Sagittarius

The Newsletter of the Astronomy Section of La Société Guernesiaise

January – March 2011

Forthcoming Events

Annual Business Meeting

early February - tba

WEA Course

Thursdays 8.00 pm at the Observatory

10th February – 17th March

La Société Guernesiaise Junior Section

Friday 28th January
7.00 pm at the Observatory

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

Inside

Inserts

Star chart

Sunset, sunrise, moonset and moonrise times

Solar Eclipse: 4th January 2011

The astronomical year has already started with a partial solar eclipse on the 4th January!

From my vantage point on the east coast of Guernsey, a large black cloud covered the Sun from sunrise until 09.00 GMT, but the eclipse was visible from then until it finished, at 09.24 GMT. I took the photograph below at 09.06 GMT.

At this time the Sun was about 17.5% eclipsed (the maximum, at sunrise, was 70%). The Moon had just uncovered a sunspot, which can be seen in the upper left of the picture. The sunspot is about the size of the Earth.

Technical details are: Tripod-mounted Canon EOS 20D camera, with 600mm zoom lens, 72mm diameter, and SolarSkreen aluminised optical filter. 1/125 second exposure, at 200 ISO.

David Le Conte

Astronomical Events in 2011

This year there will be a partial eclipse of the Sun and a total eclipse of the Moon. Jupiter and Saturn should provide some excellent viewing, and we can expect some good observations of meteor showers.

PLANETS

Mercury is poorly placed for observation from Guernsey this year. The best time would be around the spring equinox, after sunset in the west. Greatest elongation is on 22 March. It might also be seen soon after sunset at the end of July, and mid-November, when it will be close to Venus. Early September, before sunrise, will also be a good time.

Venus continues as the 'Morning Star' until February, greatest elongation being on 08 January. It will not be visible again until December, when it appears as the 'Evening Star' in the south-west.

After its good opposition last year, **Mars** will not be visible until July, when it will appear in the east before sunrise. It will then remain visible for the remainder of the year, brightening and rising earlier and earlier, so that by the year's end it will be at magnitude zero, rising at 22.30.

Jupiter is visible in the west in the evening at the beginning of the year, until March. At the end of June it is visible in the morning, reaches opposition on 29 October, and remains visible in the evening for the rest of the year. It should provide good views. In the last few months of 2010 we had excellent observations of disc details, the Great Red Spot, and of transit events of its moons, and these should be repeated in the autumn of 2011. Transit, shadow and occultation events involving Jupiter's moons will be found at www.skyandtelescope.com/observing/objects/planets/3307071.html?page=2&c=y, or simulated on software such as Starry Night (www.starrynightstore.com). The transit times of the Great Red Spot can be found at www.skyandtelescope.com/observing/objects/planets/Transit_Times_of_Jupiters_Red_Spot.html. They can also be seen on Starry Night, but remember to set the Jovian System longitude to the current value (currently 157º).

At the start of the year **Saturn** will be visible in the morning sky. It will rise earlier and earlier, reaching opposition in Virgo on 04 April. Its rings should be well visible, as they are opening up. It will then be seen in the evening until July. By the end of October it will be rising in the east before sunrise, and will remain visible in the morning for the rest of the year.

Uranus will be at opposition in Pisces on 26 September at magnitude 5.7.

Neptune will be at opposition in Aquarius on 22 August at magnitude 8. 07 July marks a milestone for Neptune, as it completes its first complete orbit of the Sun since its discovery on 23 September 1846.

DWARF PLANETS

Pluto reaches opposition in Sagittarius on 28 June, at magnitude 14. **Ceres** reaches opposition at the end of October, in Aquarius, at magnitude 8. (We will have to wait until December 2012 for it to reach magnitude 6.7.) The other three dwarf planets (Eris, Makemake and Haumea) are too faint to be seen in most amateur telescopes.

ASTEROIDS

The brightest asteroid, **Vesta**, at magnitude 5.7, is at opposition on 05 August in Capricornus. This coincides with the Dawn spacecraft's arrival there (see http://dawn.jpl.nasa.gov/). It will orbit the asteroid for a year before leaving for Ceres.

