An Amateur Radio publication for the Microwave Enthusiast

scatterpoint

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2011 MAY

You may remember reading a Scatterpoint article about Boris Nikitin, UA3MCJ, some time ago, in which his attempts to get equipment for DSN reception at 8.4GHz was described. Well here's just one of the problems he faces on a regular basis ... the Russian climate! This winter has been particularly harsh, with snow two metres deep at times, so deep that it has been impossible to get his car out to go and collect food from a shop about 1km away across the fields! This shot was taken on a rare bright and sunny day in February this year, when he crossed the frozen wastes on foot to collect food that would have to last him ten days. Think about this when you complain about our English weather! In spite of several months of such hardship, he has made very good progress in his DSN project and has recently machined an 8.4GHz dish feed to his own design. Boris lives in the forest land to the SE of Yaroslavl City in Central Russia.

In this issue ...

Latest News ...

- **Scatterpoint becomes 100% electronic**
- **Goodbye Mr Old Editor and hello Mr New Editor**
- **G3JHM Silent Key**
- **1st QSOs at Infra Red**
- **G8CUB<>G0FDZ 132GHz QSO**

MANY THANKS TO ALL OUR CONTRIBUTORS THIS MONTH ... WITHOUT YOU THERE WOULD BE NO SCATTERPOINT!

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From the Editor's Desk

This is the last time thatI shall be writing on page 2 of Scatterpoint! After 26 years in the editorial chair and, since the advent of laptops, often a settee, I have decided to move aside and let someone with new ideas have a go. I need all the spare time I can get this summer as I'm planning to get to the stage when my house is finally de-cluttered of over 50 years of radio "junk" ..... the ultimate aim being to sell this poorly located house for one with a good radio take off and land for those LF, HF and VHF to uW antennas that I've long dreamed of!

I'm not deserting microwaves of course. I hope I can come out /P as often as possible but this year will certainly see less operation than usual from the hill-tops as I need the time for more pressing matters. The high cost of running a car these days has also made me think long and hard about driving to remote grid squares to make a mere handful of contacts.

I also have greatly missed my home construction over the past 5 years or so. In addition to my Scatter-point duties I (perhaps unwisely) assumed a commit-tee role, including Chairman, at my local club, the result being that I have not made anything 'microwave' for that long period. I have a large card-board box full of microwave projects, some of them kits and components bought a various MUD events or UK ones. I must build them up before their technology becomes as obsolete as klystron polarplexers or before I myself become obsolete!

Thanks again for the wonderful support you have given me over the years, Without you, the reader, there would be no Scatterpoint ....

So, a final 73 from Peter, G3PHO
Editor

News, views and articles for this newsletter are always welcome. Please send them to:-

editor@microwavers.org

preferably by email, or to the editor's address shown above. **The CLOSING date is the FIRST day of the month** if you want your material to be published in the next issue.

UK MICROWAVE GROUP EXTRAORDINARY GENERAL MEETING SUNDAY, 17th APRIL 2011

The Extraordinary General Meeting of the UK Microwave Group was held at 9:45am on Sunday, 17 April 2011 as part of the Martlesham Microwave Round Table event which took place over that weekend.

The motion was:

"That the Annual General Meeting be deferred to the April 2012 meeting of the Martlesham Microwave Round Table and occur annually thereafter."

There were 20 members present at the EGM + 1 proxy vote. No other representations were received from members prior to the EGM.

The motion was approved unanimously.

Martin Richmond-Hardy, G8BHC, Secretary, UK Microwave Group

THIS IS IT, THE TIME HAS ARRIVED ....

This is last issue of Scatterpoint to appear in paper format. From next month one, Scatterpoint will only be available to UKuG members through direct download from the Scatterpoint Yahoo Group on the internet. Since 2004, Scatterpoint in its present form has been edited by Peter, G3PHO, emailed and uploaded to the website by him and printed in booklet format and posted by **Mensa Printers** of Sheffield.

All that ends forthwith and a new editor, Martin G8BHC takes over the reins at the same time as Scatterpoint becomes 100% electronic.

Peter has a few reminiscences to share later with you in this issue.

Martin will be working with a small team of semi-local microwavers including John G4BAO, Sam G4DDK and Robin G8APZ. Please send ALL items for inclusion is Scatterpoint to Martin at **editor@microwavers.org**. Each member or the team will have access to it. Please do not send material to G3PHO from now on :-).

Sign up for Yahoo now, if you haven't done so yet. Details of how to do this are at www.microwavers.org.

UK MICROWAVE GROUP SUBSCRIPTION INFORMATION

The following subscription rates now apply. **Please make sure that you pay the correct amount** when you renew your subs next time. If the amount is not correct your subs will be allocated on a pro-rata basis and you could miss out on a newsletter or two!

Until May 2011, your personal renewal date will be shown at the foot of your address label if you receive Scatterpoint in paper format. N.B. This issue is the last one to be printed in paper format.

Scatterpoint distribution by email ceased with the January 2011 mailing, and from June 2011 onwards is ONLY distributed as a .pdf download by means of Yahoo! Groups.

If you have forgotten your renewal date, please ask the membership secretary for a reminder. From now please try to renew in good time so that continuity of newsletter issues is maintained.

Put a **renewal date reminder** somewhere prominent in your shack (the editor suggests having it tattooed on your forearm!).

Whichever payment method you use, please remember to include your **name** and **callsign** with your Paypal or cheque details.

Payment can be made from the UKuG website membership page

www.microwavers.org
(Paypal, or any credit card)
or
a cheque (drawn in £ on a UK bank) payable to 'UK Microwave Group' and sent to the membership secretary
or
(as a last resort, by cash to the treasurer!)

The UKuG membership rate for 2011 is:

UK	**£6.00**
US	**$12.00**
Europe	**€10.00**

For this you receive Scatterpoint as a .pdf file.

SWISS 10GHz BEACON HB9G

The photo left shows the new beacon as displayed at the French Seigy VHF and Up weekend in April. From the label on it, it appears to have been built by F5AYE using modules developed by F9HX and finishing with a 3 watt PA feeding a slotted WG16 (WR90) antenna.

The information gives no indication of the frequency or final location. However, it's one to listen for when the promised 'Mother of all Tropo Openings' comes our way later this year!

