North Bristol Amateur Radio Club

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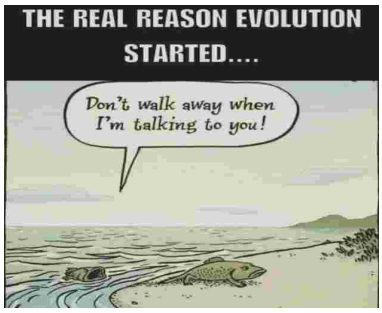
May 2020 Covid-19 Edition

Let me start this editorial with the hope that you are all well and are keeping yourselves busy, possibly playing more radio. There are some members out there that are working, or spouses are working looking after others in hospitals or nursing homes. My thanks go out to you, and indeed all those that are still working. From bin men, transport of all types to delivery men (or Women) keep safe and we hope this lock down may not last much longer.

Lock down I thought that if I went on my own to a hill top to play radio I would be OK after all the 2Metre rule would apply and I would be on my own, Wrong. Please don't be tempted, the rules are there to be obeyed. If we went to the top of a hill others would go for a picnic and before you know it everybody will be going out as normal. Please Stay At Home. Having said that it may be a good time to play radio from home and make the antenna you always wanted. Be it a new HF wire or maintain your dual bander's connections. You know it needed doing for the last 3 or 4 years.



Remember always listen to the XYL (cartoon courtesy of G7FBD).

Disappointed Editor Yes I am, I was all set to start a contest of sorts with points going to how many contacts you make over about 6 weeks. Alas, I only had one reply from the April edition. That was from Dave G3XOB. It was not meant to be a race just play a bit more radio and count up your total QSOs over 6 weeks. Aah well.....

April Fool How many of you found the April Fool joke in the April edition. Some of you believed me using a Tea Urn as a dummy load. The clue at the end of the rambling of inane drivel was the tea taken with a "pinch of salt".

An introduction to QRP

Definition
The internationally recognised definition of QRP is 5W or less output to the antenna so that is what I shall assume although some people seem to define it as anything less than a kilowatt these days!

Why QRP
Life is too short for QRP so the saying goes but I think that is missing the point. I am not dogmatic about it and I am happy to run high power when power supply and equipment availability is no object and I simply want to communicate in the most reliable way possible. Probable to rag chew with my friends about QRP! My experience is at HF so I shall stick to that. Obviously VHF/UHF QRP is a different ball game where very high gain antennas are possible. So here are my reasons for running QRP:

low power consumption for portable use.
5W with 50% efficiency is equal to less than 1A from a 12V supply on TX. Possibly less than 40mA on receive. It is therefore possible to operate for long periods on light weight lithium batteries or even solar power if you are a purest. This also enables you to be independent of mains carried noise and continue operating for emergency use where mains power is unavailable.

Small light weight equipment.
Even HF equipment can be pocket sized although the caveat is that although you may be seduced by HF transceivers that are not much bigger than a pack of cigarettes, all HF operation requires ancillary equipment such as antenna wire supports SWR meters, Morse keys, headphones batteries etc to be successful.

limited possibility of causing interference,
This can be an important consideration particularly in high density accommodation. Modern televisions may be reasonable to immune to RF but the myriad of other electronic devices around these days probable aren't particularly the sacred internet router. QRP may be the only alternative to divorce!

Able to use simple equipment
There is great advantage in using simple equipment possible home brew or at least kit built which can be easily understood and maintained. Any spurious emissions associated with simple designs will probable be at acceptable levels. With good kits available for less than £50 this provides cheap access to HF for those that would be forgiven for thinking on a quick browse through the adverts in Radcom that amateur radio is an exclusive activity.

Possible to use of inconspicuous wire antennas
There are no issues with high RF voltages ie safety and insulation requirements and RF currents are limited. It is therefore possible to use thin wire I regularly use 28SWG copper wire. This is only about a third of a millimetre in diameter is almost invisible a trick is to wrap it around fishing line for further support. Fishing line can also be used for insulation.

