Sagittarius

The Newsletter of the Astronomy Section of La Société Guernesiaise

2016

Forthcoming Events

WEA Course

Thursdays 7.30 pm at the Observatory

4th February – 10th March
(Enrolment necessary)

Public Open Evenings

Thursday 14th April, 7.30 pm

Thursdays during summer

school holidays

(21 July to 01 September)

Friday 4th November, 6.00 pm

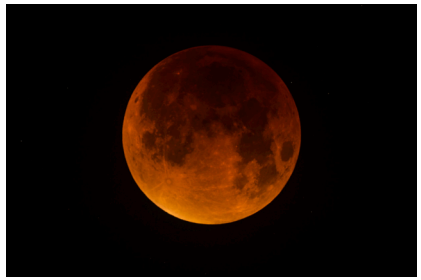
Public Open Evenings will comprise a talk or film show, with a clear night for observation being a bonus!

Public Open Day

3.00 to 5.00 pm on Liberation Day, 09 May, for the transit of Mercury.

The Section meets at the Observatory every Tuesday evening at 8.00 pm.

Inside



Lunar eclipse of 28 September 2015
by Matt Skillett

SECRETARY'S REPORT 2015

Our AGM was held on the evening of February 10th. This was relatively straight forward as each Officer was prepared to continue in the coming year with their responsibilities. The only exception to this was my position as secretary. I gave a year's notice on the grounds that although I thoroughly enjoy being secretary, I needed more time to pursue other interests.

Thursday February 5th was the start date of our Workers Education Association (WEA) evening classes in astronomy. This is always over-subscribed and is under the guidance of David Le Conte. We were fortunate this year with the weather allowing the skies to be clear for the viewing aspect of the course.

March 20th was an important day for us. We staged an Open Day rather than an Open Evening in order to watch an eclipse of the sun. This is where the moon moves between the earth and the sun so blocking out part of the sun's disc. It was not a total eclipse but 86% of the sun was covered making it the best for 16 years and another 11 years before the next. The day before, on March 19th, I had given a talk on the eclipse to students of Blanchelande College. Unfortunately, on the day itself, it was cloudy but nevertheless was a very rewarding day. His Excellency the Lieutenant Governor Peter Walker and Mrs Walker were both present, along with School children from the nearby La Hougette School. Pat Costen was present in her position as the President of La Société Guernesiaise. As always Pat found it so easy to talk with the children and generally help with proceedings of the day. Members of the media were invited, but not the general public. This allowed for the children to mix very informally with his Excellency and Mrs Walker and to freely ask us all those questions. Although the clouds were preventing us from seeing the sun we were able to link with a television network from Svalbard to follow proceedings there. In all a very good day, with the invaluable help of Mrs Damsell for allowing car parking in her field. The day was organized by David Le Conte. It is with great sadness that his Excellency Peter Walker and La Société President Pat Costen are no longer with us. I feel it a great honour and privilege to have met and talked with these wonderful people.

March 27th was our first open Evening where we invite all members of the public to see our telescopes. Unfortunately the weather was disappointing, but those who came enjoyed seeing our large telescopes and listening to illustrated talks.

May 25th we staged another Open Day rather than in the evening. It was again to look at the sun and all members of the public were invited. It went very well; quite often when we use our coelostat – a motorized mirror which reflects the sun's image to a convenient wall – the clouds usually work together to cover the sun. But on this occasion the clouds kept away, at

least most of the time, allowing our visitors and the members of the Guernsey Press to see the sun as it really is. Along with illustrated talks and film shows it made the day something special.

June 23rd David Le Conte gave a talk to the Ladies College year 8 and 9 Students as part of the College Astronomy Day.

Our summer open evenings started on July 23rd and were then held every Thursday evening until August 27th. These open evenings coincide with the summer school holidays so that children can come and bring their parents. It also gives visitors to the island an opportunity to see our night sky which many comment is clearer than their views from the cities. Debby Quertier, David Le Conte, Geoff Falla, Colin Spicer, Paul Gavey and Matt Skillett have always given up their time to help with these Open Evenings, and this year Jason Hill has been invaluable with his lectures.

Saturday July 11th we joined other sections of La Société Guernesiaise at the West Coast Week-end. This was an event organized by Jo Dowding at Fort Grey and allowed us and other sections to display the value and interest of each

July 14th was a day for astronomers to remember, amateur and professional:. the day that 'New Horizons' flew past Pluto. The rocket had taken nine years to travel nearly 4,000 million miles and was only 8 minutes late. NASA had expected Pluto to be a grey cratered object, but it turned out to be quite an interesting colourful world with very few craters.

Tuesday August 11th was our annual barbecue. We coincide this with the 'Perseids' meteor shower. The idea is to enjoy the barbecue and then sit in a comfortable chair to watch the meteors. Sometimes it works but on this occasion it poured with rain. We knew the forecast was not good, so I borrowed the Société's gazebo. I must say that it turned out to be one of our better Perseid barbecues. We didn't see one meteor but the food and company was amazing.

Saturday afternoon September 5th, Colin Spicer and I entertained the Junior section of La Société at the observatory. It had been arranged by Pat Costen. Once again we decided to look at the sun but those clouds prevented us from using our coelostat. But during a short break in the clouds we used the special eclipse glasses and along with illustrated talks on the sun they helped to make the afternoon successful.

