Guernsey Astronomers Past and Present

David Le Conte and Jean Dean

Guernsey's astronomical heritage starts over five thousand years ago with Neolithic man. With no light pollution they must have been fully aware of the night sky with a deep knowledge of changes in the position of the stars, planets, sunrise and sunset, and the seasons. The Channel Islands, in common with much of Europe and Britain, has a wealth of Neolithic remains (Sebire, 2005), including megalithic chamber tombs such as those at La Varde, L'Ancresse (Figure 1) and Le Trépied, Le Catioroc. Studies show that these are typically orientated such that their opening faces east and they aligned with sunrise twice a year, either on the solstice or on the day they were laid out (Le Conte, 2005, 2007 and 2008; Hill, 2018).

Figure 1
Le Vardes megalithic tomb at L'Ancresse, inset shows interior. Photograph is looking towards the north-west (image credit: J. Dean).

As an island, Guernsey has a rich maritime heritage, with many naval and merchant seamen, including privateers, some of considerable renown. Navigation at sea will have relied heavily on astronomical knowledge combined with accurate charts. One enterprising Guernseyman was the 17th century Henry de Saumarez, who produced one of the earliest charts of Guernsey, Herm and Sark waters. He is also remembered for inventing a device he called the *Marine Surveyor* to measure the distance travelled by a ship (de Saumarez, 1724 and 1730). He made strenuous, but unsuccessful, efforts to have it recognised as a contender for the £20,000 prize offered to solve the problem of determining longitude at sea, petitioning the Royal Society, the Admiralty, Trinity House, the Patent Office and Sir Isaac Newton, and even the King, all to no avail. Another Guernseyman, Richard de Jersey (1720-1782) in 1737, when barely 17 years old, produced what must be one of the most beautiful manuscript books of navigation, *Richard De Jersey's Book of Navigation, 1737* (Priaulx Library), wonderfully researched and illustrated, containing almost 200 pages of exquisite calculations and illustrations, many astronomical in nature (Figure 2). However, the first written record of specific astronomical events in Guernsey are those of Elisha Dobrée (1756-1844). He kept a weather journal and diary from 1777 to 1844, and in 1791 he recorded a solar eclipse, and in 1811 the appearance of a great comet.

