

## SARK ISLAND REPORT TO IDA 2017

Sark is a small island, 5 kms x 3kms, about 22 miles off the coast of France in the English Channel. We receive approximately 50,000 visitors to the island annually. It is almost impossible to estimate how many of those come due to our Dark Skies status but interest has been increasing annually.

Little has changed on Sark during the past year – we still do not have street lighting, electricity has again increased in price so very few residents waste it or have outside lighting, and 4 out of our 6 hotels remain closed. The extensive refurbishing of a large centrally situated collection of self-catering cottages was monitored for outside lighting but none has been installed. The outside seating area of the Island Hall bar was lit by an unshielded bright light but following a request from a member of the Sark Astronomy Society, the management have altered its angle to shine downwards – it is also on a timer.

SAstroS continues to offer star-gazing to residents and visitors at the Sark Observatory. So far this tourist season we have had approximately 250 visitors at star-gazing sessions.

A Guernsey Youth group who were visiting in February enjoyed an evening at the Observatory but a children's group in March had to be cancelled twice due to weather.

Royal Horticultural Society (RHS) journalists who visited to write about Sark enjoyed a good session on 17<sup>th</sup> March with clear skies.

Professor Paul Fellowes FIET, FRAS, Cambridge Astronomical Society, spent 17-21<sup>st</sup> April in Sark and gave a talk to the public and held star-gazing sessions. See Sark Visit Views below\* He also gave us his invaluable notes on our telescope.

The Flybe international airline in-flight magazine contained a 4 page article on Sark in May which was introduced with a long tribute to our Dark sky status.

On 12<sup>th</sup> August the island was visited by a sailboat, 'By the Ocean We Unite'. This Dutch group run a campaign to raise awareness of the continued pollution of the oceans by dumping rubbish. Crewed by youngsters, they decided to anchor off Sark when they saw we had dark skies and gave a well-attended public talk at the Island Hall; the following morning they brought the boat into the harbour enabling the public to visit.

[www.bytheoceanweunite.org](http://www.bytheoceanweunite.org)

22<sup>nd</sup> and 23<sup>rd</sup> August saw an Independent Television (ITV) team in Sark for making a short film about the Dark Skies of Sark. They spent two nights at the observatory (one when a group of visitors was using the telescope) and the programme will be screened on 8<sup>th</sup> September.

On September 15/17 we have the Roots Festival in Sark, and there will be two nights of star-watching at the Observatory followed by a Walk in the Dark. ( [www.sarkrootsfestival.com](http://www.sarkrootsfestival.com))

On 21/22 September Sark hosts a two-day Inter-Island Environment Meeting to celebrate 10 years of Ramsar designation with 65 delegates from other environment organizations under

the auspices of UK and Overseas Territories Conservation Forum. ([www.ukotcf.org](http://www.ukotcf.org)) This will include sessions at the observatory in the evening.

On 29<sup>th</sup> September we are expecting Professor David Hughes, Emeritus Chair of the University of Sheffield, who will spend 2 days in Sark and give a public talk followed by star-gazing at the Observatory.

### \* Visit to Sark Astronomical Society

April 17-21<sup>st</sup> 2017

### Observing Record Notes

Paul Fellows

During my recent visit to the Dark sky Island of Sark as guest of the Sark Astronomical Society I was fortunate enough to have two really clear, and one partially clear night. On all three nights we were able to observe at the SAstroS observatory using their 10" Meade LX200 and we tracked down a number of objects to observe.

This note is to record those that we saw, and is illustrated with images that I have myself taken of these object, using in all cases a similar telescope, so that the images presented here are very much representative of what we were seeing at the eyepiece.

The darkness of the skies was superb and as a result the contrast of many of the objects was very much better than it usually is from the much more polluted Cambridgeshire location of my own observatory.

#### Jupiter Rising

Jupiter was almost at opposition, and so rose early, and was the first target for the night even as the twilight was fading. We observed it on all three evenings and noted the changing positions of the moons. In each case the cloud belts were also clearly visible, but the red spot was hiding around the back of the planet unseen.



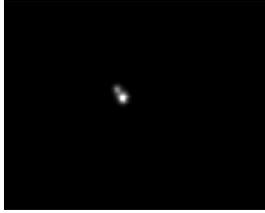
#### M42- the great Orion Nebula

Just too low in the west at this time of year to be seen before it sets in the twilight we were able to catch some views of this star-forming nebula and the trapezium of young stars in the centre that have been born from the collapse under gravity of this glowing cloud of gas.



#### Castor – the triple double star!

One of the heavenly twins of Gemini, the star we see in the sky as a single point of light, Castor, is actually a rather complicated system. The telescope was able to show is that the main bright point is split in two, as in this image, with a brighter and a fainter member of the pair. These orbit each other in around 400 years



What we could not see is that each of the pair has a tiny additional companion, a red-dwarf star, orbiting very closely too it. So close that amateur telescopes cannot separate them from the main stars. We know of these companions from advanced studies with professional instruments. The orbits are so close that they take just days (9.2 days and 2.9 days respectively) for the red dwarfs to whiz around their primaries.

