



WAS NEWS

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



Number 198

June 2006

ALMANAC

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

June/July LUNAR

June	Date	Time	Rise	Set
First Quarter	3 rd	23.06	10.56	00.43
Full Moon	11 th	18.03	21.00	02.38
Last Quarter	18 th	14.08	00.05	11.48
New moon	25 th	16.05	02.39	21.07
July	Date	Time	Rise	Set
First Quarter	3 rd	16.37	12.12	23.28
Full Moon	11 th	03.02	21.16	03.27
Last Quarter	17 th	19.13	22.48	12.26
New moon	25 th	04.31	03.52	20.40

EARTH

June	Sunrise	Sunset
3 rd	03.48	20.10
11 th	03.43	20.17
18 th	03.42	20.20
25 th	03.44	20.22
July	Sunrise	Sunset
3 rd	03.49	20.20
11 th	03.56	20.15
17 th	04.03	20.09
25 th	04.13	19.59

PLANETS (As at June 25th)

Planet	Constellation	Rises	Sets	Mag.
Mercury	Cancer	05.56	21.40	+1.0
Unfavourable				
Venus	Taurus	02.04	17.32	-3.9
Morning object in the south east				
Mars	Cancer	06.56	22.17	+2.0
Evening object in the south west				
Jupiter	Libra	15.20	01.14	-2.3
Evening object in the south west				
Saturn	Cancer	06.56	22.17	+0.4
Evening object in the south west				
Uranus	Aquarius	23.21	10.23	+5.8
Morning object in the south east				
Neptune	Capricornus	22.28	08.03	+7.9
Morning object in the south east				
Pluto	Serpens cauda	18.43	04.12	+13.9
Have you seen it yet?				

PHENOMENA

Day	Hour	June
16 th	17	Pluto at opposition
18 th	06	Saturn 0°.6 S. of Mars
19 th	08	Uranus at stationary point
20 th	20	Mercury at greatest elongation E. 25°
23 rd	01	Venus 6° S. of moon
27 th	16	Mercury 5° S. of moon
28 th	12	Saturn 3° S. of moon
28 th	23	Mars 2° S. of moon
04 th	00	Earth at aphelion (152 M km)
4 th	20	Mercury at stationary point
5 th	23	Jupiter 4° N. of moon
6 th	07	Jupiter at stationary point
18 th	07	Mercury in inferior conjunction

Minima of Algol

June	Unfavourable
July 2 nd	23.30
July 23 rd	01.12
July 25 th	22.00

Lunar Occultation's

Times as at Old W.A.S. Observatory

Date	U.T.	S.A.O. No	Mag	Phase
June	h. m. s.			
15 th	00.12.29	189549	6.3	Reapp
16 th	00.26.20	164524	7.0	Reapp
29 th	21.04.07	98854	7.5	Diss
July				
3 rd	22.40.55	138986	6.9	Diss
7 th	18.26.05	183987	2.9	Diss
7 th	19.28.47	183987	2.9	Reapp
14 th	22.58.48	146505	6.9	Reapp
14 th	23.39.10	146515	7.4	Reapp
27 th	17.25.00	Mars	1.8	Diss
27 th	18.44.00	Mars	1.8	Reapp
31 st	20.18.29	157815	6.9	Diss

The list above is a selection of the more easily observed evening events, about 20% of the list available, there are lots more in the wee small hours for the insomniacs amongst us

Dave Wells

Editors Note

Whilst in the garden last week all fell quite, suddenly the clouds parted and a ray of light burst forth and a commanding voice spoke from on high (and it sounded a bit like Jan) **'ROBERT, THOU HAST BEEN GRANTED HONOUARY MEMBERSHIP'**.

'But I am not worthy Chairman' I replied, head bowed

'STOP SNIPELLING YOU WORM, NOW YOU'RE NEVER BE FREE!

So there you have it...I'm up there with other honorary members such as Carl Sagan, Neil Armstrong, Fred Hoyle and Galileo! Wow – I am truly not worthy - thank you.

But I know what you're all up to oh yes - trying to butter me up eh? Only 2 issues to go until the magical issue 200 and no contributions yet!

Don't make me have to write an article myself....I beg you....