DON HAYTER G3JHM, SK

Many of our UK readers will already know that Don passed away at the beginning of March this year. Don was certainly one of the pioneers of amateur microwaves in the UK. In 1959, Bob G3GNR and Don G3JHM, had their very first 10GHz QSO, over a 4km path (later extended to 30km) between Worthing and Newhaven, in Sussex They were using the 'evergreen' modified 723A/B klystron on 10050MHz at about 10mW o/p and their PSUs were two small rotary converters running from 12V batteries. The receivers were single-ended mixers with LOs fed by a 10dB directional coupler and NF measured at 11dB! Both these operators were still very active on 10GHz ssb/cw up to the late 1990s and, until Don's recent passing, were probably two of the longest serving 10GHz ops, at least in the UK.

In the early '70s, Don was instrumental in the setting up of what we now call microwave round table meetings. He organised the venue at the IBA HQ at Crawley Court, Winchester for meetings of likeminded microwavers and also liaised with our French counterparts across the English Channel. His wife always very kindly helped with catering at these events. He and Dain Evans, G3RPE, also organised the circulation of an activity news sheet (the embryo Microwave Newsletter) so that operators (most were /P in those days) would know who was going to be on from where during the summer activity days. Don was one of the first microwavers to use site evaluation and path loss software as he was able to access it at his work.

After his wife died some years ago, we didn't hear Don on the 10GHz band but his call would come up on the DX cluster from time to time as he chased DX on the 50MHz and 70MHz bands. He had a high power (1KW) NoV) for 70cm ... some would jokingly say he always had it switched on!

The writer has in mind a particular day many years ago on 10GHz. Don called me on the 144MHz SSB talkback frequency and said he would listen for my signal, which he eventually heard. He then said I should listen for him but it would take 10 minutes and he would come back on 144MHz to tell me he was transmitting on 3cm. I later found that this delay was due to him having to climb out through his upstairs shack window and crawl across a horizontal ladder to his 3cm dish to operate a manual change over waveguide switch! This was his normal routine! Contest QSOs could take a long time with G3JHM!

RIP Don de G3PHO

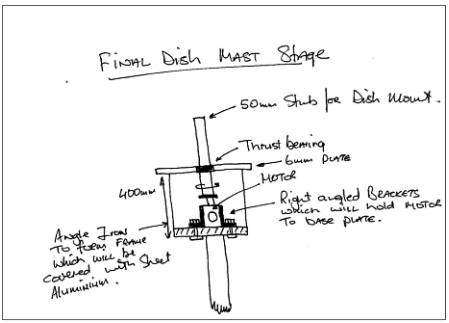
Dish progress 2011

…. by John M0ELS

Well its been a good start to the new year and I am happy to report that I have made some progress in getting my 2m EME dish mounted onto a stable platform. I have acquired a steel pallet which was “de-rusted” and coated with rust resistant paint. The pallet will sit on top of four concrete blocks and will be levelled as required. I will also weigh the pallet down with extra weight to prevent it from taking off ... hi!

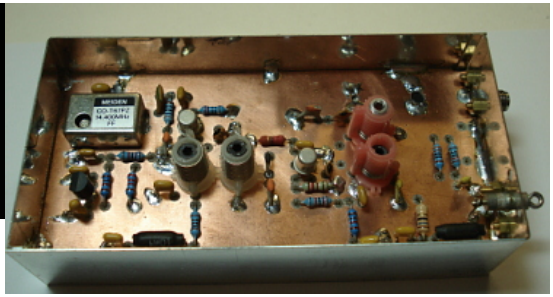
I have also recently had a solid post mount made by an engineering firm and it seems that all systems are go. The post will bolted onto a 10mm base plate which will be welded onto the pallet as shown.

This will allow for easy removal if required. I spent a lot of time doodling different ideas to get the design right as well as the right price tag. ... ‘Cheap’ being the operative word, with quality. The azimuth motor will be sandwiched between two right angle plates and will be bolted to these on both sides, thus allowing me to attach an encoder to the protruding spindle underneath the gearbox. I will weld four x 400mm angle iron lengths to the top plate, one on each corner, on top of which I will weld a 6mm plate. In the center of this plate will be a thrust bearing, through which a 50mm dia pipe will run and attached to the motor spindle. Actually, the motor spindle has a gear wheel already mounted on it and I will simply weld a small plate to it and then to the pipe. As this project nears completion, I will have to look at getting the tracking hardware and software, but the current price tags are beyond my pocket, so am looking for some other means of keeping the dish on the moon.



A 144MHz Source for Transverters

By Mike Scott, G3LYP



In the RSGB Microwave Newsletter for February 1994, Andy Talbot, G4JNT, published a design for a 144MHz source to drive a microwave transverter for use as a beacon without the need to tie up a transceiver. I built one and incorporated it into a 23cm transverter and it worked very satisfactorily.

In the February/March 2011 Scatterpoint, Bernie Wright, G4HJW, reviewed the capabilities of the 14.4MHz crystal oscillator modules available very cheaply from Pyrojoseph on e-Bay. Last year, Bernie, as a follow up to his work on using LNBs as 10GHz receivers, produced a kit to make a low power 10GHz transmitter utilising one of these oscillators as the starting point. The main board multiplied the 14.4MHz by 30 and amplified the signal to give 100mW at 432MHz.

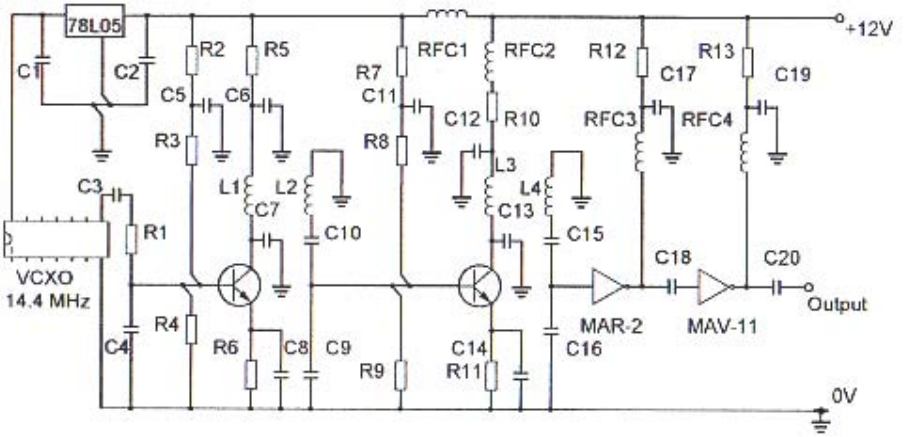
As I needed another 144MHz source for a project, I thought that the 14.4MHz oscillator multiplied by ten would do the job. The resultant circuit is somewhat of a hybrid between Bernie's and Andy's designs, and consists of a times five multiplier to 72MHz, followed by a doubler to 144MHz. Both stages utilise a BFY90. Two stages of amplification, consisting of a MAR-2 followed by a MAV-11, give an output at 144MHz of about 60mW. The main limitation is that the adjustment on the oscillator limits the output frequency to about 144.01MHz, but this is adequate for the purpose I had in mind.

