GM4UFD. By helping Morag in this way it allowed her to operate from the forward base station on her own, get the special event callsign and get the idea of supporting a charity.

Morag says that one of the strengths of the expedition is that it is a close knit team and that each time they do an expedition they learn something new. Rather like amateur radio.

Operating

Expedition assigned frequencies: 7·085MHz, 14·285MHz, 28·885MHz, 31·285MHz, 50·105MHz, 50·110MHZ, 144·300MHz SSB/CW UoSat Oscar 11 DCE Digitalker 145·825MHz±Doppler

Callsigns

Sridniy base GB4MSS/UA0, Forward base GB4ICE/UA0

It is possible that the expedition will be doing some operating from their acclimatisation base at Dikson Island where the club callsign is EK0DR. They should be at this base the last week of February and the first week of March.

Laurence and Morag Howell, GM4DMA and GM0MUV

Sir Ranulph Fiennes was educated at Eton College and then the Mons Officer Cadet School in Aldershot. He was commissioned into the Royal Scots Greys in 1966. Promoted to Captain in 1968, his military career included attachments to the Special Air Service and the Sultan of Oman's forces. Sir Ranulph's retirement from the army marked the beginning of a series of adventures which has earned him the description "The world's greatest living explorer" from the Guinness Book of Records. These adventures include going up the White Nile in a hovercraft, parachuting onto the Jostedalsbre Glacier and negotiating over 4,000 miles of Canadian and Alaskan rivers. His most famous expedition to is the Transglobe when, with companions Oliver Shephard and Charlie Burton, he circumnavigated the world by polar route.

Dr Mike Stroud was educated at Trinity School, Croydon and University College London where he gained a BSc in Human Biology in 1976. He took a year off from full time education and travelled overland to India where, with four companions, he trekked through the Himalayas to become the first Europeans to enter the Zanskar area of Ladakh since the Chinese invasion of Tibet. Two years later he undertook a second expedition to visit the then unknown monastries of Zanskar. After completing his house jobs in medicine and surgery, Mike joined the British Antarctic Survey as a medical officer. Ranulph Fiennes asked Mike to join him on his first unsupported walk to the North Pole in 1986. On that occasion they got further north than any other unsupported expedition before frostbite caused their withdrawal. Mike is now senior research scientist at the RAF Institute of Aviation Medicine.

Laurence Howell joined British Telecom, while continuing his education at Croydon College of Technology. Fed up with fixing telephones he applied to the British Antarctic Survey as a radio operator. For the next 33 months he was at the British Antarctic Survey Base on Adelaide Island. Over this period he became involved in experiments looking into radio anomalies in the high polar latitudes and also set up the world-wide propagation beacons. He joined the Transglobe expedition with Sir Ranulph Fiennes on their final leg in the Arctic. Laurence is at present employed as communications officer on a North Sea oil platform. His interest in amateur radio started in the early seventies as an SWL and he was licensed in 1974.

Morag Howell was educated at Kirkwall Grammar School in Orkney Islands. She became the first woman to study electrical/electronic engineering at Banff and Buchan College of Further Education to HNC level. She later took her Marine Radio Operator's Certificate. Morag is now employed at Banff and Buchan College where her job requires her to turn her hand to almost anything and she has set up computer networks, and maintained navigational aids. Morag first Arctic expedition was the unsupported attempt in 1988. Morag obtained her Class B licence in 1983 and her Class A in December 1989.

Leonid Labutin, UA3CR, is well known to radio amateurs for his work with amateur radio satellites. A retired engineer he is now involved with the Sport Federation of Moscow where he has worked to promote amateur radio as a pastime and reduce its military links in the Soviet Union. His main interest is HF packet and satellite communications and he has been involved with the Soviet Radiosport series of satellites. Leonid was a member of the Ski Trek polar expedition of 1988/89. He lives on the outskirts of Moscow and is a regular visitor to the UK at the AMSAT Colloquium.

Left to right: Sir Ranulph Fiennes, Dr Mike Stroud and Leonid Labutin, UA3CR

Sponsors

An expedition of this type wouldn't have been possible without the support of the following who have donated or supplied equipment.

SMC — Yaesu equipment
Jaybeam — specialist UHF and VHF antennas
C & S Antennas Ltd — masts and HF antennas
Raychem — low temperature wires and coaxial cable
BNOS — loaned PSUs
CAPCO — loaned antenna tuning units
Microwave Modules — VHF amps and frequency counter
AMSAT UK — Toshiba lapheld computer, TNC, Uosat Oscar 11 demodulator and logistical support
University of Surrey — for use of Uosat Oscar 11 digitalker and soft/hardware

Main sponsor for North Pole 90 — Damart

The Squarebashers in Malta - the autumn 1989 DXpedition

by Tim ("It's all right, Mum, I packed the DX Dust this time") Kirby, G4VXE

Despite some distractions brought about by such things as a couple of members getting married last year, the Squarebashers had sufficient energy left over to undertake an autumn expedition to Gozo. Here's the story of how they got on...

It seems almost customary for the Squarebashers to be attempting to plan the next expedition - at least in principle - whilst enjoying the current one. Following our last two autumn expeditions, we felt that we should stick to precedent and go somewhere in autumn 1989. The question, as ever, was where?

For our autumn trips we like to go somewhere that will be interesting from an HF point of view but, more importantly, one which will be in a prime spot for 50MHz F2 and trans-equatorial propagation. This seemed to suggest somewhere in the Mediterranean, particularly since a superlative rating in the Sunshine Stakes is high on the 'VXE priority list. So one pleasant evening at Chateau 'DAZ we settled down to leaf through the holiday brochures. There were various alternatives, and one that I was particularly keen on (especially having read the *RadCom* article by G3SXW) was The Gambia. Unfortunately, other members of the group did not share my enthusiasm for the yellow fever jabs!

Malta looked very interesting, although I was concerned that most of the available accommodation appeared to be of the type which would seriously impair erection of an 'adequate' antenna farm. Also, I felt that Malta was already well represented on the bands, with some very well-known 50MHz operators active regularly. But then, after some study of the brochures, Carol said "What about Gozo?"

Colin and I immediately realized that this could be good, since Gozo just manages to sneak into a different locator square from the one which contains the mainland of Malta. Better yet, there appeared to be a number of villas available for hire on the island - just the thing for DXpedition groups. One in particular looked highly inviting, being described as a farmhouse. Subsequent enquiries suggested that the take-off was good (you find this out by asking whether the property has a sea view), so it was time to sort out who was coming. Actually, no-one needed much persuasion, although there were a couple of refusals due to pressure of work and lack of holidays. The 'Ayes' turned out to be 'Captain' Richard, GW8TVX and his band consisting of Colin, G0DAZ, and Carol; Dave, G8ROU; and the 'Terrible Twins' Jon, GW4LXO and Tim, G4VXE.

I duly applied for a licence, and at the same time took the precaution of writing to Joe, 9H1CG, to let him know that we were planning a visit. Joe was to prove a most valuable contact and promised to help in any way he could. This was just as well, since my application for a Maltese licence seemed to get lost somewhere between Cheltenham and Valetta. Incidentally, you might think from reading your shiny new licence that the CEPT provisions allow you to operate from Malta. Well, they don't just yet - although I'm told it's not far off. You have to fill in a comprehensive form including such details as your mother's maiden name; quite what this might have to do with assessing the possibilities of EMC, etc, still isn't clear. You also have to include circuit diagrams of the equipment you plan to use. The licensing authorities in Malta require two months to process an application, so as a result of the lost form we were a little short of time. At this stage Joe very kindly agreed to make a personal visit to the Wireless Office to sort things out.

Two days before our departure I rang Joe and he informed me that the callsign would be 9H3LF. I was well pleased with that and immediately planned an assault on 7MHz CW to give the call an airing in something like the right place!

We had decided to concentrate on HF and 50MHz for this trip. My trusty IC740 would form the basis of an HF station, with a Jaybeam VR3 trap vertical for 10, 15 and 20 metres and wires for the other bands. The vertical is not as good as my Butternut HF6V but I had it available and it looked as though it would be easy to transport. On 50MHz the station would consist of an Icom IC551 and a 3-element MET Yagi. Once again Alan Kelly Communications did us proud and supplied the antenna. Our other regular sponsor, BNOS, were kind enough to loan us one of their excellent power supplies. You'll notice, incidentally, that I have not mentioned an amplifier for 50MHz; the reason is that only 10W is allowed on that band in Malta.

A MODEST SET OF LUGGAGE

Getting the gear to the airport proved quite interesting, since we'd decided that Richard, Jon and myself would travel to Birmingham Airport by train. Carol came to the rescue and volunteered to collect my radios and antennas to save my bringing British Rail to a grinding halt by filling up the guard's van in one fell swoop. Poor old Richard still had to transport the poles on the train, but at least they are made of a very robust and extremely lightweight material. Eventually we all met up at the airport and surveyed the extent of the luggage. Quite modest, really, by our standards, with no need of the infamous 'Trunk' this time! As a result of careful planning (well, approximately) we had exactly the right number of bags containing radio equipment, so each person could transport one as hand baggage. Customs and security were negotiated with a minimum of effort.

The flight to Malta passed without incident, although our airline did not measure up to the high standards of excellence set by Air Europe on previous expeditions. On arrival in Malta we had to queue for some time whilst the credentials entered on our boarding cards were checked - presumably

Mgarr Harbour — our first sight of Gozo

Operating in the sun

to establish whether or not we were undesirable aliens. Fortunately the system appeared to have failed, and we were all allowed in!

True to their word, Joe, 9H1CG, and Mans, 9H1GB, were waiting by the customs barrier to meet us and assist with the formalities of importing equipment into the country. This was particularly kind of them, since by now it was 3am local time. As a good amateur, Joe was less bothered about the lateness of the hour than the idea that he might be missing some 50MHz DX! Customs was successfully negotiated after some rapid-fire explanations by both Joe and Mans in Maltese; I didn't understand a scrap of this, although in the torrent of words I definitely copied something which sounded suspiciously like "Bloody bureaucracy"! Having sorted Customs out, Joe and Mans welcomed us to Malta and explained that we would be taken by bus to the ferry for Gozo. For a while this looked unlikely, since two taxi drivers almost resorted to fisticuffs in an effort to resolve the matter of who would take us to the ferry. I was unable to comprehend the nature of the argument, but on reflection it was probably along the lines of "Oh no - they're the Squarebashers, the well-known British radio hooligans. I'm not taking them, you take them!"

We bade farewell to Joe and Mans and boarded the minibus for the ferry. The driver was quite chatty and started to tell us about Malta. I particularly remember him mentioning two items of important information. One was that it hardly ever rains in Malta, and when it does it merely drizzles for a minute or two. The other was that Maltese drivers are leisurely and there are never any accidents. We were to learn the real truth in the course of the next seven days...

As we waited for the ferry at Ciriekawa at 4.30am I was consoled by the thought that at least I didn't need a coat. Spot on cue the said vessel duly appeared out of the darkness, looking not unlike a Missisippi paddle-steamer. A handful of passengers and a couple of ancient-looking cars disembarked, and we were then beckoned to struggle aboard with our luggage. As might have been expected, the ticket collector denied all knowledge of the proposition that the price of the ferry ticket was included in the price of our holiday, and we all had to pay again. I suppose that at 5am the sum of £1 seemed a small amount to pay for a quiet life. The crossing was smooth and I enjoyed watching the water slip by whilst a distant thunderstorm lit up the horizon to the south. Some 20 minutes later we were arriving in Mgarr harbour.

A BIT OF A SQUEEZE

At this stage a small shadow of doubt crossed my mind and I said to Colin, "I suppose someone will meet us off the ferry?" I must say that the tone of his reply of "Oh, yes, of course" was rather less than convincing! We hauled ourselves off the Maltese equivalent of the African Queen and looked around for someone waiting to meet us with a large minibus or similar conveyance. There was nothing in sight - not unless you counted the little Ford Fiesta over there, that couldn't be for us of course. Could it? Omigawd; yes, six heavily-laden Bashers are being ushered towards the Fiesta, it's our transport! Grinning profusely, the driver invited us to start loading this vehicle. Right, matey, this isn't just any old bunch of English visitors, this is the Squarebashers and the luggage is going in if it's the last thing we do. The suitcases and rigs fit in the boot, somehow. The parcel shelf is surplus to requirements and gets removed at an early stage in the proceedings. Without that, the boot gets loaded up some more. Time for the poles to go in; inserted athwartships, they fit just fine. Jon and I manage to dodge the poles and wriggle our way into the back seat. 'The Captain' is next, and Jon invites him to join us on the back seat; it looks as though the only possible method of entry is through the hatchback and over the luggage! Now there are three on the back seat. Carol manoeuvres into the front seat and hangs on to one end of the poles. Colin has got it easy, the driver's seat looks just like the place to be.

Now - have we forgotten anything? Oh yes, where's 'ROU? Ah, not to worry, he's got in another car with a couple of ladies *d'un certain âge* and what looks suspiciously like their toy boy! Their driver tells us to follow and that he'll show us to the farmhouse. Dave subsequently told us that the ladies were somewhat the worse for drink and almost lynched the driver when they discovered that they were not going straight to their hotel...

The Fiesta starts and slowly we inch our way up the hill out of Mgarr and along the island road towards Xaghra, where the farmhouse is located. On the way, I was struck by the size of some of the local churches. One of the villages through which we passed has a church on the same scale as St Paul's Cathedral, and I swear I'm not exaggerating in the slightest. Soon we are cruising through the streets of Xaghra, and we draw to a halt in the street. This doesn't look like a farmhouse, it must be the ladies' hotel - gosh, what a dive.

MALTESE CHAINSAW MASSACRE

It *was* the farmhouse, of course. The driver unlocked the door and off we went again through a very dingy alley; oh dear. What was worse was that the establishment adjacent to the farmhouse was, of all things, a chainsaw shop. Visions of TVI and the Texas Chainsaw Massacre flashed through my head; for a few moments I was of the firm opinion that there'd been some very large-scale mistake early in the planning stage and that it was time to look up the airline timetable for a return to the UK *el pronto*. Seconds later, we were in a beautiful courtyard overlooking a valley facing into the centre of Gozo. Further inspection revealed that the house was beautifully furnished and that, on the first floor, there was a terrace with a spiral staircase up to the flat roof. It could have been designed solely with antenna erection in mind. Our sighs of relief could have been heard on the mainland.

By now it was 6am and we had been travelling all night. Are we tired? Most certainly we are tired - but there are two stations to get on the air. We unload the car and set to work. 'The Captain' and 'ROU get cracking on the mast whilst Jon and Colin unpack the 50MHz Yagi and start assembling it. I begin working on the HF antenna. In something less than forty minutes the VR3 is strapped to the side of the balcony complete with its radials and the 50MHz Yagi is up on its mast. The sun is coming up fast and it is already wonderfully warm. Turning our attentions inside to setting up the station, our first discovery is that the prevailing electric sockets are the usual UK 3-pin standard ones - how civilized! This saves the usual ploy of swiping one plug off a table lamp for the 50MHz rig and another off the toaster for the HF machinery. It's now 0649 and the 50MHz station is operational, the HF station having been on the air for the past twelve minutes. Jon confirms with 9H5AB and 9H5EE that the 50MHz system is working properly. Down on 14MHz I'm getting some great reports from all around Europe and from further afield too - some nice DX in the first few minutes is XE3LPV and VK4XA.

FEEDING THE INNER MAN

In the meantime, following a short snooze, Carol has not been idle and has found a shop that's open at 6.30am and obtained emergency breakfast supplies. I begin to find my concentration lapsing a bit in the CW pile-up (I've been up for 24 hours with no sleep, which is my excuse) and we call a halt to proceedings whilst the kettle is put on, the cornflakes tipped in the bowl and the toast placed under the grill. Bliss.

After breakfast we return to the shack to find something of a commotion in progress on 50MHz. Joe, 9H1CG, is working KE0SC/DU3 and giving him a pretty good report too. Joe turns it over to him; the DU is there but nothing like the S5 that Joe is reporting. Our well-drilled and much-rehearsed reaction to this scenario sets in and there is complete panic; somewhere in the rush of 'Bashers falling over one other to reach the antenna and feeders, everything is checked and pronounced OK. So why the blazes aren't we hearing him? Joe signs and Jon calls the DU on SSB - damn, the DU is calling CQ again. Joe replies and tells him to listen for us; we start calling on CW. Sure enough, we make it and swap reports - great. Two continents worked after only three hours. It's now 1100 and I decide that I really am tired. I leave the shack in the capable hands of 'LXO and hit the sun lounger outside for some well-earned sleep...

Just as I was starting to doze off, Jon called me. "There's a weak VK on - are you interested?". Battle of Britain pilots scrambling for their Spitfires had nothing on me as I shot off the sun lounger and was back in the shack in seconds. Sure enough Paul, 9H1BT, was working a VK4, but unfortunately the VK was only about 219 at best and he didn't come up at all in strength. This led to a somewhat anguished discussion; Jon and I both felt that something was wrong with the system but Joe felt that it was just one of the freaks of propagation. All went quiet for a while, and I managed a few minutes' sleep in between consoling myself with some DX on 28MHz SSB.

The 50MHz band was empty until around 1500, when we noticed that the ZS3VHF beacon was coming through. We turned the beam and in no time the beacon was a solid S9 with no flutter. A few CQ calls and continent number three was in the log in the shape of Louis, ZR3AC. He was quickly followed by Hal, ZS6WB, and most of the

rest of the Pretoria gang. This sort of propagation seems to go on for ever, and it was still there about two hours later when we heard Nelson, G1PAM, on 50.110. An executive decision was taken to turn the beam north-west - we felt that we'd have plenty more shots at Africa but that the UK was a different story. The opening was a good one, reminiscent of our time as ZB2IQ. In the next 55 minutes we made about 70 contacts with G, GW, F, SM, PA, GD and GU. What made things particularly interesting was that the northern Europeans (including G) were reporting an extensive aurora, but of course that wasn't evident to us. By then I was incredibly tired, but as I eased into sleep the last thing I heard was Jon working G7BXS in Cornwall.

Jon and I decided that it would be prudent to leave the rigs on all night in case there was any late-night or early-morning DX. Jon told me later that shortly after midnight he heard some good backscatter signals from the CT and ZB2 beacons; my reply went something along the lines of "%@$&!"

A CONSIDERATE BAND

Next morning we all felt somewhat refreshed for having had a good night's sleep. The 50MHz band tends to be considerate of DXpedition operators' needs and didn't demand our attention until the civilized hour of 0853, when G3GJQ/5N29 made a welcome appearance. Meanwhile the weather outside was stunning and we decided to move the HF station outside on to the terrace. Ten minutes later I was suitably installed, complete with sunshade for the rig and sun cream for the operator! A very pleasant couple of hours passed as I flicked between 14, 21 and 28MHz CW. At some stage I suggested that it was time for a change and that Richard should start up some SSB activity. Rubbing his hands together, 'The Captain' set to on 21MHz SSB. The pile-up wasn't overwhelming, but it was about 300% better than the ones from Porto Santo. However, it soon became apparent that it was not just any old weekend, it was JOTA weekend; we were soon being besieged by JOTA stations and hundreds of Scouts were keen to exchange greetings messages with us. I must record my sadness that no Guides wished to talk to us and that the ladies from Harrogate Ladies College featured recently in *RadCom* didn't choose to call us - oh well...

Back on 50MHz, we'd clocked up another continent in our quest for WAC in the shape of South America. First in the log was Michel, LU3DCA, followed quickly by CX8BE and a host of other LU stations. Next to appear was North America, which followed on very shortly by courtesy of 8P6JW. Other interesting stations worked in this early afternoon opening were DL3ZM/YV5 and a couple of Puerto Ricans - KP4EIT and KP4A. The band went quiet for an hour or so and then Jon detected some weak CW, which on closer inspection turned out to be FR5EL from Reunion Island. Shortly after we worked him, the propagation shot round suddenly and we had another opening to South America. Amongst other things this brought CW0L, who apparently was on an island off the coast of Uruguay. I subsequently found their 28MHz station buried underneath a massive pile-up. Ten minutes later we had an opening to Zimbabwe and Mal, Z23JO, made a welcome appearance in the 9H3LF receiver. Prior to our departure for an evening meal of Derbyshire Curry (by popular request — well, fairly popular, anyway) G3GJQ/5N29 showed up once again.

With all this going on, you might be tempted to think that we were neglecting the HF bands - but this was emphatically not the case. One band that I always enjoy on DXpeditions is 7MHz, and I was determined to make at least a few QSOs on it from Gozo. Just after lunch, I was stalking round the terrace peering at likely-looking supports and muttering to myself. Looking on with a somewhat bemused air was Carol, who wanted to know whether I was making a lizard trap and was this anything to do with the secret ingredient in Derbyshire Curry? Eventually, Colin and I came up with the best plan for the 7MHz antenna. The wire came out of the shack, up the spiral staircase, back to the water tank on top of the roof, across the roof of the chainsaw shop (making sure that no mad axemen caught us in the act) and from there down the side of the wall, where the end was secured with a convenient stick. The counterpoise consisted of - no, I can't reveal it, or the HF DX fraternity will laugh even louder.

The Squarebashers: Colin, G0DAZ, Carol, Tim, G4VXE, Richard, GW8TVX, Jon, GW4LXO, and Dave, G8ROO

I'm sure 7MHz aficionados will be gnashing their teeth at the description of our antenna and I know that it was a pretty poor excuse for one, but it was all we could do. And in any case... it worked fine. I tuned up, wound the keyer up, took a deep breath and called CQ. Within seconds I was on the wrong end of one of the biggest pile-ups of the DXpedition! I stuck with it for an hour or so and then it really was long past my bedtime, so I promised faithfully to be back at the same time on the following day and rather reluctantly closed down.

Next morning I was still fast asleep when I became aware of a loud noise in the shack-cum-bedroom. Clearly Jon heard it too. As we both slowly regained consciousness, there it was again; what on earth was it? Good heavens, it's the 50MHz rig; someone's tuning up, and whoever it is he's 30dB over S9. Must be a local - but who? No way - it's KG6DX on Guam and his SSB CQ is *amazingly* loud. We recover from the shock fast enough to call Joel and swap reports and locators. We sign and tune round to see what else is coming through. Half-an-hour later, at 0710, there's a weak SSB signal on 50.110MHz. It turns out to be VS6XMQ, and the next three or four minutes are real nail-biting stuff as we try to convince him that the call is 9H3LF, not 9H1LF. Finally, it seems that all is in order. Joe, 9H1CG, confirms this too, so that makes Asia and all six continents. Major celebrations (well, tea and toast for breakfast) ensue.

50MHz WAC

Our 50MHz WAC is in the bag, but the search for new countries and interesting propagation on 'six' continues unabated. At 1024 we work ZC4MK on CW, presumably by some sort of scatter mode. A few minutes later there is propagation over the Equator to Alain, TR8CA, followed by a ZS and then equally quickly there is a spate of Dutch stations. Since we don't have the friendly 'Iron Mules' of fond memory, the E and F2 layers seem to have decided to keep us in trim by causing us to rush outside and turn the beam every few minutes.

Talking of outside, this was about the stage in the DXpedition when some of you who heard us might have been just a teensy bit misled. We like to think of our callers as clients, and we think you like to hear just how wonderful the weather is in the exotic climes we visit - just as we love to hear how downright awful it is in dear old Britain. As you know, the cardinal principle of business is that the customer is always right - so the unwritten rule was that weather reports would always contain words such as 'stupendous'. Now this was all very well and good, but 'The Captain' went a bit over the top. He was describing the weather to someone in the usual superlative terminology; the sun beating down on the terrace, DXpedition members falling over from heatstroke, supplies of sun cream running dangerously short, etc, when there was an almighty clap of thunder followed by the unmistakable sound of an extremely heavy shower of rain. Richard was quite unperturbed by these events and apologized for the loud bang, explaining that a capacitor in the power supply had blown up (not the BNOS supply, naturally). And the rain? Well this was simply the result of the bathroom being adjacent to the shack! With abilities like that, Richard is confidently expected to stand for Parliament before the next election...

In true ZB2IQ style, it was democratically decided that lunch was in order and we wandered down to the lovely village of Marsalforn, the regular lunchtime eating spot, for a pizza and

beer. On our return it became evident that something was happening on 50MHz. Some weak CW was detected and the Decoding Committee identified it as belonging to Bob, VP5D. I called him, very hopefully, and much to our delight he was happy to persevere with our weak signals. We managed to swap reports and confirm all the details before he faded out. Next one in the bag was a real goody; PT9FH, no less, who induced a collective roar of laughter when he announced that he was "...on the Bolivian border". Why did we laugh? Well, it was so reminiscent of our G-station VHF Manager, who is forever announcing in his CQ calls that he's "...on the Welsh border"!

Some more ZS and LU stations were punctuated by a CW QSO with probably the slickest operator I've ever come across on the VHF bands. I didn't think my CW was that bad but it took me a moment or two to work out that the station calling CQ at about 40wpm was FY5AU. Not to be outdone, the keyer was wound up and we had a great QSO lasting a minute or so, during which a fair amount of information passed between us. For reference, Les was slightly weaker than FY7THF, so if you can hear the beacon you should be able to work him if he's about. After the contact with Les in Cayenne the rest of the day was peppered (ouch) with QSOs into South Africa.

BEWARE LOW FLYING PADDLE KEYS

The evening session found Jon on six and me on forty. One of the W stations I worked asked me whether we could come up on 10MHz, to which I said yes, certainly and suggested a time and frequency. When the time came I carefully tuned up and started calling W1NG. At this point I was a bit startled to see Jon throwing his paddle key across the room towards me. Since I wasn't aware that he had any deep-seated tendencies towards psychopathic violence, I mildly enquired whether everything was all right. It seemed that for some reason the paddle had become an integral part of the 10MHz radiating system and had given poor Jon a fair old belt when I started transmitting. I quickly worked W1NG and W4FZW and hastily returned to 7MHz; I wasn't allowed on 10MHz again!

The following day saw 'The Captain' Carol, Colin and myself taking a sightseeing trip round the island. All was going well until we were about half a mile from home, at which point the heavens opened in a big way; I'd never seen rain like it before. Things got so bad that we decided we'd better stop before we ran into something. After about 15 minutes the rain receded to something like manageable proportions. So much for the taxi driver's confident meteorological statements; drizzle indeed! Incidentally, you may remember his other *pronunciamento* about the standard of Maltese driving. Well, I'm not doubting his word but the crosses on the side of the road looked rather ominous. Almost as worrying was the sign that appeared on the wall of the car hire company. It said "Maltese drivers drive on the left... on the right... and in the middle".

Returning from lunch we found 'ROU operating the 50MHz station and he'd just worked OA8ABT. Just to prove it, Jon found him and worked him again since there was no-one else calling him for some strange reason. The evening TEP session brought the typical mix of LU, CX and ZS, this time with the added bonus of PY2BBL. Then Mans, 9H1GB, told us that he'd just worked a CE station who was looking for us. On 7MHz I was swapping 144MHz stories with SM5CNQ when - as they say in the thrillers - all the lights went out. Looking outside it was obvious that the whole island was in darkness, including the lighthouse!

NAME THAT TUNE

When we awoke the following morning, the power was still off; this was serious. At about 0830 the fridge rumbled back into life, which was fine, but 50MHz was dead. However, Richard fired up the HF rig and settled down to do his stuff. But 30 minutes later we were powerless once again. The following seven hours were tedious beyond description and new depths of boredom were plumbed by the Squarebashers. Highlights were Richard's 'Guess The Tune' competition, thanks to his battery-powered CD player, and Carol's announcement of "They've got power over there". Hmm; if it hadn't been raining so hard, we'd probably have pinched the battery out of the Fiesta and run the 50MHz station from...

The all-important volts were finally restored at about 1600, by which time the TEP was well into its stride. Just to add to our woes, Mans announced that there had been a long-path opening to JA the previous night... The next day saw a host of French stations in the 50MHz log, along with GJ0KKB (but where was The Voice of Jersey??) along with a nice Caribbean opening at lunchtime. After the TEP had faded, deep into the night, Jon was still carefully listening on 50.110MHz and heard three JA stations - one of whom was probably JA1VOK. Unfortunately they were all very weak and no QSOs could be made.

Alas, the day of our departure inevitably dawned, but in true Basher style we were determined to keep the 50MHz station on as long as we could - particularly since there was a reasonable opening to the UK in progress at the time. So it came to pass that at 1019 we signed with Jerry, G4RQP, and 9H3LF was QRT for the time being.

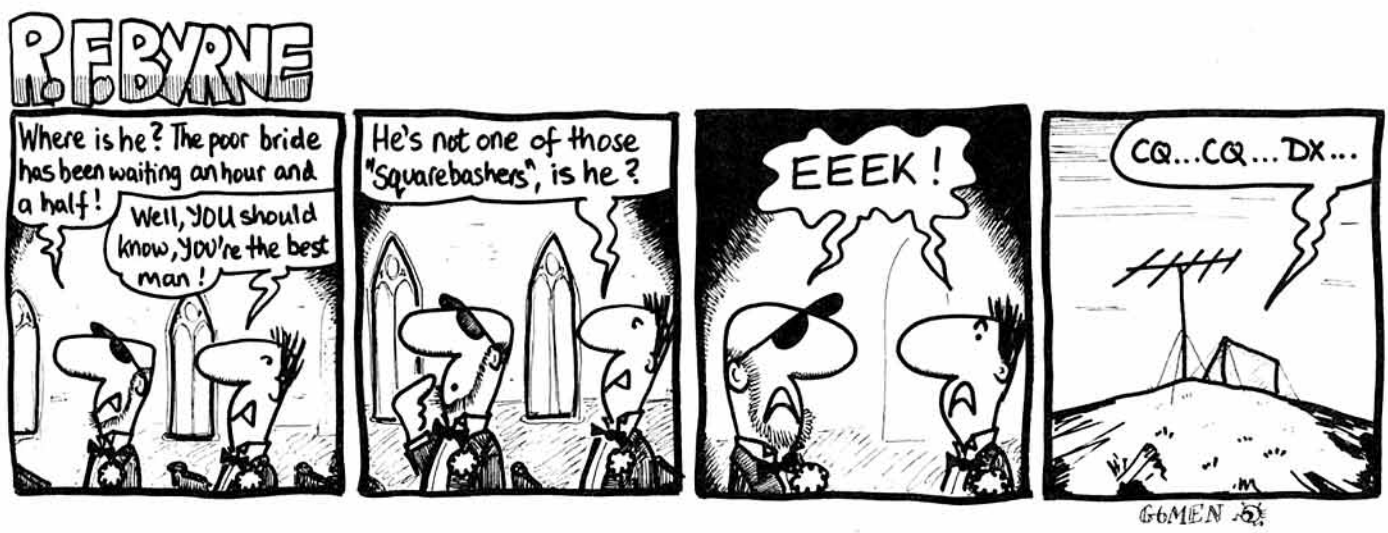
What a week! Long after Cycle 22 is a pleasant memory, we'll savour the sound of KG6DX at S9+ and all the openings to South America and the Caribbean. We couldn't do it all, of course, and it was a great shame that we didn't have a chance of working into the USA on 50MHz and also that there was no good long-path opening to JA. We were also sorry that we had not taken any 144MHz gear, since the possibilities of working Africa and (presumably) South America from there are very good. We will also remember an excellent holiday and the kindness and hospitality of the amateurs of Malta - particularly Joe, 9H1CG, and Mans, 9H1GB and the rest of the 50MHz crowd, who put up with our 24-hour-a-day operation with good grace and went so far as to say that we would be welcome at any time!

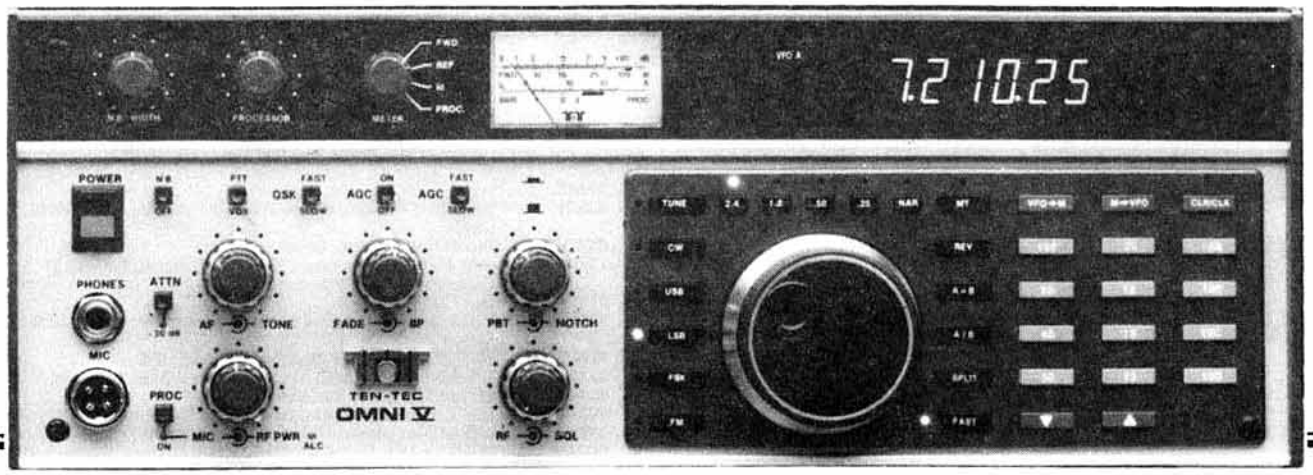
Certainly Gozo appealed to us very much. It is a quieter and more attractive place than Malta itself, and having found such a villa, we could well be tempted to return with some 144MHz gear in the Es season to try and help people cross JM76 off their 'wanted' list *(yes please - Ed)*. The only slightly irritating aspect of the DXpedition was the number of UK stations who delayed us in the middle of some almighty pile-ups to tell us all about the time they went to Gozo and had we come across old so-and-so? We're all in favour of a friendly chat, but I'm sure you'd all agree that it's a bit selfish to detain a DXpedition station when many others are waiting for a contact. After all, how do you feel when you're trying to struggle your way through a howling wolf-pack to cross a new square off your list and the guy who's currently working the DX is banging on about something boring whilst slowly but surely the band is going out? No fun, is it?

Please think twice before you do this sort of thing if it's obvious that it's a pile-up you're in, not a cosy Sunday-morning chat. Beware the Bashers' Blacklist...

If you worked us, please QSL as usual to G4VXE. If you QSL direct, please include a self-addressed envelope and adequate return postage. If you don't, the card will go via the bureau, and there may be some delay because I always deal with the direct cards before thinking about the bureau ones.

In the meantime, plans are well advanced for our next trip - as always they're classified COMINT, TOP SECRET UMBRA at present but stand by for exciting revelations in *RadCom* as soon as they're finalized. You'll love this one...!





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SPECTRUM ANALYSIS

HF

JOHN ALLAWAY G3FKM
10 Knightlow Road, Birmingham
B17 8QB

What a pity that there doesn't seem to be enough room on the bands for everybody ! The latest craze seems to be deliberate jamming of packet stations - operating quite correctly - in the rtty sub-band on 14MHz - by rtty stations. In the band-plan the segment is for "rtty and packet".....

More about packet on hf. I received a translation of a letter written by DJ4XN to the DARC magazine *CQ DL* recently. It is quite amusing and what is described may be only too likely to happen - but please don't assume that because it appears here then I must be "anti".... It goes as follows :- "I am the proud owner of a C64, a homemade interface with AM-7911, a TS440S, TL922, and a programme with all mod.cons. My system can certainly stand up to comparison with much more expensive hardware. As I understand it the original idea behind packet radio was to provide a means of communication on VHF which would enable those in poor locations to communicate with stations situated some distance away, by linking them up via other stations.

In theory, there should not be much difference between packet radio on VHF and HF - except for the difference in speed, i.e. 300 baud on HF as opposed to 1200 baud on VHF. What happens in practice, however, is a different story. Yes - the system does work - providing there is never more than one station on the same frequency at any one time. The moment another station appears (and wasn't multiple use supposed to be one of packet radio's main selling points ?) things start to go wrong.

NORTH POLE EXPEDITION

In the middle of the month Simon Browne, G0GWA, and Paul Keighley, G0KPH, are due to start a seven-week venture jointly with Soviet and Norwegian amateurs in an expedition to the North Pole. It will start from Khabanga (in UA0B) and will go via Severnaya Zemlya. The two hope to be given reciprocal licences and if the equipment allows will be on all the hf bands using cw and ssb. 4K calls will probably be used for some of the expedition. Simon says that hf work will depend on the geomagnetic activity which will occasionally make the hf bands unusable.

SOVIET HIGH-SPEED CW CLUB

The U-QRQ-C was formed on 3rd December 1988 under the sponsorship of RSF. Its objectives are to encourage the use of cw, to encourage high-speed cw operation, and to generally improve behaviour on the hf bands. It is an international club and open to all who are able to carry out an "ordinary conversational" QSO at a speed of at least 170 a minute characters using at most a basic electronic keyer. To join you need five sponsors from among the current membership and the members you work will notify the secretary following the contact during which you should mention your wish to join. When five recommendations have been received an addressed envelope and irc should be sent to V.Mitkevitch, U3DR, Domodedovo 142040, PO Box 1833, USSR. The annual fee is 10ircs and this has to be sent to LZ1BC. There is a net every Wednesday from 1800 on 3.565MHz and on Saturdays from 0800 on 14.070MHz following announcements from club station 4L1QRQ.

CONTESTS

U-QRQ-CW HF Contest

0200-0800 18 March.

An interesting new contest for high-speed operators. I can supply copies of the rules (sase please).

QTH CORNER

A92KG	
A92QL	via YASME Foundation, Box 2025, Castro Valley, Calif, 94546, USA.
CE0OGZ	Box 4178, Valparaiso, Chile.
FT4WB	Jean-Pierre Berthoumieux, 29 Rue du Cammas, F-31650 St Orens de Grenville, France.
FT5XA	(see FT4WB)
FT5XH	F2CW, J. Calvo, Les Bois de l'Essard, Nercillac F-16200 Jarnac, France.
WZ6C/ST	W4FRU, PO Box 5127, Suffold, Va, 23435, USA.
VK9TR	T. Rogers, 13 Justine St, Flagstaff Hall, SA 5159, Australia.
3DA0BK	PO Box 122, Eveni, Swaziland.
3D2WZ	G3WZ, 11 Meadow Court, Whiteparish, Salisbury, Wilts, SP5 2SE.
3Y5X	LA6VM, Jacob Favesv 6, N-0287 Oslo 2, Norway.
8Q7AH	HB9TL, J. Laib, Einfangstr. 39, CH-8580 Amriswil, Switzerland.

Scores in the **1989 CQ 160 Metre Contests** have appeared. In the **CW section GW3YDX** scored a massive 393,712 points and won the K5AAD Trophy with world top score. **G4BYG** and **G4OBK** had the same score - 157,278 points, G3XTT 141,696, **GM3PPE** 72,012, **GI4BBV**,and G3TXF 4,611. In the **Multi-operator** category **GM3IGW** made 195,615 points.

Another list of results received is for the **1989 HA DX Contest**. In the **Single-operator** section **G3ESF** scored 133,713 points to come 14th. G0DDB was the only other UK entrant with 9,900.

CQ WPX SSB Contest

0000 24 March - 2400 25 March

All bands excluding WARC. Single-operator (a) multi-band and (b) single-band. Multi-operator, multi-band only, single and multi-transmitter. Single-operator entrants may only operate for 36h and off periods must be a least 60m in duration and marked in the log. Exchange RS and serial QSO number from 001. QSOs between stations in different continents count three points on 14, 21, and 28MHz and six on 1.8, 3.5, and 7MHz. QSOs between stations in different countries in the same continent count one and two respectively. Contact with one's own country may only be made for multiplier credit and have no points value. The multiplier is the number of different *prefixes* worked - each counts only once however many bands it is worked on. Final score is total QSO points times multipliers. There is a QRPP Section for stations with output not exceeding 5W and entrants must mark this clearly on the summary sheet and state the exact output power. Official log and summary sheets are available from CQ Magazine, WPX Contest, 76 N.Broadway, Hicksville, NY 11801, USA in exchange for a large self-addressed envelope and some ircs. Logs must be postmarked no later than 9 May and "SSB" written clearly on the envelope. I can supply photocopies of the full rules (sase please) but have no contest summary sheets or log forms.

East Meets West CW Contest

1800 - 2200 17 March

Sponsored by YLRL and only open to lady operators. Copy of rules available on receipt of sase.

AWARDS

WARC 79 Award

JARL is sponsoring this new award designed to encourage more activity on the "WARC" bands (10, 18, and 24MHz). To qualify you need to make confirmed contacts with at least 79 stations (including one from each of the ten Japanese call areas) involving at least two of the new bands. The award seems to have a closing date and valid QSLs must be dated between 1 July 1989 and 31 December 1990. (No further details are available at the time of writing but will be given later.)

Worked All Zones

CQ Magazine has announced changes to the administration of the WAZ Award. W4KA has handed over to a new manager - John Dionne, K1MEM, 31 DeMarco Rd, Sudbury, Mass, 01776, USA. Please also note that applications for 5BWAZ and 1.8MHz WAZ must be sent direct to K1MEM (with the relevant QSL cards) - I cannot certify these in the usual way.

ARRSM 10th Anniversary Award

This is being issued to those who contact or hear ten San Marino stations on the same or different bands between 15 April 1990 and 14 April 1991. The fee is US$10.00 and applications including a list of QSOs and the QSLs go to Tony Ceccoli, ARRSM, PO Box 77, San Marino 47031.

DX NEWS

The expedition planned by the large group of USA operators to **Bouvet Is** was cancelled. A general press

Eight Band Table No.1

Call	1.8	3.5	7	14	18	21	24	28	Total
G3KMA	135	248	309	320	104	322	76	310	1827
G3XTT	161	212	263	304	78	297	61	272	1648
G3GIQ	71	211	267	322	69	321	66	304	1631
G4LJF	42	251	258	304	27	286	5	255	1392
G4OBK	124	156	203	279	10	248	3	227	1250
G3TXF	65	164	204	282	4	264	1	238	1222
G3YMC	81	113	189	250	60	257	41	208	1199
GM3PPE	69	165	174	224	71	224	71	192	1190
G0HSD	19	103	114	169	0	200	0	188	793
G4NXG/M	1	31	58	196	37	211	45	199	778
G3JXN	19	56	109	156	13	144	6	206	709
GM40BK	8	46	96	100	20	110	12	140	532
Average	66	143	187	242	41	240	32	228	1181

Next deadline — scores to reach G3GIQ by 8 April — please note that for entry into this all must have made QSOs on each band listed.

FINAL 28MHz COUNTRIES TABLE

G0IHB	214 (ssb)	G0JHC	135
G4MUW	211 (ssb)	G4XAH	134 (ssb)
G0CKP	207 (cw)	GM4OBK	132
G4ZYQ	184	G2AKK	125 (cw)
GM4ELV	182 (qrp)	G4OBK	115
G4DXW	179	G0BXD/M	109
G3TXF	166 (cw)	G4SJG	101
G4NXG/P	149	GD4XTT	98
G3SXW	146 (cw)	GM4CHX	84
G0FWX	141 (ssb)	G6HM	81 (cw)
G0JSM	135	G3SDK/M	54

Congratulations to the winner — **G0IHB** and also a special mention to G0CKP who found 207 countries on the band using cw!

release from the *Saturday Evening Post Society* dated 22 December said that it was postponed indefinitely and possibly permanently. This was due to the loss of the use of the *Deep Salvage 1* whose owners had leased it to another company from 15 February for a five month period. A month-long search for alternative transport failed and the group apologises to all who supported them.

The Amateur Radio Republic of San Marino (ARRSM) will be celebrating its tenth anniversary on 15 April and a special callsign, T71OA, will be in use from the club station on all bands and modes on 21 and 22 April. Special QSLs will be sent out direct (see also *Awards*).

W.e.f. 1 January 1990 Danish amateurs have been allowed to operate on 10, 18, and 24MHz using all-modes and normal power inputs.

DX News Sheet mentions that a five-man dxpedition to **Palmyra Is** (KH5) is being organised. A tentative schedule was for operation to be from 11 to 17 March.This should be followed by a move to **Christmas Is** (T32) for some action in the WPX contest on 23 and 24 March. Depending on funds and interest shown the group may then try to get to **Kingman Reef**. They should be leaving Honolulu on 7 March for Christmas Is where they will take a chartered boat to Palmyra. Their return to KH6 will be on 28 March. Later in the year visits to **Howland Is, Canton Is, Tuvalu, Rotuma**, and **Wallis Is** may be organised.

VK9TR, on **Willis Is**, frequents 14.226MHz between 1100 and 1200 and has also been spotted on 14.213MHz at 0600 as well as in the 14.222MHz net at 0500. VK0JR is a new one on the air from **Macquarie Is**. HL5BDS has left **S.Shetland Is** and has been replaced by HL8KSJ. VP8BQ is in **S.Orkney** and is said to join the 14.422MHz net at 0500. G3OKQ should by now be on **Pitcairn Is**.He will be very active in April in support of the VR200 celebrations. Last time he was there his callsign was VR6JR.

Lynx DX Bulletin mentions the possibility of a large group visiting **Western Sahara** at the end of February or the beginning of this month. It will be on all bands ssb, rtty, and cw and will have a special callsign.

The *Long Island DX Bulletin* reports G4WYG/ST2 active on 14.040MHz from 1800 and another station in **Sudan** - WZ6C/ST2 who is often near 18.070MHz at the same time and later near 14.030M MHz. PA3CXC, F2CW and PA3DFT hope to be in **S.Sudan** as 6U0CW and 6U0DX for two weeks from the middle of this month. 5U7NU, in **Niger**, who has been worked on 28MHz ssb, will be there for some time and should be on other bands by now. TJ1PD in **Tchad** meets QSL manager N5DRV every Wednesday at 1900 on 21.265MHz, and also appears on Sundays at 1800 near 21.365MHz. From **Mali** TZ6VV seems to a regular between 2100 and 2300 on 21.272 or 28.472MHz, from 0600-0800 on 14.175MHz or 7MHz, and between 1700 and 1800 he uses 21, 24, or 28MHz.New operators have reached **Kerguelen Is** and both FT5HX (F6GYV) and FT5XA (ex-FT8XA) have been heard on 14.115MHz around 1600. *DX News Sheet* says that FT4XG and FT4XI are also on the island. **Crozet Is** is a much rarer spot and Jean-Louis, FT4WB, is a very new operator on the air from there.

WB2DND hopes to be in the **United Arab Emirates** again and be on the air from A61AD. He will concentrate this time on 3.5 and 7MHz cw.

A group of five S.Florida dxers will be on the air from **St. Barthelemy Is** from 1 to 8 March, particularly during the ARRL DX contest. Their P46 call has not yet been announced.

The latest on the DXCC situation is that QSLs for **Conway Reef** and **Banaba Is** may now be submitted for credit. ARRL has clarified the position over Banaba - if you have a VR1 QSL from Ocean Is this counts

HF F-LAYER PROPAGATION PREDICTIONS FOR MARCH 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 colums.

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	....688883..	...1799996..	...48999982.	...688888951	4227666667886	8765333335799	8752111112578	+42.....24+
MALTA	....788885..	...18999981.	...399999951	1..688889973	652876667998	997643345799	8974211112588	++4.....25+
GIBRALTAR	....377665..	....5888871.	....8999995.	88888972	441487777997	996764445799	9986321125B9	+++3.....2++
ICELAND	.....13342..	.....36664..	.....688872.	....2888995.	21..67778885	873465445789	9985321234B8	+++2.....3+
** ASIA								
OSAKA	...1572.....	...27841....	...3864221..	...274334322	....41.14664	....1...2573	251	..........2.
HONGKONG	...3788741..	...3787763..	...15656772.	1...34347852	3....1.15886	2.......2587	364	..........3.
BANGKOK	...48+++83..	...4687896..	...136568821	1....4347853	4....1.15787	4.......2588	1.........266	34
SINGAPORE	...5788884..	...4587896..	...126568831	1....3247853	4....1.15787	3.......2588	266	33
NEW DELHI	...58+++5...	...5677871..	...334558421	2.1..2237653	62.....5788	73......2588	51........267	2.........34
TEHERAN	...6++++94..	...76678961.	1.1633568842	313411237975	8451...15798	873.....2588	74........267	42........34
COLOMBO	...6++++95..	...55678971.	1..113568942	31...1237975	73.....15798	72......2588	5.........267	2.........34
BAHRAIN	...7++++951.	...766789721	2.1532558964	5233..237987	865.....4899	872.....1588	75........367	42........34
CYPRUS	...5++++971.	...798999931	2..887789974	522866678997	976643346899	99631...13689	8841.....1478	55........4+
ADEN	...7+++++831	1..755679953	521521358987	7433..137999	985.....4799	883.....1588	761.......266	43........34
** OCEANIA								
SUVA/S	.....35531..	....156663..	....3656762.	...15434782.	...452.1471.	...42...15..	...1.....2..	....
SUVA/L	53.17431.386	441386422585	222685434862	..377322585.	..1641..372.	...41...15..	...1.....2..	....
WELLINGTON/S	....257541..	....477663..	...27656861.	...57434783.	...651.1574.	...32...251.	...1.....2..	....
WELLINGTON/L	43..3.....36	551151....56	4433731..275	2246731.1563	..2651..274.	...32....41.	...1.....2..	....
SYDNEY/S	...4888863..	...5987875..	...58656882.	...474347841	...141.15762	....1...255.	.........22.	....
SYDNEY/L	....421...34	11..6421..66	221185321186	211274223485	...251..2672	....2....44.	.........11.	....
PERTH	...6++8752..	...57877751.	1..256568742	2...23237875	3....1.15797	1.......2586	263	.........3.
HONOLULU	........131.	.....1..252.	....131.572.	....2321671.	..2342..45..	..352...12..	..12........	....
** AFRICA								
SEYCHELLES	...666885631	2..655777864	521311458987	8431..237999	973.....4799	86......1588	73.......267	4.........34
MAURITIUS	1..6+++++853	3..655779975	631322458998	8521..237999	972.....4799	85......1588	72.......267	4.........34
NAIROBI	2..677788964	41.755589887	842511158999	9743...37999	9961....4799	884.....1588	761.......266	43........33
HARARE	41.577+++986	63.655579998	962622258999	9854...37999	9971....4799	885.....1588	762.......266	43........33
CAPETOWN	41.388++++98	62.576679999	961753348999	983721.26899	9975....3799	8962....1588	774.......267	45........34
LAGOS	63.2++++++98	861485558999	993762226999	99684...5899	99971...2799	8885.....588	6762......267	343.......34
ASCENSION Is	54..9+777757	861196556879	994483113899	997771...799	99974....489	88851....178	6662......57	333.......24
DAKAR	43..8+++++96	761.97656998	985385213899	997572..1799	99975....589	88852....278	7662......47	443.......24
LAS PALMAS	....7++++962	11..99999984	441298888997	774487767899	998875445799	998742112489	88741....268	+54.......35
** S. AMERICA								
Sth SHETLAND	42...5++++86	741126778898	985346457789	997664225578	899751..2247	68852.....14	4662.......1	.33.......
FALKLAND Is	32..37++++86	551.57777788	884276443489	997574221268	999751....37	89852.....15	6863.......2	353.......
R DE JANEIRO	22..18866774	541.38655687	884266311389	9975741...179	999751....58	88852.....27	7663.......4	433.......
BUENOS AIRES	22..47++++85	441.67765687	774286521279	9974742...58	999751....27	89852......4	6762.......2	353.......
LIMA	....1.++++73	11..31765465	442.53531137	775273321...7	898651.....4	78852......1	4763........	.43.......
BOGOTA	......++++73	11....1765565	332.13531137	66523321..17	898641.....5	88862......2	5763........	243.......
** N. AMERICA								
BARBADOS	.....7++++83	11....8765586	442.26521268	7752442...48	998651....17	89852......5	7763.......2	443.......
JAMAICA	887772	1775565	331.13541137	65413432..17	898551.....5	78852......2	5763........	243.......
BERMUDA	4887872	5775685	321.16542377	65413431.158	898552....26	88852......4	6763.......1	343.......
NEW YORK	788862	1776774	22...3553467	542.14331147	887442....16	78852......3	4663.......1	.43.......
MEXICO	187751	276543	22...1.353214	442.31231..3	687351.....	38852.......	1663........	.33.......
MONTREAL	677861	1777773	21...3554576	542.14332257	887332....26	68852......3	4663.......1	.33.......
DENVER	25641	37652	21.....46333	431.2..34113	57534....1..1	36852.......	.463........	..3.......
LOS ANGELES	........663.	17641	11.....27432	331.2..25111	365241..2...	.5852.......	.262........	..3.......
VANCOUVER	.........22.	2431	1.....4542	32...1..15432	35423...31.1	14752....1...	.253........	..2.......
FAIRBANKS	..........11.	11112331	21..32124553	343341.14543	13552...1311	.122........	....	....

We regret that, at the time of going to press, the sunspot number data for January 1990 and predictions from the Sunspot Index Data Centre in Brussels have not been received. We will, however, publish them as soon as possible.

also as Banaba, however if your credit for W.Kiribati was obtained by sending in a card from Ocean Is dated before 1970 please send this QSL in again together with a W.Kiribati or Gilbert Is card. I also hear that the ARRL DXAC has voted unanimously to include **Walvis Bay** on the list, but this has now to be approved by the Awards Committee.

PROPAGATION

Smithy, G8KG, says that his report is rather short this time and something of a holding action until the sun makes up its mind!

It goes as follows :-"The steep climb in solar indices in the last week of December proved to be the result of a markedly one sided sun rather than the beginnings of an overall rise. The provisional monthly mean solar flux was 214 sfu (provisional monthly sunspot number 165.1) and at the time of writing (22 January) it looks as if the January figures will be similar. This suggests that, at least for the time being, mean solar activity is levelling off - but at a very high level, the 27-day average solar flux at 213 sfu being still well above 200 where it has now been for more than five months.The most recent prediction from NGDC Boulder is for most probable peak smoothed monthly sunspot number of 187 (90% probability between 161 and 216) most probably in February. The indices for December and January suggest the peak may be rather lower and/or later than this but even-numbered cycles tend to have prolonged and rather flat maxima. It is interesting to note that some eighty years ago Cycle 14 peaked in 1906 with a highest smoothed monthly sunspot number of 64 and only three months above 100. 2800MHz solar flux was not yet being measured but approximate values would have been a smoothed monthly peak of 115 sfu and the best months below 150 !

BAND REPORTS

The following supplied the logs this month — G2s AKH, HKU, GM3CSM, G3s GVV, KSH, LPS, YRM, G4EHQ, GW4KGR, G4s, MUW, NXG/M, GM4OBK, G4s SFU, ZYQ, and G0IHB and thanks go to all. Calls in italics were stations using cw.

1.8MHz
0200 *PY2RO.*

3.5MHz
0500 *W1-W0, ZF2/OR/8.*
0600 FP5DX, V31BB.
0800 JA8EPO, WB7EWC.
1300 *OY3QN,* PY1RO.
1900 *VU2IN.*
2000 VE8HL (Zone 22).
2100 VK6LK.
2000 DU9RG, W1-W3, *6W8JX.*

7MHz
0000 *ZD8VJ.*
0300 A92BE.
0400 TL8WD.
0700 8P9AC.
1500 *KL7CYL, K7RO, W6BV, W7OF.*
1600 *JD1BFA, UA0ZX, VK2EKY.*
1700 *3W5TA, 4S7WP.*
2000 WL7E.
2100 3Y5X.
2200 RA0AD/JT, *TA3D, 3W8KPV, 3Y5X.*

14MHz
0900 *FO0IGS, ZM7VS, 3D3WZ.* [sx].
1100 *JT2AB, 3D2XR.*
1200 VK9TR, *WL7BHT, 4S7CF.*
1400 R1O/RA3SS.
1500 9N90ICY.
1600 *FK8GJ,* XW8DX, *K3BB* (Nova Zemlya).
1700 FT5XH, S42LK, *4K4AB* (Dickson Is).
1900 *KN0E/KH3, KH6IJ, ZD7KM,* 3Y5X.
2000 *TR8XX.*
2100 *OD5PL,* TT8GA.
2300 *CE0OGZ* (Juan Fernandez), *KN0E/KH3,* KH6IJ, WZ6C/ ST4, *W7, 9V1YC.*

21MHz
0800 *A43XA,* JA, VK, ZL.
0900 BY8AC, HL2HJ, JT1BY.
1100 RA0AD/JT, YJ1SHD.
1300 TL8HW.
1600 TL8WD, ZS8MI.
1700 FR5VN, VE8CB, ZD9BV.
1800 3Y5X.

