



# WAS NEWS

Monthly Newsletter of the Worthing Astronomical Society

Official website: [www.was.org.uk](http://www.was.org.uk)

Affiliated websites: [www.observatory99.freeserve.co.uk](http://www.observatory99.freeserve.co.uk)



Number 175

May 2004

## ALMANAC

All times U.T. for B.S.T. add one hour  
April / May

LUNAR					Day	Hour
May	Date	Time	Rise	Set		
Full Moon	4 <sup>th</sup>	20.33	19.23	04.14	12 <sup>th</sup>	13 <sup>th</sup>
Last Quarter	11 <sup>th</sup>	11.04	02.03	10.33	14 <sup>th</sup>	20
New moon	19 <sup>th</sup>	04.52	03.55	20.40	16 <sup>th</sup>	21
First Quarter	27 <sup>th</sup>	07.57	11.18	01.26	17 <sup>th</sup>	12
June					17 <sup>th</sup>	22
Full Moon	3 <sup>rd</sup>	04.20	21.25	03.26	21 <sup>st</sup>	12
Last Quarter	9 <sup>th</sup>	20.02	00.44	11.02	22 <sup>nd</sup>	16
New moon	17 <sup>th</sup>	20.27	02.51	20.44	22 <sup>nd</sup>	19
First Quarter	25 <sup>th</sup>	19.08	11.37	**..**	25 <sup>th</sup>	06
					27 <sup>th</sup>	14

## PHENOMENA

### May

- Alpha scorpiid meteor shower
- Mercury at greatest elongation W.26°
- Mercury 2° S. of moon
- Neptune at stationary point
- Venus at stationary point
- Venus 0.3° S of moon
- Mars 3° S of moon
- Saturn 5° S of moon
- Saturn 2° S of Mars
- Jupiter 3° S of moon

### June

- Venus in inferior conjunction ( transit )
- Uranus at stationary point
- Pluto at opposition
- Venus 1° S of Mercury
- Venus 5° S of moon
- Mercury 3° S of moon
- Mercury in superior conjunction
- Saturn 5° S of moon
- Mars 4° S of moon

### Minima of Algol

- May Inconveniently situated
- June Inconveniently situated

EARTH			Day	Hour
May	Sunrise	Sunset		
4 <sup>th</sup>	04.26	19.29	8 <sup>th</sup>	09
11 <sup>th</sup>	04.14	19.40	10 <sup>th</sup>	16
19 <sup>th</sup>	04.03	19.52	11 <sup>th</sup>	12
27 <sup>th</sup>	03.53	20.03	12 <sup>th</sup>	23
June			16 <sup>th</sup>	16
3 <sup>rd</sup>	03.47	20.10	17 <sup>th</sup>	17
9 <sup>th</sup>	03.44	20.16	18 <sup>th</sup>	21
17 <sup>th</sup>	03.42	20.20	19 <sup>th</sup>	08
25 <sup>th</sup>	03.44	20.22	20 <sup>th</sup>	11

## PLANETS (As at May 27th.)

	Constellation	Rises	Sets	Mag.
<b>Mercury</b>	Aries	03.19	17.46	-0.2
Unfavourable				
<b>Venus</b>	Taurus	04.46	21.42	-4.2
Brilliant in the west				
<b>Mars</b>	Gemini	06.19	22.53	+1.7
Evening object				
<b>Jupiter</b>	Leo	11.38	01.18	-2.1
Brilliant evening object				
<b>Saturn</b>	Gemini	06.24	22.36	+0.1
Visible in the west				
<b>Uranus</b>	Aquarius	01.02	11.31	+5.8
Unfavourable				
<b>Neptune</b>	Capricornus	00.13	09.32	+7.9
Unfavourable				
<b>Pluto</b>	Serpens cauda	20.12	05.57	+13.8
Possible				

## Lunar Occultation's

Times as at W.A.S. Observatory

Date	U.T.	S.A.O.No	Mag.	Phase
May	h. m. s.			
10 <sup>th</sup>	02.52.49	189249	6.9	Reapp
22 <sup>nd</sup>	22.03.22	78804	7.5	Diss
23 <sup>rd</sup>	20.17.48.	79650	5.4	Diss
25 <sup>th</sup>	22.08.25	98956	8.0	Diss
26 <sup>th</sup>	22.44.02	99058	8.2	Diss
29 <sup>th</sup>	23.00.54	138942	6.6	Diss
June				
11 <sup>th</sup>	00.51.46	109192	5.9	Diss
11 <sup>th</sup>	01.01.01	109192	5.9	Reapp

This is only about 18% of the predictions for the W.A.S. Observatory, full list available on E-mail.

