newsletter

"*having fun with rf*"

wythall radio club

wythall contest group

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May-June 2013

Wythall Radio Club meets from 8pm every Tuesday evening at Wythall House, Wythall Park, Silver Street, Wythall, B47 6LZ, near Birmingham. Visitors are very welcome. **Wythall Radio Club** is affiliated to the Radio Society of Great Britain. Contact g0eyo@blueyonder.co.uk

Whether we look forward or back — it's all great!

Its now the end of April and having suffered a long cold spell over winter and spring and we are just beginning so see some sun to brighten our lives. Probably wishful thinking to hope that we have a good summer with lots of opportunities for portable and constest operation and a summer barbecue. In March we held our rally which, despite the poor weather beforehand and restricted on-site parking, saw a healthy contribution to club funds and an increased footfall. The rally pretty much runs itself on the day, but it was great to see so many members turn out to make it the success it was. Most of our traders were keen to see us next year and we have earned a good reputation with them for the help we give them on the day in loading and unloading their stuff.

The Easter contest gave us a few surprises and has proved a popular fixture in the club's calendar of events. The results are shown on page 6. Following the Christmas contest the club has initiated an "Activity Ladder " to encourage members to get on the radio each day and this has also proved successful and popular. You can read about this on page 8. We have the "Mills on Air" special event station to look forward to at Avoncroft in May and later on in the summer there will be VHF NFD. You can see all the events in the club calendar on our website www.wythallradioclub.co.uk which is gaining a good reputation for being one of the most popular club websites in the internet.

May also sees the start of the Lew Williams Morse Shield activity event. This is a Wythall Radio Club operating event, open to all club members, to promote the use of Morse Code on the amateur bands and to remember past club President and morse aficionado Lew Williams.

It is not a contest in the traditional fashion, but a month long activity event, when on-air morse activity will be encouraged. The Lew Williams Shield will be awarded to the Wythall club member who has shown the biggest contribution to the event, and/or shown the greatest improvement in morse code skills. Other certificates may be awarded by the contest committee.

Contacting other Wythall Club members using morse code will count very favourably. Contacting other non-club members is also allowed and encouraged. The event period overlaps with a number of HF CW contests which can be used to practice and use CW on air. (RSGB 80m Club Championship CW, King of Spain CW, Baltic Contest, and CQ WPX CW Contest.) Regular 'ragchew' contacts are equally valid – the quantity of contacts is not the most important factor.

Chris G0EYO was honoured to have won it in 2012 and would encourage all our CW trainees to have a go for this.

Chris G0EYO

A fun project for a wet afternoon: A one valve TRF regenerative medium wave receiver

The Treasurer's tale

Twenty club members' had great fun building Barry's one transistor regenerative short wave receiver. Keeping it simple but stepping back 50 or so years, Colin M0GJM found a circuit for a one valve set and looking through the list of the "Club's valve stock" he found we had a suitable candidate- the ECC82.

The valve was delivered to Colin on a Club night together with a B9a base and off he went to heat up his soldering iron!

Keen to have a go and see how this circuit performed, I thought I would build a similar version using bits from the junk box (literally in the case of the tuning capacitor). Taking a look at the circuit , it uses a twin triode so perhaps it is cheating with two valves in one "envelope"?

How the radio works

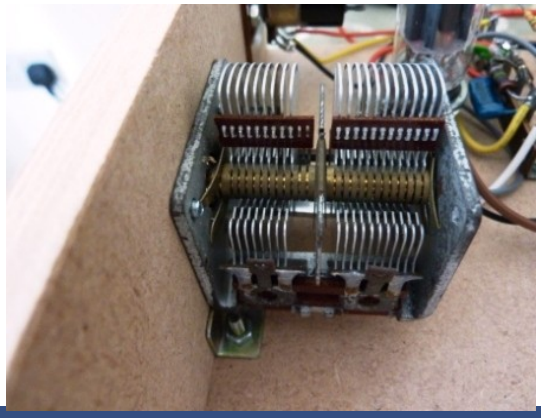
The radio circuit is a very conventional regenerative receiver using an ECC82 or 12AU7 . One triode functions as a regenerative grid leak detector which is coupled to the second triode which provides some amplification of the detected signals. The tapped coil follows the original circuit and consists of 77 turns of 38swg wire tapped at 7 turns from the earthy end wound on a ferrite rod.
The antenna is coupled directly to the tapped coil or via two small value capacitors and the connection that gives best overall results in terms of sensitivity and selectivity should be used.