Efficiency
The use of QRP teaches efficiency in antenna construction, tuning and careful operating procedure. "You can't afford to waste it!"

Extra challenge
Even common place contacts can become a thrill when you have overcome the odds even better when using home brew equipment.

Why did I get interested?
Travelling in Europe I set myself the challenge of working friends back in the UK with simple hand carried equipment flying hand luggage only. Preferably with home brew equipment. I suppose the Romantic idea of a WW11 spy operating in secret was in the back of my mind although I would draw the line at the possibility of getting shot for anybody considering a Dxpedition to North Korea! I was once accused of being a spy by a fellow guest on a neighbouring balcony at a hotel in Croatia.

What Mode?
Mode and efficiency are inexplicable tied up so compromises need to be made the choices for HF operation are:

SSB
This is pretty inefficient in terms of use of bandwidth and unless you have a particularly good antenna and conditions will only give you a sore throat. If you must use SSB with QRP restrict QSOs to standard phonetics and short overs

Digi modes
I must confess I do not have much experience with these and they have limited appeal for me. Although they can be very efficient they do not comply with my criteria for simple equipment at the very least they require an embedded micro and probably a laptop computer.

CW
This is a subject in itself but suffice to say this is the obvious choice. Bandwidth requirements are less than a tenths of that for SSB actually minimum bandwidth is determined by rise and fall time and very narrow bandwidths are possible. Equipment requirements are as simple as it is possible to get and of coarse the romantic appeal of the spy radio is fulfilled!

Learning CW
This is intimidating to some but I can only say the challenge of learning and using this skill is a major part of the fun. Comparing it with learning a language it is only really necessary to be able to order your food in a restaurant and ask the way to have a standard CW QSO you don't need to be fluent. Good operators should always slow down to your speed unfortunately there are a lot of bad operators out there but if they don't accommodate you that is their failure. Most send too fast anyway for their receiving ability.

CW is a bit like skiing it is very easy to learn to go down hill fast but takes a lot more time and effort to learn to do and do so in a controlled manner and crucially stop when you need to! The real skill in my opinion is to be able to rag chew in CW and I always like to go a little beyond the basic exchange so I feel I am communicating with a fellow enthusiast and not just a machine. Of coarse there is the temptation to use a computer to send and receive Morse this seems to me to be a little pointless as you then end up with a rather inefficient digital mode and most computer programs struggle with hand sent Morse.

Choice of Rig

Many people will be drawn to the Yaesu FT817 though a great versatile little rig in my opinion it's main draw back is the current draw on receive which necessitates a bulky power source for any prolonged period of activity.

There are many simple dedicated QRP CW rigs many of them available in kit form. Most of them that are sophisticated enough to be more than a toy are basically the same design a superhet transceiver using NE612 balanced mixer ICs with a crystal filter in the IF using cheaply available 5MHz or 9MHz crystals. Older versions use analogue VFOs or crystal controlled varicap VFOs. Most nowadays have DDS (Direct digital synthesis) VFOs these are marginally more power hungry and potentially introduce some noise into the simple receivers which are generally very quiet. The up side is that they are very stable and usually include a digital frequency readout both of these are really essential for operating on the modern bands where most operators will be using digital controlled receivers with brick wall narrow filters. The NE612 has the disadvantage that it has a poor dynamic range therefore these rigs usually include a switched attenuator although this won't necessarily solve the problem and extra preselection filtering is required in practice this is harder to achieve with multi band rigs which require complex switching. The poor high signal handling can result in considerable crossmod and intermod interference for example from adjacent broadcast band signals on 40m lack of preselection can also allow the reception of loud image signals for example strong 15MHz broadcast signals can interfere with 30m (10MHz) in a rig using a 5MHz IF. Some of the original designs such as the Heathkit HW7 use a direct conversion receiver directly mixing down to audio the primary problem with this is the receptions of both sidebands. However a new take on this is the recently very successful QCX transceiver from Hans Summers at QRP labs. His design uses a phasing detector to eliminate the unwanted side band combined with very narrow active audio filter.

