

WAS NEWS

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



Number 186

May 2005

ALMANAC

All times U.T. For BST add one hour

		May/June LUNAR		
May	Date	Time	Rise	Set
Last Quarter	1 st	06.24	02.26	10.29
New moon	8 th	08.45	04.05	20.16
First Quarter	16 th	08.57	10.55	01.49
Full Moon	23 rd	20.18	20.14	03.16
Last Quarter	30 th	11.47	01.10	11.13
		June		
New moon	6 th	21.55	02.52	20.34
First Quarter	15 th	01.22	12.17	00.30
Full Moon	22 nd	04.14	21.41	03.04
Last Quarter	28 th	18.23	23.54	11.47

31 st	10
3 rd	09
5 th	07
7 th	08
8 th	13
10 th	
10 th	04
14 th	03
14 th	23
16 th	07

Mars 0.5° N. of moon
June
Mercury in superior conjunction
Jupiter at stationary point
Mercury 3° S. of moon
Venus 4° S. of moon
Ophiuchid meteor shower
Saturn 5° S. of moon
Pluto at opposition
Uranus at stationary point
Jupiter 0.4° N. of moon

Minima of Algol

May Unfavourable
June Unfavourable

Lunar Occultation's

Times as at Old W.A.S. Observatory

Date	U.T.	S.A.O. No	Mag	Phase
May	h. m. s.			
11 th	21.44.40	78000	8.6	Diss
12 th	20.55.55	78968	7.2	Diss
12 th	21.11.02	78976	8.2	Diss
12 th	22.08.21	79015	9.0	Diss
14 th	21.54.29	80414	7.9	Diss
15 th	21.07.08	98640	7.8	Diss
15 th	21.53.03	98646	8.4	Diss
15 th	22.19.18	98657	8.9	Diss
16 th	20.42.54	99052	8.4	Diss
16 th	21.03.26	99067	8.9	Diss
17 th	22.53.10	118666	8.8	Diss
17 th	23.13.21	118674	9.0	Diss
19 th	22.00.35	138861	8.0	Diss
19 th	23.11.18	138880	8.8	Diss
19 th	23.53.05	138882	9.0	Diss
28 th	01.35.02	189416	6.2	Reapp
29 th	02.56.20	190461	5.8	Reapp
30 th	03.08.56	165127	6.4	Reapp
June				
11 th	21.48.03	98484	9.2	Diss
11 th	22.44.03	98518	9.0	Diss
12 th	21.32.07	98936	8.2	Diss
13 th	20.55.06	99301	9.1	Diss
13 th	21.08.52	99302	7.9	Diss
13 th	22.15.54	99312	8.6	Diss

		EARTH	
May		Sunrise	Sunset
1 st		04.32	19.24
8 th		04.20	19.35
16 th		04.07	19.47
23 rd		03.58	19.57
30 th		03.50	20.06
		June	
6 th		03.45	20.13
15 th		03.43	20.19
22 nd		03.43	20.21
28 th		03.46	20.21

PLANETS (As at May 23rd)

	Constellation	Rises	Sets	Mag.
Mercury	Aries	03.38	18.40	-1.1
Unfavourable				
Venus	Taurus	04.46	21.10	-3.9
Evening object in the west				
Mars	Aquarius	01.43	12.37	+0.4
Difficult morning object in the east south east				
Jupiter	Virgo	14.40	02.27	-2.3
Brilliant object in the South west				
Saturn	Gemini	07.40	23.38	+0.3
Evening object in the southwest				
Uranus	Aquarius	01.26	12.09	+5.8
Difficult				
Neptune	Capricornus	00.36	10.01	+7.9
Difficult				
Pluto	Serpens cauda	20.42	06.19	+13.8
At opposition next month but still difficult				

PHENOMENA

Day	Hour	May
13 th		Alpha Scorpiid meteor shower
13 th	15	Saturn 5° S. of moon
19 th	22	Jupiter 0.3° N. of moon
20 th	00	Neptune at stationary point

The list above is a selection of about 50% of the more easily observed events

Dave Wells

Editors Note

With new (1 month) assistant WAS News Editor asleep on my lap I try to put the finishing touches to this months Newsletter!

