



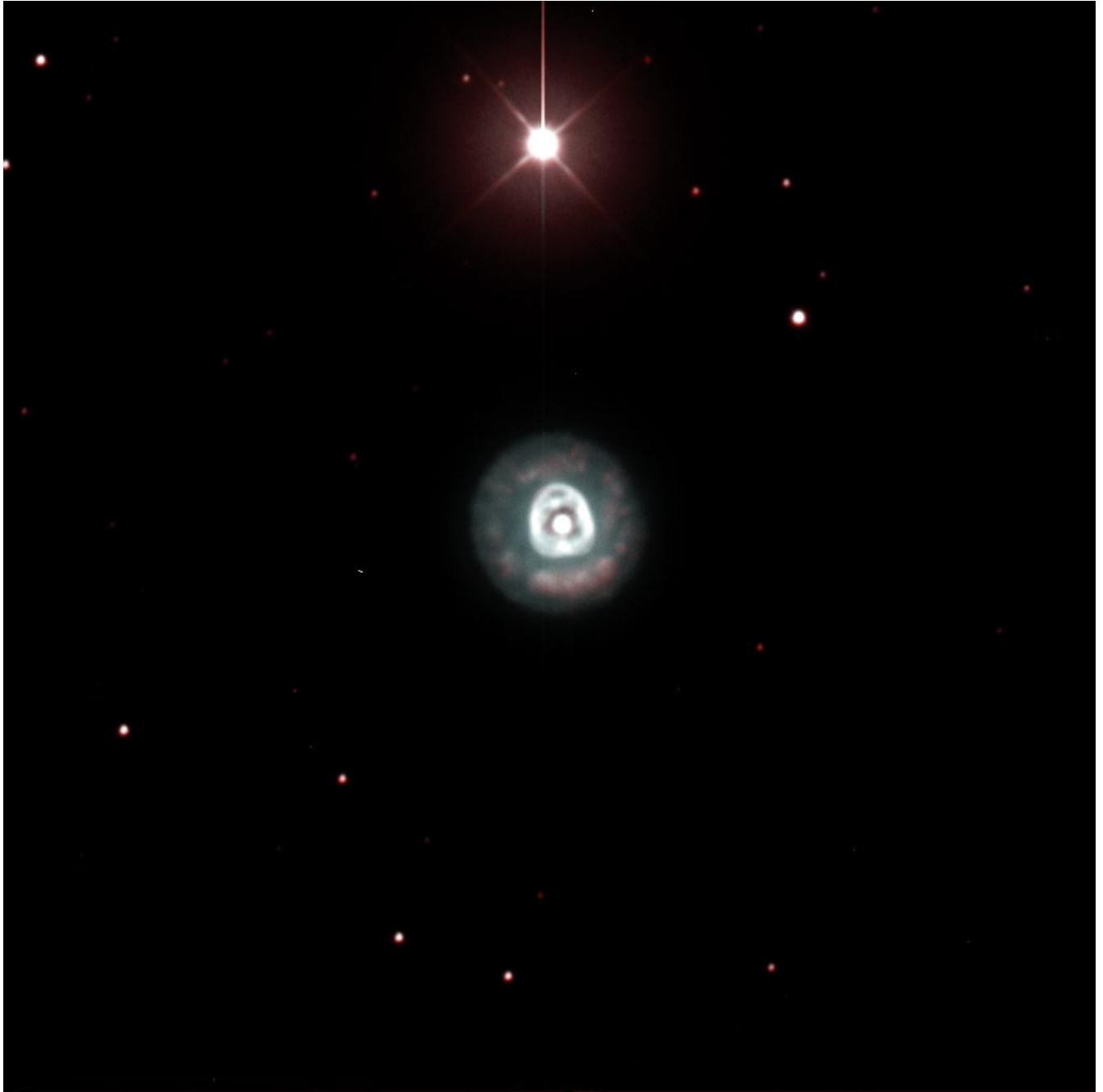
# WAS NEWS

Monthly Newsletter of the Worthing Astronomical Society  
www.was.org.uk



Number 212

October 2007



## Eskimo Nebula

Graham Boots and Keith Peters

**F**aulkes Telescope Project - NGC 6384 25 seconds RGB 8<sup>th</sup> January 2006

# ALMANAC

All times U.T. B.S.T. add one hour

## October/November

### LUNAR

October	Date	Time	Rise	Set
Last Quarter	3 <sup>rd</sup>	10.06	21.48	14.50
New moon	11 <sup>th</sup>	05.01	06.39	16.54
Apogee	13 <sup>th</sup>	10.04	406,508km	
First Quarter	19 <sup>th</sup>	08.33	14.31	22.25
Full Moon	26 <sup>th</sup>	04.52	16.21	07.14
Perigee	26 <sup>th</sup>	11.56	356,751km	
November				
Last Quarter	1 <sup>st</sup>	21.18	22.18	13.50
Apogee	9 <sup>th</sup>	12.49	406,667km	
New moon	9 <sup>th</sup>	23.03	06.53	15.30
First Quarter	17 <sup>th</sup>	22.33	13.13	22.51
Perigee	24 <sup>th</sup>	00.19	357,199km	
Full Moon	24 <sup>th</sup>	14.30	15.15	07.46

### EARTH

October	Sunrise	Sunset
3 <sup>rd</sup>	06.03	17.35
11 <sup>th</sup>	06.17	17.17
19 <sup>th</sup>	06.30	17.00
26 <sup>th</sup>	06.42	16.45
November		
1 <sup>st</sup>	06.53	16.34
9 <sup>th</sup>	07.07	16.20
17 <sup>th</sup>	07.21	16.09
24 <sup>th</sup>	07.33	16.01

### PLANETS

(As at November 1st)

	Constellation	Rises	Sets	Mag.
<b>Mercury</b>	Virgo	05.25	16.14	+0.6
Best morning apparition of the year				
<b>Venus</b>	Leo	02.31	15.13	-4.4
Morning object in the south-east				
<b>Mars</b>	Gemini	19.51	12.26	-0.6