ECLIPSES

The year starts with a partial solar eclipse, partially visible from Guernsey. On 04 January the rising Sun at 08.06 will be 70% eclipsed. The eclipse actually starts at 06.56, when the Sun is 11º below the horizon, and maximum eclipse of 71% is just before sunrise. The eclipse finishes at 09.24, when the Sun will be 8º above the horizon. If the horizon is clear the rising eclipsed Sun could make a good photo opportunity. At sunrise the Sun will be at an azimuth of 125º. Remember, however, to use safe observing methods. Guernsey is very close to the central path of this partial eclipse, which passes through the Cotentin. The maximum eclipse of 75% is in northern Russia.

On 01 June there is another partial eclipse, maximum 60%, but only visible from far north latitudes.

This is followed, on 15 June, by the best eclipse of the year for Guernsey – a total eclipse of the Moon, for which a good view of the eastern horizon is desirable. The Moon starts entering the umbral shadow of the Earth at 19.22 BST, before it rises. The centre of the eclipse occurs at 21.12, and the Moon rises just after, at 21.13, at an azimuth of 128º. This is a central eclipse, ie the Moon passes virtually through the centre of the umbra. Hence, totality lasts a long time (1hr 41 min), of which we will see 50 minutes. Totality ends at 22.03 (when the Moon's altitude is 5º), and the Moon finally leaves the umbra at 23.02 (altitude 11º). It leaves the penumbra at midnight.

There are no total solar eclipses anywhere this year. (The next is on 13 November 2012, in northern Australia and the southern Pacific, although there will be annular eclipse on 20 May 2012, centred on the northern Pacific.) A partial solar eclipse on 25 November, visible from New Zealand and Antarctica, is not visible from Guernsey. Neither is a total lunar eclipse on 10 December.

OCCULTATIONS AND CONJUNCTIONS

No lunar occultations of planets or bright stars are visible from Guernsey this year.

The following are planetary conjunctions, 3º or closer:

02 January	Jupiter and Uranus (0.6º)
16 March	Jupiter and Mercury (2º)
11 May	Jupiter, Mercury (2º) and Venus (0.7º) (Low in east before sunrise)

and conjunctions of the planets with the Moon, 3º or closer:

30 January	Venus (3º)
27 July	Mars (0.5º)

METEORS

The **Quadrantids** with up to 80 per hour, peak on the night of 03/04 January, which this year coincides with the New Moon, giving very favourable conditions. The **Perseids**, however, with a peak on the night of 12/13 August, suffer from very unfavourable Full Moon conditions. The best meteor shower of the year could well be the **Draconids**, peaking on 08 October, with perhaps 200 per hour, although a bright Moon will interfere with observation. The **Leonids** peak on 17/18 November, their sharp peak being at 08.00 in the morning of the 18th, when the Moon will be at Last Quarter. The richest annual shower, the **Geminids**, with the possibility of over 100 per hour, peak on 14 December, at a time of a waning gibbous Moon. Evening observation will, therefore, be favourable.

COMETS

After some good observations of Comet Hartley last autumn, this year's harvest of comets is rather disappointing (unless, of course, a bright one appears unexpectedly).

Comet predictions for 2011 are available at the excellent website of the British Astronomical Association's Comet Section (www.ast.cam.ac.uk/~jds/preds11.pdf). The best one is likely to be Comet **Garradd** (2009 P1) reaching perhaps magnitude 7 at the end of the year. It will be well placed for our latitude, heading towards a circumpolar position. It should become visible, at 9th magnitude, several months earlier, when it reaches opposition in August.

The other possibility is Comet **Levy** (2006 T1), which, although it does not reach perihelion until January 2012, will be faintly visible from the autumn of 2011, reaching 9th magnitude at the end of the year.

Check the www.heavens-above.com for star charts showing comet positions.

THE SUN

We are now well past solar minimum, and the sunspot number is beginning to climb, as we head towards solar maximum. During 2011 the sunspot number is predicted to increase from 17 to 46 (with a maximum of 90 in 2013). Details are at www.ips.gov.au/Solar/1/6. See also http://sidc.oma.be/.

EQUINOXES AND SOLSTICES

The following are the dates and times of the equinoxes and solstices in 2011:

Vernal Equinox	20 March	23.21 UT
Summer Solstice	21 June	18.16 BST
Autumnal Equinox	23 September	09.05 BST
Winter Solstice	22 December	05.30 UT

SATELLITES

The International Space Station is regularly visible from Guernsey. Also of interest are flashes from the Iridium satellites, and periodic launches of the Space Shuttle. 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.

