New Zenith





Vol 22 Issue 1 — February 2014

When Printed, this Newsletter costs VAS at least £1

Society News

Wight Stargazing Live 2014

About 70 visitors to the observatory despite the bad weather, many youngsters and lots of interest in the Dark Skies work.

Raffle Winners

- Jacqui M Binoculars
- Gary Peace The Stargazers Handbook
- Mike W The Stargazers Handbook
- Pete W Signed copy of Chris Hadfield's Book

Many thanks to everyone who helped on the night.

A member's request

Watching the cars parking on Friday night, I noticed that our members park rear end into the hedge throwing full beams across the playing field and the area in front of the observatory disturbing anyone observing there. How about we all use dipped headlights and park facing the hedge?

Housekeeping

A few of us have made a good start on tidying the observatory recently. Furniture has been moved, notice boards refreshed and perhaps most importantly, a lot of old junk has been taken to the tip.

There is more to clear under the dome and in the storage area but meantime, could we all please make an extra effort to keep the place tidy by putting things away after they have been used.

If anyone has carpentry skills, and would like to make a combined wall-mounted visitor comments book stand and donations box (to be fixed in the entrance corridor), I'd be very pleased to hear from them.

John Dobson, 1915-2014

"If you own a telescope, it is your duty to share it with people who don't."

See "RIP John Dobson" on page 7

Clear Skies! Brian Curd Observatory Director

VAS Website: www.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

35 Forest Road, Winford, Isle of Wight, PO36 0JY

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

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.

Contents this Month Society News 1 Monthly Meeting Calendar 2014 2 February Sky Map 3 February Night Sky 4 November Meeting Report 5 Rosetta Wakes Up 6 International Astronomical Youth Camp 7 RIP John Dobson 7 CPRE Star Count 2014 8 Gaia mission settles in at L2 8 Lumens, the new Watts 9 The Back Page 10

Monthly Meeting Calendar 2014

Check the website for up to the minute information.
All details correct at time of publication.

Date	Subject	Speaker
24 Jan	Supercomputer Astronomy	Neil Phillipson
28 Feb	History of the Dark Sky	Alan Dowdell
28 Mar	Fascinating Facts About Solar Eclipses	Sheridan Williams BAA
25 April	Cosmic Rays	Prof. Alan Watson
23 May	TBA	Dr Thomas Kitching
27 June	The Radio Sky	Paul Hyde BAA
25 Jul	Exoplanets and How We Find Them	Jakub Bochinski, Chairman OU Astronomy Club
22 Aug	ТВА	
26 Sep	Mysteries of the Solar System	Dr Stuart Eves Astrium
24 Oct	ТВА	
28 Nov	TBA	

Members wanting training on the observatory Meade LX200 should contact:

Barry Bates on 872979

Observatory Visits Booked

Thu 30 Jan	1st Sandown and Lake
17.30-19.00	Sea Scout Group
Tue 4 Feb 17.30-20.00	6th Newport Cubs
Thu 6 Feb	1st Sandown and Lake
17.30-19.00	Sea Scout Group

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

VAS Contacts 2013/14				
President	Barry Bates president@wightastronomy.org			
Chairman	Bryn Davis chairman@wightastronomy.org			
Secretary	Rebecca Mitchelmore secretary@wightastronomy.org			
Treasurer	David Kitching treasurer@wightastronomy.org			
Observatory Director	Brian Curd director@wightastronomy.org			
Programme Organiser	Elaine Spear & Chris Wood progorg@wightastronomy.org			
NZ Editor	Brian Curd editor@wightastronomy.org			
Membership Secretary	Norman Osborn members@wightastronomy.org			
NZ Distribution	Brian Bond distribution@wightastronomy.org			
Others	Mark Williams Nigel Lee			

Island Planetarium @Fort Victoria

The Island's Telescope Professionals

New and Used Meade Cellestron Telescopes New dealers in Skywatcher & Vixen in 2013

