



Mid Sussex Amateur Radio Society  
NEWSLETTER  
May 2008

# Mid Sussex Matters

**Flash!**  
**Mills Weekend -**  
**see page 7**



In this issue

- Dynamic Range
- Really Chasing DX
- D-Star
- CW on the Internet
- Antenna Report

## FROM THE PRESIDENT'S CORNER

Listening to several members talking recently about their plans to take out second mortgages to fund the purchase of the latest transceivers, and seeing in Radcom and on the web the bewildering choices now offered for these items, I wonder if we are perhaps getting things out of proportion.

Amateur radio, the hobby we all enjoy, is after all just a hobby and I wonder if we should be spending such huge sums on transceivers these days at the bottom of the cycle. In 3 years' time, when signals are booming in all day and night, the development of modern HF gear may well have moved on and today's expensive magic box of tricks might be old-fashioned.

There are, for example, developments in software defined radios which work in conjunction with your computer that might leave even the best of today's rigs standing by then.

AND... please remember that even the biggest and best of today's toys will not perform without an adequate antenna nor will its successor when the sunspot cycle peaks!

So give some thought to the above, and pay a lot more attention to your antennas. But don't let me spoil your fun!

**Ken Gibson G3WYN**

### ***On The Cover .....***

The IC-E92D, the latest addition to Icom's line of D-Star radios. Read about D-Star on page 11.

### **Photo Credits**

Cover – Icom UK; page 5 – Elecraft ; page 8 - G3HUA;

## ***From the Chair***

Due to the sails being removed from Jill Windmill they have told us that we cannot operate GB0JAJ from within the boundary of the mill for the Mills Weekend in May. But they did offer to rope off a part of the car park for our use. But after discussion with the committee this was decided against. The other option was to use the field adjacent to the site but, after being told the farmer would make a charge for its use, we again decided against that too. But good fortune was on our side when William M3VRE offered us the use of the SHERMANBURY WATER MILL; it's a bit dilapidated but at least it's a Mill so "thank you" William and we will let you all know the time and directions ASAP. [see page 7...ed.]

For all of you who attended the Round Table evening back in January, I thought I would just give you an update on some of the suggestions that were put forward. We have discussed some of them at our meetings, but since a number of you have been unable to attend, here is a summary:

***Morse classes.*** It was asked if we have any members in the society who would be prepared to teach Morse to a few members. If you are prepared to do that could you please let me know.

***Quartermaster.*** It was suggested that we create this new position; we felt that this comes under the remit of the Shack Manager.

***Radio Bazaar.*** This suggestion we feel is worth looking into, so have spoken to the member who suggested it and hopefully he will take the responsibility to organise this with the committee's help (probable date and venue will be in April 2009, Cyprus Hall). As soon as we have any more information we will let you know.

On Sunday 18 May, we have been asked by the organisers of the May Fair to be held at St Wilfred's Primary School, Burgess Hill, if we can attend to help with some security duties (similar to those we do for their fireworks display), and to set up a radio station. We have agreed, so will be looking for volunteers to help us.

Well I think that's plenty from me this month,

73 till next month

**Russell Nelson G7TMR**

## *Editorial*

I started working on computers about a year after I was first licensed as a ham so both careers proceeded in parallel, at least until I retired. In the early years there was little connection between computers and radio but by the 1980s I started hearing about packet radio and similar things. At that point I made the decision that ham radio was my hobby and computers were my job and I wasn't going to mix the two. If the truth be told, I was at that time pretty much a ham radio troglodyte – REAL hams communicated on the HF bands with CW. Even that newfangled mode Single Sideband was a little suspect and anything digital was too far out to even merit thinking about.

But when I retired and had a little more time to devote to radio my attitude started to mellow. I started to experiment with packet and then moved on to APRS, Echolink, Winlink 2000, IRLP and eventually PSK31 – all things with a flavour of digital technology. And though I still considered myself to be a CW man, I discovered that the digital modes were fun and fascinating.

