

# Newsletter

## Chesham & District Amateur Radio Society

[www.g3mdg.org.uk](http://www.g3mdg.org.uk)

March 2021

We meet the 2<sup>nd</sup> and 4<sup>th</sup> Wednesdays of the month at the Ashley Green Village Hall, Ashley Green, HP5 3PP

### Welcome

Since the last newsletter coronavirus figures have reduced drastically, we are however 'not out of the woods' yet, hopefully it will not be too long before we are able to meet as a club again.

My thanks to Jeremy G3XZG for his article "Windmills on and off the air".

Due to the seriously cold snap lately we've decided to move the shack (originally sited in a single-skin brick outhouse) into the back bedroom in the house, hence the lack of 'air time' this month, at least it won't matter how cold it gets now as I'll be able to operate in the warm!

On the licence front it seems the RSGB have had a change of heart on the journey to a Full licence.

I've included 'Lest we forget' this month, I've often found if I don't use formulae that often I tend to forget them, this is as much a reminder for me as it is for anyone else.

Bryan M0IHY

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### Contact details

Chairman - Jeremy Browne (G3XZG) Secretary - Malcolm Appleby (G3ZNU)  
Treasurer - Matt Whitchurch (M1DTG) Editor - Bryan Page (M0IHY)

Angie Page (M6WTL)

All the above are members of the committee and can be contacted on [cdars\\_committee@googlegroups.com](mailto:cdars_committee@googlegroups.com)

# Chairman's Ramble

As usual, I've been caught out by how short February is and suddenly realised that instead of the normal 4 or 5 days, when you reach the 26th, there are only two days left of it.

We now have a "road-map" at least towards restrictions being lifted, though hedged about (if you can hedge a map that is), with all sorts of if's and but's. This does mean that we can start planning actually to meet as a club, though zoom has served us very well together with the Wednesday nets.

As I understand it, the "rule of six" is supposed to come in again from the end of March, but for meeting people outside only. I don't expect this will enable us to use the hall again, and probably the more relevant date is 17th May, when the proposal should allow for indoor meetings, though possibly with some social distancing. As we have discovered, that is not a problem at Ashley Green, and we already have in place all the risk assessments and protocols, should they be needed.

The Golden Eagle should be open by then as well, assuming it has survived the various lockdowns which will have played havoc with the hospitality industry.

So far, we have put together a programme up to the end of April, on the assumption that the first occasion on which we can meet in person is likely to be the 4th Wednesday in May, which I think is the 26th. Before that, we have the Windmills on the air week-end on 8th and 9th May and the Brill society have confirmed they are happy for us to represent the windmill again this year.

We are applying for the call GB0BWM again and will hope to be able to operate from the mill itself should restrictions permit.

I am looking forward to giving some points in March in the contest which I guess rejoices in the most politically incorrect name of the Beru, that is British Empire Radio Union. In fact its a commonwealth CW contest, but nobody seems to have got round to changing the name. Because of the various time differences, it runs from 10am on the Saturday to 10am on Sunday, and usually on the second full week-end. Yes I'd better check that. Its a good chance to get some quite rare DX, the only drawback being that on the DX bands, you can find yourself calling CQ, and then a station comes back on the same frequency, working someone else in the UK, that you couldn't hear because of the skip. Let's hope for better conditions this year, as the last couple of years have been pretty dire.

Still, spring is in the air, the birds are singing, though some sound a bit reluctant and I might be able to have a haircut in April.

73, Jeremy.

# Editor's Muse

This past month I've spent very little time on air, the shack has proved too cold (several nights running it was below 0°C) and even though we have a portable fan heater, it didn't have much effect. We therefore took the decision to move the shack up into the back bedroom, where it will be as warm as I need it!

Due to the work we've carried out resiting the shack my report on the QRM Eliminator will have to be reported on next month.

A change in the corona virus isolation dates means both Angie and I having to isolate till the 31st of March, hopefully it won't be too long before we're able to meet up again.

I've been asked to do some research on ARDF (Amateur Radio Direction Finding), hopefully what I've found will be helpful.

