The Newsletter of the

Royal Naval Amateur Radio Society

Autumn 2016

Carl Mason (GWØVSW) and Mark I Spitfire. See pages 15 and 39

www.rnars.org.uk
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Items published in the Newsletter do not necessarily represent the views of the RNARS.

Contents:

Formal notice of the RNARS 2016 Annual General Meeting

The **Annual General Meeting** of the society will take place on 8th October 2016 starting at 14:00 in HMS Collingwood.

Apologies: To be sent to Joe Kirk; General Secretary, see inside front cover for contact details.

Gate Security: Members attending must supply their **name, nationality and address** to Joe Kirk well in advance. If bringing your own car, you must also supply Joe with the registration number, make, model and colour; Joe's contact details are on the inside front cover.

Voting: You may vote on resolutions at the AGM either in person or by appointing a proxy. The Chairman will act as your representative and follow any voting instructions given. If you do not want the Chairman of the AGM to act as your representative and wish to nominate someone else, write to the Secretary and inform him who that person is at least one week prior to the AGM. Give clear instructions to your representative for each item on whether you wish to vote "For" or "Against". A proxy voting form is supplied on the rear cover.

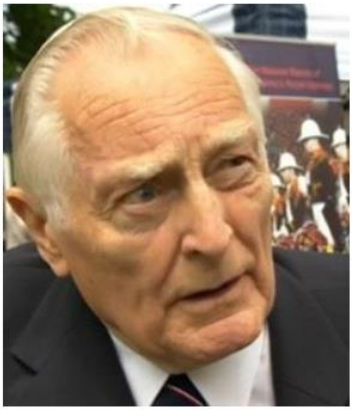
Accommodation: Service accommodation **is not available** unless you are a member of the Senior Rate's & Warrant Officer's mess within HMS Collingwood. Below are the contact details of the local tourist information office that retains a list of B & B's and suitable hotels, they can provide listings on request. The society cannot be held responsible for the quality of the accommodation, but note that the list is approved by the local tourist information services.

Gosport Tourist Information Centre, South Street, Gosport, PO12 1EP
Tel: 023 92522944 - E-mail: tourism@gosport.co.uk

2016 RNARS AGM HMS Collingwood timings

1030 HQ Shack open and commodities on sale
1130 Up Spirits.
1200 Hands to Lunch. Lunch will be provided but all those who wish to partake **must** inform the Secretary when applying for security clearance. Non pass holders will need some form of photo recognition when arriving at the Main Gate. (Passport, Driving, Licence etc.)
1400. AGM - Members planning to attend must inform the Secretary by 23rd September 2016. All present pass holders will need to have passes renewed and application for new passes must be received with completed renewal forms, to the Chairman before September 9th 2016.
Raffle on completion of the AGM.

Chairman's Chat



Welcome to the autumn edition of the Newsletter. An important production as it introduces the start of four editions a year. Our editor deserves much credit for all his great efforts in the continued improvements he has made over his years in office. It is worth remembering that his introduction of the electronic version of the Newsletter not only meant subscriptions for those taking advantage of this method could be drastically reduced, but it also meant that no further increases for those who still prefer a hard copy even though printing costs and postage have rapidly increased over the past five years. I cannot guarantee that those who prefer hard copies will be exempt from increased fees in the future, but for those who take the electronic version I see no reason why the present fees should ever be increased, and they get the colour version too!

In this edition there is enough to keep all members happy, especially the technocrats and for those that have the usual moan about too many war and members' stories. I have often wondered how many of those who find fault have actually submitted an article themselves in an effort to "improve" things?

Which of course brings me back to one of my pet subjects in reminding you all that these newsletters can only continue if enough material is forwarded to the editor for publication? Please be aware that he is not responsible for any inaccurate data supplied by members or the fact you have not received your copy. Constructive criticism is acceptable but unhelpful or petty moans are not. It is also essential that the membership officer is kept informed should you change your address.

Doug

L/C-ratio and calculation of parallel resonant circuits with ring core coils, part III

This is the third and last part of a trilogy which started with "Study on ring core coils" (NEWSLETTER – Summer 2009), followed by "L/C-ratio of parallel resonant circuits with ring core coils" (NEWSLETTER – Winter 2015).

To recall, the second part ended with; "Conclusion: the L/C-ratio for itself cannot be the sole and decisive criteria neither for the design nor for the judgement of the "quality" (quality here not in the sense of "Q" only!) of a resonant circuit!"

That means that up to now, the crucial questions are not answered:

- Which numerical value for the L/C-ratio can be used for the calculation to get an optimal resonant circuit?
- Exists at all a numerical value which can be designated as optimal?
- If yes, where one can find it?

For that reason I searched in some of my books about high frequency technique if there is anything mentioned. Most of the authors wrote nothing useful about this theme or the one wrote more or less the same like the others. Following as examples the evaluation of only three sources (not all I used are listed in the bibliography).

Source [2]
Various limiting value calculations about L/C-ratios are presented, but no givings of a numerical value for an optimal L/C-ratio. Also the given text (quotation): "The better the L/C-ratio the better the Q" is only a verbal form of the wellknown equation $Q = (L/C)^{0,5}/R$

Source [3]
Quotation: "In practice the L/C-ratio cannot be arbitrary enlarged, because a great L has consequently a great R which leads to a worsening of R_{res} respectively Q". Also nothing new in this source and no givings of numerical values for the L/C-ratio. None of these two sources contains givings of numerical values which should be aspired/reached for an optimal L/C-ratio for calculations of resonant circuits.

Source [1]
For a special reason I present this source as the last one, because finally here one can find a clear statement!

In connection with the L/C-ratio is treated at first the theme "Product LxC" and its variation possibilities for a constant frequency of resonance and then follows the sentence (quotation): "These terms depend to a considerable extent upon the particular application considered, and have no exact numerical meaning".

There is no doubt that one can interpret this sentence as follows: A definite numerical value for a „optimal" L/C-ratio does not exist!

And so; which procedure to the theme "resonant circuit" can be recommended to the radio amateur who ist still interested in DIY-work?

From my point of view (and my DIY-experience!) these are the following four steps only:

- calculate
- build
- measure
- optimize

To these steps following some shortened explications/notes.

Step 1: Calculate
The first priority is to differenciate whether the calculation has to be made for a resonant circuit for a fixed frequency or for a tunable frequency range.

Resonant circuit for a fixed frequency
With the Thomson-equation the calculation of such a resonant circuit is very simple: at first one has to calculate the product LxC and from this value various L- respective C-variants. Of course neither with L_{min} = 1 and C_{max} nor with L_{max} and C_{min} = 1 one can build a resonant circuit! Because of that various iteration-calculations have to be made. Finally one has to lay down L- an C-values which seem to be favourable, build the resonant circuit with them and investigate it by means of measurements.

Resonant circuit for a tuneable frequency range
This calculation is essential more lavish like that one for a resonant circuit for a fixed frequency!

Important note:
For electro-technical and high-frequency-technical calculations of that kind of which I know from the beginning that I will repeat them from time to time, I make calculation form sheets (which one cannot find in this kind of layout in the literature!).

The procedure to make them is the following:

- at first the method of calculation will be fixed
- then correspondingly structured for the draft of the calculation form sheet
- with the draft will be made a check-calculation
- and finally, if all is correct, the fair copy of the calculation form sheet will be made.

The figures 1, 2 and 3 show samples of such calculation form sheets for resonant circuits as well as for ring core coils.

Goal of all calculation form sheets I already made (and in future will make!) was: they must be self-explaining, that means without additionally explanatory notes or previous studies. So everybody can use them directly: put in the numbers, make the calculations and one has the result and, important, knowing that all is correct!

Important note to the calculation form sheet, PART 3, 4. Point (Figure 3):

The calculation steps are referred to my Grid-Dip-Meter (GDM) which has, additional to the measuring instrument (mA) to indicate the dip, a round scale (180°) divided into 100 scale graduation marks (degrees) where one can read the corresponding scale value.