28MHz
0900 *XV2A.*
1000 BV2FA, BY5RF, BY8AC, FK8FR, JT1BX, KH0AC, T5YD, XW8KPL, XX9JN, 8Q7CZ.
1100 HS0AIT, V85GA, YJ8AB, *ZS8MI,* 3Y6X, 9V1NQ.
1200 A43XA, BY5RCS, WZ6C/ST4, N3CRH/TJ, *TK5EP, TZ6VV,* VK8KCH, XW8KPL, LZ1EF/ Z2.
1300 TL8WD, 3W5JA.
1400 FR5DL, SM0OIG/YN, ZS8MI, 5U7NV.
1500 V2/OE2CHN.
1600 A22AA, XF1C, *3DA0BK.*
1700 *FH5EJ,* VY2ZV (P.E.I.), W6-W7, *WA0FSV* (S.Dak).
1900 *FY5YE,* 3Y5X.

Final 1989 Table

	1.8	3.5	7	14	21	28	Total
G3TXF	44	54	115	134	151	166	664 (cw)
G0CKP	—	33	71	187	147	207	645 (cw)
G3SXW	38	54	105	135	135	146	613 (cw)
G4OBK	49	66	112	99	92	115	533
GM4OBK	8	46	96	100	110	140	500
G4NXG/M	1	13	30	86	115	150	395
GM3YOR	—	35	90	55	89	46	315

(There will be no further yearly tables)

Many thanks to *DXNL*(DL3RK), the *Long Island DX Bulletin*(W2IYX),*DX News Sheet*(G4DYO), the *Ex-G Radio Club Magazine*(WA8TGA), *DX Report*(VK9NS), the *Lynx DX Group Bulletin*(EA2JGO), *DX'press*(PA3CXC), and the *DX Bulletin*(VP2ML).

Closing date for May issue is **26 March.**

UHF/VHF

NORMAN FITCH G3FPK
40 Eskdale Gardens, Purley, Surrey CR2 1EZ

The past month has not produced any significant tropo openings nor any big auroras. There is plenty of news though, including details of more 'wet square' opportunities, more European countries available on 50MHz and band planning topics.

RARE SQUARES

Andy Adams, GW0KZG (GNS), has sent a brochure about the Royal Research Ship 'Challenger' and details of its March itinerary. It is due to leave Barry Docks on the 1st, sailing around southern and southwest Ireland, via IO41, 42, 32 and 33, to reach IO34 square on about the 4th.

Between the 8th and 11th, the ship will be carrying out research in IO35, 36, 45, 46, 55 and 56, after which it will be bound for the Scottish islands. The next leg will take it through IO66, 56, 57, 47, 48, 59, then to IP50 and 61 arriving at Torshavn (Faroes) on the 19th. It will then sail through IP72 to the next operational area in 81, 82 and 92 in the period 22-27, followed by a port call in north Scotland on the 29th. Thereafter the Challenger will sail back to Great Yarmouth by 1 April.

Andy stresses that this schedule may be altered. GW0KZG/MM will operate on 144.240MHz SSB, but using CW if necessary, times being 1200-1300 and from 1700UTC. Some Saturday afternoon activity is possible but he will not operate during port calls or while in a foreign country's territorial waters.

The equipment will comprise a TR-9130, Microwave Modules 100W amplifier and either an 8-element Yagi or an 8-over-8 slot fed Yagi by Jaybeam. He will try to be QRV during any auroras and mentioned MS, but there are no worthwhile showers in March. Another 30 day trip in the North Sea is scheduled to start on 4 April and the map indicates a voyage criss-crossing the area right up to the Shetlands; Andy has promised a detailed itinerary later. If time is short we will broadcast relevant news on GB2RS.

The QSL route is either via the Bureau or direct to Mr A Adams, 2nd Engineer, R.R.S. Challenger, c/ o Natural Environment Research Council, Research Vessel Service, No. 1 Dock, Barry, S. Glamorgan, CF6 6UZ.

REPEATER NEWS

In a January Press Release, the Bedford Repeater Group reported a number of changes. Last October, GB3BD (RB6) was closed down due to site problems, but GB3BL (RB7) was then licensed and provides 'handheld' coverage in Bedford. GB3BF (RB15) has been permanently closed down due to unexpected duplication of coverage in the north of the county.

There are plans to re-site GB3BD in mid-Bedfordshire with a trial in-band link to GB3BL, subject to DTI approval. Following a major overhaul, GB3BW (RM6) should now be back in service. Sites have been agreed for a proposed 145MHz speech repeater to cover Bedfordshire and north Buckinghamshire and for a digipeater in the 430MHz band running Node software.

Funds are urgently needed to purchase equipment and donations, made out to MVRUG, should be sent to G4JUB (QTHR). Further information about the BRG may be had from Doug Ash, G1BWW (QTHR), or via answerphone on Hitchin (0462) 711722.

CONTEST NEWS

The Danish national society, EDR, has sent copies of the rules for the Scandinavian VHF/UHF/SHF Activity Contest, a cumulative affair which is open to all amateurs outside OZ, OH, LA, SM and OH0. The 144MHz events are on the first Tuesday of the month, the 430MHz ones on the first Thursday and the Microwave legs on the first Monday. The times are 1800-2200UTC.

"The log must contain contacts with stations from Denmark, Finland, Norway, Sweden or Aaland, in at least two different locator squares (JO65, JO66 etc.)". Presumably, only Scandinavian QSOs count? The exchanges are RS(T) and locator, but no serial number, and the scoring is one point per kilometre with bonus points for each new square. The rules occupy a whole A4 sheet so if any reader wants a copy, send me an SASE.

BAND PLANNING

In the January VHF/UHF I mentioned the 'Sutton and Cheam syndrome' created by the club's choice of 70.325MHz for its members' net. Although the club had gone through what it assumed were the correct channels to check its suitability, it had already been earmarked for packet radio use.

David Reynolds, G3ZPF (WMD), relates a similar story from the Dudley ARC which opted for 70.4875MHz three years ago. Then rumours began that the Packet

Working Group were considering putting a proposal to the VHF Committee for this frequency to be used for packet links. To quote from his letter, "I wrote to virtually everyone at RSGB HQ, from the President down, when letters to the VHF Committee chairman went unanswered. All letters were re-routed to him and I had to wait a further two years for a reply. Even then it was just to say that, 'the matter had been correctly discussed,' and that it was hard luck."

David quite rightly suggests that if the packet radio issue had been discussed more openly at the time, and a letter he sent to the then editor of *RadCom* on the matter had been published, it, "...would have saved the Sutton and Cheam Club from its current predicament."

In complete contrast, David Stansfield, G0EVV (NLD), wrote, "On 1 October 1989 I wrote to the Society over a conflict of interests within Northumberland on the 70MHz band. This occurred when a packet mailbox commenced operation on 70.4875MHz, while as a club, we had used 70.475MHz for several years. I am pleased to say the problem has currently been resolved; the packet station now uses, and proposes to use, other more suitable frequencies."

We discussed the need for a new 70MHz band plan for the 1990s during the January meeting of the VHF Committee. The following proposals are for discussion only at this stage, as we want your opinions and constructive criticisms before making any final decisions;-

70.000 - 70.075MHz CW and beacons; 70.075 - 70.200MHz SSB and CW; 70.225 - 70.400MHz All Mode; 70.400 - 70.500MHz FM only

It is proposed to retain the following spot frequencies;-

70.070MHz Unattended QRP beacons; 70.200MHz SSB calling; 70.325MHz Packet radio; 70.487MHz Packet radio

The RTTY and Raynet frequencies can be accommodated in this suggested plan. Although not wishing to encourage 'channelization' of the all mode section, we realize that many operators use modified PMR equipment with 25kHz and 12.5kHz filters, so will probably operate on multiples of 12.5kHz.

The historic 70.26MHz National Mobile and Calling Frequency, identified in the current band plan, does not fit into this scheme, so it would seem appropriate to phase it out eventually. It should be possible to 'tweak' crystals down to 70.25MHz and easy to adjust them to 70.2625MHz. Has anyone tried this?

The band is unique since there is still AM activity, so any new plan must take account of this as well as anticipating future trends. Please send in your comments so that we can make some sensible decisions.

ANNUAL VHF/UHF TABLE
Final placings for 1989

	50MHz		70MHz		144MHz		430MHz		1.3GHz		Total
Callsign	Cty	Ctr	Cty	Ctr	Cty	Ctr	Cty	Ctr	Cty	Ctr	Points
G1SWH	80	33	74	7	97	24	55	9	—	—	379
G8LHT	70	18	36	5	97	30	54	15	13	5	343
G6HKM	61	45	—	—	81	28	51	17	37	10	330
G0IMG	69	29	41	5	56	12	27	5	—	—	244
G1DOX	36	8	49	6	66	18	29	6	16	7	241
G4XEN	24	9	23	4	84	32	44	13	4	2	239
GW1SZF	48	25	—	—	89	20	21	7	—	—	210
GW6VZW	78	33	—	—	71	21	—	—	—	—	203
G4PIQ	—	—	—	—	88	34	53	20	—	—	195
G8PYP	36	28	1	1	55	25	28	11	—	—	185
G4LDR	43	12	—	—	54	16	48	12	—	—	185
G1LSB	28	11	—	—	47	27	48	17	—	—	178
GD6ICR	8	4	34	5	54	12	40	7	8	4	176
G0EVT	28	29	—	—	40	29	6	7	—	—	139
G8XTJ	43	19	—	—	56	15	—	—	—	—	133
GM4CXP	28	11	4	1	60	19	4	3	—	—	129
GW0GEI	68	47	—	—	—	—	—	—	—	—	115
G4OUT	—	—	28	5	54	20	—	—	—	—	107
G3FPK	—	—	—	—	78	26	—	—	—	—	104
G1GEY	—	—	—	—	—	—	58	16	21	7	102
GW4FRX	—	—	—	—	70	32	—	—	—	—	102
G1CEI	5	5	—	—	60	14	12	5	—	—	101
G60DT	—	—	—	—	23	9	41	12	—	—	85
G4TGK	—	—	—	—	61	18	—	—	—	—	79
G7CLY	—	—	—	—	59	14	4	1	—	—	78
GJ6TMM	28	12	—	—	23	9	1	4	—	—	77
GM0JOL	—	—	—	—	61	14	—	—	—	—	75
GM1ZVJ	4	3	—	—	26	16	—	—	—	—	49
G0HDZ	—	—	—	—	38	7	—	—	—	—	45

British counties were the 79 listed in the January 1989 *RadCom*. Up to three different stations allowed in all 12 GM regions. EI counties excluded. Countries were the usual DXCC ones plus IT9.

BEACON NOTE

GB3CTC (IO70OJ) on 50.042MHz returned to service on 4 January. Unfortunately, cross modulation problems required its being shut down again on the 13th. A solution is being sought as this is a very useful, international beacon at this stage of the solar cycle.

THE 1989 TABLES

Congratulations to Gerry Schoof, G1SWH (MCH), who headed the five band table with 379 points. Runner up Ian Harwood, G8LHT (YSS) and Ela Martyr, G6HKM (ESX) who came third, also scored well over 300 points. I have shown the leading four stations in each of the five bands; The winners were Steve Jones, GM0GEI (HLD) on 50MHz; G1SWH on 70MHz; G8LHT on 144MHz; Don Stoker, G1GEY (TWR) on 430MHz and G6HKM on 1.3GHz; well done, all. The first entries for this year will be in the April issue.

50MHz

The good news is that four more European countries have released the 50MHz band to amateurs. Swiss amateurs can apply for a permit to operate outside TV hours in the band 50-52MHz. These permits will last till the end of the year.

All Austrian licensees were granted permission to use 50-52MHz for a one year period from 1 February with certain geographical restrictions for TV considerations. Those in the restricted zones can only operate in non-TV hours, which are 00-09, the rest can operate all day. All modes are permissible but the maximum bandwidth is 3kHz, which really restricts it to CW and SSB. No unmanned, mobile or portable operation is allowed and the power is 25W 'key down' to horizontal antennas.

The Belgian PTT has granted Class A and B licensees use of the band on a trial and secondary basis until the end of 1993. They will have to apply for a permit, the conditions being 30W 'key down' power in the 50.00-50.45MHz segment. The conditions are pretty stringent, involving an annual PTT inspection. Ted Collins, G4UPS (DVN), said that no permits had been issued up to 24 January.

Ivan Stauning, OZ7IS, the VHF Manager of the EDR, has written to confirm the general release of the band, on a secondary basis, to all Danish amateurs, which includes the Faroe Islands, for an experimental period until the end of this year. The band is 50-52MHz and the power limits are the same as for 144MHz. This means 500W input for Class A and E, and 100W for B, C and D licensees with no restrictions on antennas.

In his December 50MHz report Ray Cracknell, G2AHR (HWR), states it "...was a month of remarkably good DX propagation from Britain, although east/west propagation almost completely dominated. Propagation to Africa south of the Sahara, and to South America south of the geomagnetic equator was absent, as must be expected at this time of the year. Conditions across the Atlantic were more like 28MHz and on occasions were so good that QRP was usable; for example, at 1655 on 7 December, GI8YDZ copied AF1T who was using one milliwatt of. SSB."

The report contains a diagram by Bill Stirling, GM4DGT (LTH), of the auroral curtain as 'seen' from his QTH at 1640 on 29 December.

He first measured the time difference between the GB3BUX time signal on 50.000MHz and that from MSF on 16kHz, to which 'BUX is locked. He then measured the delay on the beacon signal reflected from the auroral curtain at various beam headings. From this data he calculated the distances, which varied from 2475km at 10 degrees to 1160km at 60 degrees. The distances at 30, 50 and 70 degrees equated to 1675km. Conventional auroral propagation occurred between 1640 and 2303 between British and Scandinavian stations, with auroral-E between GM, GI and SM, OH between 2044 and 2320.

On 21 December, 1700-1800, there were auroral reflections from 280 degrees with G/GM contacts reported; on the 22nd, 1200-1230 G/LA; on the 24th, 1900-2200 G, GI, GM, GW and LA QSOs took place, followed by auroral-E between G/GI/GW and LA, 2242-0022. Other events reported were on the 26th, 1930-2259; 27th, 1600-1720 and 1900-2100; 30th, 1824-2303, with Ar-E at 2303-2350, very similar to the 29th. Strong auroral TV was still being received at GM4DGT at 0128 on the 31st.

Although no QSOs have been reported between British and New Zealand stations, ZL TV video has been received. On 4 December, GM4DGT copied it on 45.25MHz, 0925-1020, peaking S9 at 1010, along with video from VK4 on 46.25MHz. There was a repeat on the 18th at 0912, and on the 27th, VK2 and VK4 TV was again logged around 1000.

As always, Ray's report contains contributions from observers in JA, SV, Z2, ZD8 and ZS which provide a

global record of 50MHz propagation. A remarkable fact emerges from ZS6BMS's report in his 'Summary of transatlantic work from South Africa in Cycle 22.' Between 26 February and 19 November 1989, the total available propagation time was just 30 minutes!

Next, some items from G4UPS's information pages, starting with news of several DXpeditions, the first to Sudan (KJ64) in the last week of March and lasting till 10 April. The operators will be PA3DFT, VK9NS and JA5DQH who will be using 100W to Yagi antennas on 50.105MHz. If there are big pile-ups, they will work split frequency. QSLs should be sent via PA3CXC.

From 25 March to 16 April, VK9LE will be operating from Lord Howe Island, which is probably QF98. QSL details later. W6JKV, who put on a good show from The Gambia last year, is planning a trip to the South Pacific in March or April, possibly to Easter Island, CE0.

CO2JA is another new station QRV from Cuba and Jose has worked into W6 with 5W. Brian Otter, 9J2BO (KH44), received his transverter on 19 January and was busy making a beam. There are plans to send him a transceiver and amplifier from South Africa. His QSL manager is W6ORD.

Hal Lund, ZS6WB, has sent the first 1990 issue of his 'ZS VHF News' which includes a review of activity in 1989. He reckons the DX outlook for this year looks good and that the period through March into our Spring should see good openings to Europe. Hal points out that most European DXpeditions are timed for June/July, the peak of the Es season, and November/December to catch the F2 openings to North America. Unfortunately, these are the worst times for Southern Africa, their best periods being around the equinoxes.

In his rare squares list, Hal mentions ZS9A, ZS9H, ZS3KC and ZR3AC (JG77), ZS4AAB (KG11), 7P8DP and ZS4PV (KG30), ZS4NS (KG32), A22BW (KG38), ZR6CBK and 3DA0AU (KG53), ZS6LUX (KG56) and Z23JO (KH52).

Now to the home front, beginning with John Hoban, G0EVT (YSW), who worked HC5K and HC2FG (FI07) very easily on 24 December. He had auroral QSOs with SM6 and GM on the 29th and heard OH5NQ very briefly via Ar-E and rounded off the year on the 30th with GM3WYL (IO75), also via Ar.

Darrell Moody, G0HVQ (GLR), caught openings to VE and W on 22 December, and to the Caribbean, Equador and the USA on the 23rd. He reports marginal/brief openings westwards on 24, 27, 29 and 30 December. 3 January brought the first DX of the decade - HC2FG and YV5ZZ (FK70) around 1250; 9Y4VU was S9+ briefly. On the 4th, 1620–1700, there was an opening to VE and W1-4, best DX being K3ZO (FM18) and K4CKS (EM74). The Quadrantids shower produced nothing on the 50.350MHz random MS frequency. On the 5th, TI2HL was S9 for a while around 1415.

LOCATOR SQUARES TABLE
Starting date: 1-1-1979

Callsign	50Mhz	144Mhz	430Mhz	1.3GHz	Total
G6DER	43	183	114	82	422
GJ4ICD	337	263	119	59	778
G8ATK	—	143	94	52	289
G3IMV	206	427	125	51	809
G4RGK	50	299	133	51	533
G6HKM	187	217	109	46	559
G0DAZ	137	316	122	39	614
G1KDF	139	180	102	37	458
G4MUT	98	153	94	34	379
G6STI	—	152	69	24	245
G1GEY	—	170	92	22	284
G6UWO	—	41	44	18	103
G8LHT	113	185	93	14	405
G1DOX	54	73	16	8	151
G4XEN	66	293	114	5	478
G4VXE	147	162	42	4	355
G6MEN	67	54	27	3	151
G4IJE	307	338	5	2	642
G4KUX	—	384	120	—	504
G4TIF	172	204	111	—	487
G6HCV	219	231	—	—	450
G0CUZ	—	329	73	—	402
G4RRA	—	280	80	—	360
G1LSB	44	172	143	—	359
G4SSO	—	256	98	—	354
G0EVT	88	209	57	—	354
G4PIQ	—	261	87	—	348
G1SWH	143	149	53	—	345
GM4YXI	—	340	—	—	340
G4SWX	—	333	—	—	333
G4DHF	—	325	—	—	325
G0GMB	—	187	99	—	286
G0JHC	231	48	—	—	279
GJ6TMM	62	151	47	—	260
G8PYP	118	105	31	—	254
G4YTL	—	245	—	—	245
G3FPK	—	241	—	—	241
G0LFF	83	153	—	—	236
GM4CXP	—	198	31	—	229
GW4FRX	—	228	—	—	228
G4DOL	—	216	—	—	216
GM0GEI	169	—	—	—	169
G8XTJ	44	120	—	—	164
G0HVQ	80	71	—	—	151
G4XBF	—	150	—	—	150
G4TGK	—	137	—	—	137
GW4VVX	—	115	—	—	115
G1CEI	11	77	18	—	106
GM0GDL	—	83	22	—	105
G1WPF	—	101	—	—	101
G6ODT	—	21	47	—	68
G0HDZ	—	64	—	—	64
GM1BVT	41	21	—	—	62
GM1ZVJ	6	48	—	—	54
G7CLY	—	44	2	—	46

No satellite, repeater or packet radio QSOs. 'Band of the month' 1.3GHz.

G1SWH's last 1989 county was GW1BDF (GNM) on 29 December. Gerry started this year well with KP4BZ, WA5OWC (EL97), WB4JEM (EL89), K5WAT (EM90) and K4KUZ (EL96). In an Es opening on 15 January, he worked OZ2OE (JO45), OZ6CE (JO55), OZ7IS and OZ1LIT (JO65), OZ7DX (JO66) and an SM between 2015 and 2037.

Harry Synge, G3BOC (SPE), wrote about computer software and mentioned he has been QRV on the band for 17 months resulting in 130 squares and 29 countries in the log. He reckons his best DX are YN3CCY on CW and PZ1AP.

Roger Horne, G4HBA (YSW), writing from "...the forgotten north of England..." achieved WAC with ZC4MK at the end of October. He lists some nice DX worked in November and December, but is yet another operator who is frustrated by southern stations who insist on working the same DX stations, "...for old times sake, over and over again." Roger's wife Pat is G8KRU and she completed her WAC in only 17 contacts during 1989. Their station comprises an FT-107, home built G3WPO transverter and QQV06-40 PA running 17W PEP to two 4-element Yagis, stacked five-eighths wavelength apart.

Neil Underwood, G4LDR (WLT), put in a late entry for the table. He runs a Spectrum transverter with 144MHz IF, 20W amplifier and an HB9CV antenna at 15m. Martyn Jones, G4TIF (WKS), also enters the squares table with 172, but mentions the difficulty in knowing what stations are valid, e.g. EA, EA8.

G4UPS misses little on the band and began 1990 with VE and W QSOs to FM17, FN20 and 74, EL96-98. Ted heard V31PC at 1545 on the 1st. The 3rd brought QSOs with SM7, GM, HC5 and W1 and on the 4th, VE1, W1, 2, 4 and 8. SM7AED (JO65) was a CW MS QSO on the 5th and TI2HL was worked at 1423. He contacted SV1VV on the 7th and later GM4DGT (IO86) via back scatter at 90 degrees.

Beacons EA3VHF on 50.070MHz and CT0WW were S9 around 1600 on the 9th and the latter was also strong at times on the 10th which brought a QSO with CT4KQ (IN60) at 1652. GB3SIX was copied strongly at 1725 by KG4SM.

G8LHT reports modest activity with a few new North American squares in December and some Ar activity on the 26th, 27th and 29th. Steve Damon, G8PYP (DOR), worked HH7PV (FK28) on 23 December, VE1 and W1/2 on the 27th and VE3 and W4 on the 28th. From 1932 on 15 January he has Es QSOs with SMs and OZs in JO45, 66, 67 and 89, the opening still in progress when he went QRT at 2025. The Irish TV station at Gort (IO53) on 53.757MHz was also copied around 2000. On the 16th, he had more Es contacts with SM7FJE and OZ1GEH (JO65) around 1820.

New squares in December for Geoff Brown, GJ4ICD, were VE2MLP (FN08), WB0WAO (EN84), K0GJX (EN35), W5FF (DM64), D44BC (HK76), VE2KV (FO60), VE1QX (FN76), N0IPL/VE (FN95), N4CKM (EM78) and VE3CTT (FN07). He has received lots of W and other DX QSLs and says, "...so these big DX stations do QSL!"

GM0GEI reports Ar activity on 27–30 December bringing contacts with EI, G, GI, GM, GW, LA, OH and PA stations. New ones earlier in December were TU2OJ and D44BC. Since Christmas, Steve has been running 9W from an IC-575 to a 6-element Yagi.

70MHz

G0EVV reports that there are 22 mobile and fixed stations using FM from converted Pye 'Westminsters' on 70.475MHz; they are all members of the Northumbria ARC.

Andrew Mowbray, G0LWS (LDN) advises that members of the Silverthorn ARC are QRV on 70.45MHz FM from the club's shack most Friday evenings using the calls G2HR, G3SRA or G8CSA. They have a good take-off at 350ft ASL and the furthest they have worked, using a collinear antenna, is G4ZDK (NHM). Others in the locality, using 'Westminsters' on 70.45 and 70.475MHz, include G0LXA, G1ANM, G1HEQ and G8BNE. There is limited activity on AM and FM on 70.26MHz.

144MHz

Reg Woolley, GW8VHI (GNW), still prefers the original E-QTHL system. He was home over the New Year period so had a go in the Quadrantids on 3 January, completing with DL4MDQ (FI) and Y27BL (GI) during skeds. He completed in four minutes with EA6FB (AY) on the random 144.200MHz frequency. Others heard on .200 were OK3LQ, IK4DCX and F1CCM. His station was a TS770E, two 14-element Cushcraft Yagis and GaAsFet preamplifier.

G0EVT reports a strong Ar signal from GM4IPK (SLD) on 30

50MHz Annual Table — 1989 Final Placings — Top Four

Callsign	Countries	Counties	Points
GM0GEI	68	47	115
G1SWH	80	33	113
GW6VZW	78	33	111
G6HKM	61	45	106

70MHz Annual Table — 1989 Final Placings — Top Four

Callsign	Countries	Counties	Points
G1SWH	74	7	81
G1DOX	49	6	55
G0IMG	41	5	46
G8LHT	36	5	41

144MHz Annual Table — 1989 Final Placings — Top Four

Callsign	Countries	Counties	Points
G8LHT	97	30	127
G4PIQ	88	34	122
G1SWH	97	24	121
G4XEN	88	32	120

430MHz Annual Table — 1989 Final Placings — Top Four

Callsign	Countries	Counties	Points
G1GEY	58	16	74
G4PIQ	53	20	73
G8LHT	54	15	69
G6HKM	51	17	68

1.3GHz Annual Table — 1989 Final Placings — Top Four

Callsign	Countries	Counties	Points
G6HKM	37	10	47
G1GEY	21	7	28
G1DOX	16	7	23
G8LHT	13	5	18

December but low activity. John thought the Quadrantids shower poor with plenty of local activity but only a few short bursts from the DX. He did not complete with anyone, but heard OK3LQ, I4XCC and OE5OLL.

Peter Hirons, G1CEI (HPH), was pleased to discover a southerly tropo opening, possibly a narrow duct, in the late evening of 2 January which brought QSOs with F6HRE and EA2AWD (IN93), FF1LEQ (IN97), FC1GXX (IN95) and FC1OQJ and F9NB (IN96). GM0GMD was worked at 1947 on the 3rd. Peter runs about 60W from an FT-726R system to a 14-element Yagi at 35ft.

John Palfrey, G4XEN (NHM), worked OH2BYJ on random CW MS on 13 December for his 32nd country in 1989. Nothing exceptional was worked during the December auroras on the 22nd, 26th, 29th and 30th. G8PYP also worked F6FRE and FC1OQJ on 2 January, the only other activity being an uncompleted random MS attempt with IK4DCX at 0227 on the 4th. (Sorry about the January table misprint, Steve; not my fault.)

430MHz

G1CEI musters 50W on this band to a 19-element Yagi at 33ft. In the 2 January opening, he worked EA2AWD, FC1GXX and F9NB after contacting each of them on 144MHz a few minutes earlier. Paul Brockett, G1LSB (LCN), did not mention the 2 January opening, so perhaps it did not reach the Spalding area? On the 3rd, he worked DF7VX (JO41) though.

G4LDR worked 16 countries last year with his FT-780R running 10W and a 17-element Yagi at 17m. Neil is also QRV on 435MHz ATV with a 10W home made TX to a VK3ATY design. G4TIF worked his first new square for over a year, thanks to GM1SZF (IO88) on 15 November.

Geoff Pike's, GI0GDP (ATM), letter of 14 December didn't arrive in Purley till the 29th, so missed the February deadline. He uses an FT-790R and 40W home made amplifier (MRF646 PA), home made GaAsFet preamplifier and 19-element Yagi. He was active on 3 December working stations in G, GD, ON and PA, the continentals being mostly in JO21 and not a bad haul from Carrickfergus.

1.3GHz

John Tye, G4BYV (NOR), called CQ on 3 January and was answered by HB9AGE (DH75g). Walter leaves his TX in beacon mode; it sends his call, followed by a carrier and when that ceases, the station is in receive mode. You can then call and have a QSO, apparently. John listened to this for about 90 minutes, but nobody seemed to know about this system - now you do!

G4XEN has got going on the band at last using a SOTA transverter which a previous owner had thoroughly mis-aligned. The one watt to a single 23-element Yagi has brought QSOs with PE1EWR, G4OIG, G6HKM, G4FUF, G8XIR, PA3BAS, G3IMV and PA0FRE. John plans to increase the power and improve the receive capability this year.

DEADLINES

Please send your next reports by 24 March and 21 April. My QTH is 40 Eskdale Gardens, Purley, Surrey, CR8 1EZ. (Please note slight change of postcode). The Telecom Gold Mailbox is 76:MSX022 and the telex number is 93121 32268(SAG).

SWL

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

HF NEWS

This month it is the HF bands which provide most of the talking points. The Christmas and New Year period produced one of the best DXpeditions on record — the Norwegian trip to Bouvet Island (3Y5X). Many listeners were able to delete Bouvet from their All Time Wanted Lists — your scribe included. It appeared that whenever you tuned the bands, the 3Y was there doing a superb job of giving everyone a new country. Most caught them on four bands, but Robert Small heard the expedition on 3.5MHz CW, but there is some doubt in his mind that he was the genuine article. Only time — and

Naoki Akiyama, NX1L/JH1VRQ (ex-N1CIX) has sent this QSL card from his holiday with Claudia-Elisabeth Wulz HB9CUY/FD1NLQ in May last year when they set up a station at the Manchebo Beach Hotel, Aruba. They used a Kenwood TS-440S transceiver and a Butternut HF8V-X vertical. In between their sunbathing, sightseeing and get-togethers with local amateurs, they made a total of 4,100 contacts with other amateurs in 110 countries. The trip also accounted for a great many useful SWL reports.

the QSL card — will tell. QSL's by the way go to LA6VM, and remember to include an extra IRC or dollar bill as your thank you for a job well done.

Also available for the keen listener was the fine XW8 expedition; they were on all bands too, and some SWL's heard them on all five main bands. XW8KPV was also very QRV over the New Year holiday period, thanks to a JA led trip. QSL for that one goes to JH1AJT. XW8KPL is also reported, the operator's name is Fu Thong. The 3W5JA trip was rarely heard in the UK, but we cannot have everything! Also in the Far East over Christmas was another JA group who signed XV2A. This station was QRV on all bands from the Post and Communications Office in Ho Chi Minh City. QSL via JA3UB.

Conditions this year have been rather mixed (perhaps because everyone is hoarse after shouting at the 3Y!), but the LF bands have been showing up quite well, especially 7MHz. Here, apart from the expeditions already mentioned, these stood out from reports sent this month — AP2KS, DU6BG, FK8KAA, HH2PK, HL1UA, JA3EMU/JD1, RA0AD/JT, VE3CPU/J8, PY0FF, VS6VO, VU2AWR, XT2KG, XX9JN, ZD8VJ, ZF2OS, 4S7WP, 5H1TV, 8P9EM and DK7UY/9L. On what used to be my favourite band — 3.5MHz — conditions have been patchy. No one reported any mega-DX from the Pacific over the holiday period, but DU9RG, VS6VO, YB0RX and 9M8PV were mentioned. Africa had been represented by TL8WD, TU2UI, TZ6VV, N6QLQ/5NO and 5T5CK, while the usual VK, ZL and South American DX was there for the taking.

Moving to the main DX bands, 14MHz had been relatively poor compared to what is expected of it. AJ0C/KL7 (Adak Is), N6TRE/HZ, G4WYG/ST2 and 3DAO/DF3ECW were the only stations which seemed worthy of a mention this month.

On the other hand, 21MHz had thrown up some good DX. Several BY's were mentioned, together with A92QL, FG5ED, TL8WD, TI6RPC, TZ6PS, V29A, V31DX, VK4WTI (Thursday Is), YJ1TRS (Torres Is) and ZS8MI.

28MHz carried much of the DX traffic and most reports list vast quantities of stations heard. As usual I will pick and choose to come up with my ideas of the best on offer. They would include:

FINAL 1989 HF TABLE

Station	DXCC	28	21	14	7	3.5	1.8	Total
BRS25429	271	217	226	241	177	128	45	1034
BRS8841	273	220	235	234	163	121	58	1031
BRS52543	244	180	195	209	154	109	42	889
BRS32525	201	161	88	135	69	56	36	545
BRS1066	166	85	107	122	90	37	38	479
BRS20249	138	61	78	95	35	30	7	306
BRS91244	59	24	17	35	12	9	0	156
BRS40292	—	28	46	26	27	23	5	155

Congratulations to David Whitaker who pipped Robert Small by a very small margin to top spot in 1989. I hope that a few more listeners will submit their scores for the 1990 table.

FINAL 1989 UHF/VHF TABLE

Station	50	70	144	432	Total
BRS32525	152/49	11/5	96/26	14/5	358
BRS25429	127/30	—/—	94/23	16/7	297
BRS52543	126/38	22/6	41/14	18/8	273
BRS31976	—/—	5/1	97/27	41/14	185
F11ATZ	14/10	—/—	70/20	10/5	130
BRS62088	32/9	—/—	22/8	—/—	71

ALL TIME COUNTRIES TABLE

Station	DXCC	28	21	14	7	3.5	1.8	Total
BRS25429	346	294	324	342	286	257	132	1635
BRS32525	335	281	311	326	279	274	120	1591
BRS8841	327	282	310	323	278	254	97	1544
BRS52543	300	227	253	278	228	202	110	1298

A22BR, BV2FA FK8EB/M, J88BN, TA0B/1, TJ1DK, V2/OE2CHN, VP2EY, VS6BX, LZ1EF/Z2 and 8Q7BX.

ALL TIME COUNTRIES TABLE

This table has not appeared for some time but as I have four end of 1989 figures, I felt the time had come to resurrect it. The table reflects "All Time Countries", including deletions. Any listener with a healthy Countries tally is invited to submit their score for this table.

DX CHAT

The main news to interest keen SWL's at the time of compiling this is that there might be a trip to Palmyra Is this spring (quite rare this). Some American operators are planning to be active from KH5 around 11-17 March, and then move on to T32 for the big Contest at the end of the month. Trindade Is (PY0) might have been active by the time you read this. Some PY's were planning to be active in February.

Those listeners who like to be kept up to date on DXCC credits might like to know that T33 (Banaba Is) and 3D2 (Conway Reef) have been added to the DXCC List. The granting of credit for Banaba is interesting because experienced listeners will remember that there have been operations from there before when the Island was known as Ocean Island (VR1). Look carefully through your logs to see if you logged a VR1 on Ocean Island in the early '70's, and if you missed the T33 trip — like I did, you have a new DXCC country! But, if you only logged one VR1 on any band and the operator was on Ocean Island, you will have lost credit for what is now Western Kiribati, formerly the Gilbert Islands. It is all very complicated, so please check your logs carefully! While on the subject of DXCC, the status of K7SS/PTI should be known next month.

Listeners will have heard stations signing "ES" if they have been listening this year. Estonian amateurs are now using these "pre-war" prefixes. It might be of interest to know that the prefix number indicates the Province.

VHF NEWS

Michel Monteil F11ATZ wrote after a lengthy absence to provide an update to his 1989 table scores. He pointed to some good Sporadic E on 50MHz last year, which netted him 10 countries, and to hearing EA6, 3A2, IT9 and TK on 144MHz. Among his latest confirmations were EA2AWD (IN93) and EA6VQ (JM19) for 432MHz reception reports.

Martin Parry BRS52543 reported HC5K on 3 January on 50MHz, but remarked upon the fact that all the good DX has gone into hiding for the time being.

Although I caught openings to the East Coast of the States on 26, 27 and 28 December, the only entries in the log for 1990 are SM7FJE, heard by Meteor Scatter on 3 January, and YV5ZZ heard for five minutes on the 4th at 1252.

As for 144MHz, the log is as bare. The only entries so far this year were during, in my opinion, a very poor Quadrantids Meteor Shower when I4XCC, YU1WP and OE50LL were heard between 0154 and 0210 on the morning of 4 January.

FINALE

Once again, the column has reported what the Society's listeners have heard. I am always interested to know what YOU have been hearing. It might be fairly mediocre, or even quite exotic. Whatever you have been hearing, why not write and let me know. Your contributions will really help me when I come to compile the next SWL Spectrum Analysis. The May deadline is Monday 26 March. Until next month, 73.

RSGB NATIONAL VHF CONVENTION

Sandown Park Racecourse, Esher, Surrey

SATURDAY 12 MAY 1990

- **One day exhibition and lecture programme**
- **Specialist groups**
- **Full lecture programme on VHF, UHF and micro-wave subjects**
- **Equipment test facility**
- **Morse tests**
- **Presentation of trophies**
- **Comprehensive trade exhibition**

PROGRAMME

1030 **Convention opens.** Enter through main entrance.
Refreshments. Snack bar in the hall will be open from 1100 to 1800 and the licensed bar will be open throughout the convention.

1130 **AGM** 6m Group.

1330 **Convention address and presentation of trophies** by RSGB President Frank Hall GM8BZX

LECTURE PROGRAMME

Detailed Arrangement for Lectures will be Notified on Arrival

	A	B	C
1415	'The Optimum System for VHF/ UHF-Transverters or Black Boxes' *Angus McKenzie, G3OSS*	'New Amateur Satellites launched This Year' *Ron Broadbent, G3AAJ*	'Communication by Light' *Dr. Julian Gannaway, G3YGF*
1515	'DX and the Solar Cycle' *Ray Cracknell, G2AHU* *Prof. Martin Harrison, G3USF* *Ted Collins, G4UPS*	Microwave Committee Forum	Remote Imaging Group AGM *Henry Neale, G3REH*
1615	VHF Contests Committee Forum	'Construction of Simple Microwave Sources' *Sam Jewell, G4DDK*	Morse Test Forum *Robert McEwan Reid, G4GTO*

1715 Lecture Sessions Ends

1800 Trade exhibition closes. Convention ends

ADMISSION

To simplify management and to reduce costs, it has been decided, as last year, not to issue admission tickets for this convention, either in advance or at the gate.
Admission will be by payment on entry as follows:

Convention and exhibiton	£1.50
,, ,, ,, (under 18)	£1.00
,, ,, ,, (under 14)	Free

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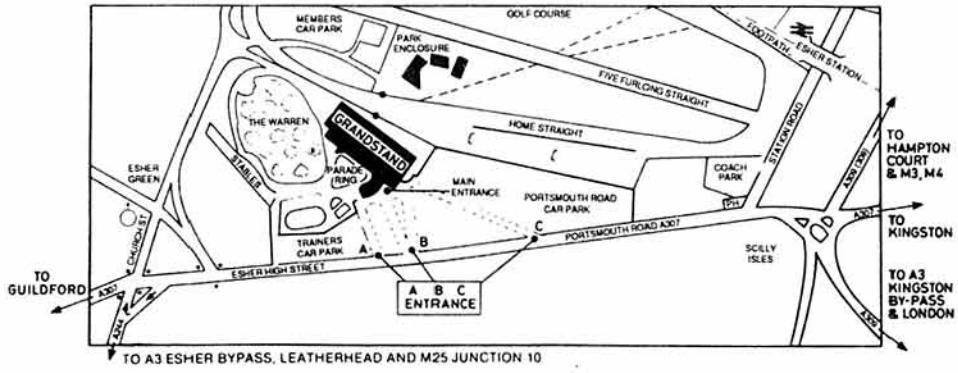
ACCESS MAP TO SANDOWN PARK
Talk-in station
GB2VHF:
channels S22
SU22



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The TS-140S was in effect designed by our customers, who demanded Kenwood performance and facilties at modest cost. The TS-140S has all mode, all band HF coverage, and of course a high performance general coverage receiver. 100W output and a first class receiver combine to make the TS-140S a really satisfying rig to own. It's also available in the form of the TS-680S which has all the bands and modes of operation of the TS-140S but with the 6 metre band as well.

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Random Ramblings.

Joseph Addison wrote, sometime around 1690 "Unhurt among the war of elements, the wrecks of matter and the crash of worlds." In other words, he had chosen an aerial rotator which wouldn't hold his beam in a high wind!

It is foolish to economise on your aerial rotator, because if you do, and install it on top of a pole or mast, you will be extremely sorry when it breaks and you have to take the whole thing down again. When it comes to top quality aerial rotators, it's hard to beat those from DAIWA. The MR-750 series rotators are capable of holding the aerial still and rotating the house, but one has inevitably to pay for such performance.

We have just started selling two rotators from the EMOTO company, which was founded by a respected mechanical engineer, and has built a substantial reputation in Japan for high quality mechanical design. These rotators complement the DAIWA MR-750, and give you a real choice for your rotator requirements. They all use a safe 24 volt supply to feed the motors, and the controllers are easy to use and easy to read.

I can only give the briefest of details in this small space, but when you need further advice, give us a call or drop a line, and we will explain in great detail why these rotators are the best, and tailor the right one for your needs. As I started with the quotation, I may as well end with one equally appropriate: "Down, thou climbing sorrow, thine elements below", which comes from King Lear, so even poor old Shakespeare had his beam fall down.

DAIWA MR-750PE **£290.00**
Turning torque..... 700kg/cm to 2800kg/cm
(depending upon number of motors)
Braking torque ..... 6000kg/cm to 21000kg/cm
(depending upon number of motors)

The MR-750PE is unique in that the rotator is supplied with one drive motor fitted, but up to three additional motors can be fitted, each one multiplying the turning and braking torque. With all four motors, the MR-750 could almost be used for powering a railway engine turntable, such is its turning power. Must also mention that the additional motors can be fitted without dismounting the rotator from the aerial system.

EMOTO 105TSX **£159.69**
Turning torque..... 520kg/cm
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EMOTO 757SRX **£347.24**
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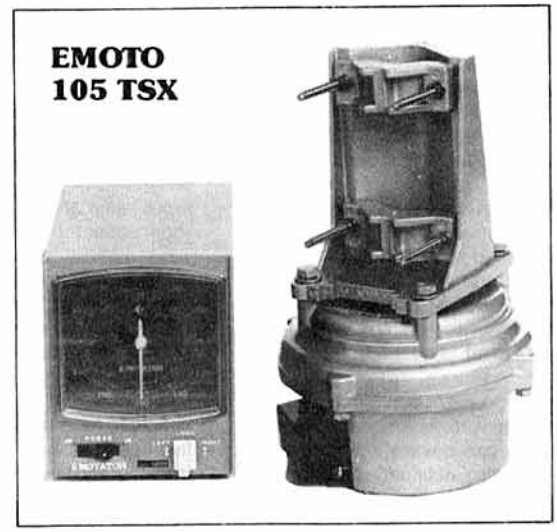
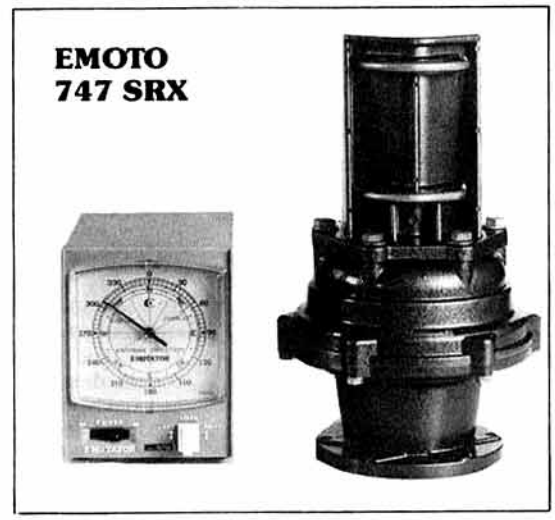
Both EMOTO rotators are extremely well made and weatherproofed, with hard epoxy based paints and stainless steel hardware. Both rotators are supplied for flat base (i.e. tower) mounting, and lower mast clamps are optionally available.

For more details, just ask for the rotator leaflets from us.

John Wilson
G3PCY/5N2AAC





TECHNICAL TOPICS

PAT HAWKER G3VA

BATTERY POWER SYSTEM

Arrie Wessels, ZS6UY in 'Amateur Radio Station Power Supply System' (*Radio-ZS*, January 1989, pp16-17) provides details of a constant-voltage charger used with a lead-acid vehicle battery to supply power for his equipment. His introduction sets out the reasons why this approach has gained so many adherents. He writes:

"The price of amateur radio equipment is constantly rising and today it is not unusual to have equipment worth several thousands of 'rands' in the radio shack. Most of the modern solidstate equipment is 13.8V working and particularly the linear amplifiers and HF transceivers draw considerable currents during transmit. Typical radio shack requirements would be around 35A during transmit, dropping to a few amps during receive, assuming a number of peripheral equipment is also switched on.

"This equipment, unfortunately, is extremely sensitive to any over-voltage. An over-voltage of a few microseconds can destroy your expensive investment. It is false economy to connect a 'cheap' power supply to your equipment. Unfortunately, most commercial power supplies for amateur equipment I have seen have inadequate protection, if any, against over-voltage surges. Also most of these power supplies, despite the name tag, are barely rated for more than 10A continuous output. I have seen very expensive amateur equipment totally destroyed by these power supplies. Just listen on your local repeater and hear the sorry tales and very expensive repair bills!

"There are commercial power supplies available that will safeguard your equipment. Unfortunately, these are beyond the means of most amateurs. To design and build a safe power supply capable of handling in excess of 35A continuous is very complex... The best solution to the radio shack power supply problem is the lead acid battery route... A car or truck battery kept on float 24 hours per day with a properly designed and adjusted charger will last many years with virtually no attention. My battery is already ten years old, only needs water once in three years and, at the last capacity check, was still 95% good! It stands on the carpeted shack floor, which remains in good shape. Acid leakage in brand-name low-maintenance or sealed batteries is not a problem. Stick to brand names, spend a few extra rand and get the semi-transparent nylon case type of battery..."

He describes in detail the building of a charger (**Fig 1**) providing some 5A output which is simple to build ("No circuit boards etc needed. Components need only be wired point-to-point") but advises strongly against using lower-rated components and attempting to build it too small ("I have yet to see a radio shack that does not have plenty of room under the table").

He advises constructors to make sure the transformer can carry the current for 24hr/day by testing it with a lamp load and checking that its temperature does not exceed 55°C (hot to touch but not hot enough to burn your fingers): "Make the heat sink as large as your box can accommodate and ensure that it is exposed to enough natural airflow to keep the temperature below 60°C after five hours on full load. Avoid using fans; apart from cost and noise, they affect long-term reliability. For safety, a thermal cut-out (70°C) is fitted to the heat-sink with the transformer thermally coupled to the heat sink (alternatively fit a separate cut-out to the transformer). Both the mains and output wires should be threaded through toroids or ferrite-rod filters to prevent RF from entering the unit. Observe extra care with the pins of the LM338K voltage regulator since a short-circuit will result in 0V output or, if connected to the battery, spectacular results *(This could be prevented by using suitably rated diodes to prevent current flowing back from the battery into the charger — G3VA)*. If charging a new battery, set output voltage to 14.40V until charging current drops below 500mA and then reduce the output to 13.80V and check that the battery stabilises at this point, drawing approximately 100mA. If the battery becomes fully discharged, an unattended charger will restore full charge after approximately one week (14.40V may be used if full capacity is required within 24 hours but never, never exceed 14.40V and immediately reduce voltage once current drops to 500mA since otherwise the battery life may be severely curtailed). It is very important to set the float-charge voltage to exactly 13.80V since if the voltage is even fractionally lower, sulphation will set in with time and battery capacity permanently lost. If voltage is set higher, gassing will take place, water consumption will increase, active material will be shed off the plates with permanent loss of capacity. Use a reliable, high quality meter for this adjustment."

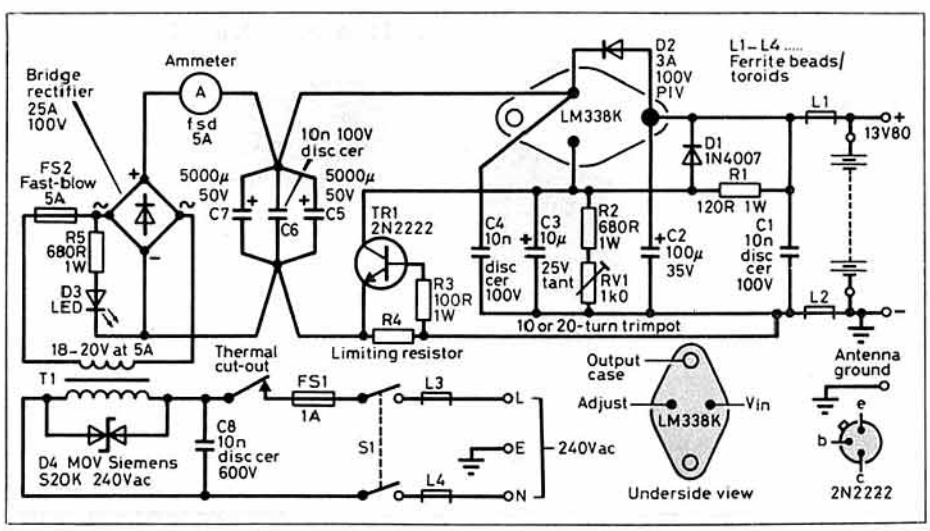


Fig 1. ZS6UY's constant-voltage charger for lead-acid vehicle batteries designed to be left on float-charge. R4 is current limiting resistor (eg two 0.3-ohm 5W resistors in parallel but adjust to keep temperature rise within the limits set by the thermal cut-out).

SIMPLIFIED FREQUENCY MODULATION

Geoff Bagley, G3FHL recently came across an interesting voltage-tuned oscillator, used to generate FM, from the valve era but which he feels might provide a useful means of frequency-modulating (or providing a VCO) using an FET oscillator with greater freedom from phase-noise than the conventional use of a varactor. This was 'Simplified Frequency Modulation' by G S Bruck (*ProcIRE* (USA), Vol 34, p458, 1946) as shown in **Fig 2**. L1-C1 form the main oscillator tuned-circuit of a grounded-anode Hartley oscillator. The cathodes are tapped into the coil for feedback. The second tuned circuit, L2-C2, is coupled inductively to L1-C1 so as to form a 90° phase-shifter. The quadrature voltages at the ends of L2 are both added or subtracted to that at the top of L1 (the centre-tap).

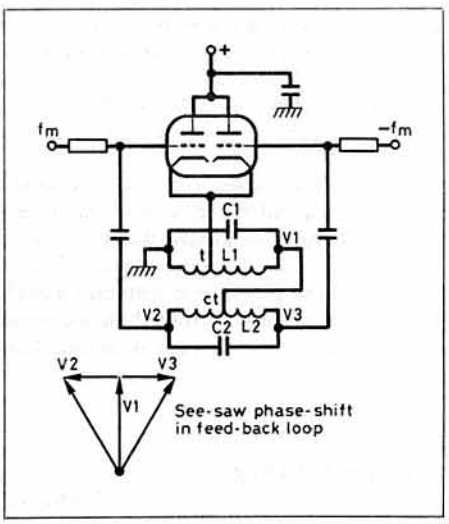


Fig 2. Simplified frequency modulation (Bruck, 1946) which should be adaptable for FETs and give lower phase-noise than using a varactor.

Thus the feedback in the oscillator is vector-modulated to produce a variable phase shift within the feedback loop of the oscillator. The vector diagram, suggests G3FHL, is probably similar to that in a Foster-Seeley FM discriminator. The voltages used to swing the frequency are applied in push-pull to the two grid-leak resistors.

BATTERY DEVELOPMENTS

The January *TT* (pp35-36) included a brief summary of the significant progress currently being made in the field of rechargeable (secondary) batteries, including what Dr M L Whitehead described as 'The quantum leap in (lead-acid) technology' with particular reference to the development and commercial exploitation in recent years of sealed lead-acid technology. I also included a mention by Dr R M Dill of the progress being made with lithium/polymer batteries for consumer and other applications.

Two reports in *New Scientist* (6 January 1990, p36) underline how such developments will affect portable operation of radio equipment — and the operation of 12V or 24V gear from home locations. In 'Rechargeable battery unlocks the power of polymers', Chris Vaughan states: "Scientists in California claim to have developed a rechargeable battery that provides more power, stores more energy and has a longer shelf life than any other. The key to the device is a new type of positive electrode, made of a plastic polymer, and layers of

a gel and lithium. The result, say the inventors, is a solidstate battery that weighs about half as much as others of the same power."

This is thus a practical implementation of the solidstate lithium/polymer battery mentioned in the January *TT*. The American work stems from Lutgard De Jonghe and Steven Visco (Lawrence Berkeley Laboratory). They believe that such batteries would be relatively easy and inexpensive to make with current technology and should reach the market in some two to four years time. Rechargeable batteries would be suitable for many different applications, from the sustained micro-power demands of a watch to the medium power of portable transceivers or video camcorders etc, with the battery at room temperature. At raised temperatures, larger lithium/polymer batteries could be used for such applications as electric vehicles (at 80°C producing an average of about 160-180Wh/kg). Even at room temperature they should give about twice the power/weight characteristics of nicad batteries.

It is claimed that this is the first polymer battery that releases the energy stored in the polymer's disulphide bonds: "When the bonds are broken, energy is released in the form of electrical current and the polymer becomes a salt — a process known as depolymerisation. When the current is reversed, the disulphide bonds form again and the battery is recharged." Each unit of the polymer can consist of any of a number of different molecules, from a simple chain of sulphur-carbon bonds to complicated ring structures, with polymers containing fluorine or nitrogen providing the most power. The Lawrence Berkeley Laboratory prototype has a ring-structure polymer containing nitrogen and sulphur, a thiadiazole ring (SRS in **Fig 3**).

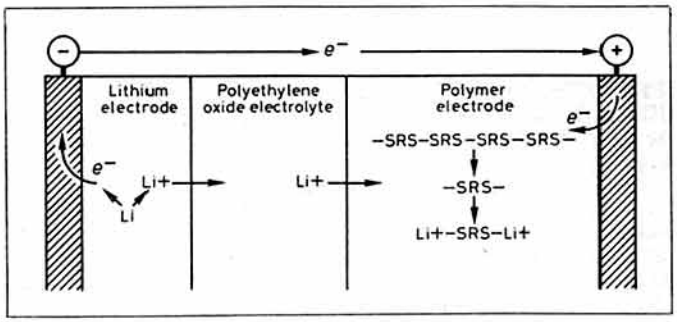


Fig 3. Solidstate lithium/polymer rechargeable cell as developed at Lawrence Berkeley Laboratory. The polymer's disulphide bonds (S-S) release energy as they break.

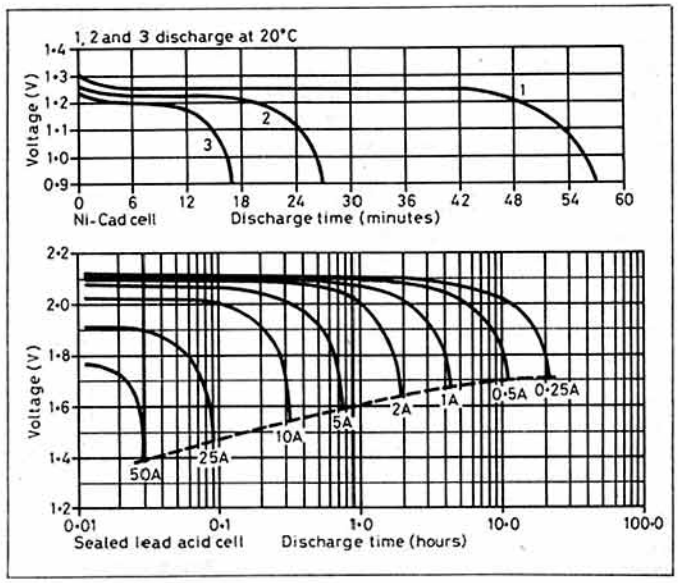


Fig 4. Nicad (a) and Cyclon sealed lead-acid cells (b) under various discharge conditions.

Possibly the role of rechargeable nicad batteries is under more immediate attack from compact sealed lead-acid batteries. Some years ago, Chloride Power Ltd introduced the 'Chloride Cyclon' range for portable or emergency operation with a claimed life of up to about eight years. In this range, the cells are cylindrical with thin, wound electrodes made of high purity lead. Instantaneous discharges up to 100A and sustained discharges of 30A are possible with a 2.5Ah cell of this type. The batteries retain their charge over long periods (up to three years at room temperature) although it is worth remembering that the self-discharge increases rapidly at high temperatures. **Fig 4** shows typical discharge curves of Cyclon and nicad batteries.