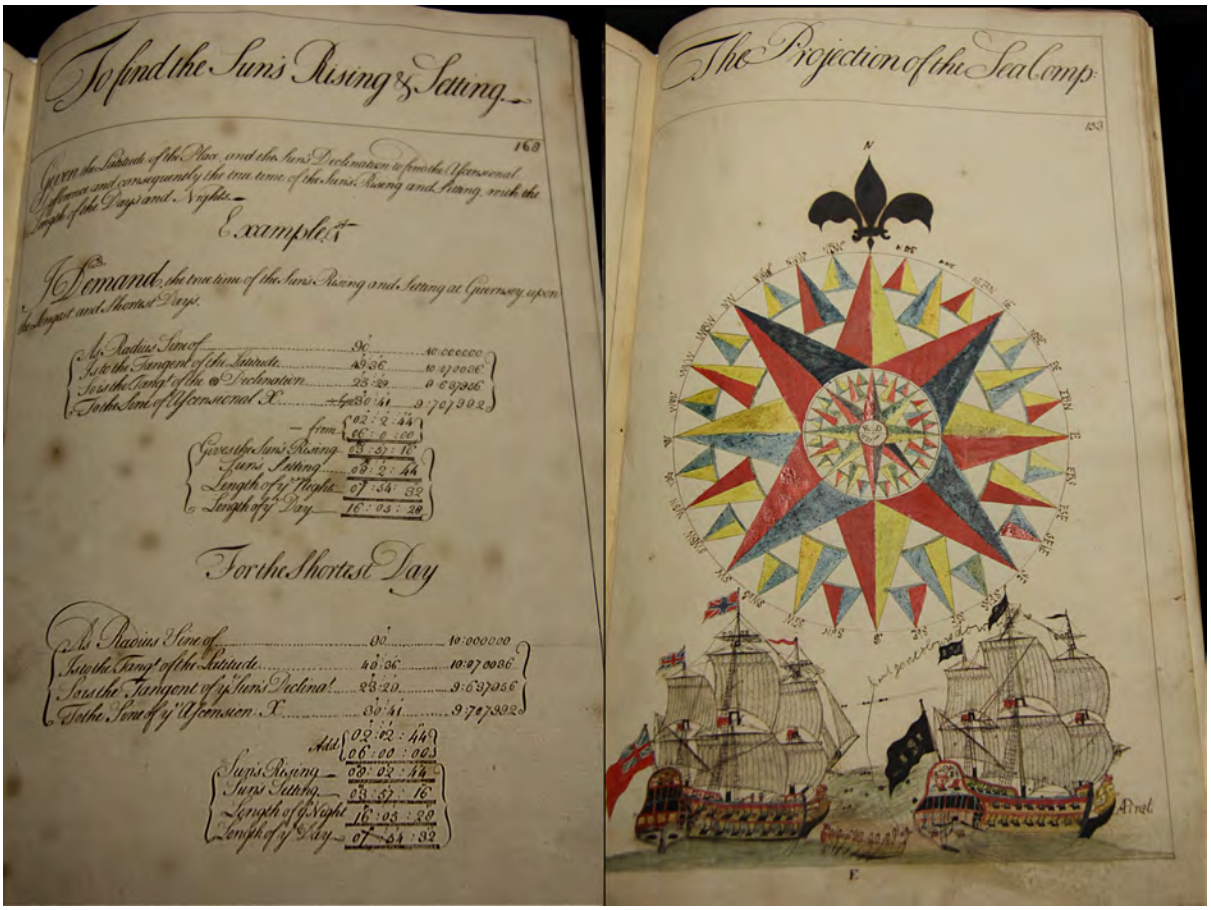

Figure 2
Extract from Richard de Jersey's Book of Navigation, 1737 (Priaulx Library collection).

Richard Saumarez (1764-1835), brother of Admiral Lord James de Saumarez, was an accomplished London surgeon and in 1742 he published several ideas on natural phenomena (Saumarez, 1812) claiming that Sir Isaac Newton was wrong in his observation that sunlight was composed of all the colours of the rainbow, as otherwise everything sunlight fell on would appear of those colours. He also suggested other notions including the Sun was not hot, because as you went up a mountain it got colder, even though you were closer to the Sun, that earthquakes were caused by the ignition of materials through fermentation of organic matter, and that comets prevented the dissipation of Earth's atmosphere into space. He also challenged Newton's Laws of Gravity, through equally spurious arguments. Saumarez, in common with many natural philosophers of his time, worked from the premise that science should support religious concepts.

The same premise was also evident in the work of Guernsey-born John MacCulloch (1773-1835), Fellow of the Royal Society he was a geologist who had a far more sound understanding of science and astronomy than Richard Saumarez. He produced the definitive 19th century map of the geology of Scotland, a notable achievement. He challenged the conclusions of the Astronomer Royal, Nevil Maskelyne, who had estimated the density of the Earth based on the deflection of a plumb bob caused by the mass of the symmetrical and isolated Scottish mountain Schiehallion, as measured against the positions of stars. McCulloch felt that insufficient account had been taken of the geological nature of the mountain. He went on to write a three-volumed thesis (MacCulloch, 1837) in which he endeavoured to show by geological and other analysis, that the Earth, and by extension the Universe, had not existed for eternity but had been created by God. MacCulloch was not, however, universally popular in Scotland. His scathing attacks on the nature of the Highlanders led to one entrepreneur to sell chamber pots with MacCulloch's portrait in the bottom – an honour later bestowed on Adolph Hitler.

Archaeologist Frederick Corbin Lukis (1788-1871) who had an interest in megalithic tombs, carried out a thorough excavation of the La Varde structure in 1837 and documented the orientations of many dolmens in Brittany (Sebire, 2007). Although not an astronomer, he described the great comet of 1843 with a letter in *The Star*. On 29th March 1848 with another letter to the paper, he documented the sighting of an atmospheric effect known as parhelia , two bright spots of light either side of the Sun as the sunlight is refracted by ice crystals in the atmosphere, often called sundogs. Later, Lukis recorded a partial eclipse of the Sun in Yorkshire on 8th March 1867.

Samuel Elliot Hoskins (1799-1888) was a Guernsey physician with a special interest in meteorology. Primarily a skilled doctor and a Fellow of the Royal Society, he was one of the great Victorian polymaths, writing on: thoracic disease, stethoscopes, cholera, paper-making, Tudor history, carved oak chests, geology, botany, weather patterns, genealogy, a comedy play, and a report on the failure of the percussion caps on the guns of the 46th Regiment. His

contribution to astronomy was through his daily, detailed meteorological records for Guernsey (Le Conte, 2011) from 1842 until 1880 (a task then taken over by Mr A. Collenette). Hoskin's records included notes of astronomical events: 12 eclipses, 13 meteor showers, 26 sightings of the northern lights, as well as numerous sightings of solar and lunar haloes.

During the great solar eclipse of 15th March 1858, Hoskins made measurements of atmospheric ozone, and his observations were reported by the London Meteorological Society. This same eclipse was photographed by another Guernseyman, accomplished photographer Thomas Lukis Mansell (1809-1879), with most likely the first astronomical photographs taken in the island (Figure 3). George Kemp also observed the eclipse with a telescope and tried to photograph it, without much success. However, he sketched and described the presence of sunspots in *The Star* the following day. Curiously, the same eclipse was observed from the convict ship *Lord Raglan*, off the coast of Portugal upon which Guernseyman, Aimable Duperouzel, was being deported to Australia for a period of ten years. The log records: "*Eclipse nearly total but not seen until the shadow had partly passed off*."