For each of the coils (they are numbered) of my home-brewed high-accurate Grid-Dip-Meter exists a calibration curve “MHz = f(degrees)” to determine the measured resonance frequency of the resonant circuit.

RESONANT CIRCUIT CALCULATION

CAPACITY RATIO C_{MAX}/C_{MIN} OF THE VARIABLE DISK CAPACITOR

PART 1

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1.	Frequency range						
f_{max}		MHz	f_{min}		MHz		
2.	Values of the variable disk capacitor *						
C_B		pF	C_E		pF		
C_E / C_B =	[pF] /	[pF]	C_E / C_B		—		
3.	Estimated wiring capacity C_W			C_W		pF	
4.	Calculation of the parallel capacitor $C_{p,calc}$						
$(f_{max}/f_{min})^2$ = (	[MHz]/	[MHz])^2 = X		X		—	

With $(f_{max}/f_{min})^2 = X$ is valid: $C_{p,calc} = \dfrac{C_E + C_W - X(C_B + C_W)}{X - 1}$

$C_E + C_W$ =	[pF] +	[pF]	$C_E + C_W$	
$C_B + C_W$ =	[pF] +	[pF]	$C_B + C_W$	
$C_{p,calc}$ =	[pF] −	[−] · [pF]	$C_{p,calc}$	
	[−] − 1			

pF

Chosen: C_p = [pF] and matching to $C_{p,calc}$ with C_{pc}

5.	Beginning and end capacity of the VDC		
$C_{max} = C_E + C_W + C_{p,calc}$ = (	[pF] +	[pF])	C_{max}
$C_{min} = C_B + C_W + C_{p,calc}$ = (	[pF] +	[pF])	C_{min}

pF

6.	Capacity ratio C_{max} / C_{min}				
It must be: $C_{max}/C_{min} = X = (f_{max}/f_{min})^2$					
$C_{max}/C_{min} = X$ =	[pF]/	[pF]	X		—

Notes

* VDC not fitted!

English version: 18-6-15

JHT 1/2000

DIPL.-ING. JÜRGEN H. TIMCKE

Figure1
Calculation form sheet for a tuneable resonant circuit.
Part 1: Calculation of C_{max}/C_{min}

RESONANT CIRCUIT CALCULATION

CALCULATION OF THE INDUCTIVITY AND CALCULATED RESONANT CIRCUIT VALUES

PART 2

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Calculation of the inductivity L
for the tunable range from f_{min} to f_{max}

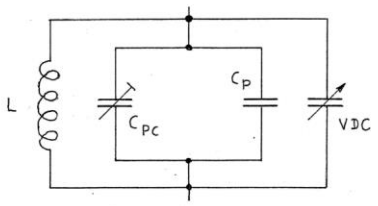
It is valid: $f = \frac{1}{2\pi\sqrt{L}\cdot\sqrt{C}} \Rightarrow L = \frac{1}{4\pi^2 f^2 C}$

And from this: $L\,[\mu H] = \frac{25330}{f_{min}^2\,[MHz]^2 \cdot C_{max}\,[pF]} = \frac{25330}{f_{max}^2\,[MHz]^2 \cdot C_{min}\,[pF]}$

1. Calculation of L with the values of f and C

f_{min} =	MHz	C_{min} =	pF	
f_{max} =		C_{max} =		
With f_{min} and C_{max}	$L = \frac{25330}{[MHz]^2 \cdot \quad [pF]}$	L		µH
With f_{max} and C_{min}	$L = \frac{25330}{[MHz]^2 \cdot \quad [pF]}$	L		µH

2. Calculated resonant circuit values



Chosen

f_{min}		MHz
f_{max}		MHz
C_{min}		pF
C_{max}		pF
$C_{p,calc}$		pF
C_P		pF
C_{PC}		pF
L		µH

Notes

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Figure 2
Calculation form sheet for a tuneable resonant circuit.
Part 2: Calculation of the required inductivity L

RESONANT CIRCUIT CALCULATION

CALCULATION OF THE RING CORE COIL FOR THE TUNABLE RESONANT CIRCUIT

PART 3

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1. Initial values

f_{min} =	MHz	C_{min} =	pF	$(f_{max}/f_{min})^2$ =		—
f_{max} =		C_{max} =		C_{max}/C_{min} =		
Required inductivity (from PART 2)				L		µH

2. Calculation of the ring core coil

AMIDON ring core	Size: T	A_L – value		✳
	Dimensions: $D_o / D_i / W$ =			mm
Required number of windings: $Z = 100\sqrt{L\,[\mu H]/A_L\,[\mu H]}$ $Z = 100\sqrt{\quad [\mu H] / \quad [\mu H]}$			Z	Wdg
Z_{max} at $\varphi = 300\,[°]$: $Z_{max} = \left(\frac{D_i}{d} - 1\right) \cdot 2{,}618$	d			mm
	Z_{max}			Wdg
Enamelled copper wire, chosen diameter			d	mm
Carried out number of windings ✳✳ at $\varphi \approx$ [°]			Z	Wdg
Measured inductivity	$\varphi \approx$ [°]		L	µH
	$\varphi >$ [°]	$\varphi <$ [°]	L	µH

3. Reduction of the number of windings (if required)

Reduced number of windings	Z			Wdg
Measured inductivity	L			µH

4. ① Measurement of $f_{min,ex}$ and $f_{max,ex}$ with the GDM

Ring core coil with L = [µH] at the measuring-adapter	Req	C_{min} =	pF	At the measuring-adapter	Ex	C_{min} =	pF
		C_{max} =				C_{max} =	
	$C_{max,ex}/C_{min,ex}$ = X'				X'		—
	$f_{min,ex}$	GDM-coil Nr.		$f_{max,ex}$	GDM-coil Nr.		
		Degrees			Degrees		
		$f_{min,ex}$ MHz			$f_{max,ex}$ MHz		
	$(f_{max,ex}/f_{min,ex})^2$ = X''				X''		—

Notes

① These measurements are not absolute necessary, but one can gain useful data!

✳ Dimensional unit: $\left[\frac{\mu H}{(100\ Wdg)^2}\right]$

✳✳ Recommendation: Some more as calculated!

English version: 20-6-15

JHT 1/2000

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Figure 3
Calculation form sheet for a tuneable resonant circuit.
Part 3: Calculation of the ring core coil

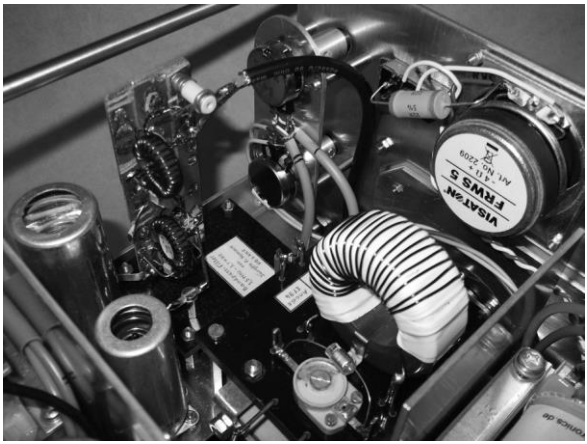
For that reason, this part of the calculation form sheet perhaps must be altered according to the Grid-Dip-Meter of the user.

Additional note to the 3 calculation form sheets:

Of course all of them can be ordered (e-mail) as PDF (DIN A4) from the author!

Step 2: Build
From design point of view exist various kinds to build a parallel resonant circuit with ring core coils. The most important for each high-frequency-technical module is, taking into account the design conditions, to use thick wires (skin effect!) and make the whole wiring as short as possible.

Figure 4 shows the ring core coil of the resonant circuit of the audion stage of one of my home-brewed receivers (in German language this type of receiver is designated as "Kleinsuper"). Under the white insulating tape are the windings of the resonant circuit and above it the windings of the reaction coil. As mentioned in the report about my studies of ring core coils (NEWSLETTER Summer 2009), it is not necessary to spread/distribute the windings across the whole circumference of the ring core, this is of course also valid for the reaction coil.