Used equipment in stock

TAL 200mm Newtonian Reflector
Skywatcher 180mm Maksutov Cassegrain

Cellestron150mm Reflector (NEW)
Cellestron 120mm Refractor

Skywatcher 120mm Refractor

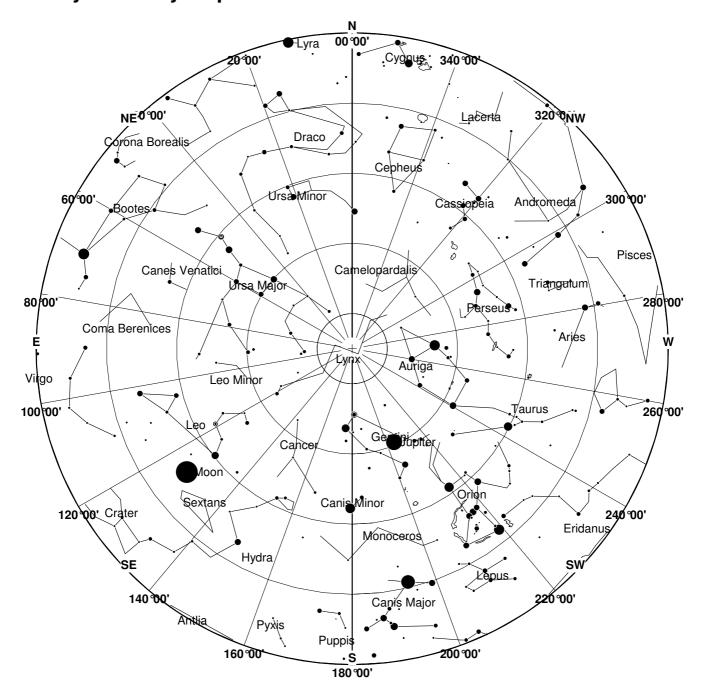
Various starter scopes and accessories

Discounts and deals for VAS members

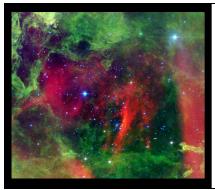
Call Paul England – VAS Member on 761555 - leave your number if I am not there and I'll call you back

also - enquiry @islandastronomy.co.uk

February 2014 Sky Map



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



NGC 2244 (also known as Caldwell 50) is an open cluster in the Rosette Nebula, which is located in the constellation Monoceros. This cluster has several O-type stars, super hot stars that generate large amounts of radiation and stellar wind.

The age of this cluster has been estimated to be less than 5 million years and its two brightest stars are HD 46223 of spectral class O4V, 400,000 times brighter than the Sun, and approximately 50 times more massive, and HD 46150, whose spectral type is O5V, has a luminosity 450,000 time larger than that of our star, and is up to 60 times more massive, but it may actually be a double star.

This article is licensed under the GNU Free Documentation License.

It uses material from the Wikipedia article "NGC 2244"

February 2014 Night Sky

Moon Phases

New	1 st Qtr	Full	Last Qtr
Jan 30 Mar 1	6th	14th	22nd

Planets

Mercury

For the last week of Jan and first week of Feb, Mercury makes a fleeting visit to the evening sky. It is at its brightest in Jan but is very close to the horizon at sunset as it moves higher in the sky it fades rapidly as it moves away from us. Look low down in the south western sky during the hour after sunset, your search will be aided by using binoculars, Mercury can be quite bright but difficult to spot against the still bright sky. On the 1st it is a little over 7° below the crescent moon.

Venus

For most of this year Venus appears as the Morning Star. It is not a very good apparition; the planet never gets very far above the horizon before the sky starts to brighten. This month at about 6:30 Venus can be found between 1 and 2 hand's widths above the horizon in the south east, being so bright if the sky is clear it will be very easy to spot even as the sky brightens. See how long you can keep sight of it as the Sun rises.

Mars

Mars is steadily brightening as we approach this April's opposition. It is still only suitable for observation for those who are willing and able to be up in early hours of the morning. It rises before midnight but is not well positioned until about 2 or 3am. This will rapidly improve during March. It can be found close to the bright star Spica in Virgo. After following the arc of the tail of the great bear to Arcturus while speeding on to Spica, before arriving you will encounter the much brighter and much redder Mars. Take the opportunity that the next few months will give to observe the Red Planet It will be over two years before another close approach occurs and another six before one that is as good as this.