What we can do though is look a little off to the side and see, a third fainter point of light. This is another object that orbits right around the outside of the quadruple star centre, in a long slow orbit that lasts around 100,000 years. This object is clearly red in colour and, is another PAIR of red dwarf stars. This time the pair are so close to each other that they spin around each other in only 20 hours.

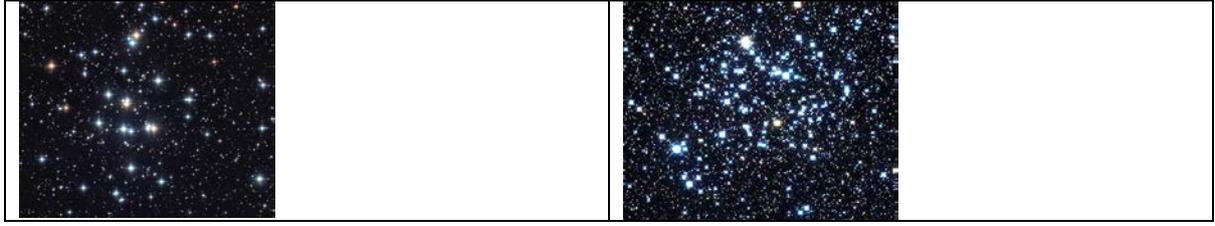


This picture, very much over exposing the central combination reveals the outer red-dwarf-pair as a separate dot.

## Clusters

We also looked at a number of star-clusters, these are the next stage on from a star-forming region such as the Orion nebula. Once the stars are formed their stellar-winds blow away the cocooning gas and dust, and just leave an “open cluster” of stars. Our galaxy contains very many of these, and this time of year there are some that are nicely placed for observing.

<p>M44 –the Beehive Cluster – clearly visible to the naked eye under the dark skies of Sark, but usually invisible in Cambridge was a glorious sight especially in binoculars. The main telescope has too much power and magnification and therefore rather a narrow field of view so was not the best way to view some of these.</p>	<p>M35 – at the foot of Gemini – another nice open cluster, just about fitted into the field of view. In fact there is more to this one that we didn’t hunt down as everyone wanted a look. Maybe next time we can see that it shares the sky with another cluster that is much deeper behind it out in space.</p>
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Just next door in Auriga we surfed across M36,37 and 38, which are similar open clusters of stars

Turning North, we pointed at the constellation of Hercules and the great Globular Cluster, M13

This lies just beyond the outer edge of our galaxy and is a ball-shaped mass of around half a million stars packed really closely together. The stars are very old and come from a first generation of stars from the dawn of time. As such they are mostly very clean and made only of the Hydrogen and Helium that formed in the big bang and are not dirtied up with the by-products of giant stars, such as the carbon and oxygen and metals that we depend on for life.

In 1975 the Arecibo radio dish was used to beam a radio message to this object, in the hope perhaps that with so many stars, perhaps some would have planets, and some even have life. The distance to M13 is however 25,000 light-years, so there is another 24,958 years to wait before the message arrives. And of course a similar period before any reply has a chance to get back. However, the discovery that the stars are so unsullied with the planet- and life- forming elements rather suggests that it's not worth the wait.

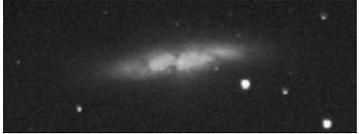


M13 – the great globular cluster in Hercules

#### Other Galaxies

As Ursa Major (the plough, or big dipper) was high above our heads, and in the best location for looking for fainter objects it was a great place to go galaxy hunting.

First we found M81, Bode's Galaxy and M82, the cigar galaxy. These are around 10 million light years from us, but quite close to each other so that they have almost collided in the recent cosmic past

Bode's Galaxy – M81		The Cigar Galaxy – M82
		<p>The near collision around 6 million years ago has partly disrupted M82 and given it this rather curious appearance</p> 
The spiral arms were able to be seen filling the field of view		

Moving to the other end of Ursa Major we also located M51 the whirlpool and the M63 sunflower galaxy

	
M51 the whirlpool, found after about six attempts!	M63 sunflower galaxy (found by accident while actually searching for the whirlpool in the wrong place) Richard also found this and thought the shape like a leg of lamb!

And finally, also in the region of Ursa major we were able to catch an Owl – this being M97 the Owl Nebula



I think the idea being you can see the face of an Owl in it, this is a “planetary nebula” where a mid-sized sun-like star has reached the end stage of its evolution, consumed all its fuel and blown off its outer layers to space as smoke-rings, leaving the dead white dwarf of the core behind.