

SOCIETY NEWS

Another Year

As we head towards 2015, and on behalf of the Committee, I wish all members, NZ readers and their families a very merry Christmas. I also thank all those who, during 2014, have helped out in any way.

As usual at this time of year the whole Committee takes a well earned month off, that means there is no December monthly meeting and the next New Zenith will be the February 2015 edition.

Brian Curd

Observatory Clean Up!

Help is needed to:

Clear out old items
Trips to the dump!
General cleaning
etc, etc..

Date

Sunday 14th December from 10am

Equipment Collection

Any old items, too good for the dump, will be available to members on a "first come first served" basis on
Thursday 18th December from 7.30pm

New Year Dinner

**Saturday January 10th 7.00 for 7.30pm
Bargeman's Rest, Newport**

Bar Menu - most mains cost £10 & puddings £5
Individual orders at the bar as are drinks of course

Please put your name on the list at the November Friday meeting on the 28th November or contact me at chairman@wightastronomy.org

I look forward to seeing many of you there!

Bryn Davis
VAS Chairman

VAS Website: wightastronomy.org

Submissions or letters to New Zenith are always welcome and should be sent to:

The Editor New Zenith

35 Forest Road

Winford

Sandown PO36 0JY

Tel: **01983 864303** or email: editor@wightastronomy.org

Material for the next issue by the 6th of the month please.

VAS Registered Office

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The Vectis Astronomical Society and the Editor of the New Zenith accept no responsibility for advice, information or opinion expressed by contributors.

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Observatory Diary

Monday, 19.30hrs	Members Only by arrangement Telescope and night sky training. Contact Barry Bates 01983 872979
Thursday, 19.30hrs	Members and Public. Informal meeting and observing

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Monthly Meeting Calendar 2014

Date	Subject	Speaker
28 Nov	Lucky Planet: Is the Earth Special and Are we Alone in The Universe?	David Waltham

2015

Date	Subject	Speaker
23 Jan	The Star of Bethlehem	Stephen Tonkin FRAS
27 Feb	Basketballs and Beyond - Wonders of the Cosmos	Jane A Green
27 Mar	Stars over the Nile - Ancient Egyptian skylore and observing	Bob Mizon BAA
24 Apr	Our Dynamic Sun	Helen Mason
22 May	TBA	TBA
26 Jun	TBA	Haley Gomez
24 Jul	Light - Astronomical Applications of Spectroscopy	James Fradgley
28 Aug	Astro Photography	Simon Plumley
25 Sep	Photographing the Aurora	Elizabeth Cunningham
23 Oct	EUCLID and the Expanding Universe	Tom Kitching
27 Nov	TBA	James Fradgley

Observatory Visits Booked

None this month

It would be appreciated if members could avoid using the observatory at these times.

Telescope Training

Any member who would like training on the observatory Meade LX200 should contact
Barry Bates on 872979

VAS Contacts 2014/15

President	Barry Bates president@wightastronomy.org
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Membership Secretary	Norman Osborn members@wightastronomy.org
NZ Distribution	Brian Bond distribution@wightastronomy.org
Others	Mark Williams & Nigel Lee