Bryan M0IHY

# AGM Notes 2021

## CHESHAM & DISTRICT AMATEUR RADIO SOCIETY

### MINUTES ANNUAL GENERAL MEETING

ZOOM ONLINE MEETING 27/01/2021 20:10

#### 1. Apologies

Denis G4TBG

#### 2. Members Present

Graham	G0MKI
Jeremy	G3XZG
Malcolm	G3ZNU
Chas	G4CLM
Terry	G4UEM
Dave	G8FMC
Guy	M0GUY
Chris	M0IEA
Bryan	M0IHY
James	M0JCQ
Matt	M1DTG
Angie	M6WTL
Peter	M7CKP

#### 3. Minutes from the 2020 AGM

Chris M0IEA raised the fact he was not included in the minutes from the 2020 AGM as being present, this we agreed to rectify.

Bryan M0IHY

Read and approved.

#### 4. Matters Arising

The committee had not brought back to a club meeting details of proposed amendments to the constitution (item 9a of the 2020 AGM document) regarding the Northampton Radio Club and their help towards CDARS points in any contest they are not participating in themselves. It was agreed this matter would be dealt with this year.

#### 5. Chairman's Report

We record almost a year late the loss of Shirley G4HES who passed away about the time of last years AGM. Shirley had been a member of the club for very many years with her husband Ron G3NCL who used to run the RAE classes at the Whitehill Centre, Shirley was an extremely valued long-standing member of the club. Several of the club attended her funeral, it turned out she had four sisters that none of us really knew about and all of them attended. It was a quite well attended funeral with a gathering at the Whitehill Centre, this was probably at the beginning of February and we've hardly been able to gather since.

Over the past year, as a club, we've been surprisingly very active, surprisingly because the pandemic has severely affected a lot of organisations. As a radio club we have a specific advantage in that we can do our hobby from home. The message throughout the year, apart from a couple of months in the summer has been basically to stay home, you probably heard stations on with the stay home message.

I think the first thing to do is to thank everyone who has contributed throughout the year, and in particular to

thank the committee Bryan, Angie and Matt for all the work they put in. The first thing to mention is probably the newsletter which is now celebrating its first anniversary, that's something the club used to have many, many years ago. Producing a newsletter by email is a lot easier producing it than by printing, photocopying and whatever that used to have to be done in the 80's and 90's when the club produced the 'Pigeon Post', many thanks to Bryan for getting that going and continuing editorship of it and all those who contributed towards it. It now includes such things as the Air Miles, and other regular features of that sort. It's been a very valuable thing that the club has done over the year, it's also on the club website and is a focal point for what we're doing as a club.

The other thing to mention immediately, again thanks to Bryan, for setting up online training for the Foundation and Intermediate Licensing using some of the resources of the Chelmsford Amateur Radio Society and Essex Hams and also setting up and collating some of his own resources, as a result of that we have had a number of people go through the training course.

We made the most of the callsign for SSB Field Day despite a somewhat weird set of rules that was disadvantageous to small clubs.

The other main thing to mention over the year is the move to Ashley Green from the Whitehill Centre, we will I think reap the benefits of the move in the coming year hopefully when we can all meet up there and use it as a contest site when necessary but also for the club meetings. I think it has a lot more potential than the Whitehill Centre. We now have permission to store items there, which is good. Simple things like car parking is much easier, it's something we've been meaning to do for years and have finally got round to it, so I'm hoping that will give us its full potential once we're all able to meet again.

We have managed to hold meetings successfully on Zoom, lectures and even a construction forum, which was interesting, as well as the construction night at Ashley Green with the building of the 'Slim Jim' antenna.

Many thanks to Malcolm for setting up and hosting the Zoom meetings and link and for taking charge of dealing with and maintaining the club website, which has been very successful this year.

As far as contesting goes the combo with Chesham and Northampton has done quite well. Overall we came 3rd in the UKACs and at the moment we're 5th out of 60 odd in the AFS contest with just one to go. It's all quite close at the top, we're not far behind 3rd and 4th and Harwell in 6th place are not far behind us. We're very much keeping the club name up there, which is very good.

