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**The Journal of  
Horsham Amateur Radio Club**

September 2008

Sponsored by:



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Members on the air (attached separately)

**Cover photo: Pratical Wireless 2m Low Power Contest**

# Editorial

Contributions have been flying in this month and also mostly to the correct email address which helps me a lot. So that this magazine is kept to a manageable size you may find items that have been postponed but be assured that they will appear very soon. The last update of the 80m Club Championships appears this month.

A big thank you to Bryn G3SWC for producing the results. SSB Field Day was to be the next contest but unfortunately it has once again been cancelled due to lack of enough operators. So as a reminder of past times there are three photos of mine that I have re-produced with a new scanner that I recently purchased.

Congratulations to Anne M1AIM who turned 70 recently and also to Ron G3PYC who has celebrated 80 years young. Hello and goodbye to M6CSL alias Christopher Langmaid who has joined HARC but also passed the Intermediate exam and is now 2E0BQU, well done!

David G4JHI





(Above) HARC SSB Field Day

(Below) HARC VHF Field Day



# July Meeting Review:

## Update on Antennas Old and New

by Prof. Mike Underhill G3LHZ

Mike began his talk with a summary of his past investigations and what his future area of investigation would be. Some interesting observations were made. 'Small antennas are efficient' – The books are seriously wrong- The loop controversy is a serious misrepresentation of the facts- Heuristics shows why.

But, for small antennas that are efficient – The bandwidth is small – The antenna usually has to be tuned – The Q and the transmit voltages are high. How do you measure (small) antenna efficiency? – Heat methods based on the First Law of Thermodynamics are reliable and trustworthy, based on: 'What goes in must come out as radiated RF or heat'.

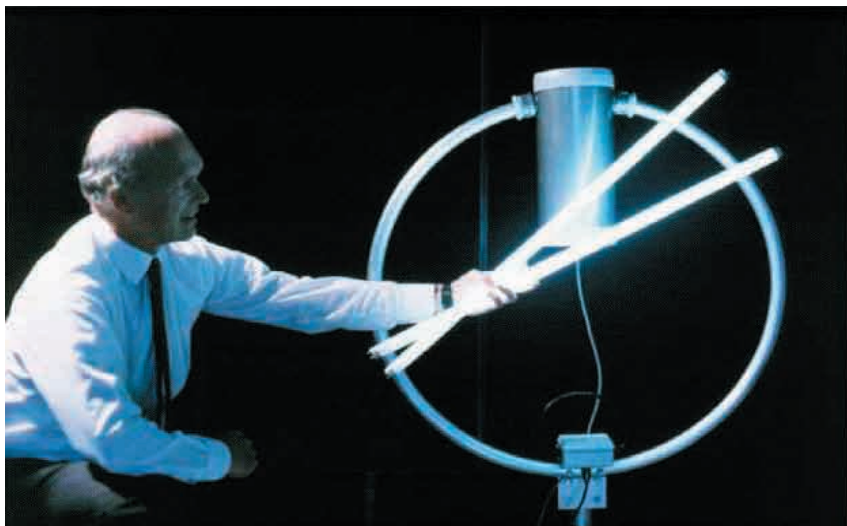
Field strength methods are usually flawed and very inaccurate. Mike then went on to discuss what Heuristics are: Heuristics can be defined as learning from experience, it is the process of 'trial and error' or 'guess and confirm'. So heuristics in this sense means deriving or deducing the theory from measurements and observations, it is the scientific process!

It is what radio amateurs do, giving and receiving signal reports and comparing them against regular net reports, the comparison of different antennas. With measurement of the antenna's Q, bandwidth, front-to-back ratio, radiation pattern, the overall efficiency of the test antenna in question can be derived. Mike then proceeded to demonstrate how one of his loops radiated on 14Mhz with the aid of 100w or so from

an IC706, loop antenna and a florescent tube.

The tube illuminated when in close proximity to the loop and by rotating the tube from full brightness to a dull glow the loops primary vertical and horizontal radiation patterns could be determined. From this demonstration Mike then went on to show other forms of small transmitting 'loops' bent into various forms of folded dipole, multi turn loops and 'hairpin' configuration that could be used, all with Mike's twisted gamma type matching.

