

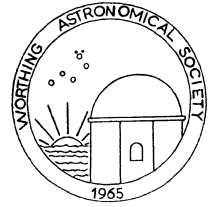


WAS NEWS

Monthly Newsletter of the Worthing Astronomical Society

Official website: www.was.org.uk

Affiliated websites: www.observatory99.freeserve.co.uk



Number 153

May 2002

ALMANAC

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

May/ June

LUNAR

May	Date	Time	rise	set
Last Quarter	4th	07.16	02.13	10.34
New moon	12th	10.45	04.29	19.50
First Quarter	19th	19.42	10.22	01.30
Full Moon	26th	11.51	20.18	03.56
June				
Last Quarter	3rd	00.05	01.21	11.47
New moon	10th	23.46	03.19	20.01
First Quarter	18th	00.29	12.20	00.42
Full Moon	24th	21.42	20.25	03.02

EARTH

May	Sunrise	Sunset
4th	04.27	19.28
12th	04.14	19.41
20th	04.02	19.53
27th	03.54	20.02
June		
3rd	03.47	20.10
10th	03.44	20.16
18th	03.42	20.20
24th	03.44	20.22

PLANETS (as at May 20th.)

	Constellation	Rises	Sets	Mag.
Mercury	Taurus	04.17	19.51	+1.0
coming to inferior conjunction				
Venus	Gemini	05.53	22.42	-4.0
Visible in the West for two hours after sunset				
Mars	Taurus	05.21	22.00	+1.7
Visible in the West N. W. in the evening				
Jupiter	Gemini	06.46	23.01	-1.9
Visible in south-western skies				
Saturn	Taurus	04.50	20.47	+0.1
Difficult				
Uranus	Aquarius	00.53	10.52	+5.8
Morning object				
Neptune	Capricornus	00.08	09.14	+7.9
Morning object				
Pluto	Ophiuchus	19.51	05.53	+13.8
Small hours object				

PHENOMENA

Day	Hour	May
10th	20	Mars 0.3° S. of Venus
13th	12	Neptune at stationary point
13th	22	Mercury 2°N. of moon
14th	08	Saturn 1° S. of moon
14th	19	Mars 0.6° N. of moon
14th	23	Venus 0.8° N. of moon
15th	19	Mercury at stationary point
16th	12	Jupiter 2° S. of moon
27th	07	Mercury in inferior conjunction

3rd	00
3rd	23
7th	05
8th	15
9th	11
9th	13
10th	21
12th	12
13th	04
13th	22
21st	14

June

Uranus at stationary point
Jupiter 2° S. of Venus
Pluto at opposition
Mercury at stationary point
Saturn in conjunction
Mercury 3° S. of moon
Saturn 1°S. of moon
Mars 0.9° S. of moon
Jupiter 2° S. of moon
Venus 1° S. of moon
Mercury at greatest elongation W. 23°

Minima of Algol

May / June Inconveniently situated for observation

Lunar Occultations

Times as at W.A.S. Observatory

Date	U.T.	S.A.O.No	Mag	Phase
May	h. m. s.			
16th	20.31.19	79257	8.3	diss
16th	20.47.45	79276	8.8	diss
17th	20.11.20	80058	8.9	diss
17th	20.14.16	80061	8.7	diss
17th	20.25.22	80065	8.6	diss
17th	20.27.17	80060	9.2	diss
17th	21.24.10	80081	9.0	diss
17th	23.59.57	80172	8.3	diss
18th	20.55.43	80730	9.0	diss
18th	21.53.36	80743	9.0	diss
18th	22.21.01	98484	8.9	diss
18th	23.25.28	98518	8.6	diss
18th	23.31.54	98510	7.3	diss
19th	20.53.21	99001	8.9	diss
19th	21.41.47	99009	8.9	diss
19th	22.05.42	99016	9.1	diss
19th	22.44.22	99030	8.4	diss
20th	21.38.36	99461	8.8	diss
20th	21.44.11	99463	8.9	diss
20th	22.22.48	99474	8.4	diss
20th	23.21.41	99487	8.8	diss
20th	23.51.18	99494	8.1	diss
21st	22.20.14	119177	8.7	diss
21st	22.37.20	119183	8.9	diss
June				
14th	21.27.28	80604	8.3	diss
14th	22.40.34	80631	8.0	diss
18th	22.39.52	138923	8.2	diss

This is only about 45% of the predictions for the W.A.S. Observatory.