Step 3: Measure
Apart from the usual measurements at resonant circuits to check the existing frequency range is, if ever possible, to determine with frequency oscillator and oscilloscope $\Delta f_{0,7}$ and $\Delta f_{0,5}$ to calculate with the first one the quality Q as a judgement criteria. Recommendable in this connection is also to draw the resonance curves to get an

impression of their tendencies with regard to the required/desired steepness, that means selectivity.

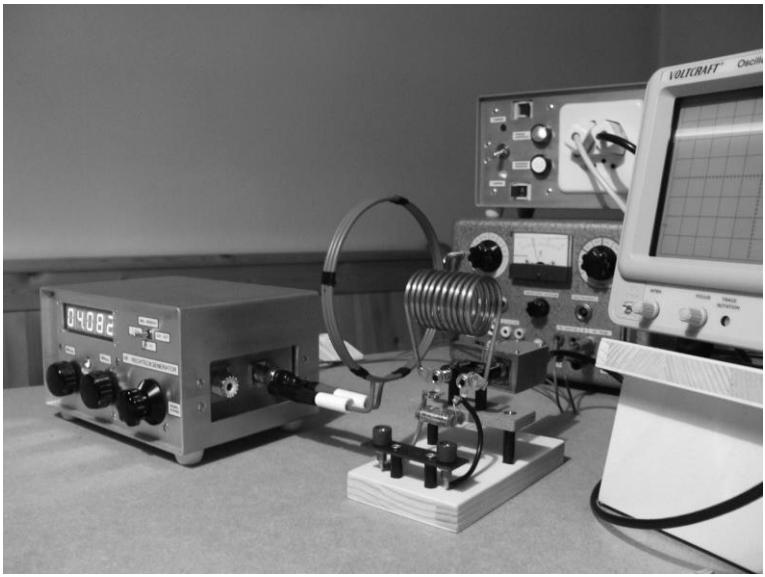


Figure 5
Part of my measuring place. Set up for measurements at a resonant circuit for experiments to determine its various characteristic values.

Step 4: Optimize
If the measurement results are not satisfactory one can take optimization measures by means of logical interpretations of the tendencies of the curves, presented in the diagrams of figure 1 and figure 6 of the article "L/C-ratio of parallel resonant" (mentioned at the beginning of this article). Based on this the resonant circuit can be altered and again measuring-technical checked and, if necessary, still more optimized.

Final word
The calculation form sheets, figure 1 and figure 2, show that for the calculation of a resonant circuit not any numerical value of a L/C-ratio must be introduced into the calculation procedure, because such a value does not exist! This confirms without any restriction the statement given in source [1]: …and have no exact numerical meaning.

Appendix
Abbreviations and indices in the calculation form sheets.

B	Beginning	p	parallel
calc	calculated	PC	Padding capacitor
E	End	Req	Required
Ex, ex	Existing	W	Wiring
I	Inside	Wdg	Winding
O	Outside	φ	Angle of contact

Photography and calculation sheets: author

Bibliography

[1] ARRL: The Radio Amateur´s Handbook
[2] Karl H. Hille (DL1VU)
Vom Elektron zum Schwingkreis
[3] Hans-Joachim Fischer
Amateurfunk
[4] Jürgen H. Timcke (HB9ANE)
A Study on Ring Core Coils
(Collection of measurements data)

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Newsletter Feedback
I'm always pleased to receive feedback on the Newsletter and since the Summer edition went out, a number of members have been in touch asking why the Newsletter doesn't have a name? It's their view it is not just a newsletter, more a club magazine.

When I took over as editor of the newsletter for my sailing club, I had it aptly renamed; "*Loose Sheets*".

So over to you; what do you think and have you got an initive name for the Newsletter with perhaps a nautical and or radio theme?

Contact me as per the instructions in the editorial and I'll pass on all suggestions to the committee. *Colin*

Carl "Biggles" Mason has his heads in the clouds – again

CPO (SCC) Carl Mason (GWØVSW) sent in a couple of pictures from a recent Sea Cadet Aviation course he attended as senior flying instructor when ten sea cadets attained their 'Silver Wings' at Lee on Solent (former HMS Daedalus) courtesy of Portsmouth Naval Gliding Club.

Carl reported that the cadets had an early start (06:45) to fit in ground training on subjects such as navigation, radio communications and meteorology followed by flights over the Isle of White, Portsmouth Harbour and surrounding area. Only one day was lost to flying activity due to weather conditions.

Six of the cadets will be returning in July to hopefully progress to their 'Gold Wings'.

Carl's impressive aerial picture of Portsmouth Harbour

A very warm welcome to our new members and up-dates

New Members		
Roland Taylor	MØBDB	5010
Anthony McKeever	SWL	5011
Josh Patterson	G7SUV	5012
Anthony (Tony) Nicholls	GØLUB	5013
TS Centaur	SWL	5014
Alan Campbell	M6LFM	5015
Andrew Cowley	2EØREE	5016
Joseph Skittlethorpe	SWL	5017
Roger Isaac	GØHAE	5018
Re-joiners		
Reg Walker	M3LDS	4931
Darren Shiels	GØBWX	3459
John Grint	2EØPPO	4963
Jim Hutchens	GMØSYY	4182
Steve Hindle	MØETY	4684
Dean Ledger	2E1ILH	4698
Tristan Thomas	MW3VJN	4960
Richard Benton	G4WKW	2503
Peter Moss	M3OSP	4795
Changes		
Benjamin Angus - Was M6GOC	2EØPTE	4995
Resigned		
No reports		
Silent Keys		
Gerald De Voil	G8SKK	1313
George Marshall	G3HWS	2409
Fred Rafferty	GØHMS	2549
Jack Brazzill	G3WP	0236
Sten Wahlskog	SM6DRE	0507
Ted Phelps	W8TP	1779
Tom Bates	G4MZS	2923
John Patrick	G3TWG	0268
Archie Dalziel	GM4FGD	1581

HF Attic Aerial – or - Squeezing a gallon into a pint pot

This article has come about following requests from a number of members who are surprised I am using an indoor wire aerial when they hear me on various nets and wanted to know more about it.

I make no apology for using the term aerial rather than antenna. Antennas is wot (sic) insects have and I refuse to use Americanisms; I go to the cinema to see a film, not a movie!

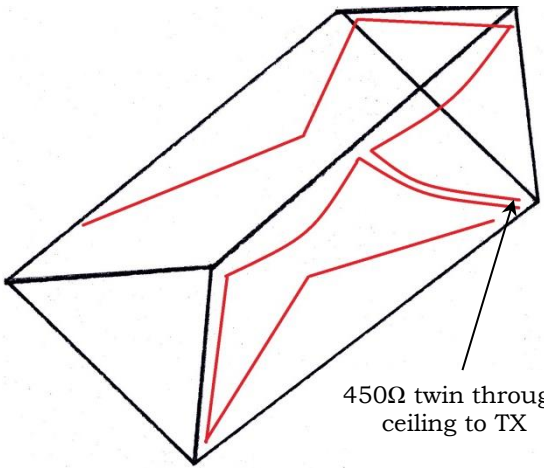
First of all, there's a plethora of information regarding aerials and theory in magazines, books and of course the 'net. However, it is my experience that aerials and RF can't read theory; so if you chance upon a source that says a particular idea you have doesn't work, it could be advantageous to ignore it and build the aerial and see what transpires.

Indoor HF wire aerials are always going to be a compromise and never as efficient as something strung up outside. My attic isn't all that big and I live in a terraced row of houses. So I have to expect some attenuation. Over the last couple of years I have tried various indoor aerials including a loop from an idea by fellow RNARS member Carl Mason (GWØVSW). Fed with coax, it required a 9:1 balun at the feed point of the aerial. It tuned from 28 – 7 MHz, but results were a little disappointing, however I continued to use it while I gave the matter further thought.

