

HARCNEWS



Newsletter of



Horsham Amateur Radio Club

Est. 1938



G4HRS

December 2006

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Notes From The Editor

For those going to this year's Christmas Dinner I have included a map since this is a new venue. Some of you will know that there has been a road diversion in the vicinity of The Dog and Duck but the work was completed during mid November and the A24 is now open as usual.

The British Heritage Television Project plans for a 405 line 60th Anniversary broadcast did not actually take place since Ofcom would not grant a licence as the frequencies requested are no longer allocated to television in Britain.

However members were invited for celebrations at Alexandra Palace on November 2nd. HARC has been publicised many times on local radio stations BBC Southern Counties Radio and Mercury FM.

Apparently we have now gone national since I have been informed we were featured on the club section during the Chris Evans show on BBC Radio 2 broadcast

weekdays at 5pm! Well-done Andrew!

The Radio St. Helena broadcast that took place on 4th November was well received here during the transmission to Japan at 57/9 using my FT1000MP. I found the European broadcast not quite so good since it was a bit muffled and they had drifted slightly off frequency!

However their programmes were reaching the UK from 1800 until late. At the HARC AGM after the official business has finished there will be another of those great surprise raffles.

If you have anything you would like to donate please gift-wrap it with no clues attached but remember what it is as Marilyn will be making a secret list. You can make it anything you like including a booby prize but perhaps not a used train ticket or Christmas card!

I would like to thank everyone who has contributed to the newsletter this year and for

the support that I have been given since I took over as Editor. If I am re-elected for 2007 I look forward to preparing the newsletters and will continue to find ways to enhance HARCNEWS for your reading pleasure.

Merry Christmas
David G4JHI



November Meeting Review:

Electric Motors,

by John Narborough
of the Amberly Chalk Pits

Museum written by Adrian G4LRP

John began his talk by introducing us all to the early works of Benjamin Franklin in the late 1700's and his study of Static electricity, and to illustrate his work, demonstrated some of his early experiments. The first to be shown was a model of the earth and moon's orbit around the sun. In this case a globe the size of tennis ball with a long balance arm.

At the far end of this arm

atop a pin point bearing was a smaller globe (the earth) with a smaller balance arm, again at the far end of this arm was the moon. The whole lot was then finely balanced on top of a school lab Vander Graff Generator.

John then proceeded to increase the speed of the friction motor that gentler the static charge. The model solar system then gently started to rotate about its



(Above)
John with the 'Van de Graff generator'
& demonstrating 'electrostatic repulsion'

pivot points. Movement was proven to be caused by the ejection of charged particles from pinpoints placed at the ends of the arms.

John then demonstrated his party piece, the jumping pie dishes. This proved to be a great success, aluminium pie dishes were stacked in a neat pile on top of the Vander Graff generator, and when switched on the pie dish leapt into the air like a volcano, proving that a static discharge was responsible.

The final demonstration of static electricity was a model of 'Franklin's Jack'. This is in effect an electrostatic motor. In this case Perspex disc in the vertical plain with very low friction bearing that allowed the disc to rotate freely between two insulated supports fore and aft of the disc.

Placed around the circumference of the disc were eight brass balls; at the ends of the insulating supports were two more

brass balls. These in turn were connected to the Vander Graff generator and earth.

When the generator was switched on and the wheel was encouraged to rotate, the motion increased, as positive and negative charges were applied to the balls around the disc, the mutual attraction and repelling of charges between the fixed and rotating balls causing the disc to continue to rotate.

John then moved on to the work of Faraday and his published paper of Electromagnetic Rotations. A brief explanation followed of Faraday's experiment with a rotating wire in a cup of Mercury and Barlow's Star.

The next development was the use of a coil to 'magnify' the magnetic field or electrical charge depending on the actions used. This in turn led to the development of rotating electric engines based on the reciprocating layout of the then steam engines of the day.

John then covered the very early designs of commutator electric motors and demonstrated a very simple electric motor (just like the ones we used to make at school!). We then moved onto the development of large industrial electric motors and dynamos of the 1870's that used electromagnets instead of permanent magnets for field windings.



(Left)
Franklin's
Jack

Then onto the first factories in 1871 to use electric motors to drive line shafting instead of steam or water. From here we moved onto the design and uses for 'series wound' electric motors used for high torque at low speed i.e. early traction motors used in electric vehicles of the early 1900's.