Dave Wells

## Editors Note

Greetings, Greetings,

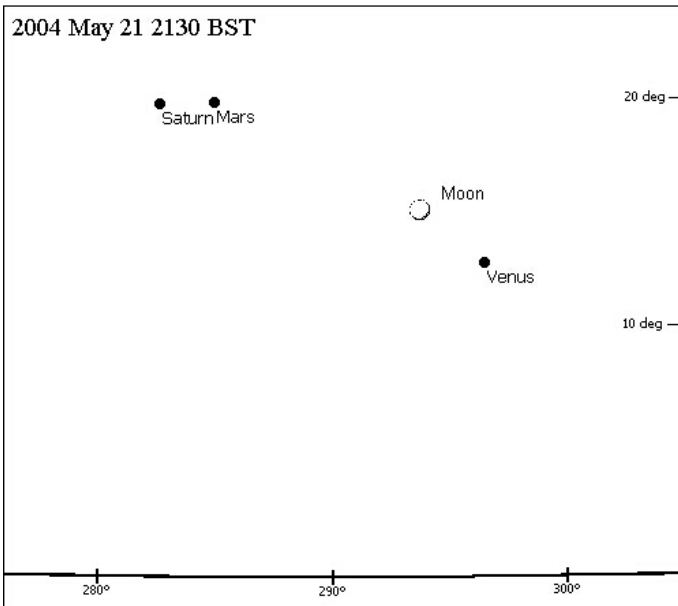
Planets, Stars, Comets, Nebula and Spacecraft all feature in this Months WASNews. Excitement mounts as we move closer toward the transit of Venus and Cassini's rendezvous with Saturn and its mighty moon Titan – more on that next month!

Rob

## Dates for your Diary

### Observing Meeting

Glen Thomas - Planetary Section Director



Observe Venus, Mars, Jupiter and Saturn on **May 21st** (or 22nd) at High Salvington.

Four of the five naked eye planets are currently visible (See the chart. Mercury is still too close to the Sun). With Jupiter high in the south-east, Saturn closing to 2° from Mars and a 2 day old crescent Moon close to Venus, after occulting it earlier in the day, they should make an impressive sight.

There will be an observing session held at the Honeysuckle Lane car park from **20.00 BST** on the **21st**, with the **22nd** as a reserve day in case of poor weather. (See the WAS Handbook for a map.)

See you there

## Comet 2001 Q4 (NEAT)

Alex Vincent

Date	R.A.		Dec.		Mag.
	h	m	°	'	
2004					
May 13	08	18.6	+11	24	1.1
May 18	08	48.5	+36	27	1.7
May 23	09	10.4	+35	35	2.3
May 28	09	27.2	+41	22	2.8
Jun 2	09	40.3	+45	18	3.2

The above Ephemeris is for Epoch 2000.0

This comet will be seen in the evening sky from mid May onwards, going through Canis Minor, Cancer, Leo Minor & Ursa Major. It will be circumpolar from May 28.

### Observing the Transit of Venus

Glen Thomas - Planetary Section Director

On the morning of Jun 8th, for the first time in living memory, Venus will transit the face of the Sun. Venus transits were once used to measure the size of the Solar System. Newton's Law of Gravitation allowed the relative sizes of the orbits of the planets to be determined, while the transits provided a baseline measurement: the distance to Venus. This can now be done with greater precision using powerful Earth based radar systems, so transits have little scientific value now, but are still exciting to observe as events of historical importance.

The transit starts only 90 minutes after sunrise and lasts about six hours, so while a fairly clear ENE horizon is needed to spot first contact, most of the transit should be easily visible for most people.

Event	UT	BST	Sun alt.
First contact (start)	05:19:56	06:19:56	12°
Second contact	05:39:49	06:39:49	15°
Mid-transit	08:22:46	09:22:46	40°
Third contact	11:04:09	12:04:09	60°
Fourth contact (end)	11:23:40	12:23:40	61°

These times are for Worthing and are based on transit predictions by Fred Espenak, NASA's GSFC. The times given in the diagram are for those observing from the centre of the Earth. Timings for cities in the UK and world-wide are provided at the web site: <http://sunearth.gsfc.nasa.gov/eclipse/transit/TV2004.html>

The start of the transit, first contact, is when Venus's limb touches the limb of the Sun. Twenty minutes later the planet will have moved entirely within the solar disc - second contact. Third and fourth contacts are the same but in reverse, marking the end of the transit.

