

# *Sagittarius*

The Newsletter of the Astronomy Section of La Société Guernesiaise  
October – December 2011

## **Forthcoming Events**

### **Public Lecture:**

Frank Dowding: "The Space Shuttle, A look back"

Tuesday 15<sup>th</sup> November  
8.00 pm at the Observatory

### **Public Open Evenings**

(now Thursdays)

27<sup>th</sup> October: 6.30 pm

New format will be that Public Open Evenings will be on a Thursday evening and will comprise a talk or film show, with a clear night for observation being a bonus!

### **Astronomy Section Christmas Meal**

Tuesday, 6<sup>th</sup> December: 8.00 pm  
(venue to be confirmed)

In addition, the Section meets at the Observatory every Tuesday evening, and Friday if clear for observing.

## **Inside**

|                                      |    |
|--------------------------------------|----|
| All-Sky Camera                       | 2  |
| UFO lands at Observatory!            | 4  |
| The BAA Jersey Meeting               | 7  |
| A Draconid Storm?                    | 8  |
| Jersey Astronomy Club                | 9  |
| Abstracts from Astronomy periodicals | 10 |

## **Inserts**

Star chart

Sunset, sunrise, moonset and moonrise times

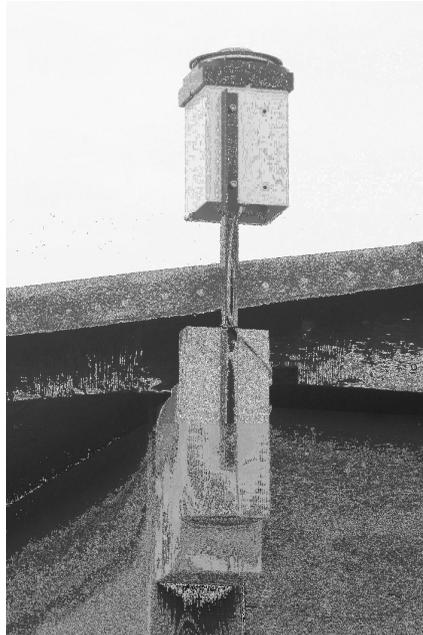
## All-Sky Camera

In May 2011 we were approached by Visiting Professor Bill Martin of the Centre for Astrophysics Research at the University of Hertfordshire with the proposal that an all-sky camera be installed at our Observatory. The camera images the entire sky, from horizon to horizon, and operates automatically, downloading images to a computer, and uploading them to a website.

The University operates four such cameras at various locations, its interest being particularly in research on night-time cloud cover, and observations of meteors (especially fireballs), passing satellites (such as the International Space Station and Iridium flares), variable stars, and perhaps even supernovae. It may also be possible, by triangulation, to determine the track of meteors, leading perhaps to the recovery of meteorites. The first camera was installed at the university's Bayfordbury Observatory in October 2009. It wished to move one of them to the Channel Islands, and Guernsey was selected. The camera is likely to be re-located to Sark after some six months.

After much consideration as to the best position for the camera – a compromise between sky coverage and cable length – we received the camera, together with its computer, on 26 July. Installation above the south gable of the telescope building was straight-forward. Then we had to carry

out the computer configuration, focus and centre the camera image, and set up the Internet link. This was less straight-forward, but eventually accomplished, although at the time of writing there are still some nightly periods when the uploading to the website fails. These interruptions are relatively short – rarely more than half an hour.



**The camera**

Despite this, all images are retained in files on the computer, which we are then backing up elsewhere. They are also compiled into nightly videos, which are uploaded to the website. Archived images and videos can be readily viewed on the site. The images are retained in raw FITS format and as

compressed JPEGs. Each night the numbers of images can number many hundreds, as recording is continuous, with new pictures being taken every minute or two, depending on the exposure. With the longer nights of winter the nightly count is likely to be well over a thousand.

The camera was operational by 09 August. The first couple of weeks were plagued with a bright Moon and bad weather, but we managed to get some image sequences of clear skies,

showing very clearly the Milky Way, Jupiter, and even, given the camera's high sensitivity, objects such as the Andromeda Galaxy. It also, of course, picks up aircraft, as well as occasional wildlife. The videos clearly show the diurnal rotation of the stars. Nearby lights show very bright images, and the glow of the airport and Town lights is apparent. The camera software works out the optimum exposure, up to two minutes in a dark sky.



All-sky camera image showing the Milky Way, Jupiter, and a possible Iridium flare or meteor.

