



**RAGCHEW**

**SEPTEMBER 2017**

## FROM THE EDITOR

Although the club's final meeting of the session was held in mid-July, I know that members have been very active over the summer break. Andy M0RON has been busy formulating a programme of activities designed to help and encourage our newer (and not so newer) members in the fine art of building antennas and simple radio circuits also practical demonstrations of good operating with specific emphasis on net and repeater procedure. In this issue of "Ragchew" is the first of a series of articles based on these projects - building a simple dipole for 2 metres. A small group of members met in early July to build this antenna and have reported good results.

A group of club members led by Gary M0XAC and Dave G4BCA entered the Low Power Field Day using the call sign G2HX/P - see the article in this issue to see how they did.

Dave G4BCA gave an interesting talk to club members in July entitled "Contesting for Beginners" which set out the basics of operating and etiquette. The VHF UKAC evening FM contests are a great introduction to this facet of the hobby - do give it a try and don't forget to submit your entry to the RSGB.

As I write this column, Leta and I are making last minute preparations for our annual trip to Lundy in the Bristol Channel. The weather forecast for Bideford (the port where we sail from) looks unsettled with a brisk north-westerly so crossing the Bideford Bar will be interesting! I plan to be active on 40m and 80m for an hour or so in the morning (0700-0800) and also in the evening from 1600-1700. If the weather is bad then the upside is more time indoors operating. Keep a lookout for G4CIB/P on the 70cm and 6m UKAC events.

Finally, many thanks to our Committee for all the hard work they put in on our behalf. This coming year looks to be an exciting one with plenty of activities to suit all tastes.

## GB4GHF - Saturday 2<sup>nd</sup> September

This Special Event Station was held at the Gloucester Life Museum to celebrate the Gloucester History Festival.



Many thanks to Alan G4MGW and Gary M0XAC for once again putting on this event, also to the handful of members who came along to assist with assembly, operating and dismantling of the station. Once again Father Sol didn't play ball but nevertheless some interesting qsos were logged including a station on Flat Holm island in the Bristol Channel. On 2 metres an interesting qso on ssb was logged with G8XVJ/P who was on for the 24 hour Trophy Contest. In fact we were his first qso. At present the future of the building is uncertain so this may well be our last event here.

## RF NOTES by Tony G4HBV

In my last "Notes" I stated that receiving antennas can only deliver a maximum of half the energy they intercept to a matched receiver. This may be rather surprising so I thought I ought to explain why this is so. I said that the field around a receiving antenna is more complicated than that around a transmitting antenna. The complication is due to the fact that when a receiving antenna intercepts field energy, RF currents flow in the antenna. As well as being delivered to the terminating receiver, these currents also re-radiate – it is a consequence of the laws governing RF behaviour – so our receiving antenna also behaves as a transmitting antenna – something we cannot stop and just have to accept.

We can use a law of electrical engineering to prove that a maximum of half the intercepted energy can be delivered to a connected receiver. This is called the "maximum power transfer law" This law states that if a power source is connected to a load, maximum power is transferred to the load when the source resistance equals the load resistance.

In the case of a transmitting antenna, power lost by radiation from the antenna can be represented by a hypothetical resistance, called the "radiation resistance" Such a resistance does not exist in practice, it merely serves to represent the lost power which is radiated from the antenna. In exactly the same way, the power lost when a receiving antenna re-radiates intercepted RF field energy can be represented by the same value of radiation resistance. This radiation resistance is a property of the antenna, both in transmitting mode and when receiving. The value of the radiation resistance of an antenna will mainly depend on its size, in terms of the wavelength of the RF, and its environment (i.e. ground proximity, antenna conductor layout etc., etc.).

Now applying the law of maximum power transfer, we can see that maximum power (half that intercepted) will be delivered to a terminating receiver having the same input resistance as the antenna's radiation resistance, that is a matched load. In this case we treat the antenna as a voltage source in series with the radiation resistance delivering power to the matched receiver load. Take my word for it, without straying into the maths of the maximum power transfer law that this is so. I hope you've understood this. I sometimes think that we treat antennas as just another item in our stations without realising their special properties and this can sometimes lead to apparently odd RF behaviour.