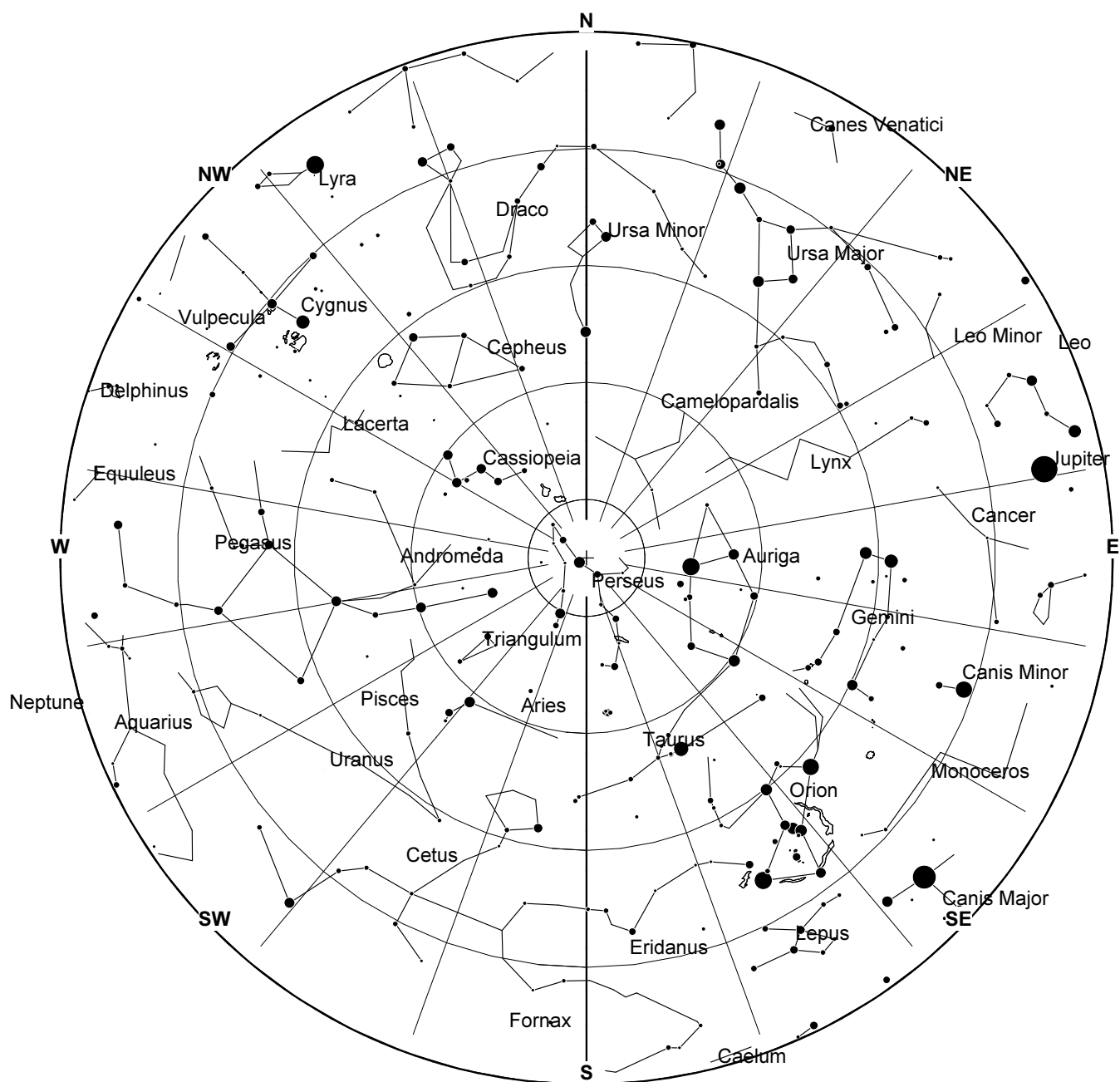
Important

Members using the observatory outside normal Thursday meetings **MUST** enter a line or two in the Observatory Log Book.

On several recent occasions, lights, heaters and the Meade LX200 have been left on!

When you leave the observatory please ensure it is secure and all lights, heaters and telescopes are **TURNT OFF**.

December 2014 Sky Map



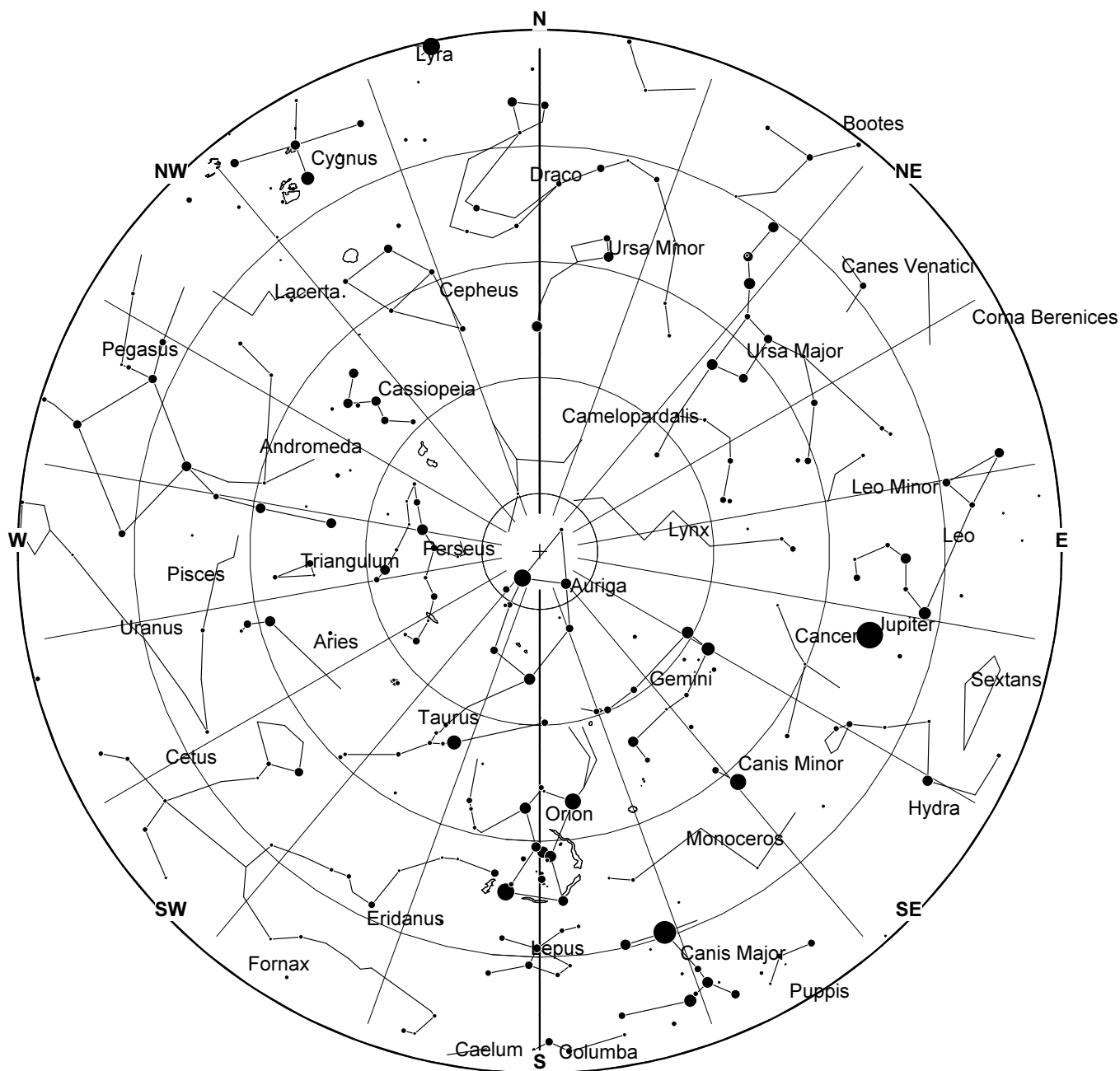
View from Newchurch Isle of Wight UK - 2200hrs - 15 December 2014