Feedback from the detector cathode to the coil tapping provides the regeneration and eliminates the need for a separate feedback winding. A variable voltage on the detector anode allows regeneration to be adjusted and this is supplied by a variable potentiometer.
To introduce folks to valve circuitry without the dangers of high voltages, this radio will run quite happily from 12.6v for both the heater supply and for the "ht".
The combined current is around 155mA and so a well regulated power supply is recommended.

Using such low "ht" the valve is run in the so called "space charge mode" that was used in the early hybrid car radios. Using the better properties of valves for the RF and IF sections, transistors were used for the audio amplification and audio output stages where performance was more than adequate. A whole range of valves were specially designed for these early car radios but this receiver uses a valve which is quite happy at such low voltage and is easily available. Additional audio amplification is provided by any standard audio chip and I have provided a RCA phone jack to couple the audio to any amplifier to hand.

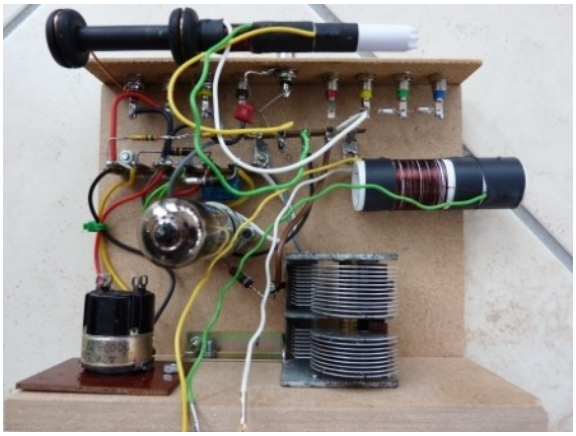
My version from the Junk box

Diving in to my man store I came up for air triumphantly clutching a 12BH7A valve, a variable tuning capacitor, pieces of wood to use for base and front panel and a few capacitors and resistors.



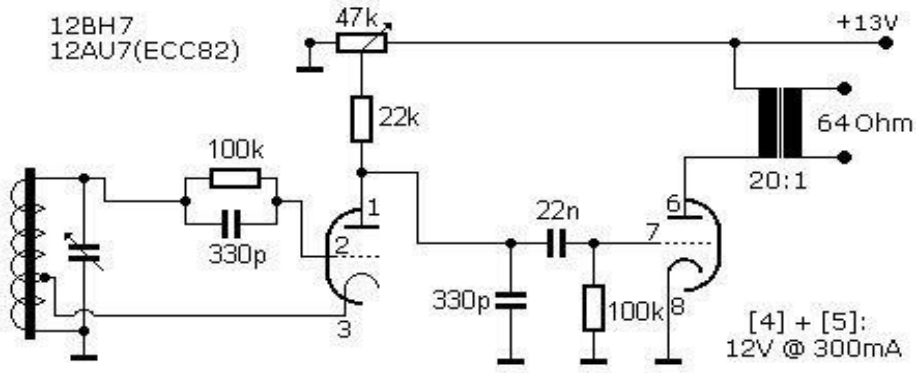
I did not have at the time an ECC82 and so I used a 12BH7A, an American double triode used in their early colour TV's as frame generators. It had probably had a hard life and so was not expecting too much from it.

Tuning capacitors are expensive and being ever resourceful, I have found it better value to purchase scrap valve or early transistor radio and salvage the parts. Salvage is very apt as the tuning capacitor came from a radio that looked as though externally someone has put it on the compost heap! However the electronics were OK- Dansette made very durable compost heap proof radios- and after three cycles through the sonic cleaner and one hour at 50 degrees C in the oven, the tuning capacitor measures spot on for this project.