Visible from evening onwards				
<b>Jupiter</b>	Ophiuchus	10.36	18.35	-1.9
Visible in the south-west				
<b>Saturn</b>	Leo	01.01	14.51	+0.7
Morning object in the south-east				
<b>Uranus</b>	Aquarius	14.55	01.59	+5.9
Evening object in the south				
<b>Neptune</b>	Capricornus	14.02	23.30	+7.9
Evening object in the south				
<b>Pluto</b>	Sagittarius	10.32	19.42	+14.0
Unsuitably placed				

### PHENOMENA

Day	Hour	October
14 <sup>th</sup>	04	Saturn 3°N. of Venus
16 <sup>th</sup>	05	Jupiter 5°N. of moon
24 <sup>th</sup>	00	Mercury in inferior conjunction
30 <sup>th</sup>	19	Mars 3°S. of moon
31 <sup>st</sup>	20	Neptune at stationary point

### November

1 <sup>st</sup>	23	Mercury at stationary point
4 <sup>th</sup>	02	Saturn 2°N. of moon
5 <sup>th</sup>	17	Venus 3°N. of moon
8 <sup>th</sup>	05	Mercury 6° N. of moon
8 <sup>th</sup>	20	Mercury at greatest elongation W. 19°
12 <sup>th</sup>	21	Jupiter 5°N. of moon
15 <sup>th</sup>	08	Mars at stationary point
24 <sup>th</sup>	10	Uranus at stationary point
27 <sup>th</sup>	06	Mars 2°S. of moon

### Minima of Algol

October	1 <sup>st</sup>	21.06	16 <sup>th</sup>	05.12	19 <sup>th</sup>	02.00	21 <sup>st</sup>	22.48	24 <sup>th</sup>	19.36
November			5 <sup>th</sup>	06.54	8 <sup>th</sup>	03.42	11 <sup>th</sup>	00.30	13 <sup>th</sup>	21.18
			16 <sup>th</sup>	18.06	25 <sup>th</sup>	08.36	28 <sup>th</sup>	05.24		

Times as at NEW W.A.S. Observatory site

I've noticed a difference of up to ten seconds or so on some timings from the old site.