Rob

Dates for your Diary

Friday 16th June 2006 – Dr Keith Strong

The Hampshire Astronomical Group will be welcoming one of its old members, Dr Keith Strong, back to the UK in June. The lecture will be in the Clanfield Memorial Hall, South Lane Clanfield.

Doors open at 7.30pm, lecture starts at 8pm. Entrance fee will be £1.00. Any queries to Graham G Bryant

20 The Smithy

Denmead

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The lecture will be:

"The Sun: A Link to Climate Change?"

By Dr. Keith T. Strong, Principal Scientist, Lockheed Martin Advanced Technology Centre

Abstract:

We know the Sun is a variable star and that any changes in the output of the Sun will change the environment of the Earth. Since the beginning of the industrial age the Earth's climate has warmed, and particularly rapidly in the last 30 years or so. During that time the Sun has been at its most active since continuous sunspot records began 400 years ago. Are the recent climate changes mainly caused by changes in our star the Sun and not greenhouse

gases, as most climate experts believe? We will look at the changes in climate and the Sun and see if there is any possibility that climate science has got it badly wrong.

Bio:

Dr Strong started his interest in the Sun as an amateur astronomer at the Portsmouth Astronomical Group nearly 40 years ago. He went on to University College, London, to get a B.Sc in Astronomy in 1972, and a Ph.D. at the Mullard Space Science Laboratory in High-Energy Astrophysics in 1979. Since then he has worked at Lockheed Martin (LM) as a research scientist studying the Sun with a variety of space instruments (Solar Max, Yohkoh, TRACE, and SoHO) built at his laboratory. Starting in 1995, he managed the Solar and Astrophysics group at the LM Advanced Technology Centre in Palo Alto, California, and became the lead of all space science research activities at LM in 2000. He is now Principal Scientist at LMATC and is working on research to help quantify any link between the Sun and Earth's climate change in conjunction with NASA scientists in Maryland.

Solstice Drink - Wednesday 21st June

Some of us will be going to **The North Star**, Littlehampton Road, Worthing to celebrate this year's summer solstice with a drink or two! We meet any time after 8pm in the non-smoking section.

The North Star is on the north side of Littlehampton Road, about 300m east of the Durrington Lane roundabout and next door to Tesco Express/garage. If anyone would like more detailed directions please ring Linda and Dave Storey on 01903 264136.

Please note this is **not** a WAS organised event.

Reports

Solar Section Report - May, 2006

Brian Halls

Reports were received for 30 days; Graham Boots (24 days) Brian States (29 days) and the Director (1 day)! It is a welcome back for Brian States who many will remember as a regular solar observer.

MDF = 2.99 (R = 36.4)

May started off as quite spotty, the first week saw a moderate number of active spot areas, with this pattern lasting into the second week of May.

By mid month however activity began to decline and a number of days were recorded as spotless. By the end of the month, sunspot bearing longitudes were once more

rotating into view and the number of active sunspot areas began to increase.

Southern latitude sunspot groups were once more, more prominent than those in the north.

Noctilucent Cloud (NLC)

Believed to comprise of water ice condensed onto tiny fragments of meteoric debris, noctilucent clouds are more prominent for observation during the weeks around high summer, (May/June to August). Though not a true solar phenomenon, observations of these objects are collated by the BAA Aurora Section.

Neil Bone in his *Sky Notes* report in the latest BAA Journal, (*J.Br.Astron.Assoc.***116**,3 2006) notes that condensation can only happen when the higher areas of the atmosphere are sufficiently cold and the present approach to solar minimum, when there is less heating of the upper atmosphere by solar interaction with the Earth environment, may produce ideal conditions for NLC to appear and be observed.

NLC may appear in southern latitudes after sunset when the Sun is 6° – 16° below the horizon.

The clouds will appear as silver-blue and will stand out in contrast with the twilight sky and may be recognised by their fine banded structure.

Please let me know if you have seen or photographed these phenomena. Good hunting.

solar_section@was.org.uk

The Planets in June

Glen Thomas - *Planetary Section*

Around the summer solstice, the end of civil twilight is around 2200 BST, so this is a good time to get outside, glass of Pimms in hand, to survey the Solar System.