For a number of years we have had on loan from Hertfordshire University an 'All Sky camera'. It takes night pictures of the full sky every minute or so. The results are automatically sent to Hertfordshire to compare with other cameras around the country. But the software owned by Hertfordshire appears to be faulty. It is hoped that this can be corrected as the pictures are interesting as can be seen on our web page www astronomy.org.gg.

On the evening of Wednesday September 16th Dr Robin Catchpole gave a lecture to a full house at Candie entitled 'From here to the edge of the observable universe'. Dr Catchpole is with the Institute of astronomy at Cambridge, and has been well received in places such as New Zealand, Hong Kong and South Africa. The evening was the result of working closely with the Jersey Astronomy Club. Sue and Jim Drew advised us that Dr Catchpole was giving this talk in Jersey and asked, if it were possible, would we like him to come to Guernsey. We immediately agreed as David Le Conte and Dr Catchpole had been friends for many years.

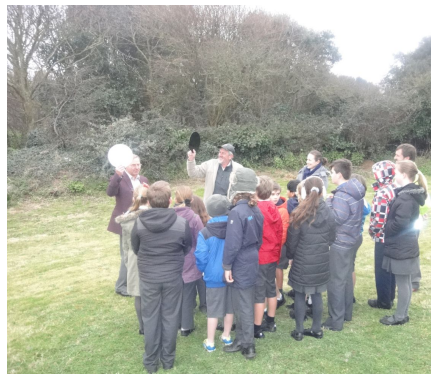
October and November saw many groups of people visit our observatory. We encourage the idea of a group of people for an hour or so. People who prefer a one-to-one rather than join the many people on a clear open evening, such as social clubs, school children and scout groups.

Sark opened their new observatory on October 10th. This has been a great success story for Sark. Being granted the first Island in the world to have 'Dark Sky Status' and now to have built an observatory. The opening ceremony was performed by Marek Kukula and was witnessed by our members David Le Conte and Paul Gavey. Annie Dachinger and her team deserve all the credit they have received.
November 12th David Le Conte gave a talk on astronomy to 'The Carers Getting Together' in the Harry Bounds room at Les Cotils. This was very well received.

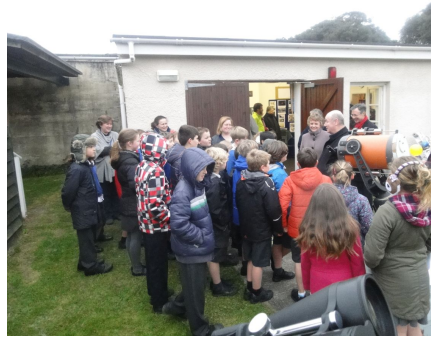
At this time of writing we are looking forward to our Christmas meal, this year at Moores Hotel.

It has been a busy year and my thanks go to everyone that has helped to make it a good one. I wish everybody a Happy Christmas and a Prosperous 2016 New Year.

Frank Dowding, Secretary La Société Guernesiaise Astronomy section



Frank and George demonstrate the solar eclipse



His Excellency and Mrs Walker talking to the children

Transit of Mercury
9th May 2016

On Liberation Day from 12.12 to 7.40 pm BST, there will be a transit of Mercury across the disc of the Sun. Detailed timings in BST (using *Guide* software) are:

First contact (ingress, exterior contact) 12.12.37
Second contact (ingress, interior contact) 12.15.50
Centre of transit (least distance of centres) 15.56
Third contact (egress, interior contact) 19.36.58
Fourth contact (egress, exterior contact) 19.40.08

It will be seen from the above that the whole event lasts 7½ hours, the planet taking some 3 minutes to cross the solar limb on both ingress and egress.

The last transit of Mercury was on 08 November 2006, but that one was not visible from Guernsey. The last one visible from our Observatory was on 07 May 2003, and was observed in its entirety on a day with perfect weather, excellent views being obtained both with the heliostat and the filtered 11-inch Celestron. We will be hoping for equally good conditions for the 2016 event.

During the transit the small planet, although on the Earth side of its orbit, subtends just 12 arc-seconds, and it is, therefore, too small to see as a black disc against the bright solar disc with devices such as solar eclipse glasses. And there are severe dangers in using binoculars, telescopes or other optical equipment pointed at the Sun as serious eye damage can result. The Guernsey Observatory is equipped with special equipment, both specialist filters and the heliostat which projects a safe solar image.

Another method is to use a conventional refracting telescope and without looking through it point it towards the Sun (being guided by the appearance of the telescope's shadow) until a solar image is projected and focused onto a piece of white card. The image of Mercury will appear tiny compared to the Sun, so a large magnification is desirable and the longest practical distance between the card and the telescope. It also helps to shade the card with a suitable shield such as cardboard.

The Observatory will be open to the public from 3.00 to 5.00 pm. Astronomy Section members may wish to watch it at other times, especially during the ingress and egress phases. We expect there will probably be a presence at the Observatory during much of the transit.

The 2003 transit gave us useful experience in preparation for the rare transit of Venus in 2004 (which was also viewed from the Observatory, unlike the 2012 one which was clouded out).