Presented by Dave Wells

Editors Note

Greetings all!

An exciting month ahead astronomically speaking, plenty of opportunities for some great planetary observations (see elsewhere in this issue), stunning new pictures from the recently upgraded Hubble Space Telescope (see elsewhere in this issue), The Sky at Night celebrates its 40th anniversary,who could ask for more?

Clear skies perhaps???

Rob

Dates for your Diary

Comets

Alex Vincent

Comet 2002 C1 Ikeya-Zhang

Date	RA		Dec		Mag
	h	m	°	ç	
May 7	17	37.8	+50	23	5.5
May 12	16	55.8	+42	58	6.0
May 17	16	26.9	+35	41	6.4
May 22	16	06.7	+29	04	6.9
May 27	15	52.3	+23	18	7.4
Jun 1	15	41.9	+18	22	7.8
Jun 6	15	34.4	+14	09	8.3
Jun 11	15	29.1	+10	33	8.7
Jun 16	15	25.5	+07	27	9.1
Jun 21	15	27.7	+04	47	9.5
Jun 26	15	22.1	+02	27	9.8
Jul 1	15	21.9	+00	23	10.2

The above co-ordinates are for Epoch 2000.0

This comet is still quite bright and circumpolar during the first half of May. It passes close to the M13 Globular cluster in Hercules on May 15.

Mercury Observations

An opportunity for amateurs to contribute to the first ever pro-am collaboration project on Mercury.

Professional astronomers Ann Sprague and Josh Emery will be observing Mercury from the Infrared Telescope Facility at Mauna Kea, Hawaii between May 2-5 and June 22-24, 2002 and Johan Warell has been granted observing time for Mercury as well on the Nordic Optical Telescope for the period June 28-July 2.

The main emphasis will be on visual and near infrared work to obtain information on the surface composition.

They propose amateurs also join in making as many observations of Mercury as possible from around the world on these dates. Of particular interest are observations and images that have already been acquired which show surface features on Mercury that will be visible during these periods.

Intending contributors can log on to a web page detailing the "Mercury Watch Support Observations Program" at www.astro.uu.se/planet/planet/MERCWWW/supportobs.html This page gives information on ccd and visual techniques, filters, and how to submit results to the professionals. On the linked pages is additional information on planned Mercury research observations and links to related sites.