Never has a month gone by so quickly and words such as telescope, nebula & quasar have been quickly replaced with sterilizer, pampers & yellow poo.

Any errors are the result of only 4 hours sleep.....

Rob

PS – Shorter than normal newsletter this month – more contributions please!!!!

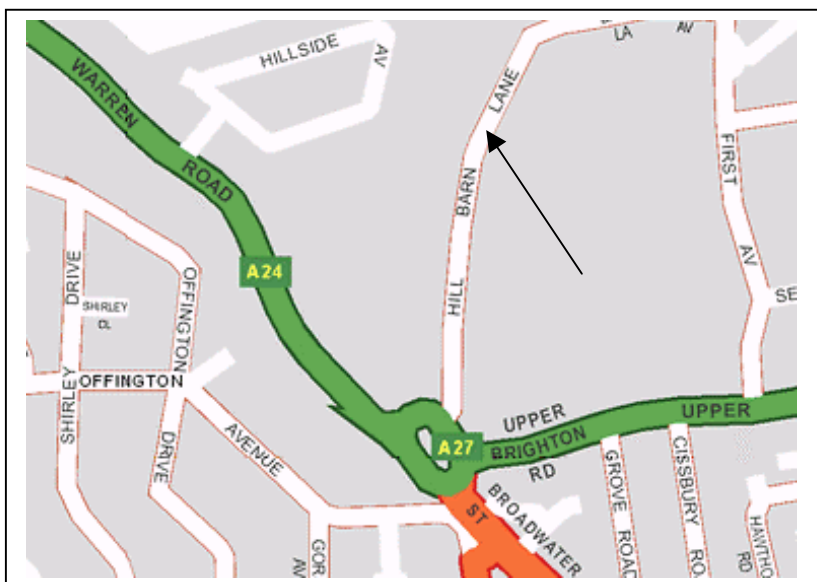
Dates for your Diary

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.



Reports

Solar Section Report - April 2005

Section Director, Brian Halls

On the whole, the number of sunspot groups remains in a declining phase, however the spots that do appear still have a quality which makes them interesting to watch day to day as they grow and decay during their life cycles.

For much of the month, activity tended to be biased towards the southern solar hemisphere, but activity did decline enough, so by the 13th only one sunspot region – 0750 – a return of a large group visible in previous months - was visible.

Activity once more increased with activity equally divided between the hemispheres briefly with the 24th being a spotless day. Two days later another sunspot group developed – 0756 – which eventually grew into a large naked eye sunspot group, which was magnetically complex.

This group, which on a number of days was the only group visible, dominated the Sun until the end of the month and into the beginning of May.

Reports were received from, Graham Boots (21 days) and the Director (1 day) with other details in the article from the daily Space Environment Centre reports and weekly reports from the Solar Influences Data analysis Centre, Royal Observatory of Belgium.

MDF= 2.00; R= 24.7

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Articles

An Observing Evening with Ed Sampson

Graham Boots

On the evening of Friday the 15th April 2005 Keith Peters and myself visited new WAS member, Ed Sampson at his home in Goring where he has a south facing rear garden that has an almost unobstructed view of the sky apart from the lower northern area. Ed has a Meade LX90 Schmidt/Cassegrain that has an aperture of 20.3 cms. at a focal ratio of f10 and is mounted alt/az ie., not equatorial. He used an Alignmate manufactured by Broadhurst Clarkson & Fuller (BC&F) of Kent that fits into the 1.25" diameter eyepiece tube. One side shows a

bubble for levelling purposes and when the Alignmate is turned over and put back into the eyepiece tube it shows a compass. This item cost about £25.