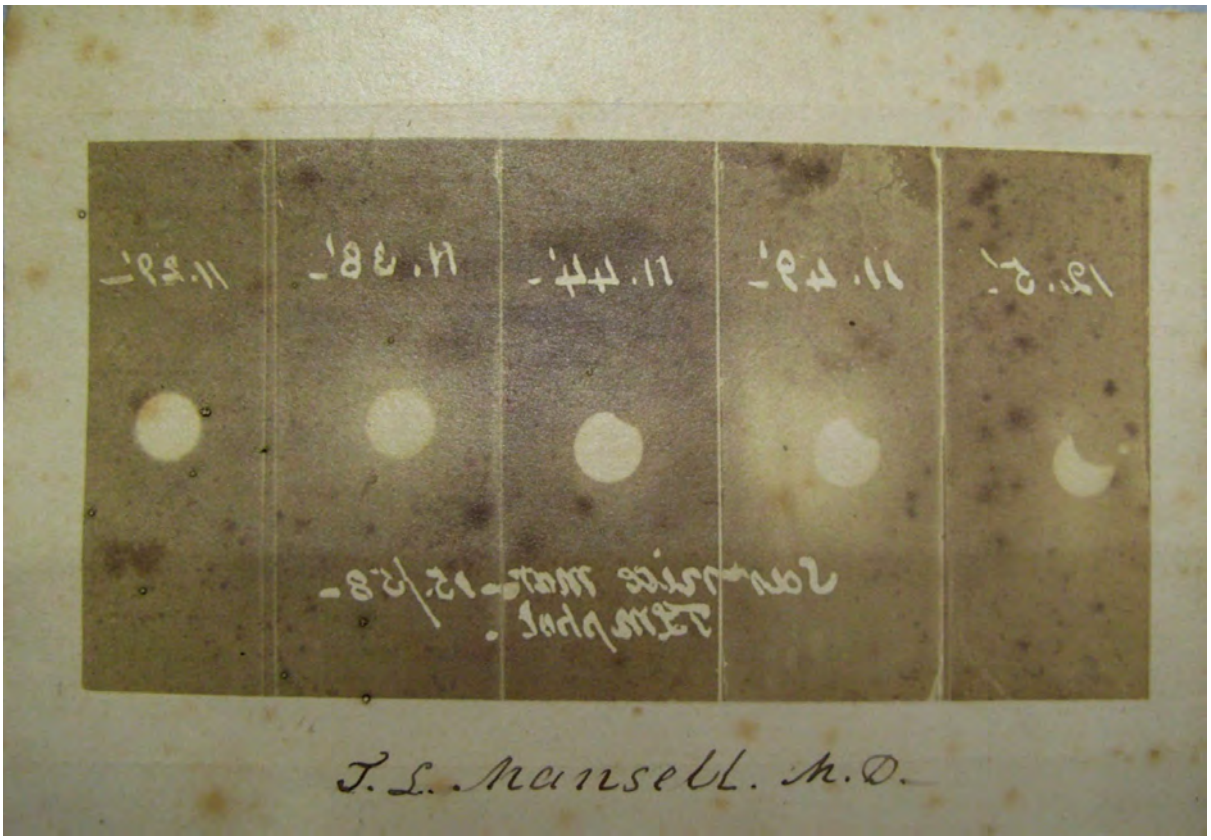

Figure 3
Annular Solar Eclipse 15th March 1858 photographed by Thomas Lukis Mansell using the wet collodian process (States of Guernsey Island Archives).

While talking of curiosities, mention should be made of Guernsey resident German Johannes von Gumpach (1814-1875), who had a very high opinion of himself as an astronomer, writing to many of the astronomical establishments in the 1860s, challenging scientific opinion while lacking any robust scientific argument. Self-opinionated, he was prolific in publication but given to fanciful ideas about astronomy (Le Conte, 2019). Scathing about Newton's theory of gravitation, he engaged in lengthy, largely one-way correspondence with the 14 English astronomical luminaries of the day, particularly over the question of the shape of the Earth, which he claimed was fatter at the poles than at the equator, a claim long known to be false. His targets also included Warren De La Rue as Secretary of the Royal Astronomical Society, accusing him of "trickery".

Warren De La Rue (1815-1889) (Figure 4) was one of the foremost 19th Century astronomers (Le Conte, 2011). He was twice Vice-President of the prestigious Royal Society, the only Guernseyman to achieve that position. He was Secretary and President of the Royal Astronomical Society, being awarded its Gold Medal, was twice President of the Chemical Society, and Vice-President of the Royal Institution. He published some 200 scientific papers and received many international honours. He was lauded as an extremely capable scientist, inventor and businessman, with a very genial temperament. Renowned as Britain's best astronomical photographer of the 19th century, he made significant contributions including introducing the wet collodion process to astronomical photography, and the other great innovation was providing his own 13-inch astronomical reflecting telescope with a clock drive so it could track the stars (Figure 5), enabling long exposure photographs to be taken.

Figure 4
Warren De La Rue (image credit: National Portrait Gallery, London).