The Little Dumbbell Nebula, also known as Messier 76, NGC 650/651, the Barbell Nebula, or the Cork Nebula, is a planetary nebula in the constellation Perseus. It was discovered by Pierre Méchain in 1780 and included in Charles Messier's catalog of comet-like objects as number 76. It was first recognised as a planetary nebula in 1918 by the astronomer Heber Doust Curtis. However, there is some contention to this claim, as Isaac Roberts in 1891 did suggest that M76 might be similar to the Ring Nebula (M57), being instead as seen from the side view. The structure is now classed as a bipolar planetary nebula (BPNe).

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It uses material from the Wikipedia article "Little Dumbbell Nebula".*

January 2015 Sky Map



View from Newchurch Isle of Wight UK - 2200hrs - 15 January 2015







Jupiter is the fifth planet from the Sun and the largest planet in the Solar System. It is a gas giant with mass one-thousandth of that of the Sun but is two and a half times the mass of all the other planets in the Solar System combined. Jupiter is classified as a gas giant along with Saturn, Uranus and Neptune. Together, these four planets are sometimes referred to as the Jovian or outer planets. The planet was known by astronomers of ancient times. The Romans named the planet after the Roman god Jupiter

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Dec 2014 & Jan 2015 Night Sky

Moon Phases

New	First Qtr	Full	Last Qtr
			
Dec 22nd	Dec 28th	Dec 6th	Dec 14th
Jan 20th	Jan 27th	Jan 5th	Jan 13th

The Winter Solstice, our shortest day and the point at which the Sun is at its most southerly declination occurs at 04:44 on December 22.

Planets

Mercury - Over the New Year period Mercury makes a rather mediocre appearance in the evening sky just after sunset. At this time of year at sunset the ecliptic, the path taken by the planets lies very close to the horizon. Between the 7th and 14th of Jan Mercury passes very close to Venus fading away as each day passes.

Venus - Dec sees Venus start its apparition as the Evening Star. As the month begins it will be a challenging object, still being very close to the Sun, but by the New Year it will be clearly visible low in the southwest after sunset.

Mars - For the last few months Mars has hardly changed its position low in the south western sky after sunset and this situation will stay the same until the end of Jan. During Jan it's about a hand span above and to the left of Venus.

Jupiter - Jupiter is well placed for observation during both Dec and Jan. It is located under the nose of Leo the lion and being so bright it can not be mistaken for any other object. At the beginning of Dec it rises at about 10pm and by the end of Jan just after sunset.

Saturn - Saturn is not well placed for observation being very low in the southern sky rising just before sunrise. Look for it in the stars of Scorpius low in the pre dawn south eastern sky.

Uranus - Uranus is a little over 3° below Delta Piscium. It can be found quite easily with a pair of 10x50 binoculars. During Dec it is well placed in the southern sky as it darkens after sunset. During Jan it shifts to the southwest and lower in the sky making observation more difficult.

Neptune - Neptune can be found in the constellation of Aquarius located a little under 1° west of the star Sigma Aquarii. Like Uranus at during Dec is well placed for observation as soon as the sky darkens but it soon sinks into the south western sky and is lost in the haze.

Deep Sky



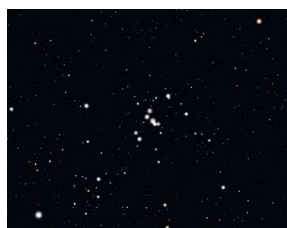
NGC457 Owl or ET Cluster
RA 1h 20m Dec 58° 20'
mag 6.4

Best viewed in large binoculars or a low powered telescope, it is visible in 10x50s but the ET outline is just a little too small, it really needs more than 10 times magnification, but not too much. The star Phi Cass and a close companion make the two bright eyes and two more chains make the arms and body of the stick figure.