## 2004 and 2012 Transits of Venus

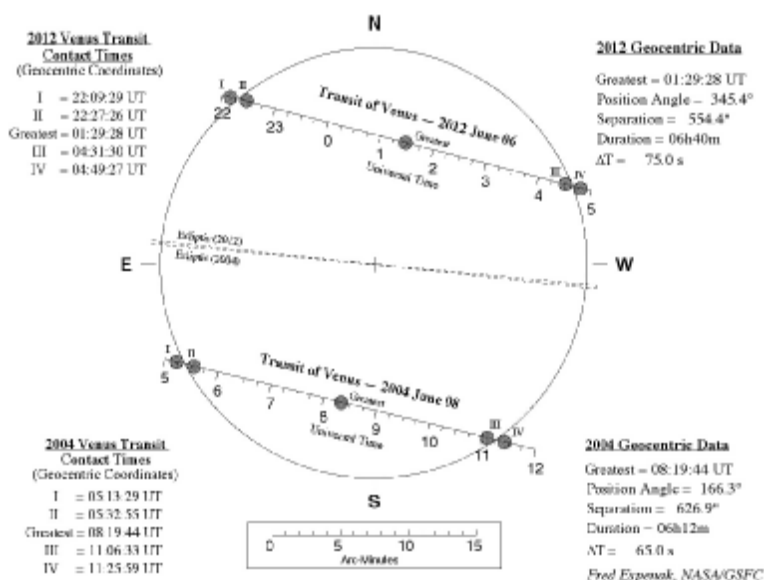


Figure 1 - Path of Venus across the Sun's disk on 2004 June 08 and 2012 June 06

### Observing

**WARNING:** Never look at the Sun directly, either with the naked eye or through any telescope, binoculars, camera or any other optical device as you can seriously damage your sight with just a brief glimpse. Anyone who is unsure of their ability to observe safely should join a group led by an experienced solar observer.

### Projection

The safest way to observe is by projecting the image onto white card. Mount the card onto the telescope or one half of binoculars, using one piece as a shade and another as a screen. Sight on the Sun by watching the shape of the shadow of the telescope. Remove any spotting scope for extra safety or tape the lens caps into place. A large aperture telescope can collect enough solar radiation to damage the delicate optics of eyepieces (particularly the glue in high-quality ones) or the mirror of a reflector, so use a small aperture refractor and a cheap eyepiece.

### Solar Filter

You should use a purpose made solar filter that fits securely over the objective or aperture end of the telescope. Never use just an eye-piece filter as these can crack due to the intense heating effect of the sunlight. Those with H-alpha filters may see Venus in silhouette against a prominence or the Sun's atmosphere before first contact.

### Digital Camera

A digital camera or webcam fitted to a telescope along with a solar filter is good for group observing and very safe as nobody will be looking through an eye-piece. An

additional filter on the camera will probably be needed to avoid over-exposure, which could mean that you miss the transit or damage your camera.

### Eclipse Viewers

Some of you will still have one of those cardboard eclipse specs, and these may be safely used to view the transit. Venus is both larger and closer than Mercury was during last year's transit and it should be visible to the unaided, but protected, eye. You should check the dark film of the viewer since any scratches or pinpricks at all make them unsafe to use and they should be discarded. Also, do not be tempted to magnify the small disc of the Sun using binoculars in front of the eclipse viewers – the viewer film may melt and split.

## Reports

### The Planets in May 2004

Glen Thomas - Planetary Section Director

**M**ercury is not yet suitably placed as recovers from last month's superior conjunction.

**Venus** is already low in the sky at sunset as it draws near to the Sun for June's transit (see article). Venus is occulted by the Moon around 11.00 UT on 21st but as it occurs during the day it is difficult to observe unless you use a telescope with GOTO or setting circles. **DO NOT** scan with binoculars or telescope as the risk of accidental blinding is great should you aim near the Sun.

**Mars** is near to **Venus** but is far dimmer at magnitude 1.7.

**Jupiter** is still high enough to observe easily during the evening and is a rewarding sight.

**Saturn** joins **Venus** and **Mars** for a close grouping towards the end of the month. Its low altitude as the sky darkens makes it more difficult now to spot the detail in the cloud tops or the rings.