Date	U.T.	S.A.O. No	Mag	Phase
<b>October</b>	<b>h. m. s.</b>			
18 <sup>th</sup>	19.38.31	188048	8.6	Diss
22 <sup>nd</sup>	18.36.54	146362	3.7	Diss
22 <sup>nd</sup>	19.55.11	146382	6.3	Diss
27 <sup>th</sup>	23.33.39	76119	5.4	Reapp
27 <sup>th</sup>	23.54.23	76140	4.4	Reapp
28 <sup>th</sup>	00.02.48	76155	4.0	Reapp
28 <sup>th</sup>	00.15.57	76159	5.9	Reapp
29 <sup>th</sup>	21.52.01	77675	4.6	Reapp
29 <sup>th</sup>	22.40.44	77724	7.3	Reapp
30 <sup>th</sup>	22.38.57	78929	6.1	Reapp
30 <sup>th</sup>	22.40.45	78947	6.3	Reapp
30 <sup>th</sup>	23.42.43	78979	8.2	Reapp
31 <sup>st</sup>	23.21.47	79847	6.9	Reapp
<b>November</b>				
17 <sup>th</sup>	18.31.01	164589	8.2	Diss
18 <sup>th</sup>	19.34.21	146161	6.8	Diss
19 <sup>th</sup>	17.09.53	146645	6.6	Diss
19 <sup>th</sup>	19.11.17	146680	8.3	Diss
19 <sup>th</sup>	22.00.54	146712	7.6	Diss
19 <sup>th</sup>	23.30.52	146733	6.6	Diss
20 <sup>th</sup>	20.53.19	109094	7.0	Diss

The list above is a selection of the more easily observed evening events, (about 16 % of the list available,) there are more in the wee small hours for the insomniacs amongst us.

Dave Wells

## *Editors Note*

Well, Sixty years in space eh? Who'd have thought....

Back in the early 1970's (when dreams of Interplanetary space exploration kept this young editors brain buzzing into the wee hours and fevered calculation revealed that I **would** be the right age for a manned trip to Jupiter & Saturn in the year 2001) I was convinced when I grew up trips to the moon would be commonplace. What did I get? Trips to France on the Channel Tunnel.

But we can still dream! Let your inquisitive minds soar with this months feature packed newsletter.

Rob

### *Dates for your Diary*

#### Regular Observatory Evenings

Graham Boots

Member, Trevor Little has kindly agreed to hold regular observing evenings at our observatory at Windlesham House School Washington. Of course these will only take place should the sky be clear. Please check with Trevor if in doubt about the weather. Trevor can be contacted by telephone on 01273 242570 and Mobile Telephone No. 07814575464 and email: [southwickrifleclub@ntlworld.com](mailto:southwickrifleclub@ntlworld.com)

These observing evenings will be on the last Friday of each month as follows:

Friday 26th October

Friday 30th November

Friday 28th December

They will be held from 7.00 p.m. to 11.00 p.m.

There are plenty of car parking spaces on site. There are toilet facilities near to the site. Please bring a yellow and a red torch. Please wear warm clothing.

There are no refreshments on site so if needed please bring your own. Please be sure to have your little blue observatory card with you when at the observatory site. These can be obtained from Graham Boots Tel., 01903 505346

## SAGAS Meeting

Graham Boots

SAGAS Meeting at 2.00 pm on the 20th October 2007 at South Downs Planetarium Chichester. Many South of England astronomical societies will be represented. This particular meeting will be chaired by Croydon AS. The speaker and title have yet to be announced.

### *Reports*

#### Solar Section Report - September 2007

Brian Halls

September saw a month where sunspot activity was almost non existent.

Sunspots visible at the close of August were still visible for the first few days of the month and then disappeared.

It was not until the end of September did sunspot activity once more make a show - active region 0971 at N03° L=113° appeared on the 28th.

What was interesting about this group (apart from it being the first reasonable northern hemisphere sunspot for sometime) was the way it drifted from the northern hemisphere to the southern, ending at S01°, just a few days later before it decayed.

The Sun was once more devoid of sunspots at the start of October.

Reports were received from Graham Boots and the Director.

WAS R = 2.54 (R<sub>i</sub> = 2.4)

MDF = 0.21

From October 1st, the Space Environment Centre (one of the sources for solar reports in WASNews) has been renamed the Space Weather Prediction Centre, to reflect its operational nature.