Transits of Mercury are nothing like as rare as transits of Venue; they occur on average about 13 times per century. When they do happen it is always in May or November, the latter being rarer than the former. May transits occur when Mercury is at the descending node (moving southwards and in line with the plane of the Earth's orbit around the Sun) and is near aphelion (furthest from the Sun and closest to the Earth). November transits happen when it is at the ascending node and near perihelion.

This transit will be visible from western Europe (including all of the UK), western Africa, eastern North America, much of South America, Greenland and the Arctic.

The next transit of Mercury will be on 11 November 2019 (Armistice Day!). It will be visible from Guernsey, but the Sun (and Mercury) will set during the last half of the transit. The next one after that will be on 13 May 2032, all but the first 45 minutes being visible from here. So the 09 May 2016 event is our best chance of seeing an entire Mercury transit for many years. Indeed, we will have to wait until 2039 and 2049 to see transits in their entirety.

Transits of Mercury were predicted by Kepler (1571-1630), and the first one to be observed was by Pierre Gassendi (1592-1655) in 1631. Other observations followed, including the one of 1677 which was observed from St Helena by Edmond Halley (1656-1742). Halley realised that timing such a transit could provide a measure of the scale of the solar system, but that transits of the larger and closer Venus would be needed to give the precision necessary, something which was confirmed by French observations of the Mercury transits of 1723 and 1753.

David Le Conte

References:
Guide software.
BAA Handbook 2016, pp12-13.
Journal of the BAA, 125, 5, 2015, p263.
Transit: When Planets Cross the Sun, by Michael Maunder and Patrick Moore (Springer, 2000), pp23-27.

Astronomical Events in 2016
as seen from Guernsey

By David Le Conte

This leap year's main highlights are undoubtedly a transit of Mercury on 09 May, and the opposition of Mars in the same month. In January there will be the possible observation of a comet.

PLANETS

Mercury will be visible in the periods around its greatest elongations:

Date	Elongation	Direction to look	Time	Comments
07 February	26º Western	Low in East	Before sunrise	Too low
18 April	20º Eastern	Low in West	After sunset	
05 June	24º Western	Low in East	Before sunrise	Too low
16 August	27º Eastern	Low in West	After Sunset	Too low
28 September	18º Western	Low in East	Before sunrise	
11 December	21º Eastern	Low in West	After sunset	

The best times will be mid-April and mid-December evenings, and late September mornings.

On Liberation Day, 09 May 2016 from 12.12 to 7.40 pm BST, there will be a transit of Mercury across the disc of the Sun.

Observation of the transit requires special equipment, which is available at the Guernsey Observatory. Mercury, subtending just 12 arc-seconds, is too small to see as a black disc against the Sun with devices such as solar eclipse glasses. Therefore either specially filtered telescopes, telescopic projection, or the use of a heliostat are needed.

The transit is the subject of a separate article published in the 2015 issue of *Sagittarius*.

Venus is the "Morning Star" in the east from the beginning of the year. On the morning of 09 January it will appear very close to Saturn. It reaches superior conjunction on 06 June, and by July will be visible in the west after sunset. On the evening of 27 August it will be just 8 arc-minutes from Jupiter, low in the west. From then right to the end of the year it will remain prominent in the evening sky as it heads towards maximum eastern elongation in January 2017.

Early in the year **Mars** is visible in the eastern morning sky. Although it gets higher in succeeding months it never reaches a high altitude. It reaches opposition on 22 May at a declination of -22º, a distance of 47 million miles (76 million km), and an angular diameter of 18 arc-seconds. This is only slightly better than the oppositions of 2012 and 2014, but will be worthwhile observing during May and June. We will have to wait for the next opposition, on 27 July 2018 for a better view – in fact the best for many years in the past and the future.

At opposition it will, of course, rise as the sun sets, and thereafter to the end of the year it will be visible in the evening, its declination (and therefore altitude for we northern hemisphere observers) improving, but receding and getting fainter and smaller in telescopic views.

At the beginning of the year **Jupiter** rises around midnight. It rises earlier and earlier and reaches opposition on 08 March in Leo. As last year it will be well placed for observation, and will remain visible until September, being at conjunction with the Sun on 26 September. From mid-October it will become visible in the east before sunrise.

We can again expect excellent views of its moons, atmospheric bands on its disc, and the Great Red Spot. Transit, shadow and occultation events involving Jupiter's moons can be calculated using a Java script on the *Sky & Telescope* website (register at http://tinyurl.com/24kp25 and remember to enter the date in the US format: month/day/year). They can also be simulated on software such as StarryNight (http://www.starrynightstore.com/), and there is the *JupiterMoons* app by Sky & Telescope, which also gives the transit times of the Great Red Spot.

On 04 July NASA's Juno spacecraft will go into polar orbit around Jupiter after a four-year journey. It will study the planet's composition, gravity and magnetic fields, and the polar magnetosphere. It may determine whether Jupiter has a rocky core, how much water there is in its atmosphere, its mass distribution and wind speeds. It is planned to make 37 orbits before crashing into the Jovian atmosphere and burning up. In addition to a plaque commemorating Galileo's observations of Jupiter's moons in 1610, it is carrying three toy figures made of Lego: Galileo, the Roman God Jupiter and his wife Juno!

