equivalent of no more than 2 ½ inch refractor, albeit without the interference and light pollution that we suffer with today.

This years attempt at the 'Messier Marathon' is scheduled for 20th March (or following weekend), weather permitting. The Section's best attempt to date was in 2000 when almost 80 objects were 'bagged' before mist and cloud obscured the view at 4 am. There only is a short window from late March to early April for such an attempt which is best seized without the moon. If interested, then please let Jessica or myself know.

Debby Quertier

Section subscriptions. A reminder that subscriptions are due for the coming year. If you have an email address it would be helpful if this could be included on the form when you renew your subscription.

Electronic/email Sagittarius. We are considering additionally producing an electronic version of Sagittarius although the format has yet to be decided. Transmission by email will save costs and labour of filling envelopes. There may be benefits if members opt for the electronic version in that we will be more readily able to include photos/pictures than at present. Printed Sagittarius will continue but members may choose to receive it by email instead. More news in next (printed) edition.

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Sagittarius

The Newsletter of the Astronomy Section of La Société Guernesiase

January – March 2004

Forthcoming Events

International Space Station
visible in evening skies
23rd January – 5th February

Business Meeting
Tuesday 27th January

'Hands on' viewing with smaller telescopes
Tuesday 24th February

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

Observatory Public Open Evenings 2004

Section News

Observing was poor in the last few months of 2003 as a result of the weather although on the clear nights we have continued to have visitors wanting to see Mars. In November, we were visited by the 20th St Saviours Brownies. Again, the weather spoilt any viewing but they did enjoy a talk given by Jessica and we were able to show them the telescopes and tell them what they could do. Jessica received some lovely letters from the young girls who obviously had a great time.

The long awaited CCD camera has arrived and been fitted to the Meade telescope. Those who have used it, have been pleased with the images, though plenty of practice and experimentation will be needed.

Just before Christmas a group of us had a meal at La Hougue Fouque Hotel to round the year off. They certainly do good food and it was a most enjoyable evening.

A note for your diaries, Tuesday 27th January is the Business Meeting/AGM at 8.00 pm at the Observatory.

On Wednesday the 28th January we shall be visited by the St Martins Brownies group, we should be able to show them Saturn and the first quarter moon, though have planned a talk should any practical observing not happen. The girls are due to arrive at about 6.15pm and the evening should end about 7.30pm, any help will be appreciated.

Tuesday 24th February from 6.30 pm is a public open evening with the aim of allowing youngsters find objects for themselves using our collection of smaller telescopes. This is not just restricted to children, adults can have a go too! Members are, of course, welcome to attend or even, perhaps to bring their telescopes along.

This edition of Sagittarius includes a viewing programme for members. We are keen to see more members at the Observatory other than on public open evenings and will be pleased to assist anyone who wishes to further their astronomical knowledge. If there are any suggestions for future evenings please let Jessica or myself know.

Debby Quertier

Proposed Viewing Programme for first half of 2004

Dates subject to confirmation in later editions of Sagittarius.

January

Tuesday 27th – 8pm. Annual Business meeting at the Observatory

February

Tuesday 10th – 8pm onwards. Study the evolution of stars by viewing different objects, each being a different stage of a star's lifecycle. In the winter sky we shall start at Orion. M42 is a stellar nursery, amongst which we can see the Trapezium, a group of four young stars. We then move on to the Pleiades, a group of young blue stars that appear as a hazy starry patch in Taurus. At the foot of Orion we have Sirius, the brightest star in the sky, shining white and about 8 light years away from us. Above our heads will be Capella in Auriga, this yellow star is similar to our own sun, about half way through its life. We then move to look at two bright examples of red giants, Betelgeuse in Orion and Aldeberan in Taurus, two stellar bodies that dwarf our own sun. Aldebaran shines with the luminosity of 5,804 suns, its size being 219 times the radius of the sun and it 65 light years away. Betelgeuse on the other hand shines with the luminosity of more than 300,000 suns, over 1,500 times the radius in size and 429 light years away. Such massive stellar bodies may end their days in supernova explosions, which are so huge that they may become daylight objects for many months. The good winter sky example of this is M1, the Crab Nebulas in Taurus, this is the remnant of a star that exploded in 1054.