[solar\\_section@was.org.uk](mailto:solar_section@was.org.uk)

## Cosmology and WMAP

Professor Malcolm MacCullum FRAS

Dept of Mathematics, Queen Mary University of London

Results from the Wilkinson Microwave Anisotropy Probe (WMAP), along with other observations, are allowing wide ranging cosmological questions to be answered, or at least to have the answers known more closely.

WMAP was launched to measure the cosmic microwave background radiation (CBR) to a resolution and precision that far outstrips the measurements from COBE. The CBR is the oldest observed radiation and contains within it clues to the nature of the Universe, the cosmology, that is difficult to deduce by other means.

Cosmic background, for example, gives the abundances of Hydrogen, Helium and Lithium, the lightest elements. This cannot be explained by stars alone. It also describes an isotropic universe, looking the same in all directions. The universe is obviously not isotropic in many observations: Bright galaxies are distributed with 15% variations with direction. With radio observations 5%, diffuse x-rays are down to 2%, while CBR is isotropic to 0.03%! Close enough.

So, what should cosmology explain?

1. Universe is lumpy. That is, the universe has a structure that includes deep space, galaxies and stars - certainly not smooth.
2. Cosmological expansion, following the famous Hubble law of 1929.(also local Virgo motion)
3. Evolution of the universe over time.
4. 4 The hot dense phase immediately after the Big Bang.
5. 5 Isotropy - CBR looking the same in every direction.
6. 6 Homogeneity - the universe looking the same everywhere we look.
7. 7 Physical parameters such as baryon density, and why the universe is fit for life (anthropic principle).

The Standard Model as it currently stands describes the following:

1. The universe as isotropic,
2. As spatially homogeneous (Robertson Walker space)
3. General relativity is well tested, esp. since 1970s, and explains the Universe's evolution quite well. General Relativity is verified regularly, include in lunar ranging, double pulsar data and by use in GPS (60m corrections by GR, kms by Special Relativity).
4. No universal pressure. The Standard model also fits Hubble expansion, the CBR, element abundances,
5. Also isotropies, the three types of neutrino and it allows Hawking Penrose singularities for black holes. But NOT lumpiness! Also, universe expansion graphs show a positive cosmological constant with flat universe, which does not match this model, but does possibly fit with Einstein's Cosmological Constant (his "biggest mistake").

The additions since 1980 as the theory and observations have developed:

6. The Cosmological is 1 in the usual units, and this needs cosmological dark matter (CDM).

This is supported by galactic rotation curves and galaxy cluster dynamics, which demonstrate the effects of more gravity than can be accounted for by observable gas, dust and stars (Baryonic matter).

7. Inflation developed originally by Alan Guth: Some 'field' (the so-called 'inflation' field) give an accelerating force to the universe, while quantum fluctuations in the very earliest (and tiny) universe evolve giving energy to normal matter and the dark matter, with perturbations or small initial differences in temperature or density.

This all leads, through gravitational attraction, to stars and galaxies and produces a geometrically flat universe. Perturbations act like sound waves, in phase and oscillating. We can calculate the wavelength distribution at last scattering, (when the CBR was emitted) and this predicts the precise variations in the WMAP data!

The data is also a test for curvature (or flatness), while the amplitude of the CBR variations depends on nature matter content, allowing astrophysicists to measure both these vital quantities for the early universe.

In a flat universe parallel beams of light will always remain parallel, but in a slightly curved universe these parallel beams will cross or separate without actually bending. Negative curvature means low density, positive curvature means high density.

The curvature can be measured by looking at statistical reductions of the WMAP and other data (eg from Boomerang, an Antarctic balloon experiment) which show the size of the temperature variations at different angular scales (i.e. the differences between parts of the sky 2 degrees apart are on average different the differences for parts of the sky 1 degree apart). The Standard Model has  $\omega = 1$  (meaning a flat universe with just the critical density of matter), which affects the peak angular scales on the graph plot.

There are still problems with the inflationary paradigm of Guth: what is the inflation field? How does it interact with matter?

8. Non linear clustering of galaxies by N-body computer simulations. The predicted matter distribution does not quite match observations.