Many thanks to everyone. Despite everything it's been I think a successful year and we're clearly not going to meet again until March at the earliest given the dictates from the Prime Minister. For the moment we will keep going with our 'nets' and Zoom meetings and look forward to meeting in person when we can.

## 6. Treasurers Report

The year started with the best part of £4000 total, part of which is the NSI savings account, which gets about 0.5% interest. In terms of income, members subscriptions are up on last year, we have something like 21 members, an increase of 3 on last year. The membership fee's should cover the Ashley Green costs.

Equipment sales boosted the clubs accounts. We were able to purchase ferrite cores as a club, thereby at greatly reduced cost to the members wishing to participate, of the 15 cores purchased we have 3 left @ £7.78 each, which are property of the club. Likewise we managed to bulk purchase the Slim Jim antenna kits (10), of which 2 @ £9.00 each belong to the club. Matt will chase people who have not paid.

£100 had to be paid to Ashley Green Village Hall as a 'breakage deposit', which is refundable should we decide to go elsewhere. Ashley Green Village Hall are adding to the date we have initially paid up till any sessions we have paid for but have been unable to attend due to coronavirus restrictions, at the moment we are paid up till around March.

# AGM Notes 2021

The cash balance is about where we started at the beginning of 2020.

It was agreed to maintain the single annual membership of £25 and family membership to £30 for this year, with a view to increasing the fee's next year.

Matt will send details of his home address for people who don't do online banking, they will be able to send him their cheques payable to "Chesham & District Amateur Radio Society".

Bryan queried whether Paul Bryant was still a member, the last we had seen of him was at Ashley Green Village Hall last year - Bryan will email him and see how he is.

## 7. Secretary's Report.

Due to COVID-19 things have been put on hold this year. Brill Windmill was cancelled but 6 club members, G3XZG (Jeremy), G8FMC (Dave), M0IHY (Bryan), M0JQC (James), G3ZNU (Malcolm) and Matt (M1DTG) took part from their home QTH's using the callsign GB0BWM. All QSO's were loaded to eQSL and Clublog.

It was great to get Ashley Green Village sorted out as our new club QTH.

Whilst Angie has enjoyed her time as club secretary she has decided to step down from the role due to health reasons, she will however remain on the committee. Both Angie and Bryan have agreed to carry on the role of club secretary until such time as conditions (coronavirus) allow them to transfer club paperwork to the newly appointed secretary.

## 8. Election of Officers and Committee.

Jeremy thanked Angie for the work she's done over the past couple of years.

It was unanimously agreed for Jeremy to remain as Chairman. Both Matt (treasurer) and Bryan will continue in their current committee roles.

Malcolm agreed to take on the role of club secretary, this was seconded by Dave G8FMC.

Angie has agreed be the 5th committee member.

None of the members had any objections to them continuing/taking on the roles.

It was also agreed that committee meetings may happen on Zoom as this seems to be the normal thing to do and as such is convenient.

It was discussed that one of the things the committee will address is during the winter months Zoom may be an ideal mechanism to hold meetings, this may be for the whole club or to take place during a club meeting (for those that can attend) at the hall and Zoom at the same time.

## 9. Any Other Business

Bryan asked about the taking down of the antenna's at the Whitehill Centre and about the removal of club gear from the cupboard at the Whitehill Centre. It was agreed that the first thing needed was storage cupboards to be purchased and installed at the Ashley Green Village Hall, then the contents of the Whitehill Centre cupboard could be transferred to the new venue. It was agreed that an aerial rigger would be required for two of the four antenna's at the Whitehill Centre, therefore it would be advantageous to get them to remove the other two at the same time.

Whilst the Whitehill Centre have emailed the club requesting the removal of equipment, we have not responded to the email, as mentioned in the previous paragraph we need to purchase cupboards first.

# AGM Notes 2021

Terry G4UEM was asked if his offer of storage of the club generator from Terry G0VFW's QTH was still available, he responded by saying 'yes', this would have to take place when coronavirus restrictions allow.