BAA electronic circular No. 00039
<http://www.britastro.org/>

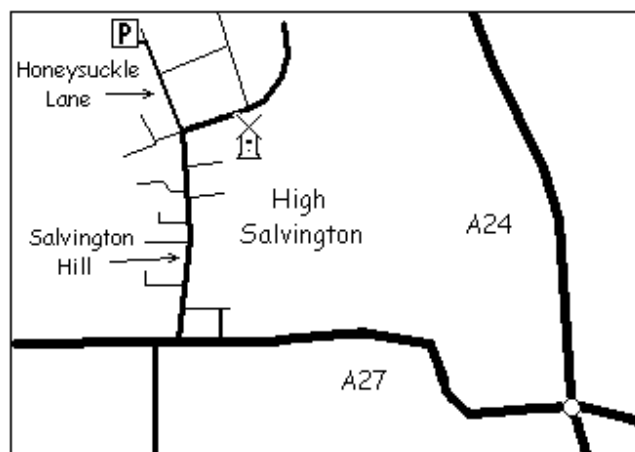
Reports

Planetary Section Report - May 2002

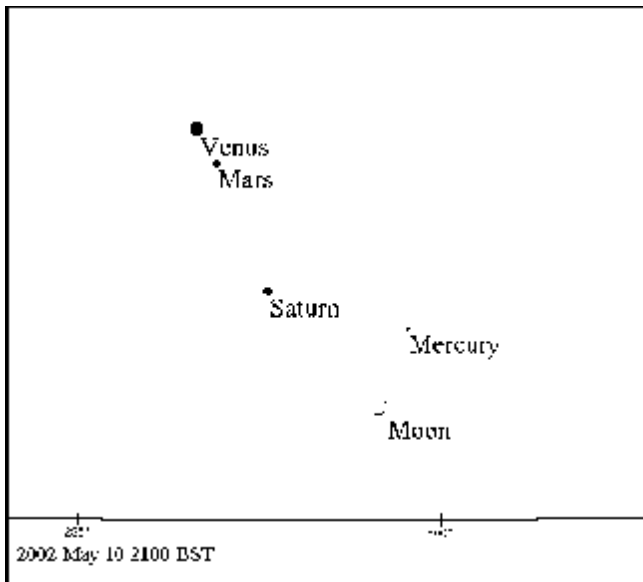
Glen Thomas

Observing the Planets at High Salvington

There are two observing sessions for the much publicised grouping of the five naked eye planets this month, meeting at the High Salvington Honeysuckle Lane car park, 20:40 (8:40) pm onwards (see [map](#)).



The first date is **Friday May 10th**, when **Venus** and **Mars** will be just 0.3° apart; close enough to be seen in the same telescopic field of view. Saturn, Mercury and Jupiter will also be visible marking out the plane of the ecliptic.



The second will be on the **Monday May 13th** with the chance to spot a 33-hour-old **Moon** as it arrives to join the party (May 14th if cloudy). See the **chart** for the positions of the planets around half an hour after sunset.

Such a close and visible alignment of the five bright planets will not happen again until the year 2040, so make the most of it!

Mercury will be 9° above the horizon at 21:10 on the 13th, 6° to the right and 2° lower than Saturn and two magnitudes dimmer in the twilight sky. The angular width of a clenched fist held at arms length is about 10° - sweep with binoculars after sunset to catch the elusive Mercury before it sets.

On the 13th, the 32-hour-old crescent **Moon** is 3° closer still to the horizon than Mercury and needs a clear WNW horizon to see it.

Venus, the Evening Star, is shining brightly over in the west-northwest horizon. In a telescope Venus should show a slightly gibbous phase, but no other features. It will twinkle more as it nears the horizon, with colourful flashes cause by atmospheric refraction.

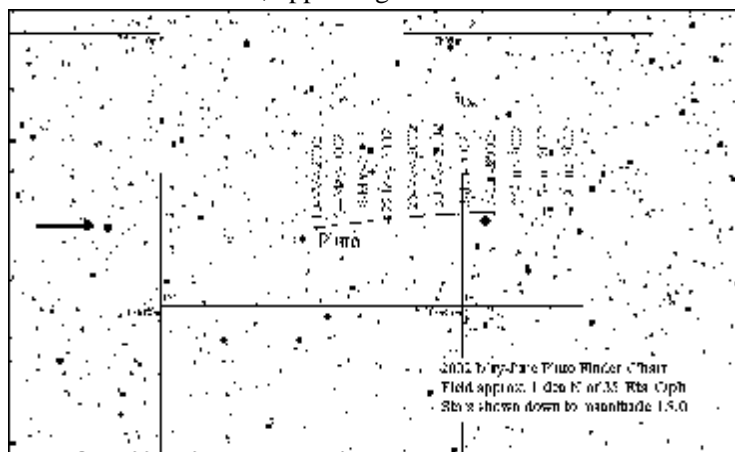
Mars is a fainter point close to Venus - only 0.3° apart on the 10th. However, it is more than twice as far away as the Sun and at only $4''$ across you will not see much detail on the surface.