Jupiter

Passing through the constellation of Gemini, Jupiter is as high as it gets in our skies and so is ideally placed for observation. It can be seen from dusk until just before dawn above and to the left of the well know winter constellation of Orion. It draws attention to its self by being noticeably brighter than any star.

Saturn

Saturn has moved from the constellation of Virgo into Libra below to the exotically named star Zuben Eschamali;

the scorpions' northern claw. If we could see the whole of Scorpious from our latitude we would be able to see that the stars of Libra form the claws of the scorpion, and from their Arabic names it is clear that this was once the case. At this part of its orbit Saturn is quite low in our skies so the amount of viewing time when it is clear of the haze around the horizon is rather restricted. Around mid month look to the south east from about 4am onwards. It is much brighter than any star in that region of the sky so should be easily seen.

Uranus

Uranus is traversing the constellation of Pisces and is still visible in binoculars at the start of the month, but as the Sun is now setting later every day and Uranus getting lower it gets more challenging every day.

Neptune

Neptune is now lost in the glare of the Sun until it becomes a morning object in the second half of the year.

Deep Sky

NGC2244 RA 6h 32m Dec 4° 57' mag 4

This is the star cluster surrounded by the Rosette nebula that on the clearest nights is visible to the naked eye as a bright spot in the winter Milky Way. Binoculars show the brightest members of the cluster forming a rectangular shape. The rosette nebula is a large object, about twice the diameter of the full moon, so is best observed visually using a rich field telescope; a nebula filter will help to increase the contrast with the background sky.

NGC2169 RA 6h 9m Dec 13°58' mag 5.9

This cluster is easily visible in binoculars as a small parallelogram. In creasing the magnification to about 100 with a small telescope will reveal that the stars spell out this cluster's popular name, the '37' cluster. The 7 is quite clear if you can see down to magnitude 11, the 3 is less obvious but is there with a little imagination.

M78 RA 5h 47m Dec 0°3'

A small bright reflection nebula that is a part of the great Orion nebula M42 located in the sword. This nebula can be seen in binoculars but is rather small so is best viewed through a telescope.

M50 Open Cluster RA 7h 3m Dec -8°24' mag 7

This cluster contains about 200 stars spread out over an area of sky approximately the same as that of the full moon. To the visual observer the edge is not clearly defined, further from the centre the star density gradually reduces and the cluster just fades to the background. An easy binocular object.

Peter Burgess

November Meeting Report

The VAS meeting in November was a little different in format as we hadn't managed to get a specialist speaker. We did though use it as an opportunity to update members with short talks from Chris Wood, Brian Curd and Bryn Davis as well as the normal roundup from Peter Burgess.

Dark Skies - Chris Wood

Work on the Dark Sky project is continuing well and both Chris Wood and Brian Curd are having regular meetings with the IW AONB.

AONB have recently agreed to fund the installation of fixed Sky Quality Meters (SQM) across the IW and we are currently asking contacts if we can use their locations.

Future Projects - Brian Curd

Radio Astronomy

The idea of starting some radio astronomy activities at the observatory has proved interesting to some members. For the project to progress a considerable amount of research and experimentation is required. Any member who would like to be involved should contact a committee member. It is hoped that a short presentation explaining the project in more detail will be made at a monthly meeting quite soon.

Astro-Photography

Several members use the observatory for astrophotography at the moment but the equipment we have is quite limited and decisions need to made on what is needed to improve the situation. Again those interested in progressing this should contact a member of the committee with a view to forming a working group.

Measuring the Moon - Bryn Davis

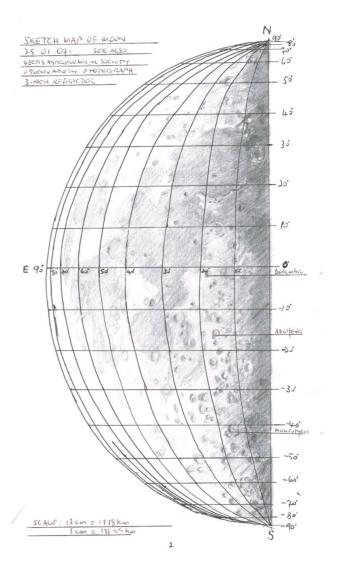
Bryn gave an excellent short talk on one of his earliest observational exercises - How to measure the height of mountains on the moon.

