



# WAS NEWS

Monthly Newsletter of the Worthing Astronomical Society

www.was.org.uk



Number 184

March 2005

## ALMANAC

All times U.T.

### March/April

#### LUNAR

March	Date	Time	Rise	Set
Last Quarter	3 <sup>rd</sup>	17.36	01.44	09.09
New moon	10 <sup>th</sup>	09.10	06.49	18.10
First Quarter	17 <sup>th</sup>	19.19	08.56	02.14
Full Moon	25 <sup>th</sup>	20.58	18.04	05.58
<b>April</b>				
Last Quarter	2 <sup>nd</sup>	00.50	03.12	09.48
New moon	8 <sup>th</sup>	20.32	05.19	18.32
First Quarter	16 <sup>th</sup>	14.37	09.32	02.38
Full Moon	24 <sup>th</sup>	10.06	19.44	04.38

#### EARTH

March	Sunrise	Sunset
3 <sup>rd</sup>	06.41	17.44
10 <sup>th</sup>	06.26	17.56
17 <sup>th</sup>	06.10	18.08
25 <sup>th</sup>	05.52	18.22
<b>April</b>		
2 <sup>nd</sup>	05.33	18.35
8 <sup>th</sup>	05.20	18.45
16 <sup>th</sup>	05.03	18.59
24 <sup>th</sup>	04.46	19.12

#### PLANETS (As at March 25<sup>th</sup>)

	Constellation	Rises	Sets	Mag.
<b>Mercury</b>	Pisces	05.47	19.10	3.8
Unfavourable				
<b>Venus</b>	Pisces	06.01	18.10	-3.9
Unfavourable				
<b>Mars</b>	Capricornus	03.58	12.30	+1.0
Difficult morning object in the South east				
<b>Jupiter</b>	Virgo	19.05	06.30	-2.5
Brilliant object in the South East				
<b>Saturn</b>	Gemini	11.15	03.23	0.0
Well placed in the south				
<b>Uranus</b>	Aquarius	05.14	15.49	+5.9
Unfavourable				
<b>Neptune</b>	Capricornus	04.26	13.49	+8.0
Unfavourable				
<b>Pluto</b>	Serpens cauda	00.42	10.13	+13.9
Difficult				

#### PHENOMENA

Day	Hour	March
10 <sup>th</sup>	00	Venus 2° N. of moon
11 <sup>th</sup>	18	Mercury 3° N. of moon
12 <sup>th</sup>	18	Mercury at greatest elongation E. 18°
19 <sup>th</sup>	18	Saturn 5° S. of moon
20 <sup>th</sup>	00	Mercury at stationary point
22 <sup>nd</sup>	03	Saturn at stationary point
26 <sup>th</sup>	15	Jupiter 0.9° N. of moon
27 <sup>th</sup>	02	Pluto at stationary point
29 <sup>th</sup>	16	Mercury in inferior conjunction
29 <sup>th</sup>	20	Venus 4° S. of Mercury
31 <sup>st</sup>	03	Venus in superior conjunction

#### April

3 <sup>rd</sup>	16	Jupiter at opposition
4 <sup>th</sup>	00	Mars 4° N. of moon
7 <sup>th</sup>	16	Mercury 3° N. of moon
8 <sup>th</sup>	21	Annular-Total eclipse of Sun (South Pacific)
9 <sup>th</sup>	01	Venus 1° S. of moon
12 <sup>th</sup>	08	Mercury at stationary point
16 <sup>th</sup>	03	Saturn 5° S. of moon

#### Minima of Algol

March 11 <sup>th</sup>	03.18	14 <sup>th</sup>	00.06	16 <sup>th</sup>	20.54	19 <sup>th</sup>	17.42	31 <sup>st</sup>	05.00
April 3 <sup>rd</sup>	01.48	5 <sup>th</sup>	22.42	8 <sup>th</sup>	19.30	23 <sup>rd</sup>	03.36		

