



Newsletter of the Harwell Amateur Radio Society
 Affiliated to the Radio Society of Great Britain.
 RSGB Regional Club of the Year, 2009 and 2011

Editorial Comment

Well, here we are back in the UK at last. We finally managed to 'hitch' a lift on a Brittany Ferries freight sailing on the 19th June. Our original trip was planned to be for 6 weeks from the 5th March but ended up being nearly 4 months! However, I think Ann and I can safely say that we felt very safe and secure while in Normandy. Radio did play a large part during our extended stay, not just the usual contests but also the daily skeds on their local 2m repeater, F5ZBF. At the peak of the confinement, up to 25 club members joined in the sked each morning. I just hope that the repeater transmitter had enough heat sinking for continuous transmit operation! It was good to be able to join in these skeds as it kept us informed and I hope showed support for the club and committee officers who were trying to keep all their members occupied and safe.

VHF NFD is coming up this coming weekend (4th - 5th July) but this year it is going to be very different from previous years. No entries from portable stations are acceptable with individual stations encouraged to operate from home and 'donating' their points to their club. If you can operate on any of the bands from 6m to 23cm please consider operating over the weekend thus adding to the overall HARS points. Beware though that each of the 5 bands has its own operating 2 hour 'slot' over the weekend (3 hours for 144MHz) so make sure you know when to come on!

73, Mike, G8CUL/F4VRB.



QAV

No 469
 July 2020

An Over From Our Chairman

As far as I am aware, we are all still surviving this epidemic and though socially not as we would like the zoom and 'on-air' meetings are being well supported enabling us to all stay in touch. Thanks to all who support these events as it is your attendance that makes them worth running.

Welcome back to the UK Ann & Mike after a very protracted stay at their French home due to the Covid virus, finally arriving back in the UK Friday evening. Whilst they have been away both have been continuing their commitment to clubs' activities, Ann as secretary and Mike with the production of both QAV monthly and QAV weekly Extra.

Thanks go to John G6PEP for the large scale updating of the Foundation course presentation. The trainer group comprising John, Richard, Alex, Jim and to a lesser extent my self have

organised zoom-based revision meetings for the four students who are sitting their foundation exam online. Congratulations to Howard who has just passed the foundation exam and now awaits his licence.

VHF NFD will not as such be running due to the need for distancing, however there are plans in place to operate the 5 bands from fixed locations. A contest committee will be meeting (via Zoom) to discuss how this event can be configured using members existing fixed location stations.

73, Dave G8DVK

Stop Press!: Congratulations also to Howard, John and Julian for also passing their Foundation exams in the last week! - Ed

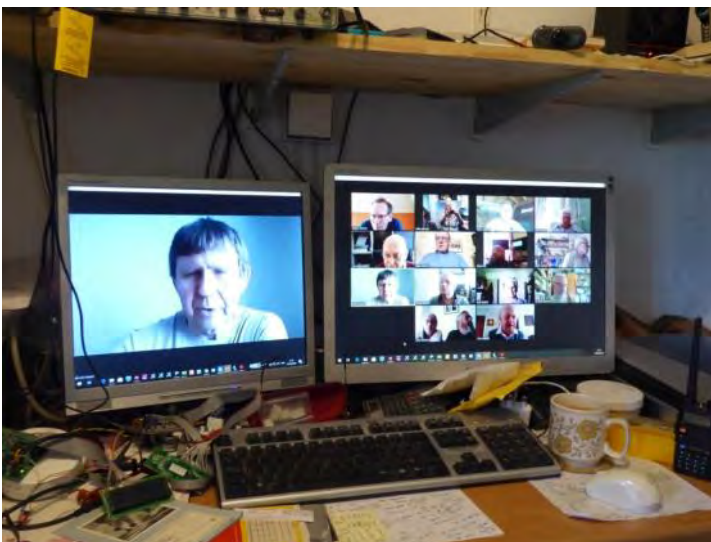
HARS Virtual Membership

The HARS Virtual Club Membership continues to attract new members to the club, both licensees returning to Amateur Radio after a break, and those embracing the hobby for the first time.

It is expected that formal club meetings will not restart until much later this year or perhaps not until 2021. The Virtual Membership category provides a method by which non-members can gain contact with the club and its existing members.

This new membership category has been an outstanding success with nearly 40 new members joining us since April this year.