A quick flourish of the soldering iron soon had the components soldered and the coil was wound and positioned.
A 220nf capacitor connected to the audio amp's anode provided a suitable audio tap for any external amplifier.

A one valve TRF regenerative medium wave receiver– continued



How did it perform?

The coil as wound covered medium wave and after 15 seconds warm up the usual stations came in loud and clear but selectivity was none too good. Undoubtedly the direct capacitive coupling used does not help and a separate antenna winding would be preferable. The circuit certainly works but there is a lot of room for improvement. So this is perhaps best considered as a start to a journey of experimentation.

As a starting point, I wound a new coil on a 20mm plastic former using the same wire size and amount of turns and converted the original coil connections to plug in so it was an easy swap. The air spaced coil covered a slightly different frequency range but seemed more efficient and by sliding it over the ferrite rod allowed by careful positioning the reception of all stations up to long wave.

Next then was the valve…..
There are lots of twin or double triodes that use the same pin out so there is room for experimentation here.

A word of advice though about heater voltages. The ECC82 and 12BH7A both have 12.6v heaters (in this circuit the two individual 6.3v heaters are connected in series) Some twin triodes only have parallel connected heaters and so will require 6.3v only. Over-running these valves will burn out the heaters fairly quickly but there is plenty of valve data about on the internet if uncertain.

A big thank you to Barry for providing 3 twin triode valves for evaluation.

A few that I tried:
KIV the heater requirements

ECC81	no regeneration
ECC83	unstable regeneration
ECC82	brilliant! Better than the 12BH7A
E88CC	possibly the best of the lot
ECC88	no regeneration
12BH7A	pretty good but valve may be past it's best

Ian M0IDR

Colin's tale

My account of this one valve radio is very much in line with Ian's version so I do not wish to repeat. As Ian said I found the circuit as following the fun we had making the transistor TRF with Barry, I decided it would be fun to have a go using a valve. Whilst I have constructed a few electronic circuits over the years, valves, although old technology were new to me.

One of the initial criteria was for a circuit that would work using a valve that only needed low voltage to work. Also a valve that we had in the club's stock. The ECC82 fitted the bill nicely, being able to work on 12 volts. The reasoning behind this being twofold. 12 volts is easy to source and there is no danger of getting a shock !! The radio, that Ian made, had some changes to the component values and as it worked OK I used the modified circuit.

My effort was made using a perspex base with an aluminium front panel. Ian brought me the ECC82 and base and I had all the other components in the junk boxes. The airspaced variable capacitor I bought at our Rally, in March, along with a few more, as I know they are getting rarer and more expensive.

All the component and valve base wiring I did using a tag strip on the underside if the Perspex sheet. The small PCB on the back of the front panel is a little stabilised power supply, from China, via Ebay, that gives up to 2 Amps at outputs from 3 – 40 volts. Having spent some enjoyable time, constructing the radio, I eventually got to the stage of trying it. I did get a sound like a radio that was not tuned to a station, but no amount of adjustment would bring in any stations.
Following a consultation, with Ian, it appears that although I had wound the ferrite coil correctly, I had used a thicker gauge wire. This obviously made the difference, which allowed the radio to work but not in a frequency range where there were any radio stations !

Having rewound the coil, using 38 SWG copper wire, it brought the tuning range back to cover the old medium wave stations. As Ian said, there is room for improvement, as the sensitivity, selectivity and output volume are all poor – but it does work ! In completing this project I have discovered that the Internet has a wealth of information, circuits etc from very basic to complex radio systems, a lot by Radio Amateurs. I am sure that the next project will be in there somewhere but may have to wait now for the dark winter evenings !