One aerial I had previously used in two locations where garden space was not a problem, was a doublet cut for 3.5 MHz with very good results. So, would a doublet, zig-zagged around inside my attic work?

For those not in the know, a doublet is basically a dipole cut for the lowest frequency to be used and fed with twin or parallel line; not co-ax. I used commercial 450Ω I picked up at a jumble sale for a surprisingly good price (cheap). But homemade or 300Ω twin will work. However; and it's a big however, twin feed has to be kept clear of metallic items, such as water pipes and water header tanks found in attics. I overcame this by using lengths of cordage secured into the roof trusses with plastic clips and tied off to the twin feed to guy it clear of metallic objects by a distance of a couple of feet.

My shack is in the spare room, so a small hole was drilled into the plasterboard ceiling within the fitted wardrobe which has full length doors to lead the feeder into the "shack".



For the actual aerial I had a good length of bell wire; perhaps a wee bit thin, but as this was an experiment, I didn't want to go to any great expense; I can already hear cries from some quarters; "typical tight Scotsman!" Anyway, I arranged the wire around the attic as per the rough diagram above.

Now, there's a couple of ways to match twin feed to a 50Ω transmitter. Firstly, use a 4:1 balun if you are using an unbalanced matching unit, or, use a balanced matching unit similar to the one Ken Randall (G3RFH) made and described in the Winter 2013 edition of the Newsletter.

I do have a balanced matching unit I built many moons ago; perhaps a future article; the capacitor was salvaged from an old valve receiver but I don't think it would handle more than ten Watts or so; anything more than that and sparks will fly. So until I find a nice big juicy variable capacitor, I have to go with a fifty ohm unbalanced matching unit and a 4:1 balun. Incidentally I picked up the matching unit for one pound at a boot sale in damaged condition and luckily the seller didn't know what it was. Twenty minutes on the bench with some cleaner and a few tools and I had a working Daiwa 2.5KW cross needle matching unit.

Trawling the 'net for the design for a 4:1 balun, I came across several suggestions. The one I decided to build recommended winding the coils around a 1½ inch plastic pipe and using the heaviest gauge of solid copper wire I could find. Well I had a length of two-inch diameter pipe and some heavy gauge stranded speaker wire, so that's what I opted to use, after all it was at this stage just an experiment.

After rigging the aerial up and down and zig-zagging around the attic, running the parallel feeder into the shack and connecting up the balun, I was surprised to find it tuned up with no difficulty on 7, 14, and 28 MHz. The SWR on 21 MHz is a little high. In any case forty and twenty are my favourite bands, but sadly can't use the aerial to transmit on 3.5MHz; it's just not long enough.

Beyond my wildest expectations, the performance on forty has been very good when the band has been open, just ask members of the mid-morning Bubbly Rats net where reports of 59 are exchanged both ways. And I've even worked the USA on forty with it. As for twenty, I've worked the East coast of the USA, Brazil, St Helena and all round Europe.

Anyway, the experiment has become my aerial; I haven't changed the thin bell wire or tweaked the simple crude balun following advice from Mike (GØVIX) in Fareham; "Colin, you are five nine plus with me, it's working well, don't change a thing!" I am also reminded of the performance of the very simple wire aerial Doug our Chair uses at home strung between his and a neighbour's balcony on HF.

As I've said, aerials and RF can't read theory, so it might surprise you what can be built and actually works; so give it a go.

Colin (GM6HGW – 1870)

HMS Highway

I have to admit that HMS. Highway was an unusual looking vessel and on various occasions attracted impertinent comments via Bridge to Bridge exchanges, particularly from joining escort vessels; "What a funny shape you are!" This would of course be a mild comment. I recall reading in recent times, an Autobiography written by an ex Gunnery Officer, GG Connell entitled "Fighting Destroyer" in which he describes his time aboard HMS Petard. There is a paragraph wherein he mentions Highway and Petard escorting us to Colombo and thence to Bombay. However, he describes our ship as a small aircraft carrier. Perhaps an understandable error, but Highway was a Landing Ship Dock (LSD). Perhaps their comms' department had not caught up with their "errors and omissions". Incidentally, the updated version of Highway, was HMS Fearless.

Highway, did not conform in many ways when comparing with the layout of an RN ship, yet by the current design of modern RN vessels, it probably would. This also applied to the engine room, and victualing arrangements amongst others, which I will not delve into here, only to mention that, because of these various items some were of a specialised procedure and the possible reason that we had several crew members who were T124X. You don't need to be an ancient mariner of a certain vintage to be aware of this particular category. I do not doubt that they were capable in their trade, but I have to mention they were a pretty tough bunch, in a word, "trouble". I would

venture to say that, if we had been of Nelsonian vintage, their various fracas situations would have gone beyond fifty lashes.

Such was their Ill-disciplined behaviour, a signal was dispatched to shore authority, and in due course, Highway was graced with a visit by a Hunt Class Destroyer; HMS Lamerton. The miscreants were taken aboard and transported to Malta and presumably cells.

Highway was something of a work horse and ubiquitous in our travels. For quite a number of our trips we were allocated an escort vessel and whilst operating in the Med' it was invariably a Hunt Class destroyer.

Recalling another voyage, and anticipating the arrival of yet another nurse maid on a beautiful flat calm day with blue sea, and skies, I was proceeding along the upper deck as one does in the line of duty. I had reached a point beneath the bridge and flag deck and looking out across the sea saw a destroyer which turned towards us. I could hear its klaxon blaring and above me a scuffling together with urgent invectives issuing from the flag deck.

However, 'twas a storm in a teacup as I learned from a bunting tosser. Incorrect pennants had been displayed. As I recall they were not taken to task for their misdemeanour. Yet the mystery was the approaching aggressive destroyer which proved to be our escort; namely HMS Lamerton which we had met before. Either they had had a crew change or the officer of the watch aboard Lamerton wanted to give us a shake-up, I suspect the latter.

NB: HMS Petard whilst serving in the Med' attacked and captured U559. Two crewmembers swam across to the sub and obtained key signals to do with the Enigma. These were passed to the occupant of the ship's whaler. Sadly, both very brave men went down with the sinking submarine. However; the info they gained enabled Bletchley Park to crack the new Enigma system which was introduced and could have brought disaster to the UK. Both crew members received posthumous George Cross. They were not given VCs. because the enemy could be alerted to our discovery. None of this information was promulgated until several decades later.

Bill GØIEC 3526

HMS Collingwood Divisions

Peter (G3RDR) has recently returned from his travels to Australia where he had time to visit HMAS Castlemaine and have his picture taken. Peter also sent a few lines from an event he recalled from 1968 at HMS Collingwood.

Ceremonial Divisions were to take place and a high ranking officer was due to inspect the parade. The parade ground echoed to the sound of boots and shouts from GI's mustering the whole of the ships company; Tiffs to the left, new entry classes to the right, PJC classes and R MECs in between and CPOs to the rear.

Music from the volunteer ships band floated gently over the parade ground. All seemed ready, row on row of Royal Navy blue suits; then a silence over the parade ground, followed suddenly by the sound of GIs boots running, what had they seen? The Captain and his high ranking guest were due in seconds and the staff had seen a rating in a light blue suit. Quickly the GIs gather round him and marched him away just as the senior officers arrived.

Urgent - UK Maritime Mobile Net

Since Bill Hall's (G4FRN) passing, a volunteer or group of volunteers is urgently required to run the UK Maritime Mobile SSB Net on 14.303 MHz at 08:00 and 18:00 daily.

The absence of the net is sorely missed by many in the amateur radio sailing and blue water cruising community.

Tributes have been paid to Bill on several sailing internet forums; http://tinyurl.com/jefnm2k - http://tinyurl.com/zr3qwpg being two examples.