Jupiter will be the next planet to become visible, high in the southwest. Look in binoculars or a telescope for the four large Galilean Moons: Io, Europa, Ganymede and Callisto. Can you spot the famous Great Red Spot? It is an anticyclonic storm that has been observed since telescopes were first invented in Galileo's time. It is cooler than its surroundings and higher and varies in the

intensity of its colour (currently quite pale) and its size. It has been as large as 40 000 km long, but is less than half that now. The Great Red Spot transits the central meridian (crosses the imaginary N-S bisecting line on the planet's surface) at 20:00 on the 13th and 22:30 on the 28th.

Saturn reaches conjunction with the Sun in early June, so it is now low down as the sky darkens, but should be straightforward to see, as it is quite bright.

Uranus and **Neptune** are visible before dawn in the East with binoculars, appearing star like.



Pluto can be found in Ophiuchus. The arrowed star in the **finder chart** is a magnitude 6.3 star exactly 1 degree due north of 35η Ophiuchi. The faintest stars shown are about the magnitude of Pluto. Observe with at least a 20 cm (8 inch) telescope from a fairly dark site on at least two occasions several days apart. Let me know if you can (or cannot) observe Pluto, the location and the equipment you were using.

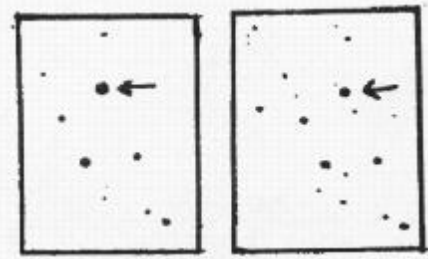
(nb. All times are BST.)

Eclipsing Binary Stars

Alex Vincent

Below are a few photographs (black on white), which I took of eclipsing binary stars at maximum & minimum.

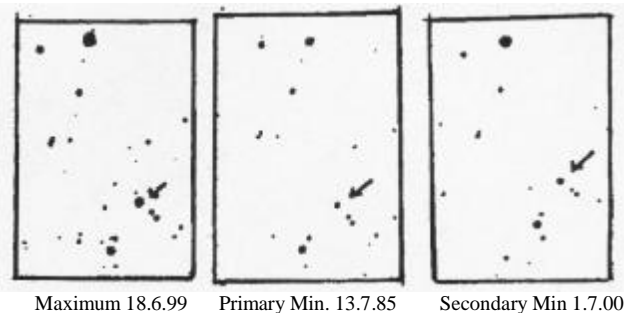
Algol (Beta Persei)



Maximum 10.9.99

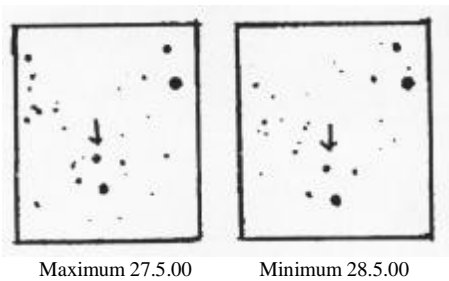
Minimum 20.8.99

Beta Lyrae

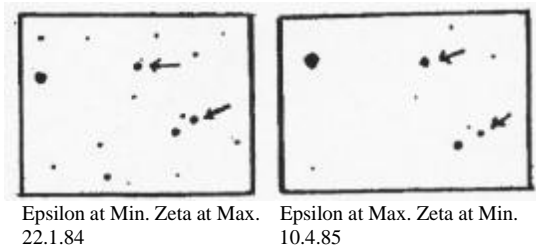


These include the prototypes Algol (EA), Beta Lyrae (EB), W Ursae Majoris (EW) and the long period Eclipsing binaries Zeta & Epsilon Aurigae.

W Uma



Zeta & Epsilon Aurigae



That of Beta Lyrae also shows its secondary minimum where these types have deep & shallow minima.

April Lecture Reviewed - Report by Vanessa Wegner

The Planet Vulcan

Dr David Brand

Although the planet Vulcan does not exist it nevertheless plays a vital role in our knowledge of the solar system, it has been described as an historical investigative story.

