I have calculated the intervals (termed the retardation) between the times of successive Moon risings for the days surrounding the Full Moon for the latitude of Guernsey. In September 2004 it was an average of just 16 minutes. For the Hunter's Moon in October 2004 it is 18 minutes. Compare this with similar calculations for the vernal equinox, in March 2005, which give 1h 13m.

These figures will change slightly from year to year, depending on how close the Full Moon occurs to the equinoxes.

The Oxford English Dictionary dates the terms Harvest Moon and Hunter's Moon from the early 18th century, and has several early quotations, including this one from 1710: "The country people call this the Hunter's-Moon", and from 1813: "Seventy harvest-moons filled his wide gran'ries with autumnal joy."

So whether harvesting or hunting you can depend on the assistance of the Moon.

David Le Conte

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Sagittarius

The Newsletter of the Astronomy Section of La Société Guernesiaise

October – December 2004

Forthcoming Events

Public Open Days (with children in mind)

Tuesday 19th October
7.00 pm
Tuesday 30th November
6.30 pm

Lunar Eclipse

28th October
01.15 – 03.45 pm GMT

Meteor Showers

Orionids – 22nd Oct
Leonids – 17-19th Nov
Geminids – 12th Dec

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

Section News

In Sagittarius this month we are pleased to include an article about Guernseyman, astronomer and scientist, Warren De La Rue by Michael Maunder. Mike has promised a second article so watch out for that.

This year's **Observatory Clean Up Day** was a great success since the sun shone for us. We had a good turnout (spouses as well) which made the job easier. Thanks to those that gave up their time. The outside to the main building has been repainted although there are a few bare patches at the side resulting from running short of paint. There has been extensive de-ivying to the storage shed and other areas and the shed has been painted for the first time (although another coat is required). Any overgrown areas have been thoroughly strimmed and cut back. The Meade Obervatory has only been partially. restained since we are intending to replace some of the plywood panelling but the roof run off framework has been completely repainted. There are still jobs which remain to be completed but the problem will be coordinating people and weather (the latter being more difficult).

The sort/clear out of the main building continues and a list of spare books is included below.

Good weather made the Annual Barbeque a successful event especially as there were a many more meteors spotted compared to the dismal few of the previous year. We saw something like 40 - 50 in an hour period before midnight although not all of these were Perseids since the trails could not be traced back to Perseus constellation.

The main activity of the month of August has been the Public Open Days throughout the school holiday period. As usual we have had a very good turnout on clear nights (on occasions for poor nights we have had good turnouts too even in thick fog!). The modest entrance charge on these occassions £1 per Adult / 50 p per child is a welcome addition to our funds. We have also welcomed back Marine Biology students from Imperial College who have used the Observatory site for field studies, the Main Building being used as an office and adjoining bunker as a laboratory. This will be the last year as laboratory facilities will be provided in future at their accommodation site.

Public Open Days for the rest of the year:

Tuesday 19th October – 7.00 pm

Tuesday 30th November – 6.30 pm

The early starts in October and November will be an opportunity for children's hands on sessions as planned for February which the weather did not allow.

As mentioned in the last edition, we are still considering a 'proper' research project for the Section. Before we do that it has been suggested that we all become more familiar with using the Meade and also get some experience with the CCD camera. Geoff Falla has suggested that we should attempt to capture images of the Lunar 100 Challenge (described below) as a long term exercise both for lunar observing and CCD experience. The other favourite, perhaps not surprisingly is variable star observation but no firm decision has been taken. Again suggestions welcome – more next time.

Colin Spicer

The Lunar 100 Challenge.

The Moon has many interesting features, and you do not need a powerful telescope to see them. A list of a hundred of these, from some of the easiest to those of a much more challenging kind, has been selected and set out in Sky and Telescope magazine, by Charles A. Wood, a planetary scientist and lunar specialist. See Sky and Telescope April 2004, with more detailed descriptions in following issues. The first 25 of these features are set out in the table below.

To observe the features as a project, particularly if this can be linked with CCD images, would seem to be a very good way of observing the Moon more effectively and, it is felt, at the same time gaining practice in obtaining some good CCD images.

