



Volume 4, Issue 6

# Mid Sussex Matters

June 2016

## 50th Anniversary Edition

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**Happy 50th Birthday**



### Mid Sussex ARS Net Times—all times local

Sunday	0800	3.740MHz+/-QRM
Sunday	1100	145.350MHz
Weekdays	1330	21.330MHz+/-QRM
Tuesday (SCARF)	2030	3.725MHz+/-QRM
Wednesday	2000	145.350MHz

GB3HY is now working on the new frequency:

Listen 430.900Mhz, Transmit 438.500Mhz, CTCSS 88.5hz

## From the Chair June 2016

Once again time is running out and only the reminder from the editor sees me sitting down to do this after an absence of a few months for which I apologise. We have seen a few interesting weeks to report on so lets start.

Ian Gledhill once again gave us a wonderful illustrated talk; this time the History of The Crystal Palace since its design and erection and then dismantling and moving to its final location with some wonderful photographs of the interior and exterior and all the visitors and then sadly the fire that destroyed the building, which could be seen for many miles, so a big thank you once again.

Mills on The Air this year was the first outing for our 'ARROW' (amateur radio room on wheels) which thanks to the team is a big asset to us and made for comfortable operating and logging, also it was much warmer than being outside. However on a hot summers day may prove to be too warm but let face it, we do not encounter many of those. Unfortunately band conditions were not very good this year but the operators made the best they could in the circumstances.

A few hiccups with equipment i.e. solar panel which Norman very kindly donated to us caused a few problems on some bands but it is all sorted out now. The Mills Preservation Society were pleased with our presence and have invited us back next year. So a big thank you to all the team who came along, in many ways it was a great success of a weekend.

Construction contest this year only saw 2 entries which I think we all found disappointing but anyhow, "thanks for these two entries at least".

The first Fox Hunt of the year saw the undefeated fox trying to be very cunning and going to Belgium which we all agreed was way off the O.S. map that we use, so a substitute fox was found. After trying to see if the signal would reach Cyprus Road car park the Fox took his place in his lair ready for the first call and was told only 2 teams had managed to even find the car park. After only 3 calls 'The Satellites' (Peter G4AKG, Mike G8KMP, Tony G3XQM & Chris M6FOW) found the fox, so after the last call at 9pm the fox and winners retired to the local hostelry for a drink and were shortly joined by the runners -up team (Kim & Jacqui) unopened envelope as well. Congratulations to both teams and more teams next time please.

## From the Chair June 2016 Continued

I believe a few of the members went to Eastbourne Rally and found some bargains so I hope you all enjoyed your visit and are looking forward to next year.

The open evening organised in conjunction with Burgess Hill Town Council Annual Festival turned out to be a damp squib but at least we did have a former member and his father came along. We also had Judy Pointing there who is our liaison person from the council, she told us that her brother is an amateur and had recently moved back to West Sussex. He has a large collection of '19' Sets so maybe we will see him one Friday. The evening also saw us loading the trailer ready for Sunday's operation in St Johns Park, Burgess Hill.

Sunday 12<sup>th</sup> June saw us setting up in St Johns park for the Burgess Hill Town Day and yes it was wet but we persevered, we used the Clarke 10mt Push up Mast which was donated earlier this year for the first time at this event and was fairly easy to erect. It did a good job and we also used the new G5RV antenna which Kim G7AIE has made to replace the Flexi weave type we had used before and it worked very well the radio. The station was quickly up and running and the gazebo and display boards followed shortly afterwards. The wet weather kept many people away from the event but rain stopped later and a few more ventured out, at 4pm, time to dismantle, the sun came out we loaded the trailer and took everything back to Cyprus Hall. Many thanks to all those who turned out to help setting everything up or came along for morale support, it was appreciated.

Friday 17<sup>th</sup> June saw the 50<sup>th</sup> Anniversary event at the Jack & Jill car park and it was good to hear G1ZMS on the air again thanks to all who came along to join us on what was forecast as not a good weather evening (wrong again) but was in fact dry and fairly warm.

Finally to all our members and families who have had or about to have hospital treatment we all wish you a speedy recovery.