The manufacturers state that the optimum charging option is float-charged by a constant-potential charger carefully adjusted to give between 2.30-2.40V per cell, with a full recharge in under 20 hours (A 16-hr recharge at 2.45V per cell should give a cycle life of 200-250 cycles for 100% complete discharges but added life expectancy with 2.30V).

This type of cell is already finding application in areas previously using nicad cells. For example, the latest Apple-Macintosh portable computer uses cylindrical lead-acid batteries providing 12 hours operation per charge.

The second item in the *New Scientist* reports the development by the American firm LDI of Scotts Valley, California of a flat-shaped, lead-acid battery which doubles the energy per unit rate and provides a more-constant discharge voltage characteristic by reducing the thickness of its plates from 0.25cm to 0.05cm — it thus appears to be a flat form of the type of wound thin-plates of the Cyclon type of lead-acid battery. It is also claimed to have improved heavy-current discharge over periods of less than 2 hours. The performance of a lead-acid battery with such thin plates is claimed to match that of a nicad battery of the same weight at discharge times of 1.5 to 2 hours, is cheaper and takes up about half the volume.

The LDI batteries, of various voltage and discharge ratings, are in cases measuring about 0.9cm thick, 22cm long and 10cm wide with two outer negative lead plates, and a middle positive electrode of lead dioxide, with the electrolyte (sulphuric acid) absorbed in a fibreglass separator. The position of the plates is stated to be critical with a steel plating acting as a spring pressing down on the assembly to achieve even pressure over the entire surface area.

Frank Harris, G4IEY has drawn attention to an article by Hidekazu Sato of the Furukawa Battery Company 'Development of sealed type lead-acid battery for solar power system' (*The Battery Man*, November 1989, pp14-15, 20, 22-23). This shows how the cost of solar power systems for remote areas has come down to the stage where the cost of the necessary storage battery has become a significant part of the total cost. In about ten years, solar panels have fallen in cost from about US$35.2/W(peak) to about $6/W. Furukawa supply several ranges of lead-acid batteries for such applications: for example PS-TL shallow discharge batteries in the range 50-2600Ah, CS-L deep discharge types for 130-2000Ah, both capable of 10-year-life; and, more recently, 12CT and 12CTE sealed 'maintenance free' units, 40-200Ah with expected life of 5 years.

MORE ON Q-GATE FET OSCILLATORS

First, I must apologise for the error that crept into Fig 7(a) of the January *TT* showing the Q Gate FET version of the Hartley oscillator. Fortunately, comparison with Figs 7(b) and Fig 8 indicated the correct connections in the source circuit, but in case anyone is still in doubt, the corrected diagram appears in **Fig 5(a)**.

George Southgate, VK5QG (ex-G3LXO) has also provided an up-date on this oscillator, showing how an additional bipolar buffer amplifier will increase the RF output and enable the circuit

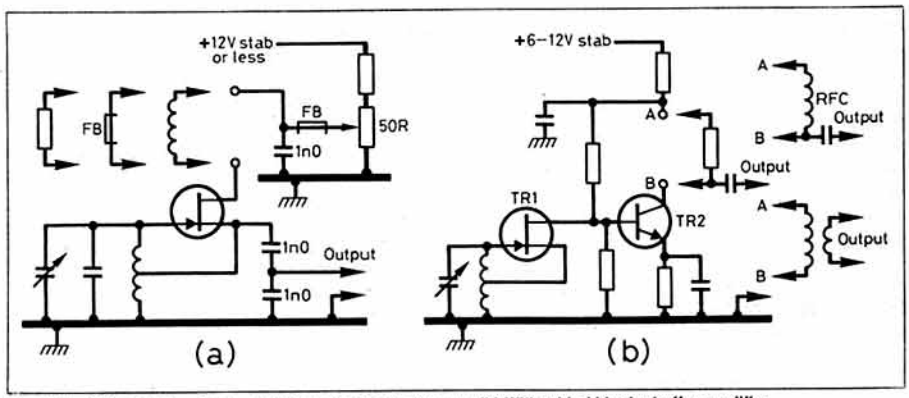


Fig 5. The QGate FET oscillator. (a) Corrected basic diagram. (b) With added bipolar buffer amplifier.

KISS CONSTANT-CURRENT NICAD CHARGER

Mike Brooker, G0IBL, a former seagoing radio officer who has now swallowed an anchor, was not impressed by the complex 'constant-current' IC-regulator chargers shown in the January *TT*. He writes: "Whatever has happened to simplicity (KISS)?". And then adds his tried and tested KISS solution:

"As an R/O for many years, I would often get complaints from the Deck Officers that their Storno VHF hand-held transceivers were not recharging. This was usually due to the (salt-laden) sea-air causing corrosion in the charger-units which were promptly consigned to a watery-grave. I would then knock together the simple form of constant-current charger which I have used for over 25 years and which has given stirling service in a variety of forms; it has proved to be virtually foolproof. Even if a fault does occur, it will not break the bank to throw the faulty unit into the waste-bin and replace it with another! All parts can usually be found in any junk store — be it junk box or junk room.

"This simple charger **(Fig 6)** has been used successfully in all climates, from tropical to arctic. In all that time, I have never (touch wood) had any problems with nicad batteries; I even have some old DEAC cells that have taken more charges than the Bank of England yet still give good service after an occasional shave with an electrolytic razor to zap off the odd whiskers. My present charger, as always, is a 'temporary' lash-up that would fit in a match box. Such chargers can be used with virtually any 12-15V PSU (even an el-cheapo 'battery eliminator' unit). Just connect the mA range of a multimeter, adjust the potentiometer to the required charging current, set an alarm timer (eg wrist-watch with alarm) and rest assured that most nicads will then happily recharge.

"This (PNP) charger uses a very old TF78 audio transistor (similar to the old AD149/AD169 types) but virtually any transistor capable of easily handling the required charging current will do. If in doubt, use a heat sink. The LED lights only when charging (unless Re comes adrift). As shown, it copes with charging currents of 3 to 150mA (some variation likely with different devices and LEDs which tend to have different voltage drops). I usually use an input of about 12V for, say, four type AA cells, and about 15V for a PP3-equivalent nicad battery. But it does not matter if the potentiometer is set to the correct charging current and if you check that the LED glows. Once the current-adjustment has been set, the multimeter can be removed. This circuit is by no means original, just an application of basic transistor theory. One final thought, this arrangement would be suitable for mobile operators drawing their supply from the car battery."

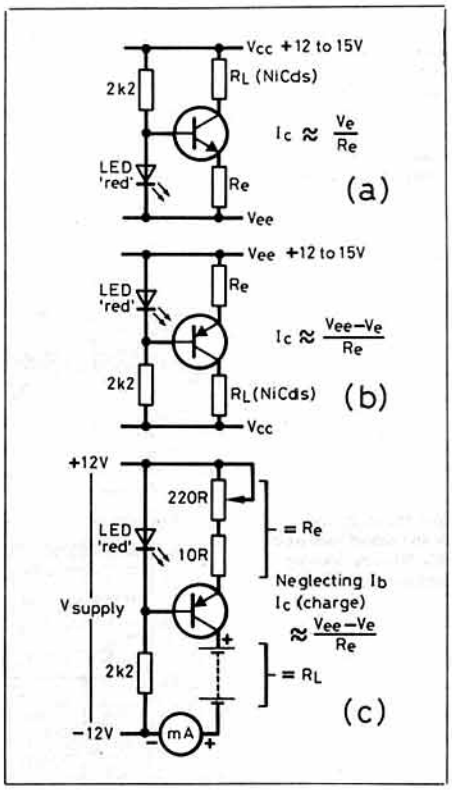


Fig 6. G0IBL's simplified constant-current nicad charging technique.

to run from a conventional 6-12V stabilised power source: **(Fig 5(b)**. He writes: "If one uses a resistive collector load for TR2, it is necessary to beware of mode jumping producing various weird output waveforms as the collector voltage is varied; so adjust for a pure sinewave output. This problem doesn't seem to arise with chokes or toroidal transformers used as the collector load. This circuit has the advantage that it adds some badly needed gain to the oscillator, producing about 50mV RMS across 50ohms, and also allows the circuit to be run from a higher rail voltage in the more conventional range of 6 to 12V. I have not included component values in these circuits in order to encourage others to think about this aspect and develop things further. In practice, the circuit seems to tolerate a wide range of values and no difficulty should be encountered in getting it to work."

SPEAKING IN DIGITS

One of the important areas where amateur radio and professional telecommunications seems to be following diverging paths is that of the digital transmission of speech. While we stick to analogue speech waveforms, the professionals seem to be moving ever more rapidly towards encoded digital systems both for 'line' (now increasingly optical fibre) and for 'radio' systems. Pulse-code-modulation (PCM) or one of its many derivatives can provide better communications efficiency at low signal-to-noise ratios than non-coded analogue systems, such as SSB, AM or FM. The drawbacks of added complexity and wider bandwidths are being overcome by the development of very large-scale integrated circuits (VSLI) with many thousands of transistor functions on the same chip and by the development of various forms of bit-rate-reduction and such modulation techniques as 'tamed frequency modulation' (TFM) that was developed over a decade ago by Philips engineers to permit a 16Kbit/s speech channel to be well-contained within a standard 25kHz VHF channel. This does not mean that digital systems are free of all problems; transmissions can be degraded by multipath (propagation delays) resulting in inter-symbol interference in exactly the same way as digital data communications.

Before long, it is expected that the entire public telephone system will be all-digital, from subscriber to subscriber, and even now many conversations over urban-junction lines and trunk lines are carried in digits. The international plans allocate a hierarchy of digital bit-rates from a basic 64Kbit/s single channel to 140Mbit/s for multiplexed speech and/or video channels. With optical fibres bit rates up to about 560Mbit/s are already practical, while systems capable of Gbit/s are being developed. Optical fibres rather than satellite communications are now regarded as the way telecommunications is developing.

However, 64Kbit/s for a single speech radio channel is regarded as excessive and some very ingenious and complex algorithms for carrying speech at lower bit rates are being developed. A recent IEE colloquim on 'Speech coding' (reported in *Electronics World & Wireless World*, January 1990) showed that a lot of work is going on in British universities in this arcane field, based on the differing requirements in speech quality: broadcast quality (7kHz baseband, SNR better than 35dB; 'toll' (trunk telephone) quality, 200-3400kHz, SNR better than 35dB); and 'communications' quality in which the prime requirement is intelligibility rather than voice fidelity.

It has been shown possible to achieve 'toll' quality with a bit rate of 9.6Kbit/s with efforts to extend this down to 4.8Kbit/s without serious loss of quality. The public aeronautical satellite telephone service (now in experimental use) has the speech coded at 9.6Kbit/s although signalling information increases this to 10.368Kbit/s and the addition of forward error correction (FEC) raises this to 20.736Kbit/s. A new coding strategy, being developed at the University of Southampton, with a 7.5Kbit/s coder and embedded error-correction, is claimed to provide a robust overall transmission rate of 11.4Kbit/s at an economic cost that would be applicable to mobile radio. I imagine that with TFM a transmission rate of 11.4Kbits could be accommodated in a 15kHz VHF channel and would thus be a feasible system for amateur experimentation. Sooner or later, I suspect that we shall need to follow the professionals into speaking in digits. Furthermore, there is work at the University of Liverpool on a form of digital quantizer (line spectral pair) which is claimed to work satisfactorily with a bit error rate of 1 in 40, and thus more robust to channel errors than conventionally error-protected digital transmission systems.

On the more-immediately relevant topic of HF packet data transmission problems (see *TT*, October 1989, p38), H E Dempsey (Threshold Communications Systems, PO Box 188, Brampton, Ontario, L6V 2LI, Canada) has suggested that a solution to the problems of HF digital communications under adverse propagation conditions might be found in the use of the 'Parker Code' developed in the 1960s by B D Parker while he was with the Decca Radar Company (British Patent No 860,830 etc), later implemented by Dollman Electronics Canada Ltd. Mr Dempsey wrote: "It seems to me that it is time for the amateur radio fraternity... to rescue the UK technological community from the wilful blindness of its Telecommunications Establishment. Those who wish to make the best of HF digital communications under adverse propagation conditions should consider the use of the Parker Code. A Parker Communications Club might get things going". The claimed advantages include detection of multiple bit errors with only four bits overhead; self-clocking with bit rate equal to the symbol rate; elimination of intersymbol errors from multipath delays of less than a symbol dwell time; and it can use classic FEC and be adaptive with ARQ.

I have described the Parker Code system in more detail for *EW & WW* but hope to return to this subject later in *TT*. On paper it sounds an attractive system though I remain uncertain whether it would be excessively complex to implement on the amateur bands: with microcomputers I would not think this to be the case.

UNDERSTANDING THOSE RADIATION HAZARDS

The inclusion of the severely restrictive guidelines on health hazards drawn up by WC2S originally published in *QST* and in the January *TT* (p36) has stirred up some thoughts on the social problems that could confront amateur activity in the 1990s. It is less a question of the possible health risks — which at most would seem to be minimal — but how they are perceived by neighbours and families.

As G3IJL puts it: "As people become aware of the possibility of non-ionizing radiation health hazards, no matter how tiny, we face the possibility that our neighbours will declare transmitting antennas a health hazard to their families. Will amateur activity come to be confined to rural dwellers with no near neighbours, with the rest of us forced into silence? In London, it is virtually impossible to avoid strong 50Hz magnetic fields; for example, when travelling on or waiting for tube trains or on intercity electric trains with 25kV lines above our heads. Is this more or less hazardous than 400W PEP to a 28MHz beam antenna at, say, 20ft?"

Clearly, much depends on the advice that may be given in future official guidelines. The current UK 22-page guidelines — NRPB-GS11 'Guidance as to Restrictions on Exposures to Time Varying Electromagnetic Fields and the 1988 Recommendations of the International Non-Ionizing Radiation Committee' — published by the National Radiological Protection Board (HMSO, May 1989, £4) confine themselves primarily to protection against the proven thermal effects from the absorption of electromagnetic energy and protection against the possibilities of electric shock and burn. The basic guidelines in NRPB-GS11 do not differ greatly from the American ANSI recommendations which have been described on various occasions in *TT*. These do not seriously affect normal amateur operation except when closer than usual to transmitting antennas (except perhaps for grounded monopole type vertical antennas where recommended limits may be exceeded within a few feet of the base).

NRPB agrees with the conclusions of the international committee (INIRC) that "there is at present insufficent biological and epidemiological data to make a health risk assessment or even to determine whether there is a potential hazard to health with regard to athermal (non-heating) effects of electromagnetic fields." Such, then, is the current official view. But it does imply that if more convincing evidence is uncovered then the guidelines may need to be changed again, and become more restrictive.

In 'Fatal Distraction, or, Is Amateur Radio a Health Hazard' Morris Odell, VK3DOC (*Amateur Radio* (VK), September 1989, pp34-35) provides a further survey of the present evidence, based partly on material supplied to WIA by Ross Adey, K6UI who, as noted in the January *TT*, is a prominent research scientist in the biomedical field.

VK3DOC notes that the current concern is not with 'acute' effects such as headaches or even personality changes but in long-term effects, possibly leading to cancer-type diseases. The difficulty is that no simple experiment can definitely settle the matter. Epidemiological studies which look at people exposed to suspected dangers and statistically compare their rates of disease and death with that of the general population are neither as simple nor as certain as they might seem. We all die eventually of something, what is important to society is if it were found that persons exposed to EM fields died significantly younger on average to those not exposed; but, so far as one can see, none of the present studies indicate this — indeed amateurs seem to be *less* vulnerable to many common diseases and accidents than the population at large.

Carcinogenic influences may be as initiators or promotors. Asbestos dust and ionising radiation are known initiators. Promotors act on tissue that has previously been initiated or undergone pre-malignant change, speeding up progression to cancerous growth. Tobacco smoke is thought to have a mixed action as both initiator and promotor.

Some test tube studies have shown an effect of RF fields on the function of lymphocytes (the cells of the immune system) but this is very difficult to test in the living body; moreover the rare cancers noted in the Milham studies etc are not the same as those that appear in other deficiencies of the immune system such as Aids. There is, as noted before in *TT*, some evidence that RF exposure may act as a very weak promotor of some rare leukaemias. But similarly, there is the possibility that such carcinogenic effects stem from solder fumes, solvents and other chemicals used in design, manufacture, repair or installation of electronic equipment.

This does not mean that we should not be concerned to read in WC2S's *QST* article that 800MHz handhelds with modest RF outputs of 1.0 and 1.8W have been found to result in the presence of a 'hot-spot' in the eye of the user with a ½λ dipole antenna and in the frontal portion of the brain while using a ⅝λ antenna. VK3DOC, however, concludes: "The chance of an amateur dying as a result of amateur radio is miniscule — enjoy the pleasures of our magnificent hobby without worrying whether it will kill you!"

MORE ON FITTING COAXIAL PLUGS

The publication in *TT* (September 1989, p40) of the Antiference advice on fitting coaxial cable to their standard TVP2 plug brought in a number of letters emphasising the advantages of the alternative method of teasing out the braid, rather than twisting it into a tail (see *TT*, December 1989, Fig 6, p37). Several readers, including Alec Hodgekinson, ZS6BMU/G3LLJ and John Harris (chairman, Stratford upon Avon & District Radio Society) recalled that the preferred method stems from the recommendations of Belling-Lee in the days when the company was a major supplier of TV antennas. B-L were also firm advocates of soldering the centre conductor.

John Harris has provided a copy of the B-L instruction sheet covering loading instructions for their standard coaxial plug (type L734/P). This was as follows(see **Fig 7**):

Trim feeder by removing 1-in outer cover, ¾-in of braid and ⅞-in of insulant. Slide clamping nut and collet on to feeder and spray the braid. Push centre conductor through plug pin as far as possible and bend sharply for soldering. Solder and trim. Slide collet up to splayed ends of braid and trim braid flush with plug moulding, using knife against collet. Push assembly home into plug so that collet enters it. Screw nut firmly to grip feeder. The plug pin must be firm.

In the case of feeder larger than 0.261-in diameter over cover, the hole in the collet clamp encircles braid only. Avoid scoring centre conductor and braid when removing insulant. Solder the conductor with a 'quick' iron to avoid melting the cable and plug insulant. Trim loose ends to avoid short circuiting. Ensure that the claws of the collet are the correct way round so as to grip the outer sheaf. Avoid twisting cable when re-assembling plug, as this tends to break the conductor.

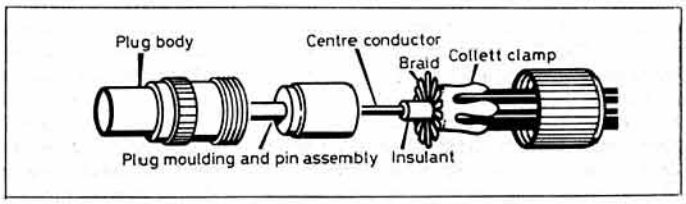


Fig 7. The preferred Belling-Lee method of fitting standard co-axial plugs to the cable.

3-in-1 ANTENNA TUNER & AF METER

A couple of ideas borrowed from the November 1989 issue of *73 Amateur Radio*:

'Three-in-One Antenna Tuner — Matches virtually any random wire!' by J Frank Brumbaugh, KB4ZGC, shows how three standard matching networks can be combined in a simple switched antenna tuner: **Fig 8**. Network A matches random wire antennas presenting a relative high (voltage fed) impedance. Network B copes with low-impedance wires (eg 0.25λ). Network C is a standard T-configuration suitable for matching to coaxial feeders, twin lead or single wires over a reasonably wide impedance range: "If you can't get below 2:1 SWR try a different network but do not change switch S1 with RF applied." For use up to about 50W, the 100pF or 365pF capacitors can be of the broadcast

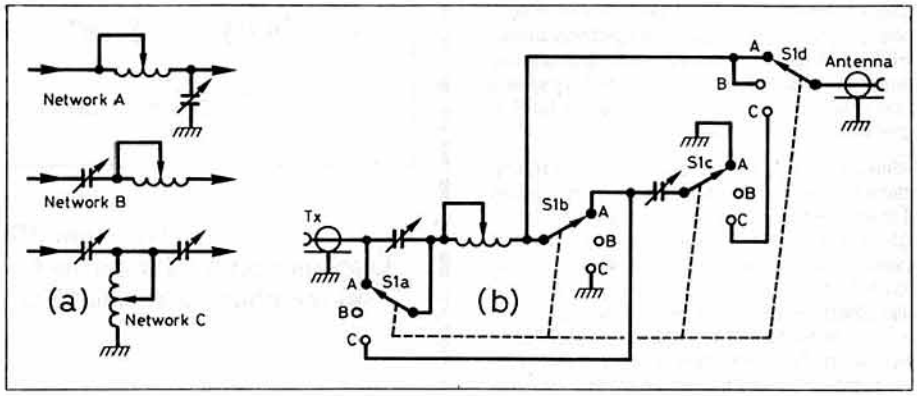


Fig 8. Three-in-one ATU.

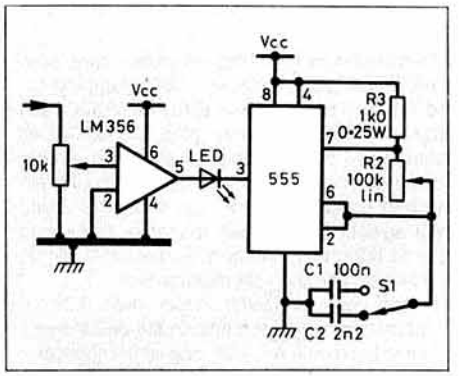


Fig 9. Low-cost audio-frequency meter.

receiver type and the switch a standard wafer switch. Inductance can be a tapped coil, coil wound on a T-106-2 toroid or a surplus rotary inductor.

'Bargain Audio Frequency Meter ($10)' by William Lazure, KB5CTH, shows a simple form of AF meter **(Fig 9)** in which the signal to be measured is nulled against a 555 oscillator with null indicated by the dimming or extinction of the LED when the frequencies match. C1 with R2 covers about 60Hz to 3kHz; C2 with R2 about 2.5kHz to about 130kHz. R2 (which should be a trim-pot) must be linear and it is necessary to calibrate it against known AF signals. The LM356 provides a gain of about 20 with pins 1 and 8 open. Almost any type of LED should prove suitable and should glow when the two signals do not match in frequency. If no null try and adjust the input potentiometer.

CARE AND FEEDING OF BATTERIES

TT has already included advice (hopefully not too contradictory) on the maintenance and recharging of both nicad and lead-acid batteries but this is a topic that continues to attract interest, with additional information still emerging. This month we quote from a number of sources, including: 'Lead-acid batteries, myths and fables' Parts 1 & 2, by Arrie Wessel, ZS6UY, *Radio-ZS*, January & February 1984; 'Rechargeable power supplies, Part 5: Nicad battery life' by Anton Wilson (*International Broadcast Engineer*, September 1989, pp60 & 62); and correspondence from John Brown, G3EUR.

First some common advice on chargers:

For nicads: Preferably always use constant-current chargers, taking care not to overcharge even at 0.1C. Trickle charging rate should not be above 0.02C.

For lead-acid batteries: Preferably always use constant-voltage units (eg 13.7± 0.1V for '12V' batteries, 2.3V for cells). Maximum charging current should not exceed about 0.2C but for vehicle batteries 4-5A is a typical figure. With a correctly-set constant-voltage charger there should be little damage if the charger is left continuously connected. Where the charger or PSU is capable of providing more than about 0.2C, some form of current limiting is advisable.

Batteries designed for portable applications, whether nicad or sealed lead-acid types, should be treated with care. It is wise to choose batteries with strong outside cases as opposed to soft coverings so that the entire shock of a fall or blow will not be transmitted directly to the inside of the cells. Short-circuits of the plates may be caused by their being forced together as a result of a physical shock or, with nicads, more normally by the growth of crystals that penetrate the separator (whiskers). Nicad crystals can often be successfully zapped, but it is safer to use a high-value electrolytic capacitor for this purpose than to use a high-current PSU/charger which may burn a larger hole in the separator. Another cause of internal short-circuits in high-energy nicads is separator break-down caused by high temperatures, due either to overcharging or being left inside a vehicle in the hot sun. Keep all batteries in a cool place, but note that nicad cells should not be charged in very low temperatures.

A lead-acid battery should preferably be kept fully charged, just below the stage of gassing. A battery should be called upon to do as little work as possible. Preferably it should not be expected to act as a large-value smoothing capacitor to eliminate supply ripple since the cumulative fractional charge/discharges will eventually result in premature battery failure due to ageing.

Battery temperature during charging (or sustained heavy-current discharges) should not be allowed to rise more than 10°C above ambient.

'Dryfit'-type small sealed lead-acid batteries have a very low rate of self-discharge while stored; they should not be stored in a completely discharged state. Avoid excessive deep discharges.

With 'wet' lead-acid batteries, the 'dead' plate material is shed and settles as sediment/sludge at the bottom of the cell (if excessive it may short-circuit the plates). A 'dry' (sealed) battery cannot shed this dead material, so much greater care should be taken in their treatment. A good rule is to leave the battery continuously on its correct (constant-voltage) charger; when discharged bring it up to full charge as soon as possible.

For professional high-energy nicad systems, as used in broadcast video, Anton Wilson points out that those spending £400 or more on a complete nicad battery system feel it should last for ever. But asking how long a nicad will last is like asking a doctor in a maternity ward the age to which a particular baby will live. Batteries, he stresses, are prone to 'diseases' that affect the life of a system as well as 'coronaries' that can kill them almost instantly. Taking 80% charge-acceptance as an 'end-of-life' point, a nicad battery may tolerate as many as 10,000 charge/discharge cycles or as few as 250. With high-energy cells and fast-charging, he puts the average life-expectancy as around 400-500 cycles with 300 to over 800 typical: "Only under the most adverse conditions should a nicad deliver fewer than 250 cycles. Conversely a nicad would require divine intervention to exceed 1000 deep discharge cycles."

He adds that: "Over-discharging a battery invites a short-circuit since the cells no longer pack sufficient punch to vaporise internal short-circuits (whiskers) as they develop." This self-correcting phenomenon cannot take place if the cell is discharged almost fully, so it is good practice to avoid over-discharging a nicad battery. It is advisable to change to a fresh battery at the first indication of depletion and to recharge batteries as soon as possible after use. Batteries should be stored charged and because of their high self-discharge rate, receive an additional slow charge the night preceding re-use.

G3EUR found that with a 45Ah Delco sealed car battery connected across a stabilised 13.8V PSU as the supply for a 100W SSB rig, the charging current, after a long transmission, can zoom up to 20A or so, then falling quickly to a low level. He feels convinced that punching such heavy currents into batteries can quickly knock the stuffing out of the plates; making it advisable to provide at least a degree of current-limiting with any PSU/charger capable of supplying more than about 5-8A continuously (depending on the capacity of the battery). Although batteries may be either 'shallow discharge' or 'deep discharge' types, both should be capable of providing their rated Ah capacity if used under the conditions specified by the makers.

Medium power HF linear amplifier

MJ Grierson, G3TSO/KD3CL, describes a very useful add-on for a low-power transceiver

The linear amplifier described was designed to compliment the G3TSO Modular Transceiver (RadCom October/November 1988) and is capable of being driven by any exciter producing from 5 to 25 watts RF output. It is ideal for use with the Cirkit Kit PA now popular amongst many amateurs as a low-cost reliable solid state PA unit capable of producing up to 20 watts output.

As a confirmed solid state man, many may be curious as to why I resorted to a valve design; the answer is quite simply that I had in the bottom of my junk box a number of components that might otherwise never have been put to use. The cost of building a valve amplifier and PSU is probably very close to that of a solid state unit and PSU, but if you already have half the components in stock then a valve design may represent the most cost-effective solution. The construction of valve equipment is becoming very difficult due to the poor availability of suitable components, and this project is only recommended for those with a junk box or the patience to search around the rallies for the components.

The amplifier is based on the 'Quarter Gallon Amplifier' (ARRL Handbook 1980); it was designed to raise the power of a US 'Novice'-type rig from 25 to 160 watts. The original design included some unobtainable components and has been adapted to utilize those components that the author could find. The valves used are the 6KD6 American line output tubes available in the UK for about £10.50. The bases may be less easy to obtain and the more common PL509 or EL509 types could easily be used as an alternative. Suitable heater supplies for the PL509 have been described in recent *Technical Topics*.

WARNING!

This amplifier operates from the AC mains and develops HIGH VOLTAGES which can be LETHAL. Great care must be taken when making adjustments. This is especially important if the constructor is not familiar with high voltage equipment.

CIRCUIT DESCRIPTION

The amplifier uses two 6KD6 television line output tubes operated in grounded grid. The screen and suppressor grids are directly earthed and the control grids are earthed to RF by capacitors C13, C14. Negative bias is applied to the control grids via independent bias pots enabling equal standing currents to be set on each valve.

RF input is fed to the cathodes of the valves via two series resistors R1, R2, whilst a DC return to ground is provided by the choke RFC1. The input impedance of the cathode circuit varies across the bands and appears to be in the range of 75Ω to 250 Ω; an input matching circuit is therefore required if the amplifier is to be fed from a solid state exciter. This may take the form of either a tuning unit or a fixed tuned filter.

The anode circuits are conventional using a pi-output circuit. Parasitic stoppers comprising 47Ω carbon resistors wound with 5 turns of 18 SWG wire are connected directly to the anode caps.

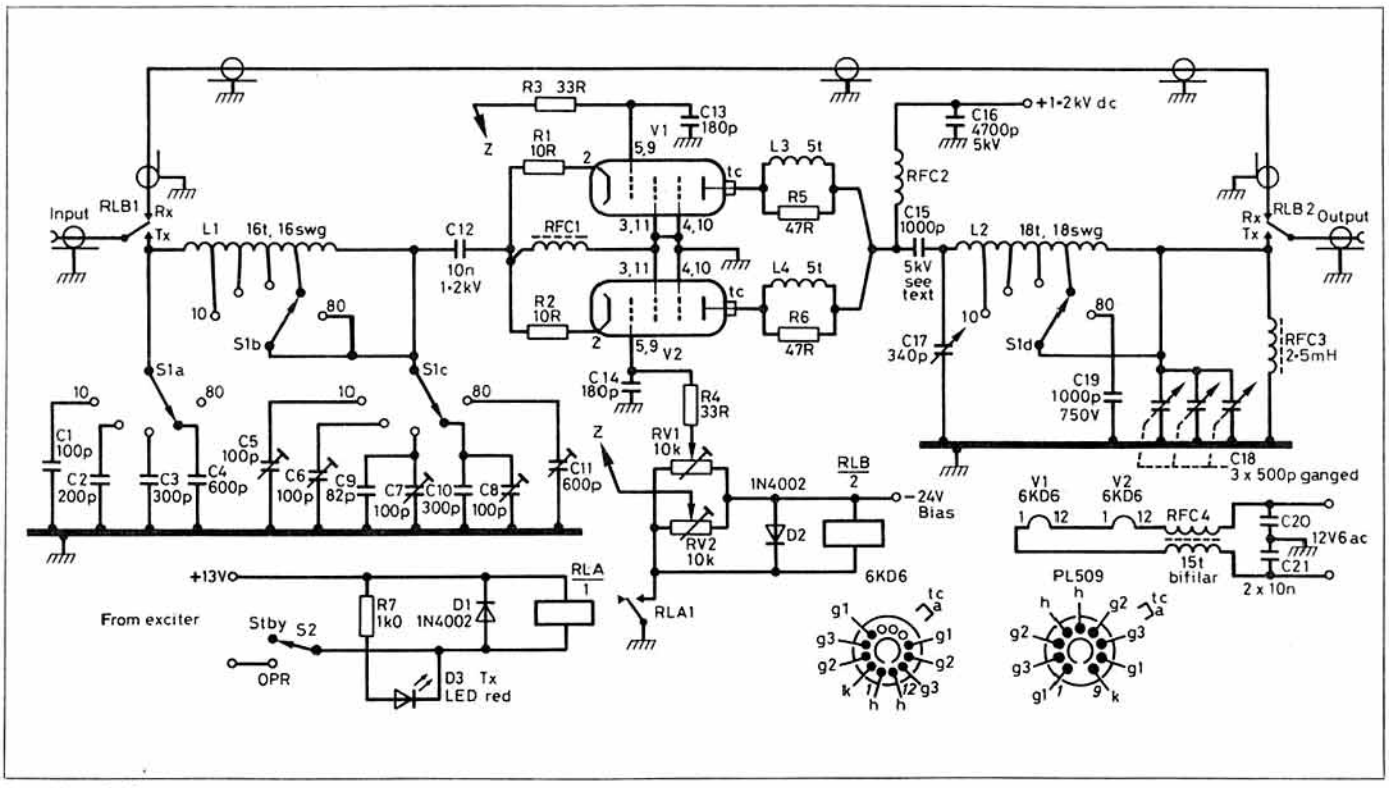


Fig 1. Main circuit

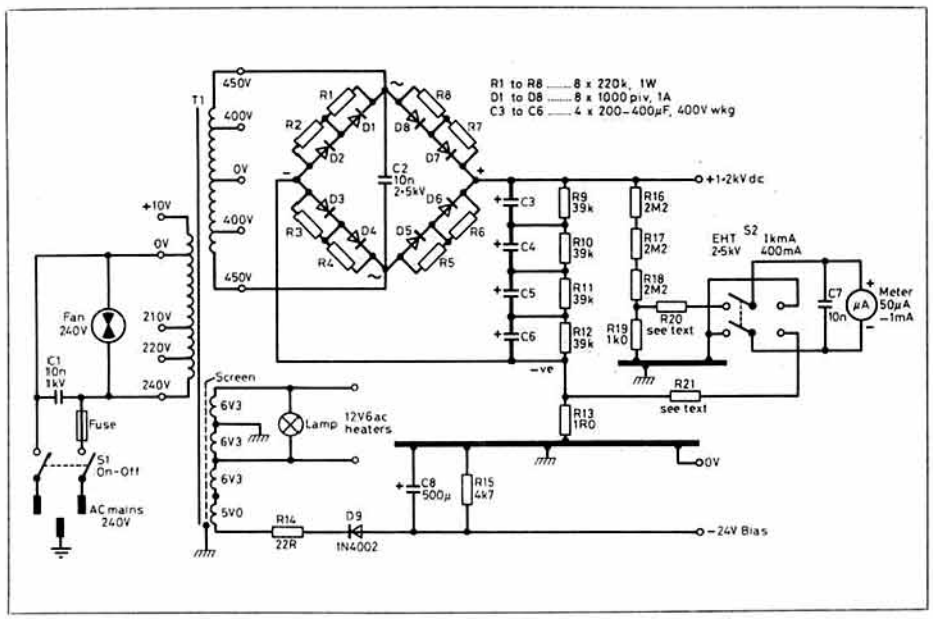


Fig 2. Power supply circuit

RFC2 is often a critical component as it must not display any resonances in any of the amateur bands to be tuned.

Nevertheless, it is a simple single layer choke consisting of 40 turns of 24SWG wire on a 0.5in TUFNOL former. C15 is a high quality mica capacitor of at least 5kV working and is the only isolation between the EHT and the antenna socket. 500pF door knob type capacitors used in TV EHT circuits may prove suitable for this application; two should be connected in parallel. Some protection of the output is provided by RFC3, a 2.5mH RFC which must be capable of blowing the fuse if C15 should go short circuit. A choke should therefore be found with fairly heavy gauge wire.

More often than not line output valves are operated with an HT voltage of about 600V. With their high internal capacitance, the anode matching can be quite a problem especially on ten metres where efficiency drops off rapidly. By using an anode voltage of 1.2kV, the anode load impedance is raised and more sensible pi-output values can be used. C17 is a difficult component to obtain and should ideally have a log law in order to spread out the minimum capacitance which is necessary to tune 10 metres. A reasonably wide spacing is also required, ideally at least 3.5mm. Suitable items can be found at rallies but not in large quantities. If necessary, a 100pF linear variable could be used with a fixed value mica capacitor switched in parallel for 40 and 80 metre operation. L2 (removed from a FT101) is wound on a ceramic former and switched using a ceramic wafer switch S1d which is ganged to a further rotary switch containing the wafers S1a, S1b and S1c, required to switch the input matching filter. L2 had a double spaced winding for 10 metres. Such a coil former is not likely to be found easily and it may be preferable to use a separate 3 or 4 turn coil wound from heavy gauge wire for the 10 metre band. C18 is a standard air spaced 3 gang 500pF broadcast type capacitor.

The heaters are RF decoupled from the AC supply by winding 15 bifilar turns on an old ferrite rod approximately 3 inches long and 3/8" diameter; the grade was unknown, but it was probably a medium wave antenna rod. As the heater supply is balanced, no RF decoupling capacitors are used. However, the use of 10nF ceramic capacitors between the cold end of the RF chokes and ground may be necessary if using an unbalanced supply.

The bias supply is used to set the operating conditions of each valve individually, and approximately -6V sets the standing current to 20mA per valve which coincides with a voltage drop of 0.2V across R1 and R2. When in standby, the negative bias is increased by raising the bias pots above ground by RLA, thus reducing the standing current. The transmit relay RLB is also switched on the bias line.

INPUT MATCHING

The input matching circuit was not included in the original ARRL article and the amplifier was initially built without this circuitry. The amplifier worked perfectly well but it proved necessary to place a small ATU between the exciter and the linear to effect a reasonable match. This proved rather cumbersome and the pi-input circuit was added. Initially, individual pi-filters were tried for each band, but there was an element of mutual coupling and it would have been necessary to short out the circuits not in use in order to tune the input correctly. The compromise system of using a tapped coil was therefore adopted. The values were determined experimentally and may vary from one amplifier to another. On 80 metres the input filter is an L match. A number of compression trimmers are used to enable the input to be tuned for minimum input SWR or maximum output. There is no reason why the input filter should not

COMPONENTS LIST

AMPLIFIER

L1	16 turns, 16 swg tinned copper 1" dia 8 turns per in. Tapped at 3 turns, 4 turns, 6 turns and 10 turns
L2	18 turns, 18 swg tinned copper, 1.5" dia. First 4 turns treble spaced, remainder double spaced. Tapped at 3t, 4t, 6t, 9t
L3, L4	5 turns, 18 swg enamel on 1W carbon resistor
RFC1	40 turns, 24 swg enamel on ferrite rod or toroid. (800u)
RFC2	40 turns, 24 swg enamel on Tufnol or ceramic 0.5" dia former
RFC3	2.5mH, 500mA
RFC4	15 turns, 18 swg enamel bifilar on ferrite rod 3" x 3/8"
S1a, b, c	3x1 pole, 6 way
S1d	1 pole, 6 way ceramic ganged to S1a, b and c
S2	Single pole toggle
RLA	Single pole 12V
RLB	Double pole change-over 12 or 24V. Aerial change over relay
V1, V2	6KD6, EL509/EL519 or PL509/PL519 with bases
C1	100pF silver mica
C2	200pF silver mica
C3, 10	300pF silver mica
C4	600pF silver mica
C5-8	100pF compression trimmers
C9	82pF silver mica
C11	600pF compression trimmer
C12	0.01uF 1.2kV disc
C13, 14	180pF or 220pF mica 500V working
C15	1000pF 5kV silver mica ex TV door knob type
C16	4700pF 5kV disc
C17	340pF wide-spaced (3.5mm) log law variable or 100pF linear plus switched parallel silver mica (80 and 40m)
C18	3 gang 500pF airspaced broadcast variable
C19	1000pF 750V silver mica
R1, 2	10R 3W carbon
R3, 4	33R 0.5W
R5, 6	47R 1W carbon
R7	1K 0.25W
RV1, 2	10K wire wound potentiometer
D1, 2	1N4002
D3	Red l.e.d.

POWER SUPPLY

T1	600 to 900V secondary at 200mA plus LT
D1-8	1000 piv (1N4007) 1A
D9	1N4002
R1-8	220K 1W
R9-12	39K 5W
R13	1R 3W wire wound
R14	22R 1W wire wound
R15	4K7 3W wire wound
R16-18	2M2 1W
R19	1K 1W
R20	see text (4k7)
R21	see text (6K6) 3x2K2
C1	0.01uF disc 2.5kV
C2	0.01uF 2.5kV disc
C3-6	200 to 400uF 400V electrolytics
C7	10nF disc 50V
C8	500uF 35V electrolytic
S1	Double pole ON/OFF
S2	Double pole change over

Fuse holder, Fan, Meter 50uA to 1mA
Plugs and sockets as required

SOME SUGGESTED COMPONENT SUPPLIERS

Sendz Components, Shoeburyness, Essex (0702 332992) for door knob capacitors, electrolytics, airspaced variables and high voltage capacitors.
SITEK, Leighterton, Tetbury, Glos (0666 89 307) for wirewound pots, electrolytics and high voltage door knob caps.
PM Components Ltd, Gravesend, Kent (0474 333762) for valves, bases and anode caps.

be tuneable; however, the introduction of another tuning control was considered undesirable. The input circuitry must be screened from the amplifier output.

POWER SUPPLY

The power supply must be able to supply a heater voltage to suit the valves in use, a bias supply and an EHT voltage of between 800V and 1.4kV.

I used a Parmeko Admiralty type transformer having a 450-0-450V winding and a number of 6.3V and 5V heater windings. New transformers would be extremely expensive but many surplus types can be found at rallies. Full wave rectification of the HT winding provides approximately 1150V for the EHT supply. The two valve heaters are connected in series and fed from two 6.3V windings connected in series; this permits balanced heater wiring to be achieved. Three heater windings are connected in series to provide approximately 24V negative bias. This is ample for bias requirements and to operate the transmit/receive relay; it is also adequate for cutting off the valves on standby. The original ARRL design obtained the operating bias by placing a power zener diode in the cathode - such devices do not appear to be readily available in the UK with sufficient power rating. The circuit used is considered to be better as it allows for equalizing the standing current of both valves.

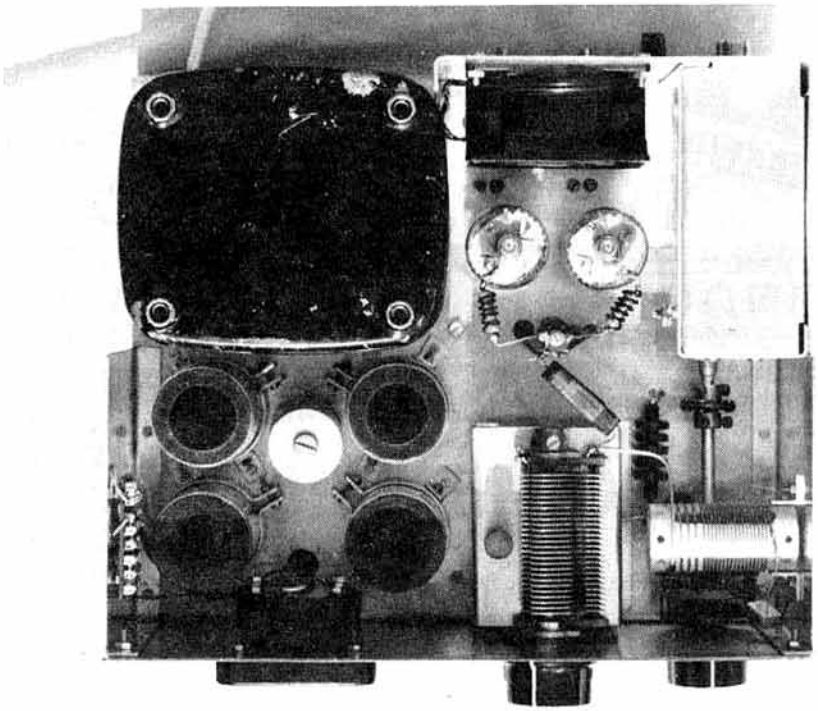
The EHT supply is rectified using a bank of silicon diodes, D1-8; they have equalizing resistors connected across them, R1-8, to ensure an equal voltage drop across each diode. The DC voltage produced is 1.4 times the AC voltage and is applied to a reservoir capacitor comprising 4×400μuF 450V electrolytics connected in series. Again, they have equalizing resistors connected across them which act as a bleeder system to the EHT supply. The value of these resistors is not at all critical but they must be of equal value and adequate wattage if they are not to overheat and break down. The capacitors must be adequately insulated as they are not at earth potential. They are mounted on a sheet of 1/4" thick perspex which was then mounted on threaded stand-off pillars.

Metering is accomplished by connecting a suitable microammeter or milliammeter as a voltmeter. R13 is a 1 ohm wire-wound resistor in the earth return of the EHT supply. By measuring the voltage drop across this resistor we have a measure of the total current being drawn. R21 is designed for a 50μA meter with a 1500R internal resistance - to provide 400mA FSD, it will have to be recalculated for a different meter. Similarly, R16-19 form a potential divider across the EHT and measurement of the voltage across R19 will give a measure of the EHT voltage. R16, 17 and 18 must not be replaced by a single resistor in case of a short circuit failure. Again, R20 may need to be recalculated for a different meter movement, or EHT voltage; it is calibrated for 2.5kV FSD indicating about 1/2 scale for 1.2kV.

A mains operated fan is connected across the primary of the mains transformer and serves to blow cold air over the two PA valves.

CONSTRUCTION

The amplifier is constructed on a chassis measuring 10"x12"; layout is not critical though the output tuned circuitry should not contain excessively long wires and should be screened from the input tuned circuitry. The actual size will be very dependent upon the components used and should not be finalised until most of the components have been collected. Locating the PSU and amplifier on the same chassis is preferable to having separate units when high voltages are employed. Components can be laid out on a sheet of paper prior to marking out the chassis to ensure adequate clearances between components. Front panel layout can be arranged to suit the individual constructor. All input, output and control sockets are located on the rear panel together with the bias pots.



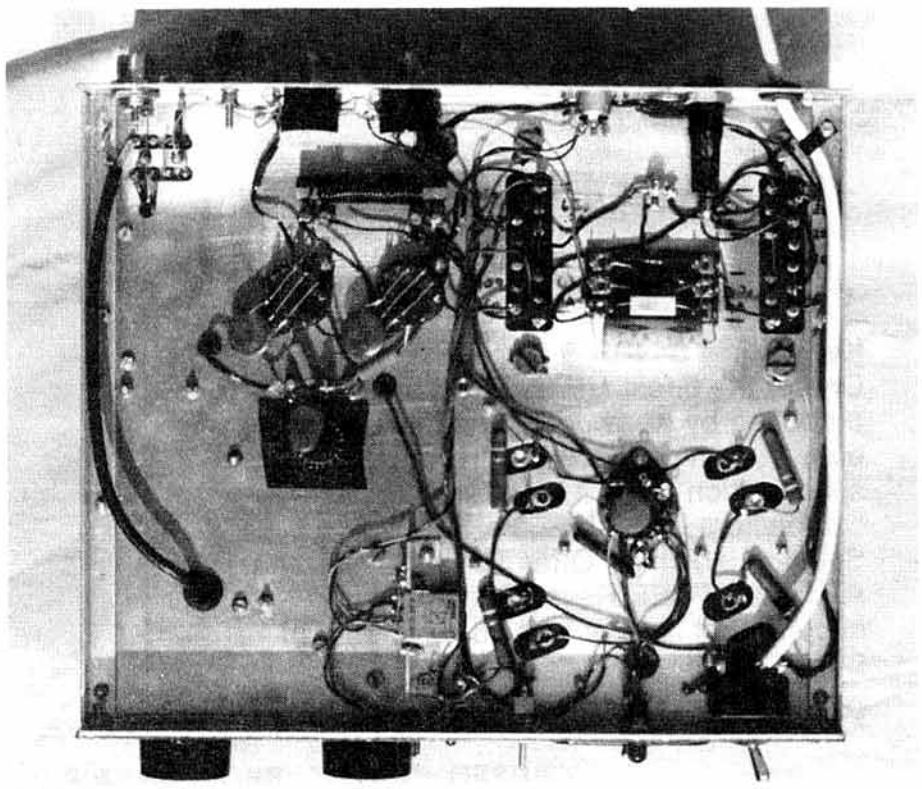
Top view

OPERATION AND TUNING

The power supply should be tested first to ensure the correct voltages are available. Heater voltages of 6.3V or 12.6V for the 6KD6, 40V for the PL509 (80V for series heaters) and between 800 and 1400V for the EHT. *Do not forget to take the necessary safety precautions when operating on high voltage equipment, it is LETHAL.*

With power supplied to the amplifier it is first necessary to set the PA bias. Adjust both bias pots fully to the negative end of the pot. With a 50 ohm dummy load connected to the output, activate RLA. The T/R relay RLB should operate and the PA

(continued on p40)



Bottom view

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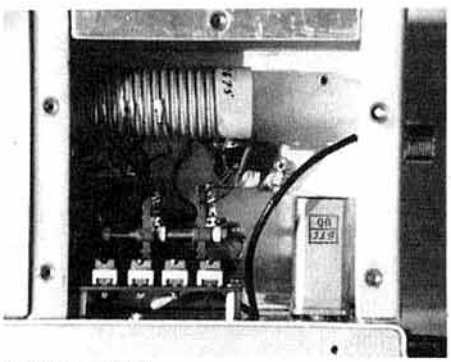
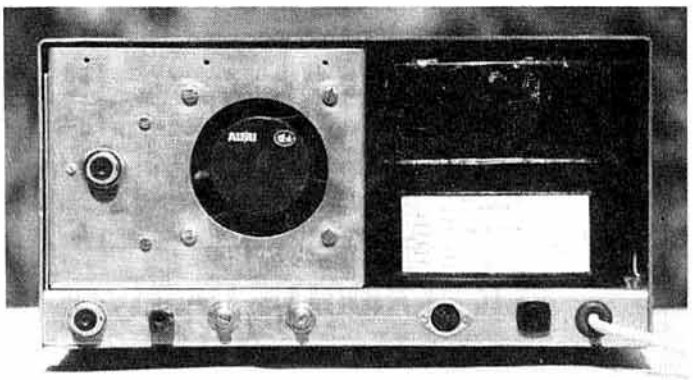
(continued from p37)

current should be very low. Place a voltmeter across R1 and adjust RV1 for 200mV (20mA) standing current. Repeat this operation with RV2 for 200mV across R2. The PA current should now indicate 40mA.

Rotate C17 and C18 from min to max capacitance: the PA current should remain stable. In general, grounded grid amplifiers are very tame and no instability should result. Select the appropriate band and apply drive to the linear from the exciter; the output may be tuned for a dip in cathode current in the conventional manner, or alternatively, by monitoring the output power, the amplifier may be tuned for maximum output. The input SWR should be monitored and the input network tuned to minimise the input SWR, or alternatively, may be tuned for maximum output. It will be necessary to adjust slightly some of the values of the input tuning capacitors for optimum results. If you do not mind tuning an external matching unit in the form of an ATU, the input circuitry can be omitted completely. The PA current will be approximately 250mA for 200W output on 80 metres and rises to a maximum of about 300mA on 10 metres due to the reduced efficiency.



Input tuned circuit



Rear view

CONCLUSION

The author's amplifier has proved very successful, providing up to 200 watts output and 10dB gain. Efficiency is high, but inevitably drops off on 10 metres where 120 watts output is about the maximum for 20 watts of drive. From 80 to 15 metres, 20 watts of drive can produce a full 200 watts RF output, however, the fixed tuned input circuit may reduce the drive level resulting in a nominal 160 watts RF output. Reports on the air have been very encouraging with no signs of splatter or distortion. The amplifier runs very cool with no signs of heating of the mains transformer or the PA valves, even when the amplifier is operated continuously key down for long periods of time.

It is possible to drive this amplifier up to over 300 watts output, however, this is not recommended in the interest of valve life and linearity. The amplifier is ideally suited to placing on the end of the many QRP transceivers currently being constructed.

The construction of a valve amplifier is no easier than a comparable power solid state amplifier; the valve design requires more effort to get working and requires retuning every time the frequency is changed. However, many amateurs are more familiar with valves and if, as in my case, the junk box contains some of those elusive parts, the valve design can still represent a viable project. □

Coaxial cable losses on the VHF and UHF bands

Giles Harrison, G6UTC, shows us how to make a comparison between cables

INTRODUCTION

Recently I found I needed to buy a substantial length of coax to use in a VHF system. As I was concerned about signal losses in the cable and also about cost, I decided to make a serious comparison between the different cables commercially available. This became fairly awkward, as manufacturers' data was rarely presented in a way to allow direct comparison. Information on losses at different frequencies was the specific difficulty: different catalogues quoted values measured in a variety of units and at inconsistent frequencies. I have therefore tried to collate what data are available, and to present them in a form which is of use to the amateur.

CHOOSING A PIECE OF COAX

The choice of cable in most situations is a compromise between its cost and its attenuation or loss. In practical terms a cable with a high loss will swallow a large amount of the power fed to it by a transmitter, and leave rather less to be radiated by the aerial system. This is obviously wasteful of transmitter power, which at VHF and above is hard-won. For reception, losses have more severe consequences: signals are often extremely weak and losses in the connecting cable may prevent a contact being successful. High power systems also need to consider the power capability of cables.

There are situations, however, when a cheaper high-loss cable can be used. One example is when the cable is used as an up-lead to a remote transmitter, and another is when the cable is used to connect the output of a masthead pre-amplifier to a distant receiver. In the second case the received signal would have already been detected and amplified to a greater level. Indeed attenuators are often used between a pre-amplifier and receiver to prevent overload, so cable loss is generally not a problem.

LOSS: HOW THE UNITS WORK

Loss is measured in a variety of units. They all seek to express what loss per unit of length can be expected from a certain cable. However, the situation is confused by the many different units of length in common use, and by the use of logarithmic methods of describing the loss. For a loss measurement to be useful, the frequency at which it was obtained must be stated. The loss increases with frequency very quickly, which is why coax is only used for the very shortest runs, if at all, at microwave frequencies and greater.

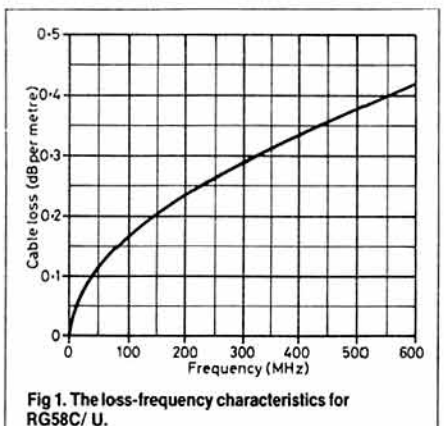


Fig 1. The loss-frequency characteristics for RG58C/ U.

To understand the way in which loss is described, imagine the following experiment. A dummy-load power meter is connected to a transmitter operating at a constant frequency. The power meter tells us that the transmitter is producing a power P. Then the system is rearranged, and a measured length x of coax connected between the transmitter and the meter. The power meter this time reads a different power Q.

So we know that the power lost in the cable of length x is (P-Q). We could write this as a percentage loss by calculating 100 (P-Q)/P.

The way that this is normally expressed, however, is in decibels (dB). A loss of L decibels is defined by the following formula (see note [1]).

$$L = (1/x)\ 10 \log (P/Q)$$

If the cable length x is measured in metres then the loss L is in the units of dB/m, pronounced as "decibels per metre".

This is by far the best way of describing and comparing the loss of a cable. The appendix lists conversion factors from various units of loss into dB/m. If losses are converted into this standard unit, then information on different cables at the same frequency can be directly compared.

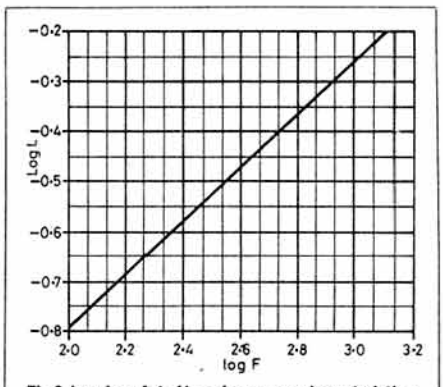


Fig 2. Log-log plot of loss-frequency characteristics for RG58C/U.