Colin M0GJM

http://www.mds975.co.uk/Content/trfradios05.html
TRF Radio website

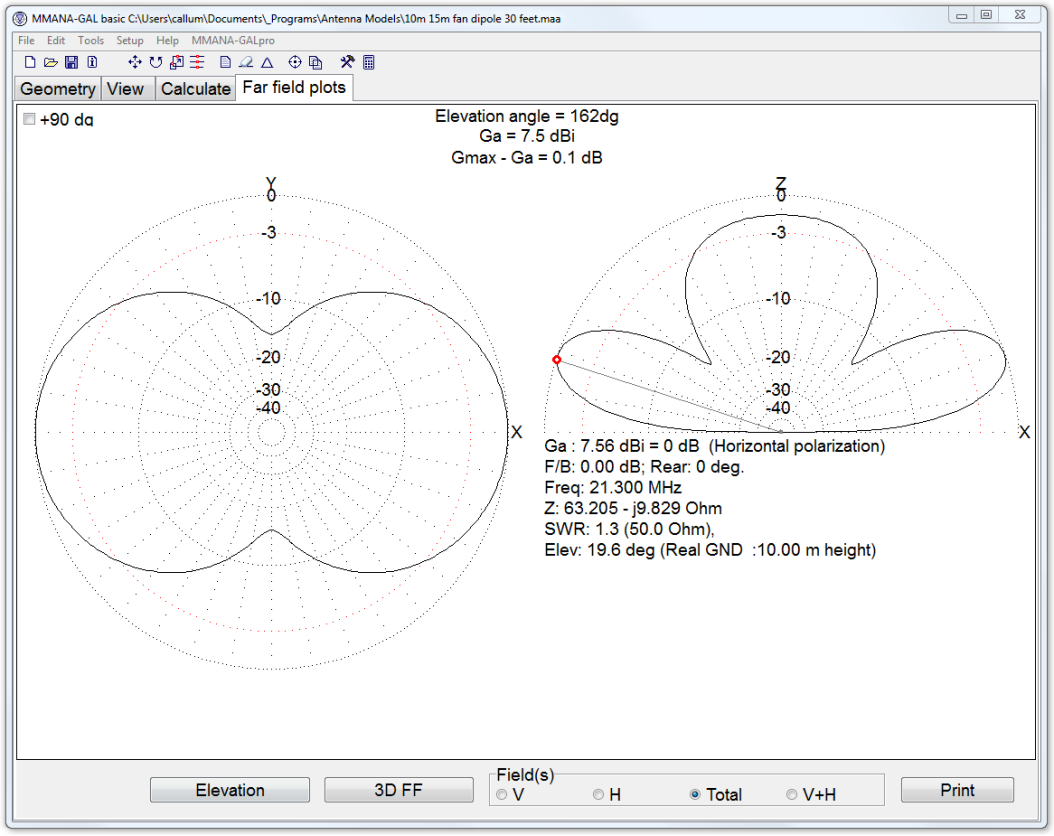
Under the hood, "Fan Dipoles"

Last year, with the assistance of Stu, M0NYP, I built a fan dipole out of D10 military telecoms wire for 80m, 40m and 20m for club field days. There was a fair amount of gap between each element, probably about 5 to 7 degrees because that's what I thought you should do. For those people who came to either the Avoncroft Mills on the Air day, or the SSB Field Day, will recall the antenna. However, we lacked 15m and 10m though which I found a disappointment.

To become "all band", I considered adding more elements to the Field Day antenna but experience has taught me that multi-band wire dipoles have a tendency to get tangled in the field. Adding more elements would probably just mean more tangles = less fun. In a Field Day situation, that's a frustrating day out.

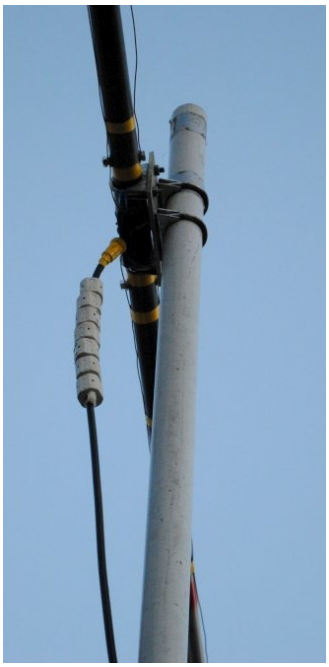
As an alternative, I thought about using some old fishing poles that I had lying around to build a fan dipole for 10m and 15m. I wondered if the "fan" in fan-dipole was a myth? I thought about placing the 10m elements on one side of the fishing pole and the 15m elements on the other side, about a 25mm separation, tapering down to about 20mm separation near the ends. Using MMANA, I created a model and it appeared to work in software. There was a compromise but only on the 10m band; the take off angle looked to be 3 degrees higher compared to a mono-bander (at 10 meters above ground) and the SWR curve was slightly less - but still usable across the whole portion of the Data and SSB portion of the band at less than 2:1 SWR.