Ham radio is a big church, with plenty of room for different interests and emphasis, so I am not going to preach that everyone should flock to the digital pulpit. On the other hand, don't reject digital modes simply because Marconi didn't use them.

In this issue we feature one of the newest digital gizmos – D-Star. The amount of D-Star activity in the UK is not great at the moment but it appears to be increasing steadily. The number of repeaters jumped from 12 in mid-February to 29 as this is written. There is a rumour that the Worthing club is considering setting one up. It shouldn't be long before it is possible to have a QSO using D-Star in most parts of the country.

Upon reflection, maybe my attitude hasn't had to change that much. Wasn't CW the first digital mode?

**Bob Clinton GØBUX**

# How Good is my Radio?

An occasional series by Chris, G4ZCS

## Dynamic range.

Is that how far I can throw my rig when I can't break a pile-up? Your rig must be better than mine 'cos you can throw yours further!

In previous articles I have explained the concept of the radio being able to hear the quietest signal "MDS" and that of selectivity, the ability to hear a signal when there are a multitude of loud signals nearby. Now what do we want when the radio hears very loud signals?

The last thing is to have a front end that is amplifying signals so much that the voltages in the intermediate stages become distorted, overloaded, and burn out! On the other hand we still need as much amplification as is practical.



The Elecraft K3 - "...better than 100 DB IMD dynamic range..." QST

Historically, dynamic range has been measured in such a way that the results do not bear any resemblance to real world band conditions. The measurements have been taken using a two tone signal placed at 20 KHz from the operating frequency. Those of us who work the HF bands regularly will know that if there is a 20 KHz gap in the band, at least four stations will jump in to fill it! So the test is not really a realistic one. In recent years a "new" test is sometimes quoted, that of "Close in dynamic range".

*(Continued on page 6)*

*(Dynamic Range - Continued from page 5)*

This is more practical as it sets the adjacent test signal at 2 KHz, a bit more like real life conditions. A reasonable range of 85dB is presently considered adequate for general use. However the activities on a contest weekend deserve nearer 100dB to prevent de-sensing and intermodulation interference.

So what exactly does “dynamic range” mean? It is the difference between the quietest signal a receiver can hear and the loudest signal that it can accommodate at the same time without degradation of its performance. Generally there are two dynamic ranges quoted, “Blocking” dynamic range and “Third order intermodulation distortion” dynamic range. Blocking describes a receiver’s ability to perform in the presence of an “off frequency” strong signal and not be desensitised by it. The third order range is the receiver's ability NOT to be affected by TWO adjacent off frequency signals that between them could generate spurious signals that appear to have passed into the receivers front end. This is caused by leakage of the two signals into the mixer stage where they appear to be a genuine signal, but in reality are not. Both the above conditions will occur regularly in large pile-ups or on contest weekends, especially on the lower bands where space is tight.

The design of the receiver should enable a very quiet signal to be heard in the presence of much louder signals some way off in the same band, and most certainly in the presence of signals a long way out of band. How is this achieved? Mostly by a good, well filtered front end, a quiet oscillator design and by a mechanical layout of the circuits that prevents leakage of signals across or between PCBs and the internal wiring. In the modern circuit using surface mount components, this is not as simple as one might imagine as components are closer together than in traditional wiring methods.

In the next issue I will cover some aspects of local oscillators and more on filters.

**Chris Saunders G4ZCS**

# Mills Weekend

Despite the unavailability this year of Jill Mill (*see page 3...Ed.*), we are still going to have a Mills Weekend operation. Mills Weekend is 10 and 11 May and this year we will be operating as GB4SWM (Shermanbury Water Mill) thanks to the kindness of M3VRE. William has kindly offered the use of "Mill Paddock" on his Shermanbury Estate, which is surrounded by the river Adur and the mill stream. Unfortunately there isn't much of the mill left to view (blame the Canadians who were stationed there during WW2!), but it will be nice to activate the site anyway. (*see [www.adur.org.uk/shermanbury\\_watermill.htm](http://www.adur.org.uk/shermanbury_watermill.htm) for photos.*)

Times will be 1000 to 1600 on both days. There will be a simple set-up consisting of a double size G5RV (204ft) 100w HF and possibly something on VHF. One end of the HF aerial will be supported by the club's trailer mast, the other by a tree. Power will either be small generators or heavy duty battery.