Mercury has a weak evening showing this month, getting to above 7° altitude from 07th to 15th June. Look low down 30° north of west. As it sinks towards the horizon look back along the ecliptic for two more planets.

Saturn and **Mars** make their showing nearby, close to M44, the Beehive open cluster. **Saturn** is quite bright still; at magnitude 0.4 it still makes a good, if shrinking, target. **Mars** is rather dimmer at mag. 1.7, and as it has reduced to only 4" diameter the 95% phase is difficult to see. Mars does, however, keep some interest; it passes through the **Beehive** cluster of magnitude 6 (and dimmer)

stars on 16th June. Send any good images in to WAS News for the September issue!

Jupiter is also visible in the darker southern skies of the evening twilight. It is currently moving retrograde (until 06th July) as the Earth overtakes it on the inside track. The Red Spot has a companion (Junior?), but it is rather smaller and difficult to see in small instruments.

Uranus and **Neptune** have not risen yet, but can be best seen around 0400.

Pluto is best seen around transit (0100 to 0200) when the sky is darkest and the tiny planet is highest. At magnitude 14 you will need at least a 20 cm objective to spot visually, good seeing conditions and a detailed finder map showing faint stars.

So, nurse that Pimms on a clear summer's evening, go out as the sky darkens and drink in four naked eye planets strung out along the ecliptic plane.

Backyard observing June

Ed Sampson

Jupiter
M5
M62
M19
M10
M12
M92
M13
95 Her

May Meeting Reviewed - Report by Brian Halls

Our Vital Moon

Robin Gorman, Hampshire Astronomical Group

It was a welcome back to WAS for Robin, who has spoken to our Society on a number of previous occasions.

His lecture was entitled – Our Vital Moon, and Robin explained how important the Moon is to us.

First, he looked at how the Moon was formed and reviewed the theories concerning its creation:

- The Moon evolved as a separate body in the vicinity of Earth.
- The Moon evolved elsewhere in the early solar system and was captured by the Earth.
- The Moon spun out from a proto Earth when the Earth was still forming.
- Collision theory.

The first and second theories are most definite non starters. The Moon has no iron core of its own, which precludes its formation elsewhere in the solar system during the planetary forming phase; and secondly the Moon is too big to have been captured by the Earth in the scenario put forward.

The third theory – a rapidly spinning young Earth losing a ‘blob’ of material that formed the Moon is also discarded as the physics just do not add up.

The collision theory, or as it is properly called, the ‘Rapid Accretion Theory’ is the current hypothesis of how the Moon/ Earth system formed; the theoretical models appear to make this the likely way it happened.

In the chaos of the planetary forming period of the solar system, a small proto-planet, about third of the mass of Earth, collided with the young planet (in the region of about 40 million years after the Earth’s formation), the iron core of the proto-planet sinking down and unifying with the Earth’s own iron core. Debris from this collision spewed into low orbit around the Earth and quickly accreted (in perhaps a period of time of as little as a year) to form the Moon.

This is born out by samples returned from the Moon landings as there are similarities between the Earth’s mantle and that of the Moon.

Robin then compared the mass ratio between satellites of the solar system with that of their parent planet – the Earth / Moon ratio is very similar, and as such is unique, except for the Pluto / Charon, but our speaker made an exception here, believing that Pluto could not be considered a proper planet, just a Kuiper Belt Object.

This newly formed Moon was much closer to the Earth than it is today – perhaps as much as 14 000 miles.

This led to some interesting effects upon the Earth. The gravity pull of the Moon upon the earth at this time would have been 256 times what it is today. If water had been present on Earth, tides would have been miles high rather than the average 8 metres we have today. But there was no water at this time, just a molten planet, so these magma tides would have been many hundreds of metres high. Moon light would have shone at 250 times brighter than it does now!

Earth’s rotation is being slowed down by the presence of the Moon. Geological analysis of samples of old rock has shown that the Earth once rotated in about 8 hours – it is thanks to the Moon that we now have a day the length of time we have. At the same time, the Moon has slowly spiralled away from the 14 000 mile orbit around the Earth to the near quarter of a million miles it is today. The

Moon is creeping away from the Earth at a rate of 4cm a year, while our day is slowly getting longer – but the long term effects of these will not be felt for billions of years. ‘Weather’ would also have been quite different. An 8 hour day would give an average wind speed of 100 mph – a severe hurricane type storm would have had wind speeds of 500! A long way from the average wind speed of 12 mph we have today.