## 10. Presentation of Trophies (virtual)

There are 3 trophies to be presented, the Denis Kind shield was awarded to Angie M6WTL for services to the club during the year, the CW G3CLJ (one of the originators of the club) trophy was awarded to Malcolm G3ZNU for his progress and participation in CW contests, the M0JCQ trophy for the new member making the most progress went to Guy M0GUY for going from Zero to Hero in the year.

Meeting close 9:05pm

## Follow-up on 2021 AGM

### MOIHY

As discussed at the AGM, I've contacted Paul Bryant, he's well and like us all shielding and waiting for the pandemic to ease up.

## Windmills on the Air - 25th Anniversary

### 25th ANNIVERSARY YEAR

Mills on the air special event this year is likely to be different due to the corona virus pandemic. It is unlikely that most of us will be able to operate from Brill Windmill. (unless you live/work there).

OFCOM have modified the usual rules and Mill callsign's can operate from supporters homes, as we did last year.

We will be operating on behalf of Brill Windmill, so our application will name the Mill address so we can move back if the Coronavirus situation changes.

The objective is to rise awareness of the Mill and SPAB (Society for the Protection of Ancient Buildings) etc.

We will therefore:

- Obtain permission from Brill Windmill, to operate on their behalf.

- Make sure we have some information about the mill to pass on to stations we contact.

- Complete the online NOV application form.

- When we are successful we need to let Gerald (G3SDY) know to add our callsign/details to the list.

The NOV holder remains responsible for our callsign.

# Direct Entry to Full Licence: Consultation

Having proved successful, the three-tier license scheme brought many people from various backgrounds into amateur radio, now the RSGB is considering going one step further to offer a single 'Zero to Hero' exam for those who have a high-level aptitude in Science, Technology, Engineering and Maths (STEM) disciplines and/or a background in electronics and/or communications, thereby bypassing the Foundation and Intermediate exams.

Whilst those of us who were not skilled in electronics or communications, the current three-tier system works well, with gradual introduction to the many facets of amateur radio at each stage, however, for those already versed in these subjects it can be off-putting to have to start from square one.

As quoted by the RSGB "Such individuals would be easily capable of passing the Full licence exam by supplementing their extensive technical knowledge with things like the licensing conditions and operating practice learned from a book and by short wave listening."

"The Examinations and Syllabus Review Group has been working on an exam specification and syllabus, which can be viewed at [www.rsgb.org/direct-to-full](http://www.rsgb.org/direct-to-full). The syllabus is essentially the Full section of the three-tier syllabus including the points on licensing and operating from the Foundation and Intermediate syllabi that are not currently covered in Full. As well as your opinions on the principle of offering a direct to Full licence route, we would also welcome your comments on the proposed syllabus."

I feel many people will welcome this direct path to a Full Licence, I also think it could be a path from Foundation to Full therefore bypassing the Intermediate exam. This could be a game-changer with a win-win situation for all concerned.

Bryan M0IHY

## Amateur Radio Direction Finding (ARDF)

I have been asked to do a little research on Direction Finding, this is what I found.

Looking at eBay and other web sites I note how expensive ARDF antenna's/receiver's are to purchase, however the links below might give you an insight into what's involved and how to build it, I've personally ordered "Radio Orienteering - The ARDF Handbook" from the RSGB shop.

G3ZOI has a resources site at <http://open-circuit.co.uk/wp/>, unfortunately his link to view eBay offers of components and kits doesn't find anything, after emailing him he said unfortunately due to Brexit he has stopped selling items on eBay, he lists component suppliers, also check out various antenna designs at this site, some great stuff there.

Various resources can be found at:

<http://www.nationalradiocentre.co.uk/ardf/>

<https://www.youtube.com/watch?v=whTb5BoQrjw>

<https://ve3ips.wordpress.com/2019/10/15/direction-finding-easy-catch-them-jammers/>

[http://www.urfmsi.org/nm-arts/wp-content/uploads/2010/10/Dale\\_Hunt\\_80\\_meter.pdf](http://www.urfmsi.org/nm-arts/wp-content/uploads/2010/10/Dale_Hunt_80_meter.pdf)

<http://www.arrl.org/files/file/RFI/Thompson%20Noise.pdf>

<https://dl.cdn-anritsu.com/en-us/test-measurement/files/Application-Notes/Application-Note/11410-00972A.pdf>

<http://rsgb.org/main/files/2012/11/EMC04-Final.pdf>

We hope to discuss Direction Finding antenna's on the first club meeting in March.