The use of photographs was more accurate than interpretive sketches, and allowed astronomers for the first time to see and record more detail than was possible visually. However, Warren de La Rue is probably best remembered for inventing the photoheliograph, the first instrument of its kind designed specifically to photograph the Sun, which today is preserved in the London Science Museum. He designed it, along with a special solar filter eyepiece to fit a 3" Dallymeyer telescope, for observing the total solar eclipse of the 18th July, 1860 on a Royal Astronomical Society expedition to Rivabellosa in Spain. The expedition was a total success and De La Rue was able to demonstrate conclusively that prominences were a solar phenomenon (Figure 6) (Le Conte, 2006, 2008).

Figure 5
Warren De La Rue with his 13-inch reflecting telescope, at Cranford, c. 1860. Wet collodian print, Royal Greenwich Observatory, Airy Papers, box 172, fol. 534 (courtesy of the Syndics of Cambridge University Library and the Director of the Royal Greenwich Observatory).

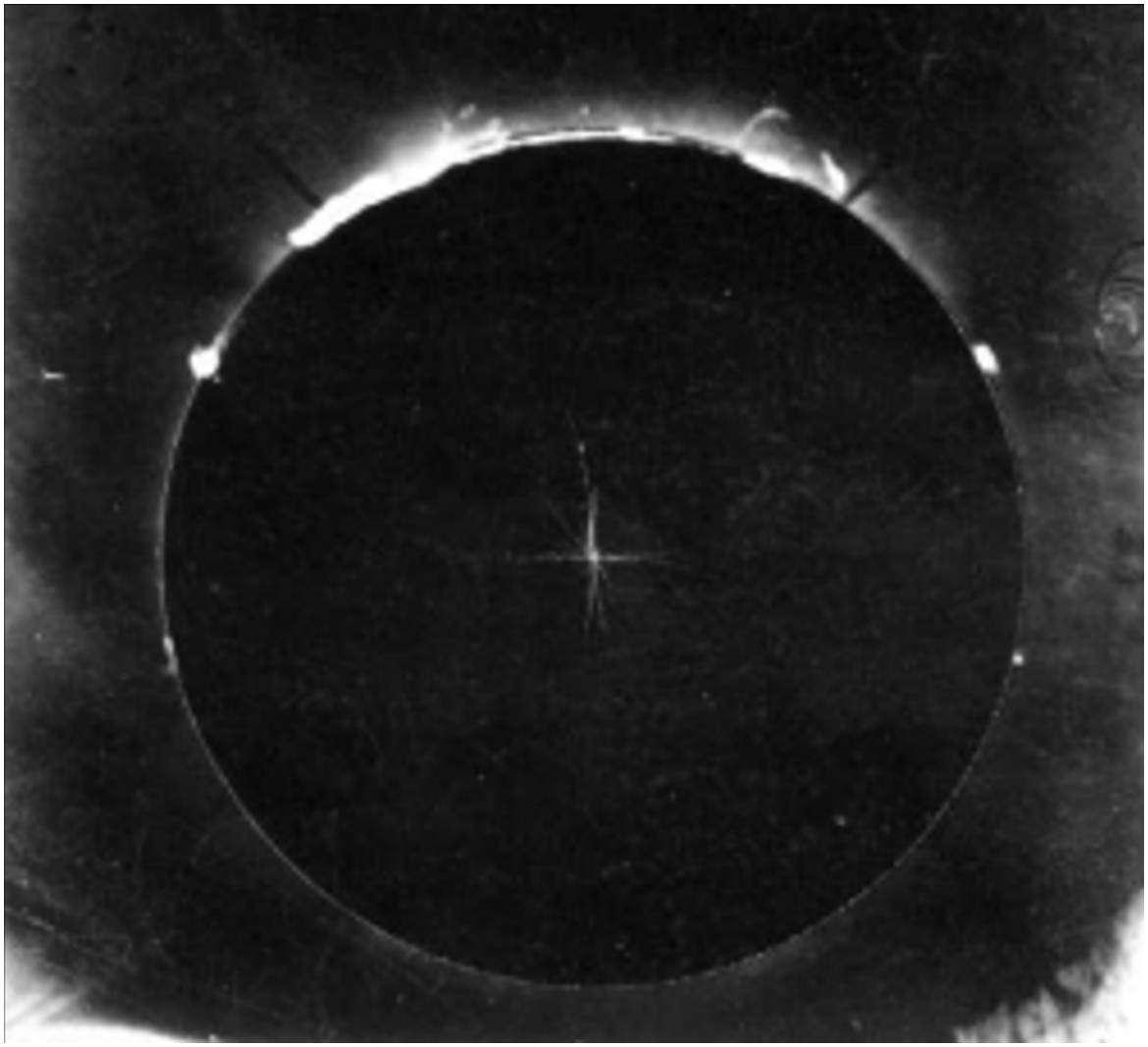

Figure 6
Solar eclipse 18th July 1860 from Rivabellosa, Spain taken by Warren De La Rue (Royal Astronomical Society collection).

Subsequently in 1874 he devised special photographic telescopes to observe and measure the transit of Venus across the face of the Sun in order to determine the scale of the solar system. In addition, he took many detailed photographs of the Moon including stereoscopic ones (Figure 7) and is commemorated with a crater on the Moon being named after him (Figure 8).

Figure 7
Stereo Photographs of the Moon taken by Warren De La Rue (Le Conte collection).