The LX 90 has two finders. A Red Dot finder manufactured by BC&F at a cost of £24 that enables approximate positioning upon an object with a 10° field of view and a 50mm x 8 Meade finder that has a field of view of 5° and cost £140, used for more accurate positioning.

Ed showed us his Deep Sky Imager (DSI) Made by Meade that cost £269 and he pointed out that it is no good for imaging the Moon and planets. He then showed his Lunar and Planetary imager (LPI) also made by Meade costing £99 from Sussex Astronomy Centre in Goring. The LPI comes free if you buy a Meade telescope. This electronic camera connects with either a USB 1 or 2 connection and runs the Autostar Suite programme. He also has a Philips ToUcam that has the disadvantages from the LPI of a narrow field of view and a lot of post imaging processing that is not easy but it does give a better final image. The LPI is also simpler to operate.

The LX90 is run off a 12 volt dry cell that also powers a 5" black and white television made by Nikka purchased for £15 from Maplin.co.uk It is also available from Woolworth's at £20. The idea of the small television is to enable focussing at the telescope before going indoors to the dining room where the main computer is situated. This computer has a 2 Giga Hertz processor. To help reach good focus he uses a Hartman Mask costing £40 which has three holes set equatorially, this divides the image into three and when proper focus is achieved the image is seen as one.

To keep dew and mist from the LX90 corrector plate and from the object glass of the Meade finder heated bands are positioned nearby around the telescope metal tubes. These are powered by the 12 volt dry cell.

The LX90 is set up using Autostar. Ed set the Autostar RA% to have a backlash of between 10 and 20%. 0% means no backlash allowed. He told us not to touch the Ratio setting, as this is 'factory set'.

Ed has a 2" diameter eyepiece based on an Erfle design that has an apparent field of view of 70°. He also uses 1.25 mm diameter achromatic eyepiece also based on an Erfle design and apochromatic 2x Barlow. The former has two elements, which eliminate false colour and cost £40, and the latter has chemical coatings costing £70 made by Celestron and is known as the Ultima, perhaps the best 2x Barlow lens around these days.

Ed recommended a Baader infra red blocking filter for Mars which retails for around £30, also an oxygen III filter for planetary nebulae again made by Baader which can be obtained from the Sussex Astronomy Centre for around £47.



We began by imaging Saturn then thin cloud approached making it difficult to focus and degrading the image so we turned to Jupiter that was in a clear part of the sky. Ed captured 50 images that were automatically processed and stacked using Autostar Suite. The colour was then tweaked slightly using Paint Shop Pro programme. He then emailed 3 images of Jupiter to Keith and myself, two of which showing the Great Red Spot approaching the central meridian taken after Keith and I had left. The approximate times of these exposures were 21h 10m, 23h 15m and 00h 15m UT 15-16/4/2005. Although Ed was not satisfied with his results we felt that he had done remarkable well and demonstrated his mastery of the equipment.

Later we were shown a result from the DSI of the Ring Nebula in Lyra. A series of images had been captured over three periods of 30 seconds in red, green and blue light, sorted and stacked. He uses a programme called FITS file format (Flexible Image Transport System which is used worldwide by professional astronomers) and gathers a series of images and the programme chosen, combined and stacked the better images. Field rotation was also cancelled out by dragging a frame over the image that included two brighter stars at some distance from each other. Field rotation is at its greatest near the central meridian and this results from the LX90 being mounted alt/az opposed to equatorial. The 15th magnitude central star of M57 could be clearly seen. This is very surprising bearing in mind the optical limit of a 20 cms.

aperture telescope is stated in the Norton's 2000.0 18th edition to be 14.2. Ed also showed a final image of the globular star cluster M3 in Canes Venatici based a collection of chosen and stacked 1 second images taken over a 15 second period.

I had taken along a 7 mm Nagler eyepiece that we used to view Saturn and Jupiter although the seeing did not allow it to perform at its best; however the 6 day old Moon appeared splendid.

I have since sent the three images to John Rogers, the director of the Jupiter section of the British Astronomical Association. One of these Jupiter images accompanies this article.