73's Till next time

Regards

Russell G7TMR

Hon Chairman

# Burgess Hill Town Day



Above: Second outing for trailer  
Left: Alan G8YKV on radio inside  
Below: First outing for 10m  
Military Mast



## Our 50th Anniversary by Jack and Jill Windmill



### For Sale

Anybody that would like one of our new 50th Anniversary Pin Badges—Contact Stella either via [newsletter@msars.org.uk](mailto:newsletter@msars.org.uk) or by telephone, details on back of this magazine.

**Cost £2.50**



ACTUAL SIZE 25mm

Item above is shown slightly larger than the actual product.

### Diary Dates for August 2016

- |        |        |                 |   |
|--------|--------|-----------------|---|
| 5-Aug  | Friday | <b>UPSTAIRS</b> | Graham Somerville-Bhi Talk on Noise cancelling. |
| 12-Aug | Friday | Downstairs      | Chat Night                                      |
| 19-Aug | Friday | Downstairs      | Radio Night & Table Top Sale                    |
| 26-Aug | Friday | <b>OUT</b>      | Fox Hunt  |
| 2-Sep  | Friday | Downstairs      | Radio Night & Table Top Sale                    |

## 2 Metre Halo Loop: Revisited

Having read John Adam's article on 'A simple Halo Loop Antenna for the 2 Metre Band' in May edition of RADCOM, I decided to have a go at making one myself. Initially I thought I would stick closely to the construction details in the article. However that good intention did not last long.

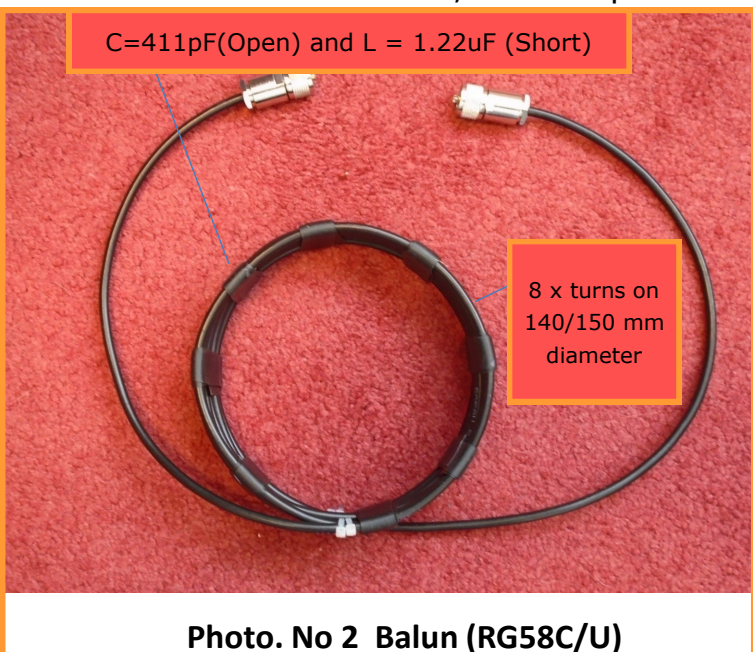
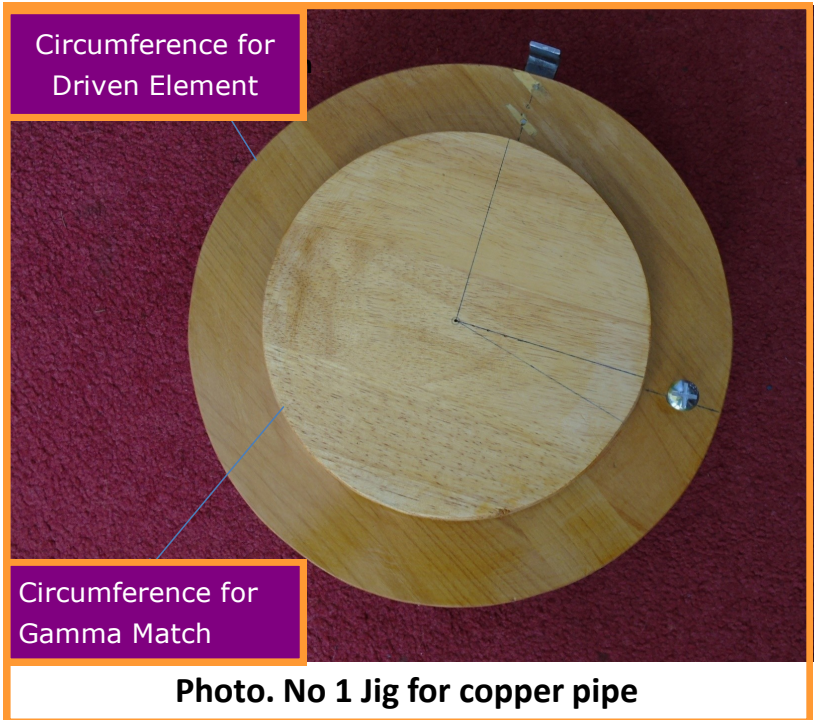
The construction itself is fairly straightforward. Although the half-hard copper pipe comes in a coil whose diameter is close to that of the antenna, I decided to make a simple jig for forming the Driven Element and the Gamma Match (**See Photo No 1**).

