

# HARCNEWS

The Journal of

Horsham Amateur Radio Club

Est. 1938



G4HRS

June 2007

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# Notes From The Editor

Let start the June comments with a very warm welcome to new Club member Ray Cootes M3TGU. I have received a few requests for particular information or articles to appear in HARCNEWS and will try and sort over the coming months. Some of this has already been taken care of or will be when the articles are finished! If you feel like putting pen to paper or using the keyboard any submissions will be very welcome.

You may have noticed recently a few old TV programmes that have come back for one off shows (or several) and may be that this will be a trend since they tend to be better than some of the more recent shows! BBC Four in particular has been showing programmes related to old Radio and TV interest with plenty of archive footage.

Thanks to all those who have submitted items about Aspidistra! There is a lot of information out there and the best way to get all the gen is to surf the Internet!

David G4JHI

Please send contributions for the July edition of HARCNEWS to the editor by 18th June. Items received after the deadline will be held over until a later edition.

All input is subject to suitability and available space.

For items sent by email please send to this address:

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

## May Meeting Review:

### 'The Future of Electronics' (or the end of electronics as we know it?)

by Mike Underhil G3LHZ

Mike started the evenings talk with a question, 'What is Electronics?' A series of answers followed:- "Electronics is the science, engineering, and application of the movement of electrons." It now includes 'Information Technology' and is now the prime mover of most, if not all, 'Industry'. It is now the main means of satisfying human needs and has raised the quality of life – at least in the first and second worlds.

Electronics is now the prime means for creating Large and Complex, Systems and Organisations (Human Beings are components of large and complex systems!) Electronics is now the prime facilitator of Government and its Bureaucracy. Mike then went through the General Trends in Electronics and offered the following:- Electronics are now more complex and have moved towards parallel processing.

They have higher speed and run at higher frequencies. They are smaller in size, lower in power consumption, are lighter weight and have more intelligence. Telecommunications electronics now mean more distance and provide mobility (mobiles, cordless, wireless and radio.)

Modern electronics are subject to EMC (Electro-Magnetic Compatibility) both in and out and allow for more spectrum conservation. Better IC technology means lower cost. All of the above also apply to Amateur Radio. After a pause for some thought Mike then described Moore's Law that

appeared in an article in 'Electronics' dated 19th April 1965 by Gordon Moore, one of Intel's co-founders.

Moore observed that, the number of transistors per square inch on integrated circuits had doubled every year since the integrated circuit was invented. Moore also predicted that this trend would continue for the foreseeable future. In subsequent years, the pace slowed down a bit, but data density has doubled approximately every 24 months.

This in turn reflects the increase in speed, processing power, memory size and a decrease in DC power requirements and physical size of electronics today. This 'empirical' law has now lasted for a total of 40 years and when projected into future the argument is that there will be only one donor/acceptor impurity atom per transistor in 2015! – if Moore' Law is followed. Mike then showed a graphical representation of the progress of CPU development.

For example, the 8080 CPU chip in the early 1970's contained just fewer than 10,000 transistors. By the late 70's the 8086 had 50,000. In 1985 the 386 CPU had 500,000 transistors on one chip, and five years later in 1990 the 486 had 1,000,000. By the time the Pentium 4 processor became available it nearly had 100,000,000 transistors, in 2005 the Itanium 2 processor had 1,000,000,000! Where will it end?

To answer that question Mike briefly explained the manufacture of IC's and noted that it is 'now not possible to test a chip because of its complexity'. Mike further expanded the limitations of physics and technology for an IC. One of the major limitations is the size of a transistor relative to the size of an atom of Silicon, and hence the number of atoms/carriers doing the work.

The leakage current from quantum-mechanical 'tunnelling' as IC feature size reduces. This amounts to about 30% of power consumption for 65 nm devices.

Other factors were, the minimum wavelength that can be used for 'optical' photolithography, the 'noise' of small devices and the achievable Signal-to-Noise Ratio (SNR), Time Jitter and Bit Error Rate (BER). Finally 'Meta-stability' in logic circuits that causes 'random' unreliability of operation. Mike then went on to explain the techniques employed to reduce the effects Time Jitter, current leakage and Meta-stability.

What of the Future – Stagnation or the end of Electronics. Electronics are now:- More Complex and proving difficult to design, have moved towards parallel processing (dual core processors rather than faster processors). Higher speed, now at the limit ~2GHz, higher frequency, now at the limit ~2GHz. Smaller size and lighter weight, nearly at the limit with the next generation of 45nm chips.

Lower power, now probably at the limit of cooling power. (It is now commonplace to have to install cooling equipment that the same or more power requirement that the actual electronic equipment being used). More Intelligent electronics now limited by the intelligence of the designers. EMC = (Electro-Magnetic Compatibility), it will not get any better.

Better IC technology, now at the limit with 45nm chips, and finally lower cost, this again is now nearly at the limit. Is this the end of electronics? Only time will tell.

My thanks to Mike G3LHZ for the use of his presentation to prepare the above notes.

G4LRP

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# A Visit to Aspidistra

## Contributors

Anne M1AIM, Tony G3NPF, Alister G3ZBU, Mike G8KNP, David G4JHI



(Above) All visitors present except three photographers!

On Saturday 12 May, we enjoyed a rare opportunity to see some of the interesting buildings on the 60-acre site at King's Standing, near Crowborough in the middle of Ashdown Forest, a trip organised by David Ansell, M3NKC. It was soon apparent that many of the buildings were somewhat dilapidated and in need of repairs to prevent irreversible decay.