Saturn's visibility in 2016 is very similar to the last couple of years. It starts the year as a morning object, rising in the east in the constellation Ophiuchus about 07.00 UT, and rising earlier as the months go by. Opposition is on 03 June, rising as the Sun sets, and visible all night. It will remain visible, progressively as an evening object, until November, reaching conjunction with the Sun on 10 December. Its declination is still low this year, so again it will not reach a very high altitude. However, with the rings at a good angle it will still present a beautiful sight in telescopes, and its brightest moons, especially Titan, should be visible.

Uranus will be at opposition in Pisces on 15 October, at magnitude 5.7. **Neptune** will be at opposition in Aquarius on 02 September, at magnitude 8.

SUPERMOONS

We have heard quite a lot lately about so-called 'supermoons' as one coincided with the lunar eclipse in September 2015. Supermoons appear when the Full Moon happens to occur when the Moon is closest to the Earth. This happens three times this year: on 16 October, 14 November, and 14 December.

DWARF PLANETS AND ASTEROIDS

Pluto will reach opposition on 07 July in Sagittarius, at magnitude 14. **Ceres** reaches opposition on 21 October at magnitude 7 in Cetus. The other three dwarf planets (Eris, Makemake and

Haumea) are too faint to be seen in most amateur telescopes.

The brightest asteroid, **Vesta** does not reach opposition until January 2017, when it will be magnitude 6 in Cancer.

ECLIPSES

No solar eclipses are visible from Guernsey this year. On 09 March there will be a total solar eclipse in Indonesia, and an annular eclipse in Africa on 01 September.

On 16 September part of a penumbral eclipse of the Moon will be visible (maximum at 8.00 pm, when the Moon is just 4º above the horizon).

OCCULTATIONS AND CONJUNCTIONS

There will be a daytime occultation of Venus by the Moon on 06 April, from 08.25 to 09.00 BST. The Moon will be almost New, and so a very thin crescent only 16º from the Sun. So great care will be needed if attempting to watch this event.

Conjunctions of planets with the Moon, with their separations (for best times see table at end of the article):

Mercury	03 June	0.7º
	04 August	0.5º
	29 September	0.7º
Venus	03 September	1.1º
Mars	03 January	1.4º
Jupiter	09 July	0.8º
	06 August	0.2º
	02 September	0.4º

The best conjunctions between planets, with their separations, are:

09 January	Venus and Saturn	0.1º
20 March	Venus and Neptune	0.5º
31 March	Mercury and Uranus	0.6º
16 July	Mercury and Venus	0.5º
27 August	Venus and Jupiter	0.1º
11 October	Mercury and Jupiter	0.9º

METEORS

The **Quadrantids** peak on the night of 03/04 January. This year it will be unaffected by moonlight, so may well be worth watching. The **Perseids** peak on the night of 12/13 August, with up to 80 per hour. The ten-day-old Moon will affect visibility of the fainter meteors. The richest annual shower, the **Geminids** peaks on the night of 13/14 December, but the Full Moon will severely affect observations of all but the brightest.

There are, of course, minor meteor showers during the year, and sporadics may be seen at any time.

COMETS

Several faint comets are due to make an appearance this year, but the best two are likely to be 2013 US10 (Catalina) and 252P/LINEAR.

Comet Catalina is likely to be the brightest, and well-placed for observation in January. It had its closest approach to the Sun (perihelion) in November 2015. It reaches its closest point to the Earth (perigee) on 17 January, when it will be furthest north in Ursa Major, and therefore easily visible at a possible magnitude 5, and visible all night. On 05/06 January it will be about a degree from the 9th magnitude globular cluster NGC 5466. On 13/14 January it passes 5º from M51 (the Whirlpool Galaxy), and on 15 January just 2º from M101 (the Pinwheel Galaxy).

Comet LINEAR (one of many with this name) will make a close approach on 21 March, passing within 5.5 million km (3.3 million miles) of the Earth. This is the fifth closest comet ever. Although it is normally faint it may brighten to 10th magnitude in the first week of April, in the south-east before sunrise.

Detailed comet predictions for 2016 are available on the website of the British Astronomical Association's Comet Section: http://www.ast.cam.ac.uk/~jds/preds16.pdf. Also check the Heavens-Above website (heavens-above.com) for star charts showing comet positions.

THE SUN

We are now well past the maximum of the sunspot cycle, but there can still be outbursts of activity, with displays of the aurora borealis (and australis) at high latitudes. Details of sunspot numbers are at www.ips.gov.au/Solar/1/6, and real-time views of the Sun are at http://umbra.nascom.nasa.gov/index.html/. Auroral alerts, with lots of other information, are at www.spaceweather.com.

EQUINOXES AND SOLSTICES

The following are the dates and times of the equinoxes and solstices in 2016:

Vernal Equinox	20 March	04.29 UT
Summer Solstice	20 June	23.34 BST
Autumnal Equinox	22 September	15.20 BST
Winter Solstice	21 December	10.43 UT

SATELLITES

The International Space Station (ISS) is regularly visible from Guernsey, looking like a very bright star crossing our skies from west to east. Also of interest are flashes from the Iridium satellites (which occur virtually every night), and periodic launches of ISS servicing craft. Many other, fainter, satellites appear every night. Details of the times and directions of visibility (together with sky charts and much more) can be obtained from www.heavens-above.com, linked from our website, www.astronomy.org.gg/iss.htm.

