

SOCIETY NEWS

Another Year



On behalf of the Committee, I wish all members, NZ readers and their families a very merry Christmas. Also, many thanks to all who have helped out in 2015.

As usual the whole Committee takes a well earned month off, that means there is no Dec monthly meeting and the next New Zenith will be the February 2016 edition.

New Year Dinner

Saturday January 9th 7.00 for 7.30pm
The Castle Inn, 91 High Street,
Newport, PO30 1BQ

Mains cost £10-15 & puddings £5

We have been allocated our own room and we hope to have a quiz
Please put your name on the list at the November Friday meeting or contact me at
chairman@wightastronomy.org

I look forward to seeing many of you there!
Bryn Davis - VAS Chairman

Brian Curd
Editor New Zenith.

VAS Website: wightastronomy.org

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

The Editor New Zenith
75 Hefford Road
East Cowes
Isle of Wight PO32 6QU

Tel: **01983 296128** or email: editor@wightastronomy.org

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

VAS Registered Office

75 Hefford Road, East Cowes, Isle of Wight, PO32 6QU
The Vectis Astronomical Society and the Editor of the New Zenith accept no responsibility for advice, information or opinion expressed by contributors.

Registered Charity No 1046091

Observatory Diary

Monday, 19.30hrs	Members Only and by arrangement Telescope and night sky training. Please contact Martyn Weaver 07855 116490
Thursday, 19.30hrs	Members and Public. Informal meeting and observing

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2015

Date	Subject	Speaker
27 Nov	<i>Medley of talks & discussion:</i> <ul style="list-style-type: none"> • Goldilocks Planets • OBAFGKM (The development of Star Classification). • Night Vision • Arcturus 	James Fradgley

Please check wightastronomy.org/meetings/ for the latest information

2016

22 Jan	TBA	TBA
26 Feb	Basket Balls and Beyond Bring a Friend	Jane A Green
25 Mar	Death From Space	Ninian Boyle
22 Apr	Astronomy on the Tablet	Dr Lilian Hobbs
27 May	Meteors	Richard Kacerek
24 Jun	ESA EUCLID Mission Latest Update	Dr Tom Kitching
22 Jul	TBA	TBA
26 Aug	William Herschel and the Rings of Uranus	Dr Stuart Eves
23 Sep	Galaxy Formation	Prof Chris Lintott
28 Oct	Radiation protection in space (for manned missions)	Dr Elizabeth Cunningham
25 Nov	TBA	TBA

Observatory Visits Booked

26th Jan - 1700-1930	1st Ryde Beavers
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It would be appreciated if members could avoid using the observatory at these times.