The CBR looks hotter in the direction of Earth's motion and cooler in the other direction (dipole component), but Smoot showed that CBR has 1 in 1000 variations from the isotropic, dipole component (Smoot 1977, won the Nobel Prize for this, but others were perhaps better placed.) Later, the COBE satellite showed smaller scale variations, but only after much subtraction of spurious noisy signals (the noise was close to signal size - so it was a lengthy and difficult task to clean up the data). The variations were of the order of 1 in 100 000.

Boomerang data was shown. This balloon experiment followed circumpolar winds which took 14 days to go all round Antarctica! In 2001 the spectrum of fluctuations matched predictions, but there were large uncertainties in the data.

WMAP gave much better resolution and precision, even in the 2003 '1 year map'. The 3 year map, with more data, was much better. (The Temperature/angular scale graph shown has very small error bars.) The calculated flatness, the matter fraction and the initial input from inflation matches the ratio of dark matter to the cosmological constant. A great result.

Supernova surveys, with redshifts up to 1.5, fit a universe with a cosmological constant bigger than 1, and this is consistent with the presence of a new factor, Dark Energy (or k-essence or quintessence). Dark energy has high pressure, while dark matter has very low pressure, and the current 'Lambda CDM model' works well up to redshifts of  $z = 6+$ .

The 2dF (2 degree field survey) and SDSS (Sloan Survey) have been used to draw N-z plots which show the distribution of galaxies over vast swathes of the visible universe. The CfA survey was first, (Margaret Geller et al.) using a sample of 1061 galaxies in 1986. The 2dF data has 220 000, while SDSS has 100 mill objects! This all gives very high quality data for verifying different models of the universe.

Brief comments were given for Baryon acoustic oscillations in the early universe, which leave large scale features at around 100 Mpc scales. Strong gravitational lensing (eg the Einstein cross), gives measurement of intervening mass distributions, eg Abell 2218, with arcs as weak lensing effects, so researchers can reconstruct mass density distribution in the lensing cluster, statistically speaking. This allows fine testing of cosmological models which predict the dynamics of such features.

The Hubble Telescope Cosmos survey, (5 000 000 objects, with redshifts of less than 3, Massey et al, Nature 2007) shows the large scale structure of the universe, while recent computer simulations based on models show clumps, filaments and voids as per observations.

Conclusions today are that baryonic (ordinary) matter is just 4.4% of the constitution of the universe with 70% as Dark Energy, while the different models and data restrict  $\omega$  (the flatness and density figure) to 1. There are alternative models, but none are very convincing, so the Standard model is the best buy. But history says beware of dogmas!

Answering questions at the end of the talk, Professor MacCullum described future developments in the Planck probe, due for launch in 2010/11, for measuring the polarisation of CMB with temperature, a feature that is predicted but not observed with fidelity. The Large Hadron Collider, due to open in 2008, may constrain quantum gravity theories, with indirect influence on cosmology. He didn't like multiple universes as a solution, as it was a very wasteful theory, which needed infinity of universes just to explain our one.

## *Notices*

### WAS Competition

Ed Sampson

#### **S**ubject

The competition is on an Image/ Photography based theme. The entrants are to capture or photograph anything in the sky with an astronomical theme.

#### **Categories**

There are 2 categories

##### **1 Camera and SLRs**

This will include film and digital SLRs compact digital and film cameras

And just about any sort of manual use camera.

##### **2 CCD and Webcams**

The second category is for Deep space CCDs or webcams.

#### **The Prize**

There are 2 first prizes one for each category.

You will each get your photo on the front page of the WAS news

You will each receive a £10 WH Smith prize

You will also receive an additional prize based on your choice of

Photography.

#### **The Rules**

1 The competition is **not** open to committee members.

2 The Photo/Image must be on an astronomical theme and taken during the competition time.

3 Details must be provided of the equipment used to capture your subject.

4 The winners will be announced on the January social and the covers will follow.

5 Only 1 image per person

6 A minimum of 5 entrants is required for the competition to go ahead.

#### **Images**

You can submit your images in any form

Photo, Print out, Slide, Digital image or even a Sketch

Submit all images to Ed Sampson or e-mail them to [star.man1@ntlworld.com](mailto:star.man1@ntlworld.com)

The committee will decide on the best entrants

The details will also be printed in the next few additions of WAS news

## Astronomical Publications

Graham Boots

The society annually subscribes to the following four organizations and receives their publications which are circulated free to members. Please let me know if you would like to go on any of the circulations lists letting me know which journals you would like. My telephone number is 01903 505346. They are *Astronomy Now*, *Sky & Telescope*, *Society of Popular Astronomy* including news letters and journal of the British Astronomical Association.