Shunt wound motor for lighter duties i.e. fan etc. Finally the combination of series and shunt motors called compound (much the same idea as a compound steam engine). The next development was the Alternating Current motor design of Nikola Tesla in 1888, which also introduced 3 phase electric motors.

After the break we moved on to modern electric motor design from 1908 onwards and the purposes they were used for ranging electric pumps to supply domestic water to the 'Typhoon' Desk and wall bracket fans (the type you see in 20-30's films), even an early electric dentist drill.

Of course in these early days the 'safety police' didn't exist and if you were stupid enough

to put you fingers in the wrong place you got an electric shock. Why can't life be that simple today! Finally the last part of the evening covered electric transport development from the electric tricycles of Ayrton and Perry with a top speed of 8 mph.

It even had electric lights for use at night. The 1870's and 80's saw the first electric trains, the 1900's saw the development of trams and ten years later the electric trolleybus. The first electric car was made in the US in 1912 by the 'Columbus Electric Car Company'.

The 1920's saw the use of 1 ton commercial electric vans (the forerunner of today's milk float) used by large municipal companies. To end the evening we were brought right up-to-date with the development of multi voltage AC / DC traction motors used for the likes of today's railway companies, Eurostar, Southern etc.

All in all as usual a fascinating evening that brought you right back to the classroom. Thank you John for a great evening, and see you next year.

Loop Aerials

by Ron Polley G3PYC



(Left)
80m loop

CONSTRUCTION. Use tubing, preferably copper, to form the loop as large currents flow for nanoseconds and this flows on the surface. 10mm o/d should be a minimum.

The support mast should be non-metallic; I use a 7ft length of 2x2 wood, as it is easy to work on the loop in

the shack prior to moving it elsewhere. The tuning 'C' and its tuning control can be screwed to the mast.

The tuning capacitor should have .032" spacing between the fixed and rotating vanes. All 'Cs' should be air spaced. A high voltage-isolating shaft coupling between the 'C'

and rotating device is required.

I use a 3000 to 1 geared motor to tune. A 3m length of tubing folded into a circle will require a tuning 'C' of 500 to 600pf across the ends to tune the 80m band. For best results the 'C' should be at the top of the loop and the loop to be in the vertical plane.

GETTING THE RF INTO THE LOOP. Mike G3LHZ uses a form of gamma match using a wire with thick insulation, wrapped round the loop to a suitable point on the loop. This takes a lot of fiddling to get the impedance right.

I have tried a small coupling loop but it is very time consuming to find the precise position for correct impedance. This also makes the loop have a very high Q. The bandwidth on 80m being only 1.5khz total.

I now use a current transformer at the mid point of the loop (at the bottom). This uses a Ferrite core of 140mu. It is 1.25" o/d, 0.75" i/d and 0.25" thick. The loop passes through

the core forming the secondary and the 50ohm coax is coupled to 14turns of 18SWG en cu forming the primary.

This handled 120w of continuous RF for 6 minutes without getting hot. The bandwidth with this on 80m was 8khz. THE LOOP IN USE. My use of loops has been on 80m with a bit on 160m.

I have tried a 2-turn loop, using 6m of tube, on both 160 and 80. The torroid only requiring 4 turns indicating a higher impedance of the loop. I also tried a 3-turn spiral loop using 10m of tube.

The results from both of these were not as good as the single turn loop. I tried the single turn loop on the 80m AFS SSB contest with wall-to-wall QRM and worked those calling QRZ, including Scottish stations.

I got the impression that they were hearing me better than I was them. As you move about the band you have to retune the loop so it gets a bit laborious. To retune I feed the loop with 5w CW and tune for minimum return

