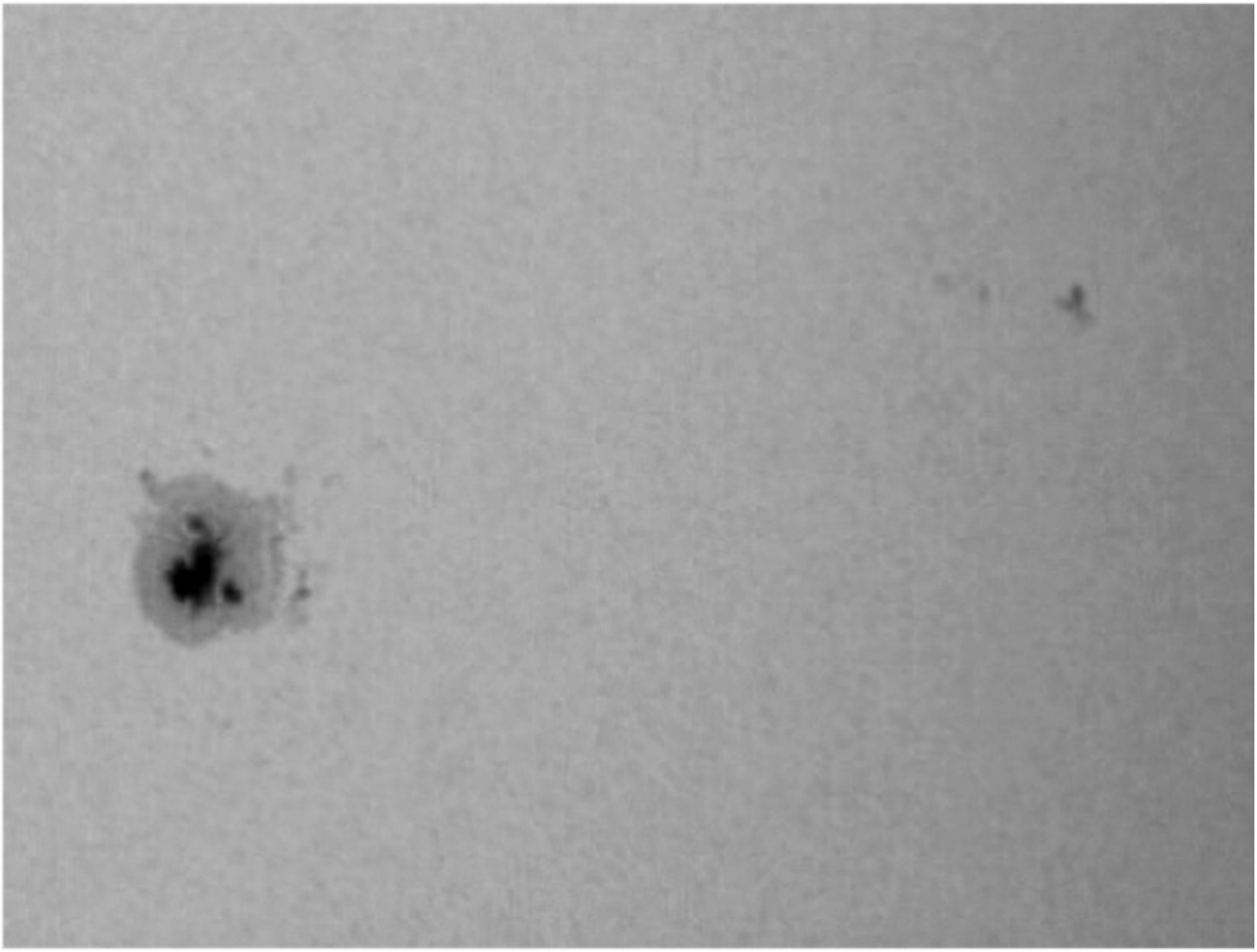
WAS NEWS

Monthly Newsletter of the **W**orthing **A**stronomical **S**ociety
www.was.org.uk

Number 208 **May 2007**



Solar Image Showing Large Sunspot Image

Bob White

Captured on 30th April 2007 at 11h 33m 59s UT.The webcam was a V-Gear Talkcam Tracer CCD.The capture software used was Astra Image Webcam Video Grabber ver. 1.0c.The telescope was a Skywatcher 127 mm Maksutov @ f11, using a full aperture Baader Solarfilm filter.The final image is made up of 32 stacked frames out of 342, using Registax 4.This large sunspot group was visible to the solar filtered naked eye.

