



**Newsletter**

**DECEMBER**

**2014**

**DX INTO THE  
 ARCTIC CIRCLE  
 BY M6CUE**

I've now increased the distance that I've managed to contact inside the Arctic Circle from 100 Km to 300 Km. On Saturday October 4th I managed to contact Torbjorn Frantzen LA6KOA on 17m at 09.30z. Wx there was warm and sunny, temp was 19 degrees, wx here at that time was overcast and wet with a temp of 15 degrees, typical, anywhere north of the Watford Gap always gets better wx than we do here in the South, this time of year.

I found him on QRZ.com, and, as he does eQSL, will await an eQSL card from him,



Here's Torbjorn LA6KOA

# HELIOGRAPHY

## BY RICHARD G4MUF

A posh word, for I really mean just flashing a mirror across to some far off place. The idea had been ruminating (in whatever part of my brain digests things several times!) for years, but Mike, M3MTG in Swindon and I took up the idea, and we tried flashing but Swindon and Wootton Bassett but had trees in the way. Then on Hackpen Hill it had to be cloudy of course. While walking on North Hill, in the Malverns, I had a QSO on simplex and the station I was working suggested if he had a mirror I could see where he was 4 Km away in Malvern town. He could see my figure on the skyline. Alas, cloudy again. But that was it... I had to take it further. A few chats with Giles, GONXA found him interested to experiment, he being a man who owns an Aldis lamp. His first idea was this:- if he sent me the grid ref of the QTH from which he would look for my flash, I should put it into my GPS as a waymark, then set the GPS to 'go-to' mode, whereupon it will give me the compass bearing to aim the beam at. As I had my Silva N54 sighting compass (all walkers should have a compass) I could see the sense in this. In the end I did not try this.

So here we were, walking the Malvern Hills, and a QSO with GONXA under way. I know the geography of the Severn vale pretty well so knew roughly where to aim the mirror towards Giles. At our picnic lunch stop I began flashing. This is where 2-way radio came in. I would need the receiving station to say 'yes' the moment a flash was spotted, and then I could home-in or fine-tune my beam direction. I was slowly sweeping the beam along the vale towards Bredon Hill and Dumbleton Hill when he said "saw it!" From then on I could narrow down more and more till he reported numerous repeated flashes, with me keeping the beam pretty much playing at the point in the far distance (well, 20 Km away). Aiming the beam of reflected sunlight (about half an arc-degree in width) is the hard bit because the beam itself is invisible in broad daylight, unlike the 'light-sabre' effect with a torch at night. Clearly a 'foresight' like on a rifle was needed and if I could see the blob of light on, say, a bush or fence post nearby, that would give me my bearing. Then of course, where is the point in the far distance to aim for? The trick was to move myself around on the hillside till only the edge of the bushes or fence post etc was in exactly the right place touching, but not obscuring, the required point on the distant landscape. All along, I held the mirror as close to my eye as possible to minimise parallax. Even better, put my eye at one corner of the mirror, and look for the corresponding corner of the illuminated rectangle on the bushes, trees or fence post. That way the sighting method is very accurate.

Next walk on the Malvern Hills I repeated the experiment to the west, with Ian, G4WUH, and again got talk-back on simplex confirming accurate flashes 15 Km away. Ian videoed the experiment from his end. Ian, who was a ship's Radio Officer in the Merchant Navy, was helpful enough to agree to try flashing a mirror from his end across to me. This time I was on Bredon Hill and he was near Kempley near Newent in Glos, about 20 Km. He took a photo of how he set his mirror up: it was a big dressing-table mirror, placed on the roof of his car! This was probably rather cumbersome, but I saw numerous flashes during a 5-minute spell, which I videoed.

Another clear sunny day we were walking on Leckhampton Hill near Cheltenham when I heard Phil, GWDIRT having QSOs on 2 metres simplex. I called him when free, and repeated my mirror game. He was on Blorenge, near Abergavenny, 68 Km away. It was just peeping over the nearer ridge of Forest of Dean, to the left of Mayhill, Pen y Fan and Sugarloaf. For a while Phil reported nothing, and I began to assume he was just over the hill's skyline or I was looking at the wrong hill. Then bingo, he saw my flashes after a few minutes. I had been aiming at the summit, and the Foxhunter car park where he was, was some way to the south, or leftwards as seen by me. He had been expecting to use binoculars but was amazed how bright and easy to see it was. My mirror is about A3 size, and he was seeing in effect a chunk of sun at 6000 degrees C. I did a much shorter heliograph to Stewart GILGS from Cleeve Hill to Leckhampton, 7 Km.