Horsham Amateur Radio Club Accounts for 2006

HARC ACCOUNTS 2006

EQUIPMENT	COST	Depn to 31.10.05	Depn for. 05/06	Net Val net	sold for	Profit/ loss
H.F. LINEAR	350.00	350.00	0.00	0.00	0.00	0.00
SOFTWARE	19.00	19.00	0.00	0.00	0.00	0.00
40m ANT	119.00	119.00	0.00	0.00	0.00	0.00
COAX	32.50	32.50	0.00	0.00	0.00	0.00
FT990 TCVR	1960.00	1960.00	0.00	0.00	0.00	0.00
P.C. I/F	25.00	25.00	0.00	0.00	0.00	0.00
POWER METER	25.00	25.00	0.00	0.00	0.00	0.00
ANTENNA WIRE	49.00	19.60	9.80	19.60	0.00	0.00
GENERATOR	367.80	147.12	73.56	147.12	0.00	0.00
	-----	-----	-----	-----	-----	-----
	2947.30	2697.22	83.36	166.72	0.00	0.00
	=====	=====	=====	=====	=====	=====
SOLD	0.00	0.00	0.00	0.00		
	-----	-----	-----	-----		
Carried fwd	2947.30	2697.22	83.36	166.72		
	=====	=====	=====	=====		

AUDITED BY:-

Robin Powell G3OGP
15/11/2006

INCOME AND EXPENDITURE ACCOUNT BALANCE SHEET 31/10/06

INCOME

BANK INT.	7.66
SUBS	667.50
REFRESH	60.07
JUNK/DONA	468.82
ADVERT	40.00
P/L SOFA	0.00

	1244.05
	=====

ASSETS:

EQUIPMENT COST	2947.30
DEP'N TO DATE	2780.58

	166.72
BUILD SOC A/C	1099.17
GIROBANK	883.11
PETTY CASH	95.85

	2244.85
	=====

EXPENDITURE

DONATION	0.00
G4HRS	-15.00
NEWSLETTER	-284.21
SPEAKERS	-30.00
RSGB	-44.00
EQUIP REP	0.00
INSURANCE	-73.50
HALL RENT	-270.00
RAFFLE	-52.00
PETROL	-41.00
SUNDRIES	-11.89

	-821.60
	=====
BALANCE OF	422.45
INC.OVER EXP.	=====

LIABILITIES

2005 CLOSING BALANCE	1905.76
EXCESS INC/EXP	422.45
DEP'N CHARGE	-83.36

	2244.85
	=====

power on a 5w power meter.

CONCLUSIONS. The loop aerial is very much more efficient than textbooks would have us believe. The loop appears to radiate just as well from the loft, shack or outside, 4ft or 15ft above ground. Only the tuning of the loop is affected.

The loop appears to radiate mostly upwards so best results come from the first skip distance outwards. The loop does not hear signals as well as dipoles and long wires. The loop has a signal catching spread of only its diameter plus a bit.

Received signals in general are down. Unless the tuning 'C' is made weatherproof then it cannot be used outside in rain or with fog or mist. Even a sunny day has its problems, if there are clouds about. The Sun's heat will expand the loop and the tuned frequency will go LF, then the cloud will make it cool and return HF.

On 80m this can mean a shift of several KHz. Any insect in the capacitor vanes during transmission can carbonize ending up with a short across the vanes. The loop generally is not very user friendly but with certain QTHs it could be very useful.



(Above)
Motor for the loop

(Left)
14-25 MHz loop



HARC Christmas Dinner 2006 reminder
for those booked in

The Dog and Duck

Dorking Road, Kingsfold

Saturday 9th December, 19.30 for 20.00

HARCNEWS is printed by Lindfield Communications

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HARC Chairman's Report 2006

Yet another year draws to a close, and it is time to review what's been going on this year. The main news for this year was that HARC has again won the Top Band Club Calls G4IQM Memorial Trophy for the leading team of five club member stations.

Whilst on the subject of contests it is time to report our other contest activity. The year started with the usual foray in the 80m CW and SSB AFS events. The usual suspects took part and this year we managed to secure overall 12th place in the CW leg and 11th place overall in the SSB.

The 80m Club Champs appear to still be well attended although some more support would help boost our placing of 5th place overall for 2006. This year's SSB Field Day, as last was run from Robin's (G3OGP) farm. Again, as last year we took the opportunity to expose the younger HARC members to a 'real' contest.

All those that took part agreed that this was an enjoyable event, and hopefully the

participants have now gained some experience and confidence to help put in a competitive entry for next year. Congratulation to all HARC members that took part in the above contests.

Club meetings this year had their usual mix of radio related to not related subjects. Apart from our usual and this year's profitable Junks sales in March and October we have had some interesting subjects from guest speakers.