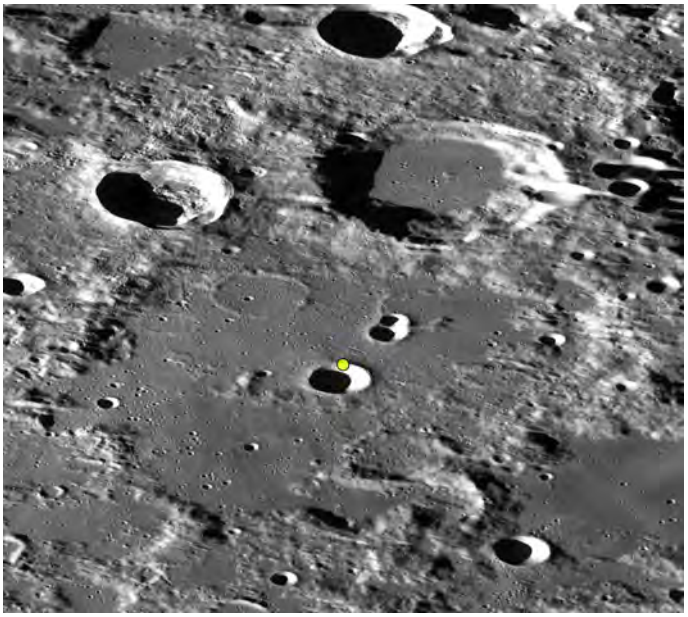

Figure 8
De La Rue crater on the Moon – yellow dot (image Credit: NASA).

Ten years after De La Rue's triumph with the 1860 solar eclipse, one of Guernsey's foremost 19th Century landscape artists, Paul Jacob Naftel (1817-1891) was invited to take part in a Royal Astronomical Society expedition to Cadiz, Spain to record another total solar eclipse on 22nd December 1870 (Le Conte, 2006, 2008). At the time it was common practice to invite artists to accompany such expeditions, using their illustrative skills to record details and the general ambience. Naftel's painting depicted the corona around the Sun and the appearance of the landscape during totality (Figure 9).

Figure 9
Total Solar Eclipse 22nd December 1870 painted by Paul Jacob Naftel (Le Conte collection).

One outstanding Guernsey academic Sir Peter Le Page Renouf (1882-1897) (Figure 10) had an interest in astronomy and managed to see and document an annual eclipse of the Sun in 1847 from Château du Deschaux, France. He became Professor of Ancient History and Oriental Languages in Dublin, and Keeper of Oriental Antiquities at the British Museum, his interests being in Egyptology, including the publication of a number of astronomy treatises. His contribution to astronomy was to identify the names of many stars and constellations referred to by the ancient Egyptians such as The Great Bear, Cassiopeia, Orion, Sirius and Castor and Pollux. His translation of the Egyptian Book of the Dead also contains a number of astronomical references. In Guernsey he is commemorated with a peal of bells in St Joseph's Church.

Greenwich Meantime (GMT) is the mean solar time at the Royal Observatory London and by the 1840s it was being used by railways across Great Britain, and by mariners to calculate their longitude from the Greenwich Meridian. In 1858 the first electric telegraph cable was installed from Weymouth, via Alderney to Guernsey, and thence to Jersey. However, it was not until 1974 that daily telegraphic signals were received in Guernsey direct from the Royal Greenwich Observatory, enabling local clocks to be set accurately. In Guernsey the clockmaker John Le Lacheur was likely the first individual to subscribe to the service, thus enabling him to set his timepieces perfectly (Le Conte, 2008 and 2009).

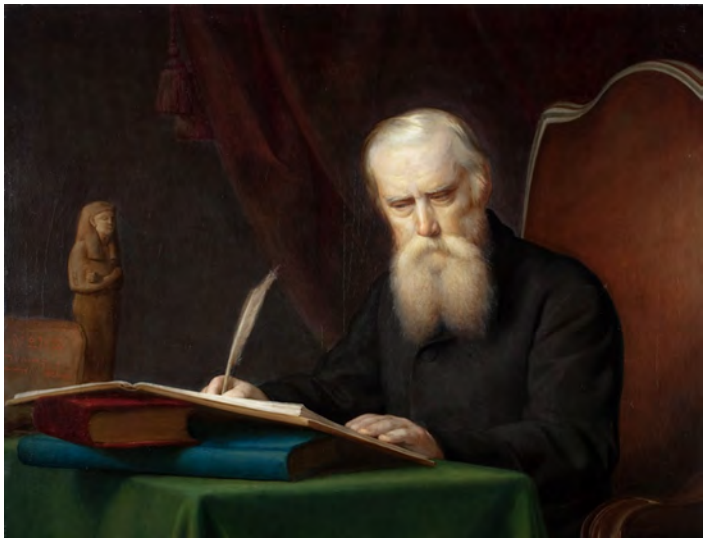

Figure 10
Sir Peter Le Page Renouf painted by Alberto de Rohden (Guernsey Museum and Art Gallery Collection).