The technical details are: Santa Barbara Instruments Group AllSky 340 monochrome camera, using a Kodak KAI-340 CCD, 640x480 pixels, each 7.4 microns square, and a high gain output stage giving excellent

sensitivity. It has a Fujinon fisheye lens, focal length 1.4 mm, F/1.4, with an acrylic dome cover. It has an internal heater to keep the lens free from condensation and the dome free from dew. Raindrops have to

evaporate naturally. The cost is a fairly reasonable \$2195, and there is a colour version for the same price.

The camera soon picked up the International Space Station and what appeared to be an Iridium flare. The sky was cloudy, unfortunately, at the time of the Perseid meteor shower in August, but I am hoping that some of October's Draconids may be bright enough to be imaged.

The images can be seen in real time at <http://star.herts.ac.uk/allsky/index.php?c=-5>. There is a link to that page at our website, [www.astronomy.org.gg](http://www.astronomy.org.gg), and there are links from the page to the image and video archives. The nightly video is usually available

sometime during the following morning.

Although the camera has been in operation at our site for a relatively short time, in mixed weather conditions, it does show promise as a useful tool, enabling a measure of cloud cover to be made, and recording astronomical and other events. The Guernsey Meteorological Office has expressed an interest in our images, as they have great difficulty gauging cloud cover at night because of the bright airport lights.

In the meantime I would be interested in hearing from any member with a proposal for research with the images.

*David Le Conte*

## **UFO lands at Observatory!**

Our all-sky camera can pick up all sorts of familiar and mysterious events in our night sky: satellites, airplanes, meteors, and atmospheric phenomena – and wildlife. Within a couple of weeks of installation an earwig was photographed crawling over the transparent dome covering the camera.

Then, at midnight on a starry 29 August 2011 an unidentified flying object landed right on top of it! At first it appeared with the star background appearing through its body, the object having landed part-way through the two-minute exposure. The next image clearly showed its dark outline, and it then appeared on

several successive images, staying there for some 8 minutes.

La Société Guernesiaise ornithologist Jamie Hooper confirmed that it was a Barn Owl, and he could tell by its broad middle claw that it was older than a year. Then on 07 September an owl was photographed again, this time perched at the edge of the camera. Jamie said this was almost certainly the same owl.

I am aware that there are owls in the area; indeed they are sometimes seen flying over the Observatory, and occasionally their screeching can be heard. Hopefully the camera will pick

up further appearances of owls and other wildlife. Watch this space, or even better visit the all-sky camera

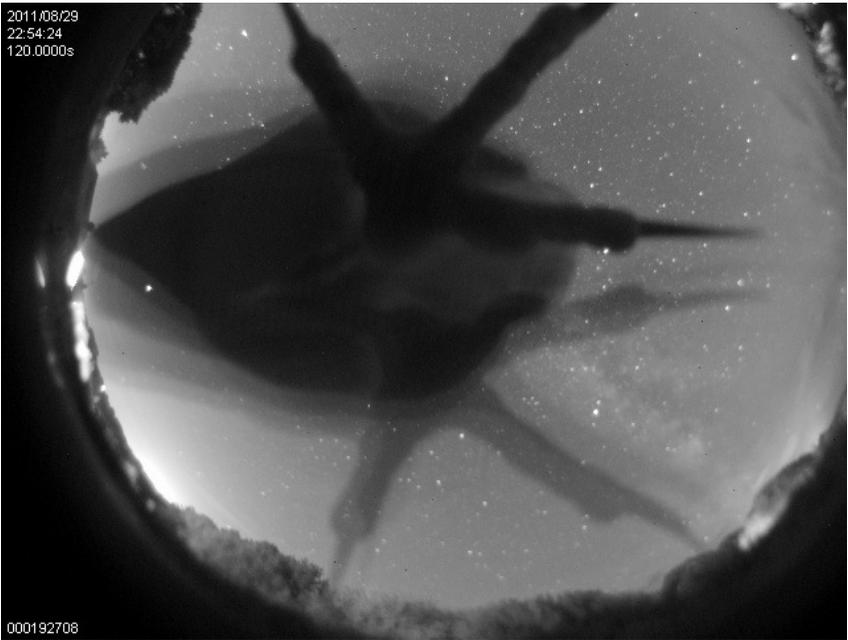
website via the link on our home page ([www.astronomy.org.gg](http://www.astronomy.org.gg)).