**VAS Contacts
2014/15**

President	Barry Bates president@wightastronomy.org
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NZ Distribution	Brian Bond distribution@wightastronomy.org
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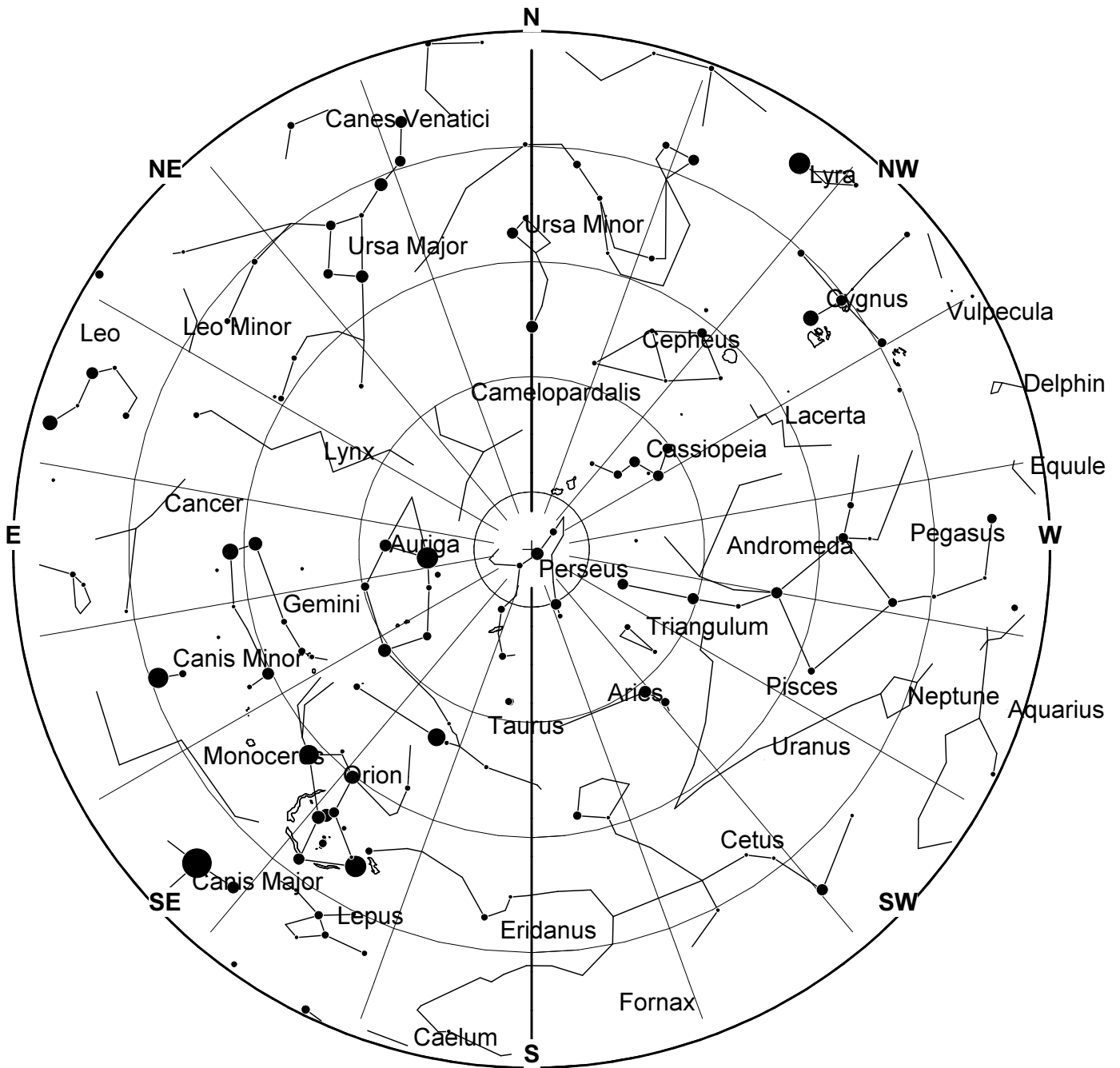
Important

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

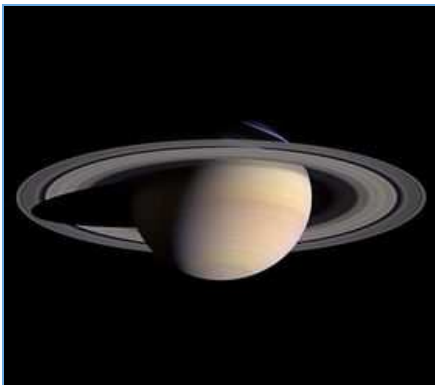
On several occasions, lights, heaters and the Meade LX200 have been left on!

When leaving, please ensure all is secure and all lights, heaters and telescopes are **TURNED OFF**.