If you think you can help, please contact Joe Kirk as soon as possible.

A wide band magnetic loop antenna for receive

I expect that most readers will immediately ask two questions: 'What is a *magnetic loop*?' and 'Why would a licensed amateur, with full sized antennas for transmit and receive, want one of these?' I shall endeavour to answer these questions with reference to my own situation.

Like many others, I use a 'long wire' and ground system for top band. The system is brought to resonance with an MFJ auto tuner. This antenna has always picked up a fair bit of local electrical noise, often at S9 – probably because it had a substantial vertical section near the house.

However, since the beginning of 2014, I have noticed a marked increase in the level of electrical noise on 160 metres. I am not sure but I think that a large proportion of the noise emanates from the overhead telephone lines carrying ADSL broadband signals. I think that my broadband speed increased around this time and I suspect that the ADSL2+ system may have been introduced to facilitate this speed increase.

The noise level was such that it was difficult to participate in the HDARC top band nets. Something had to be done! I had previously read that a magnetic loop antenna is less susceptible to *local* electrical noise for two reasons. Firstly, as its name implies, it detects the magnetic rather than electric component of radio waves. Apparently, this can help to reduce *local* noise pickup. Secondly, the magnetic loop antenna is directional, with quite a sharp 'null'. Therefore, it is possible to align the antenna to null out the local interference.

Fortuitously, I mentioned my thoughts to Howard, G3YZY, at the club just before Christmas. He is well informed on the subject and he sent me some very useful web references. I studied these and many others.

From my reading, it became clear that there are two types of small antennae: firstly, the common 'active whip' (or 'active dipole') and secondly, the 'magnetic loop'. Both require an amplifier to produce a useful signal. In both cases the amplifier must be low noise, ideally, it will have a wide bandwidth so that tuning is not required and coupled with that, it needs to have a high dynamic range to avoid overloading and consequent intermodulation from strong but unwanted signals. The amplifiers also need to provide a 50 ohm output so that they can connect to a receiver antenna socket.

However, beyond these similarities the requirements for the small whip and loop antenna amplifiers are very different and must not be confused. A small active whip or small active dipole responds to the electric component of radio waves. It is a high impedance device and therefore, needs an amplifier with high input impedance. This is relatively easy to achieve and there are several low noise, high dynamic range amplifier ICs available to ease design. On the other hand, a magnetic loop antenna operates at very low impedance, perhaps only 3 ohms and so it requires a low input impedance amplifier. Apparently, this is more of a challenge to the designer.

One of the references provided to me by Howard was to the web site of LZ1AQ, Chavdar Levkov. Chavdar is an electronics professional and an associate professor in Sofia. The research he has conducted into active magnetic loops is most impressive and well worth a read! Chavdar has produced a versatile amplifier kit to help other amateurs. This is what I purchased. After conversion from Euros, it cost me £72.87, including delivery.

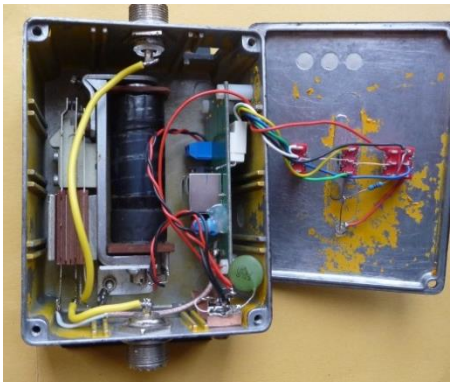
The unit on the left of the picture is the amplifier board – to be mounted **at** the antenna. This amplifier board is very versatile and actually includes two separate amplifiers: one, high impedance, for small dipoles and one, low impedance, for magnetic loops.

The circuit board in the centre of the picture is the control board. This is positioned in the shack. The two units are connected together with up to 100 metres of 'cat5e' Ethernet cable. The control board has to be fed with 12 volts and it has a BNC output for connection to a radio.

The user has to: A/ box up the control unit with 3 switches (not provided) to select different operational modes and B/ build an antenna. Instructions, downloaded from the web site, are very comprehensive.

The ability to switch modes from the comfort of the shack makes it much easier to evaluate different antenna configurations. For some situations, the small active dipole may prove better than various loop arrangements.

In order to take full advantage of this versatility, I built my amplifier control board into a box together with a change-over relay. Without power applied, the signal to and from my transceiver is routed to my long wire antenna. However, when power is applied to the control box, the relay is energised, thus connecting the (powered up) loop/dipole amplifier to the radio. This 'powering up' is controlled by my homebrew 'sequencer' and can be activated either by the PTT switches or manually.



So far, I have only built a single loop antenna for use with the amplifier (first picture). It looks like two loops but they are connected in parallel to imitate a wide structure and thereby reduce inductance. The frequency range is very broad, stated by Chevdar to be 20kHz to 55Mhz.

My testing has been limited at this time but the antenna has a sharp null. I was able to use it to take a very accurate bearing on the BBC Radio Solent MF transmitter at Fareham from my QTH at Botley. Signals are much lower on the loop than on my long wire but then, so is the noise! I think that the ratio of signal to noise is improved. I have used the antenna for Top Band contacts with Scotland and The Netherlands. I also had a 40m contact with an Italian station who was very strong on the loop.

G4SAQ TX/RX sequencer

The next stage will be to add a second loop below the first. This will increase signal strength. I also want to experiment with short horizontal and vertical dipoles. Perhaps another article will follow.

Useful links:

http://tinyurl.com/jzuwha5
http://tinyurl.com/zmrpxv8
https://youtu.be/ItLkn8r4s3E

Russell Tribe G4SAQ

Rally Reports

Starting off with the **Stockwood Park** rally near Luton

The Sun Gods were in a good mood, and it was a very warm day with a very large radio boot sale with over two hundred sellers; everything connected to radio was up for grabs.

I do this rally with the Bedford & District Amateur Radio Club (RN 4961) so we all get chance to walk round. Mark GØTOC joined us for a while. And a tot was available to those that could imbibe, but so many of our members are on medication, that they can't.

Fourteen members signed in and everybody commented on how well the event ran. The weather being so good, most attendees were gone by

midday, so we were cleared away by 13:00. This Rally is one of the biggest to be run in this country, and should not be missed.

73 *Glenn* GØGBI 3481

McMichael Rally 2016 or "Custer's (G4JBE`s) last stand".

This was to be my last McMichael rally, having recently moved from Buckinghamshire to Lincolnshire. The day started at 04:15, ready and on the road for 05:00. At least the roads were pretty quiet at that time of the day, 127 miles and almost three hours later I arrive at the site (too many roads with speed restrictions).

The day was already beginning to get too warm (20 C), stand set up ready in our usual position, time for a well-earned cuppa. Gates open to the public at 0900, and a steady stream of visitors through the hall. Numbers seem to peak at around lunchtime both inside and out on the car boot field where this year there appeared to be many more than usual.

Seventeen members and one ex-USA Navy bod signed in at the stand, three logbooks were sold and a number of key fobs given out as advertising. No enquiries this time for membership although forms were ready! John, G4KGT joined me on the stand where the "old lamp" was duly swung. With him there it gave me the only chance that day to have a look around outside at some of the goodies, and junk being offered. Numbers dwindled rapidly after 1300, I stuck it out until 1345, then started to pack ready for the long trek back home.

Said my final farewells to Andy, M5ALG (rally organiser) and to Min Standen (Chairman), both thanked me for the many years attendance I had made. Thanks really go to those that organise the rally, they put in a tremendous lot of work to make the day run smoothly. Leaving finally at around 1400, arriving home hot and tired at a little after 1700. A total of 254 miles and some six hours of driving, temp. peaking 29C. Forgive me for not volunteering for next years. I understand Phil, G1LKJ is to take over and represent the RNARS next year, I wish him good luck.