G 3 J K V and the communications used at Arnhem, some excellent home brew by G3TSO, an update on loops from Mike G3LHZ and finally our now usual November visit from John Narborough of the Amberly Chalk Pits Museum this time on the subject of electric motors.

Other home grown lectures included talks about WSJT data modes by G3WZT, more codes and ciphers from G3ZBU, a Bring Show and Tell evening, and finally a talk about the High power Aspistrax TX in Ashdown

Forest by M3NKC.

This years HARC French day out in April took the form of a trip to a Steam railway Gala event near the channel town of La Crottoy. Although mainly attended by those HARC members with a fixation for steam those that aren't so inclined also enjoyed the trip.

Foxhunts are still popular with one in March taking us to the Southdowns above Chichester and a summer evening one have the hunters walking round a large pond in circles, most enjoyable from a fox's perspective!

The Newsletter this year has taken on a new form, more pages, more diverse articles and if wanted delivery by e-mail. My thanks to David G4JHI for taking on the editorship of HARC news and making some positive improvements. Well done and thank you.

Looking forward to next year I hope that HARC can continue to build on its past successes and encourage all to enjoy the hobby of Amateur Radio. Hopefully 2007

should see HARC providing you with a club to be proud of, by providing you with meetings, events, contests that all can take part in, if not all of the time, some of the time.

I must remind you that it is "your club" and that the committee and officers are put there by your vote, we try to please, but at times, as the old saying goes "you can't please all of the people all of the time".

If you want to change things, come along to the AGM and get involved. If you want more info in the newsletter, tell us what you want or better still provide some articles for inclusion in the newsletter.

Finally in closing I would like to thank all of the committee and members who have helped HARC throughout the year by getting involved and organising club activities. I would also like to wish you all a Merry Christmas and a Very Happy 2007.

Regards

Adrian G4LRP

German Encryption Plan

In the summer of this year SES Astra who owns the fleet of satellites positioned at 19.2° east announced plans to encrypt the digital versions of many German channels on this bird.

The idea was brought up in an effort to speed up the transition to digital satellite as many homes in Germany are still watching on analogue equipment.

It is surprising that the receivers haven't given up the ghost yet. This type of unit still turns up at junk sales and can be found advertised on eBay and free newspapers. The plan is to switch off the analogue services at the end of 2008 and from 2009 broadcast in digital scrambled format only.

However there is expected to be a period where the digital services will be available in free to air and encrypted format. However public service broadcasters ARD and ZDF have objected to the plan. It is possible that there is a ruling, which prohibits German

channels not being available free to air.

There are many viewers over a wide area of Europe including the UK who have been watching programmes from Germany for over a decade and to suddenly have a blank screen will be a very big blow.

The encryption system selected is Nagravision and the viewer will need a card (available only to German residents) and either a dedicated receiver with an embedded decoder or common interface receiver and CAM (Conditional Access Module).

There will be a monthly fee for the card. If the plan goes ahead channels that would encrypt include DSF, RTL, RTL2, Pro7, MTV, Sat.1 and Viva.

German regulators are currently investigating the proposed plan and it appears that they are against the proposals. An actual decision is expected in the next few weeks.



(Left)
ZDF Dokukanal
'Safe'



(Right)
RTL2
'A thing of the past
outside Germany'

Please send contributions for the January edition of HARCNEWS to the editor by 15th December. Items received after the deadline will be held over until a later edition.

All input is subject to suitability and available space.

Any comments, letters or new ideas very welcome for all features of this newsletter.

For items sent by email please send to this address:

harc.news@g4jhi.co.uk

Web Trawl

For those who are after information on how to modify a particular piece of amateur radio equipment then mods.dk is the site to visit. In order to view the information you will first need to set up an account.

Once that has been done it will grant you free but limited access. For unlimited viewing a donation will be needed but is certainly worth the amount unless you only need

the very occasional information.

For example a manual can only be downloaded every 4 days! By clicking on the left hand side under the make of your equipment you will be presented with all the different articles under that type. There is also a miscellaneous section that may be useful.

www.mods.dk

Radio Diary

Dec 7th Club Night: Annual General Meeting

Dec 9th Christmas Dinner - Dog & Duck 1930 for 2000

Dec 14th Social Evening - White Horse - Maplehurst

Dec 25th BADNET Christmas Day Net 3.722 MHz 10:00

All above times are UTC

Club Meetings and socials start at 8pm