Thursday 5th February to Thursday March 11th. Workers Education Council Astronomy course held at the Observatory. We shall follow the same format as the last two years, flexibly changing the order to fit around the weather and viewing.

Tuesday 17th – 8pm onwards. This is aimed at assisting members to find their way around the sky. The green laser pointer is a great aid to point out constellations and other objects. Planets - Jupiter, Saturn and Mars will be visible. Bring your own binoculars or telescope. There is so much to see with just a decent pair of binoculars.

Tuesday 24th – 6.30pm onwards. Open night aimed mainly at children. There will be three smaller telescopes which the children will be able to use to find the Moon, Saturn and Mars. There will also be Venus in the southwest and, for those who stay later, Jupiter will rise after 8pm. Our open nights are always popular and children especially enjoy looking through a telescope, we also think that they will enjoy actually finding the things for themselves. There will also be viewing through the Meade and the

Celestron for those who would prefer to just look.

March

Saturday 20th - Messier Marathon. This night is ideal to try to view the 110 objects in one night. The moon is new so there should no interference for the fainter objects. If the weather proves bad then the following Saturday 27th would be a reasonable second choice, although the moon will be first quarter. There is an order to view the objects over the night, it starts in the west and then gradually works across the sky as the objects rise. There is plenty of time to see each Messier object and several objects have a NGC object nearby in the same field of view. As you see the objects you realise just how different the galaxies are to one another. It should be pointed out that we shall use the Meade to find the objects for us, the true Messier marathon involves finding each object manually but we are doing this for the simple enjoyment of seeing each object. There are certainly many objects that we can easily find manually, though some of the fainter ones would prove very difficult, especially as the sky began to lighten.

This is something we have aimed to do each year but the weather has failed us. If visibility is poor, preventing a start at 7.30pm then we try the following week.

New Moon is the 20th March. On Monday the 22nd the 2 day old moon will be quite close to the elusive Mercury. This week it will be worthwhile to look to a clear western horizon and try to find this planet. It is not difficult to see once you spot it, but it can take some finding. On the 24th March the 3.6 day moon will be close to Venus and a day later it is next to Mars. The moon will be just the sliver and will make a striking sight each night next to these three bright planets.

April

Lunar viewing. The moon is full early in the month and the first quarter is the 27th April which coincides with a public open evening. We are all familiar with the moon, but how many of the craters are we able to identify and name? The surface of the moon has a lot of interest and it is not a difficult object to view. This may be something to do over several evenings this month, to see each part of the moon at its best, though of course any viewing of the waning moon has to be done later during the night.

May

Double Stars. 18th May — 8pm onwards. There will be no moon this evening and therefore dark skied to assist with viewing. We always show visitors the double star in the handle of the Plough and the lovely double Alberio. Many of the stars we see are doubles, and some part of triple or larger systems. We propose to study the doubles in more detail, no doubt with some surprise as to just how many doubles there are and their striking colour combinations.

May 21st is the closest approach of the Comet Neat which will be visible during most of May. It is predicted to be of 1st magnitude brightness. So as well as double stars we will be directing the telescopes in May to this comet.

June

Tuesday 8th – Transit of Venus. The astronomical event of 2004 and has not been observed by anyone alive, the last time being over a century ago. The event will start early as the sun rises and we shall watch this from the Observatory in the same manner that we observed the transit of Mercury in May 2003. All the safety rules that applied to the eclipse and the Mercury transit apply to this Venus transit. **Great care should be taken in watching the transit and you should never look directly at the sun.** Further details will be available in next quarters Sagittarius.

Details of the viewing programme for the second half of the year will be announced later. Suggestions are more than welcome. Other ideas include asteriod/comet hunting, examine a given constellation in detail, distant planets (when visible!), planetary moons. For rainy evenings, Geoff Falla has a selection of videos covering a wide range of astronomical subjects.

Debby Quertier

Astronomical Events in 2004

The astronomical highlight of 2004, on the 8th June, will be the transit of Venus across the disc of the Sun - a phenomenon which no one alive has seen. In May, a bright comet will adorn our evening skies.

PLANETS

Mercury will be visible in the morning in January (maximum elongation on the 17th), May (maximum elongation on the 14th), September (maximum elongation on the 9th), and the end of December (maximum elongation on the 29th). It is visible in the evening in the last two weeks of March and the first week of April (maximum elongation on the 29th March), the last part of July (maximum elongation on the 27th) and November (maximum elongation on the 21st).