One of the regular activities that all members are encouraged to take part in is



the weekly 'ZOOM' meetings. These are held on a Monday evening at 19:30 (BST), Wednesday morning at 10:45 (BST) and Friday morning at 10:45 (BST). Various club members also hold radio 'Skeds' on both HF and VHF which all members are encouraged to join. See the Radio Diary on page 18 in this issue of QAV for more details.

Radio Active

Bob, G0ADH - After my "space filler" piece in last month's QAV, I thought that I would mention that since I wrote the piece last month, the call sign of G0ADH has once again been active.

First of all I decided to give a few points away in the 80m CC CW contest on 28th May. I'm still not sure that it was such a good idea as my total QSOs were very disappointing if not a bit "depressing", being less than a quarter of the number that I would have expected to attain a few years ago. Despite it being close to ten years ago that I was an active CW contester, my sending was reasonable albeit, rather slower. However, my ability to copy the CW was woeful. I didn't call CQ but searched and replied.

I recognised several of the old familiar call signs, some of whom I was on the RSGB contest committee with back in the early days of the new century. I'm sure that they were very surprised when I popped up after such a long absence. Maybe after a bit (or should that be a lot) of CW practice, I might have another try on the key.

I did finally raise my tower and MA5B to its full height and sent and received a few more Slow Scan TV pictures on 20m. This was rather more successful. SSTV is ideal for me as one doesn't need to use your voice and it is quite a slow, gentle and relaxing way to make contacts, taking one or two minutes for each picture to be sent or received, depending on the system being used – of which there are many! Perhaps if there is space, the QAV editor may like to find room for a couple of recent pictures that I have received. I won't go into too much detail, but for those



who are not familiar with SSTV, the idea is to exchange single pictures which include details similar to that of a rubber stamp QSO. Depending on the strength of the signal and the conditions, these can get quite detailed but the general idea is to exchange the basics. Receiving a good quality picture is very pleasing, but not essential. The important thing is to be able to read the callsign and report etc.



In general, analogue SSTV it is not a mode for those who want to show off their prowess as a photographer, or indeed anyone in a rush.

Not exactly DX, but it was good to be back on air again.



He wanted a ready made unit and would have liked a Kuhne, DB6NT, unit to match the 70cm transverter that he was already using to good effect, but Kuhne had discontinued the model. They did, though, offer the modules needed to put one together, so I volunteered to do just that.

Rear View



All these pictures were logged on 18th May 2020.

Hamish G0GLG - I was lucky enough to be on 17m on the 19th June when 2 new countries (for me) popped up on my FT* screen and I managed to exchange reports with both stations.

I'm quite sure utilising the G0KYA's UK Short Path propagation prediction WEB page greatly helps me to be on the right band at the right time. Of course this is hugely dependant on the MUF for that day and solar activity but it seems to work for me.

(Hamish's DX is included in the DX of the month table - Ed)

Roger, G3MEH - A friend was having receiver overload problems with his FT736 on 23cms so needed an upgrade.

Front View



It has a 50MHz IF using seperate RX and TX ports. The 23cm port handles both RX and TX with a coaxial relay (with sufficient isolation to prevent RX front end damage) but there is a blank N socket provided for using separate RX and TX ports. The advantage of the latter is that by using a single antenna changeover relay at the masthead and two coaxial cables, one for RX and one for TX, you avoid the significant losses (and cost) of up to four more coaxial relays.

The Innards



The case is very similar to, but not quite identical to, the one which was used by Kuhne.

Dave, M0IXP - The 6m contest on the weekend of 20th - 21st June had some great periods of propagation which seemed very well timed for my 6 hour split stint.

I imagine half the club contesters got the same contacts, but still thought I'd submit my best DX to QAV extra.

(Dave's 6m best DX is included in the DX of the month table - Ed)

Ann & Mike, G8NVI/G8CUL - Of course, over half of June was spent with us still 'stranded' in Normandy. We did finally, however, manage to get a ferry trip back to the UK on 19th June, but that is a story in its own right!

Our radio-activities while in Normandy tend to be limited to contests but we do try to do some more practical radio 'things'. We are naturally quite limited in what we can achieve while there (the

repair of the 6m rotator as described last month is a case in point) so a lot of time is spent in planning new ideas and activities - and of course, buying useful looking bits via the internet! The latter I really must try to curb - I suppose.