**Uranus** and **Neptune** are morning objects but are too low in the sky before dawn to observe easily. Wait until July for better conditions to spot these cold and distant objects.

**Pluto** transits around **02.00**, due south at an altitude of 25°: Look with a large instrument in Serpens. Best around opposition on **Jun 07th**.

## **Solar Section Report - March, 2004**

Section Director, Brian Halls

March began with very low sunspot activity, with an average of three sunspot groups, all in the southern solar hemisphere.

A large group, 0570 (S14 L302 size/class= 0570/Ekc) evolved from a small region during the first week of March and was of naked eye visibility for much of the second week. It was the most active region on the Sun during this time.

It began to decay as it approached the western solar limb during the third week of March but, this coincided with an increase in activity.

During the last week of March, the number of sunspot groups visible ebbed and flowed to extreme – from three sunspot active area on the 21<sup>st</sup> to nine groups on the 27<sup>th</sup> – this period mirrored the same time frame 28 days previously at the close of February.

The month closed with a fairly active sun spotted Sun. Activity was predominantly confined to southern solar latitudes during the month.

Reports were received from Graham Boots at the Society's observatory.

*April Lecture Reviewed - Report by Vanessa Wegner*

### **Isidis Planitia – Beagle 2 Landing Site on Mars**

Dee Levers Memorial Lecture

Dr David Rothery

The Beagle project started with no money at all but plenty of vision. Colin Pillinger was determined that his vision would become reality and his tenacious personality resulted in people like Blur & Damien Hurst becoming involved. Dr David Rothery was signed up as a geologist on the project.

Mars Express was launched on the 2<sup>nd</sup> June 2003 from Kazakhstan. Most of the project team watched the launch from the UK and experienced a heart stopping moment when the rockets ignited and the TV cameras completely bleached out for a few seconds, everyone thought the rocket had exploded until the picture returned.

Whilst Mars Express was on its journey the project team continued to be very busy experimenting with duplicate instruments. The drill bit on Beagle was crucial to the

success of the mission; previous missions had problems penetrating the dust layers on rocks so the drill bit had to be capable of doing this. A dentist from Hong Kong designed it!

On the 19<sup>th</sup> December Beagle was ejected and there followed 6 days of silent cruise before entering the Mars atmosphere. A radio transmitter would have cost a couple of kilograms which was weight they could not afford therefore there was no on board telemetry. Beagle should have dropped on three gas bags, bounce a few times protected by the bags which would then float off.

It is not known which part of the chain went wrong. It was always a high risk mission which gained a lot of media attention but it went out with a whimper rather than a bang as there were several opportunities to get a signal but not a sound was heard.

The landing site, Isidis was chosen very carefully. Isidis is in the Northern Hemisphere enjoying warmer temperatures, which are kinder to electronics. There are very few high-resolution maps of Mars and the project team only had a few sources of information. The Mars Observer Camera (MOC) carried by the Mars Survey has been orbiting Mars since March 1999. The Thermal Emission Imaging System (THEMIS) is carried by Mars Odyssey and has been orbiting the planet since Jan 2002. These sources revealed Isidis to be a safe but also interesting place to land. Present on the site are cones, which occur singly or in small groups or chains. They are in different states of degradation therefore they are of different ages. It is very hard to think of what caused these cones without referring to water. They are probably as a result of magma rising to the surface but before reaching the surface it meets water and erupts causing the cone shape.

Apart from the cones, 2.5% of the site is occupied by hills and 4% by craters, therefore this is not a dangerous site to land. Opportunity landed in a crater without sustaining any damage, which proves that a craft can land safely in these conditions.

There is no doubt that Beagle 2 is dead but the project has shown that it is possible to build a life finding craft cheaply and there is a possibility a fleet of Beagles will be designed with a view to sending to Mars in 2007. As the speaker pointed out, Beagles are pack animals and hunt better in groups!