For Keith and myself this had been an enjoyable evening of excitement from which we had both learnt a great deal in a field that interests us greatly. Neither of us had ever had such a detailed demonstration of electronic/computerized imaging. We left around 11.30 p.m. thanking Ed as we went.

Messier Objects - Continued

Jan Marshall

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.

M8
Constellation: Sagittarius
RA 18hrs 01m
Dec -24.20
Distance: 2,500 light years
Type: Nebula
NGC 6523

More commonly known as the Lagoon Nebula.
Contains the small star cluster known as 6530
9 Sagittarii is the star that excites the gas in the nebula which causes it to shine.

M9
Constellation: Ophiuchus
RA 17hrs 16m
Dec -18.28
Distance: 25,800 light years
Type: Globular Cluster
NGC 6333

Globular Cluster with a total visual magnitude of 8.5.
Total magnitude of 14.
Discovered in 1764 by Charles Messier.

M10
Constellation: Ophiuchus
RA 16h 54m
Dec -4.02
Distance: 16,000 light years
Type: Globular Cluster
NGC 6254

Discovered by Messier 29th May, 1764
Large, round bright globular cluster with a total magnitude of 6.6.

M11
Constellation: Scutum
RA 18h 48m
Dec -6.20
Distance: 6,000 light years
Type: Galactic Cluster
NGC 6705

A rich and compact Open cluster. Discovered by the German astronomer Gottfried Kirch in 1681. Has a total magnitude of 6.7.

WAS Ad

Sussex Astronomy Centre

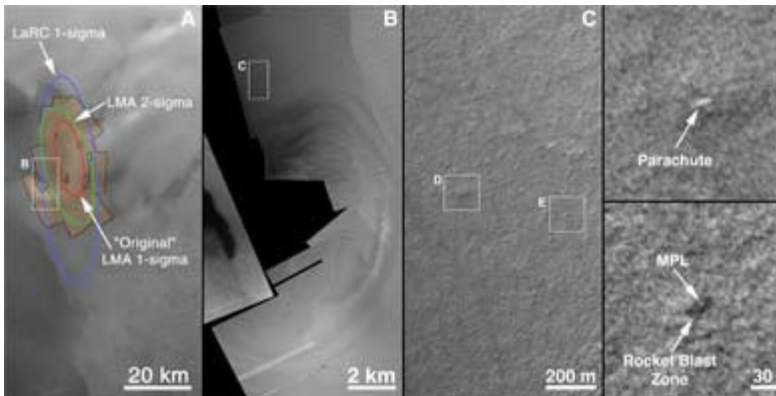
For all your astronomy needs
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Large range of accessories, software, books etc
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Worthing, West Sussex.
Telephone 01903-247317
Email worthingastronomy@tiscali.co.uk
Web Site. www.sussex-astronomy-centre.co.uk
Ask for Paul Farmer (Club Member)

WAS News News

Has orbiter found NASA's lost Mars Polar Lander?

NASA/JPL/MSSS Photo Release

The loss of Mars Polar Lander in December 1999 was a traumatic experience not only for those of us intimately involved in the mission, but also for the U. S. Mars Exploration Program. Following the failure, exhaustive reviews of what happened and why led to major shifts in the way planetary exploration was implemented. Without telemetry, the cause of the failure could only be surmised. It would be extremely important if, through some observation, it were possible to confirm the failure mode.



Credit: NASA/JPL/Malin Space Science Systems See a larger image [here](#); Download high-res image version [here](#)

Shortly after the loss of Mars Polar Lander (MPL), the Mars Global Surveyor Mars Orbiter Camera (MOC) was employed to acquire dozens of 1.5 m/pixel images of the landing uncertainty ellipses, looking for any evidence of the lander and its fate. The criteria we used in searching for MPL required a bright feature of irregular or elongated shape (the parachute) within about 1 kilometre (0.62 miles) of a location that included a dark area (rocket-disturbed Martian dirt) and a small, bright spot near its centre (the lander). In 2000, we found one example (see figure) that met these criteria, but in the absence of any substantive, corroborating evidence, the interpretation that this was MPL and its parachute were considered to be extremely speculative.