*David Le Conte*



First sign of alien (barn owl) part through exposure

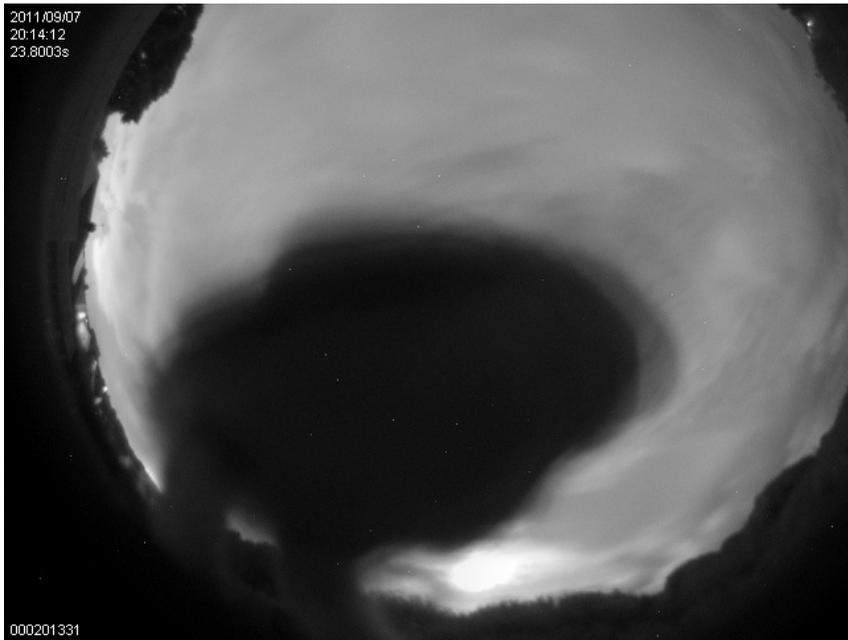
2011/08/29  
22:54:24  
120.0000s



000192708

Alien (barn owl) defined.

2011/09/07  
20:14:12  
23.8003s



000201331

Return of the alien (barn owl).

## The BAA Jersey Meeting

The British Astronomical Association (BAA) was founded in London in 1890. The Organization has always stood for the encouragement of amateurs and professionals to improve their knowledge and observational skills in all aspects of astronomy. It is recognized as a leader in its field throughout the world.

Various meetings and formal addresses are held in London throughout the year, but each September there is a special 'Out of town' meeting where a selected venue is chosen for a weekend of formal talks and informal visits of local interest.

This year such a meeting was held in Jersey. It was the first ever visit to the Channel Islands and in fact the first outside of the United Kingdom.

David Le Conte, Geoff Falla and I decided to attend the meeting. David, in fact, was one of the speakers. The weekend meeting, was held over three days, Friday 2nd September to Sunday 4<sup>th</sup> September. Geoff and I arrived in Jersey on the Condor at around 10.30 am on Friday morning. David took a later boat. We arranged to go our own ways during the day (we were staying at different hotels) and meet at the BAA venue, the Radisson Blu Hotel at 7 pm. A reception was held at the Hotel along with words of welcome from the BAA President Dr David Boyd. From 8pm till 9 we had an

interesting talk from Dr John Mason on the Northern Lights.

The next day, Saturday, was the main event, with talks from 9 am until 9.30 pm with breaks for lunch and tea. It sounds like a long day, but the chairs were so comfortable and the talks so interesting that the time seemed to fly. David's subject was: Channel Island Megalithic Tombs and was there an astronomical connection? Mike Maunder, who was also one of the organizers spoke of the interesting and subtle features which the sky offers us should we take the time to look at it. Every talk was fascinating. We heard about Camera Obscuras from Mike Frost, "Travelling with binoculars" from Dr Stuart Moore and a possible meteor "storm" in the constellation of Draco on 8<sup>th</sup> October from Dr John Mason. Variable stars from Roger Pickard and the difficulties of transporting large camera equipment when travelling to view eclipses from Nick James. The last speaker was Eric Blakeley from Channel Television who illustrated his talk with a film of his adventurous exploits, climbing the highest peaks of each continent.

The President, Dr David Boyd brought the day to a formal close at 9.30 pm after confirming that a visit to the Jersey Astronomy club had been arranged for 9.45 pm that evening.

I thoroughly enjoyed the week end and there was even time for Geoff and I to do a little sight seeing around the

waterfront and nearby areas. The weekend had been organized by Mrs Hazel Collett of the BAA and Mike Maunder as the local co-ordinator. A coach tour of the Island was arranged for anyone who wished to see some of Jersey's attractions on the Sunday morning. Geoff and I returned to Guernsey on the Sunday Condor.

Everything went like clockwork and the Radisson Blu Hotel on the Waterfront made for an excellent conference venue.