It was a privilege for the society to be given a first hand account of the Beagle 2 mission and Dr Rothery's talk gave a fascinating insight into the enormous challenges faced by the project team

## Articles

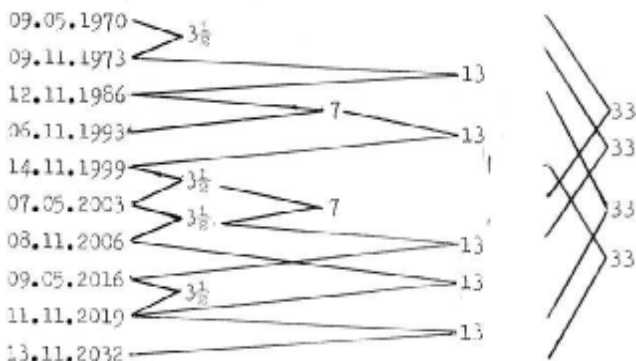
### Inner Planets Transits

Colin Knappitt

The transit of Mercury on 7<sup>th</sup> May last year prompted me to try to calculate at an elementary level why transits of the inner planets occur with the intervals that they do. For example, transits of Mercury feature periods of 3½, 7, 13, 33 and 46 years, though not consistently, as the chart shows.

The starting point is the inner planet's sidereal period (time to orbit the Sun) or, rather, the semi-sidereal period. These are given in the table below. Transits can only occur when the planet is at a node, an intersection point of the plane of the Earth's orbit (the ecliptic) and the inner planet's orbit. There will, of course, be two such points: the ascending node and the descending node for ecliptic crossing.

Mercury Transit Dates



At most inferior conjunctions, the Earth, inner planet and Sun are only roughly lined up because the inner planet is not at a nodal point in its orbit. The frequency of transits, then, must be related to the frequency at which inferior conjunction occurs and the frequency at which ecliptic crossing occurs.

The inferior conjunction intervals the synodic periods are also in the table. They can easily be calculated from the expression  $T_1 T_2 / (T_1 - T_2)$  where  $T_1$  is the Earth's sidereal period (365.24 days) and  $T_2$  is the inner planet's sidereal period.

The next step is to calculate the ratio of the semi-sidereal period to the synodic period and the ratio of the sidereal period to the synodic period with as much precision as possible – five significant figures here. These ratios are given in the table.

Planet	Semi-Sidereal Period / days	Sidereal Period / days	Synodic Period / days	Semi-Sidereal / Synodic	Sidereal / Synodic
Mercury	43.98	87.96	115.88	0.37953	0.75913
Venus	112.35	224.70	583.92	0.19240	0.38480
Earth	182.62	365.24	-	(0.23415)*	(0.46829)
Mars	343.47	686.93	779.94	(0.23415)*	(0.46829)

*\*Earth transit from Mars*

Now, any fraction close to the above ratios will predict a likely transit period. The following fractions work for Mercury: 11/29, 22/29, 41/54, 104/137, 145/191. For example,  $41/54 = 0.75926$ , within 0.2% of the required ratio of 0.75913. So, after a transit has occurred, we might expect another to take place forty-one synodic periods of fifty-four sidereal periods later.

Forty-one synodic periods or fifty-four sidereal periods total 4750.27 Earth days or 13.01 Earth years. The discrepancy of 0.81 days is small enough for it to be reduced under favourable circumstances to a level at which a transit can occur. This happened on 12<sup>th</sup> November 1986, a little more than thirteen and a bit years after the transit of 9<sup>th</sup> November 1973; and again on 14<sup>th</sup> November 1999, thirteen and a bit years after the 1986 transit. But the alignment will not be good enough for a transit in November 2012.

For Venus, the fractions 66/343, 76/395 and 5/13 are close to the required ratios. They translate into transit intervals of 105½, 121½ and 8 years approximately. Five synodic periods match thirteen sidereal periods so well that a transit after 105½ or 121½ year gap is always followed by a second eight years later.

#### Transits from other Planets

My elementary calculations suggest that transits of Mercury should be visible from Venus (at least from the top of its atmosphere) with a period of 17.8 Earth years or thereabouts. The relevant fraction here is 45/148. On Mars, transits of Earth should take place with gaps of 32.0 Earth years. This derives from the fraction 15/64.

Anybody care to confirm these speculations?

## *Notices*

### Discounts to Members

Graham Boots

Our society is affiliated to the Society for Popular Astronomy and means that our members are entitled to various discounts. Some of the firms and organizations I list here but there are others so please contact Graham Boots 01903 505346 for fuller details.

Telescope House formerly Broadhurst Clarkson & Fuller - discounts also applied to internet and mail orders.

Pulsar Optical

Orion Optics

Springer-Verlag 20% off all books

William Herschel Museum Bath

Foredown Tower Camera Obscura

Etc.,

I hold the valid membership card for those interested and our membership number is 20081 which is renewable at the end of March 2005.