Guernsey resident Adolphus Collenette (1841-1922) was a Fellow of the (London) Chemical Society, and was also a geologist and meteorologist. He took over from Samuel Elliott Hoskins the recording of the island's weather. He also had a considerable interest in astronomy, and gave a number of lectures to the Mechanics Institute, which met at the Guille-Alles Library (Le Conte, 2007). The lectures were very popular and one on Halley's Comet attracted an audience of over 300 people. Collenette was also very active in La Société Guernesiaise and a past president 1895 to 1896.

One of the most recent accomplished Guernsey astronomers is undoubtedly Jurat David Le Conte (1940-2020), a Fellow of the Royal Astronomical Society. David was educated at Elizabeth College before going to Edinburgh University from where he graduated with a degree in physics. His scientific career began at the Edinburgh Royal Observatory using a 10-inch astrographic telescope and kinetheodolite for satellite-tracking. A little while later David moved to Aberystwyth University (Figure 11) where he worked on developing astronomical optics and a timing system for a satellite-tracking camera.

Figure 11
David Le Conte (1964) at the Physics Department, University College of Wales, Aberystwyth (Le Conte Collection).

In 1964 his work in Aberystwyth led to his moving to America, having been recruited by the Smithsonian Astrophysical Observatory under a NASA contract. David worked on the advanced optical tracking of spacecraft and astronomical observations (Figure 12), using a high speed f/1, 20-inch aperture Baker-Nunn Schmidt telescopic camera and a 500-megawatt laser ranging system in Florida. This led to his involvement with the Apollo Program (Le Conte, 2019), working as the manager of the Smithsonian Institution's Astrophysical Observing Station in Maui, Hawaii where he took photographs of the Apollo 8 trans-lunar injection manoeuvre (Figure 13), a momentous event; it was humanity's first voyage into the space beyond the environs of the Earth, out toward the Moon (SAO, 1969). For the Apollo 11 Moon landing David moved to a tracking station in Arizona. After the end of the Apollo Program David became Executive Director of the Smithsonian Institution's Research Foundation in Washington DC, and later a department manager at Kitt Peak National Observatory in Arizona administering its enormous solar telescope and research projects.

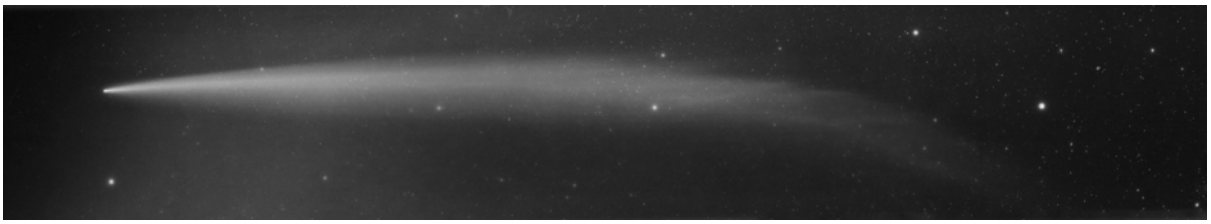

Figure 12
Comet Ikeya-Seki, the brightest comet of the 20th Century, taken by David Le Conte with a Baker-Nunn camera, Hawaii, 1965 (Le Conte Collection).

In 1978 David and his family returned to Guernsey and he joined La Société Guernesiaise and the Astronomy Section, becoming immersed in the club's activities. This included in 1990 finding a permanent site for an observatory in St Peter's and organising the construction of a roll-off roof telescope building, to house research grade reflecting and refracting telescopes which was opened by Sir Patrick Moore (Figure 14), allowing the Section to expand its activities further, growing into the group that it is today.

David's astronomical interests were varied and included calendars (Le Conte, 1997), Greenwich Mean Time and timekeeping (Le Conte, 2008 and 2009), sundials (Le Conte and Le Conte, 2004 and Le Conte 2006), and orientation of churches and megalithic burial tombs in the Channel Islands (Le Conte, 2005, 2006, 2007 and 2008). David's mathematical skills and understanding of planetary science allowed him to precisely determine the layout of the Liberation Monument which is a sundial marking the timing of events on May 9th 1945 (Le Conte, 1997, Snell *et al*., 1997).