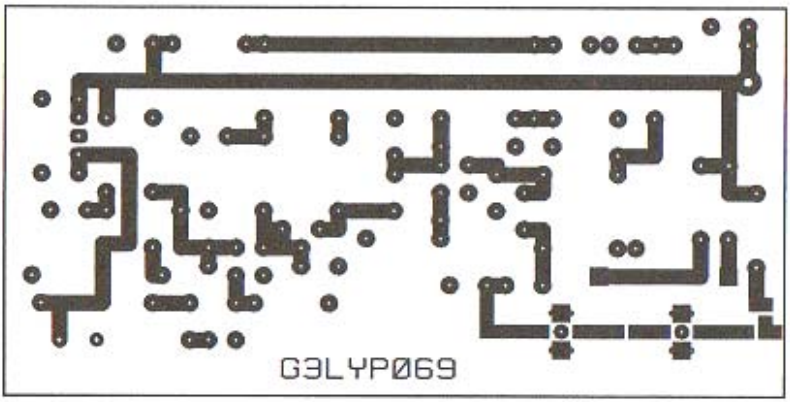
Construction utilised mainly through hole components because they were available from stock, the only exceptions being the capacitors associated with the modamps. A pcb was designed to fit in a 55 x 110mm Schubert box. No doubt the size could be reduced considerably if all surface mount components were used. Artwork for the pcb is available if required.

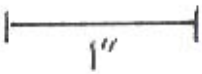
Alignment was simple using a spectrum analyser with a probe held near each of the four inductors.

One potential problem identified, when examining the spectrum of the output, was the level of the second and third harmonics which were only about 10dB below that of the wanted signal. The unwanted harmonics of the oscillator were all at an acceptably low level, and it was clear that the problem was due to the MAR-2 being over driven by the BFY90 doubler. Detuning L4 significantly reduced the level of the second and third harmonics relative to the fundamental. Interestingly, when I looked at the spectrum of the original 1994 unit, which utilised a MAR-2 also driven by a BFY90, the levels of the harmonics were at a similar level to the current unit. Several permanent solutions are possible. The first would be to increase the spacing between L3 and L4. An alternative would be to remove the MAR-2 and drive the MAV-11 directly from the doubler. Finally, a low pass filter, with a cut off at about 150MHz, could be inserted between the output and the transverter.

As an aside, in writing up this project, I used Jim Hardcastle's circuit drawing font (RadCom October 2006 p.75) which, after a bit of practice and experiment, yielded a quite acceptable result. There were a few limitations, in particular there was no symbol for a vertical tuneable inductor for L1 – 4, and the eagle eyed will note that the symbols used for the modamps are logic inverters rather than amplifiers. It is supposed to be fairly easy to create new symbols using font creating software, but I didn't want to spend any more time on it. Adding the component identification required the use of "Word" text boxes which took me some time to get the hang of. The moral is to save anything you get right so that you can get it back when things go wrong!


78L05
+12V
C1
C2
R2
R5
C5
C6
R3
C3
L1
L2
C7
C10
R1
VCXO
14.4 MHz
R4
C4
R6
C8
C9
R7
RFC1
RFC2
R12
R13
C17
C19
C11
C12
R10
R8
RFC3
RFC4
L3
L4
C13
C15
C18
C20
Output
MAR-2
MAV-11
C16
C14
R11
R9
0V


G3LYP069


1"


G3LYP069

144MHz Source Component list

```
R1,5,10---------------------- 100R
R2,7------------------------- 1K
R3,8------------------------- 12K
R4,9------------------------- 2K2
R6,11------------------------ 220R
R12-------------------------- 330R
R13-------------------------- 120R

C1,5,6,8,11,12,14,17,19------ 100n
C2--------------------------- 1uF
C3--------------------------- 10n
C4--------------------------- 39p
C7,13------------------------ 12p
C9--------------------------- 56p
C10-------------------------- 15p
C15-------------------------- 22p
C16-------------------------- 82P
C18,20----------------------- 1n (0805)

RFC1,2----------------------10uH
RFC3,4----------------------- 1uH

L1,2------- Toko S18 White,8.5 turns
L3,4------- Toko S18 Pink,2.5 turns

Tr1,2------------------------ BFY90
Regulator-------------------  78L05
Modamps--------------  MAR-2,MAV-11
VCXO---------------  Meiden,CO-67PZ
```

BYE FOR NOW ….

A nostalgic look back over a quarter of a century of UK microwave newsletters …… by Peter Day, retiring Scatterpoint editor

I suppose 26 years may seem a long time to most people but for me they have certainly gone past at a seemingly rapid rate of knots! It doesn't seem that long ago when, in late 1984, I first went down to a London meeting of the now defunct RSGB Microwave Committee. Barry Chambers, G8AGN, who was already a member of the committee, had asked me to accompany him as a visitor to the meeting. Little did I know at the time that it was a ploy for the committee to "size me up" with a view to making me a member, with specific responsibility for producing the RSGB Microwave Newsletter! Those of you who are of similar vintage as myself and who have been in amateur microwaves since the late '60s/early '70s, will remember the famous callsigns and names of those revered members of that committee for they read like an early history of UK microwaves …. Charlie Suckling G3WDG, Dain Evans G3RPE, Mike Walters G3JVL, Steve Davies G4KNZ, Julian Ganaway G3YGF, Barry Chambers G8AGN, Mike Dixon G3PFR and, among the others, I believe a young man called Graham, G4FSG! I have all the newsletters going back to number one when it was started by the late Don Hayter G3JHM and Dain Evans G3RPE as a single page affair, designed to inform people where portable stations would be located for the next microwave activity day (note… they were NOT contests!). However, at the time of writing this page, I cannot lay my hands on any of the early newsletters as I have lent them all to our Spectrum Manager, G6JYB who is busy scanning and archiving them for subsequent upload to the UK Microwave Group website … this should be a fascinating resource!