The list is more systematic compared with the Messier list of objects, being arranged, in this case, in order of difficulty. Everyone will be able to find the features in the early part of the list but it becomes more challenging as the list progresses. The list can also be used at the Observatory for location references, and as a checklist.

1	**The Moon.**	The easiest object to find.
2	**Earthshine.**	Reflected light from the Earth on the Moon - at New Moon.
3	**Mare/Highland surfaces.**	Contrast.
4	**Apennines.**	Mountain chain - rim of Mare Imbrium.
5	**Copernicus.**	Very large crater.
6	**Tycho.**	Large crater with rays - southern part of Moon.
7	**Altai Scarp.**	Mare Nectaris rim.

8	**Theophilus, Cyrillus, CathaFina.**	Group of three craters - Mare Nectar
9	**Clavius.**	Large crater - in highlands area south of Tycho.
10	**Mare Crisium.**	Circular, near northeast edge of Moon.
11	**Aristarchus.**	Very bright crater.
12	**Proclus.**	Crater with impact rays.
13	**Gassendi.**	Crater with fractured floor.
14	**Sinus Iridum.**	Very large crater, missing rim.
15	**Straight Wall.**	Lunar fault.
16	**Petavius.**	Crater, domed and fractured floor.
17	**Schroter's Valley.**	Sinuous rille.
18	**Mare Serenitatis dark edges.**	Mare edges with different compositions.
19	**Alpine Valley.**	Wide cleft.
20	**Posidonius.**	Crater with fractured floor.
21	**Fracastorius.**	Crater, subsided and fractured floor.
22	**Aristarchus plateau.**	Uplifted region.
23	**Pico.**	Isolated peak - Mare Imbrium.
24	**Hyginus Rille.**	Rille with collapsed pits.
25	**Messier and Messier A.**	Two small craters with ray.

Books - Good homes required.

The following duplicate copies of books in our library are available, and may be of interest to astronomy section members. The books are being kept on a separate shelf in the library. There is no fixed price for these books, but please leave a suitable donation.

Catalogue of the Universe. Paul Murdin and David Allen, with original photographs by David Malin. (Reference International Publishers, 1979)

The Atlas of the Universe. Patrick Moore. (Mitchell Beazley Ltd, revised edition, 1981)

The Practical Astronomer. Colin Ronan. (Pan Books Ltd, 1981)

Man and Space. Arthur C. Clarke and the Editors of Time-Life Books. (Time-Life Books,1965)

First on the Moon. G. Farmer and D.J. Hamblin. (Michael Joseph, London, 1970)

The Guinness Book of Astronomy Facts and Feats. Patrick Moore. (Guinness Superlatives Ltd, 1979)

The Cambridge Eclipse Photography Guide. Jay M. Pasachoff and Michael A. Covington. (Cambridge University Press, 1993)

A Practical Guide to CCD Astronomy. Patrick M Martinez and Alain Klotz. (Cambridge University Press, 1998)

Post-Apollo Lunar Science. (2 Copies.)(Lunar Science Institute, 1972)

The Large, the Small, and the Human Mind. (2 Copies) Roger Penrose. (Cambridge University Press, 1997)

The Amateur Astronomer. Patrick Moore. (Lutterworth Press, 1957)

Guide to the Planets. Patrick Moore. (The Scientific Book Club, 1954)

Halley's Comet. Francis Reddy. (Pan Books Ltd, 1985)

Practical Astronomy with your Calculator. Peter Duffett-Smith. (Cambridge University Press, 1979)

Sir Isaac Newton. Colin A. Ronan. (International Profiles, 1969)

Stars and Planets. Robin Kerrod. (Ward Lock Ltd, 1979)

Pioneer Astronomers. Navin Sullivan. (Scholastic Book Services, 1964)

Frank's Book of the Telescope. Charles Frank, (1958)

The Night Sky. Ian Ridpath and Wil Tirion. (Collins, 1985) Very useful mini-book.

Constellations. Jay Clark. (Dean & Son Ltd, 1979) Mini-book.