Before Uranus was discovered there were only 6 other planets known about, Earth, Mars, Mercury, Jupiter, Saturn & Venus. With the asteroid belt in the equation the distance of each planet & asteroids from the sun depict a good line. But why only six planets?

Johannes Kepler in the 16th Century spent much of his life investigating why the planets were set out at the distances they were. Whilst considering the conjunctions of Jupiter & Saturn which occur just over 240 degrees apart Kepler found that when they are marked on a circle & connected in order by straight lines a series of nearly equilateral triangles is formed, their sides enclosing an area in which another circle may be inscribed.

The inner circle is exactly half the radius of the outer circle, however he discovered that other inscribed polygons had no relation to the distances of other planets & the numbers of polygons are limitless but there were only six planets.

Kepler realised there were only a finite number of regular polyhedra (platonic solids), tetrahedron, cube, octahedron, dodecahedron & icosahedrons, i.e. all equilateral triangles meeting at each point; six triangles would be flat. Kepler published *Mysterium Cosmographicum* in 1596 where he proposed that the orbits of each of the six planets made them fit into a model with the placement of the five regular polyhedra between their spheres. Kepler was aware that his figures were not quite correct & the model only fitted because he had in affect fiddled it slightly!

Kepler published two more books & he put forward three laws, which we still follow:

- “Each planet moves in an ellipse, with the sun at one focus” (This describes the orbit)
- “Equal areas are swept out in equal times” (This describes the variation in speed)
- “Period is proportional to distance” (This describes the changes in orbit)

Kepler`s laws are accurate & he is often described as the founder of modern astronomy, perhaps one of the most fundamental aspects of Kepler`s work is that he did not make any assumptions such as Plato assuming the sun was a perfect circle & the planets moved in perfect circles.

At the same time as Kepler Galileo showed that projectiles move along a parabola & then Newton united Galileo & Kepler by propounding the three laws of motion & the law of gravitation. From these three great scientists we know that the solar system is

- A system of planets
- All at different distances from the sun
- All at different mass
- All the orbits have different eccentricities
- All are acted on by the sun & they all act on each other.

In 1781 William Herschel discovered Uranus & he immediately began to measure its orbit, however he discovered that it was not behaving quite as it should.

In 1846 Adams & Leverrier independently calculated that a new planet existed & Neptune was found in roughly the suggested position. Adams actually discovered it first & he reported his findings to the Astronomer Royal but as only a student he was not taken seriously.

Leverrier as a respected astronomer in France was listened to although in fact Adams calculations were more accurate. The orbits of Uranus & Neptune were still wrong, and then in 1930 Tombaugh (USA) discovered Pluto.

How do planets have an effect on each other? This is where precession comes in, e.g. Mercury has a high eccentricity, in other words quite a flat orbit, good quality observations of Mercury over the last 300 years have revealed this, but still this can not explain a movement of 43 second of arc per century.

Leverrier suggested there was planet inside Mercury's orbit; Vulcan.

Dr Lescarbault had been searching for Vulcan since 1858 & he even thought he had seen it! Leverrier visited him & was also convinced but when he calculated the mass of Vulcan it was not enough to explain 43" per century.

During a total solar eclipse of 1878 2 observers, Professor Watson & Swift independently searched for any objects near the sun but no evidence was found.

Einstein however came to the rescue, he published his theory of relativity, which predicted 43" per century & proved that all planets were affected by this.

Vulcan is the Greek God of fire & metalwork, which is why this name was chosen for a planet, so near the sun.

Dr Brand's lecture was fascinating & eloquent in its description of how Vulcan burst onto the scene for a few brief decades before it died a death but the study of how astronomers & scientists search for Vulcan is an excuse to take an oblique look at the history of astronomy & how this suggested planet impacted on astronomical advances over the last few centuries.

Notices

Situations Vacant

Brian Halls

I have been advised by Vanessa our Librarian that due to work commitments she may not be able to attend the meetings as regularly as she would like and therefore would have to resign her post. As Rob our editor is also co-librarian and cannot get to the meetings regularly for very much the same reasons, the post of Librarian is vacant.