The orbits can change with time, and long-range predictions are, therefore, less reliable than short-range ones. However, at the time of writing they show that the ISS will be visible in the morning hours from 02 to 23 January, and in the evening from 02 to 20 February.

WEA COURSE

The Astronomy Section's annual six-week WEA "Star Gazing" course at the Observatory will be run from 04 February to 10 March. It is usually over-subscribed, so early enrolment is recommended. See www.wea.org.gg, or telephone 237888.

OPEN DAYS

The Observatory will be open to the public again for a number of Thursday evenings during the year: 14 April, weekly openings during the summer holidays (21 July to 01 September), and on 04 November. It will also be open from 3.00 to 5.00 pm on Liberation Day, 09 May, for the transit of Mercury. Details appear on our website and will be sent to the local media.

REFERENCES

SkyMap Pro and *Starry Night Pro* software
http://www.seasky.org/astronomy/astronomy-calendar-2016.html
http://www.timeanddate.com/
RAS diary 2016

CALENDAR OF ASTRONOMICAL EVENTS IN 2016

Month	Date	Time	Event
January		All night	Comet 2013 US10 (Catalina) visible
January	02		Earth at perihelion
January	03	Morning	Moon and Mars conjunction (1.4º)
January	03/04		Quadrantid meteor shower (favourable)
January	09	Morning	Venus and Saturn conjunction (0.1º)
February	04	19.30 UT	WEA course starts at Observatory
February	07	Before sunrise	Mercury at greatest western elongation
March	08	All night	Jupiter at opposition
March	09		Total solar eclipse in Indonesia
March	10	19.30 UT	WEA course – final class
March	20	04.29 UT	Vernal Equinox
March	20	Before sunrise	Venus and Neptune conjunction (0.5º)
March	27	01.00 UT	BST starts
Early April			Comet 252P (LINEAR) may be visible
April	06	08.25 – 09.00 BST	Daytime lunar occultation of Venus
April	18	After sunset	Mercury at greatest eastern elongation
May	09	12.12 – 19.40 BST	Transit of Mercury
May	22	All night	Mars at opposition
June	03	All night	Saturn at opposition
June	03	Before sunrise	Moon and Mercury conjunction (0.7º)
June	05	Before sunrise	Mercury at greatest western elongation
June	06		Venus at superior conjunction
June	09	Early evening	Moon and Jupiter conjunction (0.8º)
June	20	23.34 BST	Summer Solstice
July	04		Juno spacecraft orbits Jupiter
July	04		Earth at aphelion
July	07	All night	Pluto at opposition (magnitude 14)
July	16	After sunset	Mercury and Venus conjunction (0.5°)
July	21	Evening	Observatory Open Evenings start
August	04	After sunset	Moon and Mercury conjunction (0.5º)
August	06	After sunset	Moon and Jupiter conjunction (0.2°)
August	12/13		Perseid meteor shower (unfavourable)
August	16	After sunset	Mercury at greatest eastern elongation
August	27	After sunset	Venus and Jupiter conjunction (0.1º)
September	01	Evening	Observatory Open Days end
September	01		Annular solar eclipse in Africa
September	02	All night	Neptune at opposition (magnitude 8)
September	02	After sunset	Moon conjunction with Jupiter (0.4º)
September	03	After sunset	Moon and Venus conjunction (1.1º)
September	16	19.54 BST	Penumbral lunar eclipse
September	22	15.20 BST	Autumnal Equinox
September	26		Jupiter conjunction with Sun
September	28	Before sunrise	Mercury at greatest western elongation
September	29	Before sunrise	Moon and Mercury conjunction (0.7º)
October	21	All night	Ceres at opposition (magnitude 7)
October	11	Before sunrise	Mercury and Jupiter conjunction (0.9º)
October	15	All night	Uranus at opposition (magnitude 5.7)
October	16	All night	Supermoon
October	30	02.00 BST	BST ends
November	04	18.00 UT	Observatory Open Evening
November	14	All night	Supermoon
December	10		Saturn conjunction with Sun
December	11	After sunset	Mercury at greatest eastern elongation
December	13/14		Geminid meteor shower (unfavourable)
December	14	All night	Supermoon
December	21	10.43 UT	Winter Solstice

Christopher Le Conte (1968-2015)

Members of the Astronomy Section were saddened to hear of the sudden and unexpected death of my son Christopher on 17 August.