An Appreciation of De La Rue

It seems like a totally different lifetime since that famous eclipse in '99. Even longer since I began to appreciate how important a Guernseyman had been in the history of science and technology.

A decade ago I kindled an interest in the history of science when researching the book on eclipses Patrick Moore asked me to help write. Very early on it was obvious that Warren De La Rue was a key player in photography. As photography was my main contribution to the book, with Patrick doing the astronomy, I thought little more about it than him as just another 'normal' scientist. How wrong can you be?

My views and curiosity really started to go into overdrive when our second book on transits got underway, and Warren's name cropped up again. It was his crucial suggestion that photography might be the way forward for the 1874 transit that got another

inventive genius moving to solve the problem of measuring from the wet collodion plates of the time. From that arose the whole of modern photography-dry plates and colour-which, literally changed the way we view the world. And with it the ability to do scientific studies on photographic plates sensitive into the infra red and thus enable the whole of modern spectroscopy.

Until that time I'd never even heard of W de W Abney and when coupled with De La Rue I began to realise that apart from a few students of history neither had just about everyone else! They had, literally, vanished from history as far as the general population were concerned. Abney is a tale for another time but it was not until last year that I fully appreciated how critical these two were in the way we live today. Particularly when about the same time I discovered a critical link with the "Leviathan" at Birr, the Earls of Rosse, and the subsequent digital revolution a century later.

I've been an amateur astronomer now for over half a century and simply thought Warren had been (just) a photographer. The book research showed him in a more general light as an astronomer. However, it was not until more detailed delving in the last year, 2003, that the full scope of his more important work became a tale to tell in its own right.

I knew he'd been President of the RAS from the records and reports in the astronomy literature. As a Professional chemist I was totally unaware that he'd also been a President of my own Chemical Society. Then a further surprise, he'd been President of the Chemical Society not once but twice! Not bad for a private individual totally outside the conventional Academic 'Closed Shop'.

None of my chemist friends had even heard of his name, so I really started to dig. The more I dug the more alarmed I became that he was not alone in losing his name to history and with it his true achievements.

This is an attempt to put some of the record straight. It's obvious that Warren had to be something special.

In these days of 'Top up Fees' and so on, can you imagine a private individual being asked by the Royal Greenwich Observatory to charter a boat and go off to photograph an eclipse as part of an international expedition and collaboration? At HMG expense?

Today, as a private researcher, he'd never get as far as to be accepted by the scientific Establishment. To be a gifted industrialist and entrepreneur almost guarantees being outside acceptability by Academia, to say nothing of the modern media.

The nearest modern equivalent is Jim Lovelock**, another private (or self-financed) inventor. Even now the Establishment snub him even though his track record of ideas and inventions is proven much better than those who sneer. The Public regard

him highly. As they did Warren in his day.

Even if a modern Warren got as far as to be acceptable he'd be swamped in the paper work preparing a proposal, but here was someone eagerly sought out to do a special job. He succeeded in taking the first ever solar eclipse pictures, several of them. These pictures solved a large number of scientific queries of the time and laid the foundations of modern spectroscopy and solar studies on the way.

In order to take the pictures Warren had to solve a number of technical problems, and these included major leaps forward in the photographic process itself, and also the instrumentation. An early example was his attempts at lunar photography, some from around 1852. One of my own more important and personal discoveries came at Birr in September 2003 when I attended a conference on (what is today called) ALT or Alternative Photography. This concentrates on the early photographic processes and one of them is the Daguerreotype.

This is a beautiful art form in itself but hideously slow often requiring minutes of exposure for a portrait in sunlight. Very few originals survive as the image is formed on a silver plate. So, imagine my delight to find some examples at Birr taken by Warren from the time, 1853, when the (Royal) Photographic Society was formed. We were there to celebrate the sesquicentenary. Earl Rosse was then President of the Royal Society and his wife a foremost photographer, another forgotten today. She set the style adopted a generation later by Julia Margaret Cameron who gets the credit.

The two families were obviously very friendly and exchanged many ideas and pictures. Two of these are in the Birr museum, de la Rue Daguerreotypes of the moon, a rarity in itself, but incredibly important in the history of both photography and astronomy. These are a stereo pair. If you're ever in Birr, do go and see these gems.