Venus will appear as the 'Evening Star' in the western sky from the beginning of the year until May. Its greatest eastern elongation will be on 29th March. It will be visible in the morning, before sunrise, in the eastern

sky, from June until the end of the year (maximum western elongation on 17 August).

The transit of Venus

Venus's inferior conjunction, on 8th June, will be an exciting time for astronomers, as it will come directly between the Earth and the Sun for the first time since 1882. Its transit across the southern hemisphere of the solar disc will be easily visible from Guernsey (as well as the rest of Europe, Africa and Asia), weather permitting. The duration of the transit will be about 6 hours. The angular diameter of Venus will be just under one arc-minute (about 3% of the Sun's diameter of 31 arc-minutes). Details of the transit are as follows:

05h 05m BST **Sunrise.**
06h 21m BST **Transit starts. The Sun's altitude will then be 9 degrees. Venus will take 20 minutes to cross the limb of the Sun.**
09h 23m BST **Mid-transit.**
12h 23m BST **Transit ends. The altitude of Sun will be 61 degrees. Venus will again have taken 20 minutes to cross the limb of Sun.**

This event can only be observed with great care, as looking directly at the Sun can cause severe eye damage, and optical aids such as telescopes or binoculars must not be used unless a specialist filter is fixed over the aperture. The disc of Venus will be large enough to be seen without optical aid, but filters must be used. The Astronomy Section has the proper filters, and a coelostat specially designed for projecting the Sun's image safely onto a screen.

More information about transits of Venus can be found in two articles by members of the Astronomy Section of La Société Guernesiaise. These are available on the Internet, at:

ds.dial.pipex.com/town/estate/vs76/venus.htm

and

ds.dial.pipex.com/town/estate/vs76/trans.htm

Mars does not reach opposition this year, but can be seen in the evenings from the beginning of the year until May.

Jupiter will visible in the evenings from late February to July, in the constellation Leo. It is at opposition on 04 March. As in recent years there will continue to be a series of transit and occultation events involving Jupiter's moons.

Saturn will be well-placed for evening observation from January to May, in Gemini, and will reappear in November. It does not reach opposition until January 2005.

Uranus is at opposition on 27 August, **Neptune** on 06 August, and **Pluto** on 11 June.

OCCULTATIONS

A lunar occultation of Mars on 26 March will not be visible from Guernsey, as the Moon and Mars will have set just before the event. However, a daytime occultation of Venus by the two-day old Moon on 21 May will be visible, starting at 12:02 pm BST and ending at 1:16 pm. This should be well worth watching.

CONJUNCTIONS

Date	*Planet*	*Separation*	*Direction and time*
25 April:	Mars and Venus	6°	West after sunset
25 May:	Mars and Saturn	<2°	West in evening
11 July:	Mars and Mercury	<1°	Very low in west after sunset
31 August:	Venus and Saturn	2°	East in morning
05 November:	Venus and Jupiter	0.5°	East before sunrise
05 December:	Venus and Mars	2°	East before sunrise
31 December:	Venus and Mercury	1°	Very low in SE before sunrise

On the morning of 10th November, Venus will be within 2° of the Moon when it rises at 04.26 am, and with nearby Jupiter should provide a striking sight. On the morning of 7th December Jupiter approaches within 1° of the Moon.

METEORS

The waning Moon is favourable for observation of the Perseid meteors around 11th August. Observation of the Leonids, about the 17th November, should also not be unduly hindered by the crescent Moon, and New Moon falling on the 12th December, the Geminids will also be unaffected.

COMETS AND ASTEROIDS

Comet Neat (C/2001 Q4) is predicted to make a spectacular appearance, at magnitude 1, in our western sky in the evenings of May. It will become visible on 6th May, and will remain in our skies until the end of July, by which time it will have faded beyond naked-eye reach. The best viewing of this comet is likely to be about 20/21stt May.

Several other, faint comets and asteroids should be visible in telescopes, as in most years.

ECLIPSES

Two total lunar eclipses are visible from Guernsey in 2004, on the evening of 4th May and the morning of 28th October.

On 4th May the Moon will rise at 8:26 pm BST, after the eclipse has started. Totality starts at 8:52 pm, mid-eclipse is at 9:30 pm (when the Moon is at an altitude of just 8°), totality ends at 10:08 pm, and the umbral part of the eclipse ends at 11:12 pm.