#### Lunar Occultation's Times as at Old W.A.S. Observatory

Date	U.T.	S.A.O. No	Mag	Phase
<b>March</b>				
	<b>h. m. s.</b>			
13 <sup>th</sup>	19.42.35	92871	8.5	Diss
14 <sup>th</sup>	19.21.56	93281	8.3	Diss
14 <sup>th</sup>	20.54.38	93309	7.7	Diss
14 <sup>th</sup>	21.34.12	93328	4.3	Diss
15 <sup>th</sup>	22.15.20	76436	8.2	Diss
16 <sup>th</sup>	23.32.28	76895	7.7	Diss
17 <sup>th</sup>	00.03.32	76903	6.9	Diss
17 <sup>th</sup>	20.41.30	77604	7.3	Diss
17 <sup>th</sup>	21.24.45	77619	7.1	Diss
17 <sup>th</sup>	21.36.38	77625	5.6	Diss
17 <sup>th</sup>	22.29.30	77675	4.6	Diss
17 <sup>th</sup>	23.36.40	77724	7.3	Diss
18 <sup>th</sup>	21.19.44	78710	6.8	Diss
18 <sup>th</sup>	21.49.31	78719	8.8	Diss
20 <sup>th</sup>	00.31.10	79650	5.4	Diss
20 <sup>th</sup>	19.51.19	80204	6.1	Diss
22 <sup>nd</sup>	00.27.46	80809	6.7	Diss
22 <sup>nd</sup>	19.45.39	98944	6.3	Diss
30 <sup>th</sup>	02.37.41	183900	5.4	Reapp
<b>April</b>				
11 <sup>th</sup>	20.31.44	76067	9.0	Diss
12 <sup>th</sup>	19.32.59	76646	7.4	Diss
12 <sup>th</sup>	21.51.56	76676	8.5	Diss
13 <sup>th</sup>	19.28.15	77177	8.8	Diss
13 <sup>th</sup>	22.37.01	77266	8.7	Diss
14 <sup>th</sup>	19.51.46	78299	8.1	Diss
14 <sup>th</sup>	20.44.07	78334	8.0	Diss
14 <sup>th</sup>	21.37.15	0	8.9	Diss
15 <sup>th</sup>	19.54.35	79256	8.5	Diss
15 <sup>th</sup>	20.24.46	79264	8.3	Diss
15 <sup>th</sup>	20.39.25	79279	8.6	Diss
15 <sup>th</sup>	21.00.02	79286	6.9	Diss
15 <sup>th</sup>	21.05.04	0	9.4	Diss
15 <sup>th</sup>	22.06.58	79315	9.1	Diss
17 <sup>th</sup>	01.23.59	80113	5.9	Diss
17 <sup>th</sup>	21.10.05	80596	8.3	Diss
20 <sup>th</sup>	20.45.31	118806	6.6	Diss
20 <sup>th</sup>	21.42.43	118823	7.0	Diss

The list above is a selection of about 26% of the more easily observed events

Dave Wells

## *Editors Note*

Sky, what Sky? Ahhh you must mean the grey blanket draped over England.

As there seems to be no looking up – look down at this months WAS News, which you will find crammed full of astronomical sights that us lowly mortals and not worthy to see. (Well at least those of us living in the South of England)

Rob`

### **Urgently Required**

Graham Boots – The President

Have you anything to offer for the Member's Evening of Wednesday the 13th April 2005? Many of our member's are away in Panama for the total eclipse of the sun on the 8th who normally contribute. If you can help please contact Graham Boots programme secretary of 01903 505346. Thank you.

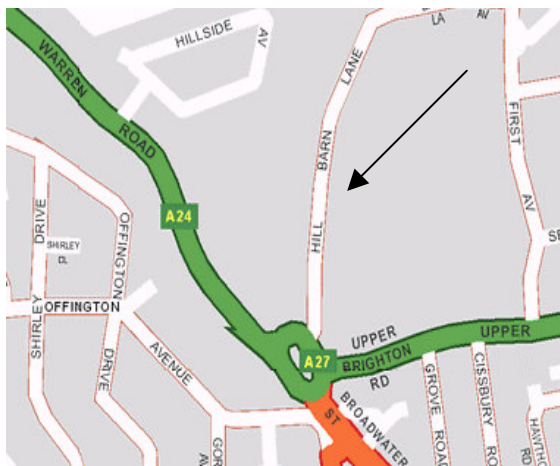
## *Dates for your Diary*

### **Hill Barn Observers Night**

Alex Vincent

I will be running the observer's nights at our Hill Barn observing site while the observatory awaits a new site. These will take place on Friday evenings starting at 7.30PM. Park at the car park at the northern end of the recreation ground in Hill Barn Lane and walk the short distance to the club house where we will be observing.