That meeting eventually saw me being offered a position on the RSGB Microwave Committee and in early 1985 I took over the editorship of its newsletter. Barry, G8AGN, offered to be co-editor concentrating on gathering and sorting any technical information that came his way, while I dealt with all the rest, including the typing (yes, on a manual typewriter and later an electric one!!) of the draft newsletter. Having Barry live just 4 miles away was a real help. This system worked quite well for some years but diagrams had to be redrawn using drafting pens and stencils if the authors had submitted them as hand drawn ones in the first instance. Barry would then get the draft copy photocopied at his workplace and two copies would be sent to RSGB HQ where two Xerox machines would run off the several hundred required for the subscribers. Note that all this was in the pre internet and home PC era, so all reader input was by "snail mail" or via the telephone. There was no chance of including photographs with any real detail as the Xerox copies made at RSGB were of too poor quality for that.

In the mid 80s, the RSGB started to print the newsletter in A5 booklet format. Prior to that, it had been 2, 3 or 4 stapled sheets of A4 but as we included more and more information and needed more pages, the A5 format allowed us to get more pages without increasing the weight of the newsletter and therefore the postage.

In the early 1990s, I finally entered the internet world with an Amstrad CPC 128, a 14.4K modem and a Compuserve ISP dial-up account for emails. Not so long afterwards along came my first PC, an Atlantic 386MHz, running Windows 95, with a 100MB HDD ... what joy! However, these advances in science did not see much improvement in the form and presentation of the RSGB Microwave newsletter. I'd felt for years that the tatty visual quality of the publication was letting down RSGB, the Microwave committee and myself as the finished product was entirely dependent on the photocopiers used at RSGB HQ.

During the 1990s and early 2000s, UK microwavers were becoming much more identifiable as a body of like minded enthusiasts, much more so than when I first got into amateur microwaves at the start of the 1970s. It was therefore a landmark decision by a small group within the RSGB Microwave Committee, in particular Sam G4DDK, Steve G4KNZ and Lehane G8KMH, to form the UK Microwave Group, as this inevitably led to a new microwave newsletter, Scatterpoint, first as a quarterly publication under the editorship of Martyn Kinder, G0CZD. At that time I was still editing the RSGB Microwave Newsletter. In November 2003 I felt honoured to be elected the first Chairman of UKuG and I made it one of my priorities to negotiate the movement of the Microwave Newsletter from RSGB and transfer its list of subscribers, subscription funds and editorial staff (ie me!!) to UKuG. This was surprisingly easy, as Peter Kirby, the former General Manager of RSGB, seemed only too keen to get this "minority interest" publication off RSGB's back! THE REST IS HISTORY!

In June 2004, the first of what you now know as Scatterpoint was released as a 10 issues a year printed, paper publication. I found a most excellent Sheffield based and family run printing business, **Mensa Printers, http://www.mensaprinters.com/ ,** who have been printing, and latterly posting, Scatterpoints for you since June 2004. I feel very sad that we have had to remove our business from them but we all have to move on! We began to supply Scatterpoint in electronic format and this soon became very popular as the £6 subscription was much cheaper than that for the paper edition! Today, in 2011, we have reached the next major watershed. The paper version is proving much less popular and postage much more costly (only 60 odd were printed for this final paper edition) and distribution is, from now on, entirely by download from the internet.

I have been privileged to have been there from the start. It's been great but I now need the spare time, so it's "VY 73 OMs" and thanks to you all for the tremendous support and friendship you have given me throughout my period as editor of what I hope has become the best microwave newsletter around!

I must give special thanks to Robin Lucas, G8APZ, who kindly offered to take on the Activity news column a few years ago. This reduced my workload by five pages a month! In addition, he has produced the complete Scatterpoint template for each month's issues, again making is much easier for me to "drop" the rest of the material into an already planned booklet. It's been a real pleasure working with him.

I also wish to the thank Bryan Harber, G8DKK and his predecessor Ian G8KQW, who had the unenviable task of keeping an up-to-date membership address database for me to send out Scatterpoint to members.

My very best wishes also go to the **new Scatterpoint editor, Martin G8BHC.** I know you will give him your utmost support in the years ahead**.**

So, I can now at last throw away my PC with its antiquated XP operating system and DTP software and do all of my computing in future with my trusty Mac Pro Notebook!

Oh, in case you wondered, I will continue to build and operate my microwave gear but hopefully do more of the building and less of the operating. I also have to move QTH before my 75th birthday late next year! I'm looking for space for my HF beams, towers, 4 squares and longwires, etc!

73 and cu on the uW bands! Peter G3PHO

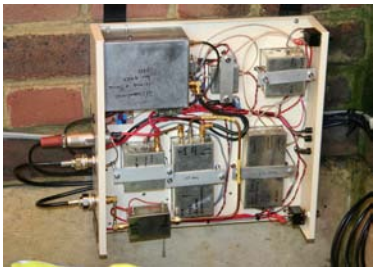
BEACON NEWS

From: Alun Cross <Alun-G4WGE@orange.net> Date: Sun, 24 Apr 2011: Having seen the mention of GB3SEE in the April Scatterpoint, here are some photos I took, while Denis-G0OLX and Jim-G4WYJ carried out the final installation of the TWO GB3SEE units (with minimal help from me!).

Iwo Jima re-enactment, by G0OLX (L) & G4WYJ (R)

G4WYJ with the 10GHz head unit prior to fitting the radome.

10GHz with radome with 24GHz unit (small white antenna on grey box)



Indoor unit closeup

PSU (actually in equipment room at base of tower)

The tower. Spot the antenna ….

(it's on the right hidden by the tree)

G0OLX making last minute adjustments to the indoor unit

Listening for the 24GHz beacon. - the transverter was actually faulty so it was audible but incredibly weak

SEIGY 2011 … A BRIEF REPORT AND PHOTOS

….. from Ralph Bird, G4ALY

The annual event at Seigy promised to be a bit special this year. I found that was indeed the case, being the 20th anniversary of the event all the stops were pulled out and even the weather contributed, by being absolutely beautiful for the whole week-end.

I arrived on Friday, 8th April, with André F1PYR, as the tables for the bring and buy were being set up. The dinner on the Friday is usually the most popular and this year there were just over 100 attending. (See above and right) The atmosphere is lovely and very friendly and the food was, as usual, excellent. We finally got back to the house where we booked in at 0130.

Saturday was the main event with many opportunities to purchase lots of interesting things at the bring and buy and from dealers at reasonable prices. …. see photo left.

As usual there was a display of home brew equipment of very high standard for which certificates are awarded for the best. The photo left shows a beautifully made 47GHz transverter by F1CLQ.

