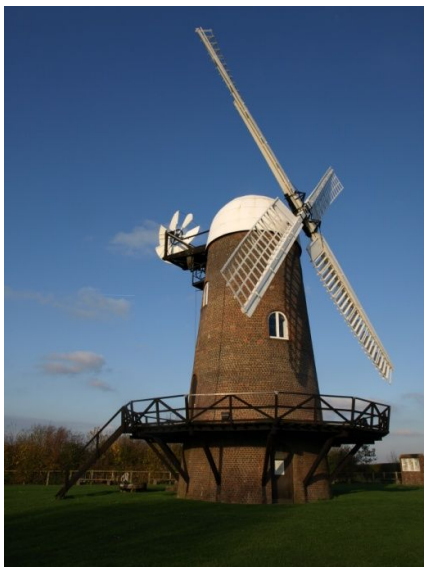
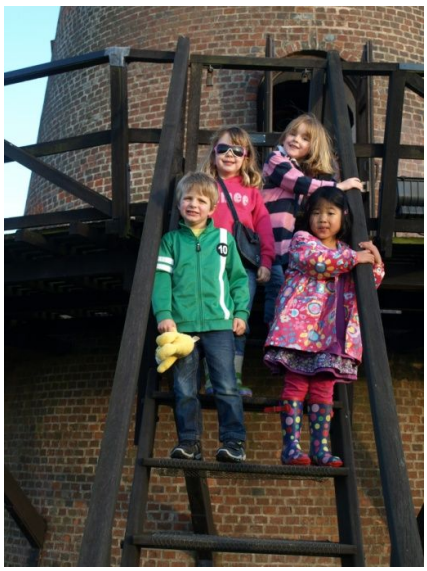
# CAC “Astrokids” afternoon in deepest, darkest Wiltshire on 19th November 2011

**Our CAC Kids team – George, Naimh, Alice, Jaimee, Hannah**

Our intrepid CAC Astrokids met at Wilton Windmill on a fine autumnal afternoon. For those that had travelled down from Bristol this was a good opportunity to stretch the legs with a lot of running and chasing around on the nicely manicured grass around the mill.

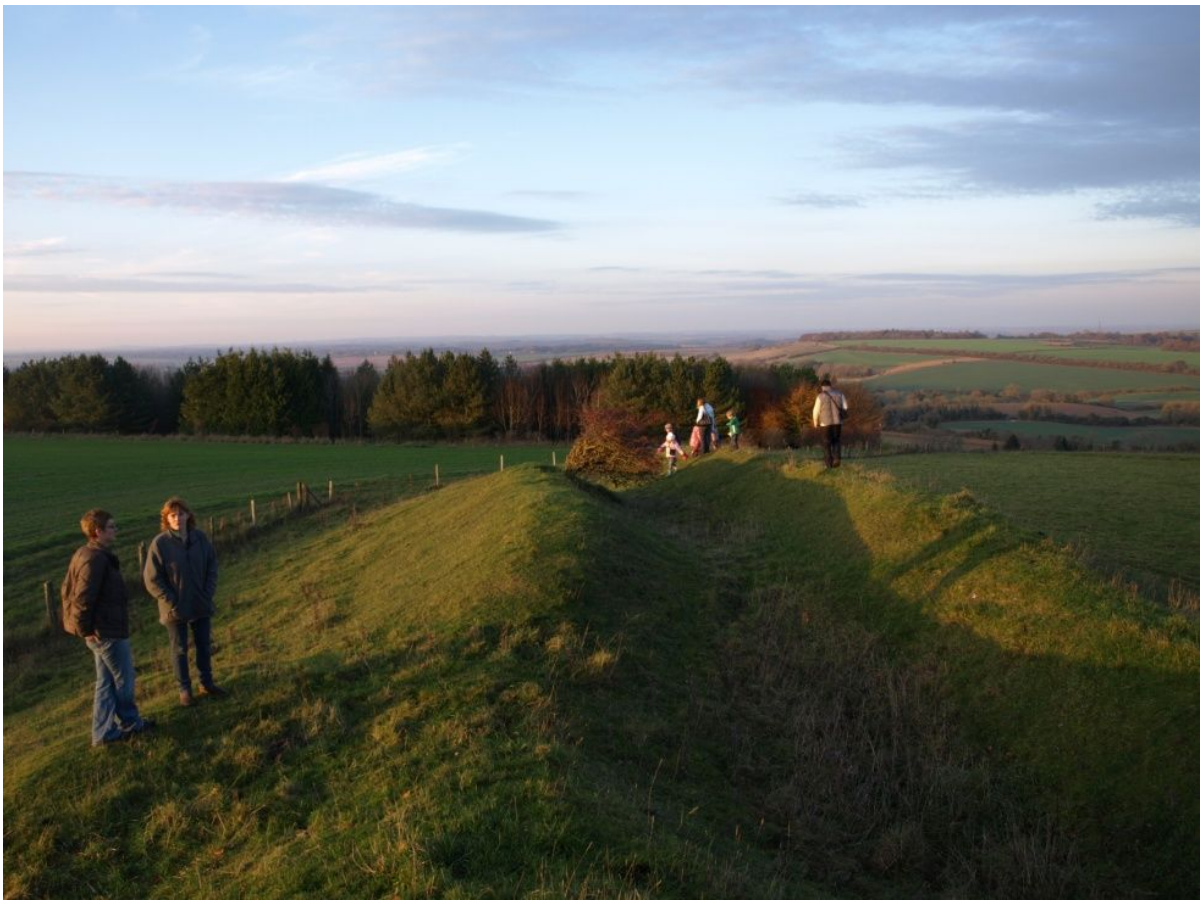
The windmill was closed to the public on this occasion but it was great to see a fully functioning windmill, for example you could see how you “reef” windmill sails. Wilton Windmill was built in 1821 and reconstructed in 1976 and milling still takes place today – check their website for details, it’s a nice spot for a picnic.