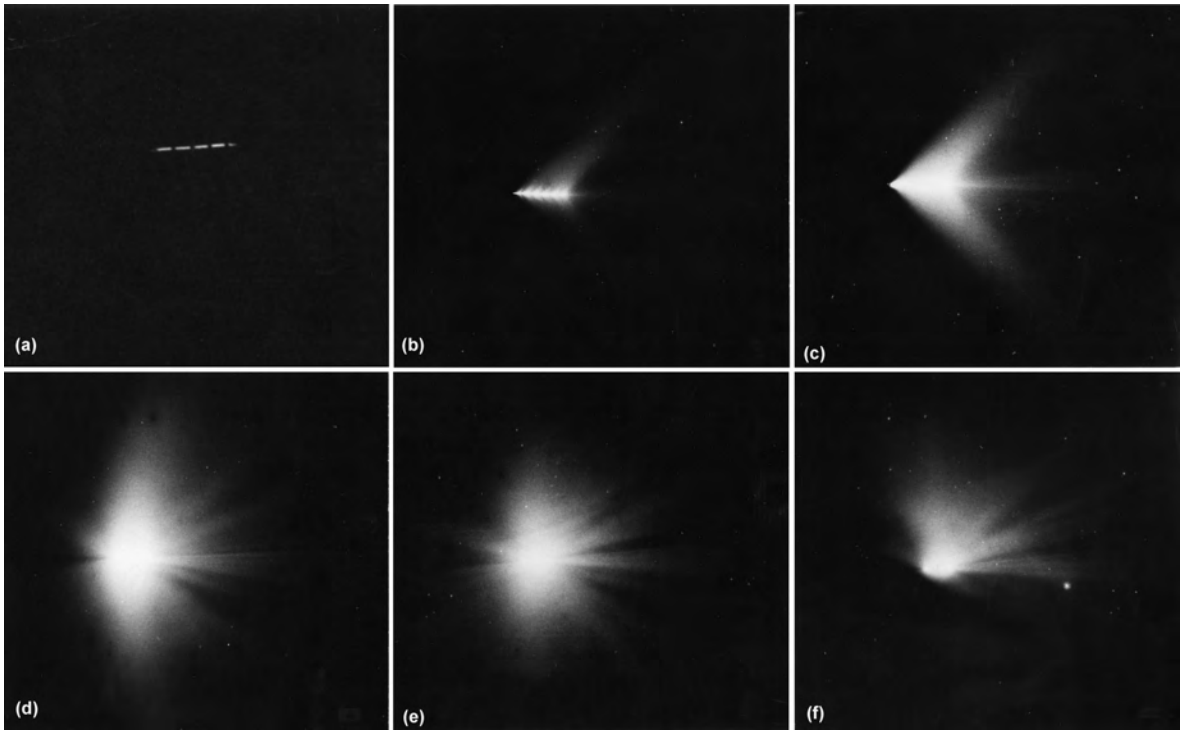

Figure 13
The Apollo 8 Trans-lunar Injection rocket burn photographed at 1544 UT December 21st 1968 from the Smithsonian Astrophysical Observing Station in Maui, Hawaii, taken by David Le Conte, Joe Coldwell and Bill Perry. Sequence: (a) the first acquisition before burn, (b) the firing of the booster rockets, (c-e) build-up of exhaust cloud and (f) the last view of the spacecraft before it goes behind the mountain (Le Conte collection).

His interests also included historical astronomical instruments, including two world war instruments, an A.M. Astro Compass MKII used by the British Airforce, and a Brunson Universal Sun Compass used by the U.S. Army (Le Conte, 2012). Being a skilled observational astronomer, David noticed detail around him, for example the thin crescent moon in a stained glass window in St Saviour's Church (Le Conte, 2019) and the incorrect orientation of a sundial at Pitmedden Castle, Scotland when visiting, which prompted David to ask the curator for a screwdriver so he might correct it for them (Le Conte., 2020).

Within the Astronomy Section, David held many committee posts over a span of 35 years including Secretary, Editor of the Sagittarius Newsletter and Public Relations Officer along with being Course Moderator for the very popular annual WEA Stargazing. David was also a very accomplished astrophotographer and like earlier astronomers, he had an interest in solar eclipses travelling to Venezuela in 1998, Zambia in 2001 and to Guernsey, Wyoming for the 2017 Great American Eclipse (Figure 15), in addition to documenting many local partial solar eclipse (Le Conte, 2011) and lunar eclipses. David also organised the August 1999 Meeting of the Royal Astronomical Society, which took place in Beau Sejour and coincided with the total

solar eclipse of that year, which participants viewed from Alderney (Le Conte, 1999, Williams *et al*., 2000).

Figure 14
Sir Patrick Moore and David Le Conte, March 10th 1993 at the opening of the La Société Guernesiaise Astronomical Sections' new telescope building (image credit Guernsey Press).