They also hold a general meeting, as we do at UKuG, to discuss the situation with contests/beacons/and awards for the top operator for the year, this year being Guy, F2CT.

Just about everybody had lunch outside under the shade of the trees. Some of the French were even getting sunburnt!

Another dinner on the Saturday evening with about 70 present was also very enjoyable. The following morning we headed back to Paris feeling very happy and content with the whole meeting. More of you should make the effort to attend this very sociable of events. You will find it, I am sure, to your liking. **73 Ralph G4ALY**

A new band, a new challenge and a new UK and world record? .... A report from Stuart G8CYW

The light evenings now place a severe restriction on operating conventional optical communications using red LEDs. Looking back at previous records (the time and date on audio files of contacts), it has been found that communication has taken place only when the Sun dips 12 degrees below the horizon, a condition known as "nautical twilight". This now will now not occur before 10pm until the end of August, or early October at a more reasonable 8pm. This places restrictions on activity over the summer months.

Stuart, G8CYW, has been experimenting using **near-infrared LEDs** producing either 850nm or 940nm radiation and filtered photo-diodes to communicate in the IR part of the spectrum. The experiments have been carried out not only in the hours of daylight but in bright sunlight also. A 1km one-way signal path was successfully trialled some weeks ago. The challenge therefore, is to communicate using these wavelengths during daylight hours, ie. between sunrise and sunset. It is hoped that other groups will join us on this band in the spirit of healthy competition to push the boundaries and see what can be achieved in terms of maximum distance worked. An extensive internet search has not revealed any reports of amateur voice communication using IR and only a single attempt at daylight operation over a short distance, and so any contacts made could be regarded as both UK and world records if no other information comes to light (pun intended!). **For a while, this would enable the UK record holders to be world record holders** also. The unique challenge here is that there is no light to be seen in the distance on which to visually line up the equipment! So it is back to compasses, binoculars and careful adjustment.

On Tuesday evening, 26th April at 7.30pm BST, in full sunlight, Stuart, G8CYW located at his home QTH IO94CX70 and Brian, G8KPD/P at IO95CA63 made their first two-way FM and SSB contact on 940nm over a modest distance of 6.3 km. Signals were 5/9+ both ways on both modes. For this contact, both stations went back to the earlier equipment described in the RadCom articles using plumbing pipe and 100mm glass lenses. Brian used separate transmit and receive heads connected to his optical transverter and FT817. The transmit head red LED was replaced by an Osram Golden Dragon 940nm 2.2W device and the receive photo diode was replaced by an IR filtered version of the same device, a SFH2030F. Stuart used an IR version of his LED transceiver connected to his optical transverter and FT817, both transmitting to Brian and receiving Brian's signal on the same 940nm LED .... see photo **(1)**

The contact was witnessed at Brian's end by the farmer and his wife who had given him permission to use their farmyard, a nice level concrete surface, Brian had only to contend with an inquisitive horse who stood exactly in the path of the beam until encouraged away by the farmer with a little extra feed! Stuart's wife Christine witnessed the other end, taking photos and even helpfully kicking the tripod taking a photo over the optics whilst in use! On this photo **(2),** the sunlit conditions can clearly be seen, as well as Brian's location if you zoom in (he was just to the left of the obvious hill on the horizon, on the flat, lower area). The sound file (8) is of the FM contact from Stuarts end, apologies again for the difference in audio levels between Brian's signal (mic over the loudspeaker) and Stuart speaking two feet away. File (9) is the SSB
Who's up for it then?

Photos opposite include one of Brian at the same farmyard **(3)** on a previous occasion when he was using a green LED. This was taken through my Meade telescope at (of course) 6.3 km range.

(1)

(2

(3)

April 2011 Low Band Contest Results

Overall

Pos	Callsign	1.3GHz	2.3GHz	3.4GHz	Total
1	GW3TKH/P	394	1000	1000	2394
2	G4BRK	1000	839	0	1839
3	G4DDK	893	531	255	1679
4	G4LDR	465	422	676	1563
5	GW8ASD	806	323	0	1129
6	GM4JR	832	0	0	832
7	G8DTF/P	133	286	137	556
8	G0JMI/P	62	196	225	483
9	GU6EFB	427	0	0	427
10	G6GVI/P	127	220	1	348
11	GM8IEM	340	0	0	340
12	G0EHV/P	254	0	0	254
13	GM4GUF/P	227	0	0	227
14	G1SMI	156	0	0	156
15	G4FSG	117	13	0	130

1.3GHz

Pos	Callsign	Locator	QSOs	Best DX		Points
1	G4BRK	IO91HP	26	GM4LBV	566km	4805
2	G4DDK	JO02PA	17	GI6ATZ	550km	4293
3	GM4JR	IO85FB	14	G4DDK	465km	4000
4	GW8ASD	IO83LB	18	PA/ON7BV/P	474km	3873
5	G4LDR	IO91EC	12	PA/ON7BV/P	357km	2234
6	GU6EFB	IN89RK	7	PA/ON7BV/P	484km	2052
7	GW3TKH/P	IO81LS	11	PA/ON7BV/P	450km	1891
8	GM8IEM	IO78HF	5	GI6ATZ	428km	1632
9	G0EHV/P	IO84XT	4	G3XDY	374km	1221
10	GM4GUF/P	IO85EO	7	GM8IEM	311km	1092
11	G1SMI	IO83PM	7	GM4JR	180km	751
12	G8DTF/P	IO83RO	9	G3VKV	193km	638
13	G6GVI/P	IO83RO	9	G3VKV	193km	611
14	G4FSG	JO02PC	7	G4LDR	231km	563
15	G0JMI/P	IO91ME	4	GW3TKH/P	159km	299

2.3GHz

Pos	Callsign	Locator	QSOs	Best DX		Points
1	GW3TKH/P	IO81LS	9	G3XDY	294km	1358
2	G4BRK	IO91HP	9	G3LRP	218km	1139
3	G4DDK	JO02PA	6	G4CBW	269km	721
4	G4LDR	IO91EC	5	G4DDK	226km	573
5	GW8ASD	IO83LB	5	G3VKV	147km	438
6	G8DTF/P	IO83RO	5	G3VKV	193km	388
7	G6GVI/P	IO83RO	6	G3VKV	193km	299
8	G0JMI/P	IO91ME	3	GW3TKH/P	159km	266
9	G4FSG	JO02PC	2	G4DDK	10km	18

3.4GHz

Pos	Callsign	Locator	QSOs	Best DX		Points
1	GW3TKH/P	IO81LS	6	G3XDY	294km	919
2	G4LDR	IO91EC	4	G4DDK	226km	621
3	G4DDK	JO02PA	2	G4LDR	226km	234
4	G0JMI/P	IO91ME	2	GW3TKH/P	159km	207
5	G8DTF/P	IO83RO	3	G4CBW	63km	126
6	G6GVI/P	IO83RO	1	G8DTF/P	1km	1

Contest Manager's Comments:

Another good entry was received, with a few less on 23cm than March, but more stations out on 9cm. All entrants used the online log entry system this time.