At the start of the project I brazed on brass end caps to the ends of each piece of pipe. However that bit of artwork prevented the antenna from resonating properly, so I had to cut them off. This was possibly due to there being a 'lumped mass' at the ends of the copper pipe.

The Gamma Match is an unbalanced feed system, suitable for matching a coaxial transmission line to the Driven Element. An unbalanced feed system can lead to Common Mode Currents, so in the

end I had to add a balun, which was constructed of a coil of RG58 feed wire (**See Photo. No 2**).

There are several variables, i.e. the position of the Gamma Match in relation to the Driven Element, the circumference and diameter of the halo and the gap between the two ends of the halo. However I found following the directions in the article in RADCOM sorted-out most of these problems for me. Having said that be prepared to make any adjustment carefully, as the S.W.R. is sensitive to changes with the variables. If you are interested in constructing this antenna, then this article is a good place to start.



## 2 Metre Halo Loop: Revisited continued.

Here is a bit of theory, but you can skip this bit if you want: As the **Radiation Resistance ( $R_R$ )** equals the **Total Power ( $P_{TOTAL}$ )** radiated in all directions divided by the square of maximum net (or effective) **Current ( $I$ )** causing the radiation is usually very small compared with the **Reactance ( $X$ )** of the loop, the '**Q**' (**Quality Factor**) or **Efficiency ( $\eta$ )** for the loop is usually very high and the bandwidth narrow. This quality factor can be expressed as  $Q = P_{STORED} / P_{DISSIPATED} = I^2 X / I^2 R$ , where **P** = power radiated, **X** = Capacitive or Inductive Reactance at resonance and **R** = Series Resistance. Even small changes in operating frequency will require re-tuning.

I initially started testing the loop with a V.N.A. in the garden (**See Photo. No 3**)

but the results proved to be unreliable and unpredictable. So I was forced to install it, together with the balun, in the loft, and run a 20 metre cable to the V.N.A. downstairs.