The gates to the club house car park close at night, but there is a gate to the side for us to walk through. Bring a flask, telescope, binoculars and a camera. Objects to see will be deep sky, Moon, the planet Saturn and the bright Comet Macholz. Any enquiries my telephone number is 07753 282714.



## **Annular-Total Solar Eclipse**

Alex Vincent

On April 8 2005 there will be an annular-total eclipse of the Sun. In this type of eclipse (called a hybrid) it is annular in the morning, total at local apparent noon and annular in the evening. The duration of the annularity and totality are quite short and the ring of Sun around the Moon's limb is very thin. The total section is in the centre of the eclipse track because the Moon is 6000km closer to the Earth and therefore its Umbra just touches the surface.

The last annular-total from Britain took place on March 15 1858 and the next will be on April 12 2545. The annular-total of May 2 142AD (CE) entered Wales as total, but transited to annular by the time it reached England. In the 1858 event, only the annular phase was visible from Britain, but in the case of the 2545 event totality will be seen across Britain. The April 8 2005 annular-total will be seen from Panama and Columbia.

If one observes an annular-total on the centre line just outside totality, then you will see a complete ring of Baileys Beads known as a "Pearling Eclipse", which must be a magnificent sight. Also it is possible to see more than one diamond ring effect at the same time and in the right place, which would also be a grand sight.

It would be an idea to travel under the Moon's shadow to record the event from start to finish to see the eclipse go from an annular to total and then back to annular. This would have to be done from a height of 30,000 feet or more and would mean that there would be totality as one is nearer the umbra. It could be done at the eclipse of April 8 2005 and if not, to prepare for the next annular-totals on November 3 2013, April 20 2023, Nov 14 2031, Nov 25 2049, May 20 20250 and Dec 6 2067.

## *Reports*

### **Young Moon Club Observation - March**

Glen Thomas - Lunar Section Director

Meet at the Honeysuckle Lane car park, High Salvington from 18.00 on Friday March 11th.

This month gives us the best chance of the year so far to see a very thin crescent Moon, with a phase of just 2.5%

The Sun sets at 18.00, with the Moon 32.49 hours old at sunset and itself setting at 19:37. I will be at the site from 18.00.

Mercury will also be visible just 3' from the Moon, so one may be used as a marker for the other.

## **Deep Sky Observing**

Dr Stewart Moore

Stewart had driven the three hours from Essex to deliver his lecture and would return directly after. He is the director of the British Astronomical Association Deep Sky section and an active member of the Webb Society that is exclusively for those astronomers undertaking deep sky observing. Deep Sky relates to all celestial objects beyond the solar system such as stars, galaxies, star clusters, nebulae and planetary nebulae.

Stewart began by explaining that the optical equipment required need only be simple and recommended 80 x 20 binoculars that cost around £150 made by Vixen. 7 x 50 binoculars with a field of view of several degrees are very useful and can contain the entire Coma clusters of galaxies.

He has several suitable telescopes for deep sky observing. These being fairly short focus Newtonians with apertures of 6", 8 3/4" costing £200 and a 14" Dark Star Dobsonian costing only £400 second hand. He has a trolley for the 6" reflector that he has used to take it to the Canary Island of La Palma where at several thousand feet of altitude marvellous clear night skies are experienced. This telescope packs small and neatly to take through airports and onto the aeroplane.

It is very important to have a good quality finder scope upon the telescopes with a wide field of view of around five degrees. He recommended the Tel Rad finder that uses red illuminated concentric circles and gives an indication of the general direction of where you want to find a particular object. He then switches to the finder scope and begins star hopping to the object he wishes to observe.

Apart from having the darkest night sky available, away from light pollution as much as is reasonable possible, Stewart described a cloth mask which is light proof and stops unwanted stray light interfering when looking through the eyepiece. This has just one hole through which look.