Conditions were perhaps a shade above normal on some paths but not by much. Weather conditions were ideal for the portables, with remarks that it was more like July than April.

It was nice to see activity well spread around the UK on 1.3GHz, from GM8IEM in the far North of Scotland, to GU6EFB in Guernsey. G4BRK was the clear winner on this band, with G4DDK as runner up. GM4JR and GW8ASD were not far behind. Leading portable station was GW3TKH/P.

No great DX was worked on 2.3GHz this time, with GW3TKH/P taking the lead over G4BRK, the leading fixed station.

Conditions on 3.4GHz were similar, with GW3TKH/P winning by a large margin with 50% more contacts than the runner up, G4LDR, the leading fixed station. It was good to see increased activity on the band, with G6GVI/P giving his rig its first airing.

The overall winner was Keith Winnard GW3TKH/P, who won the two higher bands. Runner up and leading fixed station is Neil Whiting G4BRK, who led on 1.3GHz and was runner up on 2.3GHz. Third place is taken by Sam Jewell G4DDK.

Certificates go to the overall Winner GW3TKH/P and Runner-up G4BRK and to the following band leaders, runners up, and leading portable station:

1.3GHz G4BRK, G4DDK, GW3TKH/P
2.3GHz GW3TKH/P, G4BRK
3.4GHz GW3TKH/P, G4LDR

73 from John G3XDY
UKuG Contest Manager

By Robin Lucas, G8APZ

Following on from a very hard winter, with long spells of cold and snow, Spring has arrived with an improvement in the weather. It also seems to have brought with it some improvement in propagation across the microwave bands.

Rainscatter was the predominant mode on the higher bands, as the rain scatter season got under way and some very useful distances were covered both on 10GHz and on 24GHz.

This will be the last activity column in this present format (where I submit print ready copy). From next month, Scatterpoint will be produced on a different desktop publishing system, so it may look a little different.

CONTEST and ACTIVITY REMINDER

May

17-May 1900 - 2130 1.3GHz Activity Contest
Arranged by VHFCC (RSGB Contest)
24-May 1900 - 2100 2.3GHz+ Activity Contest
Arranged by VHFCC (RSGB Contest)
29-May 1000 - 1600 1st 5.7GHz Cumulative
29-May 1000 - 1600 1st 10GHz Cumulative
29-May 1000 - 1600 1st 24GHz Cumulative

FRENCH JOURNEES d'ACTIVITE (JA)

Activity dates cover all bands from **23cm** up.

28-29 May Activity weekend - 29th matches UKuG
25-26 Jun Activity weekend - 26th matches UKuG
Plus « Grande Bleue » activity
30-31 July Activity weekend - 31st matches UKuG
27-28 Aug Activity weekend
24-25 Sept Activity weekend - 25th matches UKuG
29-30 Oct Activity weekend

Duration of all JA is 1700 Saturday - 1700 Sunday

APRIL LOW BAND CONTEST

Bob, **G8DTF** and Ross, **G6GVI** went up Winter Hill for a few hours in the April Low Band Contest. They both took gear for **23cm**, **13cm** and **9cm**. Bob sent a report of their **9cm** activity....

"The **G8DTF** equipment was a homebrew **9cm** transverter based on the Downeast Microwave board and an 80cm dish with a bi-quad feed. Power at the feedpoint was just 2mW. **G6GVI** was using an Inter-digital mixer with an old LMW LO board of 1980's vintage.

The first attempt was with Ross over a 20m path and this was, as expected, successful but only S7. We then decided to try with John **MW1FGQ** over a 62Km path using a C band LNB. We were surprised to find that John could hear the 2mW and was not a bad signal after peaking the dish.

We then had a go with Tony **G4CBW** over a similar path length. Tony also had about 1W so we could try a two way. Tony could hear my flea power 2mW and could copy my SSB OK. However, we discovered that the RX side of my system was profoundly deaf and could not hear Tony's 1W.

I have since looked at the transverter, and found the IF amp was oscillating and that the LO injection was low. I have removed the IF amp for now and added a buffer amp between the A32 LO board and the transverter.

The RX is now much more sensitive and we will go up Winter Hill again to see if we can hear any beacons. Ross is also busy improving his RX converter, and will be fitting a preamp before the next UKAC.

It is amazing what can be done with very low powers on microwaves. More improvements are clearly needed, but we are on the right track now. **73, Bob**"

From: John Quarmby, G3XDY:

The contest enjoyed conditions a little above average but not to the same degree as in March. **DK2MN** (JO32) was worked a couple of hours before the con-

test with 59 signals on **6cm** and **3cm.**

The contest got off to a good start with **GW3TKH/p** worked on **23/13/9cm** in just a few minutes. A good variety of **G**, **GM**, **GI**, **GW** and **GU** contacts were made on **1.3GHz**.

9cm seemed better supported this time, with better signals. **GM3UAG** (IO87) provided a nice DX contact on **9cm** after the finish.

OTHER CONTESTS

From: John Quarmby, G3XDY, Suffolk:

The RSGB UK Activity Contest on the 19th April also had above average conditions. 39 contacts were made in 27 different locator squares, with best DX **SK7MW** (JO65) by aircraft reflection. **DC6UW** (JO44) was a good tropo signal right at the end of the contest.

The Microwave UK Activity Contest on 26 April had mixed conditions, with tropo over the North Sea to the NE but poor conditions elsewhere. **OZ1FF** (JO45) was worked on **2.3, 5.7** and **10GHz**, and **DC6UW** (JO44) was 59+ on both **2.3GHz** and **10GHz**. No other contacts were made on the upper two bands.

Under the new scoring system adopted for the UKACs the total score would have been a nice round zero points on **6cm** and **3cm** as no UK stations were worked. **73, John G3XDY**

NEW SQUARE ON 9cm

The afternoon of 10th April produced some fine DX on **9cm** when Jim, **GM3UAG** worked John, **G3XDY** and Sam, **G4DDK** - a new square on **9cm** for Sam. Very deep QSB was noted by the stations, with signals rapidly going from SSB levels to nil.