ALMANAC

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

LUNAR

May	Date	Time	Rise	Set
Full Moon	2nd	10.09	20.09	04.00
Last Quarter	10th	04.27	01.51	11.07
Perigee	15th	15.00	359,380 km	
New moon	16th	19.27	03.18	20.10
First Quarter	23rd	21.02	10.44	01.03
Apogee	27th	21.55	405,489 km	
June				
Full Moon	1st	01.04	21.31	03.15
Last Quarter	8th	11.43	00.25	11.42
Perigee	12th	17.00	363,760 km	
New moon	15th	03.13	03.08	21.35
First Quarter	22nd	13.15	12.06	23.52
Apogee	24th	14.22	404,577 km	
Full Moon	30th	13.49	21.06	02.47

EARTH

May	Sunrise	Sunset
2nd	04.31	19.25
10th	04.17	19.37
16th	04.08	19.47
23rd	03.58	19.57
June		
1st	03.49	20.08
8th	03.45	20.14
15th	03.43	20.19
22nd	03.43	20.21
30th	03.46	20.21

PLANETS

(As at June 1st)

	Constellation	Rises	Sets	Mag.
Mercury	Gemini	05.14	22.06	+0.5
Difficult				
Venus	Gemini	07.02	23.20	-4.3
Evening object in the south west				
Mars	Pisces	01.52	14.34	+0.8
Morning object in the East				
Jupiter	Ophiuchus	20.13	04.28	-2.6
Visible most of the night				
Saturn	Leo	09.27	00.23	+0.6
Visible in the southwest				
Uranus	Aquarius	01.06	12.20	+5.9
Unfavourable				
Neptune	Capricornus	00.13	09.52	+7.9
Unfavourable				
Pluto	Sagittarius	20.34	05.55	+13.9
Difficult				

PHENOMENA

Day	Hour	May
20th	02	Venus 2°S. of moon
22nd	19th	Saturn 0.7°S. of moon
25th	01	Neptune at stationary point

		June
1st	11	Jupiter 6°N of moon
2nd	10	Mercury at greatest elongation E. 23°
5th	23	Jupiter at opposition
9th	02	Venus at greatest elongation E. 45°
10th	18	Mars 5°S. of moon
16th	00	Mercury at stationary point
16th	09	Mercury 6°S. of moon
18th	15	Venus 0.5°S. of moon
19th	07	Pluto at opposition
19th	08	Saturn 0.4°S. of moon
23rd	15	Uranus at stationary point
28th	12	Jupiter 6°N. of moon
28th	19	Mercury in inferior conjunction

Minima of Algol

May	***inconveniently situated***
June	***inconveniently situated***

Lunar Occultation's

Times as at Old W.A.S. Observatory

Date	U.T.	S.A.O. No	Mag	Phase
May	**h. m. s.**			
21st	21.49.23	80354	6.6	Diss
22nd	21.47.09	98625	7.5	Diss
25th	21.21.31	138388	7.4	Diss
26th	22.44.49	138811	7.8	Diss
27th	22.28.55	157777	8.3	Diss
June				
18th	21.39.32	98435	8.6	Diss
19th	21.44.37	98906	8.2	Diss
20th	22.17.55	118504	8.7	Diss
22nd	20.44.52	138644	7.8	Diss
24th	21.03.26	158070	7.5	Diss
24th	21.56.04	158072	8.3	Diss
25th	21.06.38	158556	6.7	Diss
25th	21.08.16	158558	6.4	Diss
26th	22.39.02	183333	7.3	Diss
27th	23.22.25	184184	6.7	Diss

The list above is a selection of the more easily observed evening events, (about 48% of the list available,) there are lots more in the wee small hours for the insomniacs amongst us

Dave Wells

Editors Note

I am currently 'Home alone', Mrs WASNews Editor and Assistant are enjoying a Holiday in the Canary Isles. 'Excellent' I remarked, 'extensive photos and report on the William Herschel Telescope please….'