I was keen to build this but unfortunately my old fishing poles were severely trashed. I needed a generous helping of Araldite to salvage the first three sections of each pole to give me a 6m total wingspan. Unfortunately, 6m wingspan isn't quite enough to place a full-size 15m band dipole right across the whole span. I aimed for 21.3MHz centre-frequency and this requires each dipole element to be circa 3.5m in length. I planned on letting the ends of the wire dipole for the 15m band droop vertically downward. As it happened, I used some hard-drawn copper wire that I had lying around and they "self-support" in a horizontal fashion off the ends of the fibreglass pole - but it would work either way.



In terms of feeding the antenna, I used coax directly to an off-the-shelf dipole centre with a load of clamp on ferrites as a choke balun. I was initially let down by some wet coax, throwing my SWR numbers out but replacing that and I was in business.

Hard-drawn lacquered copper wire with a diameter of 1.75mm was used to build the elements and in a "tuned" state, I can report the elements ended up as follows



Under the hood, "Fan Dipoles"

10m band, from centre of dipole centre to ends of the wire: 2.49m
15m band as above 3.33m
*

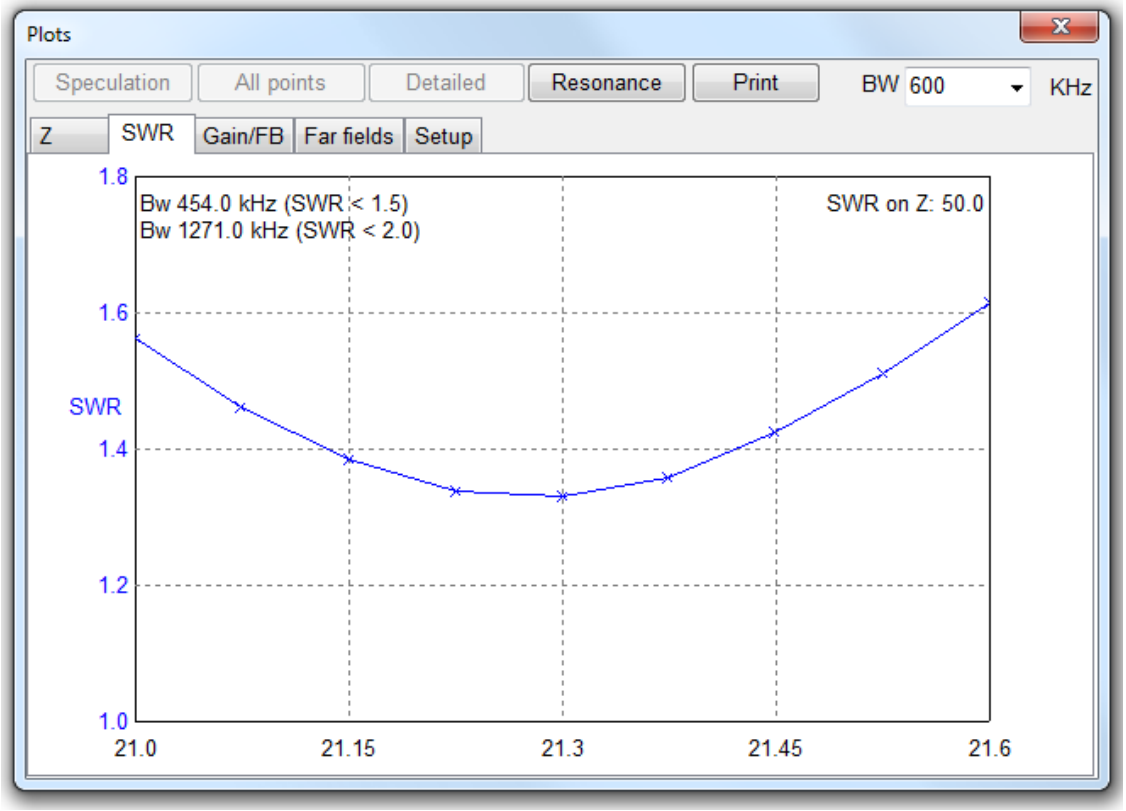
* Note that for the 15m band, if you build this, you will need to factor a 25mm dog-leg near the dipole centre, where you take the elements through the fishing rod to the other side. In effect, this will add maybe 2 to 3cms to the dimensions.