With this small diversion into photographic history it is easy to understand my concern to restore Warren's name to the mainstream of history. He was a main player in forming the Royal Photographic Society. I've yet to find a single Club photographer today who's even heard the name.

Back to the 1859-60 eclipse expedition. Warren had a number of severe technical problems to solve, not least how to preserve the delicate plates and transport them to site. The only viable process then was the wet collodion process. As the name implies it needed to be prepared and exposed wet and was an inflammable mixture of guncotton in ether, developed in a highly alkaline solution, then frequently fixed in the best fixer of the time, cyanide. Warren improved not only the technology but made the plates a lot more sensitive.

Another pioneering concept he introduced was one we take for granted. Making copies to work on and archive. So simple but crucial with valuable data. Ever wondered why you backup your PC data? The collodion plates of the time rapidly decayed and Warren helped make them much more stable on storage.

He also introduced two other essential pieces of kit. The first we also take for granted, the partially silvered mirror to view the Sun in safety. This is so familiar today that we forget it's history back to Warren. Decades later the idea of silvering glass to make mirrors in telescopes caught on. Then there was another vital piece of technology needed, quite unknown at the time. The camera shutter.

Up until then all the photographic processes needed very long exposure times, but here was a case of too much light and a need to secure very short exposures. Warren solved that one. For the expedition he had a falling plate which was activated by the simple expedient of burning through a string with a lighted candle. Tell that to the Health and Safety Commissars around today. That led in time to better shutters for his later solar work when he set up the observatory at Kew. Today no camera can function without a short-exposure shutter.

It was Herschel's suggestion that daily solar observations start, and that led to setting up an observatory at Kew where one of the longest of scientific surveys started. Warren then got involved in manufacture and design of achromatic lenses, a further tale for another time. Suffice to say that this aspect is also largely unknown, and involves most of the well known opticians of the time.

In bringing this short introduction to the work of a very remarkable man, what more can I say? In his day he was revered: today forgotten.

His RAS Obituary simply states this "In the history of celestial photography in this country, Mr De La Rue stands pre-eminent". If that is not enough of a eulogy, take the words of Airy, not noted for his modesty and tolerance of 'underlings'.

He said of the eclipse expedition "I personally did not do my part well, the most important were Mr De La Rue's photographic operations".

A great man, indeed. More next time.

Michael Maunder

** ***Editors Note.*** *As a chemist Jim Lovelock invented the electron capture detector used in Gas Chromatography but he is best known to the public as the originator of the Gaia theory of the Earth as a self regulating organism*

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

Venus in Transit. A set of articles focusing on the importance of transits of Venus, the historical value in determining an accurate distance between the Earth and the Sun, and the current importance of transits to assist the search for planets in orbit around other stars. Details also of the European Space Agency's plans for the Venus Express spacecraft, due for launch towards the end of 2005. (Astronomy Now, June 2004)

From Astronomer to Architect. Sir Christopher Wren was famous as an architect. Not so well known is that apart from being the architect of the Royal Observatory in Greenwich, he was also an accomplished astronomer and made improvements in telescope design. (Astronomy Now, June 2004)

Ringworld Rendezvous. The Saturn space probe Cassini, due to begin orbiting the planet in July, also carries the Huygens probe which is due to separate from it, and land on Saturn's moon Titan. Details of what is planned for Cassini's four year orbital mission to investigate Saturn and its ring system. (Sky and Telescope, July 2004)

Into Thick Air. Details of the European Space Agency's Huygens mission, which is due to land on Titan in January 2005. Titan is the only moon known to have a thick atmosphere, and is thought to have some similarities to Earth. (Sky and Telescope, July 2004)

Meteorites in Britain and Ireland. Officially there have been 24 recorded falls of meteorites in the British Isles since records of such events began in 1623. Details of some of the meteorites and fireballs which have been observed. It is thought that there may be many more meteorites as yet undiscovered. (Astronomy Now, July 2004)

