



Roger Dowling G3NKH
practicalwireless@warnersgroup.co.uk

Demonstrating amateur radio communications - the 2024 way

We visit the RSGB's National Radio Centre at Bletchley Park and meet some of the large team of volunteers explaining the mysteries of radio

EARLIER this year, in our regular series **The Face behind the Call**, we visited the shack of Stony Stratford-based radio amateur **Martyn Baker, G0GMB**. In addition to his home radio activities, Martyn is also Co-ordinator at the RSGB's National Radio Centre at Bletchley Park, a role which recently earned him the RSGB Founders' Cup in recognition of his dedicated work at the NRC over many years. There, he has built up an over 50-strong team of volunteers who last year spent 9,000 hours over 351 days explaining and demonstrating all aspects of amateur radio to nearly 80,000 visitors. I was delighted when Martyn extended an invitation for me to visit the NRC, **Fig. 2**, and meet some of his colleagues.

My chosen date turned out to be particularly fortuitous – the NRC organises many special events each year and on this particular day visitors were being given a live demonstration of satellite communications in action through the RSGB's links with the ARISS (Amateur Radio on the International Space Station) program. At precisely 10.44 GMT the International Space Station was due to overfly the UK and youngsters from a school in Lyme Regis were able to put searching questions about space travel to astronaut **Matthew Dominick, KCØTOR**. The large audience at the NRC watched



Sign up to our FREE email newsletter at www.radioenthusiast.co.uk

with fascination as Martyn explained the technicalities through the NRC's own satellite links with both the school and the ISS itself, **Fig. 1**.

The essentially technical nature of our hobby has always intrigued the great British public, curious as to how it works and how radio amateurs are able to make contacts with other stations around the world. Recognising this interest, the Science Museum in London set up its demonstration station **GB2SM** in November 1955, an event duly reported in our fore-runner *Short Wave Magazine* the following month. The station was under the direction of **G R M Garratt G5CS**, Deputy Keeper of the Science Museum assisted by **G C Voller G3JUL**.

It was a modest start. The technical facilities comprised an enormous a rack-mounted Labgear 150 watt transmitter and its table-top LG-300 variant; and GEC BRT-400E and Eddystone 680X receivers, **Fig. 3**.

GB2SM was modernised over the years, **Fig. 4**, even acquiring an overhead projector (remember those?) and it remained a popular Science Museum attraction until it suddenly closed, to great surprise, in 1994. The reason for the clo-

Fig.3: Science Museum station GB2SM at its opening in 1955.

Fig. 4: GB2SM in 1987 (photo © Costas Krallis).

Fig. 5: The radio room of the National Radio Centre when it opened in 2012. (photo © Pete Sipple, MOPsx/Essex Ham).



sure – "...there is no future in radio communications and therefore it is unlikely that the youngsters of tomorrow will be interested in it as a hobby" – seems risible today, and a more plausible explanation is that the station, in central London, had always been beset by high QRM levels which made amateur radio virtually impossible on many bands.

The closure of GB2SM left a vacuum to be filled and it is to the great credit of the RSGB that a big decision was taken, following the organisation's move from Potters Bar to Bedford in 2008, to invest some £100,000 in setting up its own amateur radio demonstration centre. The chosen site, in the relatively low-noise Bletchley Park in Buckinghamshire was adjacent to a vibrant heritage attraction celebrating the World War II code-breakers. A large team of volunteers and a London-based design consultancy led by **Don Beattie G3BY** worked tirelessly on the National Radio Centre project with generous support from many organisations including the major manufacturers and retailers. In addition to demonstration and heritage areas, a radio operations room, **Fig. 5**, was equipped with the latest equipment of the day in the form of Yaesu FTDX9000 and Kenwood TS-2000 transceivers.

The NRC, which acquired its own call **GB3RS**, was opened by Ed Vaisey, then Minister for Culture, Communications and the Creative Industries, on 11th July 2012.

GB3RS today

On my arrival I was welcomed warmly by Martyn Baker and his colleagues. First I met **Ed Jones G3ZLX**, **Fig. 6** from Milton Keynes who has been a volunteer for four years. At his home station, Ed is mostly active on HF SSB/CW and 2m/70cm FM/SSB, and has recently added a full-wave loop for 6m for FT8. We began the tour in the video presentation area where visitors can watch a short film as an introduction to the basics of radio communications today. An adjacent impressive large wall display with touch-screen panels depicts 'The Radio Spectrum' and how it is used by many different users for different communications purposes, **Fig. 7**.

A former software process control engineer, Ed takes particular pride in keeping all the equipment in good working order. He demonstrated to me the popular self-operated interactive exhibits, **Fig. 8**, that help visitors to understand such concepts as oscillators, bandwidth and modulation.