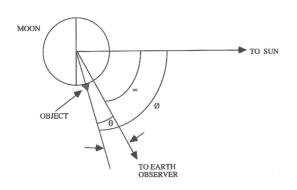
He outlined a process involving observation, sketching, applying scale factors and taking measurements. Using the data obtained and some trigonometry some really quite accurate measurements of height were calculated.

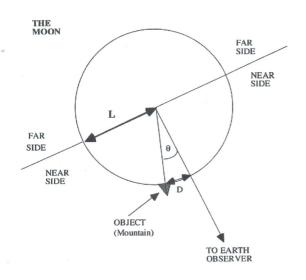
The process:

- Choose a half moon Day 6/7
- Study carefully through your telescope and select three lunar mountains clearly casting a shadow. The nearer the equator and the terminator the better

- Make a scale drawing of the half moon from your own observations showing the location of your chosen features
- Make a drawing of the first of the features in this case craters
- Determine the radius of the moon (from a text book) - L
- Calculate the scale of your drawing of the half moon
- Calculate the diameter of your chosen crater with respect to the radius of the half moon
- Calculate the scale of your drawing of the crater and the distance of the mountains from the centre line - D
- Calculate the angle between the mountains and the observer (θ) using the formula θ = arcsin D/L
- Obtain the angle between the sun, moon and the earth (observer) (α) using tables
- Add θ and α together to find angle ϕ being the angle of illumination
- Calculate the height of the mountains (H) using the length of the shadow (s) and the formula
- $H = s/(tan\phi)(cos\theta)$







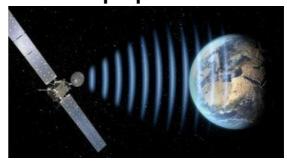


The Crater Maurolycus Scale 3cm = 100km

The above diagrams are just a few details from Bryn's presentation.

He concluded by hoping this inspires you to develop your observational skills, not necessarily doing this kind of calculation but to look for and record more detail of what you see whether by detailed notes, drawings, and or photographs

Rosetta: 'Sleeping Beauty' Wakes Up from Deep Space Hibernation



Artist's impression of Rosetta's signal being received on Earth after 31 months in silent, deep space hibernation.
(Credit: ESA-C.Carreau)

Jan. 20, 2014 — It was a fairy-tale ending to a tense chapter in the story of the Rosetta space mission this evening as ESA heard from its distant spacecraft for the first time in 31 months.

Rosetta is chasing down Comet 67P/Churyumov-Gerasimenko, where it will become the first space mission to rendezvous with a comet, the first to attempt a landing on a comet's surface, and the first to follow a comet as it swings around the Sun.

Since its launch in 2004, Rosetta has made three flybys of Earth and one of Mars to help it on course to its rendezvous with 67P/Churyumov-Gerasimenko, encountering asteroids Steins and Lutetia along the way.

Operating on solar energy alone, Rosetta was placed into a deep space slumber in June 2011 as it cruised out to a distance of nearly 800 million km from the warmth of the Sun, beyond the orbit of Jupiter.

Now, as Rosetta's orbit has brought it back to within 'only' 673 million km from the Sun, there is enough solar energy to power the spacecraft fully again.

Thus today, still about 9 million km from the comet, Rosetta's pre-programmed internal 'alarm clock' woke up the spacecraft. After warming up its key navigation instruments, coming out of a stabilising spin, and aiming its main radio antenna at Earth, Rosetta sent a signal to let mission operators know it had survived the most distant part of its journey.

The signal was received by both NASA's Goldstone and Canberra ground stations at 18:18 GMT/ 19:18 CET, during the first window of opportunity the spacecraft had to communicate with Earth. It was immediately confirmed in ESA's space operations centre in Darmstadt and the successful wake-up announced via the @ESA_Rosetta twitter account, which tweeted: "Hello, World!"