If anyone feels interested in the job, please contact Vanessa or myself. I would like to take this opportunity to thank both Vanessa and Rob for doing the job so well over the last several years. Very much appreciated.

On the subject of positions vacant, the post of Secretary is still open and as I have written above, if anyone would like to know more about the position of Secretary, please let me know – my number is at the back of this newsletter.

Library Book Amnesty

Thank you one and all for the efforts made to return those missing books

As you can see the 'to be returned' list decreases
Still outstanding are: -

In the centre of Immensities	RB
Astronomy	PM
The Night Sky	JH
Astronomy (The evolving Universe)	AB
Radio Astronomy	KG
Our Universe	CH
Black Holes	DJ
Seasonal Star Charts	RB
Comets (Video)	JR
Atlas of the Universe	PL
The Telescope	Mr. S
The Beginners Guide to Astronomy	JR
Black Holes	NG
Hunting Down the Universe	GT
A Brief History of Time	NG
Hubble Space Telescope	Mr& Mrs C
The Lighter side of Gravity	DJ
Universe	GB
Illustrated Guide to the Night Sky	WS
The Universe	GT
Universe	AC
Star Hopping	SM
Burnham's Celestial Handbook 1, 2 & 3	KP

WAS Ad

6" F6 Orion Optics Newtonian Reflector
6 * 30 finder scope
Heavy-duty equatorial mount
RA drive
All in good order.
Optics excellent.
£295.00 (Two hundred and ninety five pounds)
Tel 01903 262473
Keith Peters

The reason for sale is that I am going to buy a larger aperture telescope. However, I am under strict instructions from my wife that this one has to go before I am allowed another one! I don't know surely everyone knows you can't have enough telescopes!

What's on the Box

Wednesday 8th May 2002



21.00 to 21.30 ~ Frontiers

The first stars in the universe expired long before astronomers saw them, but research is gradually revealing their secrets. Peter Evans reports on key moments in cosmic history

Thursday 9th May 2002



01.00 to 01.35 ~ Final Frontier

From the National Space Centre in Leicester, astronomer Dr Paul Roche presents the latest developments in space science and astronomy

Saturday 11th May 2002



04:05 to 04:30 ~ Hitch-Hiker's Guide to the Galaxy

Douglas Adams's epic adventure in time and space. Fit the seventh.

Sunday 12th May 2002



14:05 to 14:30 & 22:30 to 23:00~ Hitch-Hiker's Guide to the Galaxy

Douglas Adams's epic adventure in time and space. Fit the seventh.

WAS News News

Telescope Opens Window on Dawn of the Universe - May 1, 2002

Warren Leary (New York Times)

WASHINGTON, April 30 - Using its new main camera, the rejuvenated Hubble Space Telescope has produced a stunning set of images of dynamic processes in the far reaches of the universe, scientists said today.



The Advanced Camera for Surveys has captured a spectacular pair of galaxies engaged in a celestial dance of cat and mouse or, in this case, mouse and mouse.

In some of the first pictures from the device, the Advanced Camera for Surveys, the telescope has produced clear images of galaxies colliding and spewing trails of stars in their wakes, billowing pillars of dusts acting as star nurseries and enormous gas fields splashed with the colours of an abstract painting.



Called the Cone Nebula (NGC 2264) -- so named because, in ground-based images, it has a conical shape -- this giant pillar of gas and dust resides in a turbulent star-forming region. This picture shows the upper 2.5 light-years of the nebula, a height that equals 23 million roundtrips to the Moon.

Dr. Holland Ford of the Johns Hopkins University, the lead scientist who helped develop the camera, said at a news conference by the National Aeronautics and Space Administration that the improved imager opened a window into deep space that allowed a look back almost to the start of the universe 13 billion years ago.



This is an image of the centre of the Omega Nebula, a hotbed of newly born stars wrapped in colourful blankets of glowing gas and cradled in an enormous cold, dark hydrogen cloud.

"These are among the best images of the distant universe humans have ever seen," Dr. Ford said.