It is always sorry to see the totally unnecessary, officially sanctioned vandalism that usually accompanies these "decommissioning" exercises. It could surely have been possible to salvage some of the transmitting gear and the superb art deco interiors of the buildings.



(Above) The Cinema

Nobody seems to care that this site, and hundreds like it, contributed to our victory in WWII. There is always a great outcry when somebody wants to slightly alter a listed building or develop a rural site but nobody cares when the Nation's history is wilfully destroyed by mindless officialdom.

Worse still, after the initial violation of these buildings, nothing is being done to prevent further damage and decay. The current owners, Sussex Police, use the site for training and their budgets are being reduced in this area, and they would like to flatten most of the buildings and start again given the chance! Not all buildings could be flattened, as the largest is underground...

None of the old Aspidistra radio masts remain, or transmitters. What is left are some concrete stays and many buildings that housed the 10 transmitters. One building still has four glass insulators in a wall where the open line feeders took the



(Above) Feedthrough insulators  
(Below) Entrance to the new bunker



RF power, all 600kW of it, to the aerial tuning unit.

One aerial tuning unit building is left, and it is a circular brick building about 20 feet high and 15 feet diameter, approximately. Another similar building is a cooling tower and is built in the middle of a large pond. Some of the aerials were rhombic so they could act directionally. Power was targeted at German cities, Nazi soldiers in northern France and Atlantic U-boat crews, with the purpose of delivering 'black propaganda'.

The station pretended to be German, from the 'Old Guard', and offered the civilian population helpful hints and tips on how to get a sick-note from the doctors, and suggested people visited their friends and relations in bombed cities to disrupt transport. Transmissions could start within a few hundred milliseconds of a 'real' Nazi station cutting power in the event of a bombing raid, so the listener didn't know it was a spoof!

(Right)  
Cooling Tower



One building was underground, and had been extended into a top-secret regional government nuclear bunker. We had a good tour of that facility which was fascinating. All the bunks, desks and equipment have long since gone, with the exception of a few narrow lockers to put one's worldly goods in. The kitchen's single cold-water tap had a special key to operate it, as saving water would have been vital.

140 people would have lived in the bunker for 3 months with no washing machine... The building is below the water table and leaks a bit so needs constant looking after. The guide, Bob Toynbee, was excellent, and told us many anecdotes particularly about the war years and the subsequent usage of the site. However, there was not a great deal of information about the use of the site in the cold-war years.

However, there is a great deal of information on the Internet, which fills in the gaps. The many photographs that are available on the web show what the buildings were like when they were first built during the war. These pictures only go to highlight the regrettable state of dereliction evident on the site today. The BBC obtained partial use of the station from 8th November 1942 to broadcast its European Service.

After the war the transmitter was operated for many years by the Foreign Office's Diplomatic Wireless Service, and hired by the BBC to broadcast the World Service to Europe. Medium wave frequencies 1295, 1088, 809 and 648KHz were used for both this and the European Service although there were some adjustments by 1KHz on 23rd November 1978.

English by Radio and broadcasts in various European languages could be heard clearer in Southern England than some of the domestic programmes!

In the evenings there was also noted a regular World Service transmission from the site on the 31 metre (9 MHz) broadcast band fairly well received in Horsham

along with some aircraft flutter!

The station was decommissioned on the 28th September 1982. Afterwards some contingents of the party ascended on a nearby pub 'The Hatch' to sample the delights of food and drink!



(Left) A way out of bunker

(Right) A dilapidated building



(Left) Aspidistra entrance tunnel

# For Sale

2 desks:-

I have a pale green steel frame one with 3 lockable drawers and one cupboard with a ply worktop about 5 foot long by 3 front to back, in perfect condx

Also a dark brown steel frame (just like we used to have at work) in an 'L' shape with Formica tops about 1 inch thick. Maybe 6 foot by 3 with a 5 foot by 3 angle bit. One cupboard

25 note organ pedal-board

2 x 49 note organ keyboards with MIDI output

Please contact G3ZBU for details on 01403 253432

## Beyond the stars

I have just seen this in the latest issue of Electrical Products and Applications April 2007:

"You might think you had stumbled into a scene from 'Last of the Summer Wine'. In a field above Settle, North Yorkshire, you will find a strange dish-shaped construction and perhaps, a retired gentleman or two working on it. On closer examination it turns out to be a fully functional homemade radio telescope. And, thanks to encoder technology from Sick|Stegmann, it is capable of accuracy down to mere seconds of arc.

It is hoped that the radio telescope, with suitable supervision, can be made available to anyone who is interested in how our Universe works, and anyone interested can get hold of John McKay at [3peaks@daelnet.co.uk](mailto:3peaks@daelnet.co.uk)

73, hon sec

# Radio Diary

Jun 4th, 80m Data Club Championship 20:00 - 21:30

Jun 7th, Club Night: A Brief History of Recorded Sound - John Weller G0GNA

Jun 13th, 80m CW Club Championship 20:00 - 21:30

Jun 14th, Committee Meeting - QTH of G7EYL

Jun 17th, Newbury & District ARS Rally - Newbury Showground

Jun 21st, 80m SSB Club Championship 20:00 - 21:30

June 22nd - 24th Friedrichshafen

Jun 24th, West of England Radio Rally - Frome

Jun 28th, Social Evening - The Blue Ship - The Haven

All above times are BST

Committee/Club Meetings and Socials start at 8pm