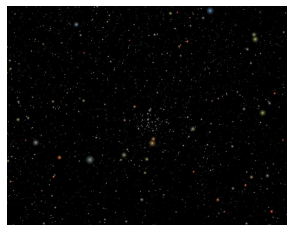
M76 Little Dumbbell Nebula
RA 1h 43m Dec 51° 37'
mag 12

Just under 1° in the direction of Cassiopeia from Phi Persei lies one of the faintest of the Messier objects; a small bipolar planetary nebula that, as its name implies, looks like a miniature version of the famous Dumbbell Nebula. At mag 12 it is beyond the reach of all but the largest binoculars, however in medium sized telescopes, with averted vision the two halves of the dumbbell can be seen. It was once considered to be two distinct objects and was given two NGC numbers NGC651 & 651.



NGC1662 Open Cluster
RA 4h 49m Dec 10° 54'
mag 6.4

About 2° towards the Hyades from the northern tip of Orion's shield can be found this large but rather sparse group of stars. About half way along the lower edge is a small diamond of tenth magnitude stars that along with an 11th magnitude outsider form a group that has a resemblance to a miniature, slightly squashed Delphinus.



NGC1647 Open Cluster
RA 4h 46m Dec 19° 7'

Scanning with a pair of 10x50 binoculars from Aldebaran towards Elnath, (the star often shown shared with Auriga) just as Aldebaran is leaving the field of view there in the centre should be a fuzzy triangular patch of stars about the same size as the full moon. This is NGC1647. Like many galactic clusters aperture is more important than magnification, an increased aperture will show more members of the cluster and allow them to be resolved whereas magnification will lessen the visual impact of the overall cluster.

Peter Burgess

The Power of Lithium Polymer Batteries (Li-Po)



I've been testing my Li-Po battery to see what it can deliver in ideal conditions.

Lead-acid power tanks weigh a tonne and can cost over £100. If you avoid astronomy outlets, you can pick up a 10Ah Li-Po for around £20!

It's roughly the size of a cigarette packet and weighs in at a mere 360g.

Fully charged, this little battery slewed during set up, and then tracked, my EQ5 with a 10kg 10" Meade for six and a half hours! The same test with a 3kg 5" Maksutov lasted a whopping 8hrs 15mins!



So, what a great little tool for going out and about with a small set up. Though as Simon Plumley pointed out, cold weather would surely reduce the performance of these batteries but hey! 8hrs 15mins!

Martyn Weaver

Some additional information:

A lithium polymer battery, or more correctly lithium-ion polymer battery (abbreviated variously as LiPo, LIP, Li-poly *and others*), is a rechargeable battery of lithium-ion technology in a pouch format. Unlike cylindrical and prismatic cells, LiPos come in a soft package or pouch, which makes them lighter but also lack rigidity.

The denomination "lithium polymer" has caused confusion among battery users. It may be interpreted in two ways. Originally, "lithium polymer" stood for a developing technology using a polymer electrolyte instead of the more common liquid electrolyte. The result is a "plastic" cell, which theoretically could be thin, flexible,

and manufactured in different shapes, without risk of electrolyte leakage. This technology has not been fully developed and commercialized, and research is ongoing.

The second meaning appeared when some manufacturers started applying the "polymer" denomination to lithium-ion cells in pouch format. This is the most extended use nowadays, where "polymer" went from indicating a "polymer electrolyte" to mean a "polymer casing", that is, the soft, external pouch. While the design is usually flat, and lightweight, it is not a true polymer cell, as the electrolyte is still in liquid form, albeit it may be "plasticized" or "gelled" through a polymer additive. These cells are sometimes known as "LiPo", however, from the technological point of view, they are the same as the ones marketed simply as "Li-ion", as the underlying electrochemistry is the same.

This article concerns the second, more extended meaning (among the general public), while the first meaning (understood in research and academia) is discussed only in the last section.

The name "lithium polymer" (LiPo) is more widespread among users of radio-controlled models, where it may indicate a single cell or a battery pack with cells connected in series or parallel. The more general term "lithium-ion" (Li-ion) is used almost everywhere else, including consumer electronics such as mobile phones and notebook computers, and battery electric vehicles.

More at: http://en.wikipedia.org/wiki/Lithium_polymer_battery



CHRISTMAS DAY



BATTERIES NOT INCLUDED



Rosetta and Philae

19 November 2014



With the Philae lander's mission complete, Rosetta will now continue its own extraordinary exploration, orbiting Comet 67P/Churyumov-Gerasimenko during the coming year as the enigmatic body arcs ever closer to our Sun.

Last week, ESA's Rosetta spacecraft delivered its Philae lander to the surface of the comet for a dramatic touchdown.

The lander's planned mission ended after about 64 hours when its batteries ran out, but not before it delivered a full set of results that are now being analysed by scientists across Europe.

Rosetta's own mission is far from over and the spacecraft remains in excellent condition, with all of its systems and instruments performing as expected.

"With lander delivery complete, Rosetta will resume routine science observations and we will transition to the 'comet escort phase'," says Flight Director Andrea Accomazzo. "This science-gathering phase will take us into next year as we go with the comet towards the Sun, passing perihelion, or closest approach, on 13 August, at 186 million kilometres from our star."