Bryan M0IHY

As it is the 25th anniversary this year of the Windmills on the air event, I thought I would sketch out the club's previous involvement, along with some random thoughts on the event itself.

The event was started by the Denby Dale Radio Society, who still run it, with the aim of publicising, and therefore helping to fund the upkeep of windmills. Although some mills, such as Pitstone, and Bainbridge on the Isle of Wight, are owned by the National Trust, most are the responsibility of local conservation groups. There is therefore no large central organisation available to assist with funding, though grants are available from such things as the Heritage Lottery Fund and the Society for the Preservation of Ancient Buildings, for specific projects.

Bucks is quite well endowed with windmills, some in better repair than others, and the first two years of the club's involvement were operated from Lacy Green, with the callsign GB0LGW. The first of these was particularly eventful as we operated from what was then the club's gazebo, on a windy day on the roadside opposite the mill. The generator we were using broke down and operation continued with the coax stretching across the top of the gazebo and into Guy's car (M3GZH). This fulfilled the dual function of keeping the station on the air and preventing the gazebo from taking its leave.

The following year we had access to an outside electrical point at a neighbouring house, but logistics were still quite difficult. The society running the mill clearly took that view as well, as the following year they declined our offer to come back and we have been operating successfully from Brill ever since.

Perhaps it had something to do with my mentioning on air that as far as I knew, Lacy Green was a seventeenth-century bit of tax avoidance. Apparently if you built a new mill, you were taxed on it, but if you could claim to have moved the mill from somewhere else, you were exempt. The claim at the time, was that the mill had been moved from Chesham, which when you think about it, is somewhat improbable.

The advantage of Brill is that it has mains electricity, the drawback being that inside the mill is one of the coldest places I have ever been to operate a station. Its warmer outside usually. The take-off is very good, the site being near to the Aylesbury Vale repeater and we always do well on 144 MHz FM, with a colinear fixed to the building at first story level. We have used wire antennas for the other bands and in good conditions both 7 and 3.5 MHz give good results.

The Pheasant pub is a short walk away and oddly, people keep disappearing in that direction.

The main idea of course is to contact other mills, but the event attracts a good deal of interest amongst hams in general, so you are seldom short of a QSO and pile-ups have been known.

These days the event includes watermills, and also industrial sites which presumably were originally coal and steam-driven, and I would not be surprised if in the future wind turbines are allowed.

On the Sunday, the mill is open to the public so we act as tour-guides while we are there. Sadly we have not been there now since 2018, in 2019 because it was being painted, and last year due to lockdown of course. It would be very good to get back there, though with several sweaters and a winter coat.

To end, some of the wording on the Brill site: It is a Grade II listed 'Post-Mill' with 17th Century origins (probably about 1680's) Located on Brill Common, Buckinghamshire, West of Waddesdon Manor - home of the Rothschilds. It is normally open to the public on Sundays from Easter to the end of September. It is arguably the best preserved (of it's type) although the oldest 'Post Mill' is believed to be Pitstone (also in Bucks) built in 1627. It has 4 sails 27ft (9m) long x 5ft (1.5m) wide. A 'Post Mill' is where the whole (wooden) structure revolves around a central 'Post' to face into the wind. Brill last milled flour in 1919, but milled Barley for cattle feed for another 4 years after. Windmills have been a feature in the Brill area since about 1250, but not on the present site.



# Lest we forget

I'm not sure about you, but I find if I don't 'use' something, I tend to 'lose' it, and so it is with formulae, so here's a gentle reminder on SWR and Return Loss...