WEA COURSE

The Astronomy Section is again running the annual six-week WEA "Star Gazing" course at the Observatory in February and March, starting on 10 February. However, it is full, and there is a considerable waiting list. Enrolment for the 2012 course starts in August. See www.wea.org.gg or telephone WEA Guernsey at 237888.

OPEN DAYS

The Observatory will be open again for a number of Tuesday evenings during the year, including each Tuesday during the summer holidays (26 July to 30 August). Details will appear in the Astronomy Section newsletters, and on the Section website: www.astronomy.org.gg.

David Le Conte

References

SkyMap Pro and *Starry Night Pro* software
RAS diary
Handbook of the BAA

CALENDAR OF ASTRONOMICAL EVENTS

Month	Date	Time	Event
Jan-Feb		Morning	Venus visible
Jan-Mar		Evening	Jupiter visible
Jan-Jul		Morning – Evening	Saturn visible
January	02	Evening	Jupiter close to Uranus
January	03	Midnight	Quadrantid meteor shower (favourable)
January	04	Morning	Partial solar eclipse
January	30	Morning	Venus close to Moon
February	10	20.00 UT	WEA course starts
March	16	After sunset	Mercury close to Jupiter
March	17	20.00 UT	WEA course – final class
March	20	23.21 UT	Vernal Equinox

March	22	After sunset	Mercury at greatest elongation
March	27	01.00 UT	BST starts
April	04		Saturn at opposition
May	11	Morning	Mercury and Venus close to Jupiter
June	15	Evening	Total lunar eclipse
June	21	18.16 BST	Summer Solstice
June	28		Pluto at opposition
June – Dec		Morning – Evening	Jupiter visible
July – Dec		Morning	Mars visible
July	26	Evening	Observatory Open Days start
July	27	Morning	Mars close to Moon
July	End	After sunset	Mercury visible.
August	05		Vesta at opposition
August			Comet Garradd at opposition
August	12		Perseid meteor shower (unfavourable)
August	22		Neptune at opposition
August	30	Evening	Observatory Open Days end
September	Early	Before sunrise	Mercury visible.
September	23	09.05 BST	Autumnal Equinox
September	26		Uranus at opposition
Oct - Dec		Morning	Saturn visible
October	08		Draconid meteor shower
October	29		Jupiter at opposition
October	End		Ceres at opposition
November	14	After sunset	Mercury close to Venus
November	Mid	After sunset	Mercury visible
November	17		Leonid meteor shower
December		All night	Comet Garrard
December		Evening	Comet Levy
December	14		Geminid meteor shower (favourable)
December	22	05.30 UT	Winter Solstice

The Astronomical Records of Samuel Elliott Hoskins.

Samuel Elliott Hoskins was born in Guernsey in 1799. Trained as a doctor, he practised here for much of his life, wrote several publications on a variety of subjects, and, in 1843, was elected a Fellow of the Royal Society. In the same year he started undertaking detailed daily meteorological measurements, and continued these for almost four decades, until 1881. The records, consisting of a sheet for each month, are contained in bound volumes, entitled *Meteorological Registers*, owned by the Guernsey Meteorological Office, and held by the Island Archives Service (reference BA/ME 25).

A large number of the records sheets are peppered with comments about astronomical events, as well as phenological ones which are particularly relevant to current studies of climate change. I undertook to go through them, day by day, to pick out

both the astronomical and phenological references. This was an interesting, though laborious, exercise, which threw up a number of significant finds. Copies of my complete analysis are being provided to the Archives Service, the Guernsey Met Office, the Priaulx Library and La Société Guernesiaise.

During the 39 years covered by the records Dr Hoskins noted 6 lunar eclipses, 6 solar eclipses, 13 meteor observations, and 4 comets. All the lunar eclipses except one were total.