The eclipse on 28th October is at a less convenient time. It starts at 2:14 am BST, totality starts at 3:23 am, mid-eclipse is at 4:04 am at an altitude of 36°, totality lasts 1 hr 21 m and ends at 4:45 am, and the eclipse ends at 5:54 am.

There is no total solar eclipse in 2004. There are two rather minor partial solar eclipses, on 19th April and 14th October, both visible only from the southern hemisphere.

EQUINOXES AND SOLSTICES

The following are the dates and times of the equinoxes and solstices in 2004.

Vernal Equinox	20 March	06:48
Summer Solstice	21 June	00:56
Autumnal Equinox	22 September	16:29
Winter Solstice	21 December	12:41

SATELLITES

The International Space Station is regularly visible from Guernsey (see cover). Details of the times and directions of visibility can be obtained from a link on the Astronomy Section's Web site, at www.astronomy.org.gg.

REFERENCES

SkyMap Pro software.
Starry Night Pro software.
www.theman.themoon.co.uk/alignments.htm

David Le Conte

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

Cosmology in the New Millennium. There is now a much better understanding and agreement on the basic structure of the universe, and its content. Powerful telescopes and ground based equipment are providing a more accurate estimate of the universe's age, that it is largely made up of non-luminous matter and energy, and has an increasing rate of expansion. (Sky and Telescope, October 2003)

The Deepest Image. A deep-space image of an area of sky near the Andromeda Galaxy is the most detailed yet achieved, using the Hubble Space Telescope's new Advanced Camera. The image required an 84 hour exposure time. (Sky and Telescope, October 2003)

Galileo Probe's Fiery End. The Galileo space probe was launched in 1989, and was in orbit around Jupiter from 1995 studying the planet and its moons. A detailed account of the mission, which was ended on September 21st when the probe was sent plunging into Jupiter's atmosphere. This was to prevent collision with and contamination of Europa, where it is thought life may exist. (Astronomy Now, October 2003.)

Revolutionary Vision. Most telescope mirrors may one day be made of liquid. Experiments have shown that a shallow pool of mercury, rotating to produce curvature, can provide a very effective mirror at a much reduced cost, compared with manufactured mirror Systems. (Astronomy Now, October 2003.)

Cosmic Ghost Hunt. A hunt for elusive neutrino particles, from a site below the ice of the Antarctic (the AMANDA project) has resulted in the first map of the high energy neutrino sky. (Astronomy Now, October 2003.)

The Orion Nebula. We are all familiar with the constellation of Orion in the winter evening sky. A showpiece of the constellation is the luminous gas cloud in Orion's Sword. This nebula is the closest of the stellar nurseries, and may hold key clues regarding how stars and planets are formed. (Astronomy, October 2003.)

Gamma Ray Bursts. A series of articles on the study of gamma rays, using the European Space Agency's new INTEGRAL space observatory. Gamma ray bursts are thought to be from massive stars producing what is now being termed a hypernova - the most powerful kind of explosions in the universe. (Astronomy Now, November 2003.)

Galactic Cannibals. Evidence found over recent years appears to confirm that our own Milky Way and other galaxies have been drawing in smaller galaxies around them. (Frontiers - UK Particle Physics, Astronomy, and Space Science, No 17, Autumn 2003.)

Mars - History and Geology. A set of articles describing what is currently known about Mars and its geology from the study of its surface, and how much ice or water may still exist there. Observation techniques have advanced in recent years, and several spacecraft are due to study the planet from orbit and on the surface during 2004. (Sky and Telescope, December 2003.)

Multiple Stars. Many of the stars that we can see are binaries with companions bound by gravity, but some are triple or quadruple systems. A list of some of the best of these multiples, including the Trapezium in Orion's Sword, the lesser known Sigma Orionis group, and other colourful examples in different constellations, including Iota Cassiopeia and Beta Monocerotis. (Sky and Telescope, December 2003.)

Massive Solar Flares. Although the Sun was expected to be heading

towards minimum activity from a Sunspot peak in year 2000, there were huge outbursts of solar flares in October 2003 - some of the most violent activity ever seen. (Astronomy Now, December 2003.)