The reply has been deemed unsuitable for such an august publication as this.

Rob

Reports

The Planets in June 2007

Glen Thomas, Planetary Sections

The Planets

Mercury completes a favourable apparition started during May. Look for the tiny planet with binoculars as the sky starts to darken in the evening. The table gives the positions for the end of civil twilight, when the Sun is 6° below the horizon.

	Date	BST	Alt°	Az°	Mag
June	03	21.52	8.6	299	+0.7
	06	21.55	7.4	300	+1.0
	09	21.58	5.8	301	+1.3
	11	22.00	4.5	301	+1.6

Table: Mercury visibility 2007 Jun (for earlier dates see May WASNews)

Venus is now much lower in the evening twilight, but is still of interest. June 12 to 14 has Venus skimming the edge of the open cluster M44, 'Preasepe' or the Beehive Cluster, making a good photo-opportunity.

Mars rises around 2.30, and does not get to even a 7° altitude mid-month before the brightening twilight obscures it.

Jupiter reaches opposition on Jun 6th. If you want to view it under good conditions, you should try close to 01.00 as it transits at the low altitude of only 17° above the southern horizon. Later in the night there may be better general seeing, but Jupiter will be descending into the haze.

Saturn is becoming lower in the south-west after sunset and fainter as Earth moves away from it.

Uranus and **Neptune** are still too close to the Sun to be suitable for observing.

Dwarf planet **134340 Pluto** transits around 1.30 at an altitude of only 15° in Sagittarius. It is at opposition on Jun 19th.

Solar Section Report - April, 2007

Section director, Brian Halls

Sunspot activity was extremely low during April, when a large number of days were recorded as spotless.

From the 5th to the 14th – no long term sunspots were recorded, though the appearance of some short lived – literally only for an hour or two – spots were recorded.

AR 0951 which appeared on the 15th was just such a spot lasting briefly before decaying.

AR 0953 (S14 L=310) appeared on the 24th as it swung round the East limb – its possible appearance being heralded by some interesting prominences visible to astronomers using h-alpha telescopes. Within a few days it had grown to a size possible for observing with the (protected) naked eye.

Until the end of the month, 0953 kept its size and was magnetically complex – producing a number of flares.

Activity through the month was again primarily associated with the southern solar hemisphere.

Three WAS members, Graham Boots, Brian States and the Director reported solar observations on all 30 days in April.

WAS Relative sunspot number = 4.00 (MDF = 0.3 – average daily sunspot groups).

International R 3.7 = (provisional)

solar_section@was.org.uk

Dates for your Diary

Open Day

Graham Boots

On Saturday the 23rd June next Paul Farmer is having a special Open Day at his shop, the Sussex Astronomy Centre in Goring. Please see his advertisement in this edition of WAS News. He has invited our society to have a stand to attempt to recruit new members.

We urgently require a few members to organise and operate this stand for the day.

Recently we have obtained about six or seven new members due to Paul's efforts so let us support him. There will be the opportunity to see the Sun in both hydrogen and calcium light. Visiting experts will be on hand to answer questions about a range of astronomical products. There will also be special one day's offers available. So, volunteers contact Paul on Worthing 247317 please!

Notices

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.

Articles

Action On Light Pollution

Colin Knappitt

There are two aspects to light pollution. The first is largely aesthetic, though that is by no means to belie its importance: the destruction of views of the night sky and the ambience of what ought to be dark landscapes and the small settlements therein. The second is economic, since polluting light means wasted electricity, and comes at a monetary cost. The two aspects often occur together: the cheap, 500W Rottweiler floodlamp is an inefficient converter of electrical energy to light (it is described as an inefficacious source) and its usual poor design, bad siteing and shallow angling then result in much if not most of the light missing the intended target. But you can have an efficient (efficacious) converter, such as the compact fluorescent tube lamps, currently popular with clueless developers, which cannot be heavily criticised with justification on grounds of energy wastage; they are, though, hugely damaging aesthetically when poorly designed, wrongly sited or over-bright.