## **SWR, what is it?**

SWR stands for 'Standing Wave Ratio' and basically speaking it is "the ratio of power that is reflected back down the antenna lead from the antenna." ... In conclusion, the higher the ratio (SWR reading), the less power being radiated by the antenna, and the more power coming back down the antenna lead. An SWR figure of 1.5:1 or less would be acceptable (see the chart on the following page), it is sometimes referred to VSWR, "Voltage Standing Wave Ratio".

The formula:

$$\text{SWR} = \frac{V_{max}}{V_{min}} = \frac{V_{forward} + V_{reverse}}{V_{forward} - V_{reverse}}$$

### **How do we calculate V max and V min?**

When the voltages are in phase, we add them ( $V_{forward} + V_{reverse}$ ) and when they are out of phase we subtract them ( $V_{forward} - V_{reverse}$ ).

#### *An example:*

In an ideal world we would want 100% of the RF signal to be radiated. If for instance, 50% of the signal is reflected back, using the formula above would mean  $V_{max}$  is 150% and  $V_{min}$  50%, therefore the SWR will be 3:1.

The above SWR formula also equates to:

$$\text{SWR} = \frac{\text{Antenna Impedance}}{\text{Feedline impedance}}$$

## **Return Loss**

Is another way of looking at reflected power, this is defined as "the ratio of incident power to reflected power", its formula is:

$$\text{Return Loss} = 10\text{Log}\left(\frac{\text{Incident Power}}{\text{Reflected Power}}\right)$$

An example given in the Full Licence Manual shows 100W *Incident Power* with 1W *Reflected Power*, this would be shown as:

$$10\text{Log}\left(\frac{100}{1}\right) = 20\text{dB}$$

# Lest we forget

Converting **Return Loss** to **SWR** is quite simple, remembering  $\text{Power} = V^2/R$  and reducing the voltage by a factor of 10 then the power is reduced by a factor of 100 ( $10^2$ ), which is what we have in this example, therefore  $V_{max} = 110\%$  and  $V_{min} = 90\%$ ,  $110/90$ , or approximately 1.2:1

Using the SWR example  $10\text{Log}(150/100)$  equates to 3.01dB, from this it can be seen that the higher the dB, the lower the SWR and the lower the dB the higher the SWR, therefore a **low SWR and high return loss is good** whilst a **high SWR and low return loss is bad**.

## SWR vs Reflected Voltage or Power

VSWR	Reflected (%)	
	Voltage	Power
1.0:1	0.0	0.0
1.1:1	5.0	0.2
1.2:1	9.0	0.8
1.3:1	13.0	1.7
1.4:1	17.0	2.8
1.5:1	20.0	4.0
1.6:1	23.0	5.3
1.7:1	26.0	6.7
1.8:1	29.0	8.2
1.9:1	31.0	9.6
2.0:1	33.0	11.0
2.5:1	43.0	18.4
3.0:1	50.0	25.0
4.0:1	56.0	36.0
5.0:1	67.0	44.4
10.0:1	82.0	67.0

## Losses at a glance

Bryan M0IHY

## March

### HF

Day	Date (2021)	Time UTC	Contest Name
Mon	01 Mar	2000-2130	80m CC DATA
Wed	10 Mar	2000-2130	80m CC CW
Sat-Sun	13-14 Mar	1000-1000	Commonwealth Contest (HF Championship)
Mon	15 Mar	2000-2130	RSGB FT4
Thu	25 Mar	2000-2130	80m CC SSB

### VHF

Day	Date (2021)	Time UTC	Contest Name
Tue	02 Mar	1900-1955	144MHz FMAC
Tue	02 Mar	2000-2230	144MHz UKAC
Wed	03 Mar	1900-2100	144MHz FT8 AC
Sat-Sun	06-07 Mar	1400-1400	March 144 432 MHz (VHF Championship)
Tue	09 Mar	1900-1955	432MHz FMAC
Tue	09 Mar	2000-2230	432MHz UKAC
Thu	11 Mar	2000-2230	50MHz UKAC
Sun	14 Mar	1000-1200	70MHz Cumulatives # 2
Tue	16 Mar	2000-2230	1.3GHz UKAC
Thu	18 Mar	2000-2230	70MHz UKAC
Tue	30 Mar	1930-2230	SHF UKAC