It takes about thirty minutes from the eyes to become fully dark adapted and much longer for what is known as 'visual violet' to build up. This is a chemical within the eyes. The longer you are in the dark the better you see the fainter deep sky objects.

Ancillary equipment needed is a red touch, logbook, pencils and sketch board. A tape recorder to describe what

you are seeing is extremely useful when writing up your final report.

Charles Messier 1730 – 1817 who lived in Paris wanted to become famous by discovering comets of which he discovered a few but he was often confused by small nebulous objects he found when 'sweeping' the sky. He decided to catalogue these nebulous objects to avoid further confusion. He catalogued 110 objects and became much more famous for this catalogue than the comets. For the most part he did not realise what the objects were.

The nearer to the zenith an object is the better it can be seen as you are looking through less atmosphere. When looking at an object in the zenith you are looking through 16 kms. of dense atmosphere and at an altitude of 45 degrees above the horizon you are looking through 23 kms. At 25 degrees above the horizon the depth of the atmosphere is 39 kms. with a resultant loss of four magnitudes.

Stewart has visited COAA (Centre of Observational Astronomy Astrophysical) in the Algarve in southern Portugal where holidaymakers can stay and enjoy viewing the night sky under dark clear skies through large telescopes. From this site Stewart has viewed the magnificent globular star cluster, omega Centauri and the giant galaxy Centaurus A. These famous objects cannot be seen from our latitudes.

Sometimes well known objects cause lesser known nearby objects to be overlooked, such as the globular star cluster M92 which is close to the splendid globular star cluster M13, both in the constellation of Hercules. When observing the large, bright globular star cluster M22, don't forget M28, another nearby globular star cluster, both in Sagittarius. Under dark skies many of the Messier objects are naked eye and easily found in binoculars.

John Herschel 1738 – 1822, the son of the very famous Sir William Herschel, was one of those sorts of people who were good at everything he did. He expanded on his father's work by going to the southern hemisphere and went to the Cape of Good Hope in South Africa.

Once there he observed and created a catalogue of deep sky objects, which was called the General Catalogue. This contained, between him and his father, nearly 5000 thousand deep sky objects that they had found and listed. Caroline Herschel 1750 - 1848 added thirteen deep sky objects in her own right.

After this, J.L.E. Dreyer 1852 – 1926 built on this work and added 7,840 more celestial objects, which became the New General Catalogue published in 1888. Over the next 20 years new entries to this catalogue and its supplements expanded the list to nearly 15,000 objects. The Index Catalogue (IC) containing a further 3,857 objects and was the last main catalogue of its type, again this work was created by Dreyer.

Stewart suggested having an observing plan or project, such as making a decision to try and observe all the planetary nebulae in particular constellation albeit over a number of viewing sessions.

Filters are a very important tool of the deep sky observer. Stewart showed a list of seven types. Some types are ultra high contrast, oxygen III and hydrogen beta and can cost around £100 each. Planetary nebulae are emission types and fluoresce. They have a primary emission and can be more clearly seen by using a line filter that allows a particular tiny part of the optical region of the electromagnetic spectrum to pass through without being interfered by neighbouring emissions that are blocked. He showed two sketches of the planetary nebula, M27, one with and one without the appropriate filter.

With the filter M27 was clearly seen but stars in the field of view were dimmed whereas without the filter the stars were much more prominent but M27 was much fainter. Many planetary nebulae are strong emitters of oxygen as they are stars close to the end of their lives having consumed their hydrogen, helium and carbon and are then hot enough for relatively short time to fuse oxygen.

These filters are not suitable for reflection nebulae such as that surrounding the Pleiades.

The Veil Nebulae in Cygnus is an extended object covering many degrees and is a supernova remnant that exploded some thousands of years ago. Using binoculars under a really dark sky is the only way to appreciate this object. The same can be said of M33 the large spiral galaxy in Triangulum.

Stewart ended his enjoyable and entertaining lecture by mentioning how springtime is a good season for observing galaxies, in particular in the constellations of Canes Venatici and Leo.

Many questions came from the audience of around fifty members and visitors.