I used this for CQ WPX and in operation at 10.5m in height, the antenna worked brilliantly with 1:1 SWR across both bands. Switching between my tuned 40m loop and my random 60m loop (with ATU), the dipole won by a couple of S points every time. Clearly my take-off angle was better and with 400W, I made 180 contacts with casual operating working some great DX, quite easily, from Japan through to Venezuela.

I conclude this report by saying that you don't need to "fan out" the dipole elements to build a fan dipole. In my case, the fan is non-existent, in fact the reverse is true, as the elements spread out from the centre feedpoint, they actually get closer together.

73.

Callum (M0MCX).



Easter Contest 2013 Results

OPEN SECTION

POS	CALL	QSOs	BEST	MLTS	PTS	Adjudicated
1	M0NYP	117	73	34	2482	1st Place
2	G4VPD	80	62	31	1922	2nd Place
3	G0HDF	87	59	31	1829	3rd Place
4	G4TVR	79	57	28	1596	
5	G7DDN	79	54	29	1566	
6	G0EYO	79	52	27	1404	
7	2E0SDD	53	42	23	966	
8	G0NES	56	38	18	684	
9	M0AEJ	32	32	18	576	
10	M6STJ	30	30	14	420	Leading Foundation
11	G1WAC	8	8	8	64	

2M FM SECTION

POS	CALL	QSOs	BEST	MLTS	PTS	Adjudicated
1	2E0BLP	112	73	36	2628	1st Place
2=	2E0TBR	86	66	32	2112	2nd= Place
2=	G1VLT	92	64	33	2112	2nd= Place
4	2E0LPD	95	62	31	1922	
5	G6ZDQ	88	56	31	1736	
6	M0IDR	41	41	23	943	
7	M6FAB	36	28	17	476	Leading Foundation
8	G1MJO	23	23	12	276	

COMPOSITE TABLE

POS	CALL	QSOs	BEST	MLTS	PTS	Adjudicated
1	2E0BLP	112	73	36	2628	1st Place 2FM
2	M0NYP	117	73	34	2482	1st Place OPEN
3=	2E0TBR	86	66	32	2112	2nd= Place 2FM
3=	G1VLT	92	64	33	2112	2nd= Place 2FM
5=	2E0LPD	95	62	31	1922	
5=	G4VPD	80	62	31	1922	2nd Place OPEN
7	G0HDF	87	59	31	1829	3rd Place OPEN
8	G6ZDQ	88	56	31	1736	
9	G4TVR	79	57	28	1596	
10	G7DDN	79	54	29	1566	
11	G0EYO	79	52	27	1404	
12	2E0SDD	53	42	23	966	
13	M0IDR	41	41	23	943	
14	G0NES	56	38	18	684	
15	M0AEJ	32	32	18	576	
16	M6FAB	36	28	17	476	Leading M6 in 2FM
17	M6STJ	30	30	14	420	Leading M6 in OPEN
18	G1MJO	23	23	12	276	
19	G1WAC	8	8	8	64	