On 16 November, the flight control team moved from the large Main Control Room at ESA's Space Operations Centre in Darmstadt, Germany, where critical operations during landing were performed, to a smaller Dedicated Control Room, from where the team normally flies the craft.

Since then, Rosetta has performed a series of manoeuvres, using its thrusters to begin optimising its orbit around the comet for the 11 scientific instruments.

More at: <http://www.esa.int/>

Wight Science

As well as monthly lectures arranged by VAS, there are other organisations on the Island holding regular events which may be of interest to members. We are hoping to provide a calendar of any such events each month so, if you know of anything which you think should be included here, please let me know. Not for profit events only please.

	<p>Thursday 26 February 2015 7.00 for 7.30 pm Bargeman's Rest, Newport – Captain's Cabin Fighting with the Internet Rob Salter, CEng, FIET, BAE Systems Engineering Fellow, BAE Systems</p>
	<p>Thursday 26 March 2015 7.00 for 7.30 pm Bargeman's Rest, Newport – Sail Loft Modern Medical Imaging: getting the right treatment to the right patient Dr Martin Christlieb, Department of Oncology, University of Oxford</p>
<p>Cafe Scientifique details are at: http://cafescientifique.onthewight.com/</p>	
<p>IET details are at: http://mycommunity.theiet.org/communities/home/173#.VHOvQlusXwM</p>	



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on 761555 - leave a message if I am not there
Or - enquiry@islandastronomy.co.uk

Lunar/Saturn Occultation

VAS field observation event 25/10/14



According to Sky & Telescope Magazine - “*To occult’ means literally ‘to hide’. A lunar occultation takes place when the Moon’s edge creeps up to a star (or planet) and suddenly snuffs it out. The star (or planet) reappears just as suddenly on the Moon’s opposite side up to an hour or more later. When the Moon is in its waxing phases, the disappearance usually happens on the Moon’s dark edge, where it’s easy to watch; reappearances are on the bright side, where the star is harder to see. When the Moon is waning, the situation is opposite: stars vanish on the bright limb and reappear from behind the dark edge. In either case reappearances take more planning to watch, because you need to be looking at the correct place on the Moon’s limb at the moment the star pops back into view*”

Peter Burgess anticipated the constraints of this event in his monthly report in November’s edition of NZ - “*For those who enjoy a challenge there will be a lunar occultation of Saturn on October 25 it starts at 17:05. This is before the Sun has set, so if it is clear and you try to observe this event, take care that your telescope cannot be accidentally pointed at the Sun. Saturn reappears from behind the Moon at 18:07, after sunset but with both objects very close to the horizon.*”

Some of us did in fact take up Peter’s challenge. Standing there on an elevated exposed place on the far south-west of the island last October 25th evening, I felt a strange feeling that savages must’ve done a similar thing many thousands of years ago, perhaps also when waiting for a significant astronomical event. Unlike all those aeons ago though, no one suggested any form of sacrifice and therefore, no sheep were present or harmed on this occasion,



Simon Plumley, Alison & Shaun Smith, Simon Overton and myself assembled heroically at the appointed time on the main road car park next to Freshwater Golf Club, standing in an ever-freshening uncomfortable breeze, desperately searching for an incredibly tiny 3% moon in the cloudy sunset conditions. Not ideal.

Despite sky apps, we spent most of the time therefore desperately searching for the moon in and around the changing cloud, with little luck after an hour of aching and rapidly numbing fingers and arms supporting binos. Then, suddenly, dramatically, at last we spotted the slimmest but large crescent moon close to the horizon in the improving contrast of sky. Simon managing to get a post-occultation image as evidence of our dedication.



We also observed moon’s watery image strangely refracting through cloud slivers, and also an inverted alien spacecraft cloud formation coincidentally in the direction of suspected alien/UFO infiltration in the Totland area.

Chris Wood

The Spaceguard Centre



Introduction

The Spaceguard Centre is the National Near Earth Objects Information Centre (NNEOIC). With Jonathan R. Tate as its Director, it is the only organisation in the UK dedicated to addressing the hazard of Near Earth Objects.

NEOs are asteroids and comets that come close to, and sometimes collide with the Earth. Such impacts can have devastating effects – they have in the past and will in the future unless we use available technologies to prevent them.

Spaceguard UK operates the Spaceguard Centre (located in Knighton, Powys, UK) from where it provides timely information to the public, press, media and education about the threat of asteroid and comet impacts, and the ways in which we can predict and deal with them.

The Centre aims to develop and maintain a world-class facility for astronomical research and science education, and to bring the wonders of the universe to everyone in a fun and understandable way.

What is the Spaceguard Project?

The threat posed to mankind by the impact of an asteroid or comet is now widely recognised as one of the most significant risks to human civilisation, yet there is no co-ordinated international effort to identify threatening Near Earth Objects (NEOs) or to deal with them once detected.