### *Was Link*

[web.canon.jp/Imaging/astro/index-e.html](http://web.canon.jp/Imaging/astro/index-e.html)

An interesting reference guide to astrophotography. This provides advice on exposure settings (apertures, shutter speeds and ISO film speeds) and includes example photos. – Submitted by: Trevor White

[www.astropix.com/Index.htm](http://www.astropix.com/Index.htm)

Another very good Astrophotography WEB site which provides reviews on digital SLR cameras, lenses and equipment for astrophotography. It also offers advice on polar alignment, piggyback shots, auto/manual guiding, focusing and digital processing. - Submitted by: Trevor White

## *Articles*

### Messier Objects

Jan Marshall

Starting with this and in future issues of WAS News, I shall be listing some Messier Objects every month. We have some new members in the society who, no doubt, would welcome some information on these famous objects; I also hope that our more experienced members will find it a useful recap!

The Messier Objects are so called because they were a list of fuzzy objects in the night sky compiled by Charles Messier (1730-1817) a French comet hunter. While hunting for comets he kept finding these faint and fuzzy objects, so decided to compile a catalogue of them to avoid them being mistaken for comets. He listed them as M or Messier followed by a number. Charles Messier did discover several comets, but it is for the Messier catalogue he is best remembered.

Magnitudes and distances are of course all approximate.

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#### M1

Constellation: Taurus

RA 5hrs 31m

Dec +21.59

Distance: 6,000 light years

Type: Gaseous, a supernova remnant

NGC 1952

Known as the Crab Nebula because it does indeed resemble a crab! It is a supernova remnant, the event being recorded by the Chinese in 1054. It also contains a pulsar at its heart, the remains of the star that went nova. Can be seen in binoculars in a dark sky but best seen in a telescope.

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#### M2

Constellation: Aquarius

RA 21hrs 30m

Dec -1.3

Distance: 50,000 light years

Type: Globular Cluster

NGC 7089

Globular cluster with a total magnitude of 7.

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#### M3

Constellation: Canes Venatici

RA 13hrs 39m

Dec +28.38

Distance: 30,000 light years

Type: Globular Cluster

NGC 5272

Globular cluster with a total visual magnitude of 6.4

## The Eyes of the Owl.

Jan Marshall

During the recent talk given to the society by Stewart Moore (see Meeting Report elsewhere in this edition of the newsletter) mention was made about the Owl Nebula, M97, once having a star in each 'eye'.

As viewed through any modern telescope powerful enough to show the detail in the nebula and in photographic images, there is a star in one of the pair of gaps or holes in the nebula that supposedly resemble the eyes of an owl. The nebula received its name by William Parsons, the third Earl of Rosse (1800-1867) when he observed it with the great 72-inch telescope at Birr in Ireland in 1848 and his observations show two stars, one in each of the 'eyes'.

It was originally discovered by the French comet hunter Pierre Méchain (1744-1804) in 1781 and later given the designation of M97 when Charles Messier (1730-1817) compiled his famous catalogue.

According to the book *Celestial Objects For Common Telescopes, Volume 2 The Stars*, by Rev. T.W. Webb, (Dover 1962 edition) the now missing star was last recorded in 1850 and has not been seen since.

It seems possible that Lord Rosse was the first and only person to have actually observed this missing star. Up until the time of his observations, telescopes had just not had the required power to show enough detail in the nebula, such as the 'eyes' and the stars seen in them.

Quite what has happened to the missing star is of course a mystery. Could it have been that the nebula and its detail were in fact on the limit of resolution of the 72-inch and because Lord Rosse saw a star in one 'eye' he naturally assumed there was one in the other? Or was it a nova that happened to be in the right place at the right time, or is there a variable with a long period in that place which again, just happened to reach maximum at the right time?

There is very little mention of this 'missing' star in publications and on the Internet, but when it is quoted, all credit is always given to Lord Rosse as being the person who observed it.

## *WAS Ad*

### Sussex Astronomy Centre

Now open: Meade main dealer for Sussex  
Stockist of Astro engineering range  
And all products from  
Meade Telescopes.

Bresser Telescopes.  
Discounts for club members  
Part Exchange considered.