Incidentally, if an antenna is open-circuited, it will still interact with an incident RF field, in this case the antenna re-radiates all the energy it intercepts – called scattering. Any conducting objects, such as metal guttering, fences etc will also act in the same way, scattering RF. Often in the VHF and UHF bands such scattering, sometimes caused by the ground or buildings causes multi-path propagation, evident by fading even between fixed stations.

A curious thing about antennas, and one that has always interested me, is how the properties of transmitting and receiving antennas are inextricably linked – you can characterise an antenna either in terms of receiving or transmitting - either way it uniquely defines the antenna's performance – this fact brings us on to the "Reciprocity Theorem"

Put simply, this says that if you have a one-way radio path between two stations, and you were to interchange the transmit and receive antennas, other factors remaining constant, the same performance over the path would be obtained. This theorem breaks down under conditions of ionospheric propagation. It is usually accurate in space-wave (direct) propagation between stations in the VHF and UHF bands.

You will notice this by similar reports being exchanged by two stations in contacts on these bands.

I am sure you will agree with me that as you get to understand them, antennas become fascinating objects.

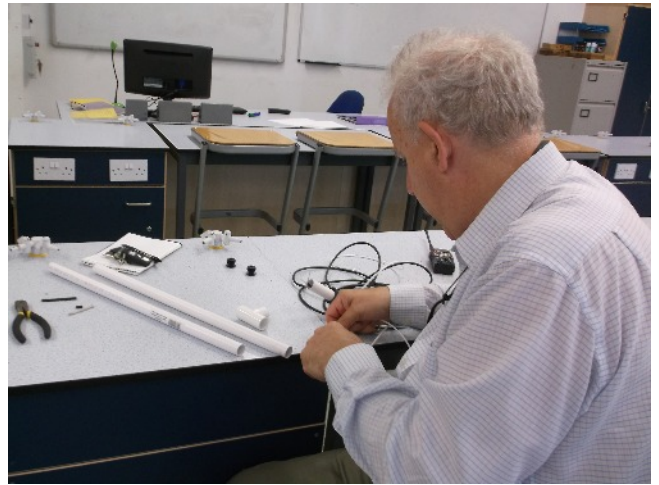
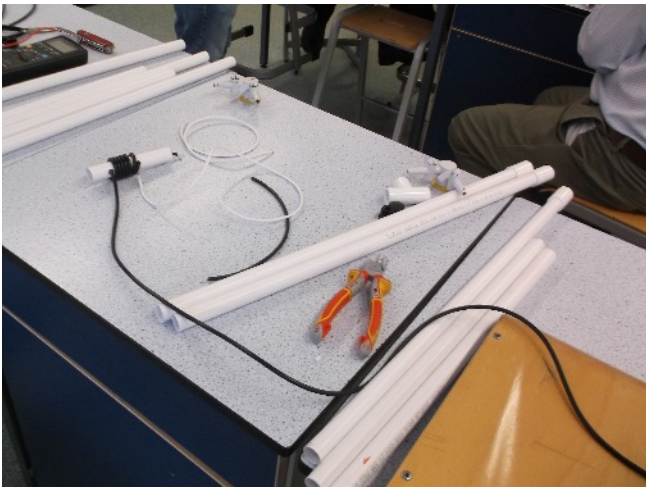
Editors note - thanks Tony for another interesting article on antennas - fascinating objects indeed!

## A SIMPLE DIPOLE FOR 2 METRES

This simple antenna has been engineered by Andy M0RON and is the first in a series of projects designed to encourage newer members of GARES to not only acquaint themselves with the practicality of building a small antenna but also enable them to receive and transmit on an antenna which will give better results than the built in “rubber duck” antenna on a handheld transceiver.

The work involves cutting some 21.5mm plastic pipe, some drilling, making up a coaxial lead and soldering it to the antenna elements.

A small group met a few weeks before we broke up for the summer to assemble the parts which Andy M0RON had supplied. At the end of the session four club members had a useful little antenna to try out during the summer break.