PLOTTING GRAPHS OF LOSSES

Cable loss, as mentioned above, increases with the frequency of the signal passed through the cable. This is due to the skin effect of the conductors, which causes the signal to pass through the outer layers of the cylindrical conductors used. Thus at very high frequencies, little of the conductor material bulk carries the signal, and the thin outer skin layer resistance causes attenuation. Hence the effective conductor area reduces as frequency increases. Another contributory factor is dielectric loss. The dielectric material which separates the inner and outer conductor causes more loss as frequency is increased.(2)

It would be useful to be able to calculate the attenuation for a certain cable at any particular frequency, making use of the data which is quoted at other frequencies. Then different cables could be compared.

The graph (Fig.1) shows how the loss of one cable, RG58C/U, changes with frequency. This graph is easily obtained by plotting quoted values from a data book (3,4) and drawing a line through the points. Other values can then be read off by interpolation.

A much better way is to plot the data on the cable in the form of a log-log graph, in which the logarithms of the losses and frequencies are plotted instead. This graph can be drawn on the usual linear graph paper, (which is easy to obtain), and produces a straight line. This type of plot is shown in Fig.2, again for RG58C/U.

CALCULATING THE LOSS AT ANOTHER FREQUENCY

The log-log plot simplifies calculating the losses at different frequencies, because of the straight line produced. Simple mathematics tells us that any straight line can be defined by an equation of the form $y = m x + c$, where m is the gradient of the line, and c is the intercept on the y axis. Thus we can produce a formula to give the loss L of a cable at any frequency F as

$$\log L = A + B \log F,$$

where A and B are constants found from the log-log plot above. So to find a value of cable loss at a frequency F we need the formula

$$L = 10^{(A + B \log F)}.$$

Table 1 gives values of A and B for ten different types of cable, which were obtained from the data by using the statistical least squares method. For

TABLE 1. COEFFICIENTS A AND B FOR CALCULATING CABLE LOSSES

Cable	A	B
LDF4-50A	-2.86	0.59
W103	-2.37	0.47
H100	-2.36	0.50
URM67	-2.30	0.57
RG213/U	-2.34	0.58
URM43	-1.97	0.54
URM76	-1.88	0.53
RG58C/U	-1.87	0.54
URM95	-1.56	0.49
RG174A/U	-1.48	0.48

TABLE 2. DATA ON A VARIETY OF 50Ω COAXIAL CABLES AT DIFFERENT FREQUENCIES

Cable	Cost /(£/m)	Overall diameter /(mm)	Inner Conductor	Loss, L(dB/m) at frequency F below				
				50MHz	70MHz	145MHz	432MHz	1296MHz
LDF4-50A	4.70[a]	16	1/4.1	0.014	0.017	**0.026**	**0.049**	**0.095**
W103	0.95[b]	10.3	1/2.7	**0.027**	0.032	**0.045**	**0.075**	0.13
H100	0.80[b]	9.8	1/2.5	0.031	0.036	0.052	**0.091**	**0.150**
URM67	0.60[b]	10.3	7/0.77	0.046	0.055	0.083	0.15	0.29
RG213/U	0.72[c]	10.3	7/0.75	0.045	0.054	0.083	0.16	0.30
URM43	0.23[b]	5.0	1/0.9	0.088	0.11	0.16	0.28	—
URM76	0.23[b]	5.0	7/0.32	0.11	0.13	0.19	0.34	—
RG58C/U	0.23[b]	5.0	19/0.18	0.11	0.13	0.19	0.35	—
URM95	020[c]	2.3	1/0.46	0.19	0.23	0.32	0.55	—
RG174A/U	0.27[c]	2.8	7/0.16	0.22	0.26	0.36	0.62	—

Suppliers

(a) Randam Electronics, 12 Conduit Road, Abingdon, Oxon OX14 1DB. Telephone (0235) 23080.
(b) W. H. Westlake G8MWW, Clawton, Holsworthy, Devon. Telephone (0409) 253758.
(c) RS Components. *via* Electromail, P.O. Box 33, Corby, Northants NN17 9EL. Telephone (0536) 204555.

these values of A and B, F must be in MHz to give L in dB/m.

THE TABLE OF DATA FOR AMATEUR BANDS

Using the formula above, I have compiled Table 2 which contains the losses of the ten cables above on the VHF and UHF bands. The data is taken from information produced by the suppliers listed. Cost is given as a rough guide only, as postage prices often vary with the quantity of cable purchased. Inner conductor details are given as, say 19/0.18, which means a flexible conductor consisting of nineteen strands each of diameter 0.18mm. Data presented in **boldface** are quoted values: all others are estimations made by calculation.

CONCLUSION

Although all of this information has been presented before in different forms, this table is especially useful to the amateur. By using the calculating procedure discussed above, estimates of cable loss for different bands can be made, which makes the choice of cable more straightforward.

APPENDIX

Conversion factors between different units

To convert a loss from other units to units of dB/m, multiply the first quantity by the appropriate conversion factor below. The answer will then be in dB/m. This conversion must precede any comparison between cables. The *Neper* is an old and rare unit of loss, calculated like the decibel but based on the natural logarithm.

From	Multiplying factor ⇒ dB/m
dB per 100 feet	0.03281
dB per 10 feet	0.3281
Neper per metre	4.3429
Neper per foot	1.3237
dB per 10m	0.1

REFERENCES

[1] Throughout this discussion, the notation **log(x)** is used to mean logarithm of x to the base of **10**, as is common practice, and it is the **log** button on a calculator which should be used. Computers using the BASIC language usually, use the function **LOG(X)** to return a natural logarithm, which is usually written on a calculator as **ln**. This is **not** the same quantity as **log(x)**. A further complication is that BBC BASIC uses **LN(X)** for a natural logarithm, and a different **LOG(X)** for the base **10** log. Conversions between the two logarithms may be made by the formulae **log(x) = 0.4343 ln(x)** and **ln(x) = 2.3026 log (x).**

[2] Connor F.R., *Waves*, (2nd ed.), Edward Arnold, London, 1986.

[3] Giles T.G. and Jessop G.R., *Radio data reference book*, (4th ed.), RSGB, London, 1977.

[4] Dummer G.W.A. and Blackland W.T., *Wires and RF cables*, Pitman, 1961. □

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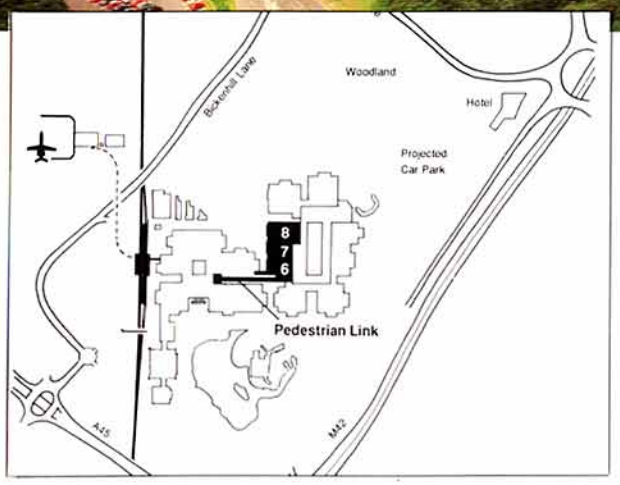

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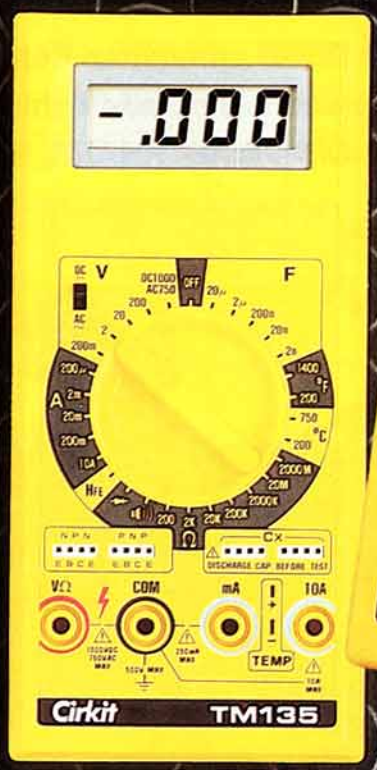

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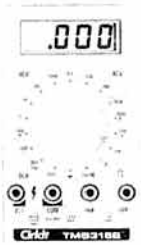

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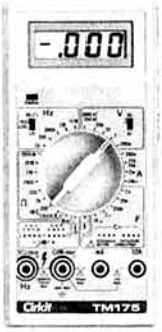

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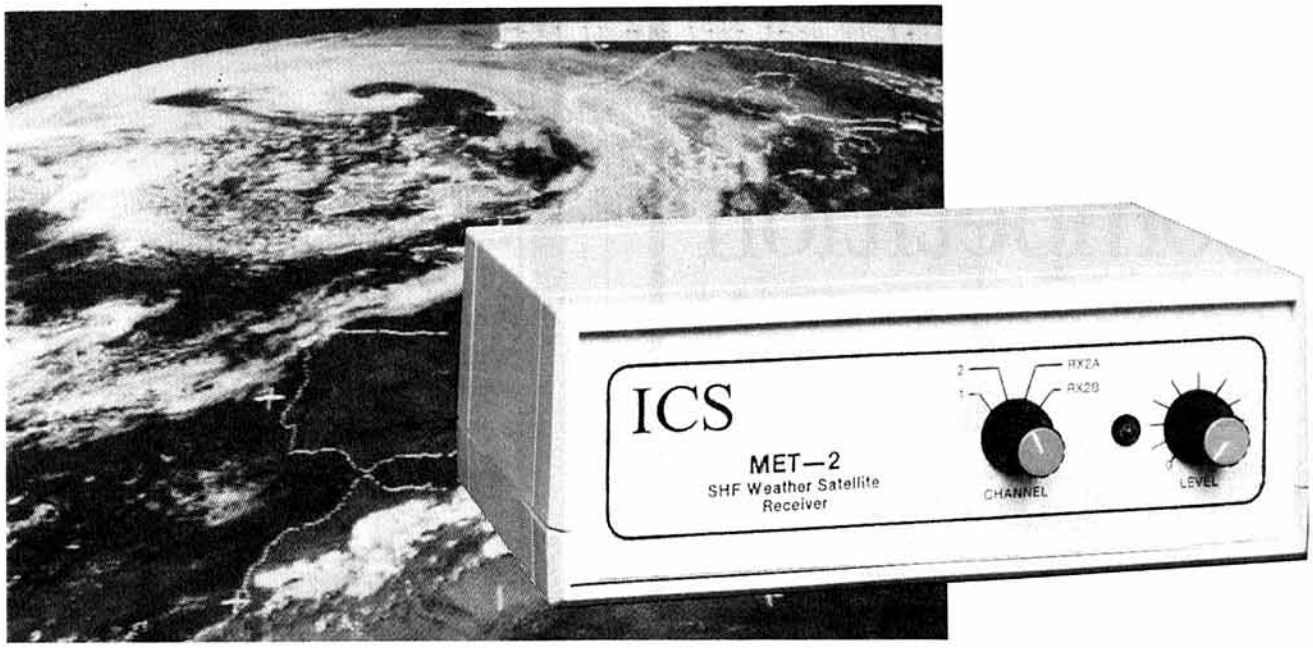

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(*) An additional interface card is required for use with the IBM-PC (£49.95 plus VAT)

MET-2 System: £599.95 plus VAT (£9.50 p + p)

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It caters for every Fax and SSTV mode known, as well as a host of new improved modes of its own. Large chunks of a colour SSTV picture can be lost in the noise, yet the entire picture can still be recovered by the receiving station!

The hardware features multiple, software selectable audio inputs, as well as a built in (not UK approved) telephone modem.

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AVT System: £299.95 inc VAT (£5.00 p + p)

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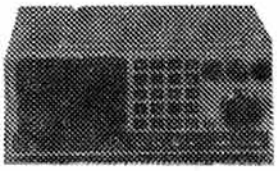

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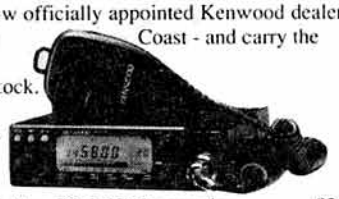

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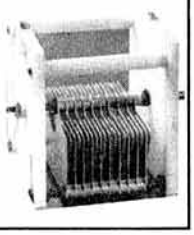

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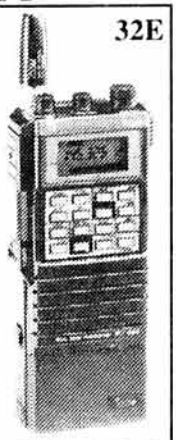

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IC - 3210E 2/70 Mobile	Call
IC - R7000 Receiver.	Call
IC - R71E Receiver.	Call
IC - 725 HF TCVR.	Call
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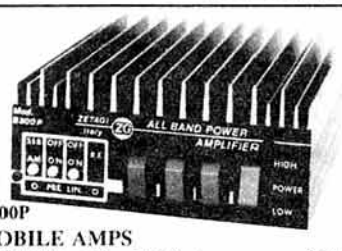

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SATELLITES

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

There is so much news to report this month that we must confine this column entirely to news. At the time of writing, we await the launch, from the ESA's site at Kourou, of the vehicle carrying the commercial satellite Spot-2, the amateur bands satellite UoSAT D and E, and the Microsats PacSat, Dove, WeberSat and LuSat. The launch was as usual delayed from the first intended launch date, viz., January 13. It was then scheduled for January 26 and then rescheduled for January 21. The delay seems to have occurred through a tape recorder failing to pass the final checkout. This tape recorder was located in a not very accessible part of the launcher, and it was anticipated that it would be a long job getting at it and replacing it. This was accomplished sooner than expected, enabling an earlier launch than expected. More of this later. So let's pass to the other main item of interest.

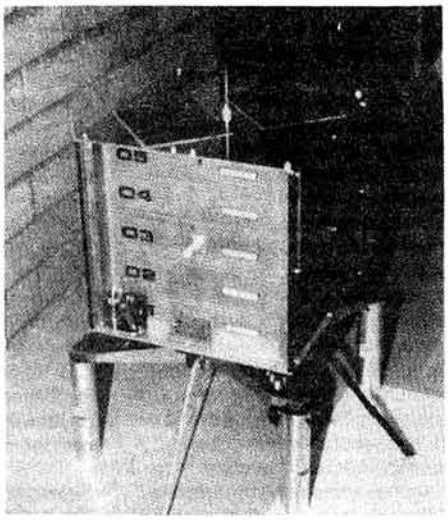
Sir Ranulph Fiennes is organising another expedition to attempt to reach the North Pole "On foot", without the aid of any backup from mechanical means of transport, dogs, resupply from aircraft, etc. Laurence and Morag Howell plus two Soviet explorers will be joining him in this adventure.

Laurence and Morag are hoping to raise funds for the Multiple Sclerosis Society, as part of the expedition team's effort. On previous expeditions they have made contact with hundreds of radio amateurs throughout the world. The remoteness of their base camps naturally attracted a great deal of interest of course, and they confirmed all QSO's with a QSL card (see feature in "News & Reports").

Leonid Labutin, who organised the radio communications for Sir Ranulph's SKITREK Expedition, has requested that satellite communications be used as much as possible. During the Skitrek Expedition, much use was made of amateur satellite communications, using the UoSAT satellites in particular, and Leonid has proposed these should be used again. Hence, AMSAT-UK was drawn into the planning phase of this aspect of the communication systems and AMSAT-UK's Hon. Sec., Ron, G3AAJ, has been attending the planning committees. AMSAT-UK has also agreed to sponsor some of the equipment required. Details of this later. So far the following has been planned: It is proposed to use OSCAR 13 with voice and CW modes from March 1 to May 16, to keep in touch with AMSAT-UK's HQ Station G0AUK. Also, it is hoped to use the DCE Experiment on UoSAT-2 and the Digitalker Experiment to pass information on a general basis to the amateur radio world. They also hope to use RS 10/11 when available. In order to carry out these communications from their restricted expedition environment, a lap top computer compatible with the IBM format is required for the DCE Experiment and for possible Packet Radio experiments. AMSAT-UK has undertaken to supply a TOSHIBA 1200 for this purpose.

Just as if the launch of six new satellites from Kourou was not enough to keep the satellite enthusiasts satisfied, the Japanese hope to launch their second amateur radio satellite in February. The latest launch date given at the time of writing is 7 February, between 0125 and 0200 UTC. The launch will be on an H-1 rocket along with the MOS-1B Maritime Observation Satellite which is an oceanographic research satellite. The MOS will be launched into a 900km orbit with a 99° inclination. JAS-1B, as Japan's second amateur radio satellite will be called, will however, ultimately be put into a 1200km orbit by using the residual propellant of the second stage of the H-1. More about JAS-1B later, as details of it become available. If all goes well, it should be well and truly settled into its orbit by the time you read this. So back to the Microsats.

At the AMSAT-UK Colloquium, held at the University of Surrey in July 1988, Bob McGwier, N4NY, presented a paper on the AMSAT-NA Microsat Program. In this he said that at the 1987 AMSAT-NA Annual Meeting in Detroit, Michigan, the concept for a new type of small satellite was presented to the Board of AMSAT-NA and to some of the technical volunteers in attendance by Jan King, VP for engineering and Chairman of AMSAT. Since then much has happened, both on the design and on the possible application of the ideas that have been developing for this spacecraft series. He said that there had been a constant increase in the demand for research and development in the USA, primarily by the DOD, on small satellites, which are cheaper than the large satellites, are more easily launched due to smaller mass and are more easily replaced upon failure. It was also the case that to carry out scientific research from space on satellites had become exorbitantly expensive. Many organisations find that they have communication needs that are not quite met by commercially available transponders. They are paying very high fees for transponder space to do the job or they are not doing the job at all, since development of a special purpose satellite is beyond their meagre communication budgets. He went on to say that, "the demand for the expertise and technology of AMSAT that has gone into the small satellites has grown beyond our wildest dream".



AMSAT's new-style "Microsats" (courtesy Oscar News — photo: Ross Forbes)

AMSAT-NA approached Arianespace with an idea of how they might be able to launch several small payloads on the upcoming launch of the Spot-2 satellite. Their initial idea, which would have limited this capacity to four small satellites and placed them inside the bottom satellite support, was rejected. Arianespace came back with an alternative design which was the work of a truly inspired set of engineers who wanted a challenge and Arianespace agreed to "visit the possibility of using it on the Spot-2 mission. We were given the signal to assume that we had a launch unless some studies that were to be done showed a problem that no one anticipated", said Bob. He continued "Later our friends at the University of Surrey learned of this approach to the Spot launch. U of S had also been discussing the possibility of getting a piggyback ride on the Spot-2 launch for some time and this seemed like a unique opportunity for the two groups to take advantage of this unprecedented opportunity". Bob went on to say that AMSAT-NA had under construction four Microsats, all in the amateur radio service constraints, for launch on the Spot launch in early 1989. UoSat would like to place their UoSAT D and E satellites on board this launch. It seemed a dream long held by AMSAT-NA, TAPR, UoSAT and amateurs everywhere would be met with a multisatellite launch of the type it was thought only our Soviet colleagues could manage.

AMSAT-NA and the University of Surrey agreed to have one contract with Arianespace, and the project proceeded amicably, so that with the launch of Spot-2, in all, four Microsats and two UoSATs would be launched.

The Microsats are cubical in format, 228mm each side of the cube. They are based on a modular type construction, thus providing greater reproducibility and ease of assembly. Essentially it consists of a computer attached to the intricacies of a spacecraft. The computer and power supply are sufficient to cope with a variety of modular formations. This will allow future planning without having to completely redesign the Microsat for possible future requirements. According to early plans, the Microsats should have the following characteristics:

PACSAT-A is a joint project by AMSAT-NA and TAPR. It is a digital store and forward satellite and has been designed to encourage use of the Packet system. Final details must await further information. It is expected that some time will be needed to test after launch and load software, so some weeks may pass before it can be released for general use. An SSB receiver, capable of tuning 435-438MHz, an FO-12 type compatible 1200 baud PSK demodulator TNC and a terminal or computer are required for the ground station. Down frequency may be around 437.025MHz.

PACSAT-B or LUSAT is a joint project between AMSAT-LU and AMSAT-NA. It is very similar to PACSAT-A. Both the design and construction have involved Argentine and USA satellite enthusiasts. It should have PSK on 437.150 and CW on 437.125MHz.

PACSAT-C or WEBERSAT is a joint project between Weber State College in Utah, USA and AMSAT-NA. It is a 'superset' of PACSAT-A and B. It will have a CCD camera on board as an experiment supplied by Weber State College. Frequency 437.075 PSK.

DOVE or BRAZSAT as it was first designated is a satellite built for AMSAT-PY. It is a mode B satellite with an FM downlink on 145.825MHz. It was planned to be a digitalker with a large memory for audio message storage. It has long been a dream of Junior de Castro, PY2BJO, to see such a satellite in orbit. The idea is for messages to be sent down for reception in classrooms solely as a means of bringing reality to spacecraft education. Only time will tell how much of this planning for these Microsats proves to be a reality. We will keep you informed as we can.

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

The European Community EMC Directive and Microwaves

What do you, as an amateur and microwaver, think about the possibility of being able to *only* buy and use commercial "type-approved" amateur equipment, rather than having the freedom and facility to design and build from scratch or kits or modify surplus equipment? It seems that this is one of the proposals in the recently published EC EMC (electro-magnetic compatibility) Directive. Extensive (and probably expensive) testing for compatibility and immunity is required for ALL electrical equipment, including electronic kits and modified or older, second-hand equipment. As far as the whole of amateur radio is concerned it could mean, if enacted in its present form, the end of experimental construction and operating on which the amateur licence is based (remember the bit about "self-training...."?). The proposed practically-based Novice Licence, in particular, would be at very considerable risk. Indeed, the very essence of amateur radio itself, the freedom to do many things denied to CB and many other licensed users of the radio spectrum, could cause degeneration of the hobby into an "appliance users club" - I was going to say "appliance operators club" until I realised that some modern all-singing, all-dancing "amateur" (?) rigs almost do the operating for you! Microwave frequencies are still the principal part of the spectrum where experimental design and operating are lifeblood of the hobby - thank goodness that there aren't too many black boxes around - yet! Don't be complacent. Cherish this traditional and long standing freedom. Use it fully and fight for it - make your views known to the Government and to me. "Small enterprise" for example the kit makers, could suffer directly and larger industry indirectly, for example by loss of practical skills learned via amateur radio. A gloomy picture? We don't think so, and it wouldn't be too good for UK Ltd. either!

Editorial comment: The situation isn't quite as bad as this because at present the proposed European Community EMC legislation exampts all home built amateur equipment. We have noted the advantage of a strong membership so that RSGB can defend the best future interests of the RSGB. A special high level group has already responded to the EMC directive discussion document and will continue to monitor the passage of the legislation. Members who require further information should check "EMC Matters", specifically June, August and October 1989. "EMC Matters" next month will also feature the proposed EMC directive.

The DTI's green paper *"Electrical Interference, A Consultative Document"* is available, free of charge on application to the DTI, Radio Communications Division, Room 106, Waterloo Bridge House, Waterloo Bridge Road, London SE1 8UA or by 'phone to 01-215-2162. Although it is now too late to make individual representations to the DTI, the Society has already passed its comment on the subject and, no doubt will continue the dialogue over the next several months.

Spectrum Usage Reports

You may remember the Merriman Committee and report which culminated in the rearrangement of the use of some parts of the radio spectrum. In particular you may recall the release of some of the old VHF TV broadcasting frequencies in "low band" — now our six metre band - and reallocation of the higher "ITV" frequencies around 170 - 200MHz to mobile use. Another of the spinoffs was the setting up of two further reviews of the frequencies between 470 and 3400MHz, into which the Microwave Committee and Licensing Advisory Committee had input. The main outcome of these two reviews was a degree of "liberalisation" suggesting that the defence spectrum should be more widely shared with civil users, provided that defence interests were not jeopardised, that pre-emptive management techniques should be explored as a means of increasing this sharing and that, without prejudice to national security, there should be more information made available to responsible commercial users on the broad pattern of defence frequency usage. What exactly this means to the microwave amateur is not yet clear but it will undoubtedly have bearing on our use of the shared bands which we now have. It could mean that there are direct effects on future bandplanning not only in the UK but also in the whole of western Europe. The topic of "common" frequencies, covered later, is perhaps one of the indirect results of such reviews. Both reports are again available (FOC) from The Library, Radio Communications Division, address given above. If you are interested their titles are, respectively, *Report of the Independent Review of Defence Radio Frequency Spectrum (470MHz to 3400MHz), June 1988* and *Report of the Civil Spectrum Review Committee: Stage 1 470-3400MHz, April 1989.* The latter paper indicates that the Microwave Committee and LAC are going to be involved in providing input on amateur usage of frequencies above 3400MHz in the foreseeable future!

Two New Signals on 10GHz

Two new beacons have come on air on the 10GHz band recently. The first is the 10GHz TV "gateway" intended to provide a crossband facility, licensed as GB3TG, from the Milton Keynes area into the 1.3GHz TV repeater, GB3TV, near Dunstable. The objective is ultimately to provide a 10GHz link into the TV repeater and also a 10GHz output from 1.3GHz input to the existing repeater input. At the moment, GB3TG is running in beacon mode only, with video output on 10.150GHz. Dave McQue, G4NJU (RMG Special Projects Co-ordinator), Nigel, G8IFF, Mark, G6XEG, and Colin, G1YEB have installed a Gunn RF head and modulator on a 20ft pole at the highest point of Great Brickhill, near Milton Keynes, and have been doing coverage trials around the area. The 20-slot waveguide antenna is thought to give about 20dB omni-gain, so that ERP from the 10mW Gunn is estimated as 0dBW. This meagre output has produced perfect (P5) pictures from various locations up to 4 to 5km away using dishes or 20dB horns whilst a low gain (10dB) indoor horn produced usable pictures with a few "sparklies" from Dave's QTH. A 90mm by 110mm horn gave just a P5 picture from the same indoor location. Effort is now being directed to the gateway proper which will have input on 10.250GHz. Dave appeals to anyone who might have a circulator available, with SMA terminations, to get in touch (QTHR) with any offers of help. His other need is for narrow bandpass diplexing filters - the 'JVL iris coupled waveguide multicavity design is probably the only type giving adequate performance and suitable for reasonably easy home construction. Just to make your mouth water, volume two of the *Microwave Handbook* has a unique chapter on Filters, by G4KNZ, in which there is an MS-BASIC design program for just such devices: needless to say a printout of the program has been sent to Dave as a "starter"! A 100mW PA "block" will ultimately be available for the transmitter.

The other device which has just come on air is the narrowband beacon GB3CMS on 10368.960MHz from Danbury in Essex. The group concerned, the Essex Repeater Group, have put it on air with reduced power (2mW) from a temporary slotted waveguide antenna, pending an increase in power and a change to the intended four-horn omni coverage. More details from G4GUJ, secretary of the group who, I'm sure, would warmly welcome reception reports. Still on 10GHz, there has been a reawakening of the old proposition of 10GHz inputs into existing 433MHz (speech) repeaters: this subject was raised some years ago but now seems to have received renewed interest from the Repeater Management Group with Dave, G4NJU's, impetus. I must say that this renewed initiative in using the interesting and productive 10GHz band is most encouraging to the Microwave Committee who will, of course, help in whatever way possible. Much of the inexpensive consumer-market satellite TV equipment seems to be providing an easier way into the newer, higher technology needed to produce more potent equipment than the simplest approach still taken (sensibly) by many newcomers to microwaves. Even if SAT.TV hasn't taken off like a rocket with the general public, amateur practices appear to be doing so!

Propositions for "common" IARU Region 1 microwave frequencies

I'll leave you with the thought this month that this subject, due for discussion at the forthcoming IARU Region 1 Conference (with WARC '92 in mind), is likely to recommend adoption of some new "common" frequencies for international narrowband working in many of the amateur microwave bands. Some of these may have been mentioned here before! An extensive study throughout Region 1, initiated by the late Dain Evans, G3RPE and now led by Arie Dogterom, PA0EZ, one of the Region 1 Coordinators, appears to be crystallising on the following changes, targeted on narrowband working in particular:

1.3GHz 1296 - 1298MHz.... as now
2.3GHz? move from 2320-2322MHz to 2400-2402MHz
3.4GHz ? no change
5.7GHz? move from 5760-5762MHz to 5668-5670MHz
10GHz ? move from 10368-10370MHz to 10450-10452MHz
24GHz? move from 24192-24194MHz to 24048-24050MHz

As far as wideband working is concerned, few changes to the present allocations are envisaged, with the proviso that present *shared* allocations are maintained with as few changes as possible. Some of these suggested changes might be difficult to implement in the UK, although the majority are not. I guess that we are ultimately bound to abandon the long-cherished harmonic relationships which are not really imperative any more, possibly trying to "trade" such changes for narrow Primary allocations whilst striving to maintain the present shared wideband allocations. If change is inevitable, why not (to misquote the oft mis-quoted Confucius) lie down and enjoy it!

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

QSL CARDS

In the last few months many listeners have asked me about the workings of the QSL Bureau, and why they had received no QSL cards since June last year. David G3JKB has admitted that there have been some "wrinkles", but to cut a long story short, a large batch of cards were received by Dave G4CYW (the SWL Sub-Manager) on 5 January. They were dispatched immediately and SWL's gratefully picked them from the letter-box with some glee.

For the future, Dave has a promise from Headquarters that parcels of cards for SWL's will be despatched at two monthly intervals.

INTERNATIONAL MARCONI DAY

Following the success of this event in 1989, I now have the rules for this year's IMD on 21 April. Once again, the associated Award Programme is open to listeners. Stations which will be active for the event from 0001 and 2359 on 21 April are K1VV/IMD, VE1IMD, V01IMD, EI2VMD, IY4FGM, GB0IMD, GB4IMD,GB2IMD, IY0TCI, IY1YTM, ZS6RSA, DA0IMD, GB2MDI, GB4MDI and one from France whose callsign was unknown at the time of G4WQL's letter. There are more stations than ever taking part in 1990 and all have a Marconi connection or are being used from sites used by Marconi and his associates many years ago.

To claim the Marconi Award, listeners must hear at least 10 IMD stations. They will be active on 3.5 to 50MHz, including the WARC bands, so there is plenty of opportunity for listeners to join in the fun. A log extract quoting the usual details should be sent to Cornwall Amateur Radio Club at PO Box 100, Truro, Cornwall TR1 1RX. The cost is £1.50 ($3 or 6 IRCs). Award claims will be processed as soon as they are received, but are unlikely to be despatched until the end of May. A copy of G4WQL's publicity release is available from me upon receipt of an sase.

VHF AWARDS — PART II

Last month we looked at the VHF Award scene generally, and concentrated on those Society Awards which were available for listeners on 50MHz. This time we will look at the "Countries and Counties Awards". These are issued to mark successful UHF/VHF achievements. There are receiving Awards for 70, 144, 432 and 1296MHz. Details of the Awards are provided in the accompanying table.

The rules are straightforward enough. All loggings must be after 1.1.61, in respect of old UK counties, or after 1.1.75 in respect of new counties. In Scotland, revisions are with effect from 1.1.76 and each different logging of a station in a Scottish region counts up to a maximum of three per region. QSL cards are required and must be sent to G4OUT, the VHF Awards Manager.

Next month we will look in more detail at the "4-2-70 Squares Awards" as I know that some listeners are unsure of the various classes of Award which are available.

Title of Award	Requirements	
	Countries	Counties
70MHz Standard Receiving	3	30
70MHz Senior Receiving	6	60
144MHz Standard Receiving	9	40
144MHz Senior Receiving	15	60
432MHz Standard Receiving	3	20
432MHz Senior Receiving	9	40
1296MHz Standard Receiving	3	20
1296MHz Senior Receiving	6	40

A Supreme Award is available for holding 3 Senior Awards or 2 Senior Awards and 1 1296MHz Award.

VE8RCS — PART II

Last month, we started our look at VE8RCS, the club station of the Polar Amateur Radio Club. Outside the main complex, there is a gym. This is equipped with a basketball court, a sauna, suntan lounge, weightlifting facilities, and a 10-pin Bowling Alley! If that is not enough, there are two curling rinks. Upstairs is VE8RCS.

All equipment in the shack is paid for by personnel on site — no tax payers' money is involved. The shack now sports a Yaesu FT767GX. Mike Parent BRS88763/568 was elected President a few years ago. He was also the QSL Manager, dealing with 30-50 direct cards a week. Dollar bills and IRCs are most welcome and mean a speedy response. The station is allocated about $30 a week to cover postage, but it is hardly ever sufficient.

The station is quite active in major contests, but "the bread and butter" is making QSOs and the operators get a kick out of giving people Zone 2 or VE8 for the first time. VE8RCS is already active on SSB, CW and RTTY. QSOs are invariably short as, sometimes, when conditions are favourable, pile-ups can last several hours with over 100 QSOs an hour the norm.

It is likely that the station will get onto Packet, AMTOR, SSTV, and into Satellite Communication soon. An QRP FT726R has already been purchased for that specific reason, but bugs have still to be ironed out. But Mike has put it through its paces on 21MHz to see what it would do. He was surprised when a KC4 on Palmer Station, South Pole came back to a call. This proves yet again that you do not need vast amounts of power when you are a DX station!

Mike hopes to be on the air soon from his home in VE3 — until then he is content to be an active listener, supporting Society listener events whenever he can.

EIGHTY METRE RECEIVER

Peter McBeath BRS44030 is a long established member of the Society whose equipment is all home-brew. He has three DC receivers for the amateur bands and one superhet for 80 metres. Three other superhets also cover from 2,000m to 9.5m. You may have guessed from this that his main interest is in construction. He has decided to let us share in the construction of his 80 metre receiver.

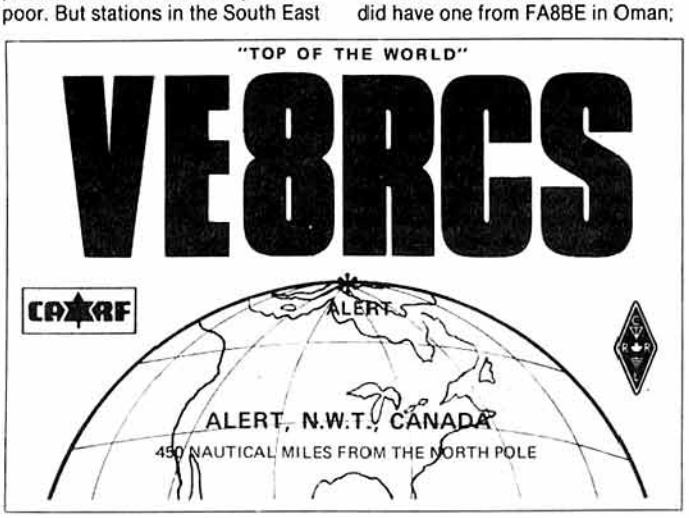
It is a dual conversion superhet for 3.5 to 3.8MHz, designed to meet the needs and pocket of the OAP, and constructed for the technical curiosity.

The receiver consists of five modules. The AF Amplifier is based around the LM386 coupled to a BC108. The IF Strip is straightforward enough with BF184 and BF185 on .1 perforated board. The mixer uses a 40673 and the oscillator a BF185, and they are set up on .15 perforated board. The 1.6MHz oscillator uses a BF180, an IF transformer, and the coil. It appears that the coil is no longer made and a book on coils (circa. 1960) suggests that such coils were almost impossible to design, but Peter triumphed. The rather haphazard appearance of this module was achieved by taking one component at random and soldering to the rest! The BFO was salvaged from a failed project. As for the power supply, it is just one PP3 for the BFO, and a PP7 for the other modules. The retail cost of the whole project was about £15, but the variable capacitors were rescued and modified from old radios.

It seems that its performance is inferior to the DC receiver, its predecessor, and selectivity was poor. But stations in the South East have been heard from Peter's QTH in Northumberland. Peter is not prepared to enter into correspondence about this project, but it was constructed mainly to see whether his very original design would work. It did, no matter how good, and that gave Peter a good deal of pleasure.

ALTERNATIVE XMAS COMPETITION RESULTS

I was pleasantly surprised by the response to my Christmas teaser. Eleven entries were received, most from established amateurs and listeners who enjoyed the task of reminiscing to discover the answers. A number of entrants spent time to explain some of their early memories, including GW3GWX whose first introduction to Amateur Radio was hearing D2IU and D2LC; G1EMD remembered seeing a photograph of a QSL card from FT4AI in the October 1959 "Short Wave Magazine" with a caption to the effect that the equipment was broken by German soldiers; BRS31976 tried a 1952 Callbook to verify his recollections, but only found a few of the callsigns listed; GM3JDR pined for his old SWL logs as BSWL3111, and maintained he could still hear MF2AA and AR8AB on 28MHz!; G3BMM had QSL cards to help with eight of the callsigns listed; G8KDQ reflected listening on a homebuilt O-V-1 receiver, and listening whilst in the Army in Palestine on a Hallicrafters Sky Champion. He never had any of the QSL cards mentioned, but mentioned that he did have one from FA8BE in Oman;



and G3DCC who actually showed me enough exotic 1940's QSL cards for me to repeat a similar competition next Christmas! Before I provide the answers, I must say that "FG3GP" should have been FG3FP, and "CZ2AC" should have been in Monaco, but it appears that the young lady operator was found to actually have been operating from Northern Italy.

Now for the answers and the winner. The callsigns were as follows:

D2IH — British Forces in Germany
AR8AB — Lebanon
MF2AA — Trieste
CZ2AC — Monaco
C8YR — China
EK1AD — Tangier
FG3GP — Senegal
FT4AI — Tunisia
FKS8AD — French Zone of Austria
HE1EO — Liechtenstein
J9ABL — Ryukyu Islands
LI2BO — Libya
MD5AK — Suez Canal Zone
NY4ZQ — Guantanamo Bay
VS71T — Ceylon

All the entrants showed a good deal of prowess in naming the countries, but the winning entry — with 14 points out of 15 — came from Philip Davies G1EMD. He will be receiving a suitable prize.

COLLECTING ARMY EQUIPMENT

Bob Francis BRS88021 invited me to his talk at a local radio society when he showed a small proportion of the Army radio equipment that he has collected over the last few years which forms the basis of his Military Radio Museum. He has a fully equipped caravan in his drive which houses a vast selection of working Army equipment. He also has a vast library of workshop manuals and technical handbooks which he wishes to expand, and a growing list of spares for many items of military equipment.

Some of the equipment which graces his shack include an 18 MKIII set; an R1155B; suitcase spy sets; 31, 38, 52, 62 and 88 sets; some Argentinian equipment from the Falklands War; a P44; an ARC44 and an ARPCM77 manpack.

Bob would like to hear from any reader who has information on German wartime transmitter codings, similarly, he is willing to provide photocopies of any literature from his reference library. His address is 163 Sherwood Park Avenue, Blackfen, Sidcup, Kent DA15 9JG.

FINALE

Once again, space has beaten me. Please let me have information for the next "SWL" by Monday 26 March. As usual, "Spectrum Analysis" covers all the latest DX news available from listeners.

NEIL LASHER, G6HIU
40 Farm Road, Edgware, Middx
HA89LT

RECENT STORMS

The few days after the recent storms (Jan 25th), left the packet network non-operational in the Southeast. Many mailboxes and nodes closed either due to lost antennas or loss of power. The recent RSGB PWG census of all mailboxes along with the maps, and information generated by header analysis, helped dramatically in remaking paths and getting the mail moving once again. At one stage all paths linking North to South were out of action and as I write some still are. Compliments must be paid to the many SysOps who, during the few days after the storm, braved high winds to climb on roofs and towers to repair or replace antennas lost to get the network back into operation.

MICROSATS

Ariane was launched successfully on 22 January, a few days earlier than I stated last month. At this time I cannot bring you any operational details other than telemetry is being received by many stations on the ground using the frequencies and modes I have published.

Signals from the Dove satellite, have been described as "colossal" which is very good news for both packet and satellite users. More news next month.

BACK IN TIME

This month, instead of going back in time, I am going forward... Captain Slog Stardate 46 15.3 all the way to Startrek IV. Those of you already on the network would probably have seen mention of packet radio detected in Startrek IV The Movie. The full report here from Lt Uhura sorry, Bob McGwier, N4HY as reported in the Packet Status Register Issue #37.

Several months ago, Harold Price, NK6K, challenged me to demodulate what he thought might be HF packets in Startrek IV. During the scenes where Scotty is valiantly trying to beam both Chekhov and Uhura back from the U.S.S. Enterprise, where they have been stealing nuclear vessel high speed photons, Scotty is having a hard time hearing them. One of the sources of interference is what appeared to be HF packet. Always being one to rise to a challenge, I took on the job of doing some fancy Digital Signal Processing footwork. Almost from the first I was certain that it must be an HF packet since my very first demodulator attempt clearly revealed flags before the start of frame and at the end of frame. It had to be HDLC of some variety.

Several things impeded the effort, including Scotty's voice on top of the packets, some SSB from 20 meters was also nearly on top of the signal. All this had to be filtered out. I spent an hour of time on the CRAY-2 at work and used the fanciest FSK demodulator I could write; finally I had a noisy baseband signal plotted on paper. After all of the filtering was complete and after building a demodulator for the badly mistuned signal, (almost 900Hz below "normal") I took all the bits to Phil Karn, KA9Q — he in turn decoded the NRZI data and proved beyond a shadow of doubt that the signal was HF amateur packet radio. The stations concerned were WA8ZCN-0 sending an RR frame to N6AEZ on 20 meters. After contacting those stations the logs back up the detail.

Bob went on to thank Harold for the challenge and Phil Karn for the help.

PWG

The RSGB's Packet Working Group met last month and discussed, among other matters, "Network Management". The guidelines published on the packet network and in Connect International have now been fully endorsed. If you missed them first time around they will be back on the network very soon.

Other matters discussed were the packet related papers being submitted to IARU conference, licence applications and hierarchical addressing. During the discussion on addressing it was decided to endorse the "white pages" system of addressing. This will be on the agenda of SysOp 9 to be held in Wolverhampton. More news of SysOp 9 and an explanation of "white pages" in next month's column.

One of the technical matters discussed at the meeting was the importance of limiting peak deviation to a maximum of 2.5KHz. Watch for a recent bulletin on the network from PWG Chairman GM4AUP Ian Suart, which contains all the information you need to check your peak deviation.

Who's who on the Packet Working Group

Chairman: Ian Suart, GM4AUP (QTHR). Tel: 0236 65937. (SysOp GB7MAC).
Mailbox Coordinator: John Theoderson, G4MTP (QTHR). (SysOp GB7DV).
Site Clearance: Dave Hough, G4WRW (QTHR). (SysOp GB7FC).
Other PWG members: GO/KBKA (GB3UP); GOEDJ (GB7YAX); G3VPF (GB3/GB70P); G3XDV (GB7HQQ); G4CCC (RMG); G6HIU (GB7HIU; G8IMB (GB7IMB); GBKHV (GB7AP); GBLWY (GB3KP).
Corresponding Members: GiDIL, G3MRX, 63NRW, G3PLX, G3RUH, G3RWL, G3XTT, G3WDG, G3UBX, G4ASR, G6DLJ, B6KVK (TCP/IP address coordinator), G80HN.

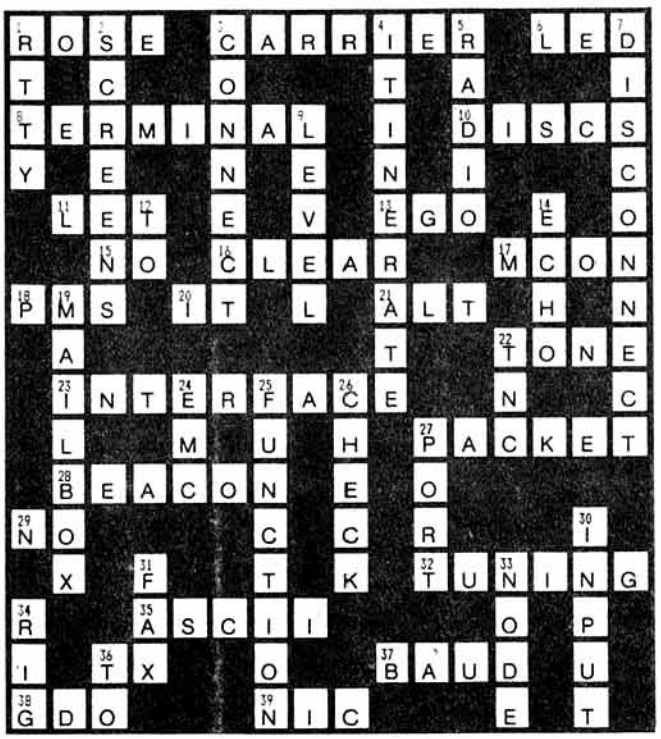
THE GOOD, THE BAD & THE ABSOLUTELY RIDICULOUS

New in the column from this month. I hope to publish the four best mail routes in the country for the previous month along with the four worst. Thanks are due to the efforts of Mike Dennison G3XDV, who has spent many hours analysing mail headers (with the help of a computer), if you are mentioned at the top then very well done. If you are at the bottom, there may be a very good reason but it may still be worth contacting the PWG for information about other routes.

Times are shown in minutes from the time a message is received to the time it reaches the next mailbox. The most recent ten figures are then averaged. The previous months' times shown in brackets.

I hope you find these as interesting as I have — if you want a full copy of the month's times showing all the main routes, then drop me a line.

December				
1st	GB7DAD	> <	GB7LRG	17
2nd	GB7HSN	> <	GB7HIU	22
3rd	GB7HIU	> <	GB7HHH	36
4th	GB7YAX	> <	GB7WRG	36
4th	GB7NUN	> <	GB7SUT	420
3rd	GB7LRG	> <	GB7SPV	487
2nd	GB7SUT	> <	GB7ERA	601
LAST	GB7SUT	> <	GB7AAA	733
January				
1st	GB7LIV	> <	GB7OAR	20 (62)
2nd	GB7HIU	> <	GB7HHH	29 (36)
3rd	GB7DAD	> <	GB7LRG	30 (17)
4th	GB7HSN	> <	GB7HIU	33 (22)
4th	GB7BMX	>	GB7KEV	827 (NA)
3rd	GB7CQV	>	GB7BMX	1460 (NA)
2nd	GB7LRG	>	GB7SPV	3681 (487)
LAST	GB7SUT	>	GB7SPV	8199 (NA)



RESULT OF XMAS CROSSWORD

I was astonished at the number of entries, but after careful checking we have a winner.

Robin Bye, G3XVW from Tadworth in Surrey wins first prize of a TNC kindly donated by the Pickets Lock Rally Committee.

Second place to Peter Wells G0JEW from Lutterworth, Leics. He wins a voucher for £30 kindly donated by Phil Bridges of Siskin Electronics.

For those of you who are still stuck here is the full completed crossword with answers.

RONALD M COWAN, GM4SRL
516 Clarkston Road, Netherlee, Glasgow G44 3RT

USER SERVICES

It is now just over a year since RAYNET's user services were increased to include the coastguard, the health boards, and all government departments. Contact should already have been made at county or region level with these new users, and groups are now starting to work with them at local level. This should, of course, not be to the detriment of relations already built up with our other users, as it would appear that they are increasing their calls upon our services. The emergency services hold regular table-top and actual exercises, RAYNET is being increasingly invited to observe or participate in these. Training for all is, of course, one of our prime aims, and some groups have already designated a training officer who ensures that all group members receive the necessary practice to gain the skills required out in the field. As RAYNET members are volunteers, and may well require to be released from work as no timetable can be written for emergencies, it is important that all are proficient in dealing with any situation which might arise, as any one member might well be in the 'hot seat' until others arrive.

EUROPEAN SPECIAL OLYMPICS

RAYNET has been asked to provide communications at this major event which will be hosted by Strathclyde Region between the 20th and 27th of July. Handicapped athletes from over 20 countries will be participating, and it will be necessary to provide a link between all the centres and the buses linking them.

As it is necessary to plan the operation well in advance, forms have already gone out to all RAYNET members in Strathclyde, and also to those who participated in the games at Leicester last year. It is likely that additional operators will be required, and group controllers who have members who would be available to work at the Strathclyde games are asked to contact GM4SRL.

The RAYNET Column will be compiled by Ronnie Cowan, GM4SRL, the member of the RAYNET Committee with responsibility for Press Relations. A good supply of news from around the country is necessary to maintain the article, and group newsletters, or other relevant news would be welcomed.

ICOM

Photograph shows IC-24ET life-size.

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MB-30	Mounting bracket
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CONTEST NEWS

RULES

COUNTY ROUNDUP CONTEST 1990 - RULES

The Guidelines for HF Contests, as published in January 1990 edition of Radio Communication will apply.

1. Eligible Entrants: All paid-up members of RSGB resident in the UK.

2. Sections: A - SSB, B - CW, both single-operator only. Entrants may submit logs for either or both sections.

3. When:
0800 - 1100gmt, 19th May 1990 - SSB
0800 - 1100gmt, 20th May 1990 - CW

4. Frequencies: Contacts may be made on the 3.5 and 7MHz bands.
Section A - SSB: 3.600 - 3.775MHz and 7.050 - 7.100MHz
Section B - CW: 3.520 - 3.560MHz and 7.010 - 7.040MHz

5. Exchange: RS or RST plus serial number commencing with 001 in each section, plus county code as published in the January 1990 edition of Radio Communication.

6. Scoring: Three points for each completed contact. Points may be claimed for contacts with stations located outside the UK. Stations may be contacted for points once on each band in each section (possible 4 QSOs). The final score is given by multiplying the total of the points scored on both bands added together, by the total number of counties worked on both bands added together. Each section is to be scored as if it were a separate contest. NB - There is no multiplier for overseas COUNTRIES - only for UK COUNTIES. Scores for both sections will count towards the HF Contest Championship.

7. Entries: Separate logs are required for each band in each section; please ensure that a completed and signed Cover Sheet accompanies each entry. Checklists of callsigns ("dupe sheets") are not REQUIRED for this event although they are always welcomed. Logs must be sent to HF Contests Committee, PO Box 73, Lichfield, Staffs, WS13 6UJ, and must be postmarked no later than 15 days after the contest.

8. Awards: Certificates of Merit will be awarded to the leading three stations in each section.

RESULTS

CLUB CALLS CONTEST ("CCC") 1989-RESULTS

Conditions were good on 11th November, except for those in Scotland, and activity was high until the last hour. A total of 34 Club callsigns appear in the logs, in comparison with only 19 the previous year. It was a pity that not all of the operators submitted logs. Nonetheless the contest was successful in achieving its aims. It brought Clubs into contact with one another and gave members a chance to meet up with old friends. It was a relaxed fun evening which brought many inexperienced and Class 'B' operators on to Top Band for the first time. Denby Dale & DARC had three SWLs doing the logging (and stated that last years Class 'B' ops were all new G0s thanks to the interest generated by the contest). Three of the five operators of G2BBC were Class 'B' licencees, and many other clubs reported similar participation.

It was pleasing to hear the Young Amateur of the Year - Ted Walker, G0KAQ - operating from Warwick School and using Gerald Frykman's call G0GNF to achieve a creditable 12th position.

Surprisingly, as the rules were very explicit, many people had difficulty getting the scoring right, and in order that everyone should start on an even footing, ALL the logs were rescored by the adjudicator. Those who claimed points for working Club stations that weren't, lost points; those who hadn't claimed had their scores increased.

Congratulations to the Lichfield Club G3WAS, the Ariel Radio Group (Birmingham) G2BBC, and the Halifax & DARS G2UG. Keep up the friendly rivalry. Thanks also to all those further down the listing for putting in their logs - without logs there is no contest.

Equipment used by the leaders:-

G3WAS: TS940S, Dipole @ 110ft and a 110ft Vertical
G2BBC: IC735, 400ft inverted-V with centre up 140ft
G2UG: Drake TR5/R7, Sloping Dipole

Comments:-
A happy, well-mannered contest - G2UG; A treat of a most social evening - GW4CC; Excellent contest as usual - G3RR; Extremely good fun - G4NHT/P.

If your club has not yet participated in this event, why not give it a go later on this year?

G4JKS

TRANSMITTING SECTION

Posn	Call	Score	
1	G3WAS	1462	C*
2	G2BBC	1402	C
3	G2UG	1394	C
	G3VER/P	1376	C+
4	G0JJN	1294	C
5	G4CCD/P	1288	C
6	G4HTD	1277	M*
7	G6RC	1269	C
8	GW4CC	1252	C
9	GW0EJE/P	1212	C
10	G3RR	1199	C
11	G3SJJ	1160	M
12	G0GNF	1136	M
13	G4NHT/P	1120	C
14	G3ASR/P	1062	C
15	GM4GRC	1046	C
16	G3FNM	996	M
17	G3PRC/P	989	C
18	G0DVE	986	M
19	G3RSC/P	975	C
20	G0BWD	950	C
21	G4CRC/P	945	C
22	G4WEY	933	M
23	G3RTE	913	M
24	G3AYC	897	C
25	G3NKS	881	M
26	G3SJE	847	M
27	G8CA	842	C
28	G5BK	841	C
29	G3UES/P	831	C
30	G3SRC	829	C
31	G3CQR	826	M
32	G0BRC/P	824	C
33	G3KDB	798	M
34	G4DDX	795	M
35	G3CMH/P	761	C
36	G3RAL/P	696	C
37	GM3RAO	658	M
38	GM3HAM/P	608	C
39	G0MFF	573	C
40	G0ACK	559	M
41	G4FRE	554	M
42	G3OLB	522	M
43	G3LET	489	M
44	G4LRT	472	N*
45	G0FAB	448	M
46	G3WPX	435	M
47	G3EAO	420	M
48	GW3JI	390	M
49	G3NLY	282	M

* = Certificate Winner
C = Club Call
M = Member
N = Non-member

RECEIVING SECTION

1	BRS28198	1020	*
2	G7AOU	436	

Check Logs received with thanks from G3JUL, G0EHR and G0JOH

2ND 28MHZ CUMULATIVES 1989 - RESULTS

The overall winner and also the leading entrant in the SSB section was (by a very substantial margin) G4NOK, the North Wakefield Radio Club station, operated throughout by G4RCG. The CW section was won deservedly by G4WVX, a very regular supporter of the Cumulatives. G4AGQ/M continues to amaze, achieving second place in the combined section, using only a quarter-wave antenna, or a mobile whip, and submitting (again) a perfect, error-free log. On the subject of aerials, no two stations reported using the same thing - G4NOK had a home-brew 5-element yagi ... GM4OBK a dipole at 20 feet agl!

Standards of log-keeping were very high, and there was only one unmarked duplicate to be found.

Conditions for the event were generally good, with much DX (primarily from the Americas, but also including 2 ZL4s) appearing in the logs. G4OJH concentrated on DX, and worked comparatively few UK stations, but in general the leaders found it more profitable to work Gs. GM4OBK comments "DGL is probably a new county for many on 28MHz - How about going for the RSGB 28MHz County Award - its a great challenge for G stations."

Many thanks to all those who sent in entries and to G2FWX, G4QK and GB0CSR(G3XWK) for their checklogs; hope to see you all again (with some new faces) next time.

G3MCX

SECTION A - CW

Posn	Call	Cty	9/10	17/10	25/10	2/11	10/11	Total
1	G4WVX	BKS	185	131	CK	CK	134	450
2	G4NOK	YSW	181	135	89	CK	-	405
3	G4AGQ/M	SXW	97	106	-	165	CK	368
4	G3JJZ	LDN	138	-	CK	100	117	355
5	G0BON	BRK	120	116	CK	100	-	336
6	G2HLU	DOR	123	-	60	42	-	225
7	GM4OBK	DGL	182	-	-	-	-	182
8	GM4GRC	FFE	119	39	-	13	-	171
9	G3WRR	LDN	-	-	-	55	52	107
10	GM4UBJ	SCD	22	13	-	-	32	67

SECTION B - SSB

Posn	Call	Cty	9/10	17/10	25/10	2/11	10/11	Total
1	G4NOK	YSW	439	372	CK	245	-	1056
2	G4OJH	AVN	244	287	94	-	-	625
3	G4WEY	DOR	159	261	CK	135	CK	555
4	G4AGQ/M	SXW	146	135	-	141	CK	422
5	G3UJG	SOM	CK	87	52	68	-	207
6	G3JJZ	LDN	55	-	CK	64	81	200
7	GM4GRC	FFE	-	110	-	42	-	152
8	GM4UBJ	SCD	66	43	-	42	CK	151
9	G2HLU	DOR	55	-	26	45	-	126
10	GM4OBK	DGL	113	-	-	-	-	113
11	G3WRR	LDN	-	-	-	35	68	103

SECTION C - COMBINED

Posn	Call	Cty	9/10	17/10	25/10	2/11	10/11	Total
1	G4NOK	YSW	620	507	CK	311	-	1438
2	G4AGQ/M	SXW	243	241	-	306	CK	790
3	G3JJZ	LDN	193	-	CK	164	194	555
4	G2HLU	DOR	178	-	86	87	-	351
5	GM4GRC	FFE	119	149	-	55	-	323
6	GM4OBK	DGL	295	-	-	-	-	295
7	G3WRR	LDN	-	-	-	90	120	210
8	GM4UBJ	SCD	88	56	-	CK	45	189

SSB FIELD DAY 1989 - RESULTS

The adjudicator is pleased to report that this year's entry showed a marked increase in the number of logs received. Perhaps more pleasing still is the fact that logs were received from several clubs who do not usually enter this contest. Conditions, however, were not as good as in 1988 and scores were considerably down, despite the increased participation.