Self-evidently, sufficient reduction of wasted energy would render construction of some new power generating capacity - including that using renewable resources - redundant. Light (and the accompanying infra-red) pollution in Britain equates to wasted output from, at a conservative guess, one or two medium-sized power stations, with all that that entails. Given the Government's oft-trumpeted intention to cut Britain's emissions of carbon dioxide, you would think that it would be acting to cut the unnecessary generation of electricity, much of which is produced by the burning of carbonaceous fuels - coal, oil and gas. Not so. Despite the best efforts of CPRE, CfDS and others, there is little headway to show in the fight to get the Government to enact legislation with teeth. The one-year-old statutory nuisance clauses against light pollution are pathetically weak in order not to offend the big polluters. Government ministers yammer on about low energy light bulbs for householders but resolutely refuse to get tough with the big polluters and the high-powered pollution products. So, what can you do?

First, put your own house in order with the following steps.

1. Get any floodlights on brackets angled sharply down. The glazed face of the lamp should be at or close to the horizontal. This is a hugely important improvement without cost.

2. Remove or disable (take out the bulb) any lamp you do not need. Resite any badly located lamp to a better spot. Again, these improvements could be without cost.

3. Power down your lamps with bulbs of the minimum wattage that satisfies the task. 300W tungsten bulbs are readily available to replace 500W and 100W for the shorter 150W. A replacement tungsten halogen bulb is about £2.

4. Replace poorly designed lamps with better products. These need not be unduly expensive. The B & Q Orion lamp retails at about £8.50 (more with a sensor) and claims to send all light below the horizontal. Regrettably, this is not true; but it is a far superior product to the standard tungsten halogen metal buckets.

5. If your lamps are sensor operated, adjust the range, if necessary, to prevent triggering by pedestrians or vehicles passing in the street. And keep the duration short.

Second, have a look through the weekly planning applications in the local paper; in the Worthing Herald, these are on the page headed "The Notices". Occasionally, there are applications involving sports lighting; more frequently, there will be applications for the building of flats or the provision of car park lighting, Make a representation to the Council Planning Department that all external lighting associated with the proposal must comply with Policy Resolution 8, the part of the Local Plan that deals with light pollution. Specifically, it requires the minimum necessary light for the task; containment of the area of illumination; and minimisation of impact upon the character of an area. You would think that, with these provisions fully in place since September, 2004, new developments in Worthing would not be adding significantly to the Town's light pollution boot-print and that there would be no need for individual development representations. How wrong you would be. Graham Boots and I learned in recent months that Policy

Resolution 8 has routinely been disregarded in the planning process and, for instance, builders of flats have been left to their own devices when it comes to external lighting. Which is why we have flats and other new premises mushrooming all over Worthing in recent years and sporting all kinds of powerful, poorly designed and often plain unnecessary bulkhead lamps and lamps on standards.

Third, write to local councillors, local M.Ps and Government Ministers, pressing for action at a local and national level. Relevant departments are defra and the pompously named ODPM.

Fourth, report day-burning street lamps to the County Council's Street Lighting Department. If these lamps are on minor roads, they will often be designated as "part-night", which means they ought to go off around midnight but the fault will keep them on. There are also part-night street lamps that fault themselves into all-night burners but stay off during the day. These are, obviously, harder to spot and report.

Whatever you do, though, do something. Even if it is no more than getting any of your own rogue lamps angled steeply down.

WAS Ad

Was News News

Astronomers make the first map of an extrasolar planet

Harvard-Smithsonian Center For Astrophysics
News Release

CAMBRIDGE, MA - For the first time, astronomers have created a rough map of a planet orbiting a distant sun-like star, employing a technique that may one day enable mapping of Earth-like worlds. Since the planet just charted is a gas giant and lacks a solid surface, the map shows cloud-top features. Using the Spitzer infrared space telescope, astronomers detected a bright hot spot that is offset from "high noon," where heating is greatest.

"We are getting our first good look at a completely alien world," said Heather Knutson, a graduate student at Harvard University and lead author of a paper about the research appearing in the May 10 issue of the journal Nature.

"We felt a little like Galileo must have felt when he first glimpsed Jupiter through the eyepiece of his telescope," Knutson continued.

Spitzer is only capable of mapping large, hot worlds - planets too hot for liquid water or life. However, the upcoming James Webb Space Telescope (scheduled for launch in 2013) may be able to map Earth-like worlds using the technique Knutson and her colleagues pioneered.