More at: ScienceDaily.com

International Astronomical Youth Camp 2014 (July 20th - Aug 9th)

Call for applications

Imagine spending 3 weeks of your summer in beautiful countryside scenery working with other students from all over the world on an astronomical project of your choice. The International Astronomical Youth Camp (IAYC) is a three-week long summer camp aiming to promote knowledge on astronomy and related sciences in a unique international atmosphere. Each year it takes place in a different European location, this year near the small town of Weyer, situated close to the beautiful "Kalkalpen National Park" in Upper Austria.

The IAYC is different from most astronomical camps for two reasons: the international character and the fact that you carry out your own small research project. You will not just accept facts, but you will discover them yourself or working together with other people. The IAYC is therefore not like staying in a hotel and following a summer school or an astronomy course. We are proud that award winning projects were carried out during the camp and many of the IAYC alumni chose science as their profession and work in leading astronomical centres.

As a participant you will explore astronomy related projects in one of the 7 working groups - together with other young people. These projects are done in a working group of your choice and depend on your own interest. The working groups themselves will be led by young scientists and focus on a specific field in astronomy. The IAYC2014 will offer a wide range of working groups and topics: practical astronomy and photography, theoretical astronomy and physics, observational physics, planets and meteorology, computation and programming, solar physics, history of astronomy... There will be something for everyone, from the complete beginner to the ambitious student. This year the working groups are:

- A MESS Astronomy: Making Equipment to Stop Stress
- APM Atmosphere, Planets, and Meteorology
- HAT History and Astronomy through Time
- PICs Photographers of the Incredible Cosmos
- SUNSCREEN SUN, SCience and REsearching ENigmas
- TRAP Telescopes, Remote Astronomy and Photometry
- ZAPPA Zappa, Astronomy, Physics, and Programming über Alice

As well as the astronomical programme, there are many non-astronomical activities such as group games, sporting events, singing evenings, hiking tours and an excursion. Since it is an international camp, the camp language is English. Anyone from 16 to 24 years old and able to communicate in English may participate in the IAYC 2014. The fee for accommodation, full board and the whole programme, including the excursion, will be 690 EUR. This applies for timely applications sent before the 11th April 2014. Applications sent after this date will be considered only if places are still available, and the participation fee will then be 750 EUR. For people interested in participating in the camp that are not able to pay the camp fee themselves, a limited number of grants is available.

For more details, application form, outlines of projects and pictures from previous camps please check out **www.iayc.org** or write to our info service: **info@iayc.org**

RIP John Dobson



John Dobson in 2002 Attribution: AlanJWylie at en.wikipedia

John Lowry Dobson (September 14, 1915 – January 15, 2014) was a popularizer of amateur astronomy.

He is most notable for being the promoter of a design for a large, portable, low-cost Newtonian reflector telescope that bears his name, the Dobsonian telescope. The design is considered revolutionary since it allowed amateur astronomers to build fairly large telescopes. He was less known for his efforts to promote awareness of astronomy (and his unorthodox views of cosmology) through public lectures including his performances of "sidewalk astronomy".

John Dobson was also the co-founder of the amateur astronomical group, the San Francisco Sidewalk Astronomers.

John died at Burbank, California on January 15, 2014. He was 98.

The 18" telescope at the observatory is signed by John.

CPRE Star Count 2014

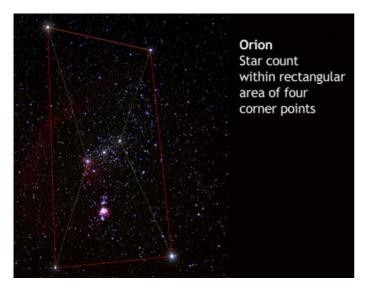


Photo: © Pete Lawrence (www.digitalsky.org.uk)

CPRE Star Count 2014 will take place Wednesday 26 February - Saturday 8 March and will compliment National Astronomy Week.

The Star Count has been an annual event since 2011 and is a great way to play a part in raising awareness of light pollution.