Now we are back in the UK we are confined to barracks for the mandatory 2-week quarantine period. To ensure we are "playing the game", we have to supply a phone number so they can check up on us. For this they ask for our mobile number which, of course, can be used almost anywhere! As I type this we are just over half way through this period and haven't left the property, except, perhaps to put the bins out for the rubbish to be collected! We have raised the main tower and I took part in the SHF contest - the first time since February! The weekend of the 20th - 21st June was the 6m Trophy contest which, for a change, coincided with some very active SpE conditions. Ann, G8NVI did a lot of operating and managed to work 68 multipliers. I didn't get many stations in the log but at least it all helps to give points to HARS.

A cartoon received from Howard, M0CIW. The legend reads -

"A Ham's shack is his castle. Happy Father's Day!"

Very apt I thought.



A Ham's shack is his Castle...
Happy Father's Day!

The NanoVNA V2 (up to 3GHz)

Jacques, F1BHL

In June I ordered a NanoVNA V2 (Vector Network Analyzer) from China. This new model officially covers the frequency range 50KHz to 3GHz. The price is \$60 US. It can be bought with all the tools needed on the following Web address :

<https://www.tindie.com/products/hcxqsgroup/nanovna-v2/>

The shipping cost is a bit expensive but very quick : 6 days after I made the order the NanoVNA was in my hands. I ordered it without any extra options because I already had the calibration kit with the first version of the NanoVNA (limited to 900MHz). For those who don't already have the required calibration kit (SS405 cable x2 + SOLT calibration kit) it can be bought for another \$10 US.

No USB cable is provided but a standard charging/USB cable for a smartphone is OK. No internal battery is installed but is not needed for use with a PC but note that it is possible to install one.

The LCD screen is very small (only 6 x 4cm) but a tool is provided to simplify touchscreen selection. I made the choice not to use the built-in screen but to connect the NanoVNA directly to a PC running with Windows 10.

To use a PC the relevant driver must first be installed, so search for "Cypress USB Serial driver". I did that but I'm not sure it is required, depending on the PC configuration. The driver can be found on NanoVNA-QT binary release downloads.

<https://github.com/nanovna/NanoVNA-QT/releases>

Then you have to install the NanoVNA-QT Software also from the same download page.

A PDF User guide UG1101 S-A-A-2 is also available which seems to be very useful.

<https://github.com/nanovna/NanoVNA-QT/raw/master/ug1101.pdf>

When you connect the USB cable, 3



red LEDs are illuminated and a 4th is flashing at a rate of 1 flash per second.

Push the small switch on the left side to "ON". Two blue LEDs light and the NanoVNA starts.

When the USB dialog with the PC is working, the LCD screen of the NanoVNA changes to "NanoVNA V2-2 USB MODE" and is no longer usable itself.

The display on the PC is very pleasant (please refer to the attached pictures).

One thing not evident is to find where it is possible to change the sweep range : click on "Device" in the top bar and select "Sweep parameters".

Here you can select the start and stop frequency along with the number of analysis points (select 100 points or 200 points, the 50 points default value is not enough). Of course, the higher the number of points, the slower is the sweep time.

Starting the Software:

When the software is launched, click on "Device" in the top bar then in the "Select Device" table click on the displayed Port COM (COM7 in my case but depending of your PC configuration). Normally you would see an animation of the displayed curves.

Doing the calibration:

The calibration is very important. It has to be done every time you change the sweep range. Happily you can save the calibration and recall it for repetitive measurements.

First click on "Clear" then on "Clear measurements".

Chose the Calibration type : it is SOL (1 port) if you want to measure a return loss only (for an antenna) or SOLT(T/R) if you want to measure a filter or an amplifier.

Begin the calibration with the SMA connector "SHORT" plugged on the left port. Click on SHORT in the calibration menu and wait until the "SHORT" case turn to the blue instead of grey. It could take 20s if all the sweep range is covered.

Then plug the SMA connector "OPEN" on the left port. Click on "OPEN" and wait until complete.

Then plug the SMA load and click on "LOAD".