### ***Frank Dowding***

## **A Draconid Storm?**

At the BAA meeting held in Jersey on 03 September Dr John Mason, Director of the Meteor Section, announced the possibility of a storm of Draconid meteors (sometimes called the Giacobinids) this October.

This meteor shower originates from Comet Giacobini-Zinner, which has a 6½ year orbit. It is unusual in that the cometary dust producing the shower has remained close to the parent comet. Normally very few meteors are seen as a result of this 'shower', but when the Earth crosses the descending node of the comet's orbit close to the comet itself meteor rates can be suddenly very high, producing a 'storm'.

Such a situation occurs this year, and predictions are, therefore, favourable for a high rate of meteors, albeit for a very short period. In 1933 the rate was about 90 per minute, and there were high rates in some later years.

The Draconid meteors have exceptionally slow trajectories, and typically show persistent trains. This

may be because they are relatively young, and contain volatile material.

The peak period may last only about 20 minutes. Various predictions have been made as to when it might happen: **between 8.11 pm and 9.42 pm BST on Saturday, 08 October 2011**. The latest prediction, Dr Mason said, is **8.57 pm BST**.

There will, unfortunately, be a bright gibbous moon, it being 11 days old. The meteors radiate from the constellation Draco, at RA 17h 23m, Dec +57°, near the dragon's head, at an altitude of 67°. Dr Mason suggested keeping your back to the Moon, and face north, keeping constant watch as soon as it gets dark, from about 7.00 pm until 10.00 pm.

Let's just hope for clear skies!

### ***David Le Conte***

*Reference:* Oxford Dictionary of Astronomy, by Ian Ridpath.  
International Meteor Organisation shower calendar: <http://www.imo.net/calendar/2011#dra>

## Jersey Astronomy Club

Saturday September 3<sup>rd</sup> was an exceptionally pleasant day for Geoff Falla and myself. This was our second day in Jersey attending the British Astronomical Association 'Out of Town' Conference. We were sitting on comfortable chairs, listening to qualified lecturers including Michael Maunder and David Le Conte talking about the very things that interest us the most.

During the afternoon there was an invitation from the Jersey Astronomy Club for anyone wishing to view their Club house that evening. A count was taken of numbers involved and a coach duly appeared at 9.30 pm. This in itself was impressive as it had seemed that every Island coach was involved with 'Jersey Live'.

About twenty of us boarded the coach and were driven to the 'Patrick Moore Astronomy Centre'. This is in the south west corner of Jersey, within the grounds of Les Creux Country Park, just west of St Brelades Bay.

We arrived at around 10 pm and with the help of a well organized number of people with torches, were escorted to the Club room. This was quite an impressive wooden building with seating for at least 30 to 40 people.

We had a short introductory talk from the Club Chairman Martin Ahier who explained that the Club had started informally in 1992 with some assistance from the Jersey States.

They meet once a month starting at 8pm on the second Monday.

We were then shown in turn, of about 7 or 8 at a time, the 'Dome' that had been given to the Club by Sir Patrick Moore. There was some doubt as to whether Patrick actually owned it but it has since been confirmed that it does now belong to Jersey.

The treasurer is Tony Isherwood. It was Tony with some help, who put the dome together after it was transported to Jersey in sections. It stands about 7 – 8 feet high in a circular barrel shape about 10 – 12 feet diameter, with the dome on top swivelling on rails. A 14 inch Meade is positioned on a concrete pillar. Tony intends to provide a motor for the dome.

Geoff and I then had some drinks and food provided for all of us and we spent some time speaking with the Secretary, Jodie Masterman and her husband Chris. Jodie has a very pleasant Californian accent; Chris helps with the Club but as he says, does not have a title.

I found all the committee very easy to talk with, but I did spend more time with Jodie, having met her earlier in the day. It seems that the Club has been through difficult times during the last few years. Membership has dropped and key people have left.

Jodie has only been Secretary since April this year but seems determined

to bring it all together. Both Jodie and Chris have expressed a wish to visit our Observatory in Guernsey. We have exchanged e-mails and intend to communicate with each other on a regular basis.

## **Geoff Falla's regular roundup of articles from popular Astronomy and Space Journals**

### **What Happens When a Star Dies?**

The result at the end of a star's life depends on its mass. The different processes, which can end with either a planetary nebula and white dwarf star, a supernova leaving a spinning neutron star, or a black hole of extreme gravity. (Astronomy, June 2011)

**Astronomy on Ice.** A project to discover more about the star formation history of the universe has taken more than five years, and has achieved good results. Based in the Antarctic, Project BLAST - with a telescope carried by balloon above most of the atmosphere, has obtained measurements of background light from large galaxies. (Sky & Telescope, June 2011)

### **What Happens when a Star Dies?**

The result at the end of a star's life depends on a star's mass. Explaining what happens during this process, ending with either a planetary nebula and a white dwarf star at its core, a supernova leaving a spinning neutron star, or a black hole of extreme gravity. (Astronomy, June 2011)

We were back on the coach at around 10.45 pm. If it was the intention to promote a Club with a promising future, then they have succeeded.