Sussex Astronomy Centre  
16 Mulberry Lane  
Goring by sea  
Worthing, West Sussex.  
Tel 01903 247317  
Email [worthingastronomy@tiscali.co.uk](mailto:worthingastronomy@tiscali.co.uk)

Ask for Paul Farmer.(Club member)

## *What's on the Box*

Saturday 12<sup>th</sup> March 2005



12.45 – 13.10: **The Sky at Night**

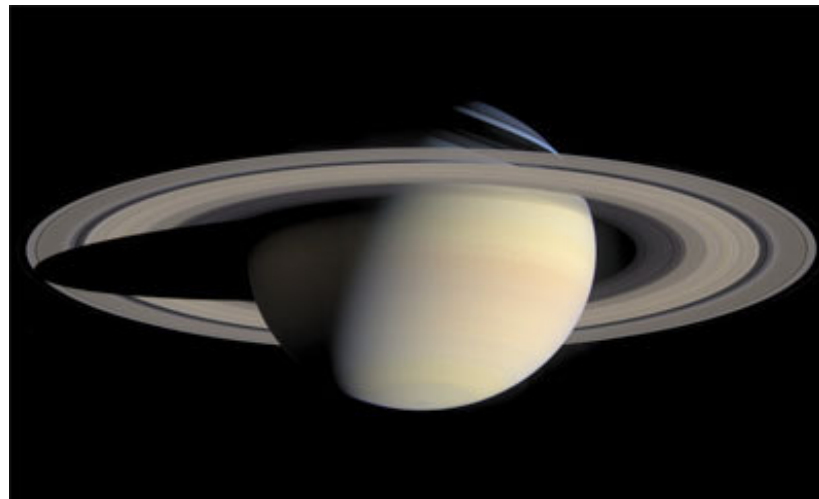
Strangers in the Night.

Patrick Moore debates the mysterious belts and the wandering strangers which escape from the Kuiper Belt beyond Pluto and the Oort Cloud at the very edge of our solar system.

## *WAS News News*

### Cassini captures greatest Saturn portrait yet

Cassini Photo Release



*Credit: NASA/JPL/Space Science Institute Download larger image version [here](#)*

While cruising around Saturn, Cassini captured a series of images that have been composed into the largest, most detailed, global natural colour view of Saturn and its rings ever made.

This grand mosaic consists of 126 images acquired in a tile-like fashion, covering one end of Saturn's rings to the other and the entire planet in between. The images were taken over the course of 2 hours on Oct. 6, 2004, while Cassini was approximately 6.3 million kilometres (3.9 million miles) from Saturn. Since the view seen by Cassini during this time changed very little, no re-projection or alteration of any of the images was necessary.

Three images (red, green and blue) were taken each of 42 locations, or "footprints", across the planet. The full colour footprints were put together to produce a mosaic that is 8,888 pixels across and 4,544 pixels tall.

The smallest features seen here are 38 kilometres (24 miles) across. Many of Saturn's splendid features noted previously in single frames taken by Cassini are visible in this one detailed, all-encompassing view: Subtle colour variations across the rings, the thread-like F ring, ring shadows cast against the blue northern hemisphere, the planet's shadow making its way across the rings to the left, blue-grey storms in Saturn's southern hemisphere to the right and tiny Mimas and even smaller Janus (both faintly visible at lower left).