Observations by MGS MOC in 2004 of the Mars Exploration Rover (MER) landing sites provided guidance for a re-examination of the previously identified MPL candidate. For example, the material from which the MPL and MER parachutes are made is similar, and its brightness in MOC images can be calculated, at least in a relative sense, as a function of sun angle. The brightness of the candidate "parachute" in the MPL candidate location image turns out to be consistent with it being the same material. The brightness difference of the ground

disturbed by rocket blast at the MER sites is similar to the brightness difference seen in the MPL candidate image, again adjusted for the difference in illumination and viewing angles. These consistencies lend credibility to this tentative identification.

If these features really are related to the MPL landing, what can we surmise about that landing from the image? First, we can tell that MPL's descent proceeded more-or-less successfully through parachute jettison and terminal rocket firing. The relative location of the candidate parachute and lander is consistent with the slight west-to-east wind seen in dust cloud motion in the area around the date of landing. The blast-disturbed area is consistent with the engines continuing to fire until the vehicle was close to the ground. How close is not known. The larger MER retrorockets fired at about 100 m altitude and continued firing until the engines were about 20-25 m above the surface; the candidate MPL disturbance is roughly the same size, but whether this means the engines were firing as close to the ground as the MER rockets cannot be determined. These interpretations are consistent with the proposed MPL mode of failure: the engines fired at the correct time and altitude and continued firing until the flight software checked to see if an electronic message indicated that the landing leg contact switch had been set. Since the initial leg deployment several kilometres above the surface apparently induced sufficient motion to trigger this message, the software stopped the engines as soon as the check was made, about 28-30 seconds into the 36-40 second burn. MPL was probably at an altitude of about 40 m, from which it freely fell. This is equivalent to a fall on Earth from a height of about 40 feet. The observation of a single, small "dot" at the centre of the disturbed location would indicate that the vehicle remained more-or-less intact after its fall.

What is important about having a candidate for the Mars Polar Lander site? It gives the MOC team a place to target for a closer look, using the compensated pitch and roll technique known as "cPROTO." Examples of cPROTO images and a description of this capability, developed by the MGS team in 2003 and 2004, were discussed in a MOC release on 27 September 2004. Without a candidate for targeting a cPROTO image, it would take more than 60 Earth years to cover the entire Mars Polar Lander landing ellipse with cPROTO images, because the region spends the better part of each Mars year covered with carbon dioxide frost, part of each winter is spent in darkness, and, because of several uncertainties involved with the technique, it often takes two, three, or more tries before a cPROTO image hits a specific target. Now that a candidate site for Mars Polar Lander has been identified, we have a cPROTO target, which may permit us to obtain an image of about 0.5 meters per pixel (allowing objects approximately 1.5-2.5 meters in size to be resolved) during southern summer this year. At the present time (May 2005), the landing site is just beginning to lose its cover of seasonal carbon dioxide frost.

Diary

11th May 2005 Magellanic Clouds - Konrad Maylin-Smith Croydon Astronomical Society

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

13th July 2005 'Wish You Were Here Astronomy' - Dr Lilian Hobbs Southampton Astronomical Society

14th September 2005 40th Anniversary Lecture September 1965 – 2005. Black Holes & White Rabbits (physics & magic) - Professor John C. Brown Astronomer Royal for Scotland Dept., of Physics & Astronomy Glasgow University

12th October 2005 Member's Contributions Inc The Super String Theory - David Storey.

9th November 2005 Universe in 4D- Cosmic Light Show - Dr. Christopher Baddiley Infrared Physicist Worcester

14th December 2005 Adventures with a Small Telescope - Neil Bone Meteor Section Director of the British Astronomical Association

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 find us on the Internet at www.was.org.uk or email: chairman@was.org.uk

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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.

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