### *WAS Ad*

#### Telescopes for Sale

Paul Farmer

Just to let you know, we now sell telescopes in our shop.

Creative Pine  
16 Mulberry Lane  
Goring by sea  
Worthing  
West Sussex.  
Telephone 01903 247317

I have in stock new and second hand telescopes.

6" Newtonian reflectors from £ 199.00 (second hand A1 condition)

New from £ 225.00

We also stock a large range of filters and 1.25" eyepieces.

New stock arriving every week.

## *What's on the Box*

Sunday 16<sup>th</sup> May 2004



03.00 – 03.30: **Volcanoes and the Atmosphere**

Look at evidence that volcanic eruptions can change the Earth's climate, and could even have contributed to the death of the dinosaurs

### *WAS News News*

#### Hubble shows demise in ice and fire

NASA News Release



*Credit: ESA/NASA and Albert Zijlstra. Download a larger version [here](#)*

The Bug Nebula, NGC 6302, is one of the brightest and most extreme planetary nebulae known. At its centre lies a superhot, dying star smothered in a blanket of hailstones. A new Hubble image reveals fresh detail in the wings of this cosmic butterfly.

The Bug Nebula, NGC 6302, is one of the brightest and most extreme planetary nebulae known. At its centre lies a superhot, dying star smothered in a blanket of hailstones. A new Hubble image reveals fresh detail in the wings of this cosmic butterfly.

Most planetary nebulae are distinctive, but few are as extreme as NGC 6302, also known as the Bug Nebula. The fiery, dying star at its centre is shrouded by a blanket of icy hailstones. Robert Frost's 1920 poem "Fire and Ice" could have been written for this object:

Some say the world will end in fire,  
Some say in ice.  
From what I've tasted of desire  
I hold with those who favor fire.  
But if it had to perish twice,  
I think I know enough of hate  
To know that for destruction ice  
Is also great  
And would suffice.

This image of the Bug Nebula, taken with the NASA/ESA Hubble Space Telescope, shows impressive walls of compressed gas, laced with trailing strands and bubbling outflows. A dark, dusty torus surrounds the inner nebula (seen at the upper right). At the heart of the turmoil is one of the hottest stars known. Despite a sizzling temperature of at least 250,000 degrees C, the star itself has never

been seen, as it is hidden by the blanket of dust and shines most brightly in the ultraviolet, making it hard to observe.

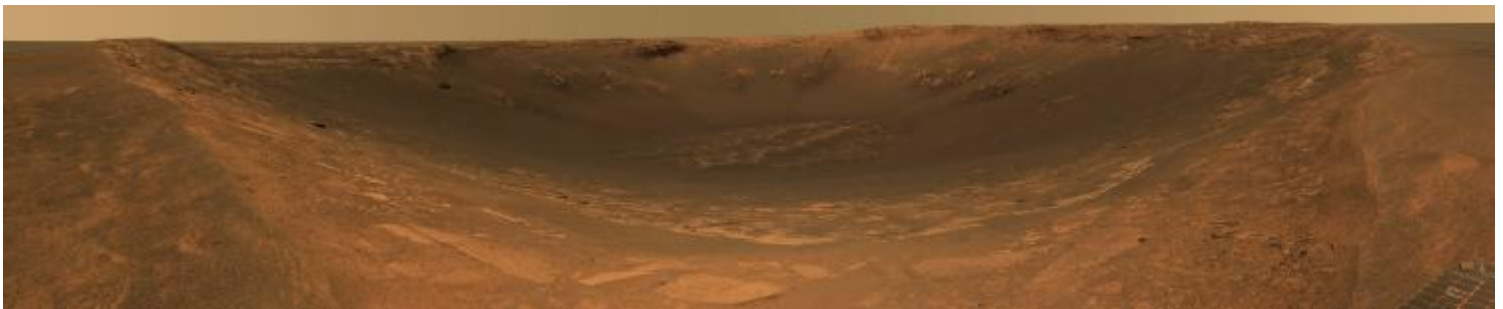
Chemically, the composition of the Bug Nebula also makes it one of the more interesting objects known. Earlier observations with the European Space Agency's Infrared Space Observatory, ISO, have shown that the dusty torus contains hydrocarbons, carbonates such as calcite, as well as water ice and iron. The presence of carbonates is interesting. In the solar system, their presence is taken as evidence for liquid water in the past, because carbonates form when carbon dioxide dissolves in liquid water and forms sediments. But its detection in nebulae such as the Bug Nebula, where no liquid water has existed, shows that other formation processes cannot be excluded.