The winners of the open section were the Windy Yett Contest Group, GM5VG, who amassed their score of 777,258 points from 1306 QSOs and 174 multipliers. Second were South Manchester, GD3FVA, with 648,923 points and Swansea ARS, GW4CC, with 506,480 points were third. (It is interesting to note that GM5VG were the open section runners-up, and GD3FVA the restricted section leaders in the 1988 event). This year's winners of the restricted section were Liverpool & DARC, G3AHD, with G3GRS and G3NJA in second and third places respectively.

The standard of log-keeping was good and, for a change, there were very few unmarked duplicate contacts in the logs. A great many of the errors for which points were deducted appeared to be due to mistakes in transcribing from the original log to entry sheets rather than errors "off air"-mistakes which could be avoided with just a little extra care.

Details of the aerials used by the leading stations always make interesting reading:

GM5VG	3.5MHz	Full-wave Delta-loop
	7.0MHz	Two half-wave sloping dipoles
	HF	5-element Tribander
GD3FVA	3.5MHz	201ft rotatable Inverted Vee
	HF	3-element Tribander
GW4CC	3.5MHz	Dipole
	7.0MHz	Dipole
	HF	3-element Tribander

Comments received with logs:

First time in years we have entered an HF contest. Enjoyed by all. The only problem was the collapse of the caravan suspension! - G4APD

We had forgotten what bread and sausages with lashings of ketchup tasted like when cooked in the open. - G3PGU

Our most brilliantly organised event to date, or so we thought. We had everything ... except the kettle. - GM5VG

Our first entry in the big league, and we

are pleased with the outcome. - GD3FVA

Weather was superb for our first foray into this contest. - G4FDS

We were on line for our fourth consecutive win when terminal sickness of the generator brought an untimely end at 0300hrs. - G3WAS

In past years our generator has failed during the night. This year it failed before the start, but a quick trip home to get an emergency replacement meant only one minute lost. - G4IRC

Finally, the adjudicator would like to apologise once more for the fact that the address for entries was omitted from the contest rules. It did appear a month later, but thanks to all who took the trouble to phone or write for details. Thanks also for all the kind words and encouragement for the Contests Committee.

G3KDB

OPEN SECTION

Posn	Call	Name of Group	3.5	7	14	21	28	Totals	QSOs	Score
1	GM5VG/P	Windy Yett CG	566/13	819/29	1343/54	1096/45	643/33	4467/174	1306	777258
2	GD3FVA/P	South Manchester RC	462/13	833/27	1178/40	875/51	403/32	3751/173	1099	648923
3	GW4CC/P	Swansea ARS	662/12	938/25	1178/40	850/31	268/22	3896/130	1062	506480
4	G4ADD/P	NDX Contest Group	438/8	704/22	1323/43	1236/39	117/17	3818/129	1100	492522
5	G4FRS/P	Farnborough & DRS	930/21	692/18	1128/34	601/26	212/25	2563/124	975	441812
6	G4NOK/P	Pontefract & Wakefield	289/10	299/20	919/33	1759/45	124/16	3390/124	1007	420360
7	G3XEP/P	White Rose ARC	856/18	843/22	709/32	936/28	150/19	3494/119	1017	415786
8	G4HRS/P	Horsham ARC	890/21	987/23	773/33	671/30	102/12	3423/119	898	407337
9	G3SFG/P	Southgate ARC	544/10	804/17	913/31	1049/32	191/19	3501/109	995	381609
10	GW3EOP/P	Port Talbot ARS	172/7	575/16	2176/59	544/23	5/1	3472/106	1023	368032
11	G3PRC/P	Plymouth RC 'A'	470/9	316/10	1131/40	852/36	238/16	3007/111	812	333777
12	G3WAS/P	Lichfield ARC	229/12	359/22	986/36	797/27	142/19	2513/116	758	291508
13	GW4EZW/P	Newport ARS	312/8	431/14	1099/39	551/32	176/20	2569/113	691	290297
14	G3ASR/P	Edgware & DRS	769/14	434/12	530/27	917/24	249/23	2899/100	792	289900
15	G4IRC/P	Ipswich RC	835/17	456/11	665/27	642/32	91/15	2689/102	711	274278
16	G3GHN/P	Clifton ARS	673/12	567/17	660/30	519/32	117/17	2536/108	665	273888
17	GU3HFN/P	Guernsey ARS	65/4	188/10	466/23	1352/36	369/19	2440/92	769	224480
18	G3NWR/P	Wirral ARS	774/15	591/13	621/27	331/24	106/9	2423/88	635	213224
19	G4ARN/P	Norfolk ARC	729/12	948/16	661/29	94/11	44/7	2476/75	648	185700
20	G4RSE/P	Sears CG	836/14	632/15	865/21	253/15	8/2	2604/67	656	174468
21	GM4TMS/P	Stirling & DARS	308/6	518/13	532/16	713/18	346/16	2417/71	683	171607
22	G0JJN/P	Hucknall Rolls Royce	141/5	259/12	259/13	1133/29	65/11	1857/70	580	129990
23	GI3XRQ/P	Bangor & DARS	153/6	234/11	494/23	344/19	419/20	1644/79	459	129876
24	G4GXP/P	Kidderminster & Dist	730/13	337/12	359/15	262/8	127/12	1815/60	450	108900
25	G4ECT/P	Cheshunt & Dist	398/9	210/7	524/20	223/16	56/5	1411/57	355	80427
26	G0INF/P	Sheffield ARC	188/7	296/10	542/15	63/7	-	1089/39	246	42471

RESTRICTED SECTION

Posn	Call	Name of Group	3.5	7	14	21	28	Totals	QSOs	Score
1	G3AHD/P	Liverpool & DARC	592/14	700/21	838/33	506/21	24/5	2662/94	675	250228
2	G3GRS/P	Gravesend RS	629/14	668/20	662/28	254/25	86/17	2299/104	534	239096
3	G3NJA/P	Torbay ARS	664/14	580/18	422/21	505/28	90/13	2261/94	572	212534
4	GM4TOO/P	West of Scotland	718/13	302/11	627/28	342/21	122/14	2111/87	544	183657
5	GJ3DVC/P	Jersey ARS	365/9	326/12	954/35	427/27	4/2	2076/85	595	176460
6	G3PGU/P	Stratford on Avon RS	845/12	397/15	382/16	358/26	148/11	2130/80	518	170400
7	G0FDX/P	Central Lancs	616/13	522/16	394/22	496/19	36/6	2064/76	511	156864
8	GM0ADX/P	Kilmarnock & Loudoun	882/11	647/16	516/24	319/14	5/1	2369/66	568	156354
9	G4FOX/P	Melton Mowbray ARS	620/14	725/19	310/16	196/9	149/16	2000/74	510	148000
10	G3RSC/P	Sutton Coldfield RS	597/10	1182/23	285/15	97/9	19/4	2180/61	549	132980
11	G3GLL/P	Colchester RA	350/5	331/18	738/30	281/21	9/3	1709/77	399	131593
12	G4FUH/P	Scunthorpe ARC	555/11	297/14	557/26	241/18	15/5	1665/74	402	123210
13	G3BPK/P	Douglas Valley ARS	536/10	338/12	481/19	332/22	48/6	1735/69	417	119715
14	G4FUR/P	Wimbledon & Coulsdon	487/11	369/15	234/16	269/21	142/14	1501/77	399	115577
15	G6RC/P	Crawley ARC	375/9	583/15	628/26	123/9	27/6	1736/65	427	112840
16	G4HRC/P	Havering & DARC	546/11	608/17	667/22	62/8	-	1883/58	472	109214
17	GM3STU/P	Unst RC	455/8	329/14	677/23	206/14	50/3	1717/62	449	106454
18	G4APD/P	Rugby ATS	328/11	441/13	213/13	382/26	82/10	1446/73	365	105558
19	G3TRF/P	Maidstone YMCA ARS	360/6	457/11	522/22	412/18	15/2	1766/59	421	104194
20	GM0GNK/P	IBM Greenock	622/11	433/13	245/12	406/16	69/4	1775/56	401	99400
21	G4ARE/P	Exeter ARS	551/10	428/14	446/22	246/9	7/2	1678/57	384	95646
22	G4GCT/P	North Bristol ARC	577/12	587/13	316/20	62/7	55/5	1597/57	371	91029
23	G4FKA/P	Sutton & Cheam RS	804/14	384/11	117/9	288/15	31/7	1624/56	389	90944
24	G6QM/P	Queen Mary CG	688/13	213/9	471/23	158/9	5/1	1535/55	342	84425
25	GM3ZRC/P	Greenock & DARC	515/9	389/16	605/20	90/6	-	1599/51	404	81549
26	G4BLI/P	Plymouth RC 'B'	320/9	489/14	673/26	22/4	-	1504/53	377	79712
27	G3VGG/P	Bromsgrove ARC	390/7	335/13	275/18	204/12	96/7	1300/57	312	74100
28	G6UQ/P	Stockport RS	238/8	387/8	331/17	184/12	52/11	1192/56	329	66752
29	G4CDD/P	Denby Dale	141/7	205/9	497/21	168/12	11/3	1022/52	279	53144
30	G0ALI/P	Wordsley Dist Guides	268/8	221/9	316/17	144/13	44/4	993/51	227	50643
31	GM4HEL/P	Helensburgh ARC	-	278/8	841/27	63/6	5/1	1187/42	350	49854
32	G4PRS/P	Poole RA	144/7	337/11	180/10	112/12	83/7	856/47	266	40232
33	G0BHR/P	Deerstalkers CG	212/7	210/6	319/10	156/8	45/3	942/34	229	32038
34	G0BRC/P	B.R.A.T.S.	526/12	-	-	-	-	526/12	160	6312

DECEMBER 1990 FIXED STATION AND AFFILIATED SOCIETIES CONTEST.

What a contest! DX for all (especially if you lived in County Durham). Although there were some people who said that conditions were very poor, I think that they really should look at their systems before complaining too much as even some of the very smallest stations worked creditable distances. I note with interest that the BBC outside broadcast chaps used a vertical, do they know something that we don't, I suppose it does cut down the QRM!

Only one log gave rise to concern, it was the tattiest most dogeared peice of paperwork I have ever come across, they lost points for unreadability! Another group decided that the norm of report followed by serial number was old hat and decided that figures like 14456 were better than 56144. I could have disqualified them but didn't, however if I had needed to input their log into my PC then I would have done so.

The best DX was worked by you know who, into Poland at over 1600 kms. There were one or two complaints of poor signal quality, one of the groups in question should have known better, being in radio comercially the other group were newcomers and will also be informed of their transgressions.

Frank PE1EWR again wins a certificate for his entry in the foreigh operators section, please let us have more entries from our continental friends. I think Frank would appreciate the competition.

The SWL's are again taking it in turns to get a certificate, please once more let us have more listener entries. As for the general single and multi operator stations I was very pleased to see such a large entry. Very pleasing also was the number of entries to the Affiliated Societies section, even though some of the entrants did not work very much they at least had a go and added to their teams effort, well done and hope that you will enter again next year.

Congratulations to the winners and runners up in each section and to the zonal winners all will receive their certificates after the next meeting of VHFCC (February).

Now a little groan. Please DO NOT use recorded delivery or registered post as I will NOT collect them from the local Post Office, the entry will be disqualified, I do not appreciate having to drive to the sorting office to collect an entry when a stamped addressed envelope or post card if sent with entry will be returned to you to prove receipt.

G4DEZ

MULTI-OPERATOR SECTION

POS	CALL	QSO	PTS	LOC	ANT	PWR	ZN	BEST DX	KMS	NOTES
1	G4KUX	720	15401	IO94	****	400	A	SP4DGN	1642	*+
2	G4SWX	527	6529	JO02	4X16	400	C	SM7BOU	885	*#
3	G4ANT	456	6358	JO02	?	400	C	SM6DWF	870	?
4	G6APZ	425	4987	IO93	2X19	400	B	SM7CSJ	1010	*
5	G0LIP	376	4542	IO92	17	400	-	SM7CSJ	985	
6	G6KEZ	373	4379	IO92	4X9	400	B	-	-	
7	GI1VHT	194	3568	IO74	2X19	300	F	DJ4IT	972	*
8	G8MKF	324	2975	IO91	4X17	400	D	DF9QT	692	*
9	G4RFR	306	2452	IO90	2X19	400	D	DF9QT	748	
10	G3OLX	343	2448	IO91	8	100	C	OZ1KLU	804	
11	G0FOS	170	2020	IO94	18	100	A	DL4XI/P	777	
12	G1ACC	286	1908	IO92	2X19	80	B	DD0EM	571	
13	G4TBR	246	1881	IO91	19	180	D	DL3BAK	657	
14	G3SDC	287	1818	IO92	2X14	400	B	FF6KOB	877	
15	G4OWM	261	1695	IO91	17	100	C	OZ1BUR	779	
16	G3NTS	256	1578	IO92	17	400	C	GI4KIS	533	
17	G4OIG	171	1575	IO92	9	70	B	DH6YAP	581	
18	G0AJQ	177	1571	IO83	9	350	A	DG2KCB	752	
19	GU8NIS	144	1552	IN89	16	100	D	GI4OWA	695	
20	G7FRE	184	1540	JO01	9	90	C	FC1LEA	570	
21	G3WHK	245	1530	IO91	16	150	C	GM4CXM	575	
22	G4KWB	258	1524	IO91	/	160	C	EI9BG	596	
23	G1XJO	225	1398	IO92	16	100	B	DL1EFJ	-	
24	G7ENF	196	1382	IO93	16	100	B	SM7JUQ	996	
25	G1GSU	226	1359	IO91	2X9	180	D	EI8GS	522	
26	G6LMU	210	1272	IO91	8	100	C	EI5FK	583	
27	G3GRO	201	1215	IO91	8	200	C	GM4FKD	553	
28	G8ZKE	196	1176	IO92	5/5	100	-	SM7FXI	1027	
29	GW1NRS	182	1121	IO81	8	100	E	PE1MFB	564	*
30	G4NYZ	228	1090	IO92	14	400	B	DJ0PQ	-	
31	G3RIR	199	951	IO92	6	80	-	EI5FK	505	
32	G7FDC	101	851	IO80	2X13	200	D	FC1EIP	1135	
33	G4DDW	182	825	IO92	3	30	B	OZ1BUR	765	
34	G7DOL	146	814	IO90	19	400	-	FC1DBE	953	
35	G7CYX	178	805	IO92	17	100	B	GM4AFF	522	
36	G4UHF	173	796	IO91	9	25	D	EI9BG	515	
37	G7ABU	150	775	IO81	17	30	D	PA0JOT	513	
38	G6XRS	142	748	IO92	2X9	60	B	OZ1CEH	913	
39	G6BBC	138	568	IO92	8	100	B	PE1DTU	454	
40	G0GYI	89	553	JO01	9	30	C	G4KUX	362	
41	G6LMZ	104	444	IO92	2X9	100	B	PA2JMK	432	
42	G3BXF	117	440	IO92	17	10	B	PE1MFB	436	
43	G8PGM	92	370	IO92	4	4	B	GI1VHT	363	
44	G7FOX	80	340	IO92	12	180	B	PE1MHM	404	
45	G4ZFR	60	330	JO02	9	25	-	GW0HGN	383	
46	G3VGG	50	256	IO82	14	100	B	PA0FHG	745	

* ZONE WINNER
\+ SECTION WINNER G4KUX
\# SECTION RUNNER UP G4SWX
? ANTENNA 1.75 X 17 ELEMENT!
/ 8/8 SLOT + 5/8 OVER 5/8 CO-LINEAR

Certificates to

G4KUX ..... ZONE A WINNER
G6APZ ..... ZONE B WINNER
G4SWX ..... ZONE C WINNER
G8MKF ..... ZONE D WINNER
GW1NRS ..... ZONE E WINNER
GI1VHT ..... ZONE F WINNER

SINGLE OPERATOR SECTION

POS	CALL	QSO	PTS	LOC	ANT	PWR	ZN	BEST DX	KMS	NOTES
1	G4PIQ	487	5015	JO01	14	300	C	DK2GR	744	*+
2	G0EHV	202	4782	IO94	10	65	A	SP4LVG	1616	*#
3	G6LOH	383	4052	IO92	16	400	B	OZ1KLU	782	*
4	G3NNG	435	3945	IO91	17	400	D	DK5OZ	790	*
5	G4XEN	272	3192	IO92	16	90	B	DK5OZ	719	
6	G3XBY	344	3188	IO92	17	400	B	SM7CSJ	1045	
7	G0GAG	239	2931	IO93	2X10	100	B	SM7LXV	988	
8	GI4KIS	143	2351	IO64	4X9	100	F	FC1APQ	697	*
9	G0ERS	303	2339	IO90	19	80	D	GM4AFF	689	
10	G4SHC	264	2166	IO83	2X15	350	-	DC8E1	644	
11	G3NAQ	277	2160	IO91	4X16	400	D	DJ2JA	714	
12	G4TZM	231	2001	JO01	14	200	C	GI4KIS	572	
13	G6ZTU	204	1952	IO93	19	200	A	DL2OM	694	
14	G6ATW	258	1940	IO91	4X5	400	C	DC7UT	617	
15	G0EMH	276	1877	IO81	16	180	D	OZ1BUR	858	
16	G0CHL	227	1761	IO83	2X16	200	B	DK2KBB	834	
17	G1OGY	241	1686	JO01	14	50	C	GI4OWA	633	
18	G8MKD	206	1682	IO92	4X9	50	B	SM7CSJ	1052	
19	G4UXC	278	1657	IO92	14	250	B	OZ1BUR	775	
20	GW0HGN	133	1645	IO73	8	80	E	DL3LAB	931	*
21	G4ARI	291	1607	IO92	10	100	B	F6ETZ	613	
22	G1RER	244	1574	JO01	19	130	-	EI8GS	577	
23	G4EQD	171	1430	IO93	8	80	B	DF9QT	640	
24	G1YNR	209	1403	IO93	2	100	B	EI5FK	565	
25	G0GRI	205	1370	IO81	2	200	D	GM4AFF	639	
26	G4JLG	184	1340	IO83	10	200	A	DL2KBB	652	
27	G0LBK	83	1302	IO93	2X14	400	A	SM7LXV	977	
28	G4NVA	211	1300	IO83	10	300	-	PA3BAS	560	
29	G8XVJ	124	1272	IO83	18	400	A	SM6NET	1098	
30	G6GAU	143	1264	JO02	14	75	C	DK2GR	751	
31	G8APB	215	1201	IO83	16	10	B	PA2JMK	500	
32	G0GLB	222	1174	IO91	17	100	D	DL4KCU	578	
33	G3MEH	198	1161	IO91	9	25	-	DF9QT	634	
34	G0EGX	168	1157	JO01	9	50	C	DL0WH	610	
35	G0HAS	218	1089	IO91	7	150	D	PA3EHW	484	
36	G4NTY	151	IO75	IO83	9	200	A	DC8EI	653	
37	G0GCI	179	1069	IO91	9	70	C	DL2OM	589	

SINGLE OPERATOR SECTION (CONTINUED)

POS	CALL	QSO	PTS	LOC	ANT	PWR	ZN	BEST DX	KMS	NOTES
38	G1CEI	178	1052	IO91	14	60	-	GM0GMD	590	
39	G3YDY	162	1048	JO01	9	40	C	DF9QT	562	
40	G1EUU	170	1034	IO92	10	270	B	OZ1KLU	712	
41	G0CLP	182	1002	IO92	14	100	B	EI5FK	515	
42	G8NTD	211	992	IO92	2X9	400	B	EI5FK	500	
43	GM4AFF	50	954	IO87	17	400	G	G4RFR	695	*
44	G1POK	181	937	IO91	7	100	C	GI4KIS	550	
45	G4GFX	124	929	IO82	9	300	B	OZ1BUR	840	
46	G3YVR	147	921	IO91	9	90	C	GM4AFF	670	
47	G4HUP	103	915	JO02	16	150	C	DG4BBC	52	
48	G8XFY	102	907	IO93	***	25	B	DC8EI	543	
48	G8LYB	189	907	IO92	16	400	B	DL1EJF	539	
50	G0HWL	179	889	IO91	-	60	D	EI8GS	522	
51	G4HLX	175	883	IO91	13	80	D	GM0LIR	483	
52	G6HXU	145	861	IO83	6	20	-	OZ7LX	954	
53	G4MEL	146	812	IO91	16	15	C	GI4KIS	569	
54	G8HHI	154	797	IO91	15	80	D	PE1DTU	423	
55	G1UUX	168	789	IO92	16	80	B	GM0KAE	510	
56	G8ZRE	139	773	IO83	8	100	A	PE1MYD	510	
57	G1SGB	136	770	IO93	2X13	200	-	FC1DBN	356	
58	G4MKW	131	753	IO91	9	80	C	GM4AFF	674	
59	G0LAP	168	747	IO92	12	50	B	GM0GMD	459	
60	G3JZZ	137	737	JO01	8/8	25	C	GI4KIS	558	
61	G1NRM	158	735	IO91	10	80	-	EI8GS	551	
62	G0BLT	122	696	IO82	10	100	B	G4SWX	361	
63	G4EPA	137	684	IO92	9	75	B	EI8EF	530	
64	G8JXV	108	664	IO91	9	100	C	GI1VHT	545	
65	G3KWY	148	641	IO92	14	100	B	PE1MFB	444	
66	G0LCB	132	608	IO91	9	50	D	EI8GS	471	
67	G3YSX	110	586	IO91	9	20	C	EI8GS	569	
68	G3ZDM	125	579	IO83	19	200	A	PE1MFB	521	
69	G6JJP	100	528	IO82	16	80	B	DL2KBB	-	
70	G3JMB	96	520	IO91	7	10	C	G4KUX	415	
71	G0MCN	115	519	IO91	2X5	85	D	GI4KIS	477	
72	G7FWE	81	461	IO83	10	10	A	PE1MYD	488	
73	G1WPF	103	447	IO91	14	100	D	PA2JMK	529	
74	G1FRY	60	442	IO81	6	30	-	G8ECI	337	
75	G3FIJ	66	430	JO01	9	10	C	GI1VHT	543	
76	G0CWI	95	427	IO91	8	100	D	GI1VHT	482	
77	G0KFV	76	416	JO01	9	25	C	G4KUX	358	
78	G0HFX	74	387	IO81	8/8	20	D	-	-	
79	G0ADH	101	375	IO91	6	50	D	G4KUX	337	
80	G1WIS	82	374	IO91	IO	100	C	G0EHV	418	
81	G8UUO	78	361	JO01	9	10	C	GI1VHT	526	
82	G1LNT	74	350	IO91	9	25	-	GI4KIS	559	
83	G1NPH	85	344	IO92	8	40	B	PE1EWR	422	
84	G1GLS	70	341	IO83	2X12	75	A	PE1MYD	487	
85	G4LDR	58	324	IO91	14	25	D	G0EHV	422	
86	G7FAZ	65	306	IO82	5	10	B	PE1DTU	740	
86	G3FNM	72	306	IO83	8	10	A	PE1MYD	492	
88	G1SVC	85	265	IO91	9	50	D	PA0JOT	411	
89	G0KZP	56	260	IO91	19	400	D	G0EHV	372	
90	G1VBL	73	256	IO91	9	11	-	G3TCP/P	237	
91	G0HHU	46	243	IO83	9	30	-	G4PIQ	291	
92	G7DIP	55	241	IO81	7	50	D	G0MFF	282	
93	G4JRY	41	234	IO93	9	10	B	G3KMI	286	
94	G6WDF	56	218	IO91	12	10	-	G4HGI	242	
95	G4GVV	66	202	IO91	7	14	D	-	-	
96	G8XYN	59	201	IO91	9	10	B	PA2JMK	412	
97	G1HLY	50	198	IO91	8	25	C	G4EQD	266	
98	G0ATR	57	197	IO92	6	10	B	-	-	
99	G3TWG	65	195	IO91	5	50	D	G4KUX	345	
100	G0KSE	62	194	IO91	SJIM	30	-	G6LUZ	154	
101	G2HIF	40	188	IO91	17	15	D	PA0OHG	433	
102	G0AYA	73	173	IO91	8	12	D	G4KUX	342	
103	G8UQC	30	172	IO83	5	15	A	PE1MYD	-	
104	G4PQZ	33	149	IO82	8	12	-	G1RER	252	
105	G8FKP	39	137	IO91	9	45	-	G4KUX	345	
106	G4BZO	32	132	IO83	9	3	-	G1RER	-	
107	G0AIZ	40	130	IO92	9	100	B	PE1MYD	398	
108	G8JAM	33	104	IO92	10	-	B	G4RFR	217	
109	G1VAK	29	97	IO92	5	25	A	G4KUX	254	
110	G3SVW	27	89	IO83	5	-	A	PE1MYD	482	
111	G7DWC	33	87	IO92	HB9CV	10	B	G0ERS	186	
112	G6NGV	41	83	IO92	10	10	B	G4SHC	125	
113	G7FXY	23	73	IO81	7	25	D	G4PIQ	232	
114	G1VAJ	22	72	IO92	7	10	B	G4KUX	254	
115	G7BNI	16	68	IO92	7	10	B	GI4KIS	418	
116	G7AQU	12	56	IO92	8	10	B	G4MEL	232	
116	G4MBW	14	56	IO82	8	25	B	G4KBW	230	
118	G0HNA	29	55	IO91	VERT	25	D	G0EMH	135	
119	G0BJK	30	40	IO83	S.JIM	2.5A	G3NSY		-	
120	G6DTW	24	38	IO91	CO.LIN	10	C	G4RFR	131	
121	G7BBC	18	22	IO91	VERT	25	C	G3NNG	99	
122	G4UQE	13	19	IO91	VERT	10	-	G1XJO	124	
122	G4OST	11	19	IO91	14	100	D	G4SWX	134	
124	G0AOU	12	16	IO83	5/8	W	2.5A	G3NSY	89	
125	G6DQO	9	10	IO83	S.JIM	2.5	-	G6APZ	63	
126	G7FAA	5	9	IO93	S.JIM	15	B	G6APZ	93	

* ZONAL WINNER
\+ SECTION WINNER G4PIQ
\# SECTION RUNNER UP G0EHV

CERTIFICATE WINNERS

G0EHV ..... ZONE A WINNER
G6LOH ..... ZONE B WINNER
G4PIQ ..... ZONE C WINNER
G3NNG ..... ZONE D WINNER
GW0HGN ..... ZONE E WINNER
GI4KIS ..... ZONE F WINNER
GM4AFF ..... ZONE G WINNER

FOREIGN SECTION

POS	CALL	QSO	PTS	LOC	ANT	PWR	ZN	BEST DX	KMS	NOTES
1	PE1EWR	74	1012	JO11	10	10	-	GW0HGN	559	*

Certificate winner ..... PE1EWR!

SWL SECTION

POS	BRS	QSO	PTS	LOC	ANT	ZN	BEST DX	KMS	NOTES
1	25429	113	1341	IO93	8	-	SM7SQJ	970	*
2	31976	109	785	JO01	9	-	GM4AFF	630	
3	28198	72	500	JO00	10	-	EI8GS	615	

Certificate winner BRS25429

Thanks for checklog from G3TCP/P

AFFILIATED SOCIETIES SECTION

POS	CLUB	CALLSIGNS					PTS	ZONE
1	MARTLESHAM DX & CG	G4SWX	G4PIQ	G7FRE	G6GAU	G4HUP	15263	C
2	DERBYSHIRE HILLS CG	G6APZ	G6ZTU	G1ACC	G7ENF	GOLBK	11531	B
3	LEICS POLY "A"	G4XEN	G3XBY	G3SDC	G4ARI	G4OIG	11380	B
4	HARWELL ARS "A"	G3NNG	G4MKF	G3NAQ	G0GLB	G4HLX	11137	D
5	SUTTON & CHEAM RS	G3OLX	G4OWM	G3WHK	G4KWB	G1POK	8134	C
6	SOUTN MANCHESTER "A"	G4JLG	G8APB	G8XVJ	G4NTY	G0CHL	6649	B
7	VALE OF EVESHAM RAC	G0EMH	G4UXC	G4NYZ	GIUUX	G6JJP	5941	B
8	CRAWLEY ARC	G6LMO	G3GRO	G3YVR	G4MEL	G4MKW	4973	C
9	RUGBY ATS "A"	G1XJO	G8LYB	G8NTD	G4DDW	G7CYX	4933	B
10	COLCHESTER RADIO AM	G4TZM	G0EGX	G0GYI	G3FIJ	G0KFV	4557	C
11	LEICS POLY "B"	G1EUU	G0CLP	G3RIR	G3KWY	G6LMZ	4072	B
12	SCUNTHORPE ARC	G7FAA	G8XFY	G4JRY	G1YNR	G4EQD	3983	B
13	CHESHAM & DISTRICT	G4TBR	G1WPF	G0KZP	G4OST	G1GSU	3966	D
14	CHIPPENHAM & DIST	G0GRI	G0HAS	G0HFK	G7DIP	G7FXY	3160	D
15	FARNBOROUGH & DIST	G0GCI	G8HHI	G0HWL	G0HNA	G4UQE	2829	D
16	REIGATE AT SOC	G1HLY	G1LNT	G1WIS	G3YSX	G8JXV	2172	C
17	SOUTH MANCHESTER "B"	G3ZDM	G7FWE	G1GLS	G7FNM	G8UQC	1859	B
18	AYLESBURY VALE RS	G0KSE	G1VBL	G3MEH	G6WD	----	1829	-
19	RUGBY ATS "B"	G3BXF	G4EPA	G1VAK	G1NPH	G0LAP	1772	B
20	HARWELL ARS "B"	G0LCB	G0MCN	G0ADH	G2HIF	----	1690	D
21	ARIEL RADIO GROUP	G3NTS	G7BBC	G6DTW	----	----	1638	C
22	BROMSGROVE & DIST	G3VGG	G0BLT	G7FAZ	G4POZ	G7AOU	1463	C
23	MAIDENHEAD & DIST	G0CWI	G1SVC	G4GGV	G8XYN	G3TWG	1307	D
24	LEICESTER RS "A"	G6XRS	G0ATR	G0AIZ	G8JAM	G7DWC	1296	B
25	MID CHESHIRE ARS	G6HXU	G0HHU	G6DOO	----	----	1114	-
26	SOUTH MANCHESTER "C"	G4BZO	G3SVW	G0BJK	G0AOU	----	277	B
27	LEICESTER RS "B"	G6NGV	----	----	----	----	83	B

CERTIFICATE WINNERS

MARTLESHAM DX & CONTEST GROUP ..... SECTION WINNERS
DERBYSHIRE HILLS CONTEST GROUP ..... SECTION RUNNERS UP

DERBYSHIRE HILLS CONTEST GROUP ..... ZONE B WINNERS
MARTLESHAM DX & CONTEST GROUP ..... ZONE C WINNERS
HARWELL ARS "A" ..... ZONE D WINNERS

HF CONTESTS CHAMPIONSHIP 1988/9 RESULTS

Position	Callsign	Score	No. of Events
1	G4OBK	9,246	6
2	G3FXB	7,340	4
3	G4BUO	6,572	4
4	G3LET	6,567	5
5	G3TBK	4,704	5
6	G3MXJ	4,316	2
7	GW3YDX	4,000	2
8	G2QT	3,653	4
9	G4CNY	3,511	2
10	GW4IOI	3,384	3
11	G5MY	3,291	4
12	G3NOM	2,900	2
13	G4WQN	2,747	2
14	G3SWH	2,707	4
15	G4ODV	2,618	3
16	G3RTE	2,333	2
17	G3VYI	2,176	4
18	G3NKC	2,175	6
19	G3NKS	2,022	4
20	GW3HGJ	1,926	2
21	G4WYG	1,856	2
22	G3GLL	1,758	2
23	G3SOX	1,725	3
24	G3ESF	1,616	3
25	G3PDL	1,598	2
26	G3SJJ	1,533	2
27	G2HLU	1,521	2
28	G3OLU	1,500	2
29	G4ZOB	1,488	3
30	GM4SID	1,467	3
31	G4KGK	1,414	3
32	G3HTD	1,306	2
33	G3ZGC	1,259	2
34	G3MCX	1,225	3
35	G3AWR	1,212	3
36	G3SJX	1,201	2
37	G3RXP	1,186	2
38	G3MPB	1,174	2
39	G2MJ	1,158	2
40	G3WRR	1,094	4
41	G4IQM	1,090	3
42	G3YLC	1,073	2
43	G3FSR	929	2
44	G4EBK	915	3
45	GM3UM	913	2
46	G4UZN	886	2
47	G3BPM	839	2
48	G3LIK	783	2
49	G0CGB	679	2
50	G3FVW	659	2
51	G3SKC	658	2
52	G3HKO	656	2
53	G0EHO	655	2
54	G3XTT	611	2
55	G3DPX	609	2
56	G3ZRZ	573	2
57	G3GMS	522	2
58	GW3SB	367	2
59	G4FDC	261	2
60	G6QQ	209	2

The G2QT trophy is awarded to G4OBK.
Runner-up certificate to G3FXB.

G3OZF

CONTESTS CALENDAR

RSGB HF CONTESTS

10, 11 Mar	Commonwealth Contest (Sept 89)
24,25 Mar	1.8MHz SSB (Jan90)
1 Apr	Ropoco 1 (Jan90)
9 Apr	1st 28MHz Cumulative (Feb90)
15 Apr	Low Power Contest (Feb90)
17 Apr	1st 28MHz Cumulative (Feb90)
25 Apr	1st 28MHz Cumulative (Feb90)
3 May	1st 28MHz Cumulative (Feb90)
11 May	1st 28MHz Cumulative (Feb90)
19 May	County Roundup SSB (Mar 90)
20 May	County Roundup CW (Mar 90)
2,3 June	HF National Field Day (Feb90)
23, 24 June	Summer 1.8MHz
14, 15 July	SWL
15 July	Low Power Field Day
26 Aug	ROPOCO 2
1, 2 Sept	SSB Field Day
10 Sept	2nd 28MHz Cumulative
18 Sept	2nd 28MHz Cumulative
26 Sept	2nd 28MHz Cumulative
4 Oct	2nd 28MHz Cumulative
7 Oct	21/28MHz Contest
12 Oct	2nd 28MHz Cumulative
21 Oct	21MHz Contest

RSGB VHF CONTESTS

4 Feb	432MHz Fixed/AFS/SWL (Jan90)
11 Feb	70MHz Cumulatives
25 Feb	70MHz Cumulatives
3,4 Mar	144/432MHz (Jan90)
11 Mar	70MHz Cumulatives (Jan90)
25 Mar	70MHz Cumulative/Fixed/SWL
8 Apr	50MHz Trophy Fixed/Single/Multi
5,6 May	432MHz Trophy & SWL
5,6 May	434MHz to 24GHz
19,20 May	144MHz & SWL Single/All others
10 Jun	432MHz CW Single/Multi
10 Jun	432MHz FM Fixed & Open
7,8 Jul	VHF Field Day
28 Jul	144MHz Low Power/SWL
29 Jul	432MHz Low Power/SWL
All Aug	432MHz Activity
12 Aug	1·3 & 2·3GHz Trophies
All Sep	1296MHz Activity
1,2 Sep	144MHz Trophy/SWL
16 Sep	70MHz Trophy/SWL
30 Sep	50MHz CW
6,7 Oct	432MHz - 24GHz SWL & IARU
9 Oct	1·3 & 2·3GHz Cumulatives
17 Oct	432MHz Cumulatives
21 Oct	70MHz CW
25 Oct	1·3 & 2·3GHz Cumulatives
2 Nov	432MHz Cumulatives
3,4 Nov	432MHz CW 8-hr Marconi/RSGB
10 Nov	1·3 & 2·3GHz Cumulatives
2 Dec	144MHz AFS/Fixed/SWL
4 Dec	432MHz Cumulatives

There will be an SWL section in every VHF contest even if not mentioned in rules

OTHER CONTESTS

First Tuesday each month
144MHz Scandinavian VHF/UHF/SHF Activity Contest (Jan89 VHF/UHF)

First Thursday each month
432MHz Scandinavian VHF/UHF/SHF Activity Contest (Jan89 VHF/UHF)

First Monday each month
Microwave Scandinavian VHF/UHF/SHF Activity Contest (Jan89 VHF/UHF)

Dates of publication of rules in *RadCom* are shown in parentheses

HF - DF CONTESTS

G.T. Peck Memorial Trophy Event
Date: 1 April 1990
Map: O.S. Sheet 166 1:50000 series, Luton and Hertford
Assembly: 1300 BST for start at 1320 BST
Location: Public car park, Nomansland Common, NGR 171124
Competitors requiring tea should notify Peter and Ruth Lisle. Telephone: 0234 267000, not later than 23 March 1990.

Qualifying Event - Northampton
Date: 22 April 1990
Map: O.S. Sheet 152 1:50000 series, Northampton and Milton Keynes
Assembly: 1300 BST for start at 1320 BST
Location: 1 kilometre North - East of Castle Ashby, NGR 865600
Competitors requiring tea should notify Mr D Newman, Haynes House, 78 High Street, Whittlebury, Towcester, Northants NN12 8XJ. Telephone: 0327 857350, not later than 14 April 1990.

144MHZ CW RSGB AND MARCONI CONTESTS

SINGLE OPERATOR 6 HOUR RSGB SECTION

POS	CALL	QSO	PTS	LOC	ANT	PWR	BEST DX	KMS
1	G4BLX	76	24807	IO90	2X17	100	DK8ZB/P	711
2	G4ARI	58	12982	IO92	10	100	DK0BN/P	698
3	G3JJZ	17	2119	JO01	8/8	2	DJ4UP	431
4	G4BVY	1	1	IO82	1/4u	1	g3xby	1

MULTI-OPERATOR 6 HOUR RSGB SECTION

1	G0CRW/P	128	31847	JO01	18	100	DK0BN/P	879
2	G5RS/P	61	19521	IO91	2X17	100	DK8ZB/P	729
3	G4EKT/P	43	14732	IO93	18	100	DK0BN/P	727

SINGLE OPERATOR 24 HOUR SECTION

1	G3JXN	98	27686	IO91	9	100	DK6AS	765
2	G4WKN	106	21891	IO92	9	100	1DK0BN/P	650
3	G4OUT	69	15612	IO92	12	30	DK0BN/P	745
4	G0GLB	42	10795	IO91	17	15	DL6BF	732
5	G4ZVS	50	8151	IO92	14	30	F6HSV/P	506

MULTI-OPERATOR 24 HOUR SECTION

1	G4XBF/P	211	72925	JO01	4X9	100	OK1KSO	846
2	G4APA/P	171	62372	IO94	4X9	100	DK2XZ/P	924
3	G3PRC/P	74	25218	IO80	16	80	F6IPS	964
4	G0CLP/P	50	14683	IO84	8	60	F6HSV/P	906

Certificates to G4BLX, G0CRW/P, G3JXN, G4XBF/P

G4DEZ

APOLOGY TO CHELMSFORD ARS G4CNT PORTABLE

A mistake was made in the HF NFD Open Section results table in respect of this club. Their top band score was, in fact, 416, which increased their overall score total to 2403. This brings their position in the lists to 14th instead of 19th.

Apologies to G3WHR, G4ICP and the Chelmsford Club.

NB: The band cover sheet will be revised to prevent this happening again. (G4JKS).

ALINCO DR 110 2M 45 Watts!

£299

Receive Option: 140-169MHz.

The new 2 metre mobile transceiver from ALINCO is superb value. Steps of 5, 10, 12.5, 20, 25kHz plus high power make it suitable for a wide number of applications. 14 memory channels and rotary dial control make operation a joy. Improved LCD display makes night operation much easier. The dimunutive size (5.5' x 2.5' x 6.75') makes for easy installation in the modern car. Other features include up/down mic., 3 way scanning, 1750Hz tone-burst, reverse input, memory skip, and of course a full mobile mounting kit. Send for colour brochure today!

WIRE AERIALS FOR ALL!

Spring is coming so why not spend some money in the area that really does pay dividends, the aerial system.

G5RV-FULL This famous 80-10M 5-band system is 102ft long and comes completely tuned. Just connect 50 Ohm feeder to SO239.

G5RV-HALF The 40-10M 4-band version needs just 51ft and gives you a simple system that needs only 50 Ohm feeder to complete.

ZEPP Systems. Many years ago the Zepp was popular but needed an ATU. The new Sagant Zepps are super single band half waves that can be end fed direct with 50 Ohm coax. No long lengths of hanging coax and amazing efficiency. 150 Watts rated. Models for 80, 40 & 20M.

HALF-ZEPPS These are half-size versions, ie, 80M is only 66ft long. "Dipole efficiency in half the length". Models for 160, 80 or 40M.

Prices:

G5RV-FULL	16.95 2 p&p
G5RV-HALF	13.95 2 p&p
ZEPP-80	55.00 2.5 p&p
ZEPP-40	49.00 2.5 p&p
ZEPP-80-Half	59.95 2.5 p&p
ZEPP-40-Half	59.95 2.5 p&p

OTHER AERIALS STOCKED: JAYBEAM DIAMOND TONNA CREATE

HF TRANSCEIVER DISCOUNTS!

Most transceivers are designed for 12 volts. The manufacturer's own PSUs are expensive. But our REVEX "BIG BERTHA" P300 is just as good and a lot, lot cheaper. Fully protected, large hunky transformer, and thermal fan cooled! Below is a list of autumn packages that we invite you to consider. Part exchange welcome. Credit? Most certainly. Just ask for quote.

Model Type	Mfr's PSU	REVEX PSU
Kenwood TS440S	~~£1360.00~~	£1200.00
Kenwood TS140S	~~£1035.00~~	£959.00
Kenwood TS680S	~~£1158.00~~	£1080.00
Yaesu FT747GX	~~£918.00~~	£759.00
Yaesu FT757GX2	~~£1228.00~~	£1069.00
Yaesu FT767GX	~~£1858.00~~	£1699.00
ICOM IC751A	~~£1878.00~~	£1589.00
ICOM IC735	~~£1357.00~~	£1069.00
ICOM IC725	~~£1137.00~~	£859.00

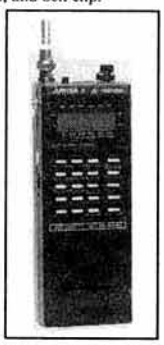
The above price comparisons use the manufacturer's nearest equivalent PSU to the P300. Each Revex is fully guaranteed for 12 months as is the matching HF transceiver. All mail orders against credit cards are despatched by 24 hour Securicor at our risk. If payment is made by cheque please allow an extra couple of days for clearance.

STILL THE BEST PERFORMERS!

25-1300 MHz* Handheld JUPITER II

£299

Price now includes ni-cads, case, 12V DC power/charger lead, and belt clip.



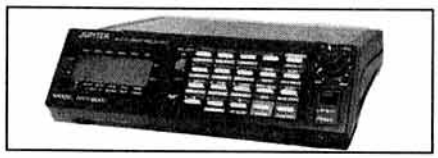
★ AM/FM
★ Direct up/down tuning
★ 5, 10, 12.5, 25, 30 KHz steps
★ 100 memories
★ 10 programmable bands
★ Step change frequency correction
★ High speed scan 20 per sec.
★ Carrier or audio scan
★ Battery Saver
★ Telescopic antenna (BNC)
★ Fast memo load feature
★ Individual memory unload
★ Uses 4 × AA cells (Jupiter II)
★ Size 7" × 2.5" × 1.5"
★ 700 MHz first IF
★ Proper English Manual
★ Superb sensitivity.
★ Does not cover 550-800MHz.

No other similar receivers offer the same features at anywhere near the price! And inside the construction is a Joy! Lots of space, nicely laid out boards all linked with quick connect plugs. Not a "Taiwanese Rat's Nest!

- **Direct up/down control.**
No need to punch anything into memories. Just enter frequency and use up/down buttons for manual or electronic tuning.
- **AF Scan.**
No more annoying blank carriers for the receiver to lock on to. Simply tell it to ignore carrierss not containing audio and it will!
- **One Button Memo Read.**
A single button takes you directly into the memory bank. Up/down or scan will quickly move you around or use direct access for a particular channel number.
- **Battery Saver.**
For long term single channel monitoring this feature will reduce battery consumption by 70%.

25-1300 MHz* Mini - mobile/base JUPITER 6000 inc. P.S.U.

£345



- **Skip Function**
Whether you want to bypass a single memory channel or an entire bank, this control provides the answer.
- **High Speed Scan.**
Select high speed scan or search and you will whiz through the range at a healthy 20 steps per second! That means you can scan 100 memories in 5 seconds or 1 MHz of space (25kHz steps) in 2 seconds. It really works!
- **Fast Memo Write.**
Enables you to quickly write into the memories, no need to select a number, the receiver will use the next empty memory.
- **User Friendly Search Programme.**
You can search in either direction and change direction at the press of a button. Total agility with a speed to match.
- **Unique Multiband Programme.**
No less than 10 separate band segments can be stored in the receiver's memory.
- **Total Flexibility.**
The basis upon which the receiver has been designed. It means you tailor the receiver to do exactly what you want it to do, almost like having a receiver that was designed for your own personal needs. No other receiver can match it, feature for feature and the good news is the cost.

World demand is tremendous. We are getting only small quantities so pick up the phone now and you could be lucky!

FREE CATALOGUE & PRICE LIST! We now have an illustrated catalogue of some interesting products for the radio amateur that we have never had the space to advertise. Also details of new items coming along. Just drop us a first class stamp and we will send you this plus our price list of over 700 items!

MIZUHO "MX" QRP SSB/CW RIGS £189

Now in stock these 2 watt single banders for 80, 40 or 20 metres are real beauties. VXO control (one xtal supplied) gives 25kHz segments on 80 and 40, and 50kHz on 20 metres. Features IRT, noise blanker, S-meter, speaker, morse key, BNC socket. Powered from AA cells or external supply. Pocket size 66W x 39H x 142mm deep. As used by GB5BN on Ben Nevis. Over 100 in use already. Send for gen.

SPECIAL OFFER THIS MONTH

A QRP STATION

Free Offer!

Buy a Mizuho 80, 40 or 20m rig and we will give you a set of ni-cads, 12V DC charging lead and a G5RV aerial system completely free of charge! Limited offer so act now!

SONY OFFER

Here is a once and only offer on Sony. Brand new stock and limited to a few only of each model!

7600DS	Portable HF with AC supply and aerial etc	145.00
2001D	Portable HF with air band, synchro detect etc.	275.00
Air-7	Airband plus broadcast receiver.	215.00
SW1E	Micro pocket HF and stereo plus active antenna.	219.00
SW1	As above but less active antenna kit etc.	139.00
PRO 80	VHF/UHF Receiver plus boadcast.	259.00
	Most accessories from stock. Phone.	

Special 600mAh AA Ni-cads 65p inc. post

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Tel: (0702) 206835, 204965
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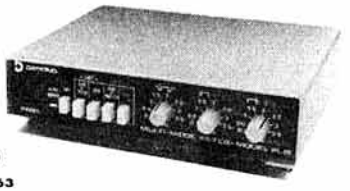
Visa and Access by telephone. 24hr. Answerphone. Open 6 full days

DATONG
ELECTRONICS LIMITED

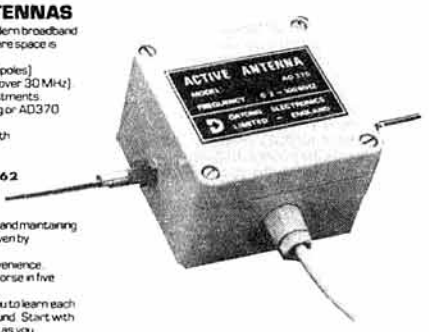
AUDIO FILTERS MODELS FL2, FL3, FL2/A



Model FL3 represents the ultimate in audio filters for SSB and CW. Connected in series with the loudspeaker, it gives variable extra selectivity better than a whole bank of expensive crystal filters. In addition it contains an automatic notch filter which can remove a "tuner-upper" all by itself. Model FL2 is exactly the same but without the auto-notch. Any existing or new FL2 can be up-graded to an FL3 by adding Model FL2/A conversion kit, which is a stand-alone auto-notch unit. Datong filters frequently allow continued copy when otherwise a QSO would have to be abandoned.

FL2 £100.91 FL3 £145.54 FL2A £44.63

ACTIVE RECEIVING ANTENNAS



Datong active antennas are ideal for modern broadband communications receivers – especially where space is limited.

- highly sensitive (comparable to full-size dipoles)
- Broadband coverage (below 200 kHz to over 30 MHz)
- needs no tuning, matching or other adjustments.
- two versions AD270 for indoor mounting or AD370 (illustrated) for outdoor use.
- very compact, only 3 metres overall length
- professional performance standards.
- both include mains power unit.

AD270 £58.22 AD370 £77.62

MORSE TUTOR

The uniquely effective method of improving and maintaining Morse Code proficiency. Effectiveness proven by thousands of users world-wide.

- Practice anywhere, anytime at your convenience.
- Generate a random stream of perfect Morse in five character groups.
- D70's unique "DELAY" control allows you to learn each character with its correct high speed sound. Start with a long delay between each character and as you improve reduce the delay. The speed within each character always remains as set on the independent "SPEED" control.
- Features long life battery operation, compact size, built-in loudspeaker plus personal earpiece.

£63.40

Our full catalogue plus further details of any product are available free on request. Dealers in most countries, please send for list.
Credit cards accepted.
Goods normally despatched within 3 days subject to availability. All prices include V.A.T. P+P.

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Est. over 20 years

RACAL RA17 Mk2 RECEIVERS all checked and serviced in our own workshop, offered with a 6 months warranty (full spec. on this superb receiver on request.) £260.00 buyer to collect by arrangement.
RACAL RA117E COMMUNICATIONS RECEIVERS 1 to 30MHz in 30 1MHz bands, later version to the above RA17, better sensitivity calibrated 'S' meter, extra mixer stage for use with synthesiser if required, a real connoisseur's receiver supplied in as 'new condition' at £450.00, a few slight marks £400.00, buyer to collect.
RA218 SSB ADAPTOR for use with the RA117E Receiver in as new condition £150.00 Carriage £20.00.
AVO 8 Mk5 MULTIMETERS used but in excellent condition with leads and case all meters have been calibrated. Superb buy at ONLY £85.00, carriage £10.00.
AVO MINOR MULTIMETERS (list price over £80.00) our price unused £40.00 used tested £20.00 p.p £2.00.
CT436 OSCILLOSCOPES DC to 6MHz bandwidth 23 valves, size 10 x 9 x 14" deep with copy of manual, all in excellent condition, ONLY £70.00, carriage £15.00.
D465 TEKTRONIX OSCILLOSCOPES DC to 100MHz bandwidth, usable to over 160MHz, all solid state portable unit supplied in excellent condition size 11 x 6 x 16" deep, £400.00, carriage £15.00.
CT402 SIGNAL GENERATORS (this is the services version of the MARCONI TF995A2 generator) fitted in a sealed metal case, size approx 17 x 20 x 10", frequency range 1.5MHz to 220MHz AM/FM, supplied in v/good condition, with leads, attenuators and matching pads etc. BARGAIN at ONLY £90.00, carriage £15.00.
MARCONI TF 2015 SIGNAL GENERATORS 10 to 510MHz AM/FM all solid state small size 10½ x 5 x 10", from £295.00.
ICOM BP2 BATTERIES used tested £5.00 p.p. 80p.
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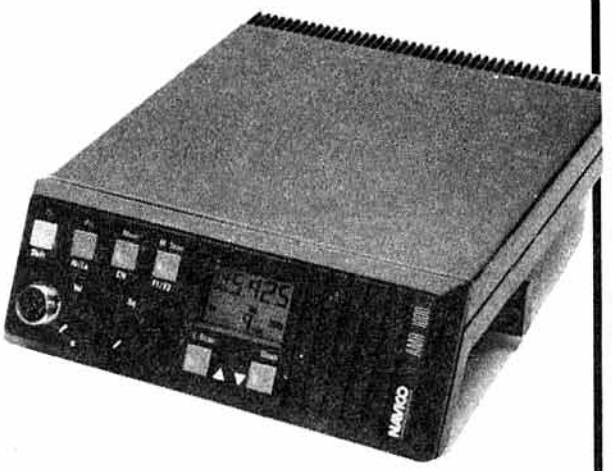

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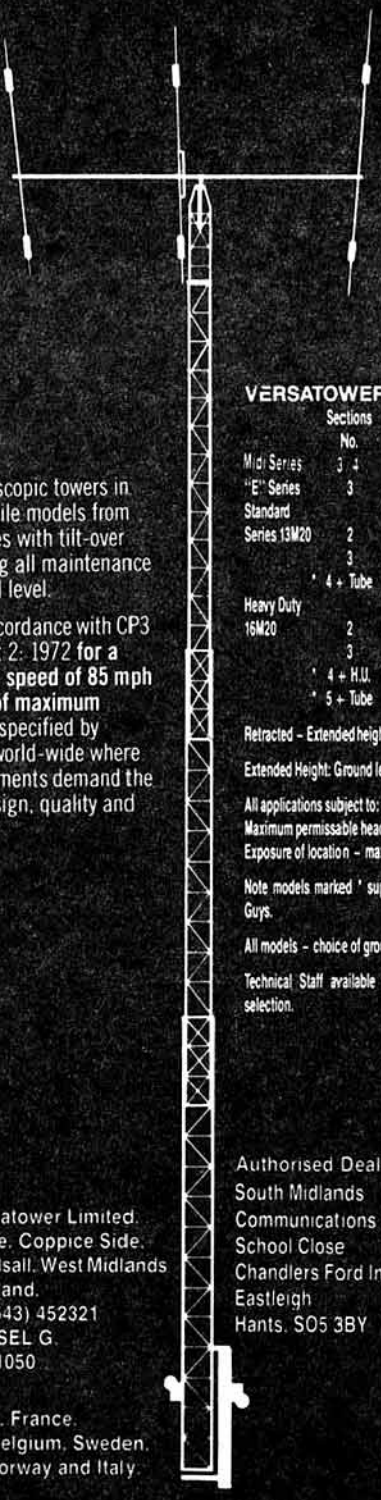

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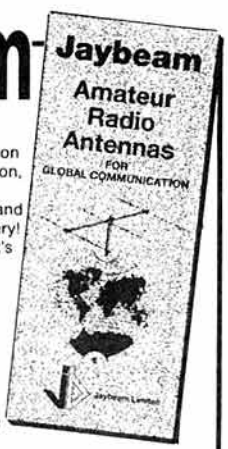

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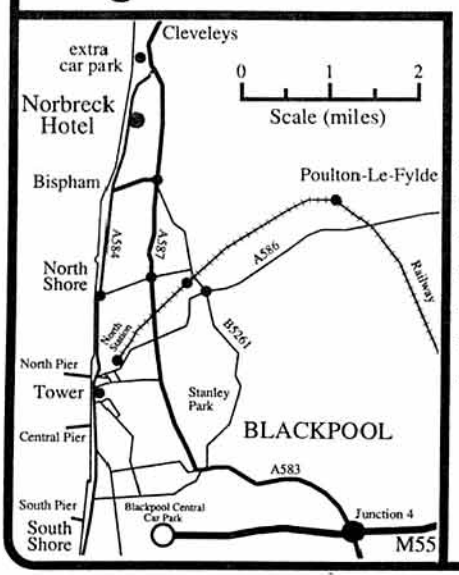

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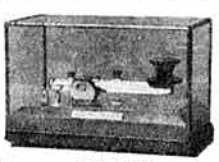

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Ham Radio Magazine, one year, by air	£25.74	£22.00

NEWSLETTER SUBSCRIPTIONS

Connect International (monthly)	£9.35	£7.95
DX News Sheet (weekly)	£21.77	£18.50
Microwave Newsletter (10 issues per year)	£7.94	£6.75
Raynet News (6 issues per year)	£5.82	£4.95
6 Metre and Up DXer (monthly)	£9.35	£7.95

Newsletter subscription rates are those for subscribers in the UK and countries in the EEC. For rates to other destinations please contact the Circulation Department at RSGB, from where free sample copies of newsletters can also be obtained.