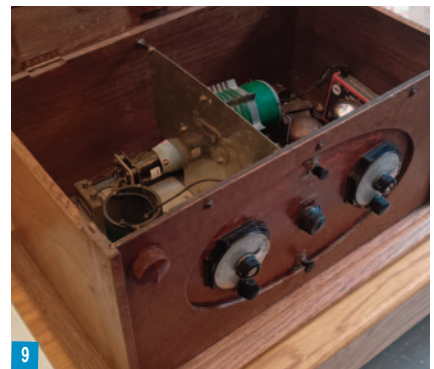


Fig. 6: Volunteer Ed Jones, G3ZLX.

Fig. 7: The Radio Spectrum display with touch-screen panels

Fig. 8: The array of inter-active exhibits have been a popular feature since GB3RS opened in 2012.

Fig. 9: A home-built radio dating back to the 1920s.

Fig.10: This 1960s KW2000 was once owned by RSGB Secretary John Clarricoats.



Ed also finds the historic equipment fascinating. He showed me a home-built radio, **Fig. 9**, that would have been the pride and joy of its constructor in the 1920s. I was also pleased to see that the major contribution of **G5KW** and **G8KW** at KW Electronics in the 1960s is recognised through a KW-2000 transceiver that was presented to long-time RSGB president **John Clarricoats, G6CL** on his retirement in 1963, **Fig. 10**.

Continuing my tour, I then met Manchester-born volunteer **John Moss G0KTW, Fig. 11** who has only returned to the hobby in recent years. John obtained his Class-B licence in 1973 but subsequently lost touch with the hobby after working in the Netherlands for some years. He particularly enjoys volunteering at the NRC because of the wide range of visitors it attracts. Some can be quite surprising – like a recent lady in her 80s who surprised John (and indeed her own daughter) by displaying an enviable ability to read CW which she had learned by serving in the Wrens in World War II. “We also get a lot of younger visitors too,” said John, “and I enjoy introducing them to the Morse Code. It’s amazing how quickly many of them take to it.”

Now located near Bishop’s Stortford, John’s main radio is a Yaesu FT-DX1, and I thought I detected a note of envy as he demonstrated the NRC’s flagship Flex-6500 SDR-based 100W transceiver covering the range 1.8-54MHz. The radio supports a range of operating modes, including CW, SSB, AM, FM and digital modes, and has an associated ‘Maestro’ visual display, **Fig.12**. To its right is a Linear Amp Gemini HF-1K 1kW linear, and on



its left a Yaesu FT-5000, regularly used with a wire dipole antenna for the daily NRC NET at 10.30 am on 7.130 MHz and for regular monitoring FT8 on 40m.

Also in the radio room, to the left, are a Kenwood TS-2000 which is still an excellent transceiver for use with satellites, and an Icom IC-9700 used for digital voice, VHF and UHF communications, **Fig. 13**. I next met **Robert Tickle M5RTP, Fig. 14** who travels to the NRC fortnightly from his home 20 miles away in the village of Harrod on the Bedfordshire border. Originally licensed as **G7EPP** in 1989, Robert has held his present call since November 2000. “My QTH is at river level, which is not ideal for amateur radio,” he told me ruefully, “and one of the pleasures of volunteering at the NRC is to have access to the latest gear and antenna systems!”

A retired teacher, he enjoys greatly the interaction with the public and in particular with younger people.

“We have an amazing range of visitors to the NRC,” Robert told me. “People are always fascinated by our live link with the International Space Station. I remember one person even asking me if we ever make contact with aliens.”

He is optimistic about the future of amateur radio. “We get a lot of visitors who have lapsed licences and want to bring themselves up to date with a view of returning to the hobby. We’re also encouraged by the number of younger people expressing an interest in taking out licences

Fig.11: Volunteer John Moss, G0KTW.
Fig. 12: Flex-6500 state-of-the-art transceiver.
Fig. 13: Kenwood TS-2000 and Icom IC-9700 transceivers.
Fig. 14: Volunteer Robert Tickle, M5RTP.
Fig. 15: The QO-100 voice SSB station

and we give them every encouragement to study for their Foundation Licences. I am able to give them the example of my own godson Barnaby who is now the proud owner of M7BSN.”