**Wilton Windmill**

Our second stop was Tidcombe Long Barrow, just a couple of miles away. Tidcombe is unusual in that its orientation in north - south as opposed to the usual east - west (ish) orientation of Neolithic monuments. As opposed to the ubiquitous antiquarian inflicted “doughnut” scar to be found on many Wiltshire monuments of this type, Tidcombe has a trench along its entire 180 foot length. We know that the inhabitants of Tidcombe village raided the monument in 1750 in search of treasure and presumably this is the result. All they found was an articulated skeleton, perhaps a secondary internment. The spoil from this trench must enhance the height of the monument, which is nevertheless most impressive.



**Exploring Tidcombe Long Barrow**

We were treated to a beautiful sunset over the barrow that bode very well for the ensuing evening of astronomy.

As Wiltshire antiquarians such as Sir Richard Colt Hoare (1758 – 1838) were conducting their rather rudimentary excavations of the Bronze Age and Neolithic barrows, Sir William Herschel (1738-1822), just a few miles away, was undertaking a similar role in the world of astronomy. Galileo had proven the theory of heliocentricity a hundred years before with his discovery and observations of the Galilean moons of Jupiter yet it was the pioneering observational astronomy of Sir William Herschel that started to put the vastness of space, and consequently the insignificance of humankind, into perspective.

The skeletons uncovered by our antiquarians and deep sky objects discovered by Herschel would call into question the established notions of antiquity and our place in the universe.

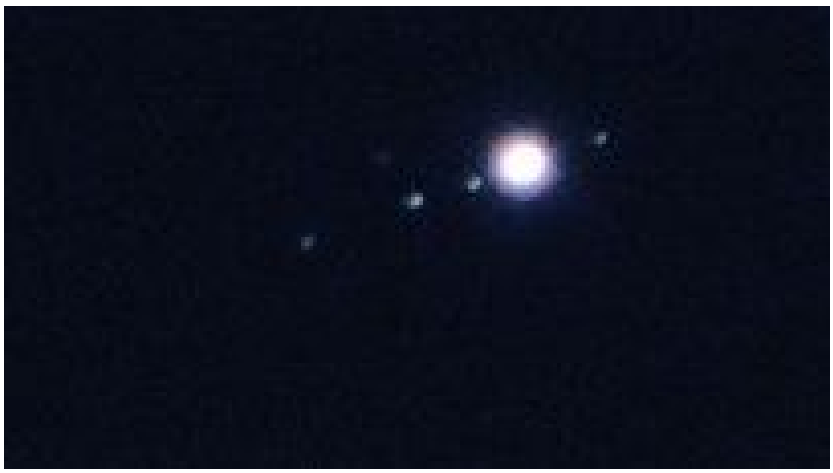
Maybe the world wasn't created on 24th October 4004 BC as proposed by Bishop Ussher and perhaps the world didn't lie at centre of the universe. The debate would culminate with Darwin's publication of On the Origin of the Species in 1859 but in some quarters continues to this day.