RAYNET SUPPLIES

Raynet Badge - Embroidered	£1.04	£0.88
Raynet Badge - Lapel	£0.89	£0.76

continued on next column

Members visiting HQ are advised to telephone first to confirm availability of goods (0707) 59015

RSGB — MAIL-ORDER PRICE LIST

	NON-MEMBERS	MEMBERS
Raynet Badge Clip	£0.50	£0.43
Raynet Car Sticker - Circular	£0.65	£0.55
Raynet Identification Sticker	£0.51	£0.43
Raynet Manual, 1986 Edition	£3.41	£2.90
Raynet Poster	£0.98	£0.83
Raynet Tie	£5.83	£4.96

MICROWAVE COMPONENTS

Capacitors		
1000pF Coffin Capacitor (pack of 10)	£1.08	£0.92
Trimmer for G4DDK 1152MHz boards	£0.99	£0.84
Exciters		
GDHM32 Doppler Module	£74.06	£62.95

	NON-MEMBERS	MEMBERS
Hardware, PCBs & Laminates		
G4DDK 1152MHz Amplifier Board	£4.11	£3.49
G4DDK 1152MHz Local Osc. Source PCB (RC 2-3/87)	£3.87	£3.29
CBT-40 Mounted Termination, 40W, 50ohm	£22.29	£18.95
CuClad 233 PCB, 0.005", 2 x 1inch block	£0.99	£0.84
CuClad 233 PCB, 0.031", 2 x 1inch block	£1.46	£1.24
Regulator PCB (RC 10/81)	£2.50	£2.13
UHF Source PCB (RC 10/81)	£7.06	£6.00
WG20 Copper Waveguide (per foot)	£7.14	£6.07
G4DKK PCB 004	£7.06	£6.00
Semiconductors		
DC1501E Mixer	£14.39	£12.23
MD4901 SRD	Out of stock	
MGF1302 GaAs FET	£8.18	£6.95
µPB581C 2.6GHz Divide by 2 Prescaler	£8.02	£6.82
µPB582C 2.6GHz Divide by 4 Prescaler	£8.02	£6.82

HOW TO ORDER

NON-MEMBERS. Use left hand price columns. Note that members' sundries are only available to members of RSGB.

MEMBERS. Use right hand price columns. It is essential that you quote your callsign or RS number so that you can be recognised as a member.

PRICES. These include postage, packing, and VAT (where applicable) and are subject to change without notice.

AVAILABILITY. Goods are available less postage and packing from RSGB Headquarters between 9.15am and 5.15pm Monday to Friday. However you are advised to confirm availability of goods by telephone before visiting Headquarters. We attempt to keep ample stocks of all our sales items, however as this list has to be prepared several weeks in advance we cannot guarantee that any item on this price list is immediately available.

PAYMENT. Payment may be made by post enclosing a cheque or postal order. These should be crossed and made payable to 'Radio Society of Great Britain'. If sending cash please use registered post. You may use your credit card for payment by post or by telephone. We accept RSGB Credit Card, Visa, Access (Mastercharge), American Express, and Diners Club cards. Our telephone number for orders is (0707) 59015 (24hrs). Our Giro account number is 533 5256.

DELIVERY. Goods will be despatched to UK destinations by 2nd class letter post or parcel post, or surface mail to overseas destinations. Please contact RSGB Headquarters for 1st class letter post or airmail rates. We normally despatch goods within 60 hours after receipt of an order, but as delays can sometimes occur please allow 28 days before enquiring about non-delivery of goods.

ORDER FROM:
RSGB SALES (CWO)
Lambda House, Cranborne Road,
Potters Bar, Herts, EN6 3JE

RADCOM PCB SERVICE

G4PMK SIMPLE SPECTRUM ANALYSER
November 1989

BOARD DESCRIPTON	CODE	PRICE
RF Board	118946	£5.30
Video/sweep board	118947a	£4.25
Marker generator/PSU	118947b	£3.90
Complete set of 3 boards	1189SSA	£12.50

G3TXQ TRANSCEIVER
Febuary/March 1989

BOARD DESCRIPTION	CODE	PRICE
Main IF/Audio	028945	£10.00
VFO	028946	£4.75
Driver/Preamp	028947	£5.50
Low pass filter	028948a	£6.50
Band-pass filter	028948b	£4.00
Control board	038942a	£4.50
Regulator board	038942b	£2.00
Complete set of 7 boards	0289TXQ	£23.50

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 Coalfield B74 4JF. Tel: 021-353 9326

Members' Ads

Conditions of acceptance are published on the Members' Ad order form inserted into the wrapper with every issue of *Radio Communication* posted to members. This form must be used when placing an advertisement; and please note that FOR SALE, WANTED and EXCHANGE advertisements must not be mixed on the same form. A new, more flexible, pricing scheme has been introduced. Details are on the form. Each advertisement must be accompanied by the correct remittance, as a credit card payment, cheque or postal order made payable to the Radio Society of Great Britain. Please note that because this is a subsidised service to members, no correspondence can be entered into.

FOR SALE

● YAESU FT77, fitted all options, AM/FM boards, FV-707DM digital VFO, FC-700 ATU, M/bracket, boxed, h/books, £450ono. Yaesu FTDX401, spkr, spare PA valves (unused), h/book, £145. SX200N scanner, £125. RT7/APN1, £20. MN62A indicator, control box, £20. PCR-2 Rx, Vib. PSU, £25. G0JNT QTHR(Grimsby) 0472 752794

● FTDX401, little used, £250. Drake R4C GWO, £250. New SK610A, £25ea. Jon G4AOS QTHR. (Newcastle-upon-Tyne) 091-236 2013

● TM411E 70cm FM TRx, 25/5W, box, packing, £250. G4FQF QTHR. (Romford) 0708 47998

● KW2000B tcvr c/w LS/PSU and mic. In addition KW110 Q multiplier, fan, spare valves, manual and full size cir.diag. £225. G3RDG QTHR. 01-455 8831

● MASTHEAD preamp ARR MM144VDG 1kW. V.high spec. Cost £300 1989. Unused, c/w box, data: £100. G4JBH QTHR. 0935 28341

● YAESU FL2100Z: £600. SP901: £25. Muirhead dial-drive HRO ST1E, straight through spindle. New: £35. Mains TV w/band amp, 6-way: £40. 1-way: £15. Altai mic stereo: £20. Mono dual-z: £10. Tubetester B/W: £15. Buyer collects. GM2FHH QTHR.(Aberdeen) 0224 324495

● EDL144 2m 100W linear/preamp: £65. Dual-beam scope 60MHz c/w manual: £170. Weltz SP350 swr/pwr meter: £65. 2m halo: £5. Digital multimeter: £15. Watford Eprom programmer for BBC-B: £40. Buyer inspects/collects or pays carr extra. G0DLF.(Northants) 0604 831061

● TRIO TR3200 70cm FM tcvr, nicads, chrgr. Case, boxed, similar TS2300. VGC: £95. G4SQV QTHR. (Derby) 0332 831300

● RE-ADVERTISED since repairs completed at Icom (UK), Icom 251E, built-in PSU, Mutek F/E. All manuals. In exc.cond, still in sealed Icom box. Not opened until sold: £425. Also Multitech MVM-12G, green screen monitor, high res, tilt and swivel base. Commodore lead, new unused, boxed: £45. Commodore 64/128 program mini office two, new, unused: £10. John.01-857 8096 after 11am

● VINTAGE radios. Marconi radiogram model 852. Ferguson model 382 Ultra with magic eye. Marconi with bakelite cabinet. All pre 1939. Can be seen near Ipswich. Also large quantity 78 records. Any reasonable offer accepted. G5WW QTHR.(Gt.Yarmouth) 0493 740033

● YAESU FRG7 rcvr, GWO: £80. Yaesu FRG9600 PSU and discone 60MHz, 950MHz. As new: £375. Spectrum 48k computer TX3 TX interface logbook and morse tutor programs: £70. Met 3ele 6m beam: £10. G1TWC QTHR. (Littlehampton) 0903 723718 eve

● RTTY/Commodore 64 computer, datacassette, G6KMM RTTY plug-in Eprom, full insts. Contest s/ware: £150. Many games. SAE list. G5LP. (Wellingborough) 0933 79539

● ICOM IC720A. All-band gen.cov tcvr, mic ICHM7, ICPS15 PSU, CW and AM filters. Exc.cond: £575ono. G0EYL QTHR. (Knaresborough) 0423 865082

● DENTRON 3kW ATU: £200. Also MFJ 989B, 3kW ATU fully metered all inputs: £275. G3KDB QTHR. (Lichfield) 0543 253398 eve

● ICOM IC2E 2m h/held c/w chrgrs, case, extra BP4 batt pack, spkr/mic and packing: £110. G8MMN QTHR. (Skipton) 0282 843725

● ICOM 251E with Mutek: £450. Dressler D200 with spare valves: £350. Complete 6m station, Icom IC551D, Icom ICPS15, Icom ICSP3 plus 6ele Elite yagi: £750. 3x 13ele Elite yagis: £120. Yaesu FT707 with FC707 and Butternut HF6VX: £500. G1SGB QTHR.(Rotherham) 0709 540753

● YAESU FT708R UHF h/held, with case, batt, 1/4 wave, manual, mint cond: £150. Sony colour video camera, model DXC1640P, semi-pro, zoom lens, electronic viewfinder, accs, aluminium carry case, inst and service manuals. Exc.cond: £295. No offers. Buyer collects. G6AQC QTHR.(Oxford) 0865 243634 after 7pm

● YAESU FT790R, 70cm, VGC, boxed, up/down shift on spkr/mic: £250. Yaesu FT225RD with h/book: £500. 100W 2m amps, Tono: £75. Mic.Mod: £90, 25W 70cm linear amp, Alinco: £90. Trio 2200G fully xtalled, h/book etc: £80. Lucas 10m FM conversion: £35. Aerials. Buyer dismantles, tools etc available. 15QD 2m, 50ft cable, coax, Stolle rotator, pole: £100. 2m 8x8 and 70cm 19ele beams, 100ft cable, coax, Iwasaka rotator, pole: £100. Please phone for further details. (Dartford) 0322 523729

● FRG7 superb cond, orig.packing and manual: £110ono. Rigonda portable B/W TV, mains/12VDC. Ideal for ATV: £15. M/mount for FT290 etc: £10. PRO2004 300ch scanner, 25-1300MHz. AM/FM, mains/12VDC. Orig packing and manual: £230ono. G8FRL QTHR.(Cambridge) 0223 863256

● PROPERTY of the late CE Sutton, G3AQ. KW Vanguard: £50. MM432/50: £95. MM144/100: £100. Azden PCS3000 2m FM tcvr: £195. Trio TR7730 2m FM tcvr: £195. Kenwood SMC25 spkr mic: £20. Uniden 2020 HF tcvr: £350. Plus several PSUs, 13.8V low current rating. Nigel, G4KZZ QTHR.(Coventry) 0203 444160

● ICS FAX1 facsimile decoder and the superb silent DCP1 thermal printer. Demodulates Fax, RTTY and Navtex. You need only SSB RX and 12VDC. Spare printer rolls available. Cost over £500. Will accept: £350. G4YXX QTHR. (Wincanton) 0963 32389

● YAESU FT101E: £300. Icom ICR70: £350. Drae 12A PSU: £75. Philips reel-to-reel stereo tape deck type N4504: £40. Brass sheet 48x24x1/16in: £10. 2x Tektronic dual-beam scopes: Offers. All the above in GWO. Buyer collects. Peter, G3UXH QTHR.(Rochester) 0634 250562

● FT73R: £200. FT211RH: £210. FT73R with nicad pack, soft case, PA6DC chrgr adaptor, technical supplement, h/book. FT211RH 5/45W 2m FM radio with mic, m/bracket, manual, Heatherlite mobile mic. Both orig.packing, little used and in exc.cond. Mick G4ITF.(Portsmouth) 0705 386184

● YAESU FT77, Yaesu SP102: £400ono. Emotator rot 105TS: £60. Conv 10FM CB. £20. All in 1st class cond. (Ashington) 0670 814413

● REALISTIC PRO2005 25-1300MHz scanning rcvr, with D130N discone ant, 25-1300MHz, and HS1300MT RX preamp. Price new £455. Sell: £400ovno. No splits. Also Yaesu FT101ZD full WARC spec plus narrow CW filter. Recently serviced by G3KLL: £475ovno. Also Yashica FXII 35mm SLR camera with case and shoulder strap and Sigma 70-210mm macro zoom telephoto lens. Still boxed and unused, black case, lens fits Yashica bayonet mount: £275ovno. Buyer collect or pay carr. Would consider exch for working HF linear. G4XPP QTHR.

● FT102 mint, 60hrs only. FM fitted. Test before you purchase. £580ono. GW4PNZ QTHR. (Swansea) 0792 204206

● HF SSB tcvr FT101. Exceptional model. Speech processor, new WARC bands, preamp, mobile fittings, smart cabinet: £295ono. Also little used MFJ ATU 941D. HF wavemeter, 70cm handy, ZX81 computer and PS: Offers. G0FDV QTHR. (Dunstable) 0582 606173

● G8XPZ wishes to update equip. Must sell following. Icom IC202 144MHz SSB tcvr with processor, mic, nicads, and int chrgr: £120. Icom IC2E 144MHz NFM, with spare batt pack, spkr/mic, 12V adaptor: £130. Would exch above rigs for FT290R inc Mutek and nicads. Sony ICF7600DS 0.15-30MHz SSB/AM RX: £95. Boxed. Total surveillance package. MX7000 scanner, Aircastle scanner computer, Spectrum 48k, RS232 interface. Gives 900mem RX from around 6-600, 750-1400MHz AM/FM/NFM. Special s/ware gives signal strength plot on TV c/w manuals etc: £460. Ring for details. Possible split on last item, eg without computer and interface: £395. G8XPZ QTHR. (Nottingham) 0602 389911

● TRIO 3500 UHF h/held c/w chrgr, manual and box: £170. Yaesu FT209R VHF h/held: £160. Post extra. G0EYX QTHR. (Stafford) 0785 52289

● MIZUHO 80m h/held tcvr, as new: £109. Tono 9100E AMTOR/RTTY terminal with VDU: £250. PK232 terminal with IBM PC s/w, as new: £199. PC HF Fax I/F and S/W: £45. Set of 8 unused Howes-built modules for 80m tcvr and ATU: £60. Dressler ARA 900 active ant, boxed: £75. Archer VHF/UHF rotator, loft use only: £30. WPO mic graphic equaliser: £25. AP100335 HF RX with PSU: £75. 2 Capco magnetic loops 80-10m: £300 buyer collects. Liniplex FS synch. RX with OSC-1: £500. SEM QRM eliminator: £45. SEM 80m DC RX: £30. Stuart Senior, G4MIB QTHR. 01-674 6452

● R109 WD RX c/w service phones, p/copy, h/book, few spare valves, 6V car batt, c/w front guard. WO: £100. Collectors item. Buyer collects. Peter QTHR. (Guisborough, Cleveland) 0287 34397 day

● MIC.MOD 2m linear with preamp, 10W in 50W out: £80. G3LBW QTHR. (Middlesborough) 0642 317547

● SCANNER 25MHz, 1.3GHz PRO2004. Virtually unused: £250. Or exch WHY. Many interests, none radio. G4PUR QTHR. (London Colney) 0727 25637 eve

● EPSON MX82F/T printer, perfect cond: £60. New 7289 23cm ceramic valves: £19. Also 2C39BA: £35ea. Paul, G4XHF QTHR. (Crawley) 0293 515201

● COMPLETE HF station. Immac.cond, like new. TS520SE tcvr, AT230 ant tuner, SP230 spkr, MC50 mic, lowpass filter, HQ1 minibeam, HF5 vert, DM81 dip meter. Must sell quickly. Best offers secures. Consider 2m portable in p/exch. (Billericay, Essex) 0277 625976

● CHARITY sale. Meopham Parish Church Rescue Fund. SAE list. JC James, Solaby, 4 Longview Drive, Huyton, Liverpool, L36 6EE.

● BBC Master 512 with PC emulator screened case, twin disk drives, 40/80T mouse, joystick, colour monitor, daisy wheel typewriter, manuals, s/ware, extensive collection games, radio packet. Complete system: £600. G2AXO QTHR. (Northampton) 0604 863311

● TEN-TEC gen.cov 585 tcvr fitted 6/8 pole filters, 282-250Hz, 258-500Hz, 288-1.8kHz, latest s/ware 960 PSU/spkr 700 mic, manuals. Boxed: £1855. Carr, ins paid. (Kirkby-in-Furness) 0229 89635

● MAGNETIC loop ant c/w approx 100ft control cable, control panel. Capco 10-20m in good order, only reason for disposal XYL objects: £120ono. Buyer collects. G0IGE. (Esher area) 01-398 5696

● ORT sale. Yaesu FT726R 2/70/SAT modules: £750. FT757GX: £475. SP102 spkr, suit either: £45. BNOS 25A PSU: £135. Tokyo linears, HL160V 2m 3/10 in, 160 out: £150. 70cm HL30U: £110. Welz SP15/AC38 ATU: £70. Welz CT300 dummy load: £65. Dragon 32 computer c/w Sony 9in mono TV, tape recorder, interface boards and s/ware for CW/RTTY, morse tutor, slow scan RX. Also joysticks and bag of games etc: £100 the lot! HK704 morse key: £15. Altai 6A PSU: £20. PC 102 keyboard: £25. 2 Drae 2-way switches: £10ea. 180W PSU suitable XT clone: £45. All immac. most boxed. Large items buyer collects. No silly offers please, not desparate!. G4FYN QTHR. (Reading) 0734 861136

● ICOM IC275E with 500Hz filter, hi-stab xtal osc, orig.packing: £575. Mic.Mod 50MHz tvtr 144MHz IF, unused: £165. Mutek GFBA144E masthead preamp with sequencer. Never used outside: £75. 13.8V 30A linear PSU: £40. G4PLZ. (Stockport) 061-439 4136 eve-w/e

● EVERYTHING for a fiver each! 144MHz 9ele Tonna, unused. 50MHz 3ele Deecomm, unused. 1185-0-1185 360mA transformer. Icom SM5 desk mic. 10x 490uF 450V computer grade electrolytics. 0-15, 0-15V 300VA toroidal transformer. 7/1000pF, 5kV Jennings vacuum variable. Yaesu YM134 dynamic fist mic. Transco SME latching changeover relay. 450-0-450 380mA transformer. G4PLZ. (Stockport) 061-439 4136 eve-w/e

● RACAL racked unit RA117E rcvr, SSB unit, ATU. Buyer collect: £295. Racal RA1218 rcvr. Buyer collect. Works and operating manuals: £325. HRO MX, coils, spares, manuals. Mint, collectors item. Buyer collect: £170. Racal RA17L rcvr: £50. Or free with above lot.(Northampton) 0604 718707

● SSB tcvr 1.8-9MHz, 10W xtalled 80/160m: £35. Icom 1050 modified for 29MHz FM: £25. Also another for modification: £25. Handic 1605DL 6ch AM for mod: £8. RTTY micro TX/RX system: £25. (Ipswich) 0473 689982

● KW2000B matching PSU, Shure 201 mic, manual: £220. KW107 Supermatch: £70. MMT144/28 tvtr with 2A supply, for use with above: £90. Jaybeam 8ele quad 2m, boxed, unused: £45. Jaybeam C52M colinear, used for a short time: £50. All above ono. Buyers inspect and collect. G4XTZ QTHR. After 1pm w/e.(Slough) 0753 74463 after 6.30w/days

● FT101ZD WARC with FM board, plus matching FV101DM digital VFO: £530. Tokyo Hi-power ATU with int noise bridge and dummy load: £150. Realistic PRO2021 scanning rcvr: £130. All exc.cond c/w orig.packing and manuals. G4LTM QTHR. (Dukinfield) 061-338 3787

● 2M yagi, Slim Jim and mobile. PSU, rotator, ant switch: £125. (Welling, Kent) 01-303 7019

● IC202S with nicads and beacon band: £110. Buyer collects. Brian, G8DIU QTHR. (Worcester Park) 01-330 0092 eve-w/e

● VME bus processor board: Force CPU1C, 10MHz 68000, 128k RAM, monitor, assembler, Basic, Forth, serial ports, parallel interface, real-time clock, double height Eurocard, use as stand alone or as VME controller. List price more than £800. Offers invited. G0CAD QTHR.(Oxford) 0865 341428

● 4CX250B amp: £200. 16ele F9FT: £20. 16ele BCX: £15. 11 vols Time Life of Photography. Brand new: £50. Mike G0KAS. (Epsom) 0372 742476

● YAESU FT767X latest spec. 2m fitted, little used: £1250ono. Also Yaesu FT727R dual-band with accs: £300. All boxed, as new. ORT sale. G4TMA QTHR. (Poulton-le-Fylde, Blackpool) 0253 886389

● AMTOR terminal unit, G3LIV, for BBC-B plus ROM, G3WHO: £80. Yaesu 6m unit for FT767: £120. 6m 3ele: £10. G4MH minibeam. Perfect: £50. G4LJO QTHR. (Winscombe, Avon) 093484 3507

● YAESU FT7B HF tcvr 80-10m fitted FM/11m/160m, FP12 PSU, FC700 ATU. Mint cond: £450. Carr.inc. Prefer no split. GW4RLP QTHR. (Caernarfon) 0286 5264

● LAFAYETTE HE80 RX: £50. Or WHY. Trio R599, extn spkr. Mint cond: £30. 2x 1930 b/cast RXs ICL computer WHY. (Basingstoke) 0256 468649

● KENWOOD VFO120, orig.packing: £30. 12V/10A PSU: £10. Buyer collects. Paul, G0EXF QTHR. (Sheffield) 0742 475524 after 6pm

● SINCLAIR Spectrum computer, data recorder. TV s/ware SSTV/ASCII/CW/LOG etc: £80. 3m Whisper writer RTTY terminal, paper, manual: £35. 12V PSU 6A protected: £10. G1UHS. (Chesterfield) 0246 569527

● ICOM 290E 1/10W 2m multimode: £200. Also BNOS LPM 10-100 linear amp with preamp exc.cond: £120. Both items together: £295. G1YPN. (Reading) 0734 414106

● VESPA HF TX and pwr supply: £50. Sinclair portable scope plus 0-10MHz probes: £80. Flightscan scanner mains powered 16mem: £50. Ferguson green screen monitor. Very little use: £15. All above VGC. Pt/exch possible for VHF colin or KW107, FC707 ATU. PSU also required to suit Icom 720A. G0CFG QTHR.(Wirral) 051-645 8519

● AVO CT38 working. Offers. WY2521 unit osc tester TMS No.1 Mk2 with WY2520 supply unit. VGC: Offers. G7BSK QTHR. (nr. Gainsborough) 0427 811051

● 2M Icom micro, 2E nicads, chrgr, spkr/mic: £150. Trio 2300 handi/talkie nicads 15W PA: £100. LX80 printer: £60. 120W linear 2m amp: £60. H/duty 20A 12V PSU: £30. 6 UHF Starphone h/helds, batts/chrgr: £25. Bird 100W dummy load 50ohm: £50. IBM PC keyboard: £15. 2m 25W Motorola synthesised 55ch mobile: £75. Len G8LXI. (London) 01-981 3518

● AMTOR/RTTY fully working on CBM3016 computer, Eproms, 8050M dual disks: £50 separate. Incs TU freq.indicators, switching, complete: £150. Datascope Digilog-3 complete, manuals, GWO. Bargain: £400ono. Station-log IBM PC database, comprehensive, prof user-friendly amateur/SWL inc worldwide callsigns database: £20. G4PEY QTHR.0403 69835

● EDDYSTONE 730/4: Offers. G3DMQ QTHR. (Reading) 0734 581481

● FT707, FTV707, FC707: £500ono. FT480: £250ono. Mapsat RX and decoder. Fully operational: £120ono. G3UPA QTHR. (Meriden) 0676 22767 after 6pm or w/e

● NDI 2m FM tcvr model HC1400. VGC, c/w owners manual, 2 mics and m/mounting kit: £140. (Warwick) 0926 54289

● ICOM IC575A 6/10m multimode tcvr 10W: £650. Ten-Tec Century 22 CW tcvr: £230. SPC300 ATU: £80. Jaybeam VR3 Mk3 3-band vert: £50. Met 3ele 6m yagi: £20. G3HRY QTHR. (Newport Pagnell) 0908 616519

● TELEREADER CD660 ASCII/RTTY/AMTOR/CW decoder, new: £180. RCA AR88LF RX. GWO: £45. Grundig Yacht Boy 215, new: £30. (Tenby) 0834 3057

● KENWOOD TS530SP, AT230, SP230, complete station. Immac.cond. Tcvr never used on TX, c/w mic, manuals. Boxes: £840. Drake TV1000LP low-pass filter: £12. Drae 3-way ant switch. Never used: £12. David. (Lincoln) 0526 22300

● TEKTRONIX 465 scope, calibrated 08/89 inc back pack and operators book, will deliver reasonable distance from Manchester: £550, 100MHz. Also 2 section 40ft lattice tower, requires a little work for completion ie brackets for winches and a header unit: £120. Buyer to collect.(Wilmslow) 0625 527250

● TRIO TR9103 2m multimode inc mic box. Bracket inst. Reasonable cond: £320. (Wilmslow) 0625 527250

● COMPLETE Kenwood HF station comprising TS830S with YG455C and YK88C 500Hz filters, SP230 spkr, SM220 station monitor with BS8 pan adaptor and TL922 linear: £2170. Stolle 2050 rotator: £25. Liner 2, 2m/10m, SSB 10W O/P: £35. Kenwood TR7800 2m/25W FM: £150. G4DFU.(Nottingham) 0602 278173

● YAESU FT209R h/held, 2x FNB-3 nicads, NC9C chrgr, MH12AB spkr mic, PA3 DC/DC adaptor, FBA5 batt case, soft case: £175 the lot. Genuine Andrew Heliax cable end N-type plug terminations: £10ea. Good N-plugs for UR67: £1.20. Paul, G4XTA QTHR. 09313 359

● AMT2 c/w BBC s/ware used only for RX: £85. Reg.post paid. G8SEE QTHR. (Camborne) 0209 716526

● FT747GX bought June 89: £580. Reason for sale. 13.8V/20A PSU: £80. HS-HF5 5-band vert aerial plus unused radial kit: £75. Prism modem 2000, new: £60. G3XHC QTHR. (Dartmouth) 08043 3621

● TEKTRONIX 545B scope, 2xCA plug-in, manuals: £45. Newbrainad computer, PSU, leads, manual: £20. Manuals, CR100, Solatron LM1420: £3. MGZB magnette: £5. Winch: £7. 1957 Bush VHF64, GWO: Offers. 4x20 telescopic sight: £5. Old wind speed indicator, collectors item: Offers. Valve collection, many new, photomultipliers. Phone for details. All above ono. Exc.carr. G0BDA not QTHR. (Kendal) 05395 63621

● MAGNIFICENT Royal Navy 9in dia brass clock. 8 day movement: £95. Goblin valve wireless with clock. Working in beautiful wooden case: £40. Move to flat forces sale. Freddie, GI4ZAH QTHR. (Castlerock) 0265 848815

● 726R, 70cm, 2m, satellite. 726R, 2m KR500 elevator. KR400C rotator. Jaybeam 2m/70cm

crossed yagi. 5ele 2m crossed. SMC polar phaser. Hansen meter FS300V 50-150MHz. Welz meter SP420 140-525MHz. Yaesu MD1 desk mic. Hi-mound HK803 key. Kent twin paddle key. Datong morse tutor. ERA Microreader. FAX1 system with Navtex, printer. HF5V 10-80m vert ant with radial kit. G0HAE QTHR. (Southampton) 0703 455777

● CAPCO AMA3 loop aerial with control box: £120. Also Welz DP-CP5 vert aerial with radials: £40. G0EVS QTHR. (Hemel Hempstead) 0442 51679

● YAESU FT1 as new cond: £975. Exch for TS440S. Heathkit 2kW pwr/swr meter, HM102: £40. KW 3-way ant switch: £10. (Stoke-on-Trent) 0782 395017

● MIC.MOD tvtrs. MMT50/144: £150. MMT1296/144: £150. MMT144/28: £50. Trio TR3500 c/w spkr/mic, softcase, chrgrs 13.8V unit: £195. Honda EX500E generator: £150. Buyer to collect. Carr at cost for smaller items. G8HPD QTHR. (Wheathampstead) 058283 3307 after 7.30pm

● YAESU FL2100Z linear, WARC bands, manual: £500. Maplin Gold M6000, 3.5 digit DMM, boxed, manual: £20. G4BPY QTHR. (Walsall) 0922 413193

● FREE Creed 75. Psion Organiser model XP: £90. TR2500, TR3500 plus accs. 2m: £150. 70cm: £200. G3LZN. (Warwick/Falmouth) 05643 2014 or 0326 74463

● 11 unused 6-pin spare tubes for HRO MX some boxed. 4x 6D6. 3x 6C6. 2x 6B7. 2x 42E: £25ono lot. G1EEH QTHR. (Crewkerne, Somerset) 0308 68598

● STC Novatel Prestel business terminal, integral modem, 7in high resolution screen plus auto dialler and connections for cassette/printer/ext colour monitor/keyboard: £65ono. G4DYM QTHR. (Longresbury nr.Bristol) 0934 833478

● TRIO TS830S HF tcvr, AT230 ATU, MC60, DL600 dummy load, LF30A lowpass filter. All mint cond. Orig.packing: £800 the lot. No split. Prefer buyer inspects/collects. G0BXS QTHR. (Oxford) 0993 830115

● TRIO TS430S, all filters: £750ono. FTV107R tvtr with 2m module: £100. Jaybeam TB3: £60. Trio TR7800, fault on TX, hence: £50. Cirkit 6m tvtr kit, not started: £40. IRCs: 40p ea. Please include SAE. G3XTT QTHR. (Henley-on-Thames) 0734 724192

● SHURE 444D desk mic. Good cond: £25. G3UVE QTHR. (Bexhill-on-Sea) 0424 215983

● TS820S, exc.cond, inc mic. Must sell, going QRT: £340ono. G4IXX QTHR. (Cheltenham) 0242 526945

● CLARKE heavy duty 40ft telescopic pneumatic mast with self supporting legs. Cost new £3000. Ideal field days etc: £450ono. Army bomb disposal team comm kit, based on Pye PF1 70cm system. Complete, mint. Boxed: £120ono. Interesting missile guidance sights consisting of X10 telescope: £20. PAS5 night vision binoculars, mint cond: £250. Sony ICF2001D, mint cond. HF airband: £250. G6CUQ. (Redditch) 0527 892282

● TS940S built-in auto tuner 250Hz CW filter. Magnificent specimen: £1600. Tony, G0HTX not QTHR. (London) 01-727 2246

● DRAKE T4XC AC4, R4C, 2x filters MS4, MN2000. All one owner. Superb cond: £750. No splits. Tony, G0HTX not QTHR. (London) 01-727 2246

● AUDIOTRINE reel-to-reel tape recorder, valve mono 1/2 track. Not hi-fi but works: £15. Neal 102 Mk2 cassette recorder with manual and spare motor for 60Hz operation: £125. Buyer collects. G8DOH not QTHR. (London) 01-352 8575

● FT980 tcvr: £950. Printer Toshiba HXP550: £125. BNOS PSU type 12/25: £100. 9in VDU: £20. Howard. 0394 460474

● CWR685E CRT display RTTY/CW/ASCII tcvr c/w keyboard c/w service manual, inst manual. Boxed, mint cond: £220ono. (Nottingham) 0602 625047

● 60FT Versatower, trailer mounted. VGC c/w head unit, towing fittings and lights: £600. Mick G0GAG. (Mansfield) 0623 642348

● TOKYO Hy-power HT180. As new, mic, boxed, 20 WT OP worked WS on 80, noise blank dig-display: £200. Converted LCD 10m FM repeat-shift mic, 50W linear: £85. MM100WT 10m linear with preamp: £105. G4KRZ. (Salisbury) 0722 29737 not after 1930.Z

● CTE CT1600 2m h/held, with ext mic, nicads, chrgr: £110ono. (London) 01-441 5126

● ICOM IC720A HF all-band plus gen.cov with ICP515 PSU: £600ono. Brian G1SPW. after 6pm

● SHACK clear out. FT290 Mk1 s/case, nicads, chrgr, m/bracket: £250. FT203R, s/case, chrgr: £120. Alinco ELH260D liner: £60. Maplin Gold freq.counter: £100. PKC2 packet communicator plus s/ware for PC, 5.25in disk: £100. 0-30V 20A PSU: £40. 3 switched PSUs total 13.8V: £50 the lot. 4-way 232 data switch: £30. HK709 morse key: £10. Maplin Gold dip meter, unused: £50. RN Electronics 2m-6m tvtr: £90. Rotator KR400RC controller: £60. Offers considered. G1VSH. (Hornchurch) 04024 72611

● SIGNAL airband rcvr type R537S. VFO and 2 fixed channels: £65. G4RHI QTHR. (Axminster) 0297 32572

● FC757AT exc.cond: £250. Tuner MMT144/28 exc.cond: £90. (Stafford) 0785 211958

● FREQUENCY counter CTE International 10Hz-1.3GHz: £70. Would exch for HF ATU Transmatch etc. Also 8ele VHF with Hirshman rotator: £40. GM0GON QTHR. (Campbeltown) 0586 52496

● 10FM DNT rig: £25. Bremi 13.8/10A PSU: £25. Maplin PSU 3A: £10. G4VQJ QTHR. (nr.Romsey/Salisbury) 0794 390595

● TRIO TS940S, VGC: £1400. SP940: £50. Heathkit/Heath Explorer HF linear: £975. Icom IC701 tcvr with 13.8 PSU. GWO: £425. (Norwich) 0603 624573

● YAESU FT101E HF tcvr with ext spkr. V.clean working order but suspect bandchange switch. Yaesu mic, Yaesu YH55 phones, HK707 morse key, MFJ901B Versa Tuner, Koyu K200 swr/pwr meter, AKD-WA3 HF wavemeter, Ten-Tec 50ohm 300W dummy load, Sigma SA450 ant switch, LF30A lowpass filter. All with insts. RG8U 50ohm coax connecting leads. All items as new apart from FT101E. Prefer no split and cash. Bargain: £400ono. G4FTL QTHR. (Park Street, St.Albans) 0727 72237

● TL922 linear, new, 3/500Z serviced by Lowe as new: £900. Manual, boxed. QTHR. (Turves, Peterborough) 073120 268 day/night

● KENWOOD MC50 mic: £35. Welz dummy load CT300 freq range 0-250 pwr 1kW: £38. FL2010 2m amp 10W: £30. G0BXI QTHR. 0703 263232

● TS430S, PS430S. The pair for: £700. Will haggle. G3DYY QTHR. (nr.Huntingdon) 0487 841558

● TS120S TX/RX: £325. Tono 5000E CW/RTTY/AMTOR/ASCII terminal unit and VDU: £170. Noise generator CT82: £35. Marconi sig.gen TF913 AM/FM 21-168MHz plus h/book: £55. Samson ETM3 Iambic keyer and paddle: £45. Service manual, Bush TV series T20/T22: £10. Ferguson stereo cassette tape deck: £25. G3RUD.(Weston-super-Mare) 0934 812348

● FRG8800 HF/VHF amateur, air, marine, b/cast bands. Digital clocks, auto timer, scanning: £450. Datong active ant: £35. G4PKH QTHR. (Berkhamsted) 0442 864059

● YAESU FT480R micro-processor controlled 2m all-mode tcvr: £260ono. Insts and 7/8 whip ant. Whitehouse, G6BCG QTHR. (Darlington) 0325 482983

● YAESU FT209R 2m h/h, Yaesu FT709R 70cm h/h, inc supplied accs, spare nicad pack, 2x Yaesu NC15 quick chrgr/PSUs, 1x Yaesu NC9C nicad wall chrgr, 2x Yaesu MH12 spkr/mics, 1x Yaesu YH2 headset. All as new: £430. GW4WBT. (Llandudno) 0492 78107

● YAESU FT480R, complete: £265. Yaesu FT780R, complete: £265. Realistic PRO2021 VHF/UHF scanner: £100. Tono 50W 2m linear: £30. MMA144V preamp: £10. Turner expander 500. Desk mic: £25. Trio pwr meter PF810: £40. Terry. 0753 866257 after 6pm

● COMPLETE shack clearance! Everything must go. 450 valves, untested though some new. 20 Denco plug-in coils, B9A. 144MHz, amp. 3 in 30W out. 32 variable caps, many wide-spaced. 100 plus VDR/varisters, new. Fluke 75 dig. multimeter. 75 valve metal screening cans, B9A. 75 valve bases. Many pre-war. Some PSUs, meters, transformers, plus nuts, bolts and washers for constructing, BA sizes. All above reasonable offers. Fountain/IBM Compat computer. 640k RAM. RS232. CGA board with extra port outputs. 101 key keyboard. 12in amber monitor. Panasonic KXP1180 multimode printer. Plus all leads: £600ono. Trio R1000 X 30-bands: £250ono. Spectrum 48k computer, joystick, interface. Fax drum speed generator and s/ware for same. PSU and manuals. Offers around: £110. WHY. G1AMR QTHR. 051-426 7975

● KENWOOD TS520SE, VFO520, MC35s mic, all mint cond. Plus boxes: £425ono. Buyer to collect. G4KPT QTHR. (nr. Taunton) 0984 24212

● TRIO 530S, filters N/C/S. LF30A tuner 230. SP230. Heathkit d/load. 250ft coax, ant. GDO. No split: £850. 2m FMS based HH 227RB-203R: £240. (Birmingham) 021-357 2009

● RACAL RA117E rcvr, 1-3MHz cont. 6 filters fitted. No cabinet, but fitted cover, c/w technical manual: £150. G3RDG. (London) 01-455 8831

● TRIO TR9130. 2m all-mode 25W. Good cond: £310. Phone pref 6-7pm. Ask for Tony. Please be persistent. (Sheffield) 0742 430463

● ICOM 290E 2m mulitmode. Good cond plus packaging, h/book, m/mount: £300. John, G4ECI QTHR. (Stockport) 061-439 3831

● YAESU FT767, incs 6m module, 2m module and MD1 desk mic. Exc.cond: £1200. HF6V vert, unused, also exc.cond: £130. Peter. (Exeter) 0392 432675

● DATONG morse keyboard sender. As new. 4x 64 character mems. Perfect CW 5-132wpm: £75. G4CJB QTHR. (Melton Mowbray) 0664 823057

● TS940S, Lowe mod, both 8.83MHz and 455kHz 500Hz CW filters fitted, also voice synth. Mint, unmarked, still under warranty. Box, manual. Any demo with pleasure. Cost £2285. 1st reasonable offer will secure. G0EOL QTHR. (Cheshire) 0606 554857

● AR3000, mint. £700. Signal R535 V/UHF airband RX, incl nicads, case, helical. VGC: £250. Lockwood, G3XLL QTHR. (Mellis) 0379 83596

● YAESU FT207R 2m h/held tcvr, case, spare batt, chrgr, remote spkr/mic: £125. G3XPV QTHR. (Shenfield, Essex) 0277 217294

● TRIO AT230 ATU with insts in orig.packing: £130. PP extra. G0GKY QTHR. (Redcar) 0642 476127

● TRIO TS120S, MC30S mic, VFO120, SP120 spkr, AT130 ATU, boxed, with manual, complete HF setup. Ideal for new licensee to get on air. Complete: £450. No split. FDK750XX multimode 144-148MHz USB/LSB/FM/CW with FDK scanning mic and m/bracket, 20W incl Slim Jim, swr meter. All for: £220ovno. Datong PC1 gen.cov cvtr, boxed, giving you 100kHz-30MHz RX with your 2m multimode tcvr: £70. Accept £700 for lot. G7BLH QTHR. (Bedford) 0234 740318

● KENWOOD R5000 with VC20 VHF cvtr: £750. Kenwood TS530SP: £625. Both as new cond, boxed. G3FUN QTHR. (Faversham) 0795 532608

● SONY KF7600D unmarked, boxed: £100. G-whip auto select 10/15/20 plus 80m bands with m/mount and coax: £40. GM0BVF QTHR. (Lockerbie) 05763 494

● HF tcvr. Heath SB102 HP23A PSU/spkr incl Homebrew tvtrs for 2m and 4m: £120. Honda generator E800E 220V 800W: £130. HF PA transistors two PT9795: £18. 15V 14A PSU 120V AC I/P. Easy mod to 13.8V: £18. 2m 8ele: £8. 4m 3ele: £8. 4m 4ele: £10. Jaybeam 15ft portable mast: £6. Prefer buyer collects larger items or carr extra. G4BWW QTHR. (Southport) 0704 29036

● TRIO TR751 2m all-mode mobile with BNOS 6A PSU for base: £375. Datong PC1 cvtr: £75. MM4001 RTTY tcvr with keyboard 45/1200 baud ASCII: £120. 2m/10m preamp: £15ea. Citizen 120D printer: £100. All plus carr. G6TPQ QTHR. (Oldham) 061-633 3895

● DRAKE TR7 4 filters RV7, PS7, Datong processor attached and service h/book: £620. AOR2001 scanner 25-500MHz: £160. Modified gonset linear 4x811A 10-80m: £80. SSM Europa-B 2m tvtr for FT101: £25. Sig.gen TF144G: £5. BC221 freq. meter mains: £5. G5KJ QTHR.(Liss) 04203 2105

● TS700G CW ext Vox, preamp: £240. Unused 2m masthead preamp, 100W switched CW mast clamps: £50. G4MMV QTHR. (Hull) 0964 622396

● DRAKE TR4C AC4 MS4 h/book. Recent overhaul, good cond: £350ono. G4UQF QTHR. (Peterborough) 0733 79079

● ICOM IC260E 2m multimode tcvr: £245ono. GI4SJQ QTHR. (Portadown) 0762 334648 after 6pm

● 1.2M k-band satellite dish plus remote positioning arm: £60. (Winnersh) 0734 788032

● KAM multimode incl Smartwatch and Kanterm s/ware for C64 PC: £200. FT290R: £200. Yaesu MD1B8 dual impedance desk mic: £35. Yaesu FIF232C RS232 Cat interface: £35. Set matched PA plus driver valves for FT102: £25. SP400 spkr: £10. Maplin 300 baud modem kit: £10. ICS PK232 ROM/cable for BBC-B: £10. BBC-B h/ware and s/ware. SAE lists. Tonotuna: £40. AI, G4CVZ QTHR. (Liverpool) 051-220 5470

● HF tcvr FTDX150. SSB/CW 80-10m bands. 120W PEP input. Solid state except PA. Mic, spkr mains PSU: £175. G0FGS QTHR. (Bristol) 0272 421965

● QTH large bungalow with tower, rotator and 3ele tribander, approx 1/3 acre garden offering great scope for ants. Situated in quiet semi-rural locality outskirts of Telford, Shrops. Available immediately: £120k ono, incl garden tractor for lawn mowing. Opus PC3 IBM compatible computer 32Mb hard disk 3.5 and 5.25in floppy drives, mouse, s/ware. Mint cond: £795ono. Mike G3XEF not QTHR. (Sidcup) 01-308 0052 eve

● TRIO R1000 gen.cov RX. VGC: £195 or exch for BBC-B computer, issue 7 preferred. Trio 2300 2m FM h/held tcvr: £90. Gordon, G1IHP QTHR. (Sutton-in-Ashfield) 0623 558663

● H/HELD Trio 2400 144-148MHz, 1.5W plus output. 10mem, scanning, c/w nicad, chrgr, case, belt clip, manuals and boxed. VGC: £120. Base stand with rapid chrgr: £18. Spkr mic: £12. Lot: £140. Gordon, G4DGM QTHR. (Wolverhampton) 0902 340211

● FT301D Yaesu 10-160 100W 12V, good cond: £300. G3NAS QTHR. (Lichfield) 0543 255992

● TRIO TS700 multimode rig, boxed: £225ono. Linear amp 50W, boxed: £75ono. G7DKB not QTHR. (Paignton) 0803 524536

● TRIO TR9000 2m multimode 10W. Perfect, little used. Best offer secures. G4CRB QTHR. (Reading) 0734 665283

● ICOM IC740, int PSU, FM marker. Mint, boxed. Best offer secures. G4CRB QTHR. (Reading) 0734 665283

● SP107 ext spkr, unused: £27. YM34 desk mic, as new: £28. Heil HC3 cartridge, unused: £15. Kenpro ballrace guying ring: £15. Exc.cond. SML swr meter: £5. Pair 7MHz traps with ant: £10. 2x mains/batt cassette recorders: £5ea. Mike, GM4KLO QTHR.(Glasgow) 041-639 2729

● EARTH rods and clamps: £10ea plus PP. (Whitby) 0947 606332

● TONO 550: £135. Realistic scanner 2001: £80. Halbar weather interface for BBC-B computer: £40. H/Held scanner, Black Jaguar: £135. Videonics plus directed: £400. As new vision/mixer special effects generator: £140. All plus post. (Littlehampton) 0903 724805

● FT101E, 160-10, RF proc, DC PSU, CW filter, mic, blower, exc: £295. FT757GX: £590ono. FP757GX: £58. FC707 ATU: £75. (Thanet) 0843 294446

● TS520SE tcvr, mint, 250Hz CW filter fitted. Also MC50 mic: £450ono. Buyer inspects and collects. (Bedford) 0234 273867 after 6pm

● IC202S: £110. 2m Wessie S20-23 RO/1/3/6/7: £75. 6m Meon 2m IF 10W PA: £100. 4m Meon 2m IF: £65. 12in B/W monitor: £20. Era Microreader and tutor. £85. Technical s/ware, cassette runs on CBM64 RX4 TIFI interface: £21. G4MTG. (Birmingham) 021-430 6764

● USA Alpha linear amp 76A and TS440S. Both as new. (Derby) 0332 833684

● IC735 Icom all-mode HF tcvr with gen.cov RX 100kHz-30MHz. 8mths old. Absolutely mint, used v.little for tcvr and RX only, c/w HM12 up-down mic. Orig.box: £790ono. G4ABF QTHR. (Southampton) 0703 791049 before 8pm and w/e

● IC251E 2m multimode, one owner from new. In mint cond. Fitted Mutek F/E. Hand and desk mics. With manuals and orig.packing. Would prefer purchaser to try it out and collect: £495ono. G0BMJ QTHR. (Eastbourne) 0323 763326 eve

● ARCHIMEDES A310 colour c/w 20Mb Acorn hard disk: £995ovno. Prefer buyer inspects/collects or carr.extra. G8ATC QTHR. (Liverpool) 051-724 4508

● TEN-TEC Argosy II HF tcvr, matching PSU, h/book. Exc.cond: £495. Dentron HF200A tcvr. Solidstate, matching HF ACS PSU/spkr. 10-80, 100W SSB/CW, h/book: £195. Trio TS700G 2m basestation, variable output module, h/book, exc.cond: £265. Icom IC245E 2m multimode, h/book: £195. SRX30D digital comm RX, 0.5-30MHz: £90. Heathkit HW8 4-band QRP tcvr. Fitted 50MHz RX module, h/book: £70. Katsumi twin paddle MK1024 keyer, mems, boxed, as new: £140. ETM2 elec single paddle keyer: £25. Hi-mound MK703 twin paddle key, solid base: £24. Hi-mound HK706 key: £13. Shure 444 table mic: £25. Starmaster Iambic keyer: £40. Maxon h/held 4ch tcvr. Would convert 2m or marine: £50. Micronta multimeter 22-204C, 43 ranges, as new: £10. Buyers collect of split post. G0MHO. (Peterborough) 0733 230088

● DRAKE TR4C with AC4 MS4, MFJ 941D 300W ATU, Ten-Tec 300W dummy load. GWO: £350. G4OLC. 0670 855953

● YAESU FT690 Mk2, chrgr, nicads: £295. 1296MHz tvtr 144MHz IF, 3W output: £120. WPO morse mem, MS version: £40. None of the above used on expedition! Tim, G4VXE QTHR. (Cheltenham) 0242 236723

● TRIO R2000 rcvr, VC10 cvtr 118-174MHz, manual. As new: £450ono. GW0DNR QTHR. (Llanfairpwll) 0248 73774

● FT790RII 1mth old, all-mode: £430. FL7025 70cm 8A/25W linear: £115. FTNC28C nicad batt chrgr: £18. TS788 DX/TX 26-30MHz 100W O/P: £200ono. (E.Finchley) 01-883 8636

● 70CM Trio TM401A mobile tcvr 12W FM, c/w m/mount. Good cond. £140. Going dual-band. GW4HAT QTHR. (Swansea) 0792 290770

● POSITION indicating meters sinc and cosine inputs capable of cont rotation. Beautifully made by Decca: £4. (Carlisle) 0228 513554

● TL922 linear: £950. MN2000 tuner 2kW: £150. FT980 tcvr: £950. Toshiba printer HXP550: £125. BNOS PSU 12/25A: £100. Howard, G0HZH QTHR. 0394 460474

● CHANGING equip. Mobile setup, incl crossband repeater facility TM221ES TM421ES RC10. Complete. Orig.boxes. Little used due to other commitments. Approx 2yrs old. Total price: £450ono. Ron, 11 Greatcroft, Firsdown, Salisbury, SP5 1SN. 0980 862489 8am-10pm most days

● ANT sale. 3ele minibeam 6-10-15-20m Altron AQ620/3E, 2wks use. As new: £150ono. Home-brew triangular alum windup lattice mast 30ft with winch: £50. Buyer collects or arrange carr. both items. GM3AHR QTHR. (Bonnybank, Leven) 0333 350580

● YAESU FT208R 2m h/held tcvr, YM24A spkr/mic. NC7 base chrgr, PA3 car adaptor, m/mount, swr meter. All boxed, manuals, hardly used. Ideal 1st rig: £185. G6RTM. (Slough) 0753 46012

● 2 transformers 240V primary. Ext wound secondary 45V at 35A. Secondary can be unwound to give lower voltage: £35ea. G4AKG. (Croydon) 01-651 5147

● KENWOOD AT230: £150. AR240 2m FM h/held synthesized tcvr. Offer over: £85. Yaesu 2m FM handie FT202R 6ch fitted, 3 xtals. Offer over: £40. G0BOI QTHR. (St. Osyth) 0255 821554

● TS830S, CW filter, VFO 240. 1st class cond: £750ono. G3BII QTHR. 0494 675528 after 6pm

● YAESU FV101Z ex VFO. Mint, boxed: £130. Or exch for PK88 and interface one for Spectrum or similar TNC not Shure. Yaesu SP901 spkr, mint: £30. Colin, G0DNQ QTHR. (Wallasey) 051-678 6052

● FT23R outfit for sale incl FNB10 FNB12 nicads, chrgrs, PA6 DC adaptor, spkr mic, mobile headset, s/case: £225ono. Sorry no splits. GM0JKF QTHR. (Banchory) 03302 3324

● HEAVY duty 60ft Versatower, 16in sides, head section with bearing, Emoto 502CXX rotator: £650. Heath 2kW linear, matching pwr meter: £650. Kenwood TL922 linear: £950. Trio TS830S, CW filter and remote VFO: £750. (Cheshire) 0565 873205

● YAESU FT1 tcvr: £900. Yaesu FL2100B linear: £425. TH3 Thunderbird 3ele 20/15/10m: £145. 25ft mast section and head unit, ideal base for tower: £95. Class-D wavemeter, mains conv: £15. All in exc.cond. Buyer collects. G3NUG QTHR.(Hemel Hempstead) 0442 62929

● FT75 80-13m tcvr. 12V xtal ch 30W PEP: £60. John, G4BYV QTHR. (Dereham, Norfolk) 036283 8142

● MAGNUM Two tvtr. Fits 101ZD 90. TAU SPC Transmatch. Valves 310 750. Bkts to make Delta loops. G4MP QTHR. (Chorley) 02572 75876

● ENGINEERS metal lathe. 9in swing over bed, 20in between centres. Face plate. 4 jaw independent chuck, 3 jaw self centring chuck, boring table, vert slide, tools, advice. No time to use: £550. Exch deal on JRC rcvr possible. G4GXE QTHR.(Buxton) 0298 78861

● SILENT key sale. Yaesu FRG7700, FRT7700 and FRV7700. All with manuals: £275 complete. KW2000E with matching PSU, nice cond with manual and hand mic: £245. Shure 444 base mic: £25. US Army BC221: £20. 2m h/held AOR240 with chrgr: £110. W/shop manual for Trio TR2400: £5. All items to be inspected and collected. Alan, G4XTZ QTHR. After 12.30pm w/e. (Slough) 0753 74463 after 6.30pm w/days

● FL2100B linear in as new cond with new valves fitted: £425. Barograph on mahogany base with glass and mahogany cover. New cost £412. Offered c/w charts for: £310. No offers and genuine enquiries only. GW3TMP. (Mold, N.Wales) 0352 771520

● KENWOOD TR851E as new with all orig.packing £450. Trio gearbox/VFO assembly, unused, for Trio TS900: Offers? G3GYX QTHR. (Nottingham) 0602 396387

● STANDARD C8800 2m mobile TX/RX: £105. Trio TR2300 2m portable TX/RX: £95. RX R208: £30. RX BC348: £30. G4UEL QTHR. (Aldershot) 0252 21353

● H/HELDS. IC2E: £110. FT708R: £115. Both with spkr/mics, chrgrs, cases, orig.packing. G8PRR. (N.London) 01-340 4139

● TRIO 9000 little used. Kenwood PSU PS20. 7/8 whip aerial. Kenwood hand mic. Adonis MM202HD headset mic. Both mics new and unused: £400ono. Buyer collect or pay carr. (Leicester) 053750 310

● YAESU high impedance dynamic mic, 50ohms. Black, as new: £8. Coutant PSU plus/minus 12V, minus 15V, plus 5V, rated 5A, heavy: £9. (Birmingham) 021-730 2001
● TRIO TS520 HF tcvr with mic, manual, DC leads. Good cond, orig packing. Bargain at: £300. G0JQR QTHR. (Ashington) 0670 819297 after 5.30pm
● CUSHCRAFT A3 tribander KR400 rotator and controller: £250. SP230: £30. G0IIY not QTHR. (Lowestoft) 0502 730523
● AERIALS. 2x 70cm 21ele tonnas: £15ea. 15ele 2m Cue Dee: £25. All good cond. Martyn G0GMB. (Milton Keynes) 0908 560026
● ICOM IC24G 2m, perfect: £120. Akai 4000DB Dolby stereo r/r tape deck. Mint: £65. Aiwa stereo cassette deck: £35. (Crewkerne) 0460 77292
● FT101Z HF tcvr, fan, good cond. V.little use. See my thin logbook: £300. G4RWL QTHR. (Carlisle) 0228 513227

WANTED

● AVO or Douglas coil winding machine. Also pre 1950s sparkplugs and tin boxes. Also any sales or technical literature, catalogues etc, relating to sparkplugs and magneto ignition equip. Martin, G8NWZ QTHR. (Wellingborough) 0933 73611.
● TEMPO 2004A and microwave modules MTV435 ATV Tx or FORTOP TVT 432 Tx. G4ZEK. (Colchester) 0206 851343
● SEM Transmatch with Ezitune. GW4UYY. (Rhyl) 0745 591686
● DRAKE RV7 remote VFO for Drake TR7 tcvr. Stan, G3XON QTHR. (Guildford) 0483 36953
● AT200 Kenwood ATU. Also FT747GX Yaesu tcvr or similar. Both must be in perfect working order. Chas QTHR. (Rhyl) 0745 334396
● NASCOM two c/w disk drives interfaces etc. Non-working unit considered. Mike, G3ZWW QTHR. (Chelmsford) 0245 442662
● ATLAS, TS130, FT7, Swan 100MX or other similar portable HF tcvr. Good cond essential. GM0IST QTHR. (Perth) 08212 360
● DRAKE R7A, RR3, DSR2, MR3, R4245. Any cond. Would import. (Shrewsbury) 0743 884858
● KENWOOD VFO820 ext VFO for TS820. Must be mint. Boxed. Good price paid. G4VZA QTHR. 0527 579371
● PORTABLE full size VHS cassette recorder plus colour camera like Ferguson Videostar. Robert G4FKR. (Winchester) 0962 880411
● MATCHING l/spkrs for FT101E and FRDX400. Your price paid for spkrs. Peter QTHR. (Guisborough, Cleveland) 0287 34397 day
● MODERN Motor Cycles 3 vols Caxton Press 1945 era. Auto Mobile Electrical Maintenance. A.Judge 1945 era. Modern Electrical Equipment for Auto Mobiles. A.Judge Caxton. Any books on pre-war Panther and or Burman gear boxes any other books on British motor bikes or Lucas Wipac Wico BTH Miller publication on dynamos Magnetos. Also any tuning info for Villers engines. G4EGB QTHR. (Scarborough) 0723 362537
● TONNA 17ele 2m 50ohm spade. 22ft alum scaffold pole. Members for active SE London contest group. (Bromley) 01-290 0031
● KENWOOD TL120 linear, SP830, VFO230, DFC230 for TS830S. Will arrange shipping from UK. Tim Ellam VE6SH, G4HUA, 107 Strathearn Rise, Calgary, Alberta, T3H 1R5, Canada. Call Collect 403 246 5263
● 100W linear for Trio TS120V or TS130V please. Must be in GWO. G0KIQ QTHR. (Macclesfield) 0625 611942
● FC902, FC102, Kenwood AT230 or similar ATU with pwr/swr meters. Mark, G0ICW QTHR. (Rugeley) 0889 577260 after 6pm
● 9MHZ xtal filters, SSB, FM and CW. Andy, G4HUE QTHR. 01-989 0867
● R209 12V GWO or WHY. Also spare 12V vibtor req. Brian, G8DIU QTHR. (Worcester Park) 01-330 0092 eve-w/e
● FT501 inst manual and cir.diag. or photocopy. Costs refunded. Alan, G0HKG QTHR. (nr.Colchester) 0787 223356
● DIAGRAM or manual for scope OS8C/U. Any info please. Frank, GW3ICF QTHR. (Cardiff) 0222 707384
● WIDE spaced capacitor 2.5k, 15-350pF, WHY? 6.3V, 16A, CT transformer. 811A valve bases. Eddystone ceramic 2.5in former 23 or 26 turns. (Essex) 0375 378783
● SWAN equip. Does anyone have an unused Swan tcvr, Vox unit, VFO or similar items to dispose of? Even a non-worker would suit if repairable. G3RCO QTHR. (Seaton) 0297 21016
● ICOM IC275E 2m multimode, tower winches up and down. Also tiltover. (Wilmslow) 0625 527250
● FV401 remote VFO for FT401 any cond. AR88D with S-meter and spkr. Must be good/exc.cond. Money waiting. Dave, G3WGN not QTHR. Leave message on 0836 899506 anytime and I'll call back. (nr.Reading) 0491 872523 w/days 8-10pm
● TRIO Kenwood R599S amateur bands rcvr, the later model with black control knobs and bronze front panel. Good price paid for one in good unmodified cond. GM4HMN QTHR. (Lossiemouth) 034381 3605
● 2M tvtr to suit FT101, Magnum or Europa type c/w all leads, cables to connect. 0685 881694
● RAF air publications relating to H2S/ASV radars, navigation equip ie Babs, Oboe, Loran, Gee etc. Also ex-RAF radio stores index, publications AP1086-Sec 10. Exc. prices offered. Would purchase post-war magnetrons, klystrons, T/R cells, TWTs, thyratrons, special types of M-OV/EEV tubes and CV types. Many thanks. M.Gee, 17 Foxley Close, Mountford Est, Ferncliff Rd, Hackney, London, E8 2JN. 01-790 2846, 01-254 9083 anytime
● DAIWA CN620 swr/pwr meter in GWO. Colyn GD4EIP. 0624 801353
● RECRUITING 24 would-be club members, all British Amateurs, to share in the enjoyment as well as the running costs of a radio amateur exotic tropical island beach villa. QTH c/w HF station, to be shared at the rate of two weeks per member annually. 0908 668169
● HF AM TX HW100 or similar, Will collect. Also gonio meter. G3WRT. (Colchester) 0473 311665 after 6.30pm
● WANTED urgently. FT225RD, FT221R, IC202, SP301, 1296/144 tvtr, 23cm linear. Cash waiting and carr.paid or arranged. Please phone anytime or write. All replies will be answered. Chris, GD8GRE QTHR. (Douglas, Isle of Man) 0624 20324
● TRIO 130V or Yaesu FT77S with FM or Trio 120V. Also spare FM unit for FT77. G8RFE QTHR. (Leicester) 0533 779689
● REMOTE VFO for Trio TS700 TX/RX. Also ext. spkr. 051-426 7975
● BENCHER keyer MFJ422BX. Also YK88SN 18kHz SSB filter, YK88C 500Hz CW filter. Mr.Kwarr, 27 Crossway, London, W13 0AX. (London) 01-997 5315
● FT101ZD workshop service manual. HF linear amp commercial or Homebrew. A good ant switch. Electronic mem keyer. Edward, EI5DR QTHR.
● ONE or more BLW60 or BLW60R or unit containing these. Ideally with small F above type no. G3BGO QTHR. (Chelmsford) 0245 263735
● CIR.DIAG, h/book, alignment info, Lafayette HA600A RX. (Cambridge) 0223 832871
● PW Texan amp, later type preferred. Leak FM tuner and stereo amp, or home constructed amp and tuner, smallish! G4LSA QTHR. (Staffordshire) 0785 74388
● RADCOM March 1988 to complete volume for binding. Willing to pay. Please help. Trevor G3SJP, Schwarzwaldstrasse 15N, 6233 Kelkheim-Fischbach, W.Germany. (Kelkheim-Fischbach) 06195 66113

EXCHANGE

● XT clone 10MHz 32Mb 640k colour, for HF/VHF/UHF linear 400W plus or VHF/UHF basestation. Various TNCs RS232 terminal, ideal packet. Various scanners for WHY? Need HF CW portable rig. Will consider exch for any radio equip. Nick G4FAT. (Malvern, Worcs) 0684 564854
● FT727 dual-band h/held. All accs, hardly used. VGC. Exch for FT290 Mk2, TR9130 etc. Must be VGC. Or offers. (Birtley) 091-410 0305
● REQUIRED clean serviceable QRP rig. For exch model schooner 7ft x 5ft x 14in, displacement 56lbs, complete radio control, great crowd puller. Value £250. (Gt.Yarmouth) 0493 393560
● MARCONI DA30, DA60 and others offered for new 10, 210, 50, 250, 71A, 015/400 and similar small pre-war TX PA. Bernard Litherland, G4IMT QTHR. (Chippenham) 0225 891254

MAYDAY!(?)