December 2015 Sky Map



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

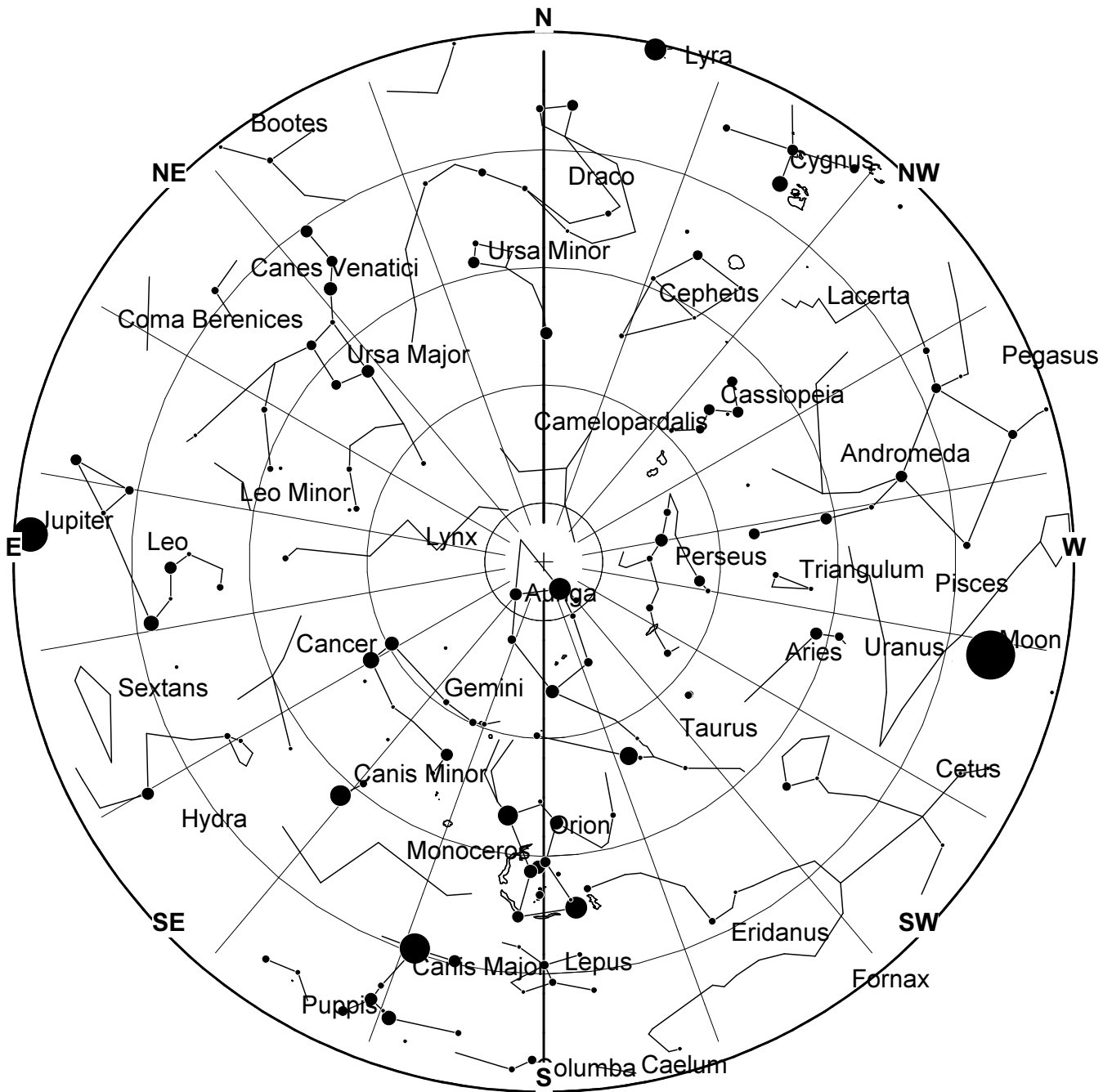


Saturn is the sixth planet from the Sun and the second-largest in the Solar System, after Jupiter. It is a gas giant with an average radius about nine times that of Earth. Although only one-eighth the average density of Earth, with its larger volume Saturn is just over 95 times more massive.

Saturn has a prominent ring system that consists of nine continuous main rings and three discontinuous arcs and that is composed mostly of ice particles with a smaller amount of rocky debris and dust. Sixty-two moons are known to orbit Saturn, of which fifty-three are officially named.

*This article is licensed under the [GNU Free Documentation License](https://www.gnu.org/licenses/fdl.html).
It uses material from the Wikipedia article "Saturn".*

January 2016 Sky Map



View from Newchurch Isle of Wight UK - 2200hrs - 15 January 2016







Jupiter is the fifth planet from the Sun and the largest in the Solar System. It is a giant planet with a mass one-thousandth that of the Sun, but two and a half times that of all the other planets in the Solar System combined. Jupiter is a gas giant, along with Saturn (Uranus and Neptune are ice giants). Jupiter was known to astronomers of ancient times. The Romans named it after their god Jupiter. When viewed from Earth, Jupiter can reach an apparent magnitude of -2.94, bright enough for its reflected light to cast shadows, and making it on average the third-brightest object in the night sky after the Moon and Venus.

This article is licensed under the [GNU Free Documentation License](#). It uses material from the Wikipedia article "Jupiter".