Thus the context and connection between our CAC Kids archaeological explorations and our "astrokids" evening is really a celebration of new ideas in two disparate disciplines but with similar academic and ecclesiastical repercussions. Sir William Herschel is our astronomical version of Sir Richard Colt Hoare.

Also, we wanted to show our CAC Kids some planets!

So, shortly after sunset we headed on to the village of Wexcombe and to the dark skies of the George household. The children did some drawing, including the creation of a giant solar system and ate sausages whilst we set up telescopes and waited for astronomical darkness. We had been watching the forecast carefully all week and the best the BBC could offer us was "partly clear". On the night however we enjoyed totally clear skies, the only light pollution coming from milky way shining brightly overhead. The seeing and transparency were also good although it was warm and we had brief moments of atmospheric disturbance reducing the quality of the views from time to time.

The first object to appear in the sky, and our first target was Jupiter. 93,000,000 miles away, we were treated a superb view. All our CAC Kids were able to describe the major cloud belts (stripes) and count the four Galilean moons. There was an interesting interloper amongst the Galilean moons, just above Ganymede. This transpired to be a background star, evocatively named HIP 9569, a 6.5 magnitude star some 665 light years away and just visible in the image below.



**Jupiter and the Galilean moons.**
**Left to right: Callisto, Ganymede, Io, Jupiter, Europa.**
**Photo: Pete Ellwood**

The next object on the itinerary was M31 – the Great Andromeda Galaxy. 2.2 million light years away, we were peering back into geological time scales. M31 is huge and is estimated to comprise a trillion stars. The sky was clear and dark enough to spot it without the telescope, through the telescope it filled up the eyepiece field of view, which, incidentally, was 0.89°.

We finished our CAC Kids itinerary with a view of Uranus, a faint and ghostly blue disk. This was a more challenging object for them, lying 1,812,638,241 miles away, almost 20 times the distance of Jupiter. However, we are so pleased that they had the opportunity to look at this planet, given that this was the focus of our evening's celebration of William Herschel, who discovered Uranus from his garden in Bath on March 13th 1781.

**Glowsticks – how we kept an eye on the Astrokids Photo: Pete Ellwood**

For the CAC Kids, it was off indoors for more sausages. The adults went on to observe a selection of stars and deep sky objects following in the footsteps of Sir William Herschel.

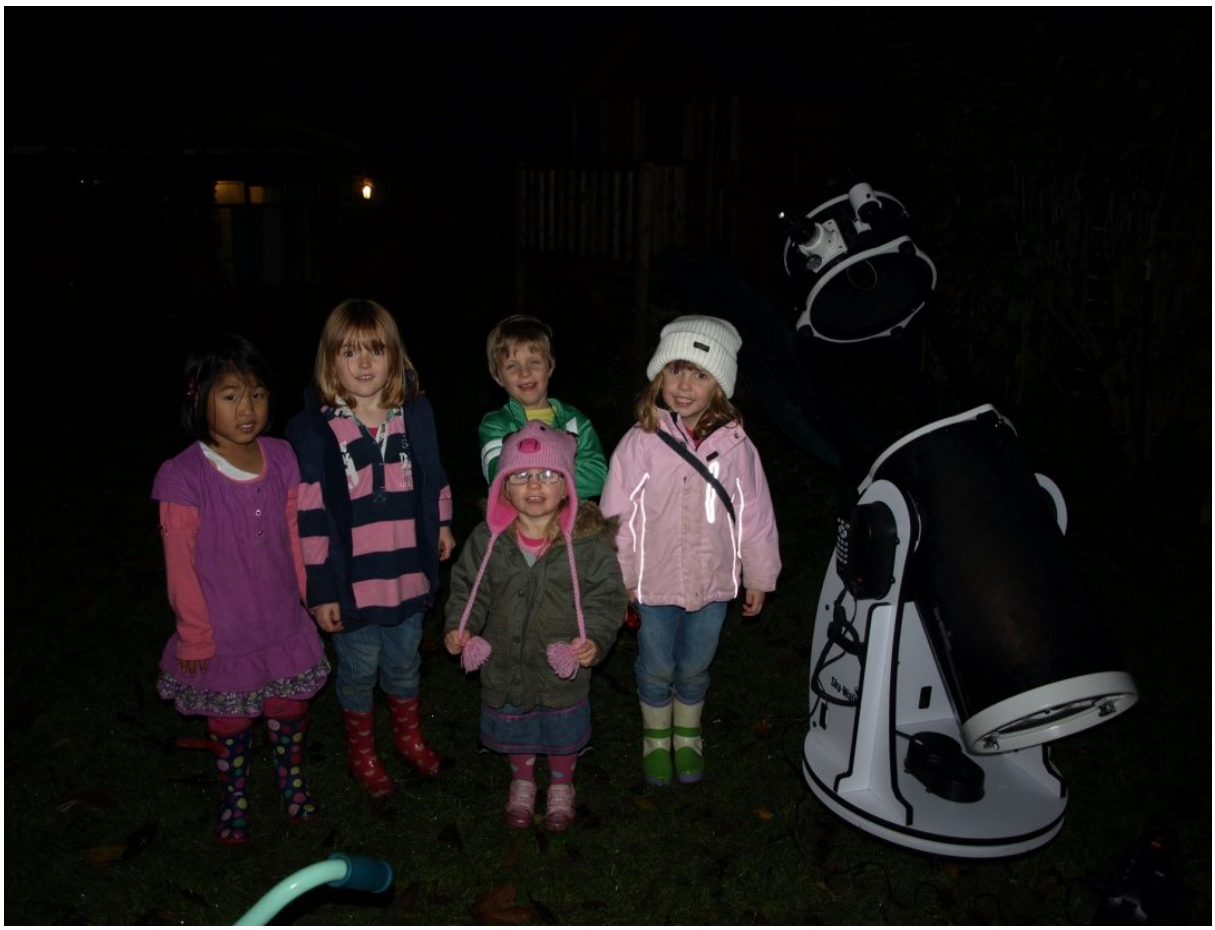
Firstly we turned the telescope to Alberio, a stunning blue and gold double star in Cygnus and around 410 light years away. The light we were looking at set off in the time of Elizabeth I and when the English were eating potatoes for the first time!