National Astronomy Week which runs Sat 1st March - Saturday 8th March 2014, happens every few years or so to promote public awareness of astronomy by celebrating remarkable astronomical events. This year National Astronomy Week 2014 celebrates Jupiter which will reach its highest point in the sky for many years in early March. Throughout the week, astronomical organisations and societies all over the UK will be holding a host of special observing events open to the public.

The Star Count is very easy for people to do. Simply count the number of stars that can be seen within the Orion constellation and then enter the information onto an electronic form on CPRE website.

Full details on the web page which will be ready at the start of February: www.cpre.org.uk/starcount.

Chris Wood

Weather Report!

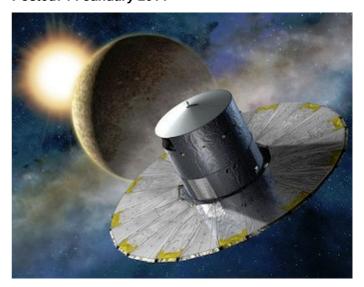
Jan 2014 is one of the wettest months for a long time. If you want to keep an eye the Island's weather take a look at:

http://www.isleofwightweather.info/wx.html

Chris Wood's station at Bleakdown.

European Space Agency's Gaia mission settles in at L2

BY STEPHEN CLARK - ASTRONOMY NOW Posted: 14 January 2014



The star-surveying Gaia observatory completed a tricky manoeuvre Tuesday to park itself nearly a million miles from Earth, arriving at a remote operating post to begin scanning the galaxy to plot the locations and motions of a billion stars.

Fitted with a pair of telescopes and the largest camera ever flown in space, Gaia launched Dec. 19 aboard a Soyuz rocket, departing on a nearly three-week cruise to the L2 Lagrange point.

Gravity from the Earth and sun helps suspend Gaia in a relatively stable looping orbit around a fixed position about 1.5 million kilometers, or 932,000 miles, from Earth.

Gaia fired its rocket thrusters a day after launch in December to put the probe on course to arrive at L2. Ground controllers devised a two-part manoeuvre to place Gaia in the correct orbit around the Lagrange point, beginning with a burn Jan. 7 and concluding with a smaller rocket firing Tuesday.

"Gaia is in its operational Lissajous orbit around L2," officials wrote Tuesday on the European mission's official Twitter account. "The thruster burn today was perfect."

Gaia will complete a loop around the L2 point once every 180 days, according to the European Space Agency. Gaia's trajectory is not stable, so engineers plan monthly manoeuvres to maintain the spacecraft's so-called Lissajous orbit.

More at: Astronomynow.com

LUMENS – the new Watts?

The other night one of the sixty watt light bulbs in one of my living room table lamps died. Replacing it seemed like one of the simplest DIY jobs around the house. However, I didn't have a replacement at home and it seems deciding to get a replacement light bulb these days can be a stressful thing.

In the good old days, we all used the same kind of bulbs and fittings. We didn't necessarily know it at the time, but we all used not just "bulbs" because these are technically known as "incandescent bulbs" as their light comes from a little glowing wire filament inside. Also, the usual base of these incandescent bulbs is technically know as a "bayonet connection" or "BC" or just "B" for short.

Fine, straightforward, got all that. So, off I go to nearest lighting retailer to find a replacement for our sixty watt (60W) light bulb, sorry, incandescent bulb. Standing in front of the lighting shelves at a large DIY store, for example, I find I am faced with an astonishingly bewildering choice and variety of bulbs and fittings. It seems I really needed to have a PhD in decision logic before coming here — I am bamboozled by all the alternatives...halogen, warm white, LED, SES, fluorescent, CFL, energy saving.. the options seem endless.

OK, so some form of energy saving bulb would seem better as this could save me some money – useful. But it seems that a 60W energy saving bulb can be much brighter than a 60W incandescent bulb, so how can I compare and find the best equivalent? Well, it seems that LUMENS are the answer. LUMENS is how bright something is whereas watts is really just how much energy something uses.

So we need to concentrate on LUMENS these days. The pictures below say it all – now I can easily find an equivalent energy saving bulb for any of the common incandescent bulbs in my house by using LUMENS. (Oh, and by the way, you should also make sure your replacement bulb has a colour temperature of 2700K on the side of the box!).