In the unlikely circumstances of hearing a distress call on the amateur bands the most important thing to do is to ***LISTEN.*** Note down everything that is transmitted by the station in distress and also the time and frequency.

Pass all this information to the police. You may have some difficulty convincing them of your sincerity as this is unlikely to be an everyday occurrence, so be patient. They will pass on the details to the Coastguard Rescue Co-ordination Centre.

Only transmit in response to a distress if you are absolutely sure that it is going to help. Remember that a local station will be of much more use than someone half way around the world.

NEVER reply to a distress call heard out of amateur bands.

HELPLINES HELPLINESHELPLIN

We have quite a number of helplines for this month. This seems to be quite a popular column - please keep your letters coming in.

AMPERITE 6H6 BALLAST CURRENT REGULATOR SOUGHT

Mr Shepherd, G8YZW, would like to thank all those members who replied to his earlier 'Helpline' request for information on the Ekco Eliminator. He mentions that he has a GELOSA 209R rcvr in need of attention, and wonders whether someone can advise him where to obtain an Amperite 6H6 ballast current regulator. Although this carries the 6H6 code (?) it is not the normal 6H6 valve. This device apparently stabilises the filament current of two of the valves. Mr Shepherd, 66 Westerland Avenue, Canvey Island, Essex, SS8 8JS.

LITERATURE NEEDED FOR MARCONI MARINE 'FORECASTER'

Mr Cuskin, RS92320, has recently acquired a Marconi Marine 'Forecaster' receiver (originally used to receive fax transmissions of weather reports). He has no other information, so if anyone has any literature on servicing, or an operating manual/circuit design, please write to him at 8 Toner Avenue, Hebburn, Tyne & Wear, NE31 2PE.

EDDYSTONE 659 RECEIVER NEEDED

One of our readers is seeking assistance in locating a mains ballast resistor for an Eddystone 659 rcvr. He would also like to know if there are any other SWLs in the Basingstone area who would like to start an SWL Club. Anyone interested please contact Mr J Wright, RS86730, 54 Queen Mary Avenue, Basingstoke, Hants, RG21 2PG.

HELP SOUGHT WITH LAFAYETTE RECEIVER, MODEL HA800

The Gloucester Radio Society have asked us to help with a problem they have with a Lafayette rcvr Model HA800 they have been given. Has anyone got a service manual or circuit diagram for this, or know where one can be obtained? The contact name is Mr WC Pearce, G0FEW, 125 Longford Lane, Gloucester, GL2 9HD.

WHO KNOWS THE 'FARNSWORTH' METHOD?

Mr Dainty wonders if there is anyone who can explain to him the 'Farnsworth' method of learning morse. Any readers who can advise him please write to him at 43 Copse Avenue, West Wickham, Kent, BR4 9NN.

A PLEA FROM THE HEART

A plea from the heart now from Mr Fletcher concerning a circuit diagram or any other information available on converting a 6v motor cycle dynamo to 12v using transistorised or IC type regulators. Also a 6v transistorised ignition circuit diagram for negative earth systems (single cylinder engine). Please contact Mr Fletcher at 114 Scholes Park Road, Scarborough, YO12 6RA.

CALLING HUGH NOLAND

An unusual request now from Fred Ford, W5AVF. Up until 1965 he was QSOing and corresponding with a ham in Nyasaland, who worked for the Royal Police Force during the Maui-Maui period. His name was Hugh Noland, ZD6HN, and was known to have returned to England after ZD6 was vacated by the English. Is anyone aware of the whereabouts of Hugh? If so, please contact Fred at 150 Cane Ridge Drive, Vicksburg, MS39180, USA.

CAN YOU HELP?

We received a lovely letter from Ed Durbajlo, SP1MHV, a Polish amateur who is attempting, with the assistance of two friends, to resume activities on their Club Station, SP1KTK, which already comprises of 16 youngsters. They are desparate, however, for any surplus equipment to enable the station to operate again; they urgently require any HF, VHF equipment, components etc, plus any old books and callbooks that members can donate to this very good cause. Perhaps someone also could offer to help with delivering this surplus equipment to the Polish Club? If anyone can suggest ways to help please contact either HQ or Radio Club, SP1KTK, c/o SP1MHV, Ed Durbajlo, PO Box 11, 78-300 Swidwin-1, Poland.

TUNING INSTRUCTIONS FOR PYE VHF TX/RX WANTED

Mr Gray, GM3LRG, is going to challenge our reputation of finding answers to helplines. Come on let's prove we can do it again!! He possesses a Pye VHF tx/rx series 294 fm on 156MHz and would like to tune it up on 145.5 etc - 6 channels. Pye cannot help, so has anyone any information on mods and tuning instruction - perhaps there is an expert on 294 equipment somewhere out there! Mr Gray is based at 47 South Street, Greenock, PA16 8QG.

AMTOR SOFTWARE REQUIRED

HELP!! starts the letter from Mr Dyke, G3ROZ. Can someone help with software in any form, to run the first ever AMTOR system as designed by G3PLX 'Amtor the easy way' RadCom (possibly) 1980. Please contact him QTHR.

CAN YOU THROW A RAY OF LIGHT ON THESE PROBLEMS?

Two very varied requests from Mr Roy Horley, G4KME; firstly on behalf of Robert, F6GFC, who is urgently trying to trace a cathode ray tube by Mullard, P31D14 250GM. The second request is for something entirely different: has anybody got a recording of the BBC Christmas Eve 1989 'Songs of Praise' programme from Warwick Castle on VHS video. Any help with either of these requests please to Mr Horley, 50 Hillswood Drive, Endon, Stoke on Trent, ST9 9BW.

STORNO CQM.J632 HANDBOOK WANTED

A request for a photostat copy of the Storno COM.632 handbook. Any reasonable costs incurred will be met by Mr Arthur Green, G3NPV, 334 New Hey Road, Oakes, Huddersfield, HD3 4GQ. Drop him a line if you can help.

CAN ANYONE UNSCRAMBLE THIS TAPE?

Mr Izaac, G3JII, has received a video tape from friends in the USA, but is having trouble 'unscrambling' it and is only obtaining a very distorted audio response. It is a standard 180min VHS video cassette, but the modulation is obviously not UK VHS PAL standard. He assumes that it has probably been re-recorded from a camcorder, perhaps partly at full speed and partly at long-play. Can anyone help please? Mr Izaac can be reached on 0548 810387, or at 'Wave Crest', Bigbury on Sea, Kingsbridge, Devon, TQ7 4AS.

SHAWNDEL FLYER NEEDED

Martin Percy, G8NWZ, has recently been elected to be his local club's magneto ignition expert. Having acquired a coil winding machine he is short of one item to complete the set up. He needs a Shawndel Flyer. This is a combined wire tensioner/reel-off unit which fits over the spool of fine (45-46 surgical typical) wire, keeping the tension constant in all conditions, including winding back a few times when required. The last known address was Shawndel Flyers Ltd in Maidenhead, Berks, but they have now stopped trading. If anyone knows where one of these gadgets can be obtained, Mr Percy would be delighted to hear from you. His address is 37 Albert Road, Wellingborough, Northants, NN8 1EL.

HOW DO I CONVERT A RT106E?

Has any reader converted a Rediffusion RT106E radio telephone (SSB) from xtal to VFO operation with cw facility. If so, Mr Stuart Atkinson, 13 Charles Street, Gainsborough, Lincs, DN21 2JA, would be pleased to hear from you.

THANK YOU FOR YOUR HELP

A few bouquets now for successes we have achieved in Helplines:

Mr Williams would like to thank those members who contacted him with reference to his successful search for an Eddystone circular speaker.

Mr GJ Taylor, G3UCT, whose request for help in restoring a WS (Cdn) No29 was published in the January RadCom, wishes to thank the anonymous sender of the very useful original manuscript of technical information for this set.

Mr Geoff Watts, BRS3129, was astonished at the fantastic response to his request for 'oldie cassettes', and thanks everyone for their help.

JIM, PLEASE CONTACT JOHN AGAIN

Mr John Hughes, GM3LCP, received a reply from a gentleman in New Zealand in response to his request in the December issue. Unfortunately the NZ gent did not give his full name, address or callsign and is only known as 'Jim'. Please can Jim get back in touch with John Hughes asap.

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 MAY 1990 issue must be sent to HQ marked 'Club News - DIARY', to be received by 25 March 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.

AVON

▶South Bristol ARC - 07, committee meeting and Severnside TV Repeater Group Presentation; 14, HF activity evening; 21, bring & buy sale; 28, computer activity evening; Apr 4, Hand-held Rig Meeting; 11, 70cms activity evening.
▶Thornbury & DARC - 7, talk 'Aurora' by Garry, G1YOA; 21, HF activity night; Apr 4, Annual General Meeting; 18, HF activity night.
▶Weston-Super-Mare RS - 5, surplus equipment sale; 19, constructors night; Apr 2, talk 'The Communications System of the SWEB' by D. Wright. Details G0KBT, tel: 0934 514429.

BEDFORDSHIRE

▶Bedford & DARC - 6, talk 'Old Radios' by Don Underwood; 13, social evening; 20, talk 'Valves, How they Glow' by Bert, G3WBC; 27, social evening; Apr 3, talk 'Fighter Aircraft of the Wars' by Stuart, G0GOF; 10, social evening; 17, talk 'Magnetic Loop Antenna' by Clem, G0EYG. Details 0234 266443.
▶Shefford & DARS - 15, visit to Baldock Radio Station. Details 0707 372211.

BERKSHIRE

▶Burnham Beeches RC - BBRC serves the Slough and Windsor areas - 5, Annual General Meeting; 19, foxhunt. Start at Haymill centre 8pm; Apr 2, quiz v MADARC at BBRC QTH.
▶Maidenhead DARC - 1, quiz at home against Reading ARC; 20, Annual General Meeting. Details Maidenhead 25952.
▶Reading DARC - 1, annual quiz v Maidenhead Club, at Maidenhead DARC; 8, HF DXing talk by G3XTT; 22, club junk sale; Apr 12 talk and demo 'Amateur TV' by G8LES. Details 0734 774042.

BUCKINGHAMSHIRE

▶Aylesbury Vale RS - 7, visit to Milton Keynes Cable TV Distribution Centre. Details from Martyn, tel: 0908 560026; 21, TBA 8pm Hardwick Village Hall, Aylesbury. Details from Geoff, tel: 0280 817496.
▶Chesham & DARS - 7, general meeting; 14, technical topic; 28, visit to Bracknell Weather Station. Details from Secretary Liz Cabban, G0ETU (QTHR) tel: 09278 3911.

CLWYD

▶Conwy Valley ARC - 1, quiz; Apr 5, talk by Dr David Last.

CORNWALL

▶Cornish RAC - 1, CRAC main meeting; 6, radio constructors workshop - both at Perranwell Village Hall; 12, CRAC computer club - Treleigh Church Hall; Apr 5, Annual General Meeting - Perranwell Village Hall; 9, CRAC computer club - Treleigh Church Hall; 10, radio constructors workshop - Perranwell Village Hall.

CUMBRIA

▶Eden District ARS - 22, Annual General Meeting; Apr 26, 50MHz, G8TXJ. Details 09312 514.

DERBYSHIRE

▶Buxton RAS - meet second Tuesday in each month at 8pm Leewood Hotel Buxton. Details 0298 25506.
▶Derby & DARS - 7, junk sale; 14, illustrated talk 'Early Radio Pioneers'; 21, Annual General Meeting; Apr 4 junk sale. Details 0332 669157

DEVON

▶Axe Vale ARC - 2, talk 'Satellite Launch from Cape Canaveral, Florida' by Vic, G4KEE. Details 0297 33756.
▶Plymouth RC - 6, visit to Planetarium TBA; 13, RSGB video; 20, activity night; 27, talk 'TV Licence Detection' by Paul Kalas; Apr 3, activity night. Details 0752 361842.
▶Torbay ARS - 2.9, club nights; 10, annual dinner at Templestowe Hotel; 16, club night; 23, monthly meeting followed by 'The Worked All Britain Awards Scheme'; 30, club night. Apr 6,13, club nights; 20, Annual General Meeting. Details 0803 526762 or 0803 329055.

DORSET

▶Plessey Christchurch ARS - 8, new licensee evening.
▶South Dorset RS - 6, SDRS meeting and bring & buy sale; Apr 3, Annual General Meeting and constructors competition.

EAST SUSSEX

▶Hastings E&RC - 21, Annual General Meeting; Apr 18, surplus equipment sale.

ESSEX

▶Braintree & DARS - 5, Joe Binning, G3AJS 'Raynet'; 19, talk by Astronomical Society. Details 0376 27431.
▶Chelmsford ARS'- 6, talk 'DF' by Dick Brocks, G3WHR; Apr 3, talk 'HF Aerials' by G3XAP.
▶Loughton & DARS - 9, talk 'The Versatile Diode' by John Ray, G8DZH; 23, talk 'Who Has L&DARS worked - a Review of QSL's' by Chris Mattison, G6BPA; Apr 6, Annual General Meeting.

GRAMPIAN

▶Aberdeen ARS - 2, junk sale; 9, talk 'Use of Basic Test Equipment for the Radio Amateur' by various members; 16, talk 'Matching Unit for Wire Antennas' by GM3UU; 23, talk 'My First Year as a Licensed Radio Amateur' by GM7FIE; 30, talk 'Latest Developments in Private Mobile Radio' by GM4SID; Apr 6, junk sale.

GREATER LONDON

▶Acton, Brentford & Chiswick ARC - 20, talk 'In-Flight Telephones' by G4GD.
▶Biggin Hill ARC - Apr 17, bargain basement.
▶Coulsdon ATS - 12, surplus equipment sale; Apr 9, talk 'Computer Aided Design' by Dave Young, G8VXB.
▶Echelford ARS - meets at The Hall, St. Martins Court, Kingston Crescent, Ashford, Middlesex. 12, talk 'Cordless Telephones, the Second Generation' by Robin Hewes, G3TDR; 29, talk 'HF Digital Communications' by Mike O'Beirne, G8MOB.
▶Grafton RS - 9, night on the air and club discussion; 23, equipment clinic - Chns, G8JGE will be on hand with his Marconi Test Set to analyse your transceivers; 30, annual club dinner at the Waggon & Horses, Southgate. Details 01-368-8154.
▶Southgate ARC - 8, preparations for the London Amateur Radio Show; 9&10, London Amateur Radio Show; 22, club meeting; Apr 12, grand surplus equipment sale. Details 01-360-2453.
▶Wimbledon & DARS - 3/4, 144/432 Contest Reigate Hill with CATS; 9, surplus equipment sale; 30, general activity evening.

GREATER MANCHESTER

▶Eccles & DARS - 6, demonstration 'Advanced Oscilloscope Techniques' by G8VF; Apr 3, talk 'HF Aerial Design' by G0KLF.
▶Stockport RS - 14, talk 'The G5RV Dipole and its Relatives' by John Verity, G4ECI; 28, surplus equipment sale. Details 061-439-3831 or 061-480-3236.
▶South Manchester RC - 2, TBA; 9, Indoor DF; 16, preparation for club stand at the NARSA Exhibition; 23, surplus equipment sale; 30, TBA; Apr 6, TBA.

GWYNEDD

▶Meirion ARS - ***NEW SECRETARY*** Lee Roberts, GW0MMW, Ty Coch, Tan-y-Bwlch, Maentwrog, Gwynedd, LL41 3AQ.

HAMPSHIRE

▶Andover RAC - 7, quiz night - Andover v Newbury; 21, talk 'Making the Right Connections' by G6GFO.
▶Basingstoke ARC - 10, special event station GB4BLE at Basingstoke Library; 25, direction finding foxhunt. OS map 175. Area South and West of Maidenhead. 2M FM channel S17.
▶Fareham & DARC - 14, project 'Two Tone Generator' by Rod, G0ERS; 28, talk and demo 'RadCom's Simple Spectrum Analyser' by Bob, G8VOI; Apr 11, talk 'They Laughed When They Saw My Radio' by Alan, G3CCB.
▶Farnborough & DARS - 14, talk 'Amateur Radio in the USA' by G0/K14OO; 28, TBA; Apr 11, bring & buy sale. Details 0276 29231 or 0252 519773.
▶Horndean & DARC - 1, talk 'Pathfinders (Part 2)' by G3VPO; Apr 5, talk 'EMC' by G4RLE. Details 0705 483676.
▶Liphook (Three Counties ARC) - 14, club night for your own activities; 28, talk 'The Gambia DXpedition' by Roger Western; Apr 11, talk 'RTTY' by Alan Hobbs.
▶Submarine ARC - meets at HMS Dolphin, Gosport, Hampshire, on alternate Thursdays throughout the year at 7pm. March 8&22, April 5&19 and so on.
▶Victory Contest Group. - 15, Contest discussion meeting. 8pm at Churchillian Public House, Portsdown Hill, Portsmouth. Details from Chris Nunn, tel: 0962 55925 (work) or 0243 374283 (home).

HEREFORD & WORCESTER

▶Bromsgrove ARS - 13, visit by Dave Howes - CM Howes, Kit Manufacturers; 27, night on the air; Apr 10, microwaves. Details 0789 773286.
▶Bromsgrove & DARC - 9, Annual General Meeting - members only; Apr 13, members' constructors competition.
▶Kidderminster & DARS - 6, DF hunt, starting from 'The Queen's Head', Wolverley; 20, project construction at 'The Queen's Head' Wolverley; Apr 3, Ordinary General Meeting at 'The Queen's Head', Wolverley. Details 0562 751584.

HERTFORDSHIRE

▶Cheshunt & DARC - 7, talk 'Keyboards, Computers & MIDI' by Alex, G0CZZ; 9/10, London Amateur Radio Show; 21, talk 'Packet Radio' by Mike Dennison, G3XDV, RSGB HQ; Apr 4, construction contest; 18, mystery talk by Dennis, G3TIK. Details 0992 464795.
▶Stevenage & DARS - 6, Annual General Meeting; 20, talk 'Which Aerial is Best?' by Peter, G0GTE; 27, committee meeting 82 Lingfield; Apr 3, talk 'Meons 50MHz and All That' by Tony, G1ZZH; 17, talk 'Converting Commercials' by Mo, G1ZOO. Details Stevenage 724991.
▶Verulam ARC - 13, activity evening; 27, The annual G3PAO Memorial Lecture. This year's talk is called 'Sporadic E' by J.D. Bacon, G3YLA.

HUMBERSIDE

▶Hornsea ARC - 7, home construction; 14, committee meeting; 21, YTV videos by Richard G4YTV.

KENT

▶South East Kent (YMCA) ARC - 14, publicity material for 1990 events; 21, committee meeting; 25, South East QRP Convention & Radio Table Fair, YMCA Centre, Leyburne Road, Dover; 28, construction contest; Apr 4, Annual General Meeting and presentation of club awards; 11, committee meeting. Details 0304 852533.

LANCASHIRE

▶Thornton Cleveleys ARS - 5, preparations for the NARSA Rally at Norbreck Castle Hotel on March 18; 26, auction of surplus equipment.

LEICESTERSHIRE

▶Leicester RS - 5, quarterly progress, open meeting; 12, committee meeting, HF/VHF activity night; 19, talk TBA; 26, HF/VHF night on the air.

LINCOLNSHIRE

▶Stamford & DARS - *NEW VENUE* The Flat, Marshall's Garage, St. Paul's Street, Stamford. 7.30pm on First and Third Wednesday each month .

LOTHIAN

▶Lothian RS - 14, open night; 28, junk sale; Apr 11, national awards by Sam Hall, GM2AOL.

MERSEYSIDE

▶Liverpool& DARS - 6, talk by Mr. Graham Barker, District Manager, RIS; 13, activity night; 20, talk 'QRP' by Mike, G0IFK; 27, surplus sale.

NORFOLK

▶Norfolk ARC - 7, talk 'Running an Electric Railway' by Mike Rowe of British Rail; 14, surplus equipment sale/bring & buy (doors open 7pm); 21, informal and committee meeting; 28, talk 'Digital Electronics' by Mike Harris, G3YIA; Apr 4, Annual General Meeting; 11, talk 'Contest Techniques and NFD Analysis' by Pat Gowen, G3IOR; 18, informal and committee meeting. Details 0508 78258.

NORTH YORKSHIRE

▶YAXPAK - Apr 8, Annual General Meeting. 2pm, Ashcroft Hotel, York. Prospective new members also welcome. Details 0723 85845.

NOTTINGHAMSHIRE

▶ARC of Nottingham - 1, construction night - promotion of home construction using useful projects; 8, forum followed by activity; 15, talk 'Ascension Island' by Richard, G3VGW; 22, minitalk 'Moonbounce' by G3YUT; 29, constructors cup - judging of members' home construction projects; Apr 5 Annual General Meeting; 12, activity night; 19, junk sale. Details 0602 733740.
▶Mansfield ARS - 1, junk sale; 15, linears v processors v antennas; Apr 5, air band radio; 19, 10 Mtr FM.

ORKNEY

▶Orkney AR Group - 7, video 'DXpedition to Lord Howe Islands'.

SHROPSHIRE

▶Salop ARS - 1, talk 'Magnetometer' by G3UKV; 15, mini Olympics Leicester G6FHM+XYL+G0JWZ; 29, first foxhunt of the year; Apr 12, talk 'Aural Propagation' by G3USF. Details 0743 235087 (daytime).
▶Telford & DARS - 7, club station on LF bands; 14, construction competition; 21, talkthrough for RAYNET; 28, club station on HF bands; Apr 4, Annual General Meeting; 11, RAYNET at Leicester special Olympics. G6FHM. Details Telford 770922.

SOMERSET

▶Yeovil ARC - 1, discussion night; 8, film 'EMI 2000' by G3GO; constructors contest entries; 15, talk 'Aerial Radiation and Pattern' by G3GO; 22, constructors contest; Apr 5, talk 'Refracting Radio Waves' by G3MYM. Details from David Bailey, G1MNM, QTHR.

SOUTH GLAMORGAN

▶Cardiff RSGB Group - 12, talk 'Digital to Analogue Conversion' by John Case, GW4HWR; Apr 9, new members night.

SOUTH YORKSHIRE

▶YAXPAK - Apr 8, Annual General Meeting. 2pm, Ashcroft Hotel, York. Prospective new members also welcome. Details 0723 85845.

SUFFOLK

▶Felixstowe DARS - 5, 'Do You Know How Fast It's Going?' - a talk on frequency measurement by Dave Powis, G4HUP, 19, Annual General Meeting; Apr 2, open evening - all radio amateurs and SWLs in and around Felixstowe are invited to come along and see what the Club is about. (Ferry Boat Inn).
▶Leiston ARC - 6, talk 'Large Transmitting Valves' by Harold Fisk; Apr 3, construction competition; talk 'Basic Logic' by Alan Martindale, G3MYA. Details 0728 830791.

SURREY

▶Dorking & DARS - 13, informal - Falkland Arms; 27, TBA; Apr 10, informal - Falkland Arms.
▶Reigate ATS - 20, talk 'Noise Bridge' by George Cripps, G3DWW; Apr 17, Annual General Meeting - members only. Details 0737 771579.
▶Sutton & Cheam RS - 16, constructional contest; Apr 20, junk sale.

TAYSIDE

▶Dundee ARC - 6, construction; 13, talk 'SI Units' by John Hughes, GM3LCP; 20, talk by Lothian ARC speaker; 27, construction; Apr 17, construction.

WARWICKSHIRE

▶Rugby ATS - 6, Mr. J.I.Hopwood, G0EDT, RSGB Reg 3 Liaison Officer; 27, talk 'Amateur Television' by Mr. R. Platts, G8OZP; Apr 10, Annual General Meeting.
▶Stratford upon Avon & DARS - 12, talk 'Satellite Weather Systems' by Leslie Kaye; 26, talk 'Amateur TV' by Paul Marshall; Apr 9, Annual General Meeting and surplus sale.

WEST MIDLANDS

▶Coventry ARS - 2, night on the air and Morse tuition; 9, talk 'An HF Communication System for Africa' by Dr. Chandler; 16, night on the air and Morse tuition; 23, video evening 'Secret Listeners and Aerial Circus'; 30, night on the air and Morse tuition; Apr 6, TBA; 13, night on the air and Morse tuition. Details 0203 523629 or 0203 523523 X2541
▶Midland ARS - 20, talk 'WAB' by G6OVO (provisional); Apr 17, foxhunt (Sunday - leave 2pm). Details 021 443 5157.
▶Mirfield ARC - Meets every Tuesday (HF night and includes a CW workshop) and Wednesday (general natter night). In association with the club the centre also runs two classes - a Beginners Morse Class (Tuesdays) and an RAE Class (Wednesdays). Details 021 783 5898.
▶Stourbridge ARS - 5, on air night; 19, Annual General Meeting.

WEST YORKSHIRE

▶Halifax & DARS - 20, Birketts components sale; Apr 17, talk 'Telecommunications, navigational aids and radar ATC' by Reg, G3PRO. Leeds/Bradford.
▶Keighley ARS - 13, talk 'Modifying PMR Gear' by G4FSO; 27, visit Leeds Weather Centre; Apr 10, night on the air.
▶Northern Heights AR - 7, Hi-Fi update with Paul Allen, G3USH; 21, talk 'Development of The Electronic Jacquard Loom' by Philip Roebuck & Mike Bailey; Apr 1, White Rose Rally (stall); 2, quiz at Todmorden & DARS; 4, Annual General Meeting, Bradshaw Tavern, 8.15pm
▶Otley ARS - 6, talk 'Constructional Techniques' by Rev G.C. Dobbs, G3RJV; 13, night on the air; 20, talk 'Air Traffic Control and Systems' by Andy Rackham; 27, junk sale; Apr 3, visit by Derrick Pearson, G3ZOM, proprietor of 'JANDEK'; 10, Annual General Meeting; 17, visit by John Birkett.
▶Todmorden & DARS - 5, talk 'Moorland Rescue' by Pete, G6CNL; 19, talk 'USS Callsigns' by Arthur, G0IPN; Apr 2, fun night.
▶White Rose ARS - 7, Rally briefing; 14, informal; 21, talk 'Packet Radio' by Kevin, G4ATZ; 28, surprise night; Apr 1, White Rose Rally; 4, party night; 11, informal. Details 0532 648521.
YAXPAK - Apr 8, Annual General Meeting 2pm, Ashcroft Hotel, York. Prospective new members also welcome. Details 0723 85845.

WILTSHIRE

▶Blackmore Vale ARS - 13, Annual General Meeting; 27, club station G4RBV on air.
▶Trowbridge & DARC - Now meets on first and third Wednesday in month. 7, surplus equipment sale; 21, social. 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 callsign and telephone numbers direct to HQ and marked 'Rally News - DIARY'.

3 MARCH

▶Tyneside ARS Rally - North-Eastern Exhibition Centre, Gosforth Park Race Course. (1 mile north of Newcastle upon Tyne). Doors open 11am. Usual trade stands, Morse tests, bring & buy, refreshments, and ample free parking. Talk-in on S22 and SU8. Details from Terry, G6VEG, tel: 091 264 8196.

4 MARCH

▶Trafford Rally - G-MEX, The Greater Manchester Exhibition & Events Centre, City Centre, Manchester. Doors open at 10.30 for all, with priority to any disabled visitors. Admission £1. Usual and new traders. Parking. RSGB stand. Bring & Buy. Morse tests. Refreshments. Licensed bar. Talk in station (GB1GMX) on S22, 2m. Details from Graham, G1IJK tel 061-748 9804.

10 MARCH

▶Lagan Valley ARS Hamfest - Laurel Hill High School, Lisburn, noon - 5pm. All the usual traders will be there together with bring & buy and light refreshments. Talk-in on S20. Details from Pat, GI4NEZ, tel: 0693 67190.

11 MARCH

▶South Essex ARS Mobile Rally - The Paddocks, Canvey Island, Essex. Starts 10 am. Trade stands, bring & buy etc. refreshments. Talk-in (G4RSE) on S22. Details Ken Hendry, G0BBN, tel: 0268 755350

▶Welsh Mobile Rally - Barry Leisure Centre, off Horton Road, Barry, South Glamorgan. Details GW6RCK.

▶Norbreck Amateur Radio, Electronics and Computing Exhibition organised by the Northern Amateur Radio Societies Association (NARSA) at the Norbreck Castle Exhibition Centre, Blackpool. Details from Peter Denton, G6CGF, tel: 051 630 5790.

▶Tiverton RC Mid Devon Rally at the Pannier Market, Tiverton. Doors open at 10.00. Free parking; food & drinks available; club room open all day; talk-in on S22; trade attendance by invitation only. Details from G4TSW, Mid Devon Rally, PO Box 3, Tiverton, Devon EX16 6RS.

▶Wythall Rally - Wythall Park, Silver Street, Wythall, Worcs. (on the A435 near junction 3 on M42, south west of Birmingham). Doors open 11.00am. Usual trade stands; flea market; bring & buy; RSGB Morse test (provisional); bar and snacks; talk-in on S22; admission 50p. Details G0EYO, tel: 021 430 7267.

25 MARCH

▶Pontefract & DARS 11th Annual Components Fair - Carleton Community Centre, Carleton, Pontefract. Commences 11am; bookstall; bring & buy; licensed bar etc; talk-in on S20; admission free. Details from Mr. B. Senior, 5 Park Close, Darrington, Pontefract WF8 3BA, tel: 0977 704067.

1 APRIL

▶Bournemouth RS Amateur Electronics (Radio, Electronic and Computer) Bring & Buy Sale - Kinson Community Centre, Pelhams, Millhams Road, Kinson, Bournemouth. Doors open 2pm. Admission 50 pence, including prize draw ticket. Refreshments. Talk-in on S22. Details and table space arrangements from Vic, G4PTC, 0202-516593 any evening after 6pm.

▶White Rose Rally - Leeds University. Details G4DXA, PO Box 73, Leeds LS1 5AR.

8 APRIL

▶Cambridgeshire Repeater Group Amateur Radio Rally/Junk Sale/Bring & Buy/Auction. Philips Radio Communications - Catering Centre, St. Andrews Road, Chesterton, Cambridge. Doors open 10.30am. Auction items accepted from 9.30am. Details G0HEM (QTHR).

▶Launceston ARS Rally at Launceston College. Doors open 10am. Bar; hot snacks; bring & buy; traders; Morse tests; opinions on your CW progress; RSGB publications on sale; breakfast bar for traders from 6am; parking; talk-in on S22. Details from Maggie on 040921 219 or Rodney & Joy on 0566-5167.

▶Lough Erne ARC 9th Annual Mobile Rally - Killyhevlin Hotel, Enniskillen. Doors open 12 noon. Details from Alwyn Magee, GI0BFD, tel: 0365 23802.

▶Swansea ARS Rally - Swansea Leisure Centre, situated on the A4067 Swansea-Mumbles coast road. Doors open 10.30am. Trade stands; bring & buy; repeater groups; demonstration station; bar; refreshments. Talk-in via GB2SWR on S22. Details from Roger Williams, GW4HSH, tel: 0792 404422.

15 APRIL

▶Centre of England AR Rally - Motorcycle Museum, Bickenhill, near NEC Birmingham. Details from Margaret or Frank, G4UMF, tel: 0952 598173.

22 APRIL

▶Marske-by-the-Sea Radio Rally - Marske Leisure Centre, High Street, Marske-by-the-Sea, near Saltburn. Doors open 11am. Talk-in on S22. Details from Allen, G7CBR, tel: 0642 480055.

6 MAY

▶7th Anglo Scottish Rally - Tait Hall, Kelso. Details from Bruce, GM4UIB, QTHR.

7 MAY

▶Mid Cheshire ARS Rally - Civic Hall, Winsford. Details from David, G4XUV, tel: 0606-77787.

13 MAY

▶Drayton Manor Mobile Rally - Drayton Manor Park, near Tamworth, Staffs. Details from Norman, G8BHE, tel: 021 422 9787.

19 MAY

▶Swindon Radio Rally - Oasis Leisure Centre, North Star Avenue, Swindon, Wilts. Doors open 10am. Ample parking. Refreshments. Bring & Buy. Talk-in by Raynet S22; Admission £1 adults, 25p children. Sports facilities aveilable including Lagoon Pool with wave machine. Details from Jim, tel: 0793 611859 or John, tel: 0793 619014.

20 MAY

▶Cambridge & DARC 5th Annual Rally and Radio Car Boot Sale at Coleridge Community College, Radegund Road, Cambridge. Details from Brian, G4TRO, tel: 0223 353664.

▶Dunstable Downs RC 7th National AR Car Boot Sale - Stockwood Park, Luton. Details from Clive, G4ENB, tel: 0582 27907.

▶33rd Northern Mobile Rally - The Great Yorkshire Showground, Harrogate. Showground open 10am, doors open 10.30am.Details from Mike, G0MKK, tel: 0423 564353/507653.

▶Mid-Ulster ARC PARKANAUR Rally - Silverwood Hotel, Lurgan, Co. Armagh. Open 12 noon. Entance fee £1; Usual trade stands. Bring & Buy. Bookstall. QSL Bureau. Talk-in S22. Details from Jim Lappin, GI1YGS, tel: 0762 851179.

27 MAY

▶14th Annual East Suffolk Wireless Revival 1990 - Civil Service Sports Ground, Straight Road, Bucklesham, Ipswich. Indoor Bring & Buy. Car Boot Sale. Bookstall. 50 MHz Demonstration station; Vintage Radio Display. BYLARA, RAIBC, Scout Radio, RAYNET stands. Children's play area; Model flying display. Details from Paul Whiting, G4YOC, 77 Melford Way, Felixstowe, Suffolk, tel: 0473 642595.

▶Plymouth Radio and Electronics Fair - Plymstock School, Church Road, Plymouth. Doors open 10am. Usual traders. RSGB Zonal Meeting. Morse Tests. Bring & Buy. Refreshments. Talk-in S22. Details from Jan Fisher, G0IVZ, tel: 0752 340946 evenings/weekends.

28 MAY

▶Bircotes Radio Rally - near Bawtry, Doncaster. Doors open 11am, 10.30 for disabled visitors. Talk-in S22. Booking forms/details 23 Florence Avenue Balby, Doncaster. Tel: 0302 857526.

3 JUNE

▶British Telecom (S. Wales District) ARS 2nd Annual Radio Rally - BT Headquarters, Coryton, Cardiff. Details from Martyn Jenkins, GW7EYP, tel: 0222 379634 (office hours).

▶Southend & DARS Mobile Rally at Rocheway Youth Centre, Rochford Essex. Details from John Stone, G0DFE, tel: 0702 202216.

▶Spalding & DARS Mobile Rally. Springfields Arena Spalding. Details from T. Kettlewell, G4TWR, tel: 0775 722940.

10 JUNE

▶21st Elvaston Castle Mobile Radio Rally, Elvaston Castle Country Park near Derby. Details from John, G4PZY on 0332 767994.

▶Royal Naval ARS 30th Annual Mobile Rally - HMS Mercury, Nr. Petersfield, Hants. Details 0703 557469.

17 JUNE

▶Denby Dale Rally - Salendine Nook School, 2 miles west of Huddersfield on A640. Details from G3SDY, tel: 0484 602905.

▶Newbury & DARS Car Boot Sale - Recreation Field and Acland Village Hall, Cold Ash, Newbury, Berks. Details from Mike, G3VOW, tel: 0635 43048.

24 JUNE

▶City of Bristol Group 33rd Longleat Amateur Radio Rally, Longleat Park, Warminster, Wilts. Details Shaun O'Sullivan, G8VPG, tel: 0225 873098.

1 JULY

▶Worcester & District Droitwich Strawberry Rally - High School, Droitwich. Details from Tony, G4OPD, tel: 0905 620507 or Derek, G4RBD, tel: Worcester 641733.

▶York Radio Rally - Tattersall Building at York Race Course. Details tel: 0904 625798.

14 JULY

▶Cornish RAC Rally - Richard Lander School, Truro. Details from Rolf Little, G7FKR, tel: 0872 72554w

15 JULY

▶Sussex AR and Computer Fair - Brightonq Racecourse. Details from Ron Bray, G8VEH, QTHR, tel: 0903 763978 or 0273 415654 (office hours)

29 JULY

▶Rugby ATS Amateur Radio Car Boot Sale - venue to be advised. Details from Kevin, G8TWH, tel: 0203 441590.

▶Scarborough ARS Rally - The Spa, Scarborough. Details from Ian, G4UOP, tel: 0723 376847.

12 AUGUST

▶Flight Refuelling Hamfest - Flight Refuelling Sports Grounds, Wimborne, Dorset. Details from John, G0API, tel: 0202 691649 or Rob, G6DUN, tel: 0202 479038.

▶Derby Mobile Rally - Lower Bemrose School, St. Alban's Road, Derby. Details from Kevin Jones, G4FPY, 20 Pinecroft Court, Oakwood, Derby DE2 2LL. Tel: 0332 669157.

19 AUGUST

▶Royal Forest of Dean, Gloucs, Speech House Rally. Details from Terry, G4HZT QTHR, tel: 0594 33334 (mid evenings).

▶West Manchester RC Red Rose Summer Rally - Bolton Sports & Exhibition Centre, Silverwell Street, Bolton. Details from Dave, G1IOO, tel: 0204 24104 (evenings only).

26 AUGUST

▶Torbay ARS Mobile Rally - STC Social Club, Brixham Road, Paignton, Devon. Details G3HTX QTHR.

2 SEPTEMBER

▶Preston ARS 23rd Annual Rally - University of Lancaster. Details from Godfrey, G3DWQ, tel: 0772 53810.

▶Telford Radio Rally & Exhibition - Telford Exhibition Centre, Telford, Shropshire. Details from G3UKV, QTHR, tel: 0952 255416.

9 SEPTEMBER

▶Vange ARS Annual Rally - The Laindon Community Centre, Aston Road, Laindon, Basildon, Essex.

16 SEPTEMBER

▶Bristol Radio Rally - Brunel's Great Train Shed, Temple Meads Station, Bristol. Details from David Farr, G4WUB, tel: 0272 839855.

30 SEPTEMBER

▶Harlow AR & Electronics Mobile Rally - Harlow Sports Centre. Details from Alf, G7FNY, tel: 0279 418392 (weekdays) or Mike, G7BNE, tel: 0279 722569 (evenings and weekends).

7 OCTOBER

▶South Devon RC. Sixth Annual Ham Radio Computer Exhibition and Rally - Hillhead Campsite on the Dartmouth Road in Brixham. Details from 0803 5222116

14 OCTOBER

▶Armagh Rally - Drumhill House Hotel. Details from H.R.Rattray.

21 OCTOBER

▶4th North Wales Radio Rally - Aberconway Centre, Llandudno. Details from E. Shipton, 34 Argoed, Chester Avenue, Kinmel Bay, Rhyl, Clwyd LL18 5AY, tel: Rhyl 336939.

11 NOVEMBER

▶MARS Birmingham Mini Mobile Rally - Stockland Green Leisure Centre, Erdington, Birmingham. Details from Norman, G8BHE, tel: 021 422 9787.

18 NOVEMBER

▶West Manchester RC Winter Rally at Bolton Sports and Exhibition Cenbtre, Bolton. Details from Dave, G1IOO, tel: 0204 24104 (evenings only)

▶Bridgend & DARC Annual Rally - Bridgend Recreational Centre. Details from Don, GW3RVG, tel: 0656 860434 after 5pm.

OTHER EVENTS

9/10 MARCH

▶London AR Show - Picketts Lock Centre, Picketts Lock Lane, Edmonton, London N9 (just off the North Circular Road). Talk-in on 2m and 70cm. Bars. Restaurants. Disabled facilities. Free parking. Huge exhibition area. Bring & Buy. Dedicated area for Special Interest Groups. Admisson #1. For further details and advance ticket sales, phone 0923 678770.

18 MARCH

▶Central Scotland FM Group AGM - Golden Circle Hotel, Bathgate, West Lothian (Adjacent to M8 Motorway). Trade Show: 11am to 2pm. Business Meeting: 2pm to 5pm. Trade Show. Raffle. Slide Show etc. Talk-in on S22. Bar, snacks, soup, sausage rolls etc. There will be no Bring & Buy. Subscription 1990/1991 is £7.50. Admission to the Bathgate event (and this includes the trade show) is restricted to CSFMG members, and those joining the CSFMG at the door).

25 MARCH

▶Dover (YMCA) ARC QRP Convention & Table Fair - Dover YMCA ARC, Dover. Opens 10.30. Details from G0BPS, tel: 0303 276171.

1 APRIL

▶IARU Region 1 Conference starts - Torremolinos, Spain. Details G3FKM.

21/22 APRIL

▶RSGB National Convention - NEC Birmingham. Details 0277 225563.

29 APRIL

▶Bury RS 1990 Hamfest - Castle Sports Centre, Bolton St, Bury. Doors open 11am, for disabled and blind visitors at 10.30am; talk-in on S22 and SU8; traders; catering facilities; giant 'Bring & Buy'. Details from C.D.W. Marcroft, Mosses Community Centre, Cecil St, Bury, tel: 0706 229930 (evenings only).

6 MAY

▶BATC Convention, Harlaxton Manor, Nr. Grantham. Details from Paul Marshall, G8MJW; tel: 0522 703348.

12 MAY

▶RSGB VHF Convention - Sandown Park Racecourse. Details from Geoff Stone, G3FZL, tel: 01 699 6940.

13 MAY

▶Yeovil ARC 6th QRP Convention - Preston Centre, Monks Dale, Yeovil. Doors open at 10am by Editor of Practical Wireless, G3XFD. Talks during the day by GM3OXX, G3RHI, G3MYM & G3PCJ. GB3LOW will be on the air all day also for talk-in station. Traders as in previous years. Refreshments served from 9am. . Further details D. Bailey, Hon.Sec., QTR or P. Burridge, Chairman, tel: 0935 813054.

2 JUNE

▶RAIBC (Northern Ireland Area). First Belfast Amateur Radio Convention - 59 Connsbrook Avenue, Belfast BT4 1JW. Commencing 12.30. Usual attractions. Demonstrations and talks on the hobby. Demonstrations on Microwave Cookery. Crafts and First Aid by Red Cross. Talk-in on S22. Details from David Caldwell, GI0HOW, tel: 0232 471370.

17JUNE

▶Eighth Annual Practical Wireless 144MHz QRP Contest. 0900 - 1700 UTC. Transmitter output power will be limited to 3 watts as usual. Full rules will be published in due course in Practical Wireless. Contest adjudicator; Neill P. Taylor, G4HLX.

1 JULY

▶Newport ARS 3rd Grand Surplus Equipment and Junk Sale, Brynglas Community Education Centre, Brynglas Road, Newport. Details from Kevin, GW7BSC, tel: 0633 262488 or Bob, GW4IED, tel: 0633 280958.

15 JULY

▶Sussex Amateur Radio and Computer Fair (formerly the Sussex Mobile Rally) - Brighton Racecourse. Details from Ron Bray, G8VEH (QTHR), tel: 0903 763978 or 0273 415654 (office hours).

15 SEPTEMBER

▶Scottish Convention - Cardonald College, Glasgow. Details from GM3EDZ.

26/27 OCTOBER

▶RAF ARS AGM - RAF Cosford. Further information will become available on Packet, news broadcasts, RadCom and QRV (the RAFARS magazine) in due course.

the last...

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.

'L-METER' MODS

I would like to thank W6HPH for his comments in RADCOM Oct 89 regarding my modifications to the 'L Meter' in RADCOM July 89.

With this in mind, I did a check on the oscillator output with an oscilloscope to check for cross-over distortion, yes, there was a trace of it there but, compared with the amplitude of the sine wave, it was very small. I checked using reference inductors and found it had no effect whatsoever on the meter readings obtained. For example, on the 10uH range the test coil read 10uH and the 3uH coil read 3uH. This applied on every range of the instrument, using the appropriate coils.

Ray Morris, G3FDG

PRAISE FROM SOUTH-CAROLINA . . .

Amongst the monthly concerns of contesting - pros and cons etc etc. I would like to inject a bright spot and recognise the hard work and diligence of the staff of RSGB and Radio Communication. Like any 'diamond in the rough' it is not easy to find RadCom. You have to know first know it exists as it is not sold on newstands, and one has the task of getting the local bank here to convert dollars to pounds to send annually overseas - hoping it will arrive on time! Is it worth it? You betcha! Amongst the many magazines sold here concerning Amateur Radio, RadCom has them beat by a country mile!

I would like to thank Pat Hawker G3VA for his 'Technical Topics' section, it is highly informative and well balanced. Thank you all once again and keep up the great work.

A D Grogan, WA4MRR

. . . AND CONSTRUCTIVE CRITICISM

Congratulations on the November issue of RadCom. Recent months have seen a gradual improvement, but November represented a quantum jump.

That being said may I please make three very small suggestions:-

1. Surely 'BAND REPORTS' is a better title than the pretentious 'SPECTRUM ANALYSIS'?

2. The title 'the last word' is not as meaningful as 'LETTERS TO THE EDITOR' and would it not be preferable to drop the stuffy MR (or MRS etc) at the end of each letter. A Christian name or even initials only would suffice. *(Done! - Ed)*

3. The advertisements are beginning to come together but RADCOM will become even more useful when they are all co-located.

J Douglas Kay, G3AAE

THE LEICESTER EXHIBITION 1989

Following a most successful exhibition at the Granby Halls, in the City of Leicester, the Leicester Amateur Radio Show Committee give their thanks to the exhibitors, and to the visitors, for making the hard work necessitated to organize such a show worthwhile, appreciation must also go to the RSGB for their valuable articles published in Radio Communication. However, the LARS committee consisting of Chairman, Secretary, Treasurer and three others wish it known they are totally independent and have no affiliation with any other group or organization.

Frank Elliott, G4PDZ, LARS Secretary

MORE THAN A PASS SLIP

I recently took and passed the morse test, the pass-slip arrived with no forms for me to apply for a full class 'A' licence, no congratulations on passing the test, no: 'are you a member of the RSGB - would you like to join?' - in fact nothing enclosed but the pass-slip.

Come on - I don't expect a fanfare, a full page in Radcom or a mention on GB2RS - but I did expect a little assistance to cut-down any delay in applying to RALU - like a photocopy of a licence application form - or a few words (a standard word-processed paragraph would have done) from the President or Secretary. Perhaps a small information pack could be prepared for those who are members and who gain a licence upgrade - just a short reading list would be better than nothing.

Chris McWhinnie, G8PFW/G0MQW

[Some very good points! These suggestions are going on our 'do soon' pile - Ed]

ROMANIAN HELP

Communication technology - worldwide telephone, telex and fax traffic is often taken for granted. But then, here comes an earthquake, be it in Mexico City, Armenia or elsewhere and the system crumbles; we are reminded again, that simple equipment and a few dedicated souls can work wonders to lessen human suffering.

The latest events in Eastern Europe are often compared to an earthquake and for us, amateurs, the analogy is most appropriate. Soon after the outbreak of violence in Romania, regular communication broke down and news about large numbers of casualties begun to circulate. The whole world followed live history on TV; for a sizable community of Romanian born Jews in our country the upheaval meant much more than an interesting news item: many of them had close relatives and friends among the nameless participants of the unfolding drama.

Within hours an emergency net was organized by Romanian amateurs, operating on the 20, 40 and 80 meter bands, depending on conditions. For several days, hundreds of messages were relayed to worrying friends and relatives in many parts of the world. Red Cross shipments from Chechoslovakia and Italy were routed with the help of amateur operators.

Unfortunately I cannot give a full account of this wonderful effort but I would like to express my deepfelt gratitude on behalf of all those who benefited from the operation and took part in it in our country. Though mentioning a few operators will certainly not do justice to the many who helped, I would like to single out those with whom I had the pleasure to conduct emergency traffic:

First and foremost is Pit, YO3JW who concerted the efforts of a team, relaying requests to all parts of Romania by telephone and otherwise, during the evening hours. In many cases I got replies to my inquiries within a matter of minutes. In Israel, 4X1AD (speaking Romanian) took the lion's share of emergency traffic, but there were many others. The list would be incomplete without mentioning Colin, G4AZM, who did a wonderful job of QSP during the crucial days, when conditions were less that perfect between Romania and Israel. His tireless and professional approach was most efficient and helpful.

Micky Jonas, 4X4FL

UNINTERESTING? NEVER!

In a readers letter to RadCom during last year, the writer stated that in his opinion, amateur radio was 'inherently uninteresting'.

Being engaged in a welter of constructional projects at the time, I briefly wondered why that particular character had bothered to take up a hobby which by its own nature requires its devotees to be enquiring, experimentative, and most of all, to be filled with curiosity - the interest follows naturally! His letter came to mind again on Christmas Day, when on emptying my 'stocking', I came upon a brand new copy of the ARRL Handbook, and the latest RSGB callbook. There was so much to read in the 'Handbook' that I almost missed my Christmas dinner - and as for the 'Callbook', it informed me that amongst other things, I had over 24 amateur bands to explore - and much more.

A new boy? - No, I've been at it for over 39 years, and I still find that amateur radio is the finest hobby on God's earth.

Perhaps the writer of that letter - and others having similar thoughts - should look for the negative sign elsewhere - there's nowt wrong with amateur radio that a bit of enthusiasm won't fix!

H.N. Kirk, G3JDK.

LANGUAGE - DYING . . .

May I add my wholehearted support to the letters from G3PFR and G3UJX in August and November issues of RadCom this year on the subjects of spelling and speaking the English language; do people not realise what is happening in front of their eyes (or ears!)?