We then moved on to two globular clusters in Delphinius - NGC 6934 and NGC 7006, the latter being remarkably remote at 185,000 light years away, lying on the extreme edge of our galaxy and sometimes described as intergalactic. Turning to NGC 7331 in Pegasus, this is a

galaxy that the text books often use as an example of what our own galaxy would look like from interstellar space. The Blue Snowball nebula (NGC 7662) was a little more tricky, needing some averted vision, but simple to see once you knew where it was in the eyepiece. Its similarity to Uranus explains why William Herschel, who discovered it on 6th October 1784, coined the term “planetary nebula”.

We then ventured to Cassiopeia to have a look at a discovery by one of the greatest and probably first professional female astronomers – Caroline Herschel. NGC 7789 - Caroline’s Cluster, also known as the White Rose Cluster is stunning. Discovered it in 1873, the cluster comprises over 1000 stars and is around 6000 light years away – in this case, we were looking back into Neolithic times, maybe as Tidcombe Long Barrow was being constructed! In the wide field eyepiece it looked absolutely fantastic.

With Jupiter much higher in the sky and better placed for higher magnification we took one last look using a 7mm eyepiece and a barlow lens giving a magnification of 428x. This gave a big image of the planet and in moments of good transparency, the best view of all, but with the moons out of the field of view. The Great Red Spot was illusive, possible on the far side of the planet.