Although not a member, Chris was interested in astronomy and very supportive of the work of the Section. As a young boy he experienced the life of an astronomer and met many professional astronomers as he frequented my places of work at the Smithsonian Astrophysical Observatory in Hawaii, the Whipple and Kitt Peak Observatories in

Arizona, and the Smithsonian Institution in Washington DC.
In Guernsey he assisted with the construction of the Section's Observatory in 1993, and in 1995 he gave a lecture on terraforming solar system bodies, especially Mars. He read books on astronomy, and encouraged his children in taking advantage of the Section's Open Evenings.
In recent years he sponsored, through his company Robus Group, visiting lecturers brought to the island by the Astronomy Section, and was to have sponsored the visit of Robin Catchpole last September.
Just a few days before he died he formed a new company called *Just Look Up*, based, he told me, on a phrase I frequently used to encourage people's awareness of the night sky. The purpose of the company was to install a pop-up planetarium in Market Square to give the public the experience and education of astronomical observation.
Chris was a man devoted to Guernsey and full of ideas. The planetarium was to have been just one of many new initiatives he had in mind, including *Makerspace* – an area of the market devoted to building a community of individuals to interact, innovate and create, and to stimulate Guernsey's future as a centre of excellence for imaginative ideas.
Guernsey, and Guernsey astronomy, will miss him.

David Le Conte

Christopher Le Conte helping to build the Observatory, 1993

The Sky at Night

At this time of the year, the bright star Sirius in the constellation of Canis Major is the brightest of all the stars in our winter evening sky. Sirius can be seen rising above the eastern horizon during the late evening hours in December, becoming more elevated above the horizon during January evenings. Procyon, The Lesser Dog Star, is not far behind to the east, below the constellation of Gemini, which is recognized easily because of its twin stars of equal brightness.

The various constellations consist mostly of quite widely spaced stars, with some of the brighter ones forming a pattern in the sky. One of the best constellations to be seen is 0rion, the Hunter. This is in a southeast direction during the evening hours in December, and can be seen in a more southerly direction during January evenings. The main shape of 0rion is a large upright oblong of four bright stars, with one of these at each corner of the shape, and a short line of three bright stars, the Hunter's Belt, at the centre of the shape.

The bright, slightly orange coloured star Aldebaran, one of the red giant class of ageing stars, is above and. to the west of Orion. Another bright star, Capella, can be seen almost overhead, continuing to be near that position during January.

In the days following mid-December, the Moon will be at first quarter phase. This is when the right hand side of the Moon is illuminated by sunlight from below the western horizon. It is a good time to observe the Moon, using binoculars if available, so that many of the crater shapes on the Moon's surface can be seen.

There is also an opportunity to see the Geminid meteors during early December, with the meteors due to reach peak activity around December 13th. Up to around a hundred meteors per hour may be visible in clear weather conditions. This is one of the best meteor showers during the year, often with bright and sometimes coloured meteors to be seen.

The major planets Jupiter and Saturn are not in good view for evening viewing until the early part of next year. The news from space telescope observations is that a great many planets have now been discovered in orbit around other stars, at distances of many light years beyond our solar system. The Kepler space telescope has identified around a thousand of these 'exoplanets'. Many of these are giant planets larger than Jupiter, with the search also discovering several Earth-1ike planets, which may have similar atmospheric conditions.

Geoff Fa1la

The Flying Cross Episode

In 1967, two years before the first NASA manned landings on the Moon, there was a series of 'UFO' sightings in the UK, which were described as very different to what had been seen before. Similar cross-shaped appearances had only been reported previously on comparatively rare occasions in the past, and in other countries.

It is known that there are waves of UF0 sighting reports, with each of these large increases in reports sometimes coming many years apart, and from different countries, having a concentration of reports during these periods of increased sightings.

Apart from the USA, where the first reports in 1947 were followed by other significant reports in the next few years including the summer of 1952,

there was a large wave of reports from France in September and October 1954, which generated further official interest in the subject.

The British Ministry of Defence also began taking more note of the reports, with sightings reported to the Ministry, and showing that between 1959 and 1966 the number of reports increased from around twenty to just under a hundred in 1966. This was followed by a major increase in 1967, with more than three hundred reports during that year.

The British UFO wave of 1967, which was not to be significantly exceeded for another ten years, reached a peak during late October and the beginning of November, with most of the sightings lasting for several minutes or in some cases a much longer period of observation. A usual shape described in UFO reports from previous studies seems to have been an oval or disc shape, but the British reports in the autumn of 1967 featured a number of reports of objects having a much more unusual shape, likened in many of the sightings to a brightly glowing or fiery cross in appearance.

There are known to have been at least thirty of these reports, over a period of about six weeks, with locations from Northumberland to the south coast of the UK, and with additional reports from Ireland and the Channel Islands. The sightings were at various times, mostly during the evening or early morning hours, describing an object which was apparently both manoeuvrable and silent, and which at times seemed to be at a 1ow altitude.

Some attempts were made to attribute the sightings to the planet Venus, based on the fact that the planet was bright in the sky during this period, but there were several reasons why this seemed to be an unlikely explanation. Any planet seen for a few minutes would appear to be stationary in the sky, and would show a very gradual change in position during a more lengthy period of observation. Times were given in most of the reports, and these were divided equally between early morning and evening observations. The planet Venus in its orbit is seen alternate1y as a morning planet before sunrise or in the evenings for a while after sunset, but not both as in the case of these sightings. An amateur astronomer who witnessed one of the strange appearances stated that it was definitely not the planet Venus.