### *WAS Ad*

#### Sussex Astronomy Centre

For all your astronomy needs  
Meade, Celestron, SkyWatcher, Tal Telescopes  
Large range of accessories, software, books etc  
16 Mulberry Lane  
Goring by sea  
Worthing, West Sussex.  
Telephone 01903-247317  
Email [worthingastronomy@tiscali.co.uk](mailto:worthingastronomy@tiscali.co.uk)  
Web Site. [www.sussex-astronomy-centre.co.uk](http://www.sussex-astronomy-centre.co.uk)  
Ask for Paul Farmer (Club Member)

### *Articles*

#### External Lighting Guide For Clueless Developers And Builders

Colin Knappitt

First, in the unlikely event that being clueless bothers you – forget it! You are making your proud contribution to a huge pool of human ignorance.

Next, your mission statement.

#### **Mission Statement**

1. To bring sources of artificial light where no sources have been before.
2. To maximise electricity consumption and light production in realising no. 1. In short, the maximum light for the light task, even if there is no task.
3. To broadcast light as widely as possible, particularly when/where there is no lighting task to achieve, and thus to destroy views of the night sky and the ambience of dark landscapes.

Let us look at the above in more detail.

In the benighted past, it was the case that people had to cope as best they could with daily dark periods. They adopted strategies such as applying white paint to the edges of steps, attaching reflectors to posts, inserting cats' eyes in roads, affixing 40 watt bulbs to walls, even allowing their eyes to become dark-adapted. Can you imagine! We don't have to bother with all that primitive stuff anymore. This is the Twenty-First Century. So when you erect a building on a previously dark site, stick a powerful bulkhead lamp on any vacant area of wall that takes your fancy. Alternatively, if there is a car park, length of drive- way or garden area, you can draw attention to these features by ringing them with high-powered light sources on posts. Best of all, do both: wall lamps and standard lamps. This is called the binge lighting principle.

A successful economy requires consumption. The sale of more exterior lamps is good news for lamp manufacturers and, ultimately, for you. More lamps and more high-power lamps means more electricity consumption. Good news for electricity supply companies, power station construction companies and, ultimately, for you. So go for lots of lamps and pick ones that pack a bit of a punch in the wattage stakes. Householders used to have to get by with a 40 watt tungsten bulb on the garage wall but they soon learned to appreciate the superiority of a couple of half-kilowatt Rottweiler tungsten-halogen floods turning night into day. Give them what they want.

High power alone is not enough in the quest to abolish darkness. We need a combination of high power and poor lamp design. In fact, most lamps betray no evidence of design at all and this is ideal, because it keeps the unit purchase cost down for you. So, no fancy hoods or shields, just plenty of glass or transparent plastic allowing light to be emitted every which way. This is called the blunderbuss principle.

What about some specifics? Well, high pressure sodium bulkhead lamps are popular. They have a high light output in sickly salmon orange and a fair electricity consumption. They are readily available in cheap plastic boxes with no directional feature; so they are good for polluting a wide area of any neighbourhood and the sky. Also popular are the highly luminous, totally unshielded circular or square fluorescent lamps. They do suffer from the drawback of not consuming large amounts of electricity - but you cannot have everything. So far as "in-your-face" lighting goes, they have a lot to recommend them. Finally, globe lamps are always available for a touch of class. You cannot fix the globe itself onto a wall, so usually it will be on a stem or a post. The beauty of the globe lamp is that it can give pretty well full 3-D light pollution coverage: up, down and all-round

sideways. Some recent examples of this sort of lamp have opaque caps or painted top halves but that, of course, defeats the purpose.

In conclusion, external lighting is almost as easy to do as creating building noise. And, if you are not sure, just trust to your instincts.