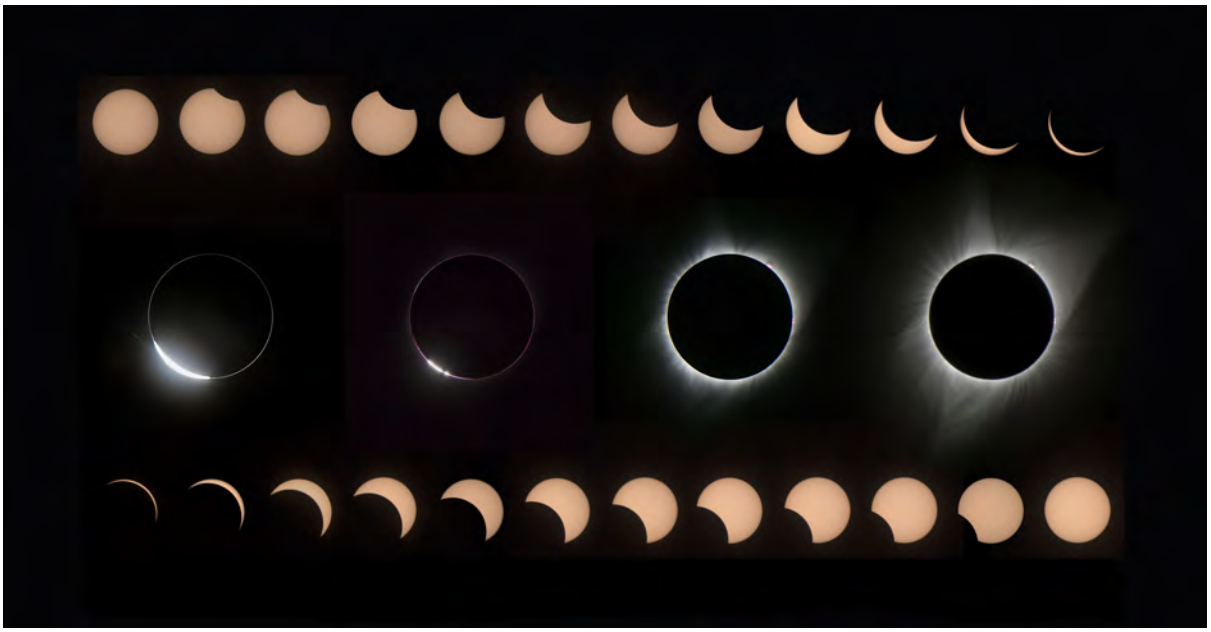

Figure 15
The Great American Eclipse, 21st August 2017, taken by David Le Conte from Wyoming, Guernsey, U.S.A. (Le Conte collection).

Although not astronomical, like many scientists, David's interests and accomplishments were varied. He was, instrumental in achieving the return to the island of the 16th Century, fine bronze Falcon cannon (Le Conte, 2011); made a significant contribution to the design of the Guernsey flag and was President of La Société Guernesiaise and more recently Archivist and Librarian. In 2005 David was accorded the highest civic accolade by being elected a Jurat of the Royal Court.

Finally, mention must be made of other modern Guernsey astronomers. Physicist Dr David Falla, a member of the Institute of Physics and Fellow of the Royal Astronomical Society and founder of the Astronomy Section of La Société Guernesiaise, obtained his PhD at the University of Bristol and held research posts at the University of Manchester and Queen Mary College, University of London. David went on to work at CERN in Geneva and the Rutherford Laboratory, Cambridge before being appointed as a lecturer at the University College of Wales, Aberystwyth, retiring in 1996. His special interest was the application of particle physics to astronomy, and his published papers relate to subjects such as light echoes, gravity and black holes (Falla and Floyd, 2002, Falla *et al*., 2003).

Another modern Guernsey astronomer is Professor Peter Sarre, a researcher in astrophysical chemistry and molecular astrophysics at the University of Nottingham. Peter was born in Guernsey and attended Elizabeth College, going on to study chemical physics at the University of Sussex, graduating in 1972, and obtaining his PhD in laser spectroscopy from Southampton University in 1976. Originally having a general interest in the links between laboratory molecular spectroscopy and astronomy, his astronomy observational research started around 1990 working in the field of astrochemistry. Recent publications include infrared observations of diffuse interstellar bands (Rawlings *et al*., 2019), dust and molecules around Sakurai's object - a white dwarf star that later transformed into a red giant, located at the centre of a planetary nebula (Evans *et al*., 2020) and graphene oxide nanoparticles in the interstellar medium (Sarre, 2019). Peter is a Fellow of the Royal Astronomical Society and of the Royal Society of Chemistry, where he held the position of Honorary Secretary and Treasurer of the Faraday Division and Chairman of the Astrophysical Chemistry Group. He has served as Chairman of the UK Southern African Large (10-metre class) Telescope Consortium (SALT), and as a member of the UK Infrared Telescope Board (UKIRT), as well as a number of other astrophysics and astrochemistry boards and working groups.

Michael Maunder, a Fellow of the Royal Astronomical Society and Fellow of the Royal Society of Chemistry, an astronomer from Alderney, should be mentioned. He is a photographic chemist, renowned astronomical photographer, particularly of solar eclipses – experiencing some twenty or so in total, and author, including some books co-authored with Sir Patrick Moore (Maunder and Moore, 2007, 2010 and 2013).

Finally, mention should also be made of Guernsey astronomers associated with the Astronomy Section of La Société Guernesiaise, particularly founding members Geoff Falla and Frank Dowding. Both recently retired in 2017, having given a sterling 45 years of their time to running the Astronomy Section, helping to inspire the next generation of astronomers and show members of the public the wonders of the night sky. Both were given Honorary membership of La Société Guernesiaise in 2020. More recent members, Advocate Jason Hill and astrophotographer Dr Jean Dean, both Fellows of the Royal Astronomical Society, and other Astronomy Section members continue to promote astronomy to the general public and school children. One ex-junior member, Thomas Harvey, recently elected a Fellow of the Royal Astronomical Society, has completed 3 years of a physics with astronomy degree and has been awarded a place at Harvard University for his final year.

Acknowledgements

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