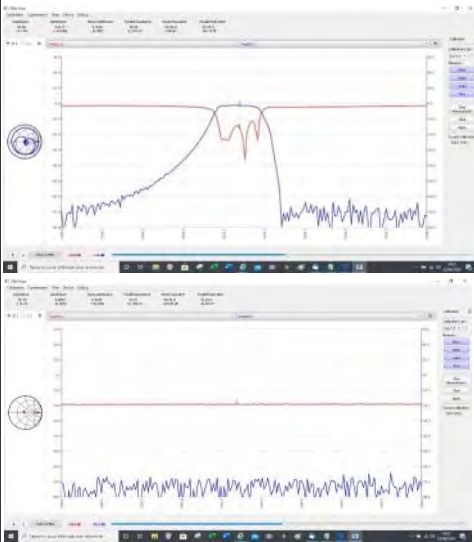
Finally connect a cable between the left and the right port and click on "THRU". When the THRU case turns blue, the calibration is finished. Finally, click on "APPLY" to enter it.

The NanoVNA is now operational. If you have selected on the display "mag

"(S11)" for the red curve and "mag (S21)" for the blue curve, the blue curve will flat near Zero dB and the red curve (return loss) at more than 15dB for the very high frequencies (2GHz as an example), much lower for low frequencies.

A good tip to check if the calibration has succeeded : disconnect the cable from the left port and put a good 6dB SMA attenuator : the return loss (red curve) will be around 12dB. This is because the energy goes first through the attenuator (6dB loss) and then as it is an open circuit, all the energy goes back to the input port (6dB more). The same test could be done with a good 10dB attenuator, in this case the return loss is around 20dB.

The attached pictures show the response of a 9 cell 2423MHz filter and the return loss of a 10dB attenuator.



Conclusion:

This small device is a very amazing piece of equipment with good accuracy which can be useful for all hams. For the fans, the Smith Chart is also displayed.

Officially, the frequency range is 50KHz to 3GHz but it is possible to use it up to 4.4GHz. For fun I have done correct measurements between 4 and 4.4GHz, so it is usable up to the 9cm band.

A shorter resonant vertical antenna with elevated radials for 40m

Howard, M0CIW

A secluded spot at the bottom of the garden seemed just right for a 40m vertical, partly shielded by trees, but certain conditions must be met. The objective is to use a fishing pole attached to a short wooden tilt-over mast, which when down must be less than 9m long. Also the antenna must be resonant and with a good SWR and bandwidth, without using tuned matching at the antenna, to limit the transmission loss over the long coax feeder to the shack. Hence the usual options of using a loading coil or having a helical winding were rejected. As a counterpoise to the vertical, both ground and elevated radials were considered. A good system requires a large number of buried radial wires; whilst only 4 elevated resonate quarter-wave radials are required. Also only 2 elevated radials, at 180 degrees to each other for symmetry, have been successfully used. For 40m these radials need only be about 2m above ground level to reduce its effect. This design will be used with the radials pointing to Europe and America.

Meantime within the limitations of the lockdown and using what was available an experimental antenna has been built using an 8m fishing pole and short wooden post. One wire, from an existing 40m tuned dipole (~10m), was used taped to the fishing pole at intervals of about 30cm in a sinusoidal waveform along the pole. The other half of the tuned dipole was used to give a single elevated radial counterpoise with a feed-point only 1.5m above ground. One photo shows the winding at the top of the pole and the other the stand arrangement with the coiled RG58 coax providing a choke balun.



The resultant "L" antenna had a resonant frequency of 7.5MHz with a SWR of 1.15 with a workable bandwidth. Without a tilt-over mast the option was taken to increase the counterpoise length by about 1.35m to give a SWR of 1.1 at resonance and 1.2 between 7.03-7.12MHz. Having now a workable dipole antenna, albeit with the feed-point off centre, measurements could begin on air! Reverse beacon network reports for "CW Test" transmissions at 18W (~10W at antenna), using Fldigi, averaged a signal-to-noise ratio of 13dB for European countries with a single report from the USA of 15dB. QSOs at 100W on SSB received good 59 reports from Europe and Serbia (DL,F,G,I,OV,OT,YU). The best DX was at night on SSB with Canada (59) and at 18W on FT8 with Puerto Rica. A rebuild of the antenna with a longer sinusoidal vertical wire to resonate at 7.1MHz on a tilt-over wooden mast with 2 counterpoises at 180 degrees to each other and at about 2m above the ground is planned.