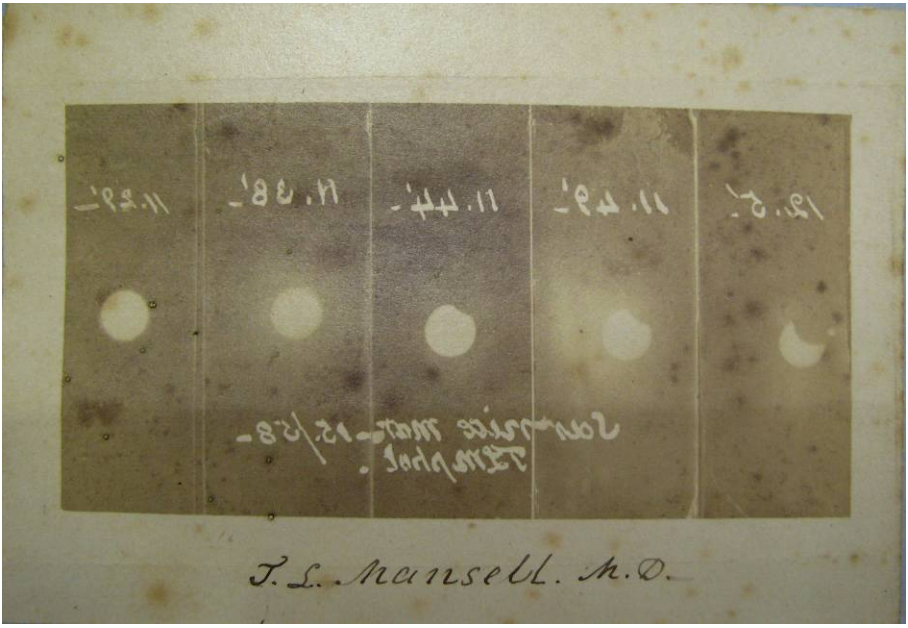
Solar eclipses

The solar eclipses were all partial. The one of 28 July 1851 had a magnitude of 75%, but was total in northern Europe and Russia. It is notable as the first one photographed (a Daguerreotype by Berkowski at the Royal Observatory, Königsberg).

The eclipse of 15 March 1858 was an annular one, the central track running 70 miles north-west of Guernsey and right across England. In Guernsey the magnitude was 97%, making it a major partial eclipse. Unfortunately, the weather was not good. Hoskins records that the day started out fine, but became misty and overcast. He did, however, record the amount of ozone during the eclipse, and this interesting observation was mentioned by James Glaisher, the Royal Greenwich Observatory meteorologist, in a report to the Meteorological Society, and by Ansted and Latham in their 1862 book on the Channel Islands.

Writing in *The Star* (of Guernsey) the next day, Dr George Kemp said that he had been able to trace the progress of the eclipse for the first half hour with a 3-inch Gregorian telescope, and had exposed a previously prepared collodion plate, but only got "*an indifferent negative*". Thereafter he got just a couple of glimpses of it, although he did make a diagram of sunspots. I do not know if these are extant; I have so far not found them.

However, a major find was pasted on a blank page in Hoskins's *Registers*. This was a set of photographs of the eclipse, taken by Dr Thomas Lukis Mansell, an associate of Hoskins, who was also interested in meteorology. Mansell (1809-79) was an accomplished photographer, and undoubtedly did his best to photograph the eclipse under difficult circumstances. The results are hardly outstanding, as shown by the copy kindly provided by the Archives Service.



Possibly the earliest example of an astronomical photograph in Guernsey: the partial solar eclipse of 15th March 1858, by Thomas Lukis Mansell.

Nevertheless they do represent the earliest example of astronomical photography in Guernsey which I have found. 1858 is, of course, quite early for the art of photography, which had only been invented a couple of decades earlier. Mansell used the wet collodion process, employing a system which he himself developed and called 'syruped collodion'. The photographs show that he got images of the Sun 7 minutes before the start of the eclipse, and at 2, 8, 13 and 29 minutes after the start. Hoskins records that Mansell took the photographs "*whenever the sun was visible*", so clearly, as recorded by Kemp, the eclipse was obscured after the last image. Maximum eclipse occurred at 12.56 GMT, 1 hour 20 minutes after the start, and long after the last picture.