Mike then demonstrated the use of a 'mRS minivna' Vector



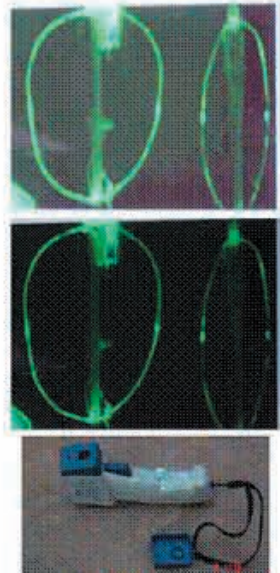
**(Above) Where it all started in 1994 – Public Demonstration at the IEE and University of Surrey**

Network Analyser a small box of electronics connected to a laptop via the USB port. Here Mike could plot various performance characteristic of the test antenna.

Here I could take up pages of text describing this marvellous little box, but if you want to look further just put 'mRS miniVNA' into Google and follow the links for a fuller explanation of the analyser and its capabilities. After the break Mike then went on to discuss the 'Goubau Single Wire Transmission Line'

## 'Heat Balance' Measurement of Antenna Efficiency (as in Nov 2004 Radcom article on Loops)

- The RF power lost as 'heat' is the same as the DC power the loop required to raise the same or an exactly similar loop to the same temperature.
- The DC power heats a resistance wire inside the loop
- Non-contact temperature measurement by Thermal Camera (below) or CHY 110 non-contact thermometer (bottom right).
- Thermal picture is of Marc Harper.
- Thermal emissivities of two loops are made equal by black paint patches at measuring points on the loops.



## miniVNA – 'DET' connection makes it a VNA – for 'transmission' measurements

[www.miniRadioSolutions.com](http://www.miniRadioSolutions.com)  
miniVNA antenna analyzer V224



1. BNC DUT: rf out / antenna. **WARNING! Do not connect to RF transmitter**
2. BNC DET: detector (transmission mode only). **WARNING! Do not connect to RF transmitter**
3. LED TX, RX: USB communication running (run mode).
4. LED POWER: *miniVNA* power on.
5. USB: USB connection (B type).

a single wire feeder with a horn attachment at each end of the wire.

Again I suggest you have a look on the web to get the full explanation of how it works! To sum up yet another fascinating talk by Mike, he has proved that the controversy over small loops is dead, they are efficient radiators in their own right.

## Goubau Single Wire Transmission Line

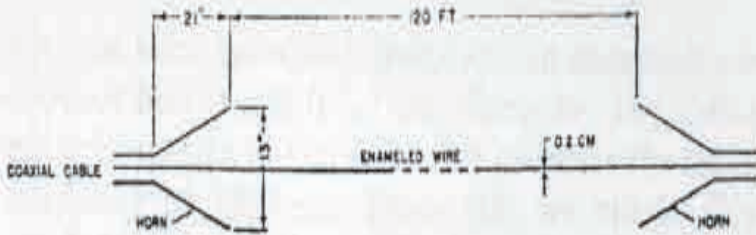


FIG. 11. Sketch of a surface wave transmission line.

"Surface Waves and Their Application to Transmission Lines", by  
Georg Goubau, J.A.P., Vol. 21, Nov., 1950, pp 1119 - 1128.

He has proved that by continual measurement, and proved that when tuned they do not get 'hot' the RF must be leaving the antenna. But from my point of view you can not compare a small loop against say a dipole, simply because an antenna's performance is so dependant on its interaction with its surroundings.

This is where a loop is at a disadvantage but I'm sure if it were possible to test both antennas at say a  $\frac{1}{4}$  wave above a perfect ground some interesting results may be found. Unfortunately I cannot do justice to the subject matter here in this short report but if you do want to learn more, I have a copy of Mike's 170 page power point presentation! Finally I shall leave you with the Schopenhauer Effect..

As the German philosopher Schopenhauer (1788-1860) put it: "All truth passes through three stages - First it is ridiculed, second it is violently opposed, and third it is accepted as being self-evident". The controversy over small loops is dead! My thanks to Mike G3LHZ for allowing me to read his presentation (but not necessarily understand it!) to assist with the notes for this report.