Photo. No 3 Outside Testing

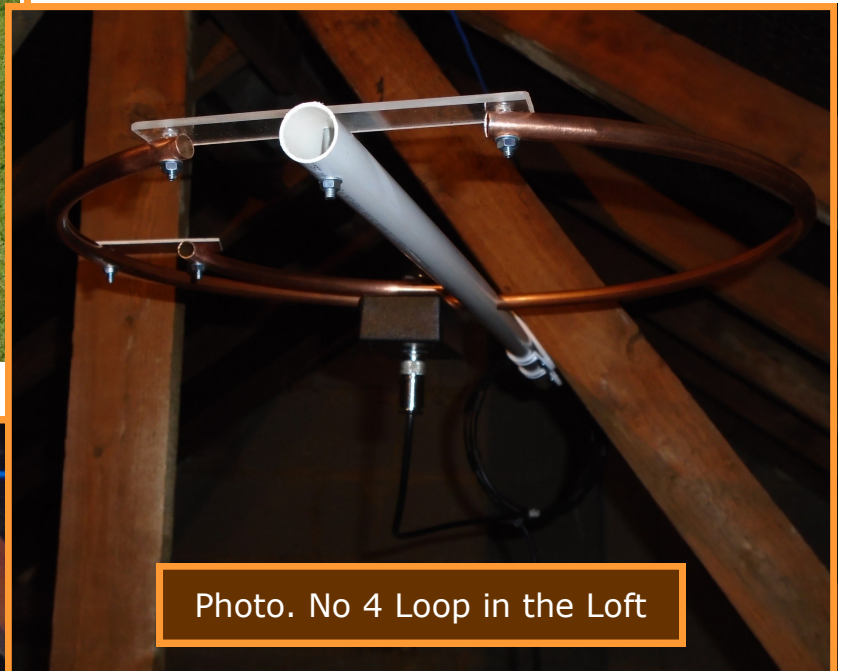


Photo. No 4 Loop in the Loft