The next solar eclipse was on 18 July 1860. It lasted from 1.38 to 3.57 pm, with maximum eclipse of 89% at 2.50 pm. This time the weather started "*very fine*", although a few dark clouds did occasionally cover the Sun during the eclipse's progress. Hoskins made detailed meteorological measurements: barometric pressure, temperature (dry, wet and black bulb), clouds, ozone, wind direction and force, with general comments on the weather. The temperature dropped by 2ºF during the eclipse.

He also recorded the appearance of the eclipse: 1.35 pm Sun visible – Eclipse

commenced. 2.15 pm neutral tint over landscape. 2.30 pm faces of observers dark – evening moths flying. 2.45 pm lurid tint – birds flying as if to roost. 3.00 pm brighter tint in the clouds. 3.15 pm brighter tint, dark clouds east horizon. 3.30 pm brighter tint, dark clouds over Sun. 3.45 pm quite bright – Sun's disc perfect. "*Nothing remarkable except the purplish tint giving the countenances of the observers the aspect of Mulattos – and the landscape appearing as if viewed in Allande - Louraine glass*."

While Hoskins was watching this eclipse, Guernsey-born Warren De La Rue was taking his famous photographs of it from a position on the track of totality in Spain.

The next solar eclipse observed by Hoskins was a 47% one on 31 December 1861, when the weather was very fine. This was followed on 17 May 1863 by a 24% eclipse, with the weather again very fine. Hoskins recorded "*vivid flashes*". On 22 December 1870 he observed an 84% solar eclipse in a gale, while Guernsey artist Paul Jacob Naftel was recording it in a painting as a total eclipse, from the central track, which was again in Spain.

Meteors

The meteor observations are, with few exceptions, unremarkable.

In 1856 he recorded: "*Monday Jan. 7th 1856, at about 4.40 pm, local time, a brilliant meteor of considerable size, like a congreve rocket, was observed in the NW about 40º above the horizon. It was visible for nearly two seconds, describing the arc of a large circle and bursting in a S. Easterly direction, without audible explosion, at an elevation of 15 or 20º above the horizon. It discharged from six to eight incandescent fragments, like those from a rocket: yellow, orange, and purple in colour. The track of the meteor was indicated by a broad line of phosphorescent nebulous vapour, which, after assuming various shapes seemed to retrograde and vanished, after the duration of 15 to 20 minutes in the NW. A light breeze prevailed – the sky was half covered with cirrostratus – the Barometer (corrected) was 28.801, the temp 46º. From the commencement of the month the Barometer had fallen gradually and reached its minimum just before the appearance of the meteor – the mercury then rose.*"

On 11 February 1860 he recorded: "*Vivid meteor 11 pm. This meteor of large size was seen in Jersey as well as Guernsey – followed by a loud explosion*".

He mentioned the (Leonid) meteor shower of 13/14 November 1866, although without comment. He did, however, paste in a couple of newspaper cuttings. This was at the peak of the Leonid shower period of 33 years, when elsewhere hundreds or thousands of meteors per hour were reported.

The shower clearly excited great public interest. *The Star* of 15 November carried an article copied from *The Comet* (another Guernsey newspaper) of 14 November, reporting

that William Newberry ("*an intelligent man*"), whose job was to attend to the lighting (presumably gas) in part of St Peter Port, saw the shower, which lasted 5 minutes, the largest ones being "*of exceeding brightness, and had luminous trains attached to them*". He described the sight "*as one of surpassing beauty, and producing an impression upon his mind of wonder and delight. ... It was such a sight as never to be forgotten by him.*"

The same newspaper quoted an article in the *Shipping and Mercantile Gazette* of 14 November, describing the observations from London:
"*Appearance of meteors. – The remarkable clearness of the atmosphere very early this morning was singularly favourable for astronomical observations, and the great periodical appearance of meteors or shooting stars which was to recur between 1 o'clock and sunrise was witnessed in the metropolis under very favourable conditions. Great numbers of people were abroad in the streets looking for the phenomenon, and at some points, notably on the bridges and in Trafalgar-square, crowds of persons were assembled, all of whom were star-gazing. The heavens were deeply blue, and the stars very bright. Almost directly after 1 o'clock am, the sky was first occasionally, then frequently, and soon constantly streaked with the trains of the countless stars which shot across the heavens. This extraordinary meteoric display occurs once in 33 years, and is, of course, looked forward to by scientific men with great interest.*"