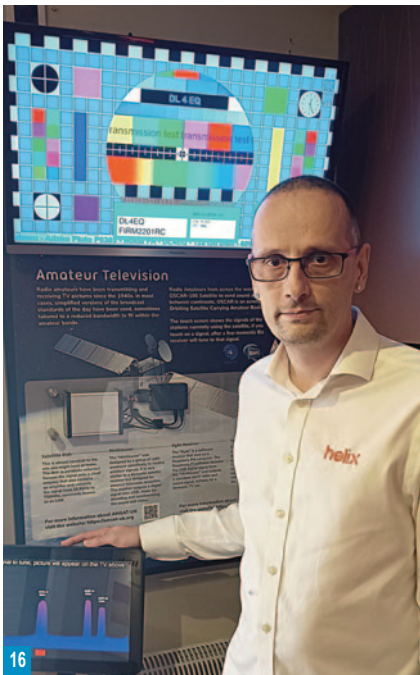
QO-100 satellite demonstrations

The geostationery QO-100 amateur radio satellite (also known as Oscar-100) was launched in November 2018 and has since provided a new dimension for amateur audio and television reception and transmission. The NRC’s involvement in satellite radio and television were demonstrated to me by **Las Sanduly MOBOY** from Romania, now living in Milton Keynes. Las has been in this country for ten years and takes a particular interest in satellite radio, with his own Pluto-based SDR duplex QO-100 system at his home QTH.

The NRC has two areas devoted specifically to satellite communications. The first of these, located in the main radio room, demonstrates the use of QO-100 for voice SSB communication **Fig. 15**. The equipment comprises an Yaesu FT-818 transmitter connected to a Kuhne 2.4GHz upconverter from Kuhne; the transmission dish is equipped with a modified patch antenna. On the receive



15



16

side, an SDRplay is connected to a PC running SDR Console software.

In a separate area outside the radio room Las demonstrated digital amateur television reception, **Fig. 16**. An interactive display enables visitors to tune into stations by clicking on the spectrum via a small touchscreen. The equipment consists of a Raspberry Pi, a British Amateur Television Club 'Ryde' DATV receiver and a small computer running the interactive processes.

Outside the building, Las walked me around the various antennas currently in use at the NRC. The most immediately ob-

vious is the impressive SteppIR high performance steerable Yagi array, **Fig. 17**, which is operational in the 40m-6m bands. It uses advanced technology to tune itself to the frequency of the station being worked. The NRC is also equipped with a conventional rotatable 2m/70cm beam, **Fig. 18** and a 80m/40m wire dipole. At the front of the building, three satellite dishes are used for the QO-100 displays, **Fig. 19**.

Looking ahead

I should like to thank Martyn and his team for making me so welcome at the NRC, and for updating me personally on the latest developments in radio communications technology.

The NRC is an undoubted success, earning a Trip Advisor rating of 4.5 out of 5, and I have no doubt that Martyn's large army of volunteers are central to this. It is a fact of life that amateur radio is a highly technical hobby, and however good the static displays there is no real substitute for practical demonstrations. There are usually three or four volunteers on duty each day, so visitors can always call upon them for helpful verbal explanations as to how the more complex gear actually works.

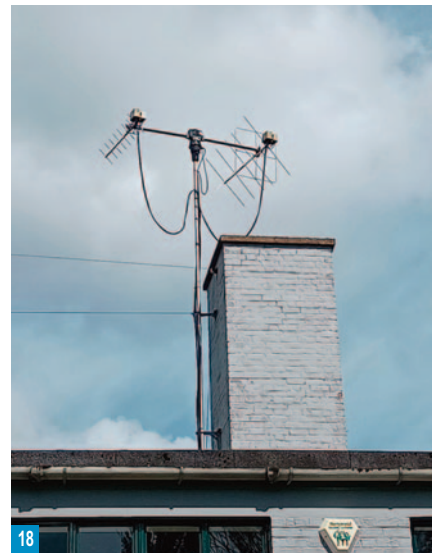
But what of the future? It is a salutary thought that all the state-of-the-art equipment at the NRC will, in due course, acquire 'heritage' status – and at a speed most of us would prefer to overlook. Already, in the 12 years since it opened, the NRC has been in a state of constant evolution. Fortunately, the amateur radio community is by nature populated by enthusiastic individuals and organisations who are keen to share their knowledge and resources to enhance our hobby. For example, the QO-100 DATV demonstration facility described earlier, which was only installed a year ago, drew heavily on the generous assistance of the **British Amateur Television Club** and **Justin Crockett, G8YTZ**. A few months ago, a multi-layered Geochron display which illustrates a host of features including time-zones, weather, position of satellites & DX contacts was very kindly donated by **Patrick Bolan, KJ7ZSU** and is now installed in the technology area.

As communications technology develops at an ever-increasing pace, the NRC will require constant updating to reflect the latest techniques, many of which are being developed by the radio community itself. This is the future challenge for the NRC and the RSGB. On the evidence of my visit, I have every belief that it is a challenge that will met with enthusiasm and success.

● **Entrance to Bletchley Park and the National Radio Centre is free to members of the RSGB. For non-members, normal Bletchley Park admission prices apply.**



17



18



19

Fig. 16: Las Sanduly M0BOY demonstrates interactive digital amateur television reception

Fig. 17: Stepp-IR antenna

Fig. 18: 2m/70cm steerable dipole

Fig. 19: Satellite dishes for QO-100 reception and voice transmission