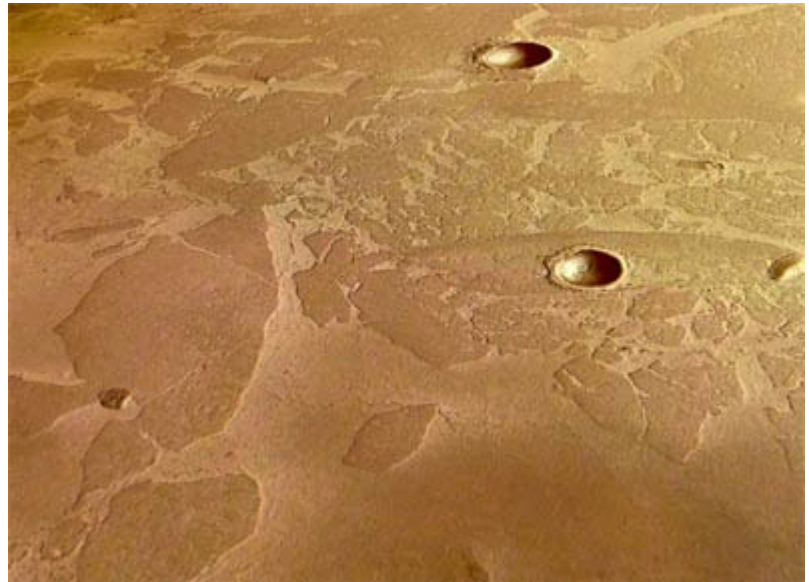
The Sun-Saturn-Cassini, or phase, angle at the time was 72 degrees; hence, the partial illumination of Saturn in this portrait. Later in the mission, when the spacecraft's trajectory takes it far from Saturn and also into the direction of the Sun, Cassini will be able to look back and view Saturn and its rings in a more fully-illuminated geometry.

## **Europe's Mars Express sees signs of a frozen sea**

### **European Space Agency News Release**

**T**he discovery of what could be a frozen sea close to the Martian equator, protected from disappearing by a thin layer of volcanic ash, was reported this week at the first Mars Express Science Conference in Noordwijk, the Netherlands.

The water that formed the sea appears to have originated beneath the surface of Mars, and to have come out through a series of fractures known as the Cerberus Fossae, from where it flowed in a catastrophic flood. It collected in a vast area about 800 kilometres long and 900 kilometres wide with a depth of about 45 metres. As the water started to freeze, floating pack ice broke up into rafts. These became later covered in ash and dust from volcanic eruptions in the region.



*This image, taken by the High Resolution Stereo Camera on Mars Express, shows what appears to be a dust-covered frozen sea near the Martian equator. It shows a flat plain, part of the Elysium Planitia, that is covered with irregular blocky shapes. They look just like the rafts of fragmented sea ice that lie off the coast of Antarctica on Earth. The scene is a few tens of kilometres across. Credits: ESA/DLR/FU Berlin (G. Neukum) [Download larger image version here](#)*

The water that formed the sea appears to have originated beneath the surface of Mars, and to have come out through a series of fractures known as the Cerberus Fossae, from where it flowed in a catastrophic flood. It collected in a vast area about 800 kilometres long and 900 kilometres wide with a depth of about 45 metres. As the water started to freeze, floating pack ice broke up into rafts. These became later covered in ash and dust from volcanic eruptions in the region.

Ice is unstable at the surface of Mars because of the low atmospheric pressure, and sublimates away (changes straight from ice to vapour without passing through the liquid state) into the atmosphere, but some of the ice rafts appear to have been protected by layers of volcanic dust. While the entire sea froze solid, the unprotected ice between the rafts sublimated to leave 'ice plateaus' surrounded by bare rock.

The sparse cratering of this region shows that it cannot have formed more than about five million years ago, meaning this is a relatively young feature. The question remains as to whether the frozen body of water is still there, or whether the visible floes are just the remains of the sublimation process. Two observations suggest that the ice is still there: first, the submerged craters are too shallow, indicating most of the ice is still in the craters; and second, the surface is too horizontal if the ice had been lost, there would be a greater height variation.

## *Diary*

**9<sup>th</sup> March 2005**      **Astrophotography Impact since 1795 Mike Maunder Astrophotographer & Eclipse Chaser**

**13<sup>th</sup> April 2005**      **Member's Evening Short Talks and Imaging Displays by members**

**11<sup>th</sup> May 2005**      **Southern Africa Large Telescope (SALT) 11 meter Dr Malcolm Coe Southampton University**

**8th June 2005**      **Jets, the exhaust of the most efficient engines in The Universe Dr Christian Kaiser Southampton University**

All Meetings (**bold**) are held on the second Wednesday of every month unless otherwise stated, at Heene Church Rooms, Worthing at 7.30 p.m. Meetings include the latest astronomical work, reports and, photographs by members. For further information please call 01903 521205, on the Internet at [www.was.org.uk](http://www.was.org.uk) or email: [chairman@was.org.uk](mailto:chairman@was.org.uk)

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## *Note to Contributors*

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

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