If you are interested and wish to lend a hand, please email me showing your interest. If at all possible, we should arrive roughly at the same time and leave at the same time. William is understandably concerned that "the uninvited" may try to tag along through his gates. So if I have an idea of who's coming and when, there shouldn't be a problem.

Please email me at [g7aie@msars.org.uk](mailto:g7aie@msars.org.uk) ASAP.

**Kim Newland G7AIE**

## Scottish Lighthouses

Bill M0BNN will activate Scottish lighthouses from his camper van as MM0BNN/P throughout May.. He will be on the north-east and east coast. He usually operates around 14.260 SSB in late morning and late afternoon. The skip from Sussex often allows contacts into GM but the path can be very unstable. If you hear him on, please give him a call. Details of his previous activations are at <http://ourworld.compuserve.com/homepages/m0bnn/>  
(Thanks to Jon Ruff G4RGV for this information)

## Really Chasing DX - Part Two

*This is the second part of Eric's reminisces of flying - and visiting hams - all over the world.*

I love Bermuda, having landed and stayed there on several hundred occasions. I got to meet Johnny VP9DL and his family. Rather than have me stay in a hotel, Joan & Johnny invited me to stay with them on every occasion and I took my first wife with me on one trip, she staying whilst I returned to New York. I returned to Bermuda 3 days later but due to a hurricane threatening Bermuda, after the passengers disembarked, the aircraft immediately turned round and returned to New York leaving her behind. This was no problem as BOAC had a daily flight to/from Bermuda and she re-joined me 2 days later.



Sometimes the DX came to Eric. Here is Sean EI7CV on a recent visit to Eric's shack in Lindfield..

It's easier to tell you where I have NOT been or flown over than all the places I have visited. In fact, I can only think of one, that being the Antarctic. If we are to believe the Bible and the existence of The Garden of Eden, then in my opinion, it must be New Zealand, which to me is the most beautiful country that I have ever visited. Honolulu, The Caribbean Islands, Zimbabwe, and Johannesburg are all beautiful and colourful, but none have the charm of New Zealand. For rugged scenery, Australia and the Andes are top of my list but also try Sondestrom fiord in Greenland, (but NEVER in winter) For panoramic splendour, flying at 20,000 feet over the dense jungle of the Brazilian rainforest for hundreds of miles was quite breathtaking. From that height the dense foliage looked just like a green sea. With only the sun available, navigation for 9 hours was dead reckoning, so it was nice to arrive in Georgetown British Guiana absolutely on track!

Bermuda was one of my favourite stops because there was so much to see and do, There are many islands, some inaccessible but all the beaches were marvellous with crystal clear water allowing a great variety of tropical fish to be seen. The cost of living is VERY high, mainly due to the fact that, apart from Bermuda onions, nothing is grown or produced, meaning that almost everything has to be imported. Having said that, the island is a blaze of colour with the many tropical flowers that are grown. The have hibiscus hedges that they trim and shape in the same way that we would treat our box hedges in UK. As long as the temperature is 60 degrees or more, the hibiscus hedges bloom.

Our planet is a really wonderful place that we probably take for granted and seldom appreciate. Even the desert areas of the world have their own charm and colour, with shades ranging from dark brown to vivid red. India deserves a mention, it being a vast country with a population of over a billion people. In the far north it can be very cold in winter and baking hot on the southern plains in summer. Flying between Delhi and Calcutta, the direct track runs fairly close to Mount Everest, a truly magnificent spectacle.