Dec 2015/Jan 2016 Night Sky

Moon Phases

	New	First Qtr	Full	Last Qtr
				
Dec	11th	18th	25th	3rd
Jan	10th	16th	24th	2nd

Winter Solstice

The winter solstice, the moment when the Sun is at its most southerly point and the lowest it gets in our skies is on December 22 at 04:44. From this time the nights start to shorten and we head towards spring, though it may not seem like it.

Occultations

There are two lunar occultations involving the bright star Aldebaran the red eye of Taurus. The first, an early Christmas present occurs on December 23, when at 1807 the almost full moon passes in front of the star, and it re-appears from the night side of the moon at 19:08.

The second is at a less convenient time starting at 03:23 on January 20 when Aldebaran suddenly disappears behind the dark limb of the moon. The occultation starts when the pair are low in the west and we do not get to see the re-appearance before moonset.

Occultations are relatively common, but those involving bright stars are much less so.

Planets

Mercury

During the last fortnight of Dec and the first week of Jan Mercury makes a very poor appearance in the evening sky. Those with a very clear south western horizon and keen eyesight may catch sight of it before it sets. About the best compromise between brightness and height above the horizon at sunset is on Christmas and Boxing days when it sets about 45 minutes after the sun.

Venus

The morning star is dropping down the sky towards the Sun. By the end of Jan it is rising just before 07:00 making it more difficult to see. On the Jan 9 it is in close conjunction low in the pre-dawn sky with Saturn with a separation of about 1/3 times the diameter of the full moon.

Mars

Mars steadily crosses Virgo into Libra this winter gaining in brightness as it does. Look for the reddish object in the early morning sky between Jupiter and Venus during Dec, and between Jupiter and Saturn later in Jan

Jupiter

During the New Year period Jupiter is relatively static around the Leo Virgo border. It is much brighter than any star in that part of the sky and is easily recognisable by its yellowish colour. At the start of Dec it rises at about 1am and by the end of Jan can be seen above the eastern horizon by 9pm.

Saturn

Saturn is too low down in the morning sky for serious observation but starts its new apparition in a close conjunction with Venus as it starts to clear the horizon.

Uranus

During Dec and Jan Uranus remains almost stationary against the background stars. Look for it about 2° below Epsilon Piscium. Uranus and the stars 73, 77, and 80 Piscium make a Y shape tipped over on its side. It is visible from sunset in the southern sky.

Neptune

At the start of Dec Neptune can be found about 1.5° east of Sigma Aquarii. As the month progresses it moves away from sigma towards the east at an ever increasing rate. By the end of the year Neptune is too low in the sky to be considered as favourable for observation.

Deep Sky



M52 The Scorpion Cluster
RA 23h 25m Dec 61° 37'
mag 8.0

Follow the line from Schedar through Caph for 6° beyond Caph and you will find this fine open cluster. It is large; almost half the size of the full moon and the density of stars makes it relatively bright such that it stands out from the background Milky Way. A telescope will resolve many of the cluster members. A chain of 11th magnitude stars form a hook shape that bears a passing resemblance to the tail and sting of Scorpius. Two other stars of similar brightness mark out the claws. The brightest star in the cluster, a red tinged eighth magnitude star is not actually a cluster member but a line of sight coincidence.



NGC752
RA 1h 58m Dec 37°41'
mag 5.7

A large object, this is an open star cluster a little larger than the full moon and just visible to the naked eye in a dark sky. A pair of

binoculars will resolve up to 20 stars, and an 8 inch telescope with low magnification shows over 50. Some stars show colour, mainly yellow and orange.



NGC2264
RA 6h 41m Dec 9° 38'
mag 4.1

This is a large relatively bright cluster surrounded by a faint diffuse nebulosity. It is visible to the naked eye as a fuzzy patch, but observation with a pair of binoculars will show the inverted

triangle shape that gives this cluster its popular name, the Christmas Tree Cluster. The brightest star in the group marks the trunk of this upside down tree. Just to the south of the 7th magnitude star on the top of the tree is the cone nebula. This along with the other surrounding nebulosity is best observed using a CCD camera.



M34
RA 2h 43m Dec 42° 48'
mag 6.0

This open cluster in Perseus is a little smaller and slightly fainter than NGC752 it contains 70 to 80 stars and as with most star clusters it is best viewed using binoculars or a low magnification telescope.