*Frank Dowding*

**Visiting Vesta.** NASA's Dawn spacecraft began an orbital mapping survey of Vesta in July. The second largest asteroid in the main asteroid belt, Vesta has a huge impact crater with a central peak as a main feature. After a year in orbit the spacecraft will continue the mission to asteroid Ceres - now classed as a dwarf planet, arriving there in 2015. (Astronomy Now, July 2011)

**Planetary Nebulae.** A guide to planetary nebulae, the final stage in the life cycle of stars like our own Sun, with illustrations of some of the many varied shapes of these nebulae. (Astronomy and Space, July 2011)

**Volcanoes of our Solar System.** Volcanic activity is very evident in the solar system. A survey of volcanism on planets and moons, some of this activity produced by residual internal heat. In the case of moons, the volcano activity is seen as being the main result of tidal interactions between the moons and their planets. (Sky & Telescope, July 2011)

**Neptune comes Full Circle.** The story of Neptune's discovery in 1846, from observed perturbations in the orbit of Uranus and skilful calculations by French, British, and German astronomers. Since that time the

outermost of the major planets has now completed just one orbit around the Sun. (Sky & Telescope, July 2011).

**Spitzer's Galaxy Show.** One of four NASA space telescopes, including the Hubble optical telescope, the Spitzer space telescope has used an infrared capability to detect and measure heat radiation from objects and material which may be otherwise invisible. During its six year observation programme much information has been obtained about star formation and the structure of galaxies. (Astronomy, July 2011)

**Magnetic Solar Systems.** Our own planet has a magnetic field generated by the dynamo effect of rotation, producing an electric current. The magnetic field produced in this process protects the Earth from effects of the 'solar wind' of charged particles. The complexity of magnetic fields and periodic reversals is not fully understood, and research is now being extended to detecting the magnetic fields of other star systems. (Astronomy Now, August 2011)

**Juno Mission to Jupiter.** NASA's Juno spacecraft was launched in August to begin a five year journey to Jupiter, where it will study the planet's structure, gravity, and magnetic field in much more detail. The mission is also to learn more about Jupiter's atmosphere, and to obtain images of the polar regions for the first time. (Astronomy Now, August 2011)

**Some Exoplanet Illusions.** During more than a century there were claims

regarding the discovery of planets orbiting other stars, only for these claims to be found untrue. It is only recently with more advanced methods that large numbers of actual exoplanets have been confirmed - but there are still some errors, such as a recent claim regarding a planet in the habitable zone of the Gliese 581 star system. (Sky & Telescope, August 2011)

**Early Pummeling of the Planets.** Most evidence of early impacts on Earth's surface has been erased by erosion and crustal movements, but the Moon's surface reveals the extent of major impacts during the history of the solar system. There is debate, however, on suggested evidence of a later bombardment of material long after the planets were formed. (Sky & Telescope August 2011)

**The New Milky Way.** Our galaxy has two major spiral arms extending away from the ends of its central bar, and two lesser spiral arms. Recent discoveries about the matter which makes up the galaxy is leading to a better understanding of how it formed, and how it all works. (Astronomy, September 2011)

**The Magellanic Clouds.** The two dwarf galaxies accompanying our own Milky Way galaxy were named after explorer Ferdinand Magellan, who observed them during a 16<sup>th</sup> century expedition to Indonesia. The Magellanic Clouds can only be seen by observers in the southern hemisphere and are found to have active star-forming regions as a result

of interaction with the Milky Way.  
(Astronomy, September 2011)

**The ISS gets down to Business.** The end of NASA's Space Shuttle flights to the International Space Station is now leaving crew change missions to the Russian Soyuz, with the supply of cargo packages also being undertaken by other space agencies. Construction of the Space Station has finished, and more time can now be concentrated on planned scientific work which can only be done in this unique environment. (Astronomy Now, September 2011)

**A new Lunar Research Mission.** The NASA launch of twin spacecraft to the Moon in September is planned to measure precise variations in the Moon's gravitational field. This will help scientists to understand more about its internal structure and formation, as well as the formation of the Earth and other terrestrial planets of the inner solar system. (Astronomy Now, September 2011)



### **Astronomy Section Officers**

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