The most breathtaking sight in Japan is flying close to Mount Fuji which is not a sensible thing to do because it is area of INTENSE clear air turbulence which can tear the wings off an aeroplane. (BOAC lost a 707 close to Fuji). On a flight to Buenos Aires I was surprised to see a bustling, busy and very colourful city with very friendly people. As we approached, from 25000 feet we could see the Andes reaching up to the sky. Very impressive! In South America the most disappointing place was Rio de Janeiro. The statue on top of the mountain could easily be seen on the approach to land together with the Cocabana Beach, but on the drive to the city from the airport I was appalled by the slums on the outskirts. Probably, I thought, worse than those of Calcutta or Bombay.

Well I have almost concluded my experiences of around the world travel so will end by summarising my "best of all places." I have had holidays in Tokyo, Hong Kong, Australia, New Zealand, Bermuda, California, Michigan, Florida, Honolulu, and the Caribbean as well as the usual package holidays in Europe. Without any doubt the nicest place was New Zealand with Australia the next best. California is nice because of dry heat with plenty of sunshine. The worst? Anywhere in the Arabian gulf in the height of summer. For instance, try Basra in July with +45C temperature and 98% humidity. I have travelled millions of air miles around the world,

*(Continued on page 10)*

*(Continued from page 9)*

experienced many things but it was always nice to get into British airspace leaving the incessant radio chatter of other countries behind, and hearing a calm English voice say, "You are cleared to Heathrow, descend to flight level 120". Your sanity returns! If you want to travel the distances that I have covered, good luck to you - it will take you a lifetime.

Can I now grow older disgracefully? No I don't think I want to.

**Eric Holloway G3HUA**

## **Recent Events**

### **Surplus Equipment Sale**

The semi-annual surplus equipment sale was held on 28 March and once again there was a packed house upstairs at Cyprus Hall. The club took in about £180 from sales, food and the raffle.

### **Fox Hunt**

Sue G6YPY and Geoff G6MJW were the covert vulpines for the hunt on 4 March. Alan G8YKV and Stella vindicated the Doppler gear and were the first to find the lair (or whatever it is that foxes hide in). They were closely followed by Kevin G4XBG and Milly 2E1CCI. The team of G6XTW, G7VBR and G0BUX made a more extensive reconnaissance of West Sussex but eventually found the pub with the aid of tried and true technology - opening the envelope.

### **Kempton Park Rally**

Did you make it? Many of us didn't, despite good intentions. This was on Sunday 6 April, the day of the big snowstorm. Hearsay reports indicate that a number of the usual vendors didn't get there either, so we probably didn't miss much.

# D-Star

D-Star is a topic that is receiving frequent attention in the amateur radio press – for example, the March issue of RadCom contained an extensive review of the new Icom IC-E2820 transceiver, along with some general information about D-Star. For the benefit of our readers who don't see RadCom regularly, this article provides a brief summary of what D-Star is, along with some sources of further information.

“D-Star” stands for Digital Smart Technology for Amateur Radio and it is a standard for a communications protocol developed under the leadership of the Japan Amateur Radio League. It is an open standard, which means that anyone can build equipment that conforms to the standard, although currently only Icom is producing D-Star gear. The protocol describes both digital voice (DV) and digital data (DD) communication. The equipment currently available from Icom supports DV communication on 2M and 70 CM and DD and DV on 23CM. But to add a little confusion, the DV mode also includes a low-speed (1200 bps) data communication channel. Real DD communication is at 128 kbps.

D-Star communication can be carried out between a pair of users with the appropriate equipment or via D-Star repeaters. One of the significant aspects of D-Star communications is that messages are addressed – i.e., they contain the call signs of the originating station and of the intended recipient. However one is not prevented from using a traditional mode of soliciting ham contacts – the intended recipient address may be “CQ”.

D-Star really gets interesting when you look into the arena of repeaters. Repeater operation may just be local, similar to conventional FM repeaters, but there is also the facility for linking repeaters, either by UHF radio links or over the internet. In theory, a D-Star user will be able to talk to other users anywhere in the world, as long as the necessary repeaters are in operation and are linked to the D-Star network. There is an obvious similarity to Echolink and IRLP, but with the difference that the voice signals are digitally encoded over the entire path from the sending radio to the receiving one.