Installing Minos2 on a Linux machine (and others!) Bryan, G4CXJ

Following recent feedback, I have updated the instructions last featured in QAV for installing Minos2 in Ubuntu (and variants) or even a Raspberry Pi. There were some Minos2 updates in January 2020 and the latest top of the day version will be installed here.

It is really easy but depending on the speed of the computer, it can take a little while. Unlike running applications in the usual way, Minos2 is compiled into the kernel and this is why it takes time on installation.

An internet connection is required to download files.

Open a terminal which should open in your home directory by default.

Type: `sudo apt-get install git`

You will be asked for your logon password.

If git is already installed, it will tell you, if not the process takes a few minutes. Once underway you may be told that additional space will be required. This is just to warn you in case you have limited space on your HDD. Answer **Y**. Note you can see the progress at the bottom of the screen.

Type: `git clone git://git.code.sf.net/p/minos/minos Minos2`

This will create a directory called Minos2 into which files are downloaded. Check it out now.....

Type: `cd Minos2`

To change directory to Minos2 and....

Type: `ls -l`

The list will show new files and directories.

Type: `sudo ./tools.sh`

This will run the tools shell installation batch file, in other words the instructions. When complete...

Type: `cd mqt/Installer`

To change the directory to where the build instructions are located.

Type: `./buildInstall.sh` This process can take a while depending on the speed of your machine, in fact, at times the terminal seems to do nothing, but be patient and wait. Probably best to do something else for an hour or two or even let it run overnight, but once done you can forget it unless upgrading. (`./` is equivalent to `run` in MS but much more useful)

On completion the next message says:

Do you want to copy the build to ~/runtime (press y/n)

Press **Y** and after a bit of activity another question appears:

Do you want to copy the configuration to ~/runtime (press y/n)

Again press **Y**

That's it, Minos2 is installed! Now try it out. In the terminal:

Type `~/minos-runtime/Minos.sh &`

To add a nice desktop icon then go to **Menu Editor/Create Launcher** (Or similar wording depending on distro), Chose the menu category, say, **Accessories**, click the **+** sign to set up the launcher add the above command in the command slot, give it a name, (Minos 2 is good) and choose your icon by right clicking the Icon and navigating to the `minos-runtime` directory. Check it is all working by clicking the **Test Launcher** icon on the top bar and if happy then save. Minos 2 will appear in the Accessories drop-down, right click to "add to desktop".

From time to time, Minos gets updated, run the above from `git clone git://git.code.sf.net/p/minos/minos Minos2`.

Please note when entering the commands into the terminal, they must be case perfect otherwise an error will be thrown up. Check the syntax carefully if that happens to you!

VHF NFD 2020

What is VHF NFD? As I'm sure most of you know, there are a large number of 'contests' during the year which a lot of us take part in. These are usually (but not always) single band contests normally aimed at stations operating from 'home' or those out portable. An NFD (National Field Day) contest is different in that it would normally cover multiple bands and stations **must** be out portable operating from a tent or caravan but specifically not any permanent buildings and also not using mains electricity. The latter means some other form of power, typically a generator, but solar and wind power (to name but 2!) are also encouraged.

There are NFD events each year for HF (up to 30MHz) and VHF (30MHz and up). This coming weekend (4th and 5th July) is the VHF event with the HF event normally run at the start of June.

This year everything is different due to the Covid-19 pandemic so the whole idea of a real VHF NFD has been abandoned with a completely new set of rules written for the event, hopefully just for 2020. These special rules for this year are club-oriented in that individuals are encouraged to operate on as many of the 5 VHF/UHF bands (6m, 4m, 2m, 70cm and 23cm) as possible in fixed time periods for each band over the 24 hour period from 15:00 Saturday to 15:00 Sunday (times are all in BST). See the table in Contest News on page 16 for the various band operating times. There are 3 sections for each band, the usual AL, AR and AO which relate to the transmit power and aerial system. Each station's score in each section and band is then normalised against the leading station's score in that band/section. This means that all scores then lie between 0 and 1000, the latter for the leading station in each section/band.

The scoring system then gets a bit more complicated as each club's final score is made up of the individual station's score being normalised twice more before finally being added together.

Ann, G8NVI is organising the overall event for HARS and has contacted or is going to contact those stations she thinks will be taking part. However, if any of you feel like joining in and haven't heard from her then please get in touch!