Over the past decade or so it has become apparent that asteroidal and cometary impacts have played a dramatic, possibly leading role in the development of this planet, and the evolution of life. Natural Science is in the throes of a revolution in thinking, akin to that which occurred after the publication of Charles Darwin's "On the Origin of Species by Means of Natural Selection". With this understanding comes the realisation that there is no reason to believe that this extraterrestrial influence is at an end, and the

possibility that a major impact could severely disrupt, or even destroy our current way of life on a global scale is one to be considered seriously.

As a result of this ongoing research there is a growing international movement dedicated to quantifying and assessing the risk, and to determining methods of avoiding threatening impacts. While the subject has traditionally suffered from a great deal of scepticism this attitude is now disappearing, and the matter has become one of serious research.

Visitors are very welcome at the Spaceguard Centre, where you will be able to hear about Spaceguard and learn something about the wonders of astronomy. But beware, a visit to the Spaceguard Centre has been known to change lives!

How we are Funded

The funding for the Spaceguard Centre all comes from the admission fee charged to visitors. This is enough to maintain the building and equipment, and to pay for utilities, but not enough to pay staff salaries.

The observatory is privately owned, and was fitted out and equipped at the expense of the owner and operators of the Centre. In 2002 we received a PPARC small award (£1400) for IT equipment to support the Faulkes Telescope Project, but that is the only external support that we have received since opening in 2001.

Funding for Project Drax has come entirely from local sponsors (services in kind such as the crane to remove the Schmidt Camera from Cambridge, transport, storage etc.), donations from visitors to the Centre and the efforts of the Marches Astronomy Group.

The Centre continues to enjoy the moral support of organisations worldwide (including the Spaceguard Foundation, UN AT-14, B612, the MPC, NASA, JPL and the various NEO survey projects worldwide) they are pretty cash-strapped as well!