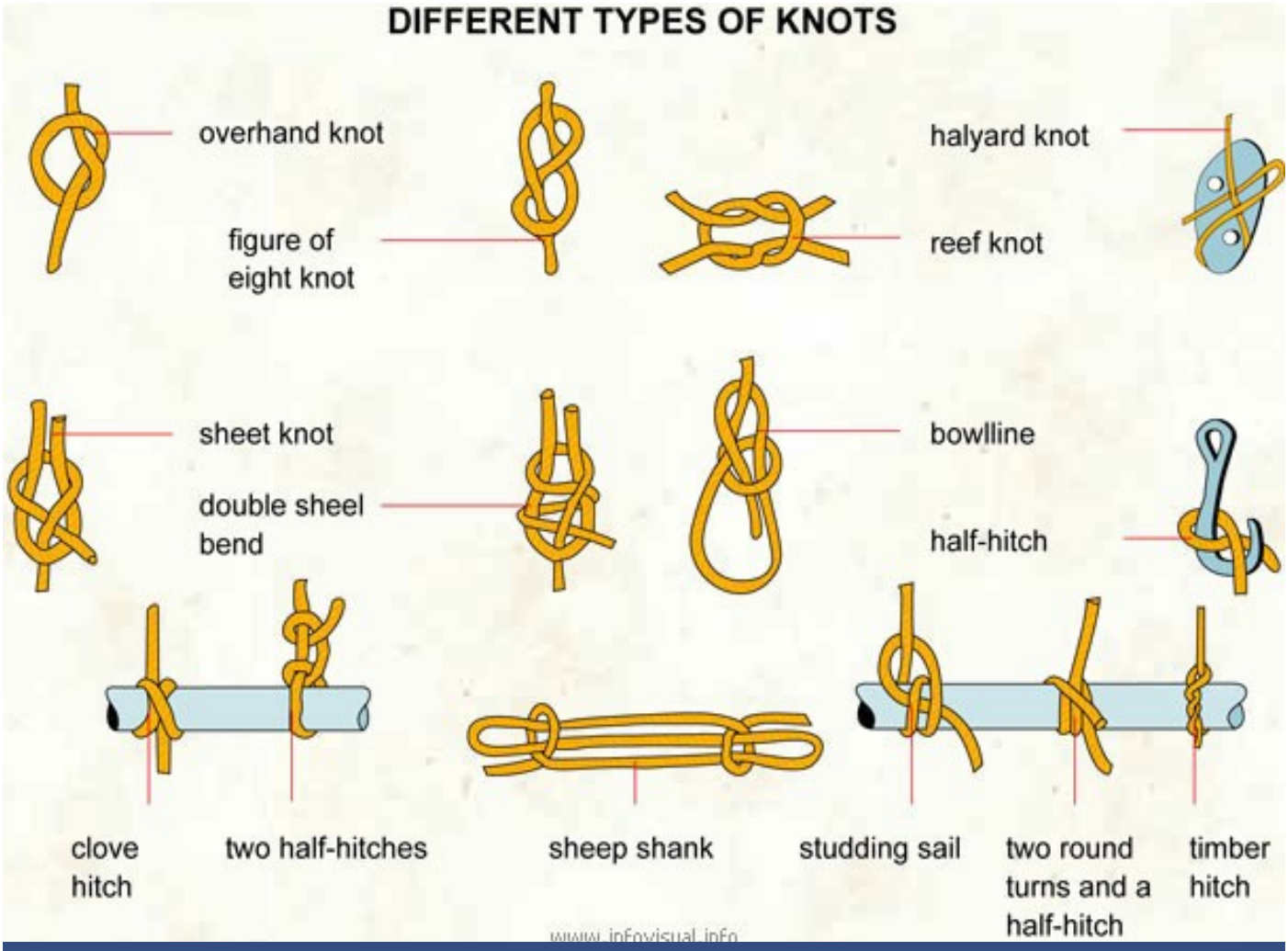
Knots for Numpties

Probably the last time you had any tuition in those, you were in the boy scouts! As a Radio Amateur though, a working knowledge of a few knots is very useful when it comes to putting antennas up, whether it be temporary or a little more permanent.

On Tuesday 16th April at Wythall Radio Club, member Callum M0MCX gave us an hilarious, hands-on demonstration of useful knots in readiness for our summertime outdoor radio activities.

It was a lot of fun… Callum's style is not what you might call "traditional" and of one thing we can be sure, audience participation was not just encouraged but absolutely mandatory!

Here are a few of knots that Callum taught us how to do. He also explained that some knots can damage the fibres in the rope and are to be discouraged.