24GHz RAINSCATTER

During the early afternoon of the 22nd April, Christophe, **ON4IY** (JO20ht) worked **F6DKW** with a rainscatter QSO on **24GHz** over a 284km path. Signals on SSB were exchanged at 51.

ON4IY went on to work Marc, **F6DWG/p** (JN19aj) 55s both ways over a 242km path.

A few hours later, Marc, **F6DWG/p** gave **ON4IY** a 59s report and got 57s in exchange. Hervé, **F5HRY** who was using only 400mW also went into Christophe's log. The rain cells were very localised but very well suited to **24GHz** rainscatter.

Christophe uses a 1.2m Laminas dish on **24GHz**, which is not the easiest thing to aim on rainscatter, together with a 3W **W1GHZ** PA and a **DB6NT** LNA.

Jean-Louis **F1HNF** in Saumur, Loire valley had a good QSO on 27th April. Between 17:30 and 18:30 on RS, he worked **F6DKW** on **10GHz** and **24GHz** gaining both a new locator and département for both of them.

Jean-Louis also worked **F1HDF/p** on **10GHz** and **24GHz**, for a new département for him, and his new ODX on **24GHz** (248 km). This was a great step from his previous ODX of 58km, and his is naturally very pleased about it!

His equipment is an offset 70cm dish, with Alcatel modules and half watt PA , 1296MHz IF.

10GHz RAINSCATTER IN FRANCE

On 24th April, Guy, **F2CT** went out portable in the evening from the Col d'Ibardin, near to the Spanish border. He was at 400m asl with the air temperature of only 12°C and 65% humidity.

The first scatterpoint he found brought in 59+ signals from the **F5ZWM** beacon in Brive, but nobody answered Guy's CQ on 110.

At 17:30utc the first test with Marc, **F6DWG** using that scatterpoint brought nothing, but Marc suggested trying via JN07. Guy heard Marc at 52s but on adjusting the beam a little, the signal peaked at 58s, with very little distortion.

Pat **F4CKC/p** was also worked 59s together with Hervé **F5HRY** (JN18eq) and Maurice **F6DKW** who was also 59. Four QSOs in just 15 minutes, two of them random at over 700 km!

Also on 24th Dominique, **F1NPX/p** (JN29dh) caught the first decent RS of the year. Most stations were received with distorted modulation, and it was very difficult to find stations on random. Although he could hear stations in the Paris area working **F2CT/p**, nothing was heard from Guy.

Stations contacted by **F1NPX/p** were: **DF2GB** (JN39) 59s, **F5DQK** (JN18) 59s, **F6FAX/p** (JN18) 59s, **F4CKC/p** (JN19) 59s, **DH2SAV** (JN48) 59s for a new square, and **DL7QY** (JN59) 59s.

More rainscatter was across France was noted on 25th April, with **F6DRO** receiving the **F1ZAI** beacon on **10GHz** at 500km, and the **LX1DB** beacon at 775km.

TROPO ENHANCEMENTS

During the evening of 23rd April, John G3XDY worked **LA3EQ** on **1.3GHz** at his home QTH (JO28XJ), but no other DX was noted.

Around lunchtime on 25th April, **OZ1FF** heard **GB3MHC** on **6cm** at 519, **GB3MHS** on **13cm** at 529, and **GB3MHL** on **23cm** at 549 but no DX QSOs reported.

FIRST STEPS ON 134GHz

From: Roger Ray, G8CUB, Brentwood

Here are some details of our recent **134GHz** QSO. The QSO was between myself **G8CUB/p** and Chris **G0FDZ/p**. It was our first trial QSO at a distance of 0.5km, at 10.12utc on 21st April. Both stations were located in JO01ep (Mountnessing, Essex). The frequency was approximately **134.9283GHz** SSB. My report to Chris was 51, whilst his report to me was 52.

My system consisted of an Elcom synthesiser, x3, into a **DL2AM** block (with a HSCH9161 diode), into the FT817 IF at 448MHz.

Chris's system used a **G4DDK** multiplier to 11GHz, x2, into a '145GHz' block using a single HSCH9161 diode, and a FT290 144MHz IF.

We were working for the first time that day! Both stations used Procom dishes with 44dB gain - the dish alignment was very critical. This was very much a first attempt, but hopefully we can now move to greater distances.

73s, Roger G8CUB

NEW 9cm BEACONS

A new beacon **G3LPC** on **3400.935MHz** is on test from Bampton, near Oxford (IO91fr). Best reception report so far is from **G3XDY** (JO02ob) at 192km.

Scotland's first **9cm** beacon **GB3CSB** (IO75XX) on **3400.985** has been activated, but at the time of writing, the local oscillator has failed. First reception reports are likely soon.

10GHz BEACON RECEPTION

22nd April produced good conditions on both tropo and rainscatter. An early morning report from **OZ1F**F (JO45bo) revealed **GB3MHX** at 519 tropo - a respectable 598km. At around midday, Nick, **G4KUX** (IO94bp) was copying **DB0GHZ** at 599 on a 634km path.

By 16:00utc, **GB3CAM** was 52s on rainscatter with **ON4IY** (JO20ht). Rainscatter continued into the evening, with **DB0ANU** received at 53s by **F5HRY** (JN18eq) 599km, and the **F5ZTR** beacon was 55s with **DL7QY** (JN59) at 557km.

Although conditions were good, the lack of activity from the UK appeared to coincide with the Good Friday Bank Holiday and the good WX.

EME ON 9CM (AND 6CM)

From: Peter Blair, G3LTF, Andover

In the DUBUS contest on 9-10th April I was intermittently active due to many conflicting activities (and resultant tiredness!). On **9cm** I worked 12 stations on CW, **DL1YMK**, **LX1DB**, **S59DCD**, **OK1KIR**, **OK1CA**, **ES5PC**, **OZ6OL**, **G4NNS**, **OH2DG**, **HB9JAW**, **PA0BAT**, and **G3LQR**. Unfortunately, before I got a chance to work the US window one of the PA units failed. **W5LUA** was heard.

In the Dubus **6cm** eme contest over the w/e 31st/1st May, I worked 11 stations, **OH2DG**, **OK1CA**, **IK2RTI**, **CT1DMK**, **OK1KIR**, **G4NNS**, **W5LUA**, **SV3AAF**, **PA0BAT**, **JA6CZD**, and **ES5PC**.