The Icom D-Star product range can be divided into two categories. First, there is a set of end-user radios, including the IC-E2820 mentioned above, a

*(Continued on page 12)*

*(Continued from page 11)*

dual-band mobile rig. There are several different hand-helds, either dual or single band. There is also a 23CM model which supports DD mode. The second category includes equipment for repeater operators. This gear supports local repeater operation and also has the capabilities for the repeater linking mentioned in the previous paragraph. Obviously Icom's market for D-Star depends on getting a significant number of repeaters into operation, so they are reported to be offering deep discounts on the repeater equipment to groups in which enough members buy end-user rigs.

One of the applications for the low-speed data channel included in the DV mode is the transmission of GPS position data. This mode appears to be in competition with APRS, though it is not immediately apparent that it provides all of the features of the older system. This is an area worthy of further study.

At present there are about 25 D-Star repeaters in operation in the UK – “about” because the operational status of some of them is uncertain and others are in the process of coming on line. East Kent appears to be a hot-bed of D-Star activity, undoubtedly because Icom's UK HQ is in Herne Bay. There are also repeaters in Folkestone and, most recently, Ashford. It is not surprising that there are also repeaters in Chertsey, Surrey and Hockley, Essex. For an up-to-date list of repeaters in the UK, with frequencies, visit [www.ukrepeater.net/channels/d-star.htm](http://www.ukrepeater.net/channels/d-star.htm).

The web provides several sources of information on D-Star. Icom's UK D-Star site is at [www.d-staruk.co.uk/categoryrender.asp?categoryid=3684](http://www.d-staruk.co.uk/categoryrender.asp?categoryid=3684) and provides information on their product range as well as general information. <http://www.d-starusers.org/> provides a world-wide list of repeaters as well as other news. There are two UK forums dedicated to D-Star: <http://groups.yahoo.com/group/dstar-kent/members?o=6&yguid=176184985> and <http://groups.yahoo.com/group/dstar-uk/>. The Icom site has a list of links to other sites.

Should you rush to the nearest Icom dealer and buy a D-Star radio? Perhaps you might want to wait awhile, especially in view of the paucity of D-Star repeaters anywhere near Mid Sussex. I must, however, confess to having a new IC-E92D handheld, still waiting for its maiden QSO. So if you too decide to take the D-Star plunge, then you can at least talk to me, when I am in the vicinity of Burgess Hill.

**Bob Clinton G0BUX**

## Members' Ads

### Yaesu FT-100

The Yaesu FT-100 is a miniature mobile transceiver that provides coverage of the 160 to 6 meter bands plus the 144 MHz and 430 MHz bands. The ultra-compact FT-100 combines a unique, user-friendly front panel with high-tech features like DSP to provide performance well above many base stations. And look at the receive coverage: 0.1-76, 108-174 and 420-512 MHz. Refinements include: IF shift, IF NB, dual VFO's, keyer, 300 memories and CTCSS. Plus you get DSP bandpass filter, notch filter, noise reduction and equalizer. Selling for £200. I also have a Yaesu FT-817 for sale.

**Darren Rainer G4VTQ**

g4vtq@msars.org.uk

## CW on the Internet

CWirc is a plugin for the X-Chat IRC client to transmit raw Morse code over the Internet using IRC servers as reflectors. The transmitted Morse code can be received in near real-time by other X-Chat clients with the CWirc plugin. CWirc tries to emulate a standard amateur radio rig : it sends and receives Morse over virtual channels, and it can listen to multiple senders transmitting on the same channel. Morse code is keyed locally using a straight or iambic key connected to a serial port, or using the mouse buttons, and the sound is played through the sound card or through an external sounder.

Note that CWirc doesn't do any Morse decoding; it simply transmits and receives Morse code timing events. A standard IRC user on the same IRC channel you're transmitting Morse on will only see coded lines when Morse code is transmitted. Only other CWirc users can receive what you send.