Mills On Air 11/12th May

Following last year's highly successful and enjoyable Mills on Air Special Event station at Avoncroft Buildings Museum near Bromsgrove, we will be holding another event at the same venue this year on Saturday May 11th using the call sign GB1DGW. We shall be QRV on 80m/40m/20m/15m as well as 2m FM. A special QSL card will also be produced. Jim has offered to do the catering, tea, coffee and bacon butties and Callum M0MCX will provide the radio gear supplemented by a few items from the club shack. Jon M0JMM is coordinating the event and has obtained the NOV for the event. Avoncroft are great hosts for an event like this and we all had a great time last year with some fantastic weather. Fingers crossed for the same this year.

Chris G0EYO

The Club's Activity Ladder

The clubs new activity ladder is now entering its third month and we have the results for February and March. The ladder was the idea of Chris G7DDN who, enthused by the enormous interest shown by members in the Christmas Contest, wanted something that would encourage members to speak to each other on a regular basis. Hence the activity ladder, not a contest or competition, but a way of encouraging us to leave our rigs monitoring 145.225MHz and exchanging pleasantries and other niceties with each other. I have been licensed for some 27 years and have kept a log of most of my QSOs. I noticed a couple of years ago that I had only had some 6500 QSOs over that period. About what Lee G0MTN used to do over a weekend CQ WW contest. I had got into the habit of being a radio ham who rarely went on the radio. Since Christmas I have probably had as many QSO's as I have had over the previous 3 or 4 years. This has also encouraged me to start using HF more often so I invested in a new auto ATU so that I could use Ham Radio Deluxe to control the radio from a PC. That led to me experimenting with the data modes on DM780 (part of HRD) and eventually transferring my log from Logger32 to HRD and connecting to the DX cluster. As a consequence I am on the radio every day on 2m FM (and have purchased a Kenwood TM V71E dual band rig and had a 2m/70cm collinear installed to be a bit louder) and on HF PSK31 most days. I have even experimented with JT65 the very low power slow data exchange. Never had so much fun with radio, why didn't I do it years ago. Well the simple answer to that, is that it took the activity ladder to excite my interest in operating again. So thanks Chris, and thanks to all the members who come on regularly to make contact. The April results will be out very shortly.

Chris G0EYO

wythall radio club

having fun with RF

activity ladder log results - 2013

Pos	Station	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	TOTAL
1	2E0BLP	2,175	1,375								3,550
2	G7DDN	1,270	1,265								2,535
3	G0EYO	1,336	1,168								2,504
4	G1VLT	1,298	264								1,562
5	2E0MEX	1,368	-								1,368
6	M6FAB	590	463								1,053
7	2E0LPD	140	401								541
8	G0HDF	208	292								500
9	G3YXM	393	-								393
10	M1JSS	187	106								293
11	M0GJM	79	45								124

Training News

March saw 7 candidates pass their Intermediate Examination and get their 2E0 callsigns. Well done to Rob now 2E0MEX, Darren 2E0LPD, Howard H 2E0TBR, Howard K 2E0KWH, Tom 2E0GSW, Andy 2E0VAZ and Paul 2E0ULC. Looking through the most recent list of members as published with the Easter Contest logger, I noticed that of the 78 members listed some 33 had come through our training programme. This shows two things; our training programmes are effective and more importantly we are a club that welcomes new members and encourages them to stay with us. I found this most satisfying. I have no doubt that most of those who passed the Intermediate exam will want to go on to gain their Advanced licence. Our course will start in September for the December examination. We are running an Advanced exam in July for two candidates who are doing the Bath based Advanced Distance learning programme and are local to us. One of them is club member Mark 2E0MSE so we send him off to the exam with our best wishes.

We have a Foundation Course starting on Monday May 13th May at 8pm and every Monday until 24th June when the examination is taken. The Bank Holiday weekend of 27th May does not have a class and there is one Saturday session on the morning of 15th June when we will do most of the practical assessments. The cost of the course will be £40 which includes the RSGB course book, the examination fee and the course materials.

If you know of anyone who may wish to take this course please let me know URGENTLY. This will be the only Foundation course Wythall will be running this year.

Chris G0EYO

The next issue of the Wythall Radio Club Newsletter will be published at the beginning of July 2013

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