VHF NFD has been running for many years and my first one was in September 1969. VHF NFD was originally run in September each year, but some time ago it was moved to the now normal month of July. For many years HARS was a key player in VHF NFD and ran stations on all bands. As we all grew a bit older the interest waned and a number of years went by when the HARS' Club callsign G3PIA was not heard on the annual July event.

In 2015 a number of us decided that it would be nice to take part again so we put on a 2-band station on just 2m and 70cm, operating from Chilton village hall. We next tried a portable station in 2017 operating from Hagbourne Hill Farm, again on just 2m and 70cm. We all had such a great time that we decided to improve the station numbers. In 2018 and 2019 we ran all 5 bands with the help of Roger, G3MEH and John, G00DQ who ran the 6m and 4m station between

them (6m is only operated on Saturday and 4m only on Sunday). All the other 3 bands run for 24 hours.

For the last 3 years Dave, G8DVK and Ann, G6SRX organised a BBQ for the Saturday evening which was really well received by all attending - even though some should have been operating the radio stations!

This year of course it is all different hence the change to individual stations operating from home, with their scores combined to give an overall club score.

Here are some photographs from previous VHF NFD events!



1967 (I think!)



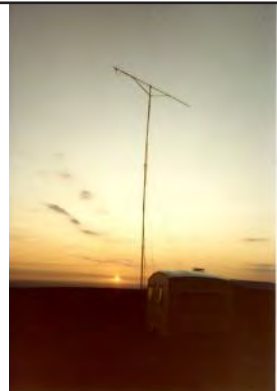
1976



1981



1984





2015



2017



2018





2018



2019



Contest News

Contests for the coming month are now included in the Radio Diary

Full details of all forthcoming contests can be found on <http://www.rsgbcc.org/>

Contests this month (July)

RSGB Hope QSO Party

These special contests finished at the end of June.

VHF National Field Day 4th-5th July 15:00-15:00 BST - see details on page 12.

Band	Day & Time slot (BST)
6m	Saturday 15:00 - 17:00
4m	Saturday 18:00 - 20:00
23cm	Sunday 06:00 - 08:00
70cm	Sunday 09:00 - 11:00
2m	Sunday 12:00 - 15:00

Contest Results

2m May Contest

SOF G3MEH 3rd, F4VSO 14th
6 hour SOF G0ODQ 6th, G4BRK 22nd, F4VRB 51st, M0KEP 76th
M0IXP 103rd, G6LNU 107th, 2E0HTG 114th, 2E0OXF 118th,
G8NRP 120th

Congratulations to the 11 stations who came on to support the club in this VHF Championship Contest.

4m Cumulatives

AO M0KEP 17th

VHF Championship

After 2 rounds of the VHF Championship Contests HARS are lying 3rd out of 62 in the AFS Section but within 50 points of 2nd place! The results of the 70cm Trophy held on the 2nd May and 6m Trophy held on 20th-21st June (who will ever forget the amazing sporadic 'E' in that contest?) are yet to come out. Forthcoming VHF Championship Contests are:

Sun 19th July—4m Trophy Contest

Sat 1st Aug—2m Low Power Contest

Sun 2nd Aug—70cm Low Power Contest

Sat-Sun 5th-6th Sep—2m Trophy Contest

Please put these dates in your diaries.

UKAC May-June 2020

	Callsign	Section	Position	
4m (May)	G3MEH	O	4	
	M0KEP	O	15	
	G4BRK	O	16	
	G0ODQ	R	7	
	G7DOF	AL	42	
23cm (May)	G4BRK	O	5	
	G3MEH	O	9	
	G0ODQ	R	10	
	G8DVK	R	11	
	F4VRB	R	12	
	M0KEP	R	16	
13cm (May)	G4BRK	O	6	
2m (June)	G3MEH	O	11	
	G8DVK	R	13	
	G4BRK	R	25	
	F4VSO	R	34	
	G0BNC	R	116	
	F4HNP	R	140	
	G6LNU	R	166	
	M0IXP	R	201	
	G8NRP	R	206	
	G7DOF	R	209	
	M0CIW	AL	40	
	70cm (June)	G3MEH	O	7
		G4BRK	R	11
		G0ODQ	R	15
F4VRB		R	42	
M0KEP		R	91	
G7DOF		R	155	
G0BNC		AL	33	
M0IXP		AL	63	
6m (June)	G3MEH	O	8	
	G0ODQ	R	20	
	M0IXP	R	98	
	F4VSO	R	120	
	G6LNU	R	128	
	G8NRP	R	135	