The first sighting of one of these strange shapes in the sky seems to have been from Wembley, Middlesex at 10pm on October 2nd, describing a globe-shaped object with four projections from the main part, and a bright light like a spotlight. After about half a minute the object began to move, slowly at first before it circled, gathered speed suddenly and disappeared, and with no sound heard during the sighting.
(Wembley News, November 3.)

In mid-October another of the reports came from Northampton, at 9.30pm on October 14th. In this case an object-

appeared to be coming down towards the ground, and was described as gold in colour, looking like a church cross. The object then seemed to float around until it faded away, with the eyewitness adding that there seemed to be a shadow like appearance around the cross shape. (Northampton Chronicle, October 25.)

On October 24th, one of several sightings described how two police officers were in their patrol car at 4. 10am, between Holsworthy and Hatherleigh on the A307 road in Devon, when they noticed a very bright diffused light in the sky, describing the light as "star-spangled", like looking at a bright light through wet g1ass. The light appeared to be keeping pace with the car. The policemen radioed their base and started to chase the object, but were unable to catch up with it. The object moved to the north of the road, and seemed to accelerate away. The sighting continued until 5am, with the policemen stating that the angle of elevation in the sky had varied between about five degrees and sixty degrees, and that a zooming motion of the light was also noted. It was further reported that towards the end of the sighting the light was joined by a second similar object before both had disappeared. (Daily Mail, October 25.)

On the same day at Caister on Sea, Norfolk, an object giving off bright light from four points projecting in the form of a cross was seen going out to sea over the Norfolk coast during the afternoon. (Daily Telegraph, 0ctober 25.)

Two days later, on October 26th, there was a peak in the number of reports, with eight on the same day. The first sighting of the day was at Okehampton in Devon at 2.05am, when two policemen described seeing a fiery cross-like object. This was evidently not as bright as that seen previously, and lasted only a matter of seconds. The object moved from west to east, dipped towards the ground and disappeared, then reappeared as it ascended rapidly until lost to view. (Exeter Express, October 26.)

At this stage in the reports, a favoured explanation was still the planet Venus, according to an astronomer of the Royal Observatory at Herstmonceaux in Sussex. However, on the following day, and after further reports, a statement from the Royal Observatory admitted that there was ‘- something up there which is not a star or a planet.’
(Daily Mai1, 0ctober 26 and 27.)

The most remarkable report on October 26th was a daylight sighting at Moigne Downs, Dorset, by Angus Brooks, a former BOAC (British Overseas Airways) administration officer. In a written statement, he reported that at 1l.25am an object was seen to descend and hover in the sky. When descending, the object appeared to be in the form of a circular centre section, with arms projecting to the front and rear, but as it then hovered two arms moved outwards at the sides to form a cross shaped object, with

four arms. After just over twenty minutes in the hovering position, the arms of the object returned to their original positions. The object then climbed away at increasing speed and disappeared. No sound was heard during the incident, and the description given to Dorset police was accompanied by drawings of the object.
(Dorset Evening Echo, October 28 and November 22, and Daily Express, October 28.)

At Colchester, Essex, also on October 26th, an illuminated saucer-shaped object was seen to follow an aircraft. The object had star-shaped beams of light coming from it, the beams receding and streaming out at intervals. When it reached the aircraft the object stopped, then moved off at speed and disappeared. (Bournemouth Evening Echo, October 27.)

It was then claimed in national newspaper reports that a firm explanation for the sightings had been found, with a suggestion that the reports were caused by United States Air Force planes which had been carrying out high a1titude refuelling exercises at night. These were over the southern counties, with the aircraft linked to a central tanker aircraft. It was thought that similar operations probably explained other sightings in the area. The Ministry of Defence accepted this explanation after the RAF had checked it out thoroughly, and was convinced that this explained what had been observed. (Daily Mail and Daily Telegraph, October 28.)

On the following day there was a surprising announcement, when it was revealed that the Ministry of Defence official explanation for the sightings did not stand up to the facts, because there were no refuelling operations at the time of the sightings. It had been confirmed by a U.S. Air Force spokesman that all of the exercises were between 5pm and 9pm, whereas the sightings of "fiery crosses" in the sky (mostly by patrolling policemen) were between midnight and dawn.
(Daily Telegraph, October 28, Sunday Express, October 29.)

With supposed explanations which still did not solve the reports of unexplained objects in the sky, it was reported that the Member of Parliament for Torrington, Devon, was to ask the Minister of Defence for a statement on the matter. (Daily Mail, October 27.)

There were other aspects of the sightings at this time which also added to the mystery, with UFO sightings coinciding with reported vehicle effects. At Hook, in Hampshire on October 26th - the peak day of the flying cross reports, a vehicle's engine, lights and radio all failed simultaneously at 4.30am, and a dark object was noticed stationary over the road ahead. After a few minutes the engine could be started again, but after continuing for a short distance along the road, the failure happened again, with the same dark object seen ahead. The shape of the object was described as like a squat ice cream cone, with a rim in the middle. The witness also noticed a change of pressure in his

ears and an oppressive smell. After a further few minutes the object moved away silently at- moderate speed, and the vehicle worked normally again. At the time of these events there had been four other vehicle interference effect cases reported in the UK during 1967. All of these cases were in the same few weeks of October and early November, with one of the most. interesting reports on November 6th between Avon and Sopley in Hampshire when at 1am the lights of a diesel engined lorry and both the engine and lights of a car coming from the opposite direction fai1ed as a large luminous object passed between the two vehic1es. The object became stationary for a short while before moving away, also producing other apparent. effects in the surrounding area. (Dai1y Express, November 7th, and BUFORA Vehicle interference Report.)