## Glossary

Binge Lighting	See Overkill
Blunderbuss Lighting	The art of shedding excessive light in all direction simultaneously
Day-Burning	The practice of keeping lamps on during hours of daylight. It provides a welcome boost to electricity consumption and, along with litter, graffiti, etc., gives a neighbourhood that lived-in look
Insensitivity	Innate inattention to the sensibilities of others, to environmental degradation and the notion of energy thrift when installing exterior lighting.
In-Your-Face Lighting	Also called <i>Ocular Assault Lighting</i> . Highly luminous, unshielded, eye-level lighting that really makes its presence felt.
Lighting Task	Ostensibly, a defined job for some lighting. With Binge Lighting, any and all lighting tasks are satisfied in one go. The term is then redundant.
Overkill	See Binge Lighting
Statutory Nuisance	Somebody who tries to control external lighting.

## Acknowledgements

1. Extreme Lighting Institute (ELI)
2. Campaign Against Dark Skies (CADS)
3. Floodlighting: A Bright Future; Bill Glair; pub. Moron Books
4. Towards Unintelligent Design In Exterior Lighting; defra, 1995 (oop)

Cassini is on the trail of a runaway mystery

NASA/JPL News Release

NASA scientists are on the trail of Iapetus' mysterious dark side, which seems to be home to a bizarre "runaway" process that is transporting vaporized water ice from the dark areas to the white areas of the Saturnian moon.



*Cassini captures the first high-resolution glimpse of the bright trailing hemisphere of Saturn's moon Iapetus in this false-color mosaic. This false-color mosaic shows the entire hemisphere of Iapetus. Credit: NASA/JPL/Space Science Institute  
[Download larger image version here](#)*

This "thermal segregation" model may explain many details of the moon's strange and dramatically two-toned appearance, which have been revealed exquisitely in images collected during a recent close flyby of Iapetus by NASA's Cassini spacecraft.

Infrared observations from the flyby confirm that the dark material is warm enough (approximately minus 230 degrees Fahrenheit or 127 Kelvin) for very slow release of water vapor from water ice, and this process is probably a major factor in determining the distinct brightness boundaries.

"The side of Iapetus that faces forward in its orbit around Saturn is being darkened by some mysterious process," said John Spencer, Cassini scientist with the composite infrared spectrometer team from the Southwest Research Institute, Boulder, Colo.

Using multiple instruments on Cassini, scientists are piecing together a complex story to explain the bright and dark faces of Iapetus. But yet to be fully understood is where the dark material is coming from. Is it native or from outside the

moon? It has long been hypothesized that this material did not originate from within Iapetus, but instead was derived from other moons orbiting at a much greater distance from Saturn in a direction opposite to Iapetus.

Scientists are now converging on the notion that the darkening process in fact began in this manner, and that thermal effects subsequently enhanced the contrast to what we see today.

"It's interesting to ponder that a more than 30-year-old idea might still help explain the brightness difference on Iapetus," said Tilmann Denk, Cassini imaging scientist at the Free University in Berlin, Germany. "Dusty material spiraling in from outer moons hits Iapetus head-on, and causes the forward-facing side of Iapetus to look different than the rest of the moon."

Once the leading side is even slightly dark, thermal segregation can proceed rapidly. A dark surface will absorb more sunlight and warm up, explains Spencer, so the water ice on the surface evaporates. The water vapor then condenses on the nearest cold spot, which could be Iapetus's poles, and possibly bright, icy areas at lower latitudes on the side of the moon facing in the opposite direction of its orbit. So the dark stuff loses its surface ice and gets darker, and the bright stuff accumulates ice and gets brighter, in a runaway process.

Scientists say the result is that there are virtually no shades of gray on Iapetus. There is only white and very dark.

Ultraviolet data also show a non-ice component in the bright, white regions of Iapetus. Spectroscopic analysis will reveal whether the composition of the material on the dark hemisphere is the same as the dark material that is present within the bright terrain.

"The ultraviolet data tell us a lot about where the water ice is and where the non-water ice stuff is. At first glance, the two populations do not appear to be present in the pattern we expected, which is very interesting," said Amanda Hendrix, Cassini scientist on the ultraviolet imaging spectrograph team at NASA's Jet Propulsion Laboratory, Pasadena, Calif.

Because of the presence of very small craters that excavate the bright ice beneath, scientists also believe that the dark material is thin, a result consistent with previous Cassini radar results. But some local areas may be thicker. The dark material seems to lie on top of the bright region, consistent with the idea that it is a residual left behind by the sublimated water ice.