David Lacey G4JBE

Caption competition

Appreciating Carl had been a submariner prior to joining the Sea Cadets as a CPO and flying instructor, Dr Ken Lown sent in a very apt winning entry from the summer caption competition with; *"Belay my last! I should have said, flaps down, not hydrophones down."*

No prizes, just a mention in the next Newsletter, so let's see what if you can come up with a caption for this poor hapless yacht owner?

Captions to the editor in the normal way, contact details at the end of the editorial.

The Communicator 1947 - 1977

Following a lot of hard work, research and assistance from others, Joe Kirk our Web Site Manager has now added every copy of the Communicator from 1947 through to 1977 to the RNARS web site. The Communicator was the branch newsletter of the RN Communications Department and makes for very interesting reading with several mentions of the RNARS.

The Communicator is in PDF format and available to download from: http://tinyurl.com/p3othg2

Me in my shack

No; it's not Ken Bruce from BBC Radio 2; it's Howard Grundey (4692) in his mobile shack as EA7/GM7ESM/P.

Howard migrates to the South of Spain each winter in his impressive campervan and operates amateur radio in the sun while the UK shivers in the rain, snow and wind.

In his e-mail, Howard let slip that he was an Auxiliary Coast Guard covering shifts in the MRCC at Douglas, Peel and Ramsey and his boss was Ken Randall (G3RFH). Howard recalls the day Ken was left high and dry as mentioned in the last newsletter. Perhaps there's more to Ken's story?

Do you have a picture of yourself in your shack? It lets others put a face to a voice and helps fill a space.

Don't be shy, send in your picture as per the instructions in the editorial.

Report & Pictures from GB6COD - HMS Collingwood Open Day
The RNARS once again took part in this annual event and enjoyed good weather and well supported by the many local members who answered Joe's, G3ZDF appeal for assistance on the day.

The following members attended to support the society and open day:
Peter G4TNN, Neil G4EMM, Mick G3LIK, Ian 2EØIHH, John MØHTE, Kevin G4JOE, Al G4PZV, Peter G3TZL, Joe G3ZDR, Ben 2EØTPL, David M6TIU, Martin MØEHL, Chris GØDAE & Doug G4BEQ. If there is an error in any of the calls put it down to how they were entered in the shack register. When I looked at the list, some must have entered their details after they had enjoyed their tot, issued on the orders of the chair.

Ian and Martin added tone to the proceeding by attending in uniform. Martin made an early arrival and had the shack fully up and running ready for a quick start.

Radio conditions were not good, but due to a strong CW team of Neil, Mike and Mick backed up by John and Doug many contacts were made, Mick of course making the most contacts. Al tried hard to raise activity on VHF but failed to make any contacts so reverted to working SSB on HF. Ian introduced SSTV and spent a considerable time not only making contacts but demonstrating the mode to the many interesting observers.

A certificate was awarded to youngsters who after instruction could send their names in Morse code. The highlight came when an elderly lady announced it was over 40 years since she had used a Morse key. She was invited to send her name and rattled it off at about 25 WPM with no trouble at all. She'd been a WRNS sparker, which of course resulted in much lamp swinging and memories of days gone by. PK31, Echo Link and Skype were also in use. Information on frequencies in use were up-dated on the RNARS Web Site.

The advantage of having such good support on the day meant all who attended had ample time to wander around and take advantage of all the activities and events that were taking place, ranging from the Field Gun Crews to "Ship open to visitors" which allowed visitors to be wowed with some of the equipment used by the RN and including the Ships Simulator demonstrating a vessel entering harbour. Sadly the Army took the trophy for the field gun competition which of course raised the blood pressure of many.

Doug G4BEQ.

Martin MØEHL

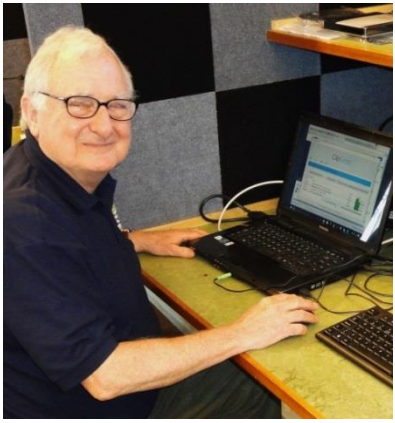
"Ee-by-gum! No whippet racing, black puddings and prop'r beer? I'm going home t' Yorkshire."

After a tot or two or three, RNARS fashion icon Mick demonstraights the English version of a Scottish sporren.

John MØHTE listens intently to Ian 2EØIHH

"So there we were; the Pentland Firth in a January gale and the main engines packed in, so I launched the whaler, rigged the sails, lashed myself to the tiller and towed the ship to safety."

Al Terry - G4PZV
Picture - Martin Longbottom



Joe Kirk goes digital
Picture - Martin Longbottom

The MOD Corsham team thought it was a clog dance competition; not a field gun run.
Picture - Martin Longbottom

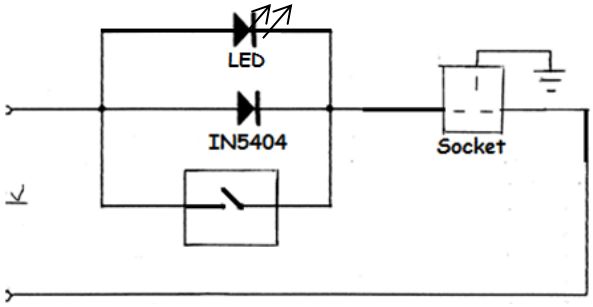
Soldering Iron Economiser

The article Colin wrote in the last newsletter jogged my memory as I had used a similar device like his for many years. It was 1966 when I first constructed a similar device after purchasing a book called 'Hobby Manual' whilst in the States. I think it was produced by the General Electric Company.

It is also quite useful as a two speed controller for small power tools as well as an OFF/LOW/HIGH lamp dimmer. Basically when in use it reduces the applied RMS voltage by about 30%. It should never be used for transformer fitted equipment of any shape or form, or fluorescent lamp ballasts. And remember; this project involves mains voltage, so be careful.

I did a slight mod to the circuit shown in the book by adding a LED in the circuit.

In use with the switch in the 'ON' position the soldering iron is at full heat, break the switch the power is reduced by the diode and the neon lights to indicate you are on low heat. When full heat is again required switch on and in a few seconds you are back to full heat.



Doug G4BEQ

Low, Lower, Lowest

Not all of us had the privilege of a professional communicating 'life' tramping about the 'oggin' surrounded by miles of the best liquid and metal ground plane possible. No wonder the water born Telegraphists have a reputation for putting out a good signal. And yes there is a tinge of jealousy in those two sentences.

Once ashore things become more equal and we as radio amateurs want to put out the best signal possible a lot of experimental work has been and is still being done on aerial systems and beyond line of sight (BLOS) propagation and antennas. A lot of this essentially military investigation has leaked into the amateur world, principally as Near Vertical Incidence Sky Wave Communication (NVIS). The principal

document of NVIS principles is 'Near Vertical Incidence Sky Wave Communication Theory, Techniques and Validation' by LTC David M. Fiedler, (NJ ARNG) Retired and Major Edward J. Farmer, PE (CA SMR) Published by Worldradio Books Sacramento CA.

The truth is that radio professionals and amateurs have been making use of NVIS for a long time without necessarily knowing what they were doing. The principle of NVIS is that signals **of an appropriate frequency** are **directed toward, and reflected from, (perhaps more correctly refracted by) the ionosphere.** The essentials required for success are proper frequency selection and suitable antenna design.
The principle is often referred to as similar to the effect of pointing a hosepipe vertically and seeing the circular pattern of water as it falls back to earth. By choosing the correct antenna, using the correct frequency (not exceeding the Maximum Usable Frequency (MUF)) operators can maximise the NIVS effect and eliminate any so-called 'skip zone'.