It is hard to imagine such a scene in central London these days, or that it would be even possible to see anything but the brightest meteor.
In Guernsey the most detailed record published appears to be that of Dr George Kemp in *The Guernsey Mail and Telegraph* of 17 November 1866. He pointed out that the night of 12/13 November might have been the peak of the meteor shower, but was cloudy. However, the following night there were many more meteors than usual for this shower. His observations started at 20 Glategny Esplanade at 11.30 pm on 13 November, with a brilliant meteor, followed by more at intervals of a few minutes. There were some clouds, the edges of which were lit by the flashing meteors. At 1.30 am he went to Victoria Tower, and the maximum was from 2.00 to 3.00 am. The display was "*magnificent*", he said. "*It would have been perfectly futile to attempt to count the number or observe the most ordinary physical characters of the rapidly succeeding and, indeed, at intervals, continual showers of coloured meteors, most of them yellow, many of the most brilliant red, and a few green. Some of the trains seemed disintegrated, and, although as a whole figure representing a long ellipse, appeared composed of myriads of brilliant dots. Some portions of the sky also, not before seen assumed a luminous appearance on the passage of the meteor.*"

Comets

Hoskins's memoirs (a manuscript, entitled *Autobiographical Twaddle*, archives ref AQ0843/02) include a note: "*1811 Oct 9 Comet very brilliant*", with a reference to Elisha Dobrée's journal. This was the Great Comet of 1811 (C/1811 F1), which, being circumpolar and bright, was of naked eye visibility for over eight months. Comets have long been associated with powers far beyond their capabilities, and this one was no exception. In the *Gazette de Guernesey* of 5 October 1811 there was an advertisement, discussing the theory of comets, and suggesting that as the comet "*will shine with increased lustre on Tuesday, the 22nd of October, this accounts for the attraction of the present small State Lottery, of only 13,500 Tickets, with more Variety of Capital Prizes than for many years past, which will all be drawn on the same day.*" This rather fanciful claim was only outdone by the general claim that the excellent wine of that year could be attributed to the appearance of the comet, the vintage being called "Comet Wine".

From 17 to 20 March 1843 Hoskins recorded the Great Comet of 1843, a sungrazing comet with a very long tail (C/1843 D1). He reported: "*The comet with very long tail but no nucleus was first observed on the 19th at 7 pm in the SW.*" He also pasted in a cutting of a letter published in *The Star* of 20 March from "*F.C.L.*" (undoubtedly Frederick Corbin Lukis), headed *Comet observed last evening*, and reading:
"*This phenomenon was remarked by a produced [pronounced?] brilliant streak of light, nearly of equal dimensions, running in a line across the head of the Hare (Lepus) – the four stars of which could be perceived through its nebulous tail. By drawing a line with Rigel and Kappa on Orion, and another parallel with it (midway from Sirius), the tail of the Comet will then pass through, or obscure the head of Lepus. The nucleus was not discernible, but appeared to be directly in the constellation Eridanus. The tail is remarkable for its length and uniform breadth.*"

On 11 September 1858, he reported: "*8 to 9.30 pm Comet visible N.W.*" This was Donati's Comet (C/1858 L1), one of the brightest comets of the century (second only to the 1811 one).

On 30 June 1861 he recorded: "*At 9 pm a large luminous disc surrounded by a nebulous haze became visible in the NW horizon. At 9.40 pm it unmistakably assumed the character, to the naked eye, of a comet, having a large nucleus & a fan-like tail projecting vertically towards the zenith. It was permanently brilliant until sunrise the next morning*[?] – *travelling with apparent rapidity, but slight declination, from NW to NE.*" This was comet C/1861 J1, discovered by John Tebbutt in Australia. Hoskins reported seeing it again on 2 July.

Atmospheric phenomena and earthquakes

Being a meteorologist, Hoskins was naturally interested in appearances of solar and lunar haloes, auroræ and parhelia. He recorded 11 solar haloes, 28 lunar haloes, 5 parhelia, 3 (solar)

rainbows, 3 lunar rainbows, and a paraselene (a Moon dog).