One image, of a colliding galaxy 420 million light-years away, showed the large spinning body of stars disrupted by a smaller one. Scientists named the large galaxy Tadpole, because the collision resulted in its having a tail of stars and dust stretching 280,000 light-years long.



This picture of the galaxy UGC 10214 was taken by the Advanced Camera for Surveys. Dubbed the "Tadpole," this spiral galaxy is unlike the textbook images of stately galaxies. Its distorted shape was caused by a small interloper, a very blue, compact galaxy visible in the upper left corner of the more massive Tadpole.

In the same image beyond Tadpole is a red dot, not seen in previous images of that part of the sky that is a faint red galaxy formed when the universe was one billion years old, Dr. Ford said.

"We are now looking back in time to when the universe was young, seeing light from processes that happened billions of years ago," he said in an interview.

Dr. Edward Weiler, chief of space science for NASA, said the Hubble mission that astronauts aboard the shuttle Columbia performed in March was a complete success. In five space walks, astronauts replaced the telescope's solar power arrays and main power controller, replaced an old camera with the new one and added a refrigeration system to revive a dormant infrared camera.

"Hubble is back in business, and everything works great," Dr. Weiler said.

The \$2 billion observatory is so much better equipped than when it was launched in 1990, Dr. Weiler said, that it can almost be considered a new telescope ready to exceed its past accomplishments.

"Even after 12 years of great science and astounding images," he said, "we haven't seen anything yet."

Mars Global Surveyor observes volcanoes

NASA/JPL/MSSS Photo release- Posted: April 30, 2002

Acquired in March, this Mars Global Surveyor (MGS) Mars Orbiter Camera (MOC) wide angle view shows the Martian volcano, Ceraunius Tholus. The presence of impact craters on this volcano; indicates that they are quite ancient and are not active today.

The light-toned area on the south-eastern face (toward lower right) of Ceraunius Tholus is a remnant of a once more extensive deposit of dust from the global dust storm events that occurred in 2001. The crater at the summit of Ceraunius Tholus is about 25 km (15.5 mi) across. Sunlight illuminates the scene from the lower left.



Diary

May 8 *White Dwarfs*, by Konrad Malin-Smith
FRAS (Croydon AS),

June 12 *Extrasolar Planetary Search* by Kevin
Apps (Previously of Sussex University)

July 10 *Members Evening* –members get a chance
to show what they have been doing over the last year.

July 13 Summer SAGAS Meeting, Portsmouth
Naval Base, Hampshire.

September 11 *The Moon – a Biography* by Dr David
Whitehouse (BBC On-line Science Editor)

October 9 to be advised

November 13 *Getting Started with CCD Astronomy* by
Alan Smith (Christchurch Hospital Observatory and
Horsham Astronomical Group)

December 11 *TBA* by Owen Brazell editor of "The
Deep-Sky Observer" published by the Webb Society.

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 or
Email: worthing_astronomical_society@hotmail.com

President: Mr. J L White FRAS

Executive Committee

Chairman: Brian Halls

7 Ryecroft Court
Penhill Road
Lancing
West Sussex, BN15 8HJ
Tel: 01903 521205
Email: worthing_astronomical_society@hotmail.com

Vice-Chairman: Bob Turner

21 Beachwood Ave
Worthing
West Sussex
BN13 2HR
Tel: 01903 692522
Email: rfturner@compuserve.com

Secretary: Post Vacant

All Correspondence to The Chairman, Brian Halls at:

7 Ryecroft Court
Penhill Road
Lancing
West Sussex, BN15 8HJ
Tel: 01903 521205
Email: worthing_astronomical_society@hotmail.com

Assistant Secretary: David Chilard

40 Ferring Street
Ferring
Worthing,
West Sussex
BN12 5HJ
Tel: 01903 501819
Email: dave-ros@tinyworld.co.uk

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: gboots@observatory99.freemove.co.uk
Web Site: 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: robertdavis@lineone.net

a b c d e f g h i j k l m n o p q r s t u v w x y z