Reports of flying cross-type objects continued in the days towards the end of October, with sightings on October 27th at Tunbridge We1ls, Kent, describing a burning cross shape with a fiery tail, and at Dublin, Ireland with mention of an object in the sky "g1owing green and red with branches." (Daily Mail, October 28.)

At Lancing, Sussex on October 28th, a bright object in the sky was described as being in the shape of the Cross of Lorraine, seen at 5.30am for ten minutes, and at Boscastle in Cornwall two farmers reported seeing a flying object like "a big mass on fire" with a cross behind it.
(Sunday Express, October 29.)

The most southerly of the reports came from the Channel Islands. On October 29th a reddish object was seen in the sky to the south of Jersey during the early hours of the morning from around 1.30am. The object was seen as having arms in the form of a cross, but with the lower arm missing, and there were tentacle 1ike extensions coming out of the central part. The object was seen by several eyewitnesses, and descended at an angle before becoming stationary. At- times the object appeared to move around, in particular at the approach of an aircraft. The sighting was also reported to Jersey Airport, but it was reported that nothing had been picked up on radar. (Jersey Evening Post, October 30.)

At Reading, Berkshire, at 8.55 pm on November 6th, a bright object 1ike a distorted Mercedes three pronged emblem was seen. When the object, was almost overhead, something seemed to drop from it and burn up.
(Reading Evening Post, November 1.)

On November 9th at 5.30pm, a dazzlingly bright object in the shape of a cross was seen at Great Bil1ing, Northamptonshire. The object changed colour from white to tangerine orange, and was seen at first travelling fast then slowly before final1y stopping, with the sighting lasting about ten minutes. (Northants Evening Telegraph, November 10.)

The Daily Telegraph reported on November 9th that in response to a question in Parliament's House of

Commons, regarding the responsible statements from police officers and engineers, with reports of objects moving around over North Devon for over an hour in one area, the Under Secretary for Defence had given a reply. This was that some of the objects proved to be aircraft, and that others were lights. Most of the lights were the planet Venus, but the source of a few lights had not been positive1y identified.

The last reported sighting in the series, and one of the most interesting in its details, seems to have been on November 16th from Alderney in the Channel islands. At 5.10pm, a resident on the south coast of the island noticed what was at first thought to be a parachute flare. It was in a southeasterly direction and seemed to be about 500 feet above the sea. Intending to inform the harbour master, he then used binoculars to examine the area where the "f1are" was hovering, for six or seven minutes. It was then seen that the object was in the form of a cross, similar to those seen in the UK. The two horizontal points and the longer vertical part of the cross were of different colours, with the lower arm of the cross seen to be wobbling as though it was producing a motive force. The object then moved swiftly away in a southwesterly direction, and disappeared in two or three minutes to the west of Jersey.

In a further 1etter, the resident - a former Army Brigadier, reported that the UFO was also seen by his wife. It was thought at first that the sighting involved a vessel in distress, using a flare to attract attention. The colours of the object were alternating red and yellow, and it was just dark at the time with too much cloud for any stars to be seen. The object was seen very clearly in the binoculars, and when moving away after being stationary for at least seven or eight minutes the object kept on a straight and steady course until it disappeared from sight. (Guernsey Evening Press, November 24, and letter, November 27.)

Geoff Falla

References:
Flying Saucer Review (FSR) Vo1 13, No 6, p 3-7.
Okehampton, Devon, (October 24th & 25th, 1967, FSR Vo1 13, No 6, p 5,) and Vo1 L4, No 2, p 35-36, &iii.
Moigne Downs, Dorset, (October 26th, FSR Vo1 74, No l, p 3-5.)
FSR Vol 14, No 3, p 30-32, &iii.

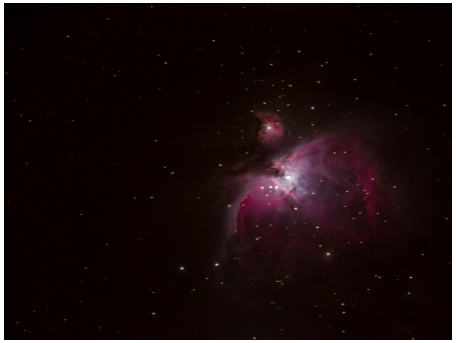
Astrophotography

Member Matt Skillett has concentrated his efforts on photographing the night sky, specifically the lunar eclipse of 28 September 2015 and other objects such as Jupiter, the Orion Nebula and the Eagle Nebula. He obtained excellent pictures of these objects during the eclipse, which he and David Le Conte observed under a beautiful star-lit sky.

Sometimes Matt worked alongside Chris McKane, who obtained good images of Comet Lovejoy (C2014 Q2) as well as other objects.

Jupiter and its moons by Matt Skillett

Comet Lovejoy by Chris McKane



Orion Nebula by Matt Skillett

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