What is perhaps surprising is that he recorded no less than 26 auroræ and 10 earthquakes between 1843 and 1881. Some of them were significant enough to be mentioned in articles in Guernsey newspapers. Nowadays auroræ and earthquakes are quite rare at our latitude. I have only seen a handful of auroræ, and have never experienced an earthquake. Hoskins mentioned that auroræ were rare, but he nevertheless saw many more than we do.

Some of them seemed quite spectacular. On 31 October 1858, for example, he reports "*vertical scintillations*" in an aurora over Alderney. On 23 February 1859 he reported: "*from 7 to 9 pm a bright Aurora, NW, with bright train of light similar to the trail of a large comet.*" On 28 August, the same year he reported an aurora with "*vertical bands of light*", and in October: "*Aurora Borealis on the 2nd 3rd & 12th. The latter lasted from 8 to 10 pm - Bright, without corruscation, from NE to SW. Alternate bands of red & bluish light, like the rays of a fan, diverging from the zenith to the horizon.*" On 09 March 1861 an aurora was "*very brilliant*". In 1870 Thomas Mansell reported in *The Star* "*a magnificent display here last night (October 24th) of bright carmine coloured aurora borealis*". On 17 December 1862 *The* (Guernsey) *Comet* reported a beautiful display. *The Guernsey Mail and Telegraph* of 20 April 1869 reported another display, and *The Star* reported one on 20 October 1870.

It seems amazing that auroræ were observed so much more frequently in the 19th century. It has been suggested that perhaps the magnetic pole was closer to Guernsey at that time, but this does not seem to be the case. Perhaps the auroræ were much more evident then because of the lack of light pollution. Today there are so many sources of light that perhaps we just do not notice them. However, forecasts of the appearance of auroræ are made now, based on observations of events such as coronal mass ejections from the Sun. In the next two or three years auroræ are expected to be more frequent and spectacular as solar maximum is reached. It would, therefore, be worth keeping an eye on the northern part of the sky at times when auroræ are predicted. A good website is www.spaceweather.com, to which there is a link from our Astronomy Section website.

It may be a similar story with earthquakes. There are now so many sources of noise and vibration that perhaps we just assume minor quakes are man-made. This deserves further investigation.

Conclusion

It is instructive to study what our ancestors felt important to record. It also gives us insight and information on events 150 years ago. In some cases these records can be scientifically useful. For example, ancient eclipse observations enable changes in the Earth's rotation rate to

be determined. Hoskins's phenological records, such as the flowering dates of plants, can be compared with today's records to provide information on climate change. The plethora of auroræ and earthquakes in the 19th century provide food for thought.

Hoskins' motivation for keeping weather records for such an extended period of time was basically commercial. As a doctor he was interested in advocating residence in Guernsey by invalids from Britain, and was attempting to show that the island's climate had beneficial effects. Little did he know that his records would still be of interest so long after his death. The fact that he went to considerable lengths to ensure that his daily data gathering was strictly in accordance with the best scientific practice means that his weather observations are still of use today.

His recording of other phenomena, however, such as astronomical and atmospheric events, must have been purely because of his love of science. It is important to record what we see and experience, because such records will last much longer than we will, and who knows what use future generations may make of them!

David Le Conte

Acknowledgements: I am grateful to the Island Archives Service for providing the facilities for study of these records, and to the Guernsey Met Office which owns them.

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

The Northern Lights. With solar activity now on the increase towards the next peak in the cycle, a detailed look at the phenomenon of the Northern Lights, and the interaction of charged particles from the Sun being drawn into the Earth's magnetic field which produces the Aurora. (Astronomy Now, October 2010)

Astrophotography. A set of articles focusing on astrophotography and techniques - from the inexpensive use of digital cameras to CCD cameras, and to the present trend for using robotic telescopes with internet access - seen as a useful alternative for astronomers in more unfavourable climates where observing in clear weather conditions is more limited. (Astronomy Now, October 2010)

Extrasolar Planets. A guide to the discovery of planets in orbit around other stars, from the first discovery in 1992. A summary of the different methods now being used to detect the presence of planets around stars, including the study of gravitational effects and the effects on a star's brightness caused by a planet transitting a star. Only a few extrasolar planets have as yet been discovered by direct observation. (Astronomy and Space, October 2010)