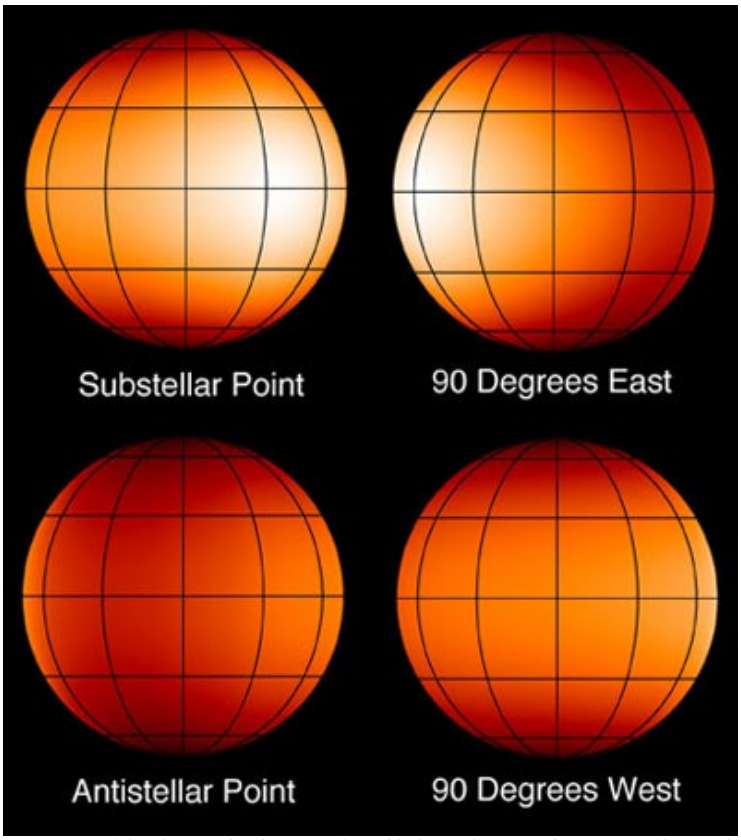
The team examined the planet, known as HD 189733b, using the Infrared Array Camera on board NASA's Spitzer Space Telescope. Infrared observations offer an advantage because the brightness difference between star and planet is lessened, making it easier to tease out the planet's signal.

Over the course of 33 hours, the team collected more than a quarter million data points. Although Spitzer could not resolve the planet into a disk, by measuring changes as the planet rotated, the team created a simple longitudinal map. That is, they measured the planet's brightness in a series of pole-to-pole strips across the planet's visible cloud-tops, then assembled those strips into an overall picture.

"We can see the changes in brightness as features in the planet's atmosphere rotate into and out of view," Knutson explained.

The map revealed a single "hot spot" that is about twice as big as the Great Red Spot on Jupiter and much hotter. The Great Red Spot is only about 30 degrees Fahrenheit warmer than its surroundings, with a temperature of -200 degrees F. In comparison, the hot spot on HD 189733b is a scorching 1700 degrees F.

Interestingly, researchers found that the hottest point on the planet is not the substellar point ("high noon" on the planet), but rather is offset by about 30 degrees longitudinally. They speculate that the shift is due to winds redistributing heat across the face of the planet.



Four views of the planet's cloudtops in infrared light, each centered at a point of longitude 90 degrees from the last. A grid of longitude lines is superimposed on the map. These views clearly show a hot spot that is offset from the substellar point (high noon) by about 30 degrees. The offset may indicate fast "jet stream" winds of up to 6,000 mph. Credit: NASA/JPL-Caltech/Heather Knutson (CfA)

"This planet has powerful jet streams. While Earth's jet stream blows at around 200 miles per hour, the jet stream on HD 189733b may blow as fast as 6,000 miles per hour, according to computer models," said co-author David Charbonneau (Harvard-Smithsonian Center for Astrophysics).

The distant planet's strong, hot winds may also help to keep the planet's night side warm. Without winds, the side facing the star would broil while the opposite side would freeze. However, the astronomers measured a maximum temperature difference of about 500 degrees F. The coldest regions on the night side remain a balmy 1200 degrees F.

"Every night is hot on this world," stated Knutson.