The MUF can be determined using ionospheric sounding information or a common rule of thumb 2-4 MHz night time, 4-8 MHz megahertz daytime. The best operating frequency is generally about 20-25% below the MUF. 3 MHz, 5 MHz allocation and 7 MHz are, fortuitously, appropriate. As to antennas, anything that radiates vertically can be employed such as a resonant dipole between .15 and .254 wavelengths above ground or .75 to 1.25 wavelengths above ground will be suitable. In addition it has been found that a half wave inverted L, a nest of resonant dipoles, and inverted V are effective.

Lower
For portable, mobile or tactical use the antenna of choice is limited. The New Jersey Army National Guard have done extensive field testing with the equipment they already have and have found that the standard vertical whip with which most of their vehicles are equipped works well as a mobile NIVS aerial when tied down so that it lies at 45° from the vertical.

For a fixed /Portable antenna which it is easy to conceal, a horizontal wire of 32 feet can be deployed from the same mounting as the whip. In a lot of cases it was reported that this wire antenna out-performs the sectional whip, (perhaps because of the screw in sectional

construction of the whip). The antenna performance can be improved by laying a 32 foot counterpoise underneath the deployed wire.

I have personally used the 32 foot wire in a parked-up mobile installation using a battery-powered FT897 in the car, a remote tuner in the boot and a 10m / 32 foot of mains earth cable supported by agricultural electric fence support posts. In amateur, i.e. not 'stealth operation It is probably advisable to use bright yellow and green striped cable so that Joe Public do not come in contact with it.

On one occasion, when I was out with a foundation student using this setup using my 10m Roach pole in a vertical configuration working 20W SSB into Europe when the student asked "Why can we not hear any English stations?" I told him to get out of the car and to lay the antenna down on top of the hedge. When he got back into the car it was remarkable the number of 'G' stations we were able to hear and contact. A useful teaching point and I probably got as much from it as did he.

And lower

Another personal experience. Whilst I was conducting experiments in my garden (and in the field behind) directed my 32 foot variegated wire in the field supported by the insulated posts and fed at the base, as usual with a remote tuner. I was in contact with an amateur in Wales (from Cumbria) when I was called to lunch. I quickly retracted the wire into the garden and retrieved the poles and went in to eat leaving the rig connected. After lunch I went out to the garage switched on the rig and was able to contact the same operator again (Good Readable). It was only then that I realised that the antenna was laid out across the garden in the grass. The ultimate concealed aerial? Not quite.

Snake in the grass

Early in my investigation following this incident I realised that I had almost come across in antenna known as "the snake in the grass". The classic design of this aerial is a length of coaxial cable fed from an ATU the 'far point' of which is terminated by bareing the wires and soldering them together. It is essential, before you deploy this aerial to ensure that you insulate this far point to avoid water ingress. The length seems to be 'whatever you can get away with'.

And Lowest

This may be of use to the amateur with 'difficult' neighbours. Some existing proven and simple methods are already available for concealing HF radio aerials, and making them work. Of these, the construction of a buried antenna is the simplest and most effective; if you choose your timing correctly.

Many types of underground aerials have been tried but, a simple half wave horizontal dipole or dipole array buried just deep enough for concealment has proved to be the best for hidden applications. You cannot just go out and buy a buried aerial so you will have to DIY. And guess what, NVIS is the dominant mode for buried aerials. Having said that the bottom line is that the energy received at a sub surface dipole is considerably reduced by ground and free space path losses. Transmitted power should therefore be as high as possible and receivers as sensitive as possible in order to communicate reliably. The buried depth of the aerial should be shallow particularly when the ground is wet or snow-covered. A half-wave centre fed dipole, well insulated and surrounded with a good dielectric (air or Teflon) and free at the ends is the best.

It is very hard to calculate the proper length of a resonant aerial when buried. In some cases, the aerial will need to be only 50% of the length it would be in free space. It will be fiddly and it will take time to get it right but it will be worth it. You will need an aerial analyser and a tuning unit. The recommended wire to use is RG-8 or larger with the outer cover and shield stripped off. A standard dipole centre should be used and connection to the feed point should be by as short a coaxial cable as possible, at right angles to the radiator a good idea is to install the dipole into a plastic tube, cut it a little long, tune it and then seal the ends of the plastic tube. Bury the aerial only as deep as required for 'mission concealment' usually less than 6 inches. Actually, in radio amateur radio applications that means just below the surface of the Earth.

Now I have tried it

Just over a year ago we moved away from my Cumbrian home (the one with the garden sporting a central antenna mounting placed above 40 buried radials) and we moved to the new location, an estate in Letchworth Garden City with a garden 9m x 7m totally enclosed by

houses and six-foot high close boarded fencing; in which we planned to build a conservatory 4m x4m . Not much room for anything 'aerial'.

When the builders arrived with plans I noted the fact that, under current legislation, the foundations of even a lightly constructed conservatory were required to be one meter deep! Before the construction or excavation had started I put together an array of eight random length radials two of which were more than 9 m long and were to be laid within and around the foundation trench. They were attached to a 1m earth spike with a lead coming to the surface. The other six Leads were laid underneath the conservatory and garden (together with the second eight random radials laid as far as possible independently. A second earth spike was driven in and all 16 radials terminated close to a buried pole upon which verticals can be erected. The problem was assembling and erecting a 10 m pole in a 9 m garden!

The system worked quite well and I had some satisfactory contacts but I could not manage 5 MHz with a vertical aerial in addition to which it was not easy to install on a temporary basis or at night.

One Sunday morning when I was due to contact the tri-service 5 MHz net I had a stroke of genius (possibly senile dementia) and I led a coax lead from my upstairs shack, out of the window, down to the ground where I terminated it in a homemade 9:1 Unun. From the 'hot 'end of the Unun I led a wire to the earth post, went upstairs and QRP-ed the radio QSY'd to 7 MHz and tentatively activated the built in tuner. The radio applied its usual instantaneous tune. I progressively increased the power to approximately 25 W, put out a CQ and was answered straight away by an Italian station followed by a QSO to Praha!

For the first time since I have been in this house could manage to contact the 5 MHz net on SSB, or all me I remind you with a subterranean antenna (if you can call it that).

If anyone can offer me an explanation of precisely how it works I will be interested to hear it.

Roy GØTAK / 2E1RAF-QRP.

QRT – Editorial

As always, my grateful thanks to all who have sent in contributions, without articles, there wouldn't be a Newsletter. Going to four editions a year means I will need YOUR help to fill forty pages; I and the few regular contributors cannot be expected to do it all.

Pictures in JPEG format are very much appreciated. Images can be re-sized and adjusted to fill gaps and allow articles to finish neatly at the end of a page. However; please and I repeat please, the back of someone's head hanging over a microphone or a key isn't much use or interest. I could fill page after page with such pictures. All you have to do is ask them to turn a little so as to show their face. In a similar vein, please when taking group pictures, try and get everyone to close up as opposed to yards apart.

For those of you who receive your Newsletter via e-mail, you will have noticed that we've had to change the way it is delivered. This followed a couple of infected e-mails sent from members addresses which killed the laptop I was using for the Newsletter. In future you will receive an e-mail containing a link to a URL where you can download the Newsletter. So far, there have been no adverse problems reported.

Colin

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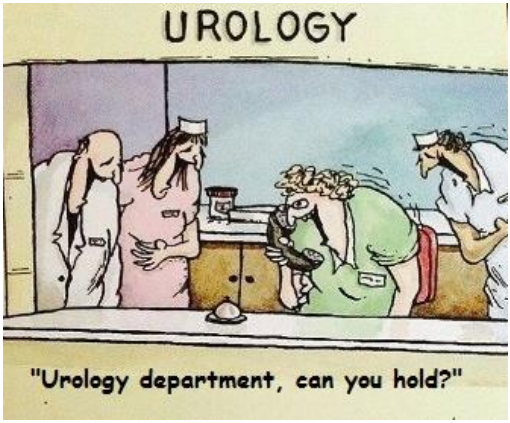
	Mobile:	00447871 959654
E-mail:	news@colinsmagic.com (Only put **RNARS** in the subject)	
Skype:	colintop	
Postal:	26 Crathes Close, Glenrothes, KY7 4SS, UK	

Late News

A late and so far, unconfirmed report just in concerning a more mature member of the RNARS who had been out driving his brand new open top BMW sports car. After breaking the speed limit on the motorway, he was tailed by traffic police with their blue lights and sirens switched on. Deciding he could out run the police, he put the boot down and powered off.