Peter Burgess



Committee post available

We are in need of a new organiser for our Friday Monthly Meetings

The role involves finding and contacting speakers and arranging for their travel

The 2016 Calendar is almost complete, so the hard part had been done

You would work alongside Elaine Spear, who promotes and advertises the talks. She is currently finding and organising the speakers as well. There is a large database of speakers which Elaine has been creating since 2009

You would not be left on your own to do this job, and would work in partnership with Elaine

Contact Elaine if you are willing and able to get involved or would like more information

elainespear1@gmail.com
07970 965105

Planetary Plates!



Available from www.thinkgeek.com - \$39.99 a set

Back 2 Skool



When I was asked by my other half to do a “Space” talk at my 4 year old step daughters school in Yarmouth, I said sure no problem. Whilst planning my talk, I realised it is so easy to over complicate astronomy as it’s hard not to get carried away with amazing facts and the huge numbers that space gives us. It’s hard enough for the most educated adult to get their head round the scale of everything let alone a roomful of people where 10 is pretty much as big as it gets. Those of you that know me realise I can go on a bit which really isn’t a good thing armed with a head full of enthusiastic astronomy data which would quickly daze the eyes of a class of 4 and 5 year olds, so simple was a must.

My audience was already pre interested in “space” and to my delight had built an impressive mock up module of the International Space Station covered in tin foil which sat proudly in the corner - Maximum 3 persons at one time.

From start to finish all the children were engaged and asking questions in the quick tour of the solar system on the iPad along with some ISS and galaxy images.

I took along one of the smaller VAS Newtonian telescopes which they were itching to ask a lot of questions about. Many questions were repeated again and again as each got their turn to ask and it was important to them to have a good question so why not just repeat it. It was the cutest thing patiently watching them construct their question albeit often the same one.

The best question was “what is the biggest thing in the universe” and some others were a lovely blend of confusing bits they had picked up about space and planets which made no sense so the hardest part was working out the question they were trying to ask but the fact they were trying so hard was terrific.

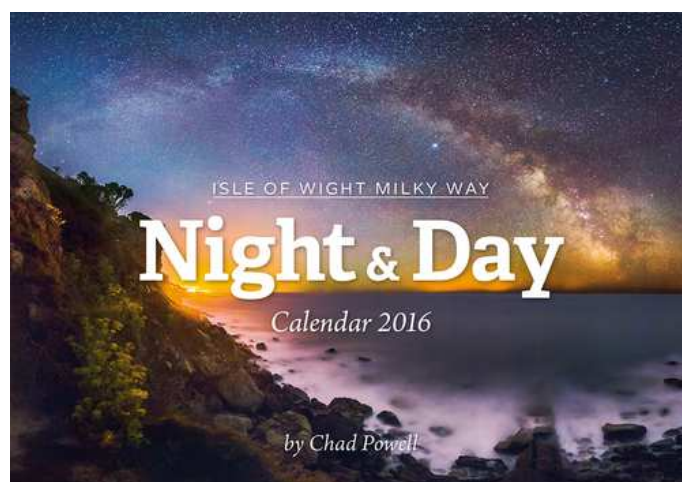
After the talk the children paired up and each got to see the telescope up close. Unfortunately it was a day of 50 mph winds and rain but this didn’t detract from their enthusiasm to get up close and turn the tracking knobs and the biggest favourite looking down the wrong end the tube seeing their face in the mirror. Everyone thought it was “massive” and “cool” so actually pointing it at anything let alone something in space was really not required.

I left the class with a pile of astronomy magazines to cut and copy and, since my visit, I believe the class elected to make all the planets in papier-mâché which are due for painting.

Returning to primary school was an eye opening and priceless experience and being able to cascade the wonders of the universe even at the most basic level was extremely rewarding and I’d recommend any of you try it.

Simon Plumley

Isle of Wight Milky Way Calendar 2016



Each calendar has a beautiful collection of photographs of Island sunsets and night sky taken by St Lawrence based photographer, Chad Powell

Chad supports VAS by allowing us to use his images on various publications

Calendars are a snip at £7.99 each and 30% of sales is being donated to VAS

They make excellent Christmas presents!