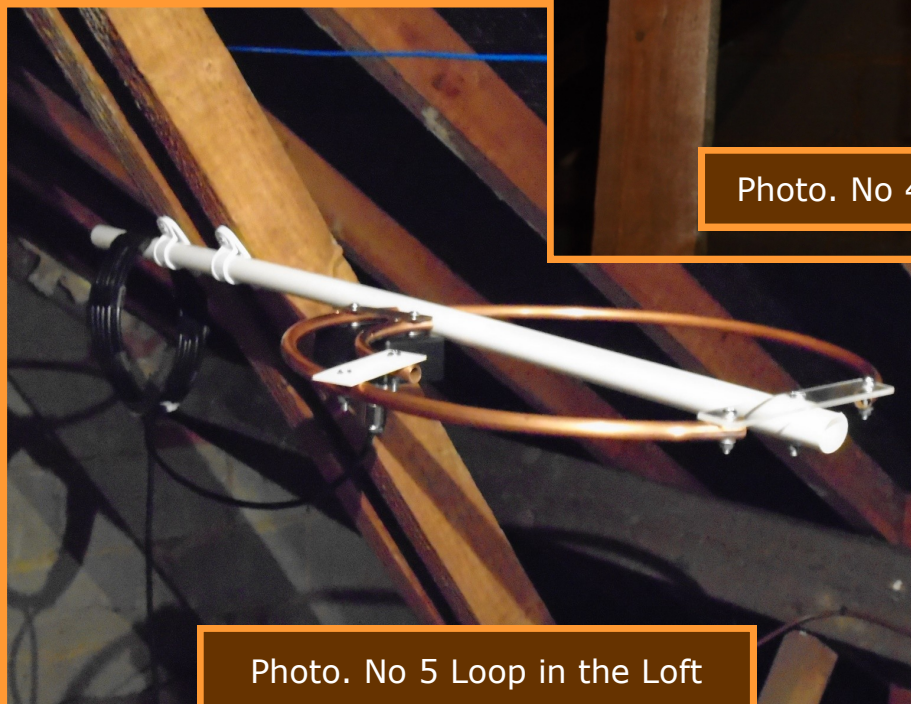
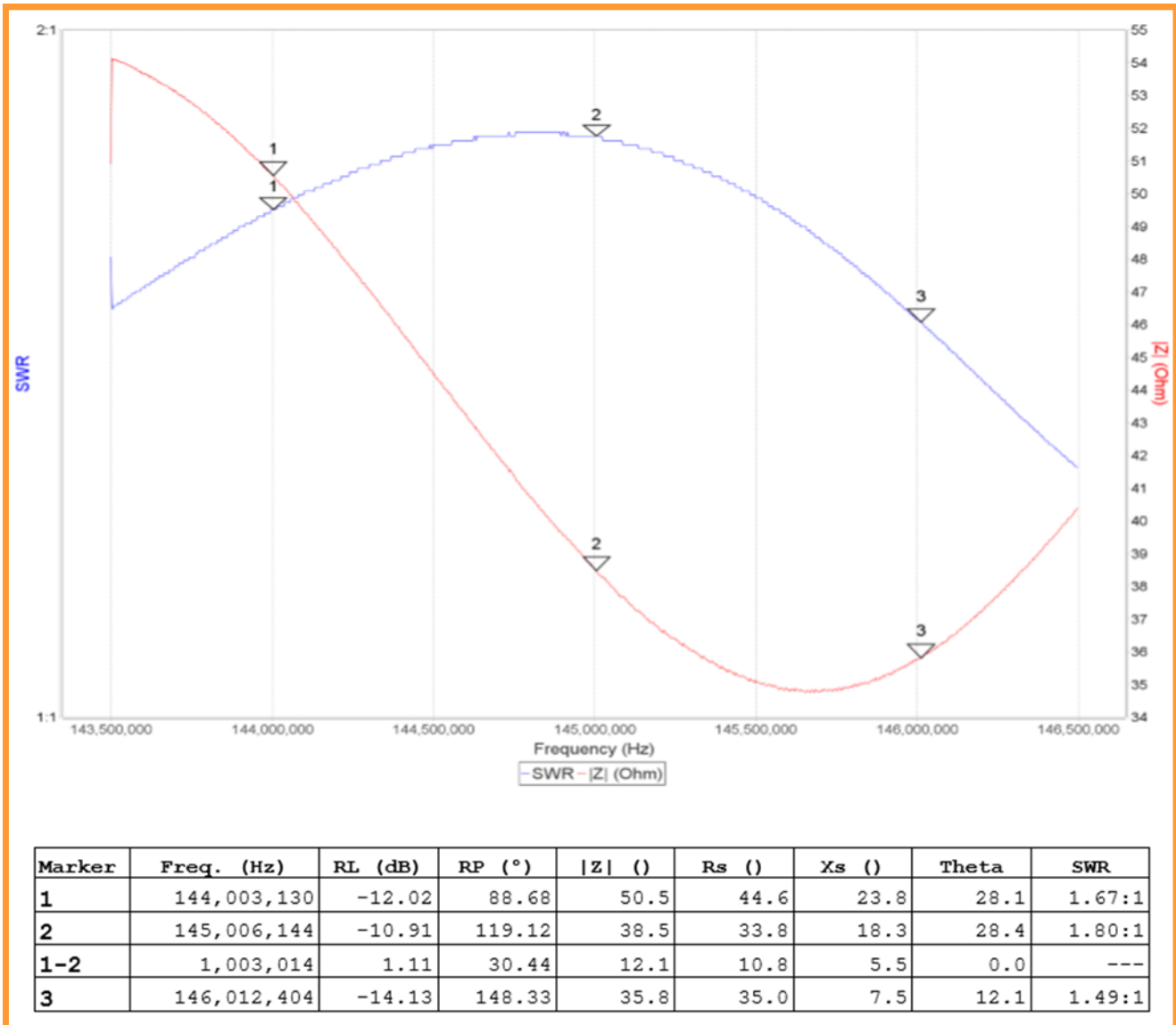