For more information or to download the program, visit <http://users.skynet.be/ppc/cwirc/>

(Thanks to Roger Ferrand G7VBR for finding this item.)

## Mid Sussex Happenings

2 May	Quiz Night (U)
9 May	Radio Night (D)
10-11 May	Mills Weekend
16 May	Radio Night (D)
18 May	May Fair, St. Wilfred's School
23 May	Construction Contest (U)
30 May	Radio Night and Table Top Sale (D)
5-6 Jul	VHF NFD
12 Dec	Christmas Dinner at Thatched Barn

Meetings are held on Friday evenings starting 7:45 at  
Cyprus Hall, Cyprus Road, Burgess Hill. West Sussex, unless other-  
wise noted. U=upstairs, D=Downstairs

**Visitors are always Welcome**

### Deadline

The deadline for items for the June issue of Mid Sussex Matters is

**15 May 2008**

### CLUB NET TIMES

Join in if you can. All times are UK CLOCK times.

Sunday	08:00	3.74MHz $\pm$ QRM
Sunday	11:00	S14 (145.350MHz)
Sunday	20.00	HY Net 433.125Mhz
Wednesday	20:00	S14 (145.350MHz)
Weekdays	13:30	21.330MHz. Work the USA
Tuesday	20:30	3.725 MHz $\pm$ QRM SCARF

## G5RV Antenna Report

I was intending to get together an antenna working party to lower the antenna to check that all was well, as our President was insistent that all was not well.

However Ken G3WYN did some checking with a multimeter one Friday evening and discovered that there was a fluctuating contact to earth.

Further investigation found that two of the joints where earth straps had been fitted originally and later removed were touching through the self - amalgamating tape that they were wrapped in. moving the joints caused the fault to go and reappear.

So on Sunday 27 April five of us descended on Cyprus Hall to cure the problem. The next question was where the earth was coming from. After a while it dawned on us that the antenna mounting hardware was earth bonded for lightning protection. The other joint that the G5 was in contact with was the 2/70 white stick. The outer shell of the connector is connected to the metal work of the antenna and hence to mounting hardware. Simple fix, remove existing self-amalgamating tape, replace it with new and wrap that in PVC tape.

We did a sweep of the antenna with an MFJ analyser and found that the expected dips were not on the correct frequencies. Although it can be tuned to give 100 watts up the spout on all frequencies, Chris G3ZCS is of the opinion that for its location it is too long. He will be doing some calculations to see how much too long. It may be that the difficulty in dropping the whole antenna without elevating platforms outweighs the benefits of cutting the aerial to its new length.

Many thanks to Kim G7AIE, Rob 2E0RJA, Chris G3ZCS and Roger G7VBR for their help

**Alan Cragg G8YKV Shack Manager**

### Club membership pin

Featuring the club windmill logo, in ruby to celebrate our 40 years.

Available from Stella Rogers, MSARS Treasurer

Price £2.00 each. Plenty of stock!



## Mid Sussex Amateur Radio Society

President	Ken Gibson	G3WYN	01444 412420
Vice President	Mike Pollock	G8KMP	01444 244953
Chairman	Russell Nelson	G7TMR	01444 236795
Vice Chairman	Alan Cragg	G8YKV	01273 844511
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Committee	Luke Milburn	2E0ZLM	01444 254728
Committee	Alan Cragg	G8YKV	01273 844511
Committee	Phil Brown	M5BTB	
Licence Holders	Chris Cook (G1ZMS, G3ZMS) Gavin Keegan (G5RV)		
Examiners of Accounts	Roger Ferrand G7VBR, Tony Finch G3XQM		
Reserve Examiners	Mike Munday G1TDL, Chris Saunders G4ZCS		

**Club Web Site: [www.msars.org.uk](http://www.msars.org.uk)**

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### **Newsletter**

Contributions are invited from all club members. The cut off date is the 15th of the month prior to publication.

**Address all contributions to the editor:-**

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