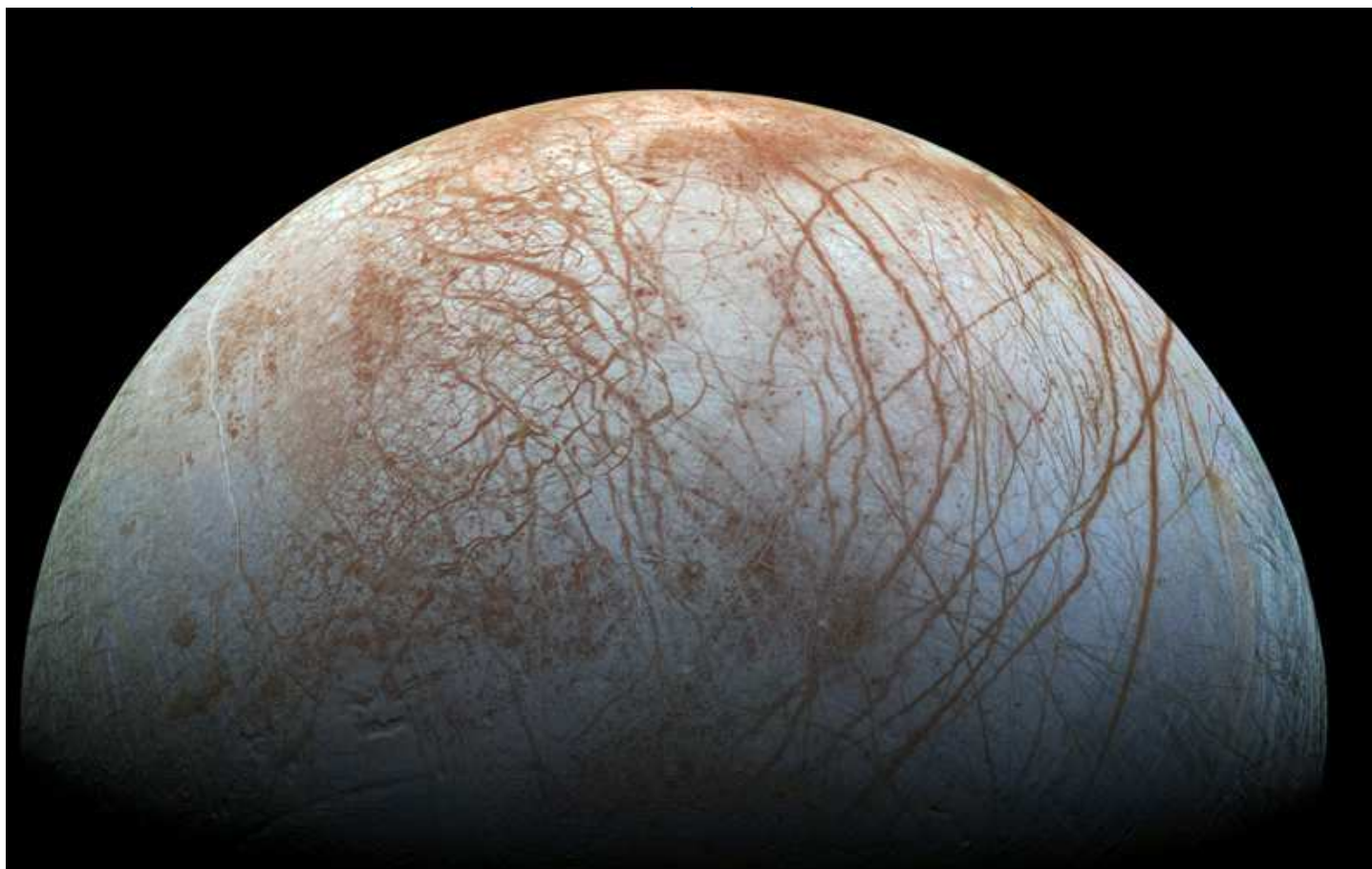
Contact Details

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LD7 1LW.
United Kingdom.**

Tel: 01547 520247

mail@spaceguardcentre.com

<http://spaceguardcentre.com>



Europa's Stunning Surface

The puzzling, fascinating surface of Jupiter's icy moon Europa looms large in this newly-reprocessed colour view, made from images taken by NASA's Galileo spacecraft in the late 1990s. This is the colour view of Europa from Galileo that shows the largest portion of the moon's surface at the highest resolution.

The view was previously released as a mosaic with lower resolution and strongly enhanced colour (see PIA02590). To create this new version, the images were assembled into a realistic colour view of the surface that approximates how Europa would appear to the human eye.

The scene shows the stunning diversity of Europa's surface geology. Long, linear cracks and ridges crisscross the surface, interrupted by regions of disrupted terrain where the surface ice crust has been broken up and re-frozen into new patterns.

Colour variations across the surface are associated with differences in geologic feature type and location. For example, areas that appear blue or white contain relatively pure water ice, while reddish and brownish areas include non-ice components in higher concentrations. The polar regions, visible at the left and right of this view, are noticeably bluer than the more equatorial latitudes, which

look more white. This colour variation is thought to be due to differences in ice grain size in the two locations.

Images taken through near-infrared, green and violet filters have been combined to produce this view. The images have been corrected for light scattered outside of the image, to provide a colour correction that is calibrated by wavelength. Gaps in the images have been filled with simulated colour based on the colour of nearby surface areas with similar terrain types.

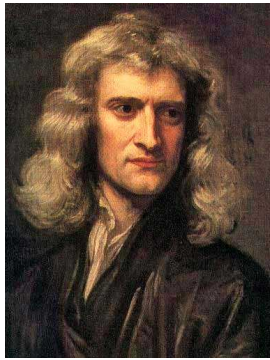
This global colour view consists of images acquired by the Galileo Solid-State Imaging (SSI) experiment on the spacecraft's first and fourteenth orbits through the Jupiter system, in 1995 and 1998, respectively. Image scale is 1 mile (1.6 km) per pixel. North on Europa is at right.

The Galileo mission was managed by NASA's Jet Propulsion Laboratory in Pasadena, California, for the agency's Science Mission Directorate in Washington. JPL is a division of the California Institute of Technology, Pasadena.

Additional information about Galileo and its discoveries is available on the Galileo mission home page at <http://solarsystem.nasa.gov/galileo/>.

More information about Europa is available at <http://solarsystem.nasa.gov/europa/>.

Born on Christmas Day



Sir Isaac Newton PRS MP

25 Dec 1642 – 20 Mar 1726/7) was an English physicist and mathematician who is widely recognised as one of the most influential scientists of all time and as a key figure in the scientific revolution. His book *Philosophiæ Naturalis Principia Mathematica* (“Mathematical Principles of Natural Philosophy”), first published in 1687, laid the

foundations for classical mechanics. Newton also made seminal contributions to optics and shares credit with Gottfried Leibniz for the development of calculus.

Newton’s *Principia* formulated the laws of motion and universal gravitation, which dominated scientists’ view of the physical universe for the next three centuries. By deriving Kepler’s laws of planetary motion from his mathematical description of gravity, and then using the same principles to account for the trajectories of comets, the tides, the precession of the equinoxes, and other phenomena, Newton removed the last doubts about the validity of the heliocentric model of the cosmos. This work also demonstrated that the motion of objects on Earth and of celestial bodies could be described by the same principles. His prediction that the Earth should be shaped as an oblate spheroid was later vindicated by the measurements of Maupertuis, La Condamine, and others, which helped convince most Continental European scientists of the superiority of Newtonian mechanics over the earlier system of Descartes.

Newton also built the first practical reflecting telescope and developed a theory of colour based on the observation that a prism decomposes white light into the many colours of the visible spectrum. He formulated an empirical law of cooling, studied the speed of sound, and introduced the notion of a Newtonian fluid.

Newton was a fellow of Trinity College and the second Lucasian Professor of Mathematics at the University of Cambridge. He was a devout but unorthodox Christian and, unusually for a member of the Cambridge faculty of the day, he refused to take holy orders in the Church of England, perhaps because he privately rejected the doctrine of the Trinity. Beyond his work on the mathematical sciences, Newton dedicated much of his time to the study of biblical chronology and alchemy, but most of his work in those areas remained unpublished until long after his death. In his later life, Newton became president of the Royal Society. He also served the British government as Warden and Master of the Royal Mint.