Smoke Signals - Interstellar Dust. Stars and galaxies are often hidden by interstellar dust, much of it thought to come from supernova explosions. The study of radiation from the dust can reveal hidden energy sources.Use of the submillimeter radiation camera, SCUBA, is helping to explain some of the mysteries of the early universe, including the nature of elliptical galaxies. (Sky and Telescope, August 2004)

Starlight Detectives. The birth of spectroscopy, the important discoveries of Joseph Fraunhofer and other pioneers in the analysis of light from celestial objects. (Sky and Telescope, August 2004)

The Origin and Fate of the Universe. Some of the best articles on recent developments in cosmology, and its emerging mysteries. The visible part of the universe is less than one per cent of its total mass - the true

nature of dark matter and dark energy is unknown. Other articles also include, the suggested existence of other dimensions, work which is starting to confirm the scale of the universe, and the search for gravity waves. (Astronomy - Special Cosmology Issue 2004)

Hubble Space Telescope - Robots to the Rescue? The plans now being made by NASA to service and upgrade the Hubble Space Telescope, using Canadian robotic equipment and which are intended to extend the life of the telescope until its replacement is launched. (Astronomy Now, August 2004)

The Galaxy we call Home. With continued advances in technology our Milky Way galaxy is turning out to be much more complex than previously imagined. Apart from telescopic imaging, surveys in the last twenty years using radio, infrared, and X ray wavelengths are revealing a much more dynamic picture. (Sky and Telescope, September 2004)

The Neutrino in Astronomy. Neutrinos were first detected in the 1950s, and for many years there was an apparent shortfall of neutrinos from detected from the Sun contrary to theoretical predictions. Recent developments, including the use of the Sudbury Neutrino Observatory in Canada, are helping to solve the problem. (Sky and Telescope, September 2004)

Black Holes Rethink. There has been some rethinking on the subject of black holes by Stephen Hawking, resulting in the settling of a bet he made in 1997 with another physicist, John Preskill. (Astronomy and Space, September 2004)

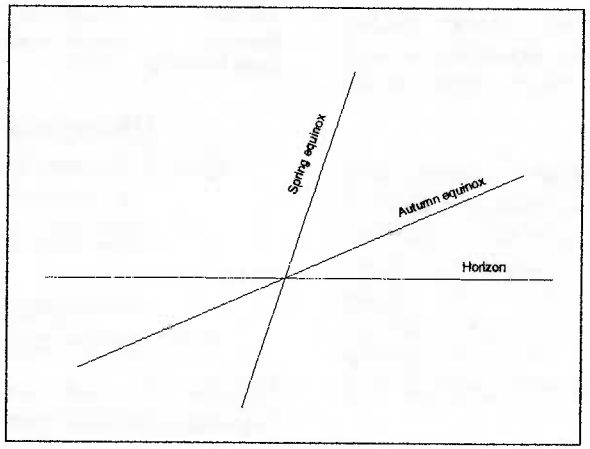
Down to Earth - our Home Planet. A set of articles focusing on the Earth, its water and active geology making it so different to other planets; the use of satellites to monitor the environment and for other purposes, and the ingredients for life on Earth, which may soon be applied to the detection of life in other star systems. (Astronomy Now, September 2004)

The Star Kings. The largest and brightest stars in the Galaxy have turned out to be a type known as Luminous Blue Variables. These can be many millions of times brighter than our own Sun. (Astronomy Now, September 2004)

A Star is Born. A team of astronomers using the UK Infrared Telescope at Mauna Kea, Hawaii, has been studying the mechanisms involved in the formation of high-mass stars, and is about to publish confirmation of its results. (Astronomy Now, September 2004)

Harvest Moon

The autumnal equinox brought with it the Harvest Moon, the Full Moon closest to the Equinox. This year the equinox fell on 22 September, and Full Moon was on the 28th. The term is applied because at this equinox the interval between successive Moon rises is a minimum, favouring harvesting. At the vernal equinox the opposite is the case. The Moon's path, of course, follows the ecliptic, the annual path of the Sun amongst the stars. At the autumnal equinox the angle which the ecliptic makes with the east horizon at sunset is small, and it is for this reason that the Harvest Moon occurs.



A similar, but slightly smaller effect, occurs in October, and is known as the Hunter's Moon.