Radio Diary - June 2020

Date	Time (BST)	Event
Monday 6 th , 13 th , 20 th , 27 th	19:30 on	Zoom Coffee Evening
Monday 6 th , 13 th , 20 th , 27 th	20:00 on	G3MEH 2m FM Sked—145.550 ±
Wednesday 1 st , 8 th , 15 th , 22 nd , 29 th	10:45 on	Zoom Coffee Morning
Wednesday 1 st , 8 th , 15 th , 22 nd , 29 th	14:00	HF Sked G8DVK 3.710MHz ±
Friday 3 rd , 10 th , 17 th , 24 th , 31 st	10:45 on	Zoom Coffee Morning
Friday 3 rd , 10 th , 17 th , 24 th , 31 st	20:30 20:45	Friday Night Sked G0AOZ 1.846MHz ± Friday Night Sked G0AOZ 3.710MHz ±
Sat 4 th -Sun 5 th	15:00-15:00	VHF National Field Day
Mon 6 th	20:00-21:30	80m CC CW
Tue 7 th	20:00-22:30	2m UKAC
Thu 9 th	20:00-22:30	6m UKAC
Tue 14 th	20:00-22:30	70cm UKAC
Wed 15 th	20:00-21:30	80m CC SSB
Thu 16 th	20:00-22:30	4m UKAC
Sun 19 th	11:00-17:00	4m Trophy Contest
Sun 19 th	10:00-12:00 14:00-17:00	RSGB Low Power Contest
Tue 21 st	20:00-22:30	23cm UKAC
Wed 22 nd	20:00-21:30	80m CC DATA
Sat-Sun 25 th -26 th	13:00-13:00	IOTA (Islands on the Air) Contest
Tue 28 th	20:00-22:30	SHF UKAC

RCE Update

Congratulations to the following members who have recently passed their Foundation Exam:

Nick M7EGA
Howard M7GKA
Matt M7MRR
John M7RCZ
Julian Callsign not assigned yet

A small group of candidates will be attending our first online Zoom Foundation Course during July. Good luck everyone!

DX of the Month

It would be nice to continue filling this list, giving the results by band, so please keeping sending in what you have worked. I only listed 1 entry per band per callsign


Callsign	Date	Dx	Band	Mode	Locator	Distance (km)
G0GLG	?	BG0BPZ	17m	FT8	NN33tu	6250
G2U	20/6/2020	CX7SS	15m	RTTY	GF25lq	10820
G8CUL	20/6/20	YP1D	6m	SSB	KN36so	2151
G8NVI	21/6/20	Z3A	6m	SSB	KN11ce	2123
M0CIW	9/6/20	KP4JRS	40m	FT8	FK68xi	6686
M0IXP	21/6/20	S57L	6m	FT8	KN76gc	2658

When sending the information to me, please list **all** of the following information of the DX station -

Date, Callsign, band, mode, Locator (preferably 6-figures), distance.

CLASSIFIED ADS

Remember that you can advertise suitable radio equipment here for **free!**



Harwell Amateur Radio Society - Committee

OFFICERS

Chairman: Dave Aram, G8DVK
Vice-Chairman: Angus Wilson, G0UGO
Secretary: Ann Stevens, G8NVI
Treasurer: David Stevens, M6YHS

ORDINARY MEMBERS

Clint Gouveia, 2E0HTG
Alex Comerford, 2E0OXF
Roger Powell, G0AOZ
John Durban, G6LNU
John Booth, G6ZHB

Other non-committee positions

Contest Manager: Ann Stevens, G8NVI
Membership Secretary: John Durban, G6LNU
Rally Organiser: Ann Stevens, G8NVI
RCE Head Trainer: Dave Aram, G8DVK
RCE Secretary: Ann Stevens, G8NVI
QAV Editor: Mike Stevens, G8CUL

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The deadline for the August 2020 QAV is 25th July 2020. Articles submitted after this date cannot be guaranteed to be included.

Contributions from all members are greatly welcomed. They may be submitted to qav@g3pia.net.