Some other mysteries are coming together. There are more data on the signature mountain ridge that gives Iapetus its "walnut" appearance. In some places it appears subdued. One big question that remains is why it does not go all the way around.

Was it partially destroyed after it formed, or did it never extend all the way around the moon? Scientists have ruled out that it is a youthful feature because it is pitted with craters, indicating it is old. And the ridge looks too solid and competent to be the result of an equatorial ring around the moon collapsing onto its surface. The ring theory cannot explain features that look like tectonic structures in the new high resolution images.

Over the next few months, scientists hope to learn more about Iapetus' mysteries.

### *Diary*

<b>15<sup>th</sup> October 2007</b>	<b>Member's Contributions &amp; AGM</b>
20 <sup>th</sup> October 2007	SAGAS Meeting
26 <sup>th</sup> October 2007	Evening with Trevor Little at the Observatory
<b>19<sup>th</sup> November 2007</b>	<b>Observing Mars - Neil Bone. Mars will be at opposition on 24th December 2007. Neil is Section Director of the Meteor section of the British Astronomical Association &amp; Author of 'Mars Observing Guide'.</b>
30 <sup>th</sup> November 2007	Evening with Trevor Little at the Observatory
14th December 2007	At the Observatory from twilight onwards Geminids Meteor Shower
<b>17<sup>th</sup> December 2007</b>	<b>Nuclear Fusion: The Sun's Power on Earth – Jim Swift Crawley Astronomical Society.</b>
28 <sup>th</sup> December 2007	Evening with Trevor Little at the Observatory
12th January 2008	Back to Basics BAA Workshop Something for most practical observers. 10.00 to 17.30 Clanfield Memorial Hall, Clanfield just north of Portsmouth
<b>21<sup>st</sup> January 2008</b>	<b>New Year Social &amp; Member's contributions.</b>
<b>18th February 2008</b>	<b>Astro Photography - Making Every Photo Count - Steve Richards</b>
<b>17<sup>th</sup> March 2008</b>	<b>Stars: Origin and Evolution – Dr Serena Viti Department of Physics and Astronomy University College London</b>
<b>21st April 2008</b>	<b>Member's Evening - Results of their work and short talks reflecting their own special interests in various branches of astronomy</b>

All meeting (**bold**) are held on the 3rd Monday of every month (except August when we normally have a bar-b-que at a member's home) at Emmanuel United Reform Church Hall on the corner of Heene Road and St., Michael's Road, Worthing beginning 7.30 p.m. Meetings include the latest astronomical work, reports and images by members. For further details contact us by Internet at [www.was.org.uk](http://www.was.org.uk) or email [chairman@was.org.uk](mailto:chairman@was.org.uk)

### *President*

**Graham L. Boots**

Tel / Fax: 01903 505346

### *Executive Committee*

**Chairman: Janet Young**

Tel: 01903 610014

Email: [janet.young53@ntlworld.com](mailto:janet.young53@ntlworld.com)

**Vice-Chairman: Glen Thomas**

Tel: 01903 261723

Email: [vice\\_chairman@was.org.uk](mailto:vice_chairman@was.org.uk)

**Business Secretary: Christa Sutton**

Tel: 01903 523764

Email: [christa.sutton@ntlworld.com](mailto:christa.sutton@ntlworld.com)

**Meeting Secretary: Graham Boots**

Tel / Fax: 01903 505346

Email: [g.boots@sky.com](mailto:g.boots@sky.com)

**Membership Secretary: Peter Atkinson**

Tel: 01903 690943

Email: [pdatkinson@tesco.net](mailto:pdatkinson@tesco.net)

**Treasurer: Colin Knappitt**

Tel: 01903 695044

### *Note to Contributors*

Contributions & Correspondence for the **November** issue of WAS NEWS should be with the Editor by **November 1st**. All material for inclusion should be sent to the Editor.

### **Rob Davis**

61 Stirling Court Road,  
Burgess Hill  
West Sussex

RH15 0PS

Tel: (01444) 239205

Email: [wasnews@tiscali.co.uk](mailto:wasnews@tiscali.co.uk) or [wasnews@was.org.uk](mailto:wasnews@was.org.uk)