Mission to the Asteroids. NASA is planning a spacecraft mission named DAWN to study the asteroids Vesta and Ceres, which are thought to have survived intact since the formation of our inner Solar System. (Astronomy Now, December 2003.)

Homing in on Extrasolar Planets. Since the first discovery in 1995, more than a hundred giant planets have been detected in orbit around other stars. A transit event in 2000 has resulted in some spectroscopic analysis of one of these planet's atmospheres being obtained for the first time, and there are plans to search for smaller, more Earth-like planets which must also exist. (Astronomy Now, December 2003.)

Hubble's Top 25 Images. It is now ten years since a special mission was launched to correct a fault in the Hubble Space Telescope's mirror when it was launched into orbit in 1990. A selection of some of the best images which have been obtained with the telescope. (Astronomy, December 2003.)

A Ferret of Comets – Charles Messier

Whenever a bright comet appears in the sky, as can happen anytime, there is always great excitement and interest. Beautiful pictures are across the newspapers and the stories therein range from scientific to the bizarre. Everyone wants to look at the sky and remark on this strange heavenly body. It will be with us for just a short time, prior to continuing its journey from out beyond the Solar System and around the Sun and then back again, the journey not just taking many years, but many thousands of years. The most famous of comets won't be back for almost 60 years, but Edmund Halley, despite being an Astronomer Royal and making several notable contributions to science, will be remembered first and foremost for the comet that bears his name.

Charles Messier, perhaps the most dedicated hunter of comets, and certainly very successful in finding them, is probably best known amongst astronomers for his catalogue of nebulae and star clusters. Whilst meticulously searching the sky for comets, he came across a fuzzy patch in Taurus. Once he realised that it was not a comet, by watching whether it moved against the background stars over a few nights, he made a note of its position so as not to mistake it for a comet at a future date. His list grew as he came across further objects that at first might be mistaken for comets. The fuzzy object he had first spotted

was the Crab Nebula in Taurus, the remnant of a star that ended its life as a supernova in 1054, M1 on the Messier list.

Charles Messier had come to Paris in 1751 and was employed by Joseph Nicholas Delisle (the Astronomer of the Navy) as a draftsman and recorder of astronomical observations. It was here, at the Hotel de Cluny, where he learnt to use telescopes, soon becoming a careful and meticulous observer. He enjoyed watching eclipses and transits, but his passion was searching for comets.

The return of Halley's comet had been predicted for late 1758/early 1759 and Delisle gave Messier the task of locating it. Using charts made by Delisle, Messier began his search sometime in 1757. If he could be the first to spot the comet on its return, then he really would make a name for himself. Sadly this did not happen. Messier, after much searching, spotted the comet on the 21st January 1759 and continued to observe and record it until it was lost in the twilight around mid March 1759. Meanwhile Delisle, for reasons not known, suppressed any announcement of the comet's discovery until the 1st April 1759, when Messier had re-spotted the comet on the other side of the sun. Meanwhile news had reached Paris that on Christmas day 1758 a Saxon farmer, and keen astronomer, named Palitzvch had first seen the comet. The news of Messier's sighting in January was understandably received with some scepticism.

Despite this unfortunate business Messier continued to search for comets, earning himself the nickname 'ferret of comets' from Louis XV. According to one of Messier's friends, Lalande, he discovered 21 comets, although this was more likely 13 or 14, with several co-discoveries. There were more where he was just pipped at the post.

His list of fuzzy objects grew and by 1759 he was considering publishing them. The first list contained 45 objects, numbers 44 and 45 being the Beehive and the Pleiades, naked eye objects which must have always been known about. These were possibly added to increase the list. The list was finally published in 1774 in the Memoirs of Science. Not all of the objects were discovered by Messier, at least 20 were discovered by his friend, and comet hunter, Pierre Méchain.

The final list stands at 109 (numbered 1 through 110, with 102 absent). The list includes: 4 planetary nebulae, 27 galactic clusters, 39 extra galactic clusters, one supernova remnant, 7 gaseous nebulae, 29 globular clusters and 2 asterisms. M102 was probably a duplication of M101. Although Messier checked the positions of each new object, there was at least one duplication, and for a while M91 was a missing object.

Messier discoveries provide the amateur astronomer with a wide and varied list of objects to view without large, expensive and sophisticated equipment. Messier completed his observations from Paris with the