Adrian G4LRP

# Foxhunt results

## 31st July 2008

The preparations for the fox hunt went well "in theory" but when it came to the "practice test" the night before, it became clear that a quick re-think was called for. The original lair was to be in the car park just opposite the CARC hut in Tilgate forest, but when Maria and I checked to ensure I was going to be heard at the start, we found no signal could be obtained.

Therefore I proceeded to try several locations close by, with Maria "listening" out for me at the designated Mannings Heath start point, before deciding on the final location at the bottom of the old Brighton Road, Pease Pottage (Map Ref. TQ 260 332). On the night, I got to my lair at about 7:20pm; Maria had gone to the start at Mannings Heath to distribute the envelopes.

At 7:30pm the first transmission was made, just in time as the cricket team stopped for Tea, allowing the "seekers" free reign on the village green! Following this I received the list of those taking part, a very good turn out of eight teams! So 2m foxhunting is not losing its appeal and it would appear that the March hunt when only three teams were out was just the wrong day!

I was a little concerned as to how close I was to the start, (only 13 minutes if you drive straight there keeping to the speed limit!) but then again I hadn't intended it to be difficult as this was a Thursday evening and about 1 hour was about right as this would give time for a good social at the chosen pub, The Dragon at Colgate (Map ref. TQ 228 327). The first few transmissions passed and then I started to find that two minutes of talking was not the easiest thing to do when no one else is contributing to the conversation.

However the time went and at 8:04 the first team arrived. Thanks to everyone that took part and Maria for her help. I hope you enjoyed it.

Steve G4TPO

The results are as follows:

1st 8:04 John G3WZT & Jan

2nd 8:13 Robin G3OGP & Pat

3rd 8:27 Mick G4EFO & Alan

4th 8:45 Adrian G4LRP

5th 8:46 Paul G4TMC

6th 9:06 Alistair G3ZBU & Gerald

Gavin G7DFV and Andrew M0GJH - MIA!

Final transmission was at 21:10 with details of the lair and the drinking hole.

## Web Trawl

The G3NPF and M1AIM website has recently been updated by adding a "Technical" section. It gives lots of information about the various types of resistors, capacitors, inductors and transformers that exist and what they are used for. The information is aimed at the new-comer to the hobby, so Tony has kept the maths to a minimum.

To access the new information, click on the "Technical" button on the left-hand side of the opening page and then follow the on-screen instructions. New-comers may also find the other sections useful. These include information on codes, licensing, prefixes, a software library with a handful of very useful programs and some written by Tony himself and amateur radio in general,

<http://homepages.tesco.net/~a.wadsworth>

# Backing up your computer

Many of us now use computers as a daily part of our life at home and in a place of work. Businesses should have a backup routine set in place but the home user should but may not. So what options are there for backing up your precious data, let's find out. We'll start by taking a look at what has been used in the past and then move on to what is used in these modern times.

The floppy drive although still in use by some is too small for the amount of data on computers today. A standard 3.5" floppy is 1.44 Mb (Mega bites) in capacity and today many would be needed. Most computers no longer come with a floppy disk drive but it is still possible to buy them. One of the disadvantages was that they were not always 100% reliable and the data could often get corrupted.

Some previous floppy disks had even less capacity such as 360 and 720k! The Iomega Zip drive came with disks sizes of 100Mb or 250Mb and were more densely packed and better for reliability. The Jaz drive had 1-2GB (Giga bites) capacity and there were other types produced by Iomega available over the years.

Since the days of the CD/CD-R/CDRW and DVD+/-R/DVD-RW these can store much more amounts of data in the range of up to 8.4Gb for example and have been particularly used for archiving. Today many use either these or USB memory drives often inappropriately called 'sticks' which are getting larger in capacity by the day and not forgetting external hard drives available now up to 500Gb and beyond!

There are many backup programs available to suit all preferences. Windows XP has a built in one but produces a very large file during the process. A suggested alternative which is easy to use and free is Cobian Backup.