Chad’s website is at: www.isleofwightmilkyway.com

*Contact Elaine Spear
07970 965105
elainespear1@gmail.com*

World Exclusive!

During 2014/15, prize-winning poet Simon Barraclough was poet in residence at UCL's Surrey-based Mullard Space Science Laboratory (MSSL).

During the year Dr. Tom Kitching was encouraged to explore his science through words and poetry (not something that was part of the normal academic way of doing things). Tom has produced some inspiring, thoughtful and very moving poems through this interaction.

Tom grew up on the Island, he loves the beach, and I can remember walking with him along Compton Bay when he was quite young talking about the size of the Universe, that conversation is echoed in his poem *Smidgen* (a very *Oil ov Woight word*).

Smidgen

*The Sun, our star, is four billion years old.
And there're more stars than sand grains, out there,
in the cold
They say you're just star dust, and a smidgen, of
soot.
But is that how you feel, with soft sand, under foot?*

*As you let the flecks flow, between all your toes,
and you sense that vast sea, you remember you
know,
that life is so small,
not long at all:*

*You are just star dust,
but with a smidgen of love,
your story's, our stories,
written above.*

Tom's poems are published in "LABORATORIO", an anthology of poems by the scientists and engineers at the Mullard Space Science Centre (MSSL). Other contributors include Dr Lucie Green, Simon Barraclough, Julia Gaudelli, Ian Rapper, Kim Burkett, Matt Hills, Alice Breeveld, David Shelton, Aimee Norton, George Seabroke, Themis Kotsialos, Jack Carlyle and Liane Struass.

Laboratorio is edited by Simon Barraclough and published by Sidekick Books at £10.00: ISBN 978-1-909560-19-2

Simon Barraclough reads from LABORATORIO at <https://soundcloud.com/>

David Kitching

Spherical Jupiter Cake Recipe



If you have a spare hour or two over the holidays you may like to try making a spherical cake!

Following on from a successful Earth Cake, this Jupiter cake looks spectacular - for full recipe details, follow the link below. (Please let me know how it turns out)

<http://cakecrumbs.me/>

Mars to lose its largest moon, Phobos, but gain a ring



Scientists say the demise of Phobos will probably happen in 20 to 40 million years, leaving a ring that will persist for 1 million to 100 million years.

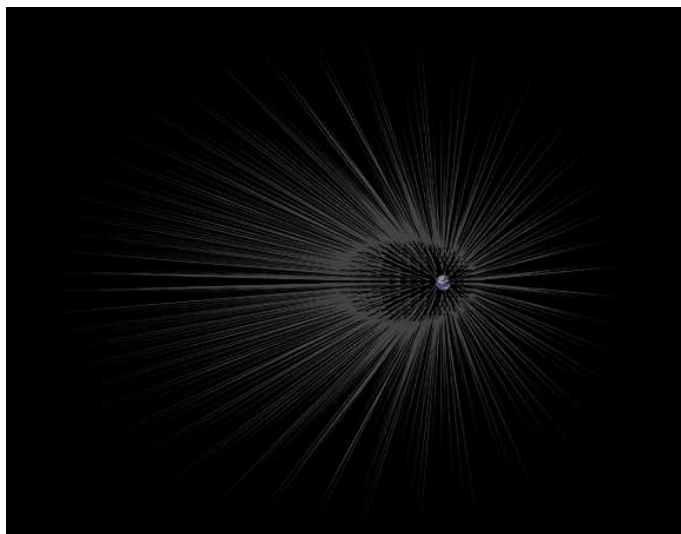
Mars' largest moon, Phobos, is slowly falling towards the planet and is likely to be shredded into pieces that will be strewn about the red planet in a ring like those encircling Saturn and Jupiter, scientists, including one Indian-origin, say.

Though inevitable, the demise of Phobos is not imminent. It will probably happen in 20 to 40 million years, leaving a ring that will persist for anywhere from one million to 100 million years, according to scientists at the University of California, Berkeley.

University of California, Berkeley postdoctoral fellow Benjamin Black and graduate student Tushar Mittal estimate the cohesiveness of Phobos and conclude that it is insufficient to resist the tidal forces that will pull it apart when it gets closer to Mars.