HD 189733b orbits a star slightly cooler and less massive than the Sun located about 60 light-years from Earth in the direction of the constellation Vulpecula. It is the closest known "transiting" planet to Earth.

HD 189733b orbits its star at a distance of only three million miles, completing one revolution every 2.2 days. Its mass and physical size are both slightly larger than Jupiter.

This discovery was made with Spitzer's Infrared Array Camera, built primarily at NASA Goddard Space Flight Center in Greenbelt, Maryland. The instrument's principal investigator is Giovanni Fazio of the Harvard-Smithsonian Center for Astrophysics.

Report reveals likely causes of Mars spacecraft loss

NASA News Release

WASHINGTON - After studying Mars four times as long as originally planned, NASA's Mars Global Surveyor orbiter appears to have succumbed to battery failure caused by a complex sequence of events involving the onboard computer memory and ground commands.

The causes were released today in a preliminary report by an internal review board. The board was formed to look more in-depth into why NASA's Mars Global Surveyor went silent in November 2006 and recommend any processes or procedures that could increase safety for other spacecraft.

Mars Global Surveyor last communicated with Earth on Nov. 2, 2006. Within 11 hours, depleted batteries likely left the spacecraft unable to control its orientation.

"The loss of the spacecraft was the result of a series of events linked to a computer error made five months before the likely battery failure," said board Chairperson Dolly Perkins, deputy director-technical of NASA Goddard Space Flight Center, Greenbelt, Md.

On Nov. 2, after the spacecraft was ordered to perform a routine adjustment of its solar panels, the spacecraft reported a series of alarms, but indicated that it had stabilized. That was its final transmission. Subsequently, the spacecraft reoriented to an angle that exposed one of two batteries carried on the spacecraft to direct sunlight. This caused the battery to overheat and ultimately led to the depletion of both batteries. Incorrect antenna pointing prevented the orbiter from telling controllers its status, and its programmed safety response did not include making sure the spacecraft orientation was thermally safe.

The board also concluded that the Mars Global Surveyor team followed existing procedures, but that procedures were insufficient to catch the errors that occurred. The board is finalizing recommendations to apply to other missions, such as conducting more thorough reviews of all non-routine changes to stored data before they are uploaded and to evaluate spacecraft contingency modes for risks of overheating.

"We are making an end-to-end review of all our missions to be sure that we apply the lessons learned from Mars

Global Surveyor to all our ongoing missions," said Fuk Li, Mars Exploration Program manager at NASA's Jet Propulsion Laboratory, Pasadena, Calif.

Mars Global Surveyor, launched in 1996, operated longer at Mars than any other spacecraft in history, and for more than four times as long as the prime mission originally planned. The spacecraft returned detailed information that has overhauled understanding about Mars. Major findings include dramatic evidence that water still flows in short bursts down hillside gullies, and identification of deposits of water-related minerals leading to selection of a Mars rover landing site.

Diary

21st May 2007 Introduction to Electronic Imaging of Solar System Objects - Ed Sampson

18th June 2007 Cassini Mission to Saturn the latest - Professor Carl Murray Astronomy Unit, Queen Mary, University of London

16th July 2007 Search for Extraterrestrial Unintelligence" - Professor Jonathan Tennyson F.R.A.S. Department of Physics & Astronomy University College London

13th August 2007 At the Observatory from twilight onwards Perseids Meteor Shower

17th September 2007 Cosmology & WMAP - Professor Malcolm MacCullum F.R.A.S.,Department of Mathematics Queen Mary University of London

15th October 2007 Member's Contributions & AGM

19th November 2007 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 & Author of 'Mars Observing Guide'.

14th December 2007 At the Observatory from twilight onwards Geminids Meteor Shower

*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 or email 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

Vice-Chairman: Glen Thomas

Tel: 01903 261723
Email: vice_chairman@was.org.uk

Business Secretary: Christa Sutton

Tel: 01903 523764
Email: christa.sutton@ntlworld.com

Meeting Secretary: Graham Boots

Tel / Fax: 01903 505346
Email: meeting_secretary@was.org.uk

Membership Secretary: Peter Atkinson

Tel: 01903 690943
Email: pdatkinson@tesco.net

Treasurer: Colin Knappitt

Tel: 01903 695044

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 or wasnews@was.org.uk