Ex RAF aircrew radio hams mention that a small mirror and pointer is included in their survival pack as per YouTube video below. If downed they can flash at a search-and-rescue aircraft looking for them. The mirror is only 10 cm wide and has a hole in it, through which the pointer is viewed and illuminated by the mirror and lined-up on the aircraft. I had a QSO on a cloudy mirrorless day with Don, MOHCU who was calling CQ SOTA from Titterstone Clee Hill, which I could see 69 Km from Leckhampton, so there is a future experiment, and so is Wrekin Hill, 95 Km from Leckhampton Hill.

(Richard's item is continued on the next page)

# HELIOGRAPHY, BY RICHARD G4MUF CONT'D

The Wrekin has the issue of being eclipsed by Abberley Hill from anywhere south of Leckhampton Hill. That may be the longest sightline I can expect in the local area, just ahead of Leck. to Pen y Fan, 94 Km. The Malverns eclipse the sightlines to the Cleve Hills and to the Longmynd from some Cotswold locations. For Leckhampton I calculated distances and bearings as per attached photo which is an extract from a panorama. This exercising of my geospatial awareness reminded me of a history book of the Ordnance Survey which had a map showing survey lines running from Isle of Wight and Purbeck to the Cherbourg peninsula (114 Km). This got me thinking of mirrors across the sea, but closer study says those lines were done by radio tellurometer, not visual. In fact its below the sea horizon except on unusual propagation called 'Looming' which is the optical equivalent of a radio duct. However, Beachy Head to near Boulogne-Sur-Mer might be possible. Returning to Giles, GONXA, he fired up his Aldis lamp at dusk from the Malverns, and he had two stations near Tewkesbury watching for his signals, and I joined in from Leckhampton using a small green laser pointer. Giles saw it very clearly from 31 Km away.

Using a mirror for Morse has problems to be addressed. I found it impossible to hold the beam steady to make a 'dash', though dots were easier by swinging the beam back and forth across the target. I found YouTube videos of a tripod-mounted mirror whereby the mirror is sprung loaded so that the beam is only trained on-target when the key is depressed. As the sun moves the setup would need resetting at intervals, otherwise the Morse would get garbled or maybe no flashes seen at all after a while. An alternative idea would be to get the beam reported as steady and mirror firmly mounted somehow, then interrupt the beam with a card to send dots and dashes. So, all good Scouts stuff, or maybe J Arthur Ransom.

Richard G4MUF Oct 2014



YouTube videos:-

SAR heliograph demo

<http://www.youtube.com/watch?v=Uf-eykGL4VM>

Heliograph Morse at Bletchley Park using "official" spring-mount mirror transmitters

<http://www.youtube.com/watch?v=f8nVkVaHZ4Q>

G4WUH's video of the British Camp-Kempley heliograph experiment.

<http://www.youtube.com/watch?v=9r9PnHmSx1M>

G4WUH video of the Jubilee Hill-Deerhurst heliograph experiment.

[http://www.youtube.com/watch?v=J4PC6\\_SGoLA](http://www.youtube.com/watch?v=J4PC6_SGoLA)

Bredon Hill pan of Malverns and thunderstorm

<http://www.youtube.com/watch?v=rc30XSPydj4>

G4WUH nr Kempley helio to G4MUF Bredon Hill summit. Flashes seen 1m24s, 2m18s, 4m53s into the video.

<http://www.youtube.com/watch?v=huzzjQsJhVc>

AND FINALLY

MERRY XMAS

& A

HAPPY NEW YEAR

TO ALL GROUP MEMBERS & ALL USERS OF  
GB3TD

MAY SANTA & THE GODS OF PROPAGATION BE  
KIND TO YOU ALL, OVER THE FESTIVE PERIOD &  
ALL THROUGH 2015.

NEIL M6CUE