More at: <http://www.livemint.com/>

Dark Matter 'Hairs' May Surround Earth



Earth may sport a thick coat of superlong dark matter "hairs," a new study suggests.

Astronomers think dark matter — a mysterious, invisible substance that neither emits nor absorbs light, and is about six times more common than "normal" matter — forms fine-grained but incredibly long streams throughout the universe.

"A stream can be much larger than the solar system itself, and there are many different streams crisscrossing our galactic neighborhood," study author Gary Prézeau, of NASA's Jet Propulsion Laboratory in Pasadena, California, said in a statement.

More at: <http://www.space.com>

Every Photo NASA's Saturn Probe Took In the Last 11 Years

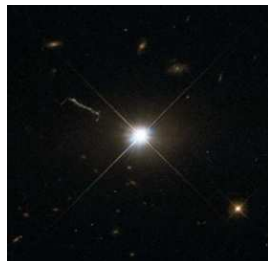
The Cassini mission has less than two years left in its mission before it crashes into Saturn, but here's the amazing discoveries of the last decade-plus.

This is every picture from Cassini's arrival in February 2004 to September 2015. The grand total is 341,805 pictures. They go by pretty fast, so be forewarned if you're sensitive to that sort of thing. Otherwise sit back, relax, and enjoy the amazing spectacle of one of NASA's most spectacular missions ever.

More at: <http://www.popularmechanics.com/>

The Case of the Disappearing Quasars

A dozen quasars in the early universe appear to have shut down in just a few years, baffling astronomers



Astronomers peering across the universe think they've caught a dozen quasars—extremely bright and distant objects powered by ravenous supermassive black holes at the centers of ancient galaxies—in a disappearing act. Or at least transitioning into their quiescent and dimmer counterparts: galaxies with starving black holes at their cores. The surprising find has astronomers asking whether these objects are shutting down permanently or simply flickering out for the time being.

Last year Stephanie LaMassa from NASA Goddard Space Flight Center (then at Yale University) discovered the greatest change in luminosity ever detected in a quasar. She was digging through data from the Sloan Digital Sky Survey when she found that a quasar had dimmed in brightness by a factor of six in just 10 years. Its spectrum changed, too, from that of a classic quasar to a regular galaxy.

More at: <http://www.scientificamerican.com/>

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on 07771550893



Basketballs and Beyond
A Talk by
Jane A Green
janegreenastronomy.co.uk



A natural, eloquent and captivating speaker, Jane has that rare ability to communicate complexities of astronomy in a warm, easy to understand way. Join her unique illustrated voyage.

BRING A FRIEND

SPREAD THE JOY OF ASTRONOMY

Friday 26th February 2016 at 7.30pm

Newport Parish Hall, Newport PO30 1JU

Vectis Astronomical Society (registered charity)

Suggested donation £2

Where Alice in Wonderland Meets Albert Einstein



Credit: X-ray: NASA/CXC/UA/J.Irwin et al; Optical: NASA/STScI

- *This group of galaxies has been nicknamed the “Cheshire Cat” because of its resemblance to a smiling feline.*
- *Some of the cat-like features are actually distant galaxies whose light has been stretched and bent by the large amounts of mass contained in foreground galaxies.*
- *This is an effect called “gravitational lensing,” predicted by Einstein's Theory of General Relativity that is celebrating its 100th anniversary.*
- *X-rays from Chandra show that the two “eye” galaxies and the smaller galaxies associated with them are slamming into one another in a giant galactic collision.*

One hundred years ago this month, Albert Einstein published his theory of general relativity, one of the most important scientific achievements in the last century.

A key result of Einstein's theory is that matter warps space-time, and thus a massive object can cause an observable bending of light from a background object. The first success of the theory was the observation, during a solar eclipse, that light from a distant background star was deflected by the predicted amount as it passed near the Sun.

Astronomers have since found many examples of this phenomenon, known as “gravitational lensing.” More than just a cosmic illusion, gravitational lensing provides astronomers with a way of probing extremely distant galaxies and groups of galaxies in ways that would

otherwise be impossible even with the most powerful telescopes.

The latest results from the “Cheshire Cat” group of galaxies show how manifestations of Einstein's 100-year-old theory can lead to new discoveries today. Astronomers have given the group this name because of the smiling cat-like appearance. Some of the feline features are actually distant galaxies whose light has been stretched and bent by the large amounts of mass, most of which is in the form of dark matter detectable only through its gravitational effect, found in the system.