Antennas
If you have a trailer mounted 100ft lattice tower with an HF beam and rotator this may be an option but it hardly meets the hand luggage criteria! In practice there are really only two options dipoles and long wires. Ground plains are also a possibility but the earth requirements generally make them impractical.

Dipoles
These have the great advantage that they are pre tuned and can be easily home brewed SOTA beams do various pre cut options. My preferred option is to use SOTA beams centre piece balun kit they also supply a 10m length of RG174 with a BNC plug fitted at one end this coax is only about 2mm in diameter and the loss is acceptable on HF also I hate fitting BNC plugs. A happy hour can be spent trimming it to length with your QRP rig and an SWR meter or an antenna analyser if you have one. Of course there will be some variation with installation but this will probably not be significant in practice. Generally QRP rigs are pretty tolerant of high SWRs as they generally don't have SWR protection so they don't fold back power but are fairly tolerant to the higher reflected voltages as these are generally within the max working limits of the PA transistors. "I have heard the FT817 may be an exception to this?". Fan dipoles can be constructed for multiple band use or clip on ends although beware the basic law of string theory "if it can get tangled it will get tangled!" So the more ambitious you are the more time you will spend setting it up.

Long wires
How long is a piece of string? "Incidentally has anybody tried loading up wet string?" Coming back to actual wire well the obvious fundamental length is a half wave. Conveniently with the harmonically related bands a half wave on say 40m will be a quarter wave on 80m. I have pre cut half wave long wires for 20m ,40m, 80m and yes even 160m! These are 33ft, 66ft, 132ft and 264 ft respectively thus for say 80m operation a 132ft long wire can be tuned against a 66ft counterpoise. Having these length pre cut makes for a predictable impedance match, radiation pattern and a useful awareness of where the voltage and current points are. Having length pre cut saves reducing your stock of wire to a tangled heap of random lengths held together with dodgy twist joints and the frustration of trying to measure wayward lengths of wire with a tape measure that you have just recovered from a cow pat.

Until further down the log.

73s Paul G4CVD

Editor's note
Antenna wire on the cheap can always be obtained using lighting flex or figure 8 bell wire. Look out for reels of wire on Ebay. Dipole centres and insulators can be made from odd pieces of plastic. Use your imagination and things will start to come together. Before you know it you too can be working portable QRP.

Story Time
This is a short story about Four people named Everybody, Somebody, Anybody and Nobody.
There was an important job to be done and Everybody was sure that Somebody would do it. Anybody could have done it, but Nobody did. Everybody got angry about that, because it was Nobody's job. Everybody thought that Anybody could do it but Nobody realised that Everybody wouldn't do it. It ended up that Everybody blamed Somebody when, Nobody did what Anybody could have done. **Is There A Moral Here**.

Net Nights
During these warmer evenings, I have decided not to run the Sunday net. There, quite frankly are too many jobs to do around the house to be tied to a time to play radio. I will however still run the Wednesday Net GB3BS 20:00 and Friday Net GB3AC from 19:00 and QSY to GB3BS at 19:30 for the second leg.

If you would like the net to continue, feel free to take over as net controller. The net will return with me in the autumn.

Things to watch during Lock down

Some of you out there are unaware of Ham programmes to watch on YouTube. There are literally hundreds out there. Some better than others Here is a list of the studio made ones. By that I mean the ones not made in the back room at home although some of them are excellent.

1 TX Factor

2 HamNation

3 Amateur Logic

Just go to the Youtube site and type in the name that you require. There are other Ham related programmes but these are some of the best. TX Factor is without question the best produced with Ham Nation a sales pitch for Heil microphones but saying that they have some good segments. Amateur logic was better in the earlier days but are still available to catch up on.

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Date of the next copy about 4 weeks time or as and when the Lock down conditions change.
Stay safe and 73 till next time.