## April

### HF

Day	Date (2021)	Time UTC	Contest Name
Wed	07 Apr	1900-2030	RSGB FT4 Contest
Sun	11 Apr	1900-2030	RoLo SSB (HF Championship)
Mon	12 Apr	1900-2030	80m CC CW
Wed	21 Apr	1900-2030	80m CC SSB
Thu	29 Apr	1900-2030	80m CC Data

### VHF

Day	Date (2021)	Time UTC	Contest Name
Sun	04 Apr	0900-1200	First 70MHz Contest
Tue	06 Apr	1900-1955	144MHz FMAC
Tue	06 Apr	2000-2230	144MHz UKAC
Wed	07 Apr	1900-2100	144MHz FT8 AC
Thu	08 Apr	2000-2230	50MHz UKAC
Sun	11 Apr	0900-1200	First 50MHz Contest
Tue	13 Apr	1900-1955	432MHz FMAC
Tue	13 Apr	2000-2230	432MHz UKAC
Thu	15 Apr	2000-2230	70MHz UKAC
Tue	20 Apr	2000-2230	1.3GHz UKAC
Tue	27 Apr	1930-2230	SHF UKAC

# 'Air Miles', how far have we gone? / results

Again James has claimed to have not done much this month, it seems we've done even less!!

So, how have we done?







(Running totals in red)

## General







### Most Miles

M0JCQ		362,420	700,551	
G3XZG		78,911	131,491	
G3ZNU		22,069	128,737	







### Most QSO's

M0JCQ		145	297	
G3XZG		47	77	
G3ZNU		39	125	

### Longest QSO

M0JCQ		VK1HX(10570)	VK1HX(10570)	
G3ZNU		ZS6JHN(5592)	HS5XWY(5939)	
G3XZG		UA9WRT(4291)	KN6MVO(5326)	







### Shortest QSO (miles)

M0JCQ		G3ZNU(6)	G3ZNU(6)	
G3ZNU		2E1IDC(16)	G7WCI(15)	
G3XZG		DL2IAD(382)	DL2IAD(382)	

### Average per QSO (miles)

M0JCQ		2,499	2,359	
G3XZG		1,679	1,708	
G3ZNU		566	1,030	







### Maidenhead Squares

M0JCQ		115	247	
G3XZG		40	68	
G3ZNU		23	87	

## By Band

### 160m

### 20m

M0JCQ		92	196	
G3XZG		32	55	
G3ZNU		6	7	







### 10m

G3ZNU		0	1	
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### 80m

G3ZNU		0	12	
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### 17m

M0JCQ		36	84	
G3ZNU		3	18	
G3XZG		2	6	

### 6m

M0JCQ		6	6	
G3ZNU		2	55	





### 40m

G3XZG		2	4	
M0IHY		0	2	

### 15m

M0JCQ		6	6	
G3ZNU		0	4	

### 2m

G3ZNU		28	28	
M0JCQ		7	7	

### 30m

G3XZG		11	12	
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### 12m

M0JCQ		1	1	
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### 70cm





# 'Air Miles', how far have we gone? / results

## By Mode

### CW

G3XZG		47	77	
G3ZNU		0	3	

### FT8

M0JCQ		86	136	
G3ZNU		39	113	

### JS8

M0IHY	0	1	
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### FM

### SSB

M0JCQ		3	3	
G3ZNU		0	9	

### Olivia 8/250

### MFSK

M0JCQ		56	158	
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### MSK144







### JT9

### Digital Voice

### PSK31

M0IHY		0	1	
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## By Country

M0JCQ		36	74	
G3XZG		19	38	
G3ZNU		11	44	

# Any other business

## Club Programme

At the committee meeting of the 18th of February the following was agreed for the coming months:

- 24 Feb - Antennas for small gardens
- 24 Mar - nanoVNA and cobweb building.
- 28 Apr - AirScout

## Construction

It is hoped during the first meeting of March we will discuss building a Direction Finding antenna, this will be followed up by a construction evening at a later date.