## Low Power Field Day 2017

A small group of members led by Gary M0XAC and Dave G4BCA took part in the Low Power Field Day held on 16<sup>th</sup> July at the QTH of Cliff G8CQZ, using the call sign G2HX/P. 39 QSOs on 80 metres, 51 on 40 metres and 1 on 20 metres were logged. We came 3<sup>rd</sup> in the Portable Section. In this section we had the highest number of QSOs on 40 metres. In terms of the overall score we would have come 11<sup>th</sup> (out of 80 entries) had there been no separate sections. Not a bad effort when compared to the large number of fixed stations who entered.



The Antenna  
Inverted V dipole fed with 300 ohm cable with an 11m pole in the centre.



The Team

Brian G4CIB, Gary M0XAC, Dave G4BCA, Bob M0NQN, Mike G4IZZ, George M0HWT

## Crickley August Bank Holiday 2017 by Anne 2E1GKY.

For a number of years we have enjoyed our August Bank Holiday meetings on Crickley Hill with very variable weather conditions - heavy rain, strong winds and even hail on one occasion with thunder and lightning and for myself quite memorable.

This time however was our very best, sunshine, warm temperature and just perfect, even the Belted Galloways usual cow pats were flattened dry!!

We were very pleased that we had three visitors who are very keen to take a Foundation Course and as Les GOULH our club Trainer was to hand this could not have worked out better, for general discussions and help and advice, also they were able to see various antennas and equipment in use.

On one previous visit some of the cattle were very interested in Gary M0XAC's equipment. Their size can be quite scary as they have access everywhere but normally just walk away.

Thanks to Brian G4CIB for doing our Rag Chew, so lets have more articles please. Anne 2E1GKY.



Arron M0HNNH's 3 element 70MHz Quad antenna



Many thanks to Mike G4IZZ for submitting these photographs taken at Crickley Hill on August Bank Holiday Monday. They show Dave G4BCA and Gary M0XAC both in deep concentration. Prizes for the wittiest captions submitted to the Editor G4CIB.

## **A New Club Initiative - Training Workshops**

Amateur radio is in some ways similar to driving. You take an exam which qualifies you to operate on certain bands and you take a driving test to demonstrate competence to drive a vehicle. But in both instances you still have a tremendous amount to learn, indeed in both cases you never stop learning. In the case of Amateur Radio, technology is advancing at an ever increasing pace as it is in the cars we drive. Years ago many newly licensed amateurs acquired their call signs usually after an extensive "apprenticeship" of short wave listening but times move on and so must the way we approach the acquisition of knowledge and experience. For some time now the club has offered Foundation and Intermediate Courses thanks to the hard work of Les G0ULH and Cliff G8CQZ. This has given a good grounding to newcomers but the new Training Workshops initiative led by Andy M0RON seeks to give both newcomers and older members alike follow-on training in various aspects of the hobby as he explains here:-

"Over the summer myself, Anne, 2E1GKY, David, G3VBQ and Brian G4CIB have been working on a series of workshops for newly and not so newly licensed amateurs.

Classes will be held at club on Monday evenings in classrooms away from main club meeting room.

The first workshop will be FM simplex QSO practice on the 25th September followed by a 2 part repeater workshop on the 9th and 16th October. The first part deals with how repeaters work and how to access them, the second will involve practical use of local repeaters using your own radio. The repeater workshops are short.

A net workshop will run in November with a couple of regular net operators and a controller; this will give new members the confidence to join the regular club nets.

A Morse class will run regularly, details still being worked on but should involve a short session each Monday with daily homework. There is a Morse straight key oscillator to build once listening is good enough and possibly an iambic practice keyer.

The Committee has wholeheartedly backed this initiative and members have offered to help. It in no way replaces formal training but is an opportunity to help members with things that you may like to find out about, and reinforce theory with practical examples.

Should you have anything else that you would like the group to look at please come forward and ask, simple tasks like making patch leads can be done easily at club but a digital mode workshop will need a little notice."

Andy M0RON

If you are interested in any of these activities then please let us know. They are meant for small groups of members (from one upwards), and are not talks for the whole Club. They are separate topics - you can just do the ones that interest you. Places may be limited, so don't delay - but workshops will be re-run if there is demand.

Future topics will be driven by demand - please let us know what you would like included.

David, G3VBQ - Secretary