Albert Zijlstra from UMIST in Manchester, UK, who leads a team of astronomers probing the secrets of this extreme object, says: "What caught our interest in NGC 6302 was the mixture of minerals and crystalline ice - hailstones frozen onto small dust grains. Very few objects have such a mixed composition."

The dense dark dust torus around the central star contains the bulk of the measured dust mass and is something of an enigma to astronomers. They believe the nebula was expelled around 10,000 years ago, but do not quite understand how it formed and how long the dust torus can survive evaporation by the now very hot central star.

### **Opportunity rover poised on rim of 'spectacular' crater**

By William Harwood - Story Written For CBS News "Space Place"



*approximate true-color panorama from Opportunity shows the impact crater known as "Endurance." Credit: NASA/JPL/Cornell. Download super high-res version [here](#)*

NASA unveiled a dramatic image from the Opportunity Mars rover today, a color panorama looking into a 30-foot-deep, football field-wide crater showing cliffs of exposed bedrock that may help unlock the geologic history of the region.

"It has been a great week on Mars," said principal investigator Steve Squyres. "Opportunity has arrived now at the lip of Endurance Crater and has returned to Earth

what is surely the most spectacular image yet from this mission. It's spectacular both from just the sheer scenic grandeur of it, but it's spectacular also for the scientific potential that it offers."

But it will take engineers several weeks to guide Opportunity safely around the rim of the crater to collect the images and other data they will need to determine if the robot can safely traverse relatively steep slopes without bogging down in fine, sandy soil.

## *Diary*

**12<sup>th</sup> May 2004**      **Member's Contributions.**  
Various short talks and slides / video display.  
Members show and describe their current activities.

**9<sup>th</sup> June 2004**      **History of the WAS Observatory**  
**Graham Boots - Curator of the Observatory**

**14<sup>th</sup> July 2004**      **TBA**

**8<sup>th</sup> September 2004** **The History of the Almagest -**  
**Mark Hurn, Institute of Astronomy Cambridge**

**10<sup>th</sup> November 2004** **Central Questions on**  
**Cosmology - Dr Alan Longstaff B Sc., PhD.,**  
**F.R.A.S., Science Writer & Tutor in Astronomy Royal**  
**Observatory Greenwich**

**8<sup>th</sup> December 2004** ' **Observing the Sun - Lee**  
**Macdonald**

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)

### *Executive Committee*

#### **Chairman: Glen Thomas**

20 Wayside Avenue  
Durrington  
BN13 3JU  
Tel: 01903 261723  
Email: [chairman@was.org.uk](mailto:chairman@was.org.uk)

#### **Vice-Chairman: Bob Turner**

21 Beechwood Ave  
Worthing  
West Sussex  
BN13 2HR  
Tel: 01903 692522  
Email: [vice\\_chairman@was.org.uk](mailto:vice_chairman@was.org.uk)

#### **Business Secretary: Christa Sutton**

8 Tower Road  
Lancing  
BN15 9HT  
Tel: 01903 523764  
Email: [secretary@was.org.uk](mailto:secretary@was.org.uk)

#### **Meeting Secretary: Graham Boots**

101 Ardingly Drive,  
Worthing,  
West Sussex  
BN12 4TW.  
Tel / Fax: 01903 505346  
Email: [meeting\\_secretary@was.org.uk](mailto:meeting_secretary@was.org.uk)  
Web Site: [www.observatory99.freemove.co.uk](http://www.observatory99.freemove.co.uk)

#### **Membership Secretary: Colin Knappitt**

41 Cleveland Road  
Worthing,  
West Sussex  
BN13 2ES  
Tel: 01903 695044

#### **Treasurer: Michael Marshall**

84 Bramley Road,  
Worthing,  
West Sussex.  
BN14 9DT  
Tel: 01903 823576

#### **Curator of the Observatory: Graham Boots**

101 Ardingly Drive,  
Worthing,  
West Sussex  
BN12 4TW.  
Tel / Fax: 01903 505346  
Email: [curator@was.org.uk](mailto:curator@was.org.uk)  
Web Site: [www.observatory99.freemove.co.uk](http://www.observatory99.freemove.co.uk)

### *Note to Contributors*

Contributions & Correspondence for the **June** issue of WAS NEWS should be with the Editor by **June 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)