How Astronomers will find Another Earth. Evidence of planets around

other stars is increasing rapidly, with the new Kepler Space Telescope already revealing that there are hundreds of planets shown to be orbiting other Sun-like stars. The presence of water on these planets, which can be revealed by better techniques and spectroscopic analysis, is all that is required before Earth-like planets are found, with water being an essential for life. (Astronomy, October 2010)

Understanding Pulsars. Fast-rotating neutron stars, or pulsars were once thought to be all similar to the original prime example - the pulsar in the centre of the Crab Nebula, which developed from a supernova outburst in the year 1054. Recent research has shown that there is much greater variety in these objects than was previously understood. (Astronomy, October 2010)

Venus - A World gone Wrong. The Earth and Venus are very similar in size, and yet the two planets could hardly be more different. A detailed look at the major differences, the thick atmosphere of Venus, which has produced the present conditions of extreme heating and pressure; also radar information which has shown that Venus has evidence of major volcanic activity, and how the planet may have changed since its formation. (Astronomy Now, November 2010)

Exoplanet Climates. Many exoplanets are “hot Jupiters” in orbit near their parent stars, while others are orbiting in or close to a star's “habitable zone”. As techniques improve it is now possible to begin analysing the atmosphere of an exoplanet as it orbits its parent star and transits across its surface. (Astronomy Now, November 2010)

Cassini's Top Ten Saturn discoveries. The Cassini spacecraft mission to study Saturn and its moons has made some significant discoveries. These include the finding that Saturn's moon Titan has an Earth-like surface with rivers and lakes of methane. Saturn has been found to have a dynamic radiation belt of charged particles, powerful lightning storms, and there was also confirmation of a hexagonal-shaped formation around its north pole, within an auroral ring. (Astronomy, November 2010)

Kepler Spacecraft's early success. The Kepler spacecraft, named after the astronomer who 400 years ago discovered how planets move in their orbits, was launched in March 2009. The spacecraft has already discovered evidence of a number of large planets in orbit around other stars, by measuring the decrease in a star's light caused by a planet in transit. The method has now been found accurate enough to identify Earth-sized planets, with the aim of finding such planets orbiting within a star's “habitable zone”. (Astronomy, November 2010)

South Pacific Eclipse. A summary of the total solar eclipse of July 11th, 2010 over the South Sea islands of the Pacific, and in particular from the dramatic location of Easter Island, which also happened to be on the path

of totality. (Astronomy, November 2010)

Mission - Earth. Planetary studies are usually set on exploring other worlds, but from the earliest years of orbiting satellites the study of Earth's surface began. From the series of Landsat satellites and other recent spacecraft there has been global monitoring of land surfaces and oceans, with amounts of ice so that any global warming can be kept under review. (Astronomy Now, December 2010)

Can ET hear our transmissions? A Royal Society Meeting of international scientists in October last year discussed whether television, radio or radar transmissions could be picked up at the distances of nearby stars, and if it was wise to transmit deliberate signals. The required signal strength is in doubt, and although larger radio telescope arrays will boost signals, the adoption of digital systems will reduce transmissions. (Astronomy Now, December 2010)

How Stars Form. The formation process of stars, from molecular clouds, through a condensation process to form a protostar until nuclear fusion energy begins, is generally understood. How very massive stars form, however, whether there is a limit on size, in view of a recent discovery and why our galaxy's star formation rate is so low are still matters of uncertainty. (Astronomy, December 2010)

What is the Sun made of? The composition of the Sun is from elements of the earlier universe, with the creation of heavier elements. Study of the solar spectrum can reveal the various elements present, but the circulation patterns within the Sun can make analysis a more complex problem. (Astronomy, December 2010)

Space Missions which turned Failure into Success. Many spacecraft missions have ended in failure, particularly some of the earlier Mars missions, but some have ended in success after apparent failure. Apart from the well known optical correction of the Hubble Space Telescope in orbit, other examples include Skylab, Voyager 2, Hipparcos and the NEAR Shoemaker mission. (Astronomy, December 2010)

From *Locksley Hall*, by Alfred Lord Tennyson

Many a night from yonder ivied casement, ere I went to rest,
Did I look on great Orion sloping slowly to the West.

Many a night I saw the Pleiads, rising through the mellow shade,
Glitter like a swarm of fire-flies tangled in a silver braid.

David Le Conte

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