[www.cobian.se](http://www.cobian.se)

# Diary

Sep 4th, Club Night: Photo Quiz - G4LRP

Sep 18th, Social Evening - The Queens Head - West Chiltonton

Sep 28th, West London Radio & Electronics Show - Kempton Park - 10:00

Oct 2nd, Club Night: Junk Sale

Oct 9th, Commitee Meeting - QTH of G3ZBU

All above times are BST

Committee/Club Meetings and Socials start at 8pm

Copy deadline for October edition 19th September

For items sent by email please send to this address:

[harc.news@g4jhi.co.uk](mailto:harc.news@g4jhi.co.uk)

## Club Champs 2008 - Horsham Club Scores - Final Report July 08

	FEBRUARY			MARCH			APRIL			MAY			JUNE			JULY			TOTAL POINTS	%	MODE TOTALS		
	SSB	Data	CW	SSB	Data	CW	SSB	Data	CW	SSB	Data	CW	SSB	Data	CW	SSB	Data	CW			SSB	Data	CW
<b>G3LET</b> Pete						489												897	1386	4.2	0	0	1386
<b>G3NPF</b> Tony	142	436		510	397		747	446		631	476		627	481		638	390		5921	18.1	3295	2626	0
<b>G3PYC</b> Ron				180			183			240			253			255			1111	3.4	1111	0	0
<b>G3SWC</b> Bryn	187	590	677	354	521	603	503	851	603	610	607	741	643	605	792	638	720	834	11079	33.9	2935	3894	4250
<b>G3ZBU</b> Alister	90	538	451	260	429	398	478	689	447	422	440	560	469	617	624	687	622	564	8785	26.9	2406	3335	3044
<b>G4LRP</b> Adrian	105			275						303						336			1019	3.1	1019	0	0
<b>G4TPO</b> Steve				387			863			678			474			865			3267	10.0	3267	0	0
<b>M0FRH</b> Ian							117												117	0.4	117	0	0
<b>Contest dates</b>	4th	13th	21st	20th	3rd	12th	16th	24th	7th	5th	14th	22nd	19th	2nd	11th	16th	24th	7th	Start times are all 2000 clock time, ending 2130 local				
<b>HARC total points</b> 32685																							
<b>Club position</b> 10th																		DOWN 1 place since last report!					
SSB entry to be sent to		<a href="mailto:cccw.logs@rsgbhfcc.org">cccw.logs@rsgbhfcc.org</a>																					
Data entry to be sent to		<a href="mailto:cccw.logs@rsgbhfcc.org">cccw.logs@rsgbhfcc.org</a>																					
CW entry to be sent to		<a href="mailto:cccw.logs@rsgbhfcc.org">cccw.logs@rsgbhfcc.org</a>																					
																		Latest results and info from RSGB: <a href="http://www.vhfcc.org/hfcc/results/2008/80mcc2008.shtml">http://www.vhfcc.org/hfcc/results/2008/80mcc2008.shtml</a>					
																		Contest rules: <a href="http://www.vhfcc.org/hfcc/rules/2008/r80mcc.shtml">http://www.vhfcc.org/hfcc/rules/2008/r80mcc.shtml</a>					
<p><b>This is it - the final report &amp; scores for this year's series of contests. With a final effort from the team, we ended up in 10th position out of a total of 64 club entries.</b></p> <p><b>A big thank you to all those that participated this year, hope you will be back in 2009. For those that didn't participate, please consider having a go next year to strengthen our team effort &amp; see if we can better our position in the CC leader table.</b></p>																		<b>THE TOP TWELVE CLUBS - out of approx 60 participating</b> (data courtesy of RSGB website)					
																		<b>Pos</b>	<b>Club Name</b>	<b>Total</b>	<b>SSB</b>	<b>DATA</b>	<b>CW</b>
1	Bristol CG	112195	38151	36106	37938																		
2	Newbury & DARS	97396	27250	31404	38742																		
3	De Montfort Univ	86877	21677	31296	33904																		
4	Grimsby ARS	83415	17352	30323	35740																		
5	Norfolk ARC	58365	18003	19675	20687																		
6	RAF Waddington	48962	19520	13626	15816																		
7	Scunthorpe Steel	44409	12837	16515	15057																		
8	Three 'A's CG	36593	9248	11182	16163																		
9	Brimham CG	32887	11236	10324	11327																		
<b>10</b>	<b>Horsham ARC</b>	<b>32685</b>	<b>14150</b>	<b>9855</b>	<b>8680</b>																		
11	Bittern DX Group	32465	17248	10240	4977																		
12	Torbay ARS	27941	10079	8456	9406																		