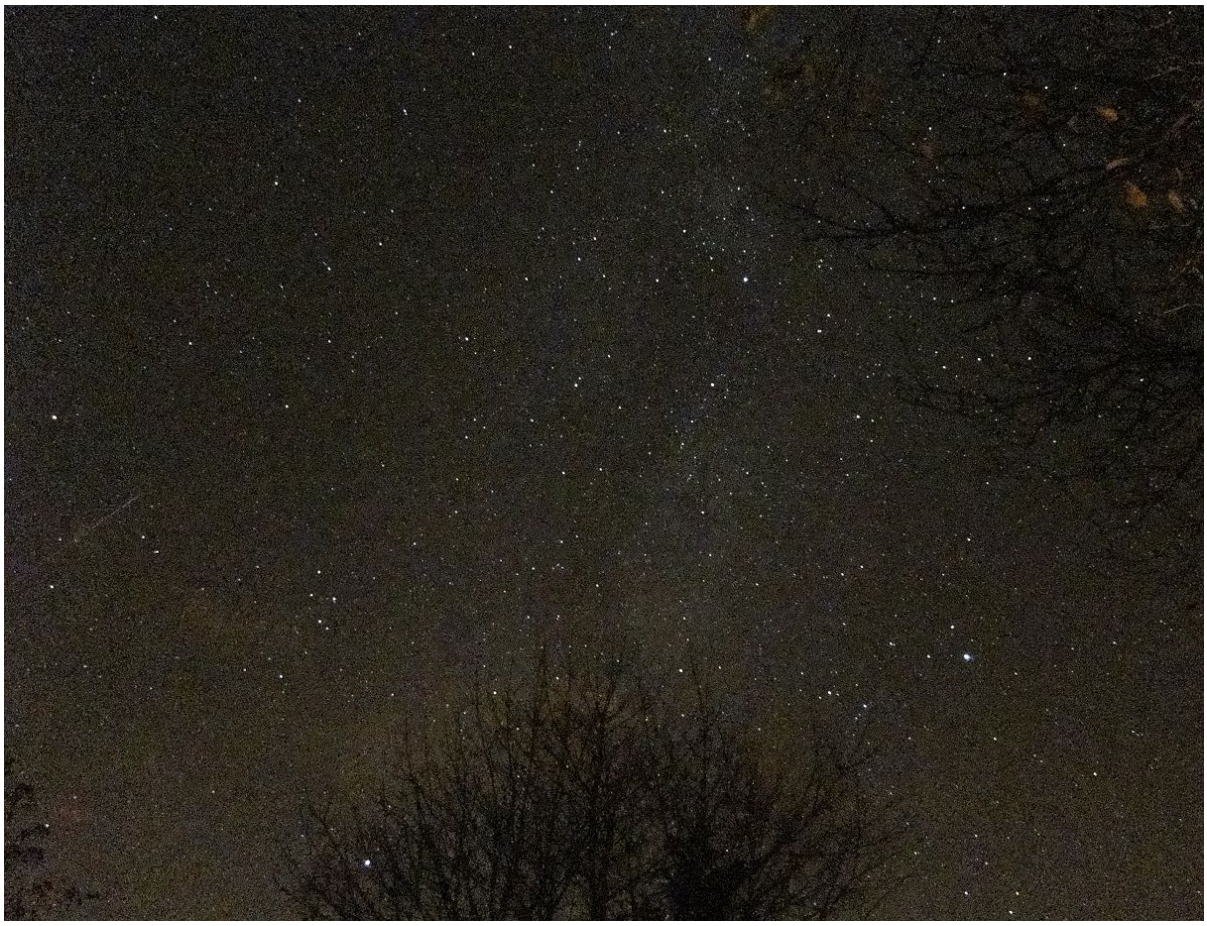


**Our young astronomers**

Finally, we had a look at NGC 869, included in the Herschel catalogue, but not discovered by Sir William. This is one component of the fabulous double cluster in Perseus, noted by Ptolemy and Hipparchus in the first century BC.

With the exception of the second viewing of Jupiter, all our other observations were made using a wide field 16mm eyepiece, providing a magnification of 94x. We were using a 12" Newtonian reflecting telescope on a Dobsonian mounting.

The catalogue references NGC refer to the New General Catalogue, compiled by J L E Dreyer in the 1880's and based on the catalogues produced by William Herschel and his son, John. M refers to Charles Messier (1730 – 1817) who was concerned with comets. His catalogue was a list of 110 objects that were not comets and thus to be avoided!



**The milky way over Wexcombe, 19th November 2011, Photo: Pete Ellwood**

This was a fantastic event and we owe huge thanks to John and Cathie George for letting us use their house and garden for the evening. John also produced a fascinating pre war Philips Planesphere and treated us to some very appropriate music by Holst on the stereo. Thank you also to Abby for selecting the afternoon sites and cooking all the sausages and to Pete for the astrophotos as credited above, all of which were taken on the night.

Finally, special thanks to our CAC Kids and the parents for bringing them along. Once again, our CAC Kids behaviour was exemplary; our biggest anticipated challenge was to keep our eyes on the children in complete darkness. Whilst glowsticks helped (and hindered from time

to time), all paid attention and did as they were asked, all waited patiently for their turn at the telescope, and as always, everybody played very well together.

Most importantly, everybody enjoyed themselves and we hope, absorbed just a little bit of inspiration for things both archaeological and astronomical.

We intend to hold another astrokids event next year when Saturn and Mars become evening objects and we have a chance to explore the moon.

John Swann
November 2011