Conditions were "challenging" with an apogee moon giving 2dB extra path loss, and very strong winds which made dish pointing hard. Equipment is a 6m dish under-illuminated to 4.5m with a **W5LUA** design 0.8dB preamp and 25W at the feed.

73, Peter G3LTF

André, **F1PYR** was also QRV to do his first tests on **6cm** EME. He had just one QSO with **OK1KIR**, but he also heard **OK1CA**, **W5LUA** and others with weak signals.

Conditions were not ideal, with the moon at apogee (as **G3LTF** mentioned) and this makes it even more difficult for a small station.

There are improvements to be made, and André hopes for better results next time.

ROYAL WEDDING 24GHz RAIN

From: John Wood, G4EAT, Essex, JO01hr

After the driest April I can remember, the forecast for rain on the Royal wedding day was welcomed (not by all!). Rain pushing in from the east was headed for London and by the early afternoon, **3cm** beacons **F5ZTR**, **F5ZBB** and **LX1DB** were good signals across a wide range of antenna headings from a wide band of rain cells. Strong QSOs were had on **3cm** with **F6DKW** (JN18) and **F6DWG/p** (JN19) but tests on **24GHz** failed.

Then Christophe, **ON4IY** (JO10-296km) came on **3cm**. He was s9+10 on **3cm** via a scatter-point about 20 degrees south of direct. He had "armchair" copy of my signals on **24GHz** but alas only the occasional short burst heard my end did not allow a QSO (I wondered if Doppler was pushing the signal out of my RIT range +/-2kHz).

We then tried an isolated rain cell more or less on the direct path 220km from me. His **3cm** signal was 55 so I feared the rain was not strong enough, but when switching to **24GHz** he was a steady 51s and reports were swiftly exchanged in 3 overs!

This was very pleasing as it is my first real DX (296km) on **24GHz** RS after many attempts. The main points to consider at **24GHz** being:

1.Look for small isolated rain cells. The larger storms attenuate as well as reflecting.
2. Rain cells at 200km+ are best if you have no elevation (like me).
3. Check the receiver tuning for significant Doppler on offset paths.
4. Test the signals on **24GHz** even if the **3cm** signals are not strong!

Hopefully this is the early start of a good RS season. **73's John, G4EAT**

It is perhaps worth mentioning that this QSO on **24GHz** RS represented a new DXCC and a new square for both stations. Well done John and Cristophe.

SEIGY 2011

Ralph, **G4ALY** was in France for the annual Seigy meeting, and during his time there, went out for an evening portable trip with **F1PYR/p** and **F1DBE/p** and one other amateur.

The picture above shows their usual portable site working **24GHz** and **3cm**. **F1DBE** is in the foreground with the red dish, and **F1PYR** behind with the grey dish.

...AND FINALLY

That concludes this month's roundup. Predicting and finding rainscatter is no longer a "hit and miss affair as it used to be, with the advent of the internet and rain radars.

This issue marks the end of an era. It is the very LAST issue produced with a paper version, but more significantly, it is also the last issue with Peter, **G3PHO** as editor.

Peter has been the editor of Scatterpoint since the beginning, and before that he edited the RSGB Microwave Newsletter from the very earliest issues.

It has been a pleasure to work with Peter in producing Scatterpoint for the past four years, and I wish him a well deserved rest as he hangs up his editorial hat!

73, Robin Lucas, G8APZ

Please send your activity news for this column to:

scatterpoint@microwavers.org

ITEMS FOR DISPOSAL

G8ZKZ has the following items for disposal - free to a good home but must be collected from Petersfield, Hampshire:

PRD Electronics Inc. type 904A Noise Generator, 50 ohm output (hardware only, no documentation). This unit powers-up, the lamp lights & the meter deflects in response to the front panel control. The front panel meter is calibrated in 'Noise Factor'. State of calibration unknown. It has been shed-stored, dry but subject to seasonal temperatures, and so has some surface rust on the cores of the transformer & choke but a brass-bristle suede brush would deal with this. [Biographical Note: 'PRD' stands for 'Polytechnic Research & Development', a company later sold to Harris-Intertype. A key player was Ernst Weber, see http://www.ieeeghn.org/wiki/images/c/c5/Chapter_1-Bridger_of_Cultures_%28Ernst_Weber%29.pdf for more info. On that web-site, there is a picture of the earlier PRD type 904 with a caption saying that it covered 10 to 1000Mc/s.]

2-off, Marconi TF 1064A VHF Signal Generators. Recent storage history as above, believed working but untested.

Generator, Thermal Noise, 6625-99-943-3249, a.k.a CT 207. This is another noise factor meter, comprising both the noise generator and the meter to measure receiver output. The identity label also says '100 - 600 Mc/s' but it might be usable at higher frequencies if calibrated. The noise generator is interesting in that it used a special diode whose geometry makes it a nominal 75 ohm coaxial line. The output impedance is 75 ohms but I may have an N-type 75 - 50 ohm adaptor somewhere. To conserve the diode tube life, the instrument is controlled by a front panel timer that switches it off after about 8 minutes. I also have a couple of spare noise diodes and the circuit diagram. [I bought this item several years ago from AH Supplies of Sheffield.] Recent storage history as above, believed working but untested. I have the circuit diagram and a photocopy of a Marconi instrument that looks as though it is/was the 'civvie' version of the CT 207.

2@ UHF wavemeter cavity assemblies covering approx 850 MHz to 1350 MHz, with piston drive & dial mechanism and detector diodes. Supplied with circuit diagram. They need housing and calibrating. [These assemblies were also sold by AH Supplies several years ago.]

1@ UHF cavity filter assembly with hardware to take a 2C39-type valve. Technical details unknown.

1@ home brew directional coupler implemented in Polyguide strip-line, thru-line has N-type connectors and the two coupled lines, have SMAs both ends, with SMA loads. This line is 1/4 wave at 145 MHz but also responds with usable bandwidth at frequencies where it is 3/4 wave (i.e. 435 MHz), 5/4 wave (i.e. 725 MHz), 7/4 wave (i.e. 1015 MHz), 9/4 wave (i.e. 1305 MHz) etc. I also have two sets of etched but un-machined Polyguide pieces to make two more lines but I probably can't find connectors for them (three house moves!!).

If anyone would like further details, please email me at Pete.weedon@ntlworld.com

As stated above, these items are offered for collection.

73 from Peter G8ZKZ