Some miles later he was stopped at a police road block. Asked why he's outrun the police he replied; *"My wife ran off with a traffic cop a few years back, when I saw the police car tailing me with blue lights and siren on, I thought the officer was bringing her back".*

As mentioned on page fifteen, Carl (GWØSVW) is a flying instructor with the Sea Cadets. Prior to the Newsletter going to print, Carl assisted running a "Gold" flying course for cadets as Chief Flying Instructor. During the course, three Spitfires landed at Portsmouth Naval Gliding Club and Carl got the opportunity to sit in a Mark I Spitfire.



RAFARS & Royal Signals ARS Nets

RAFARS	**Time**	**Freq**	**Control**
Daily	1100 A	3.71	GØSYF GI4SAM
	1830 A	3.71	G3HWQ MØRGI
Monday	1900 A	3.7	G3PSG GØBIA
Tuesday	0730 A	14.27	G4IYC
	1400 A	7.015	
	1900 A	3.567	
Wednesday	1500 Z	14.29	?
	1530 Z	21.29	
Thursday	1830 Z	14.17	ZC4RAF
Friday	0730 A	14.055	CW Net
Sunday	0900 Z	5.403	?
First Monday of the month	1000 A	3.71	?
RSARS Nets	**Time**	**Freq**	**Control**
Monday - Friday	1000 A	7.17	GW3KJW M3VRB
Monday	1830 A	3.585	GM3KHH (RTTY)
Tuesday	1400 A	7.17	MØOIC
	1600 Z	14.18	G4BXQ
Wednesday	0600 Z	14.143	Various
	1030 Z	3.615	?
	1830 A	3.565	GM3KHH
	2030 A	1.946	2EØBDS
Thursday	1400 A	7.17	GØRGB
	1800 A	3.743	G6NHY
Friday	1830 A	3.583	GM3KHH (PSK31)
	1830 A	3.565	High speed CW
	2000 Z	14.055	CW
Saturday	0600 Z	14.143	SSB
Sunday	1000 A	3.565	G3JRY (Slow speed CW)
	1100 A	7.17	GW4XKE
	1100 A	3.745	GM4FOZ
Joint Service Net	**Time**	**Freq**	**Control**
Sunday	0900 A	5.4035	G3RAF
Tuesday	1900 A	5.4035	G3RAF

RNARS Nets

All frequencies +/- QRM. DX nets are GMT; UK nets are GMT or BST as appropriate. The list is compiled by Mick Puttick G3LIK mick_g3lik@ntlworld.com – 02392255880.

UK	Time Local	Frequ	Net	Control
Daily	2359-0400	145.727	Midnight Nutters	Vacant
Sun	0800	3.668	News 08:30	G3LIK
	1000	7.065	Northern Net	GM4VUG
	1100	145.4	Cornish Net	GØGRY
	1100	7.02	CW Net	G4TNI
Mon-Sat	1030	7.065 / 3.743	Bubbly Rats	GØGBI GØOKA GWØSFI MØZAE
Mon	1400	3.575 / 7.02	QRS CW	GØVCV
	1900	7.088 / 3.743	North West-News 2000	GØGBI
Tue	1900	7.028 / 3.528	CW Net	G3RFH
Wed	1400	3.74 / 7.088	White Rose	G4KGT
	1930	3.743	SSB News 2000	GØOAK
	2000	145.4	Stand Easy	Vacant
Thur	1900	3.542	Scottish CW	Vacant
	2000 GMT	1.835	Top Band CW	GØCHV G4KJD
Fri	1600	10.118	CW	SM4AHM
Sat	0800	3.74/7.088	GØDLH Memorial Net	GØVIX
DX	**Time GMT**	**Frequ**	**Net**	**Control**
Sun	0800	7.015/30555	MARAC CW	PA3EBA/PI4MRC
	1430	21.41/28.94	RNARS DX	WA1HMW
	1800	Echolink	Echolink	VE3OZN / K8BBT
	1900	14.33	N American	WA1HMW
Mon	0930	3.615	VK SSB	VK1RAN/VK2RAN
Wed	0118-0618	7.02	VKCW	VK4RAN
	0148-0648	10.118	VK CW	VK4RAN
	0800	3.62	ZL SSB	ZL1BSA
	0930	7.02	VK SSB	VK5RAN
	0945	7.09	VK SSB	VK1RAN/VK2RAN
Thur	1430	21.41	RNARS DX	WA1HMW
Sat	0400	7.09	VK SSB	VK2CCV
	1330	7.02	VK CW	VK2CCV
	1400	7.09	VK SSB	VK2CCV
	1430	21.41	RNARS DX	WA1HMW

RNARS activity frequencies									
FM	145.4								
CW	1.824	3.52	7.02	10.118	14.052	18.087	21.052	24.897	28.052
SSB	1.965	3.66	3.74	7.088	14.294	14.335	18.15	21.36	28.94

RNARS Commodities

Item	Price
Body Warmer, embroidered with the new RNARS logo, your name and callsign. Colour: Black only Sizes: S to XXXL	£30-00 P&P £3-00
Polo shirt, embroidered with the new RNARS logo, your name and callsign. Colour: Navy only Sizes: S to XXXL	£16-00 P&P £3-00
Sweatshirt, embroidered with the new the RNARS logo, your name and callsign. Colour: Navy only Sizes: S to XXXL	£16.00 P&P £3-00
Fleece jacket, embroidered with new the RNARS logo, your name and callsign Colour: Navy only Sizes: S to XXXL	£21-00 P&P £3-00
Gold blazer badge with **new RNARS logo**	£10-00 P&P £2-00
Lapel badge with **new RNARS logo**	£2-00 P&P £1-00
RNARS Tie with **old logo**	£4-00 P&P £2-00
RNARS Log Book	£4-00 P&P £2-00

Size in inches:

Small 36-38	Medium 38-40	Large 40-42
Extra Large 42-44	2 Extra Large 44-46	3 Extra Large 46-48
4 Extra Large 48-50		

RNARS Commodities Order Form
PLEASE write clearly and use block CAPITALS
Photocopies of this form are accepted

Call-sign | RNARS No: _____|_____
Name: _____
Address: _____
_____
Post Code: _____
Telephone: _____

Advisable to check before ordering as to availability in your size.

Item Description	**Size**	**Colour**	**Qty**	**Price**	**P&P**	**Sub Total**
Enclose cheque payable to: ***Royal Naval Amateur Radio Society***				**Total Payment £**		

Overseas members, please add £5 to cover additional postage.

Send orders to: Doug Bowen GØMIU
14 Braemar Road, Gosport, PO13 0YA
E-mail: g0miudoug@btinternet.com

Please allow fourteen days for delivery and while these prices are correct when going to press, prices do vary and are subject to change.

Royal Naval Amateur Radio Society 2016 AGM Proxy

Chairman: Lt Cdr Doug Hotchkiss, MBE QCB RN G4BEQ

Hon. Secretary: Joe Kirk G3ZDF
111 Stockbridge Road, Chichester, PO19 8QR

I _____ being a fully paid-up corporate member of the RNARS hereby nominate the Chairman of the Society; Lt Cdr Doug Hotchkiss MBE QCB RN G4BEQ or _____ to act as proxy and vote in my name at the Annual General Meeting of the Society. The person nominated as proxy must also be a fully paid-up corporate member of the RNARS.

The proxy will be void if I attend the meeting in person.

Member's name: _____

RNARS Number: _____

Callsign: _____

Date: _____

Signed: _____