More at: http://en.wikipedia.org/wiki/Isaac_Newton

Christmas Quiz

1. What was the name of Yuri Gagarin’s space capsule?
2. Which planet has a year which is shorter than its day?
3. What is the only sign of the Zodiac named after two living things?
4. What is the smallest planet in the Solar System?
5. What is the name of the largest constellation?
6. Ganymede and Io are moons of which planet?
7. What is the only sign of the Zodiac that is not named after a living creature?
8. Which theory states that the Universe was created after an explosion?
9. What type of creatures were Laska and Beny who went into space in 1958?
10. Who was the first American in space?
11. Which planet is famed for its Canals?
12. What was the name of the US Space Shuttle which crashed during take-off in 1986?
13. Which is the largest asteroid in the solar system?
14. Which element makes up over 90% of the atoms in our galaxy?
15. What is the difference between meteors and meteorites?
16. With which planet do you associate the Cassini Division?
17. In 1986 which body within the solar system was explored by the European Giotto space probe?
18. Which planet, first discovered in 1930, takes 248 years to orbit the sun?
19. Triton and Nereid are satellites of which planet?
20. Which is the nearest star to the Earth, after the sun?
21. Who in 1965 became the first person to walk in Space?
22. According to the promotional trailers for the 1979 film *Alien* “in space no one can hear you..” what?
23. The first space shuttle launch took place in April of which year?
24. Who had a top 10 hit with “I’m the Urban Spaceman”?
25. Who was the first woman in space?
26. What is the name of the spacecraft that landed on the moon in 1969?
27. Who directed the film *2001: A space odyssey*?
28. According to the TV series *Star Trek*, what is space?
29. Which British born scientist in 1997 spent several months on the Russian spacecraft *Mir*?
30. Who was the first British female astronaut in space?

Answers on the Back Page

THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

The Riddle of the Missing Stars



Thanks to the NASA/ESA Hubble Space Telescope, some of the most mysterious cosmic residents have just become even more puzzling. New observations of globular clusters in a small galaxy show they are very similar to those found in the Milky Way, and so must have formed in a similar way. One of the leading theories on how these clusters form predicts that globular clusters should only be found nestled in among large quantities of old stars. But these old stars, though rife in the Milky Way, are not present in this small galaxy, and so, the mystery deepens.

Globular clusters — large balls of stars that orbit the centres of galaxies, but can lie very far from them — remain one of the biggest cosmic mysteries. They were once thought to consist of a single population of stars that all formed together. However, research has since shown that many of the Milky Way's globular clusters had far more complex formation histories and are made up of at least two distinct populations of stars.

More at <http://www.spacetelescope.org/news/heic1425/>

Spooky Alignment of Quasars

New observations with ESO's Very Large Telescope (VLT) in Chile have revealed alignments over the largest structures ever discovered in the Universe. A European research team has found that the rotation axes of the central supermassive black holes in a sample of quasars are parallel to each other over distances of billions of light-years. The team has also found that the rotation axes of these quasars tend to be aligned with the vast structures in the cosmic web in which they reside.

Quasars are galaxies with very active supermassive black holes at their centres. These black holes are surrounded by spinning discs of extremely hot material that is often spewed out in long jets along their axes of rotation. Quasars can shine more brightly than all the stars in the rest of their host galaxies put together.

A team led by Damien Hutsemékers from the University of Liège in Belgium used the FORS instrument on the VLT to study 93 quasars that were known to form huge groupings spread over billions of light-years, seen at a time when the Universe was about one third of its current age.

"The first odd thing we noticed was that some of the quasars' rotation axes were aligned with each other — despite the fact that these quasars are separated by billions of light-years," said Hutsemékers.

More at <http://www.eso.org/public/news/eso1438/>

Quiz Answers

1. Vostock 1, 2. Venus, 3. Gemini, 4. Pluto, 5. Hydra, 6. Jupiter, 7. Libra, 8. The Big Bang Theory, 9. Mice, 10. John Glenn, 11. Mars, 12. Challenger, 13. Ceres, 14. Hydrogen, 15. A meteorite is a meteor that has landed, 16. Saturn (divisions in the rings), 17. Haley's Comet, 18. Pluto, 19. Neptune, 20. Proxima Centauri, 21. Alexy Leonov, 22. Scream, 23. 1981, 24. Bonzo Dog Do Dah Band, 25. Vantana Tereshkova, 26. Apollo 11, 27. Stanley Kubrick, 28. The Final Frontier, 29. Michael Foale, 30. Helen Sharman.

Observatory

When visiting the VAS observatory, for your own safety, please bring a torch. Also, please make sure you close and lock the car park gate if you are the last to leave - if you need the combination to the lock, please contact a member of the committee.

Articles Needed

New Zenith needs letters, articles, reviews or pictures related to all aspects of astronomy.

Contributions to the Editor please at the email or postal address on the front page.

"Many people find the universe confusing - it's not"

Stephen Hawking

"Space has always been confusing to politics"

P. J. O'Rourke

"When I die, I'm leaving my body to science fiction"

Steven Wright

"Science is basically an inoculation against charlatans"

Neil deGrasse Tyson