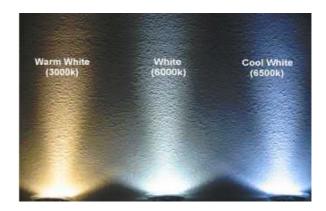
Question – how many Spaniards does it take to change a light bulb? (answer = just Juan!)

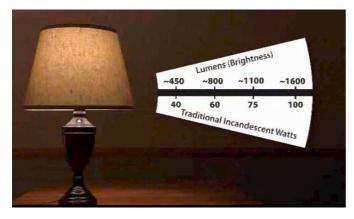
See also:

http://www.darkwightskies.com

http://www.which.co.uk/energy/energy-saving-products/reviews-ns/light-bulbs/light-bulb-faqs/

Incandescent (Watts)	Lumens	LED or CFL (Watts)
25	250	4 to 9
40	450	9 to 13
60	800	13 to 15
75	1110	18 to 25
100	1600	23 to 30
125	2000	22 to 40
150	2600	40 to 45







((c) Chris Wood 31dec13, see www.darkwightskies.com - images: americanlightingassoc.com, ledlight.com, AVforums)



Pandora's Magnifying Glass: First Image from Hubble's Frontier Fields



Hubble Frontier Fields view of Abell 2744. (Credit: Image courtesy of ESA/ Hubble Information Centre)

Jan. 7, 2014 — This image of Abell 2744 is the first to come from Hubble's Frontier Fields observing programme, which is using the magnifying power of enormous galaxy clusters to peer deep into the distant Universe. Abell 2744, nicknamed Pandora's Cluster, is thought to have a very violent history, having formed from a cosmic pile-up of multiple galaxy clusters.

Astronomers previously observed Abell 2744 with the NASA/ESA Hubble Space Telescope back in 2011, exploring the cluster's history. They found that at least four galaxy clusters had crashed into one another to form Abell 2744, causing some weird and wonderful effects. This mix of cosmic phenomena, some of which had never been seen before, led to the nickname of Pandora's Cluster (heic1111).

A mix of hazy elliptical galaxies and colourful spirals can be seen clumping together in the centre of this image. The effects of the cluster's gravity can be seen in the blue arcs and distorted shapes that are scattered across the frame, including galaxies that seem to be bleeding into the surrounding space. The arcs are actually the distorted images of galaxies far in the distance.

Read More at: Science Daily

A rare crash at the Milky Way's core

Astronomers have a front-row seat to observe a mysterious gas cloud spiralling toward our galaxy's supermassive black hole.

University of Michigan astronomers could be the first to witness a rare collision expected to happen at the center of our galaxy by spring.

With NASA's orbiting Swift telescope, the University of Michigan team is taking daily images of a mysterious gas cloud about three times the mass of Earth that's spiralling toward the supermassive black hole at the Milky Way's core. From our vantage point, the core lies more than 25,000 light-years away in the southern summer sky near the constellations Sagittarius and Scorpius.

In 2011, German astronomers discovered a gas cloud called G2. They expected it to hit the black hole called Sagittarius A* (pronounced "Sagittarius Astar") late last year. That didn't happen, but the cloud continues to drift closer. Astronomers now predict that the impact will occur in the next few months.

Astronomers have never seen anything like this, much less with a front-row seat.

"Everyone wants to see the event happening because it's so rare," said Nathalie Degenaar from the Department of Astronomy at the College of Literature, Science and the Arts.

Read More at: Astronomy.com

Observatory

For your own safety, when visiting the VAS observatory, 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 or pictures related to all aspects of astronomy. Contributions to the Editor please at the email or postal address on the front page.

"We, all of us, are what happens when a primordial mixture of hydrogen and helium evolves for so long that it begins to ask where it came from."

Jill Tarter

"The scientific theory I like best is that the rings of Saturn are composed entirely of lost airline luggage."

Mark Russell

"Anything that happens enough times to irritate you will happen at least once more."

Tom Parkin's Continuum

"What hasn't been tested doesn't work."

Trapnell's Law