Every day we are bombarded by the media using a bastardisation of the English language that emanates from across the Atlantic; it is obviously accepted by the average man in the street that to speak, spell and pronounce in this manner is the 'with it' (quote) thing to do.

There are far too many examples to write in a letter of this sort but the latest requirement being thrust at us is to call a female a 'guy'; have you noticed how many people now have the name Guy? Amateur radio in this country has also adopted many of the Americanisms: the royal 'we', which has even been used by our senior 'statesman', is an example! I make my received signals loud or quiet by the use of a gain control or two but these words are bandied about, referring to what the ether is doing to the strength of a signal, i.e. producing strong or weak signals.

I am pleased that I am not the only one who abhors this totally unacceptable intrusion into our language but can only assume that those who use such words, often in the totally wrong context, do so because they believe that vocabulary from across the Atlantic is superior to one that has been with us for a very much longer time!

George Eddowes, G3NOH

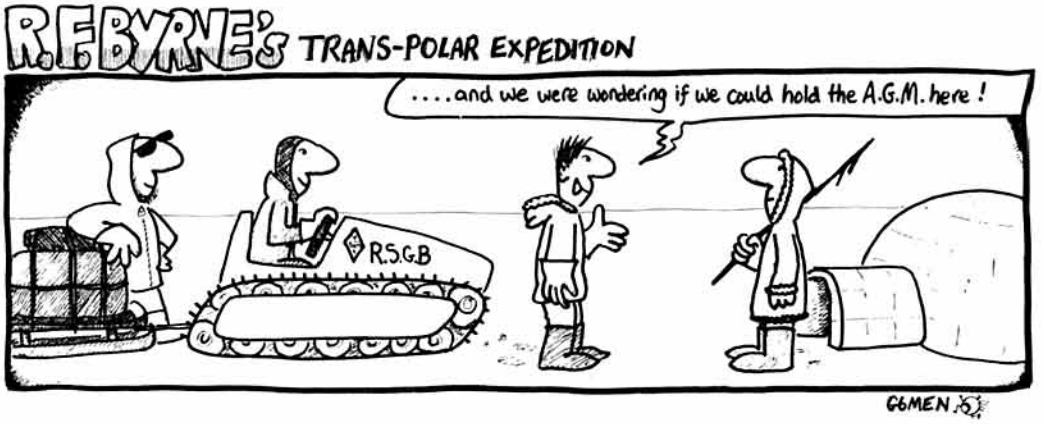
. . . OR LIVING?

I was sorry to read in your column G3PFR's disparaging comments on Franglais. Without the use of 'Spanglish' a sister patois, I would not have made the many warm friendships I have within the Colombian Amateur fraternity.

Its not that I don't aspire to speak the elegant Castillian Spanish that I hear some British amateurs using on the DX bands. Nor am I unaware of the importance of seemingly trivial things like apostrophies, that can so confuse native speakers. It's just that making friends and communicating seem rather more important than waiting until I get it absolutely right, and amateur radio does seem the ideal medium for self training oneself linguistically.

Yet if 'Japanese English' sometimes confuses users of their equipment, I am reminded of a British manufacturer who supplied a Broadcasting transmitter to Denmark with labels and knobs beautifully engraved in what purported to be Danish. The confused Danish engineers finally got the equipment commissioned when they were supplied with the standard English language controls!

Alan Davies, GW3INW/HK3



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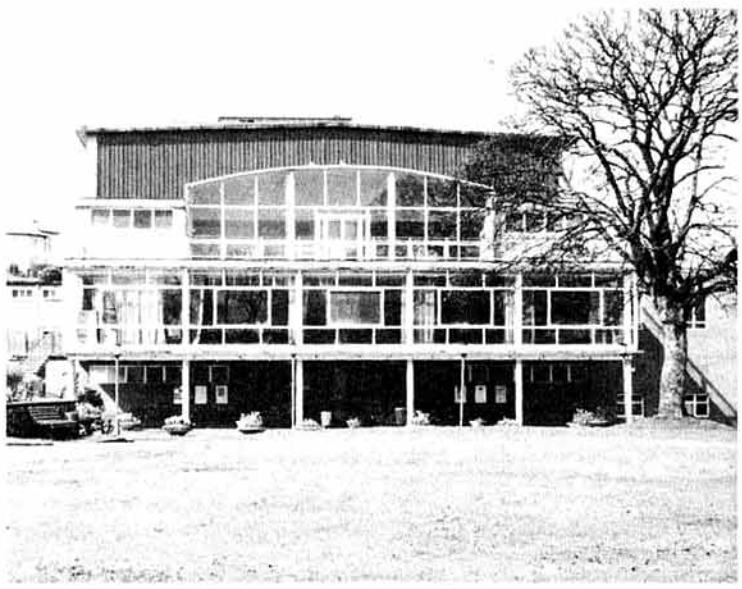
The Society's Annual Meeting

9th December, 1989
at
Dunoon, Scotland

In his welcoming remarks prior to the official start of the meeting, the Secretary said it was a very historic event for the Society to hold its Annual Meeting in Scotland, and this had been the result of a bold decision by Council. This was greeted with applause.

The President, Dr. Julian Gannaway, G3YGF, in declaring the meeting open at 2.05 pm, echoed the Secretary's comments and expressed his pleasure at the good turn-out. He explained that the day's events comprised three meetings: the Annual General Meeting dealing with business required by the Companies Acts, an Extraordinary General Meeting concerning Council's recommended changes to the Society's Articles, and an Open Meeting which gives members an opportunity to raise any amateur radio matters.



The venue: The Queens Hall, Dunoon.

Minutes of the 63rd Annual General Meeting of the Radio Society of Great Britain

The President introduced those seated with him at the rostrum:- Frank Hall, GM8BZX, President-Elect, David Evans, G3OUF, the Society's Secretary and Willie McClintock, G3VPK, the Society's Honorary Treasurer. Members of the Society's Council present were asked to identify themselves. They were Dr. John Allaway, G3FKM, Mr. John Allen, G3DOT, Mr. Terry Barnes, GI3USS, Mr. George Benbow, G3HB, Mr. Peter Chadwick, G3RZP, Mrs. Hilary Claytonsmith, G4JKS, Mr. John Greenwell, G3AEZ, Mr. Angus McKenzie, G3OSS, Mr. Geoff Smith, G4AJJ, Mr. Neil Brinkworth, G3UFB and Mr. John Case, GW4HWR.

Apologies for absence had been received from Sir Richard Davies, G2XM, the Society's Immediate Past President, Mr. George Jessop, G6JP, Council Member, Mr. Francis Rose, G2DRT, Council Member, Geoff Barnes, G3AOS, John Kennedy, G3MCX, Ron Glaisher, G6LX, Chairman HF Contests Committee, Ian Kyle, GI8AYZ, Tim Hughes, G3GVV, Chairman of the IARU Committee, Mr. Morrison, G8SEZ, Mr. Neil Lasher, G6HIU, Ray Flavell, G3LTP, Chairman Propagation Studies Committee and Alan Butcher, G3FSN.

The President announced that more than 50 members were present so the meeting was quorate (it was later recorded that some 96 members attended). The Secretary read the notice convening the meeting which had been circulated to all members with the November 1989 issue of Radio Communication.

The President drew members' attention to the first Agenda item **to receive and consider the Minutes of the Sixty-Second Annual General Meeting circulated with the March 1989 issue of Radio Communication.** No written comments had been received concerning the accuracy of the Minutes, and none was raised at the meeting.

Moving to item two on the Agenda **to receive and consider the Accounts for the year ending 30 June 1989 and the Reports of the Council and Auditors thereon,** Dr. Gannaway called upon the President Elect Mr. Frank Hall, GM8BZX, to read the Auditors' Report. This stated that the accounts gave a fair and true record of the affairs of the Society and had been properly prepared. The President called upon the Honorary Treasurer to present and discuss the accounts for the 1988/89 financial year.

Mr. McClintock said that 1988 had been a very special year for the Society being its 75th Anniversary. Council had taken this opportunity to give amateur radio a high profile with the Government, industry and the general public. The associated costs should be regarded as a long term investment for the future of amateur radio, and were therefore shown as an exceptional item in the accounts.

Unfortunately, the surplus on ordinary activities had been lower than expected and the overall result for the year was a deficit of £22,946 before tax. Contributing factors were higher RadCom and book publication costs together with a shortfall in subscription income due to a small drop in membership. This shortfall on budget had been £25,000. It was hoped that Project YEAR, the Novice Licence, new book titles and improved marketing would reverse this trend.

It was worth noting that, as the Society operated for the benefit of its members, there was every incentive to trade with only a small surplus. It was, therefore, not surprising that a swing of 1% or 2% in income or expenditure could lead to a loss. This tended to impose a considerable discipline on the accounting and reporting systems employed.

Basil O'Brien, G2AMV, a new Vice-President of the Society.

The Honorary Treasurer then asked the President's permission to bring members up to date on the accounts. He spoke of difficulties in the Accounts Department which had brought about a fundamental change in accounting policy. External accountants were now advising the Society and, together with new financial software linked to our new AS400 computer would provide more accurate and timely information would be available in future and at less cost.

The President called for questions from the floor. Mr. Crosland, G6JNS, asked whether the Society had been surcharged for the late payment of VAT. The Honorary Treasurer replied that there had been some problems in paying VAT and that the Society had been penalised somewhat during the year, the sum involved being £8,000.

Mr. Stewart, GM4TOQ, raised a point about the staff pension fund which had increased. It was explained that more staff were being encouraged to join the scheme.

Mr. Hughes, GM3EDZ, returned to the VAT penalty. He expressed his concern that there should have been better controls and wondered what was being done to improve things. The Honorary Treasurer said that he was just as concerned as Mr. Hughes, however, the Society no longer employed an internal accountant; external accountants and new systems would be used in future. This would prevent a recurrence of the situation. The President confirmed that there was no likelihood of such a thing happening next year.

In reply to questions from Mr. Foster, G1DRG, Mr. Low, GM0ECU and Dr. Marr, GM3AYR, the Honorary Treasurer confirmed that during the preparation of the Accounts it had become obvious that the accounting system was not giving the best answers; it had been decided to make the in-house accountant redundant and employ external accountants. The Honorary Treasurer said that the VAT problem had been discovered after the in-house accountant had been made redundant and that it was not considered correct to pursue the redundant accountant over the matter of the VAT. The Secretary added that the calculation of VAT was quite a complicated business which was the responsibility of the Accountant. In working out the VAT to be paid sums were extracted from various ledgers such as the subscriptions, sales and purchase ledgers. He said that one of the jobs done over the last couple of months (after the in-house accountant had left) was to re-check the VAT. The Secretary noted that some of the money referred to by the Honorary Treasurer could have been an overpayment which could be recovered in due course.

Mr. Clough, GM0MDD, asked for more detail of the surcharge. The Treasurer said the whole business was being looked into. There was also the possibility of over-payment. The full information was not yet to hand.

Mr. Morris, GW1ATZ, asked whether a full report would appear in Radio Communication. The Secretary confirmed that the matter had been discussed in some detail at the 23 November Council meeting and that certainly a report would be published.

Mr. Ferguson, GM3YTS, raised points on the higher cost of printing. The Honorary Treasurer explained that this reflected the cost of new books which were in preparation. This would be offset by future sales.

Mr. Dons, GM0AXY, asked about the value of stock held by the Society. The Secretary replied that the Society's external accountants were, amongst other things, also re-checking the value of the RSGB stock as there was currently some doubt about the method used for valuation.

Mr. Wylie, GM4FDM, asked why the accountant was made redundant and about the payment made. The Honorary Treasurer reaffirmed that the accountant was made redundant because the accuracy of the accounting information was not sufficient to operate the Society within a 1 to 2% band - the system was not working. With regard to the payment made to the accountant, the Secretary said that he did not have the actual figure paid to hand, but that there was a standard formula to be used for calculating redundancy payments based on the length of service and age of the employee.

An unidentified speaker asked whether the VAT problems arose during the period under discussion. The Honorary Treasurer explained this was so but they had not come to light until after the accounts had been produced.

Mr. Ross, GM4UFP, expressed dismay at the potential expense of employing external accountants and replacing the computer system simply to overcome an £8,000 problem. The Secretary said the decision to change the system of accounting had been made before the VAT surcharge had come to light. No extra costs were envisaged in replacing the in-house accountant with external accountants. In fact, savings were envisaged in going over to an integrated accounting system based on tried and tested packaged software. Everyone involved believed there would be substantial cost savings and a very significant increase in accurate management information enabling Council to run the business. Mr. Ross pressed the Secretary on why a new computer was needed when the software would have run on the old one. The Secretary replied that the decision to change to a faster computer had been made for quite separate reasons. The software change had become necessary when it had become apparent that the current accounting information was not in the form which was wanted.

Mr. Foster, G1DRG, wondered why there had been no internal audit which should have prevented a problem. He asked for an assurance that such a system now existed. The Secretary said it would have taken as much time to check the detailed work of the accountant as the job took in the first place. A valuable lesson had been learned in not relying on a single source of information. There was a complete resolve by everybody involved to set up procedures which would prevent this sort of thing happening again. Mr. Foster commented that he was pleased the matter had been put right.

Mr. Clough, GM0MDD, asked whether the Customs and Excise had "pounced and done an inspection". The Secretary said he was not aware of such an inspection.

Dr. Marr, GM3AYR, asked for an honest, straight account in RadCom to tell members what went wrong. The Secretary said that Council had already agreed to do that at its meeting in November.

Mr. Crosland, G6JNS, asked whether the 75th Anniversary celebrations had been within budget. The Honorary Treasurer said that it had been found out fairly soon that this budget would be around 50% of what was really required.

Moving to item 3 on the Agenda **to announce the names of members to serve on Council for the year 1990 and to call for volunteer scrutineers for the 1991 Council Election**, the President announced the result of the 1989 Council elections:-

For the three ordinary vacancies on the 1990 Council.

Mr. R.G. Barrett, GW8HEZ	2,070 votes
Mr. John Bazley, G3HCT	2,433 votes
Mr. Peter Crosland, G6JNS	1,550 votes
Mr. George Jessop, G6JP	2,259 votes
Mr. Ian Kyle, GI8AYZ	1,189 votes
Mr. Lundegard, G3GJW	2,198 votes

Messrs Bazley, G3HCT, Jessop, G6JP and Lundegard, G3GJW, were declared elected as Ordinary Members of Council.

For the vacancy in Zone A.

Mr. C Reynolds, G8EQZ	236 votes
Mr. I. Shaw, G3KWT	302 votes
Mr. G.R. Smith, G4AJJ	536 votes

Mr. Geoff Smith, G4AJJ, was declared elected as Council member for Zone A.

The President said that in Zone G, Mr. I. Suart, GM4AUP, had been elected unopposed.

Dr. Gannaway congratulated the successful candidates and welcomed them to the 1990 Council. He then asked them to stand up to be identified. The President read out the complete list of members to

serve on Council during 1990. (see January 1990 Radio Communication).

The President thanked the election scrutineers for doing a fine job. The team comprised Mr. Ted Major, G3BYC, Mr.Brian Bower, G3COJ, Mr. Winchcombe, G6ZH, Mr. Alan Gard, G4LWA, Mr. Gerald Stancey, G3MCK, Mr. Wilf Dunell, G3BYW, Bill Craig, G6JJ, Mr. P. Manning, G1LKJ and Mr. A. Butcher, G3FSN. A special vote of thanks went to Bill Craig, G6JJ, for keeping the team in order. Volunteers for next year's scrutineers were called for. There were no volunteers from the floor but the 1989 team had all indicated their willingness to take part again.

The final item on the Agenda was **to reappoint the Auditors, Messrs Moores Rowland and to authorise Council to fix there remuneration**. This was proposed by Mr. Ferguson, GM3YTS and seconded by Mr. Hobson, GM8KPH.

Mr. Crosland, G6JNS felt that the auditors had failed the members abysmally and asked whether Council was in favour of reappointing them.

Mr. Foster, G1DRG, said that the accounts showed an audit fee of £10,000. He thought that this was a very large sum of money to pay and then find the Society is in difficulties later. The Honorary Treasurer said that the problems would be pointed out to the auditors and Council believed that they should be reappointed for this year, and that the fee should be negotiated in the light of events.

There being no further questions, the President called for a show of hands on the motion. This resulted in 41 votes FOR, 32 AGAINST and 4 abstentions.

Mr. Crosland, G6JNS, called for a Poll. This required the votes of five members, and the President confirmed that Mr. Crosland held at least this number of proxy votes. Mr. Suart, GM4AUP, argued that proxy votes could not be used on procedural motions. The President said that the Articles permitted this in the case of a Poll.

The Secretary explained the Poll procedure. This year those appointing proxies had been able to specify which way they wanted to vote and this made the counting system a little more complex. He then went through the list of proxy holders to determine who was present and whether votes needed to be reassigned to second proxies.

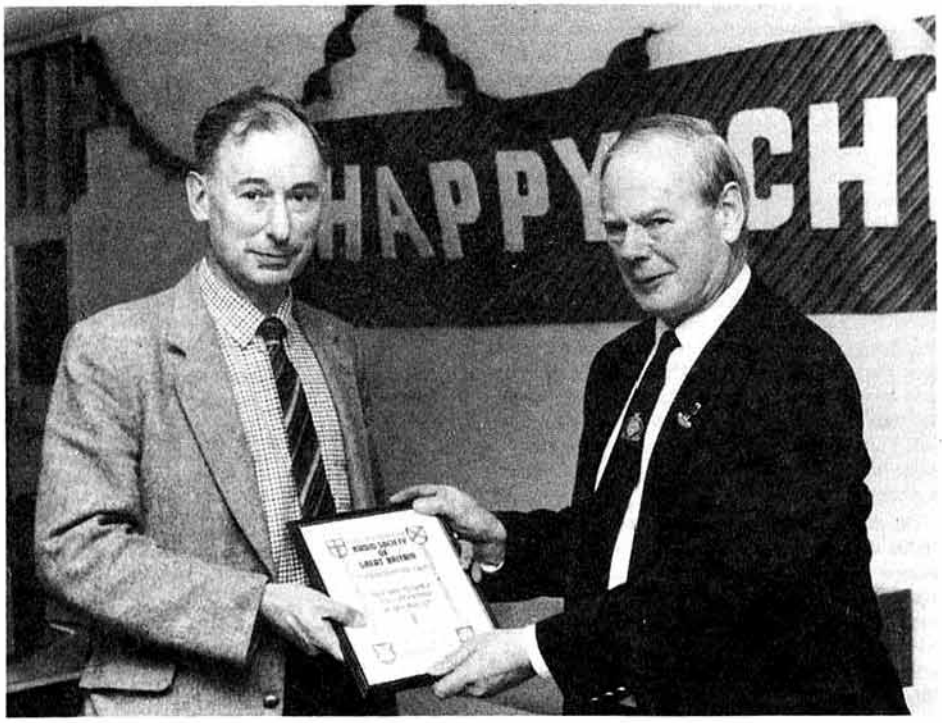
Whilst the proxy votes were being totalled, Dr. Marr, GM3AYR, commented that the proxy voters had not heard the debate so it was quite ridiculous to do a count. The President said that of those present at the meeting a majority had voted for the motion; a poll has been called for and this was the way Company Law allowed people not present to vote at Annual General Meetings.

Mr. Smith, G4AJJ, said that the Council had only recently become aware of the problem in the accounting systems. When these had been discussed at the last Council meeting it was agreed that the Honorary Treasurer would re-negotiate the auditing fee. He hoped that the fee would be low enough that the current auditors would not work for it.

A number of additional points were raised which went over the ground previously covered concerning the accounts. This was brought to a close by Mr. Barnes, GI3USS, giving a personal vote of support for the Honorary Treasurer's reliability and natural good sense to get good value for the agreed audit fee.

The President announced the result of the Poll as follows:- 2,338 votes FOR, 91 AGAINST and 6 abstentions. He declared the motion carried.

The meeting then adjourned at 3.30pm for a short tea break.



John Greenwell, G3AEZ, (right) presents Geoff Stone, G3FZL, with his Vice-Presidency.

Extraordinary General Meeting

The President introduced the second part of the meeting which was an EGM called by Council to change the Articles of Association. The President explained that EGM's were necessary from time to time to meet the changing needs of the Society to keep the Articles up-to-date. The Secretary introduced the Notice calling the meeting. (This is set out on Page iv of this Supplement) which was published in the November 1989 issue of RadCom. Because the motion was a lengthy one it was proposed that it be taken as read. The President then invited Council member, Mr. Barnes, GI3USS, to propose the motion.

Mr. Barnes explained that the background to the motion was that some time ago Council members felt that Council was becoming a self-perpetuating body as it seemed that members tended to vote for people who were already on Council. In 1974 Council decided to set a time limit for Council service, after which it was necessary for a member to stand down for a period of one year before being able to seek re-election. That limit was determined at two terms of three years each. Mr. Barnes noted that in the case of a zonal Council member the one year stand down effectively meant three years as the vacancy did not exist again for three years. He noted that while this rule provided for change, it also had a counter-productive effect as expertise, built up over a period of years, could be lost. Mr. Barnes remarked that for the first couple of years new Council members often felt that they were the new broom which could sweep everything clean, but it was only after a couple of years that they realised that they could not and they then started to add something which was not only constructive, but also practical. It was in the remaining four years that they had a chance of doing something positive. Mr. Barnes continued that (earlier in the year) Council discovered a loophole in the (1974) drafting. Having had this fact pointed out to Council, it had taken the necessary steps to close the loophole because this was felt to be the democratic view that vacancies should be created on Council. Mr. Barnes emphasised that the necessity to stop the loophole was caused by an involuntary action of Mr. Smith, G4AJJ, who had not intended to perpetuate himself on Council, but without the proposed amendment could have done so ad nauseam and stayed on Council until he was laid to rest. Mr. Barnes said that those who read the proposed amendments to the Articles would realise that they were changes simply to fill the loophole which had been uncovered - he wished to propose the motion. Mr. Greenwell, G3AEZ, seconded the motion. Mr. Low, GM0ECU, asked if someone could explain in layman terms how the amendments would stop whatever was happening. The President asked the Secretary to explain.

The Secretary said that under the Articles as they stood a member of Council could resign any day before the last day of a (calendar) year. If this resignation was offered earlier in the year the person involved could stand for re-election for the following year before they had completed their three years of service. He said that what this meant was that if a Council member resigned on 30 December they could re-stand for election, but if they resigned from 31 December they could not. It was this loophole which Council wished to remove. On a show of hands, with two against and no abstentions, the President declared the motion carried. The President closed the EGM.

The President's Speech

'When you look back over the last year it is perhaps rather difficult to find something to compare with the 75th Anniversary celebrations. It is a very difficult act to follow. However, it has been quite an eventful year. I think that probably the introduction of the revised licence last January was the most significant event. Drafting that new licence required a great deal of effort from the Society's officers and staff. It was the culmination of work that took place over at least the last five years, probably a lot longer. It has brought the licence up-to-date and produced a great many new facilities, such as unattended operation and maritime mobile, computerised logging, to name but a few. Doing all that work it certainly brought home to me how rapidly amateur radio is changing, particularly from a technical point of view. The new licence has now been in operation for a year and during that year both the RSGB and the DTI have identified a number of points which need further

clarification. We expect that these further changes will be implemented in the Spring of 1990 and the 1990 licence is therefore expected to include a number of other features such as extra frequencies for unattended operation, facilities for ARDF competitions on 3.5 MHz and the lifting of the restrictions on 18/24 MHz which were announced last June/July. The restrictions on 24 GHz may also be lifted on part of that band. Another one is allowing foreign amateurs to operate our own stations under supervision, so if you like that is an extension of the CEPT licence. We hope it will also include giving Club stations the ability to send greetings messages on a 24 hour a day, seven day a week basis which is a privilege which previously was only available to special event callsigns for short periods. I think that will be of very great benefit to Clubs that are trying to introduce newcomers into amateur radio at their weekly meetings. The ability to let anyone speak into the microphone for a few minutes will make the hobby appear much more attractive.

On the subject of newcomers, work on Project YEAR continues and although progress has been perhaps rather slower than we would have liked, owing to limitations of resources that we have available, we have nearly completed the script for the video and the first of a series of books introducing people to the hobby. In July we had a joint DTI/RSGB presentation given to Industry on Project YEAR. The DTI received our Novice Licence proposals very favourably indeed and we look forward to seeing the Novice Licence implemented during the coming year. We are currently finalising the form that the training courses and examinations will take and we will be relying heavily on you, the membership, to help by passing on the skills that you have gained over the years to the next generation of radio amateurs and also by conducting examinations. We have already had a very encouraging response from the enquiry card that went out in the December RadCom and hope that many more cards will keep flooding in.

It is gratifying to see the enthusiasm that has been shown for the Novice Licence and the Young Amateur of the Year Award particularly. There is a very definite shortage of suitably qualified staff in the electronics industry, in particular those with RF experience. Not many days pass when you don't see an editorial in a magazine, I think there was one in the latest Wireless World, commenting about that problem. Amateur radio does provide a unique way of training people in practical RF communications and that has been recognized by the DTI who are supporting amateur radio in a most positive way.

On another front, the interests of the amateur still need defending on an increasing number of fronts. We have another WARC happening in 1992 and preparations for that event are already underway. We hope to be able to provide an amateur as part of the UK delegation as we did in 1979 so we should have a very direct input to the Conference. In addition to the traditional role of defending frequency allocations, and indeed gaining them, there are other areas that are emerging where a large amount of effort is required, particularly EMC (electro-magnetic compatibility), antenna planning matters, spectrum abuse and European community legislation. Society is changing and the onus for solving a lot of these problems is shifting from central Government onto the user groups and individuals involved. In the amateur radio world much of this extra work is falling on RSGB and it cannot be borne without support from the membership, both in the form of finance and volunteer assistance. The year 1992, the year of European harmonisation - I'm not sure what harmonisation means, I am not sure there's a lot of it - is approaching, we are already beginning to see direct effects of the European Community on amateur radio. One of the positive aspects was the CEPT licence which came into effect last year and that simplified operation in other European Community and CEPT countries. There has been some progress with the European Community EMC Directive which you possibly haven't heard many details about, but there is still a very great deal to be resolved on that. It is a very uncertain area which will have an impact on almost every aspect of your lives, which basically applies to all electronic equipment.

European Community legislation will have an increasing impact on the future and we hope that most of it will be beneficial, but there are bound to be some bits which aren't. The job of the national Society is to minimise those negative effects. Just as a national Society represents the interest of its members to their national administration, amateurs in the European community are going to need a means of co-ordinating and representing their interests to their administration, which is the European Parliament. The first steps along that route have already been taken by the formation of an IARU Working Group of national Societies which are in the European community. An inaugural meeting of that working group was held on 1 December in Brussels this year. Some of the topics on the Agenda included EMC, the

RSGB EXTRAORDINARY GENERAL MEETING AGENDA

RADIO SOCIETY OF GREAT BRITAIN

(Company Limited by Guarantee)
Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE.

Proposed Amendments to Articles of Association
Notice is hereby given that the following special resolution to amend the Articles of Association will be proposed at the Extraordinary General Meeting of the Company to be held at The Queen's Hall, Queens Hall Building, Argyll Street, Dunoon, Argyll & Bute (Strathclyde) at 3pm or immediately after the Annual General Meeting on Saturday 9 December 1989.

Resolution 1: that the Articles of Association be altered as follows:-

Article 10.
Delete: All after "his appointment" in line 10.
Substitute: "The Council may appoint the President for a second year in office but no President shall serve for more than two consecutive years. (Any period during which the President has been filling a casual vacancy under Article 27 shall be disregarded). On the termination of the period of office as President the person concerned shall be a member of the Council for a period of one year as Immediate Past President. On completion of that period the person concerned will be eligible for election to the Council for a period commencing in the following year only if his or her total period of consecutive service on the Council in any capacity (other than while filling a casual vacancy) does not exceed six years and, if elected, shall be a "second term" Council Member as provided in Article 26. The Council shall publish in the Society's Journal in October of each year the name of the Member appointed to fill the office of President on the following first day of January. If the person concerned is a member of the Council at the time of appointment, his or her previous position on the Council shall become vacant on the following 31st December".

Article 12.
Add at end: "If the person appointed as Honorary Treasurer is a member of the Council at the time of appointment his or her previous position shall become vacant on the following 31st December. A retiring Honorary Treasurer shall be eligible for election to the Council but, if elected for a term starting less than one year after the end of his or her period of office as Honorary Treasurer, shall be a "second term' Council member as provided in Article 26".

Article 26
Line 8 Delete all after "are elected".
Substitute: "On first being elected to the Council, or on being elected to hold office for a term starting not less than one year after the end of his or her last period of membership of Council, a Council member shall be known as a "first term" Council member. A first term Council member is eligible, if otherwise qualified, to be elected for a second term commencing within one year of the end of that member's first term (however terminated) and shall, if so elected, be known as a "second term" Council member. A second term Council member is not eligible for election for a further term of membership of the Council which would start earlier than one year after the end of his or her last period of membership of the Council.

Article 27.
At end, Add: "Appointment to fill a casual vacancy shall be disregarded in calculating the period during which the person concerned has held office for the purposes of Articles 10, 12 and 26".

Article 51.
Third line After "Council members who.....".
Delete: "retire in rotation or for any other reason".
Substitute: "to the knowledge of the Council on the preceding 1st August will retire in rotation or for any other reason".
Fifth line After "willing to accept nomination".
Insert: "and eligible"
Delete: Whole of last sentence.

Article 76.
Line 1: Delete: "The office of Member of the Council".
Substitute: "the offices of President, Executive Vice-President, Honorary Treasurer, Immediate Past President and Member of the Council".
Line 3: Insert: "(a) Dies; or"
Re-number: "a" to "i"
as "b" to "j"

Statement Pursuant to Section 376 of Companies Act 1985 Concerning Proposed Special Resolution for Alteration of Articles of Association.

The purpose of the alterations is to eliminate ambiguities in the Constitution of the Society; and to confirm what the Council believes the membership intended when a provision was introduced in 1974 to restrict the period during which a member could serve on the Council to six consecutive years, following which there must be a break of at least one year before the member is again eligible.

The Society has been advised by Chancery Counsel that the existing Articles are not entirely effective to achieve the intended purpose.

The principal amendment is to Article 26 which classifies Council Members as "first term" or "second term" Council Members. A second term Council Member will not be eligible for re-election until one year after the end of his or her last period of membership of the Council in any capacity (ie including as President, Immediate Past President, or Honorary Treasurer).

The amendments to Article 10 (President) are to clarify ambiguities and to provide that a former President will only be eligible for election to the Council for a term commencing in the year following the end of his or her period of office as President or Immediate Past President if the total period of service on the Council in any capacity does not exceed six consecutive years. If this period does not, and the person concerned is elected, he or she will be a second term Council member for the purpose of Article 26. This amendment does not change the maximum period that a Council Member, who is elected President, can serve on the Council under the existing Articles.

The amendment to Article 12 (Treasurer) has a similar effect except that a former Honorary Treasurer is eligible for election to the Council for one three year period immediately following his or her term of office, however long the period of previous consecutive service.

Amendments are proposed to both Article 10 and Article 12 to make it clear that if a Council member is appointed President or Honorary Treasurer, the former position on the Council is vacated.

The amendment to Article 27 is to ensure that a period in office while filling a casual vacancy does not count for the purpose of the time limits referred to above. If this were not included, the Society might find it difficult to fill casual vacancies.

The amendment to Article 51 is to take account of the fact that the Council may not know of an intended resignation from the Council on 1st August, and consequently may be in difficulty in complying with the existing requirement that notification of all vacancies shall be given by 10th September. The last sentence of present Article 51 is superfluous as the President and Honorary Treasurer are appointed by the Council; continuation in office is provided for by Articles 10 and 12.

The amendment to Article 76 is to make it clear that it is all Directors whose offices would be vacated if they became bankrupt, of unsound mind, etc. It also makes clear that the office is vacated if the holder dies.

Notes to members:-
Please refer to AGM notes a, c, d and e over the page. In notes b, d and e read EGM for AGM.

By order of the Council,
David Evans
Secretary
31 October 1989

rights of amateurs in general terms - for example the right to have an antenna system, recognition of the public service aspects of amateur radio, recognition of the educational value of amateur radio, that is a subject which RSGB in particular has been trying to highlight for some time.

Looking back inside the organisation, there have been some significant changes this year, to the format of RadCom, in particular, and our investment in desk top publishing services which has greatly assisted both with RadCom and book production. This year has also seen the recruitment of two new senior staff at HQ, which should help improve many of the aspects of the operation of the Society. For sometime now our income has been barely adequate to fund all these activities and if you look at our current subscription it is on a par with the cost of an annual postal subscription to many of the other electronics magazines on sale on the bookstalls. And yet the RSGB also provides a very wide range of services in addition to just producing a magazine, RadCom. It is an unfortunate fact of life that many of our services also benefit non-members as well as members, any benefits from say the licensing and international liaison work are available to all amateurs as are many of the services we provide on behalf of the DTI, the special event station callsigns, notices of variation for packet repeaters and ordinary beacons and repeaters to name but a few. So it is really in all your interests to encourage as many amateurs and shortwave listeners as possible to join RSGB to support that work. The extensive facilities available to the amateur service are a privilege and we must be prepared to pay a realistic cost of maintaining and defending our interests and hard fought for assets, the amateur bands.

Last year we started a policy of holding the AGM at different locations around the country. Last year the meeting was in Manchester and this year we are very pleased to be here in Dunoon. Next year the event is planned for Bristol. It has certainly been a pleasure to have these opportunities to meet members from all over the country and in moving around it was the intention of Council to provide opportunities for a much greater number of members to participate in the Society's Annual Meeting and to have a chance to talk to the officials and officers. I hope all this has been appreciated by the membership.

There is one item of good news which I think would be of interest this afternoon. We have just heard from the DTI that they have agreed that we can read out GB2RS news using two of the Scottish repeaters. These are GB3OC on the Orkneys and GB3HI on the Isle of Mull and that should greatly improve the reception of the news broadcast in these remote areas and I hope that that experiment will spread to the rest of the country in due course.

Finally, I would just like to thank all those members of staff and volunteers who have helped run the Society over the year.

The Society's Open Forum.

The President introduced the Question and Answer session explaining that he would select at random written questions which had been placed earlier by members in the box provided; (he would also take appropriate questions which had been previously submitted by post).

The first question was from Mr. Miller, GM6SHB. He asked if the RSGB supported an allocation within the 2 metre band for the Novice Licence outside the busy areas of London and Merseyside. The President invited Mr. McKenzie, G3OSS, to reply on behalf of the VHF Committee which had considered frequencies for Novices on the VHF/UHF bands. Mr. McKenzie confirmed that there were a large number of areas in the UK where (over-crowding) problems existed. He reported that at a recent meeting of the VHF Committee the decision to move to 12.5 kHz channel spacing was "put on warm ice" because of technical considerations. This reduced the possibility of finding room for Novices on the band and the Committee remained concerned that there would not be enough channels if a lot of Novices came onto the band. (Note the RSGB Council has not recommended an allocation for Novices on the 2 metre band).

Members listening attentively at the Annual General Meeting

The next question selected was from Dr. Marr, GM3AYR, who was invited to put his question to Council. He said that in the last Call Book which he had purchased he was disappointed to see how many entries were "particulars withheld at licensees request". He had counted 360 in Scotland and had telephoned four of the "details withheld" amateurs which he knew. Each of them was surprised at this entry against their callsign for they had not meant this to happen. Dr. Marr suggested how the RSGB could solve this problem as publisher of the Call Book. In reply the Secretary said that certainly having so many "details withheld" entries did undervalue the Call Book as a product. The Secretary noted that two or three years previously the RSGB had attempted to solve this problem. The Society had written to every single RSGB member who had their entry in the Call Book marked "details withheld" pointing out the fact that their details were withheld and asking if they would reconsider their Call Book entry. The Society could not write to non-members as it did not know their addresses. The vast majority of members who the Society wrote to did not reply. The Secretary explained that although some members did ask for either full or limited locational information to be published, the vast majority simply did not change their minds. The Secretary went on to comment that he had earlier in the year concluded lengthy correspondence with the DTI on this very matter. He reported that the DTI had agreed to include on the tape provided by the RALU, from which the Call Book was made up, the letters in the first part of the postcode for all "details withheld" amateurs. This would provide the "postcode area" and it was expected to be incorporated in the April 1990 issue of the Call Book. The Secretary concluded that the Society had already done everything it could possibly have done within its power to try to make the Call Book more meaningful.

Dr. Marr asked further about the Call Book published in the USA. The Secretary noted that since Radio Call Book Publications Inc. of Chicago had not purchased data from the DTI/RALU and the RSGB was not permitted to resell or provide the data to a third party, then to the best of his knowledge the data appearing in the USA version was re-keyed from the RSGB Call Book.

Mr. Clough, GM0MDD, suggested that rather than the RALU asking amateurs for permission to have their details published would it not be simpler for people who did not want their details published to confirm this to the RALU. The Secretary in reply believed that there might be certain formalities which RALU had to comply with under the Data Protection Act. He said that he was saddened about this entire situation because to the best of his knowledge the UK was one of only a very few countries in the World which had such restrictions on published information.

Mr. Brown, GM4VHZ, said that he had recently moved house and had notified the RALU. He reported that his address had not yet been amended despite a telephone call to RALU. He asked what he should do next. He had not yet written to the RSGB to amend his membership address. The Secretary advised Mr. Brown that so far as his licence address and the address which was to appear in the Call Book was concerned he must continue to write to the RALU. He explained that the addresses in the Call Book were essentially derived from the DTI/RALU records and that RSGB membership records were not involved and were quite separate.

The President said that the Society had received a written question on the Call Book from the Secretary of the West of Scotland Amateur Radio Society. The letter proposed that the Call Book be printed with GD, GI, GJ, GM, GU and GW callsigns listed in separate sections. The Secretary replied that those present with longer memories would recall that the Call Book used to list the UK countries separately. He noted that prior to the use of computers the Society had to retype every callsign, name and address on a card, arrange the cards in country/callsign order and photograph the cards to make up a Call Book page. He noted that this process was very costly. When the DTI/RALU were able to provide the information on tape it was found that callsigns

The Norman Keith Adams prize presented to Mr. Davies, G4YKT, for his article on cw.

were listed in sequence, not in UK country order. In order to unscramble the order in which the information was provided to the RSGB, it would a) put up the cost of the processing and b) introduce a delay in production because another process would be involved. The Secretary felt that Council, who would need to make a decision if any change were to take place, would be interested to hear members views on the matter. There were possible alternatives such as printing the callsigns of all UK countries in groups at the back of the Call Book; however, this too would inevitably increase the cost of the book. An identified speaker noted that callsign sorting could be done at database level without the need for special software to be written.

Mr. McAnerney, GM3XNJ, said that there were plenty of callsign sorting programs available advertised in the amateur press; could the RSGB not use these programs? The Secretary said that these would not help as the RSGB main computer was programmed in a language called RPG3. He did not predict any great cost involved.

Mr. Wylie, GM4FDM interjected that he had written sometime ago to suggest that instead of the present callsign issuing system the DTI issue GM callsigns in the series GM0AAA, GM0AAB, etc. He noted that it would obviously take years to issue callsigns in the smaller countries, but they could be listed separately for DXCC. The President, in reply, noted that this would be a fundamental change and believed that there would be some difficulty in convincing the DTI to change.

Mr. Barnes, GI3USS, said that he had been advocating a policy change to return to separate country listings. He said he had a mandate from GI members to revert back to separate country listings and that amateurs in GI were not purchasing the Call Book in its present form. He felt that most members would like to see the Call Book with separate country listings despite any cost increases or scheduling delays. He felt that Mr. Wylie's proposal was impractical because it would make it more confusing when travelling into other UK countries.

The President asked for a show of hands which indicated a large majority of those present in favour of separate country listings.

Mr. Buchan, GM0EFH, noted that the USA produced Call Book listed UK countries separately, but that it also quoted callsigns which were out of date, but with cross referencing to new callsigns.

Mr. Case, GW4HWR, said that he opposed the idea of separate country listings. He noted that the next RSGB Call Book would be available in April 1990. He said that if he moved from Wales to England he would effectively no longer be in the Call Book. He said that at present it did not matter where one was, names could be found in the Call Book without any problem; if the countries were separated or someone moved out of a country, they were lost.

Mrs. Dons, GM4YMM, said that different printer type faces could be used to distinguish each country. She also asked for the RSGB to leave Mrs and Miss in the Call Book for YL's.

Dr. Marr, GM3AYR, said that he had had some 12,000 QSO's since 1946 and he had details of them on one 3.5 inch diskette. He could extract details by many parameters. He felt that there was no confusion (with the present callsign system) when one changed countries as there was, for example, no G3AYR. Before moving to the next question, the Secretary summarised by saying that there were obviously feelings on both sides and that the Council would need to discuss the matter in order to make a policy decision.

[Since this matter will be raised at the March Council meeting, all members are invited to write to the Secretary stating their views on this topic. Please mark your envelope "RSGB Call Book."]

The Secretary read the next question from Mr. Low, GM0ECU, which asked why the Lord Advocate of Scotland was being allowed to vet the Raynet report on the Lockerbie air disaster. Mr. Cowan, GM4SRL, who had been heavily involved in the Raynet operation following the Lockerbie disaster, was invited to respond. Mr. Cowan was not aware that the Lord Advocate was vetting the report. He knew that the Procurator Fiscal in Lockerbie had asked to vet the report. Mr. Cowan said that there had been absolutely no problems and that the report would appear in the January edition of Radio Communication. The report had been read, not vetted. Mr. Cowan reported that he had very recently received a letter from the Chief Constable of Dumfries and Galloway who also wished to read the report in case anything confidential to the enquiry was mentioned. Mr. Low felt that the question had not been answered and asked for an explanation as to why the report had been sent to the Law Lords and the Procurator Fiscal service. Mr. Low said that his objection was that the Raynet report on the Lockerbie disaster was a private report compiled by a private organisation and therefore should not be vetted. The President felt that since Raynet had been asked to co-operate with the authorities, that the report was not just an ordinary private document. Mr. Howarth, G3YAC, the Chairman of the Society's Raynet Committee, said that there was no question of censorship or vetting the Raynet report - it was good management. Raynet had to work very closely with various groups of authority and needed to maintain the present excellent relationship. Such relationships were very hard to win and easy to lose. He said that what was published (in RadCom) must not upset in any way the Police or Government bodies or the good relationships would be lost - it was merely a matter of good liaison.

The next question from Mr. Bailey, GM8BBA, asked if it was correct that some repeater groups were not promptly reimbursing the RSGB site fees paid by the Society; he also asked for the sums involved. The Secretary explained that the RSGB had site sharing agreements with the BBC, IBA and Pye for the use of some prime sites for repeaters and paid on behalf of a number of groups the site sharing fees provided that the Society was reimbursed. He asked Mr. Dennison, G3XDV, his Assistant, to reply specifically to the question. Mr. Dennison said some repeater groups were very tardy in reimbursing the Society. He believed that currently some £800 was owing to the Society. He said that much effort went into chasing some groups for the money owed to the RSGB and that the bottom line was that if the Society was not reimbursed, the Society would have to write to the site owner cancelling the agreement. He noted that the IBA charged £100 per annum which was a small amount by commercial standards and that currently the terms were being re-negotiated with the BBC.

The next question to be drawn was from Mr. McCulloch, GM1SRP. It asked that in view of the venue, why was the Raynet Committee seeking charity status in England. Was this not naive and would it not exclude GM's in view of the differences in Scottish law. Mr. Howarth, G3YAC, replied that his predecessor, Mr. Griffiths, G3STG, was the expert on this matter. He believed that the RSGB Solicitors, who were working on the matter, were pursuing the matter under English law as a matter of logic since RSGB was registered under English law. The Secretary said that the reason why the RSGB Council were seeking charitable status for the UK Raynet operation was that it was believed that such status would allow Raynet to receive much greater amounts of money in sponsorship and that everyone involved in the negotiations so far believed this to be the case.

The next question was from Mr. Wylie, GM4FDM, which asked, when the Society was bleeding to death with members, why did it give so much time and effort to certain projects, such as credit cards, rather than provide a faster response to enquiries. The President asked the Secretary to reply. The Secretary felt that some fundamental issues were involved. If the Society were to achieve any of its many objectives then it must have money. Without money the Society could do nothing (for amateur radio) and certainly over the last 12/18 months Council had looked at other ways of financing the Society. Obviously the subscriptions and book prices could go up, but other schemes needed to be considered to benefit the Society. The Secretary did not have the precise figure to hand, but estimated that between £10-

15,000 had to date been generated for RSGB from the credit card scheme. There were therefore advantages to be gained for all members by such schemes. The Secretary noted that the other part of the question related to the speed of response to enquiries. He said that HQ received a very large volume of letters and telephone calls every day and that some raised complex issues; there could be literally dozens of separate questions in just one letter. He said that the longest letter he had ever personally received was from a member who had written 27 pages of foolscap which had expressed views on just about everything, including cruise missiles. The Secretary said that the Society had a very hard working staff at HQ, many of whom hardly ever stopped for lunch, but who just grabbed a sandwich to save time. He accepted the fact that things went wrong from time to time, but that with a membership which had instant communication with each other, any problems were highlighted and discussed. The Secretary said that every year the Society sent out a total of some three-quarters of a million of separate items of mail and, as a result, felt that somebody, somewhere had to be happy.

Mr. Brown, GM4VHZ, asked if it would be worth sending a postcard to all non-members inviting them to join. He asked if this had been considered and if it would be a worthwhile exercise which would probably cost a few hundred pounds. The Secretary replied that the Society had sent a mailshot to all non-member Class B licensees a few years previously. A 10% response, considered good by any criterion, had been received. He said that a further mailshot for all non-members had been planned during 1990. He said that some 45% of UK amateurs were not members of RSGB and though RSGB probably had a high proportion of active amateurs as members, nevertheless there was hope to try and attract more to membership.

The next question was from Miss Beech, GM4SGB, who said that the Society officials had only been referring to gentlemen, whereas there were ladies present. Miss Beech said that in principle by encouraging young people into amateur radio the Society was aiming at boys and girls - perhaps the girls would be intimidated by people saying gentlemen! The Secretary apologised if he had omitted to say ladies. He felt that Miss Beech had a good point, but that there were many other things that would put young people off amateur radio. He felt it essential, for example, that Clubs especially created an environment in which young people could feel comfortable.

Mr. Hamilton, GM3GDX, asked if Council considered the number of HF contests to be excessive and if they should be curtailed. Dr. Allaway, G3FKM, the Society's HF Manager, said that opinion was divided on this matter. Contest-minded people thought that there were not enough contests while others thought there were too many. Dr. Allaway felt that whatever the Society decided on this issue it would be wrong and that that was the position in reality.

Mr. Stewart, GM4TOQ, said that he participated in contests and sometimes got annoyed with contest stations because they did not stick to the specified frequencies. The President reminded the meeting that it was a very difficult matter to co-ordinate contests (internationally) because every country had its own strong ideas about why it should or should not have a contest that weekend. Mr. Low, GM0ECU, said that he had recently written to his zonal Council member on behalf of the Glasgow Club requesting that the bottom 10 kHz of each band not be used for contests. Mr. Low said that the answer had been that there was no international agreement on the matter. Mr. Low asked if the next IARU Conference could consider this type of rule for all contests. Dr. Allaway said that much work had been done on contest

The RAYNET Trophy accepted by Mr. Cowen, GM4SRL, on behalf of RAYNET members present at Lockerbie following the air disaster in December 1988.

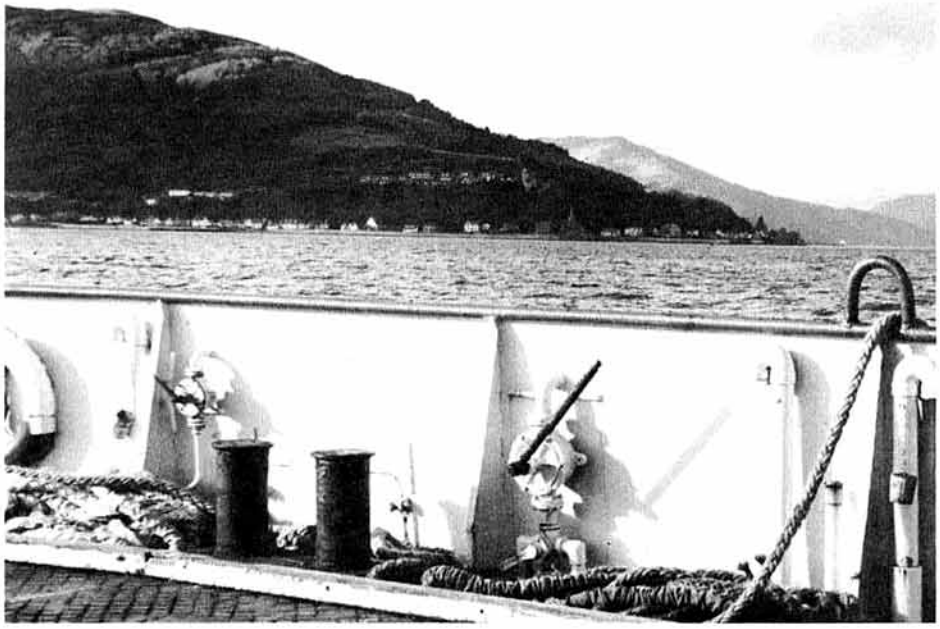
preferred band segments at international level, but that at the end of the day they were recommendations and were not mandatory. On a show of hands some 18/19 people in the hall took part in HF contests, a significant number remarked the President who then invited further comment. An unidentified lady speaker noted that YL contests were often held mid-week and contestants given specific band sections to operate in which were mandatory by the rules. She suggested that maybe some of the worldwide contests could follow suit. The President felt that the HF Contest Committee should take note.

Mrs Low, GM0IDJ, asked if the Society intended to publish a worldwide locator map, especially one covering Eastern Europe or the USA. The Secretary replied that the President-Elect had raised the same question with him a couple of weeks previously and he was looking into the matter. He understood that the ARRL published a booklet with worldwide locators in it. In support of the Secretary, Mr. Crosland, G6JNS, confirmed that the ARRL published an A5 sized map and that an SM amateur also published a map. On a show of hands, about twelve members expressed an interest in such a map.

The next question from Mr. Ferguson, GM3YTS, asked why the meeting had not been held in a more central location. Mr. Hall, GM8BZX, the EVP/President-Elect, replied saying that an invitation had been published in the March 1989 RadCom asking if any Club would like to host the 1989 Annual Meeting. There were four replies from York, Sheffield, Bristol and Dunoon. Council decided to consider further the venues on offer at Bristol and Dunoon. The Council had decided to accept the offer from Dunoon this year and the Bristol offer in 1990. Mr. Hall felt that as the Dunoon offer had the support of the local authority it was unbeatable, not to mention the Hotel prices. The President-Elect also commented on stories that had been put about saying that Dunoon was difficult to get to. He had asked a number of people attending the meeting who had replied - no bother at all.

The President took a written question next from Mr. Kyle, GI8AYZ, who asked a two-part question. Firstly, why was a Council candidate's statement restricted to biographical details only and secondly, what steps were Council taking to ensure that elections for Council did not turn into a self-promotional circus. The President answered by saying that to some extent the two points seemed to conflict. The main reason for restricting the candidates' statements to factual matters was essentially to counter the second point; by keeping statements to the facts and to discourage claims that could not be substantiated. Mr. Smith, G4AJJ, the Zone A Council member, remarked that last year's President had referred to electioneering as healthy and that Mr. Kyle had not been elected. An unidentified member said that the system of elections was as fair as possible taking into account the variation in locations and where the central Committee functions were held. Mr. Foster, G1DRG, wished to see candidates allowed some small statement of their interests and objectives. The President believed that the RSGB system was basically the same as that followed by other institutions such as the IEE.

Mr. Marsden, BRS85477, had written to ask if ways could be found to reduce subscriptions for disabled members and those on low fixed incomes. The Honorary Treasurer said that the question of how best to help people on low incomes had been raised many times in Council and Committee during the past few years. Mr. McKenzie, G3OSS, a member of Council who was blind, said that when he was Chairman of the Radio Amateur Invalid and Blind Club, several members of RAIBC had approached him saying that they were proud enough to feel that they wished to contribute to the RSGB. Mr. O'Brien, G2AMV, who had retired as Honorary Treasurer of the Society at the end of June 1989, said that the Society had agonised over this entire matter on many occasions. He confirmed that Council could grant dispensation, if it wished, on very special occasions. Mr. O'Brien also pointed out that the Society now operated a legacy trust whereby money left to the Society would be placed to be used on occasions to help people who could not afford to pay their subscriptions. On the question of the unemployed, Mr. O'Brien said that reluctantly it was considered almost impossible to administer reduced subscriptions



The magnificent view from the ferry as it appoached Dunoon.

because they could be in and out of work. The Secretary confirmed that the Society did offer reduced fees for young people, for members over 65 years of age and for the disabled; the current figures being 2,872 over 65, 626 subscriptions waived on grounds of disability, 245 student members and 197 Associates under 18.

The President said that he could take one more question which was from Mr. Miller, GM8JIP, who asked if the Society could provide local assistance to help solve EMC problems from external sources such as thermostats, pylons, etc. Mrs. Claytonsmith, G4JKS, a member of Council and the EMC Committee, said that a local scheme for providing EMC help by telephone was now in swing. Each RSGB zone had contact points listed in the December RadCom. Mr. Miller felt it would help if someone from the RSGB could be present when the DTI visited to help solve a problem, especially if neighbours were not co-operative when dealing with such matters as faulty thermostats. Mrs. Claytonsmith replied that in an ideal world it would be marvellous if the RSGB had squads of people who could assist members. Unfortunately such help would cost a lot of money, though some members of the EMC Committee did try to help by visiting some members. However, this could prove a full-time job where EMC help was provided by volunteers who did have their own jobs to do. She concluded that the new scheme should help to provide more EMC advice at local level. Mr. Hood, GM4COX, asked if the RIS were aware of the RSGB scheme in Scotland, not just London. Mrs. Claytonsmith reported that the Society was in close liaison with the RIS and that a close working relationship existed. She hoped that the RIS would disseminate the news of the RSGB scheme to all parts of the UK.

The President thanked everyone present for attending the meeting, which had proven very interesting and wished everyone a safe and pleasant journey

The Council of the RSGB wishes to thank the Argyll & Bute District Council for its warm hospitality and support of the RSGB's 63rd Annual Meeting

The Secretary announced that Council had awarded two Vice-Presidencies this year. The first to Basil O'Brien, G2AMV, the second to another past President who, because he was not able to be present at the meeting, would be presented with his certificate as a surprise as soon as possible.

Basil O'Brien, G2AMV

(See photograph on page ii.)

The Secretary said that Basil O'Brien had been a member of the Society for 54 years. The staff had lost count of the number of times that he had taken the early morning train from Liverpool to London to attend meetings; each visit an 18 hour day. Also visits often lasting as long as a week to HQ to discuss various matters with the staff. He said that Basil had undergone a hip operation earlier in the year which had impaired his mobility and that this had prompted his retirement as Honorary Treasurer in June 1989.

The Secretary said that the list of voluntary posts occupied by G2AMV put most entries in Who's Who to shame. He was the Region 1 representative for the Society from 1952-76; a member of Council from 1977-82 and again from 1984-87. He was Honorary Treasurer from 1988-89; President in 1981; Chairman of the Finance and Staff Committee from 1982-86; member of the Membership and Representation Committee from 1977-80 and a member of RAOTA and the RAFARS.

Geoff Stone, G3FZL

(See photograph on page iii. Certificate was presented to Geoff Stone on 16 December 1989.)

Geoff Stone became a member of the Society in 1946, the year he became licensed. In 1952 he started his voluntary work for the Society and since then he has been a member of one or more of the Society's Committees. Geoff was the joint co-ordinator for the International Geophysical year in 1957/58. He was elected to Council in 1960, became EVP in 1963 and was elected President in 1964. He has served on Council from 1960-74 and 1976-81. On the international front Geoff was the Society's VHF Manager from 1965-77 and served as a delegate and Secretary to a number of IARU Conferences. As an author, Geoff has provided input on antennas to several books including the RadCom Handbook. Geoff is a reserve GB2RS newsreader for most of the London area; he has also been responsible for the VHF Convention for many years.

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