More specifically, the mass that distorts the faraway galactic light is found surrounding the two giant “eye” galaxies and a “nose” galaxy. The multiple arcs of the circular “face” arise from gravitational lensing of four different background galaxies well behind the “eye” galaxies. The individual galaxies of the system, as well as the gravitationally lensed arcs, are seen in optical light from NASA's Hubble Space Telescope.

Each “eye” galaxy is the brightest member of its own group of galaxies and these two groups are racing toward one another at over 300,000 miles per hour. Data from NASA's Chandra X-ray Observatory (purple) show hot gas that has been heated to millions of degrees, which is evidence that the galaxy groups are slamming into one another. Chandra's X-ray data also reveal that the left “eye” of the Cheshire Cat group contains an actively feeding supermassive black hole at the center of the galaxy.

Astronomers think the Cheshire Cat group will become what is known as a fossil group, defined as a gathering of galaxies that contains one giant elliptical galaxy and other much smaller, fainter ones. Fossil groups may represent a temporary stage that nearly all galaxy groups pass through at some point in their evolution. Therefore, astronomers are eager to better understand the properties and behaviour of these groups.

The Cheshire Cat represents the first opportunity for astronomers to study a fossil group progenitor. Astronomers estimate that the two “eyes” of the cat will merge in about one billion years, leaving one very large galaxy and dozens of much smaller ones in a combined group. At that point it will have become a fossil group and a more appropriate name may be the “Cyclops” group.

More at: <http://chandra.harvard.edu>

THE BACK PAGE

LINKS, COMMENTS AND OBSERVATIONS

Scientists say the universe has a ‘resolution limit’ that governs how far telescopes can see

Is it possible that those distant galaxies are just too far away to ever be seen clearly? That’s the suggestion of researchers at the National Research Council of Canada, who suggest that the universe has some type of “resolution limit;” that is, a point where images of distant celestial objects will not become any clearer no matter how large the telescope is.

This is bad news for astronomers, who had hoped the 2018 launch of the James Webb Space Telescope would give a clearer view of the heavens. The Hubble Telescope experienced issues with resolution due to man-made mistakes in construction, but the limits on the James Webb telescope and future versions may be scientifically related.

More at: <http://www.digitaltrends.com/>

Unique Scope Searches for Space Junk

NASA’s new remote observatory located on a windswept island in the Mid-Atlantic provides a critical capability for tracking space junk.

An automated telescope is now open for business, prowling the skies for space junk.

The telescope is NASA’s Meter Class Autonomous Telescope, or MCAT. Based on Ascension Island in the southern Atlantic Ocean, MCAT is a 1.3-metre reflector on a double horseshoe mount, designed specifically to track satellites and space debris.

DFM Engineering completed the telescope’s installation last June, after which MCAT joined a network of telescopes around the world operated by the Orbital Debris Program Office at NASA’s Johnson Spaceflight Center, which works to characterize debris populations statistically. (The job of tracking individual objects falls to the Joint Space Operations Center (JSpOC), which was monitoring 22,000 objects in Earth orbit as of 2013.)

More at: <http://www.skyandtelescope.com/>

STEREO-A is back in full communications

NASA’s solar observatory recently emerged from behind the Sun, allowing full monitoring of our star’s activity to resume.

On November 9, 2015, NASA’s Solar and Terrestrial Relations Observatory Ahead, or STEREO-A, once again began transmitting data at its full rate. For the previous year, STEREO-A was transmitting only a weak signal — or occasionally none at all — due to its position almost directly behind the Sun. Subsequently, as of November 17, STEREO resumed its normal science operations, which includes transmission of lower-resolution real-time data — used by scientists to monitor solar events — as well as high-definition, but delayed, images of the Sun’s surface and atmosphere.

More at: <http://www.astronomy.com/>

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

“If you want to find the secrets of the universe, think in terms of energy, frequency and vibration”

Nikola Tesla

“I have never met a man so ignorant that I couldn't learn something from him”

Galileo Galilei

“Computers are incredibly fast, accurate, and stupid. Human beings are incredibly slow, inaccurate, and brilliant. Together they are powerful beyond imagination.”

Albert Einstein