Photo. No 5 Loop in the Loft

After adjusting the gap between the ends of the copper pipe, the results proved to be more consistent and positive (**See Photo. No 4 and 5**)

## 2 Metre Halo Loop: Revisited continued.

The V.N.A. results are shown below in **Fig. 1**.

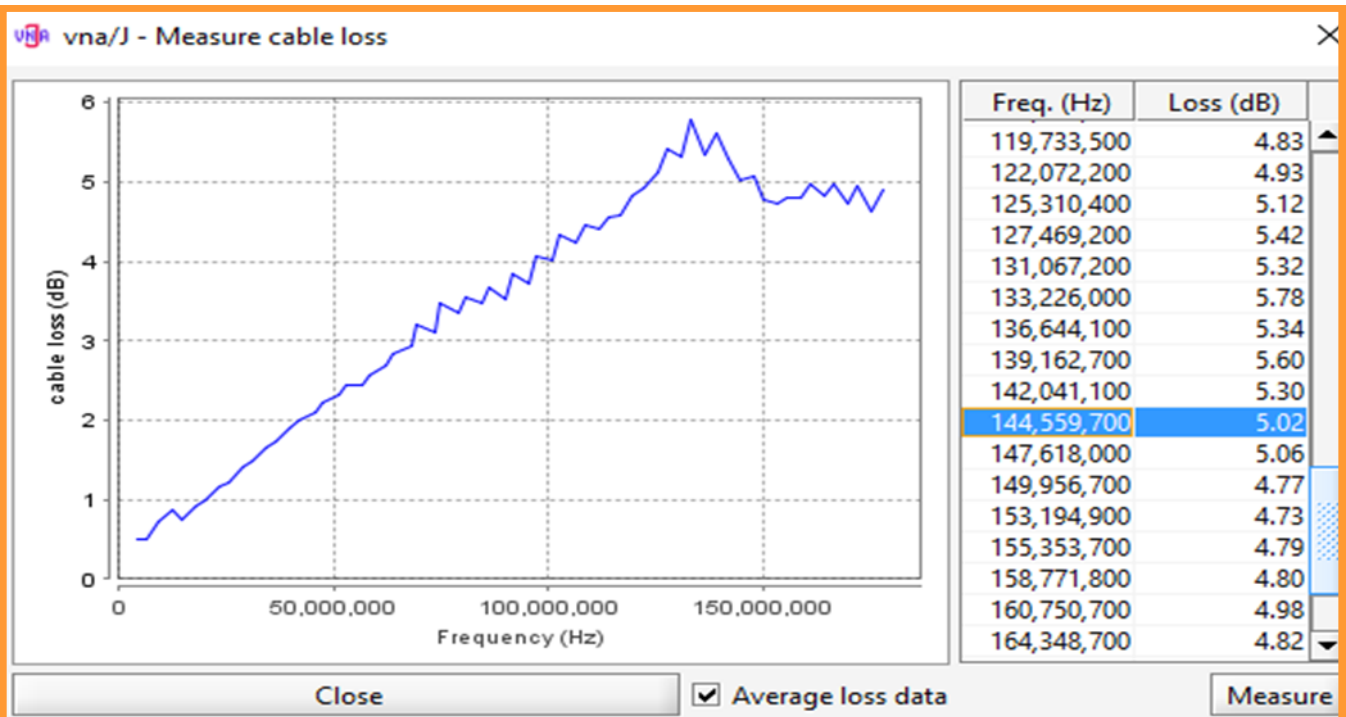


After installing the loop in the loft, I received the following e-mail below from John Adams G3ZSE:

*'My method of testing VHF antennas designed for 50 Ohms is to run low power to them through an SWR meter. I generally use initially a hand-held on 0.5 Watts. Testing with 5 Watts, I achieved an S.W.R. = 1.0:1 at 145 MHz, with the halo outside at about 10 feet off the ground. At 144 and 146 MHz, the S.W.R. was 1.4. At 147 MHz the S.W.R. had gone up a bit, but was still a lot less than 2.0. An S.W.R. of 2.0 is generally the limit of acceptability.'*

## 2 Metre Halo Loop: Revisited continued.

As you can see my results are not as good as John's, but the S.W.R.s. are still less than 2.0:1. The difference, between the two results I believe, was when I altered the gap between the two ends of the copper pipe to give a bandwidth with acceptable S.W.R. values. John's original article in RADCOM did not give any S.W.R. values, so I was not sure what the final outcome would be. An improvement in the S.W.R. values might be possible with a shorter coaxial feeder, and one with a lower loss per metre run of cable (**See Fig. 2**).



If the loop is mounted in the *vertical plane*, the radiation pattern will be a figure-of-eight with maximum radiation in the plane of the loop and nulls perpendicular to the loop. When *horizontally mounted*, the antenna is essentially omnidirectional with the nulls straight up-and-down. As a general rule, *vertically mounted* antennas function close to the ground, but *horizontally mounted* antennas should be elevated 20 feet approximately above ground.

73

Alex Henderson

M0TOT

(Please note that with Figure 1 & Figure 2, I have no control over the pale colour. Regards Editor Stella)



Our yearly Chairmans' Barbeque was held in Hassocks. The weather was great although it could have been a bit warmer! We managed to raise well over £200 to go to Alzheimer's Society; who are leading the fight against dementia

Top - Time for a chat  
Right - Jacqui-**Anyone for Onions?**  
Bottom - Andrew & Derek



**Our 50th  
Anniversary  
Barbeque.  
Full of Fun with  
Friends.**



Top - Some of our members enjoying their food  
Middle - Val & Sue  
Bottom - Sue & Jacqui. **Anyone for a mug of wine?**



## Mid Sussex Amateur Radio Society 2014— 2015

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Lead Instructor	Chris Saunders	G4ZCS	
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Our normal "QTH" is Cyprus Hall Burgess Hill Sat Nav RH15 8DX

We meet most Fridays in the Millfield Suite 7.30pm till 10.00

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**(This will only work from a members email address registered with the society)**

Newsletter—Editor Stella Rogers M6ZRJ

All articles and photographs are the copyright of the authors. Contributions are invited from Society members and should be sent to [newsletter@msars.org.uk](mailto:newsletter@msars.org.uk)

Otherwise you can use Snail mail to my address at:

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If you have some great old pics that need to be aired I can share them with the rest of the club.

Best Wishes  
Stella