At present, the Moon and Earth rotate around their common centre of gravity in a period of about 28 days. The young Earth / Moon system would have had a period of 10 hours, and because of the proximity of the Moon to the Earth there would have been a solar and lunar eclipse every 5 hours.

The Moon has also kept the Earth axial tilt at a steady angle – swinging slightly from 21.4° to 24.4° – over a period of 40 000 years. During the same time, the axial tilt of Mars would change by nearly 90°. Life could hardly be expected to develop under such radical circumstances.

To most astronomers today, the Moon can be a bit of a nuisance – its bright light making the observation of faint dark sky objects or the observation of a meteor shower difficult to do. But of course we would not be here without it.

The Moon has ensured that life on Earth could develop – it has helped make the Earth a suitable place to live – it controls the tides; it has given us a length of day which has enabled life to spread across the planet, and its moonlight has helped hunters and harvesters to work into the dark hours – a task that once took up the work of 90% of the planet’s population. Robin told us that his mother remembered that country folk would call the Moon, the ‘parish lantern’. But of course, the Moon has affected our culture too.

The way wars have been waged has often been decided by moonlight – for example, the famous Dambuster bombing missions of the second world war were decided by the amount of bright moonlight available; lovers have romanced in moonlight while literature and music have been affected by the presence of the Moon – who has not heard of the songs or lyrics of, *By The Light of the Silvery Moon*, *Moon River*, *Fly Me To The Moon* etc. etc. etc. And what about the lyricists dream – “the Moon in June.”

Robin finished his talk by mentioning National Astronomy Week in 2009 – with 2009 (hopefully) being termed by the United Nations, International Astronomy Year.

National Astronomy Week will celebrate the 400th anniversary of the first use of a telescope to make an astronomical observation and also the first recorded lunar

observation (by an Englishman) in 1609 July 26, and Robin showed a copy of that first drawing – the original and other astronomical drawings are now in the keeping of the owners of Petworth House.

It is hoped also that this first lunar drawing might be used as a postage stamp design to mark this important anniversary.

Those present showed their appreciation for an interesting and thought provoking talk.

After the tea-break, there were section reports. Alex Vincent spoke on comet Schwassman-Wachmann 3, which though now breaking up into different components was still visible. Ed Sampson gave a run through of what

might be observed, both planetary and deep sky objects. Ed also showed some animated pictures of one of the components of Schwassman-Wachmann 3, rapidly drifting against the starry background in the space of only a few minutes.

Graham concluded the evening by showing some photographs of his trip to Turkey to see the solar eclipse on the 29th of March.

Our chairman, Jan Young brought the evening to a close just before 10 p.m. All together an evening where we learnt some interesting facts about our nearest celestial neighbour, without which, we might never exist.

WAS Ad

SUSSEX ASTRONOMY CENTRE

2ND ANNIVERSARY OPEN DAY

SATURDAY 24TH JUNE 2006

Experts on Astro-imaging
**Solar Observing and all aspects of Backyard
Astronomy.**

Meade telescopes will be giving a demonstration of Coronado Solar Telescopes and will be bringing new ranges of telescopes and accessories. Meade technical experts here all day.

Free Refreshments

Special ‘one day offers’ in store

**Representatives from various clubs & suppliers throughout
the day**

All Welcome / Free Entry

Open 9.30am to 6.00pm

Website: www.sussex-astronomy-centre.co.uk

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What's on the Box

Thursday 22nd June 2006



21.00 – 21.50: Horizon

Bye Bye Planet Pluto. Series exploring topical scientific issues. Pluto is on the brink of being wiped off the solar system map. In a tragic end to a short life, the smallest and youngest planet could be relegated to the status of a mere asteroid. Scientists have mocked Pluto for years and the discovery of a potential tenth planet in our backyard could be the final nail in its coffin. As the International Astronomical Union tries to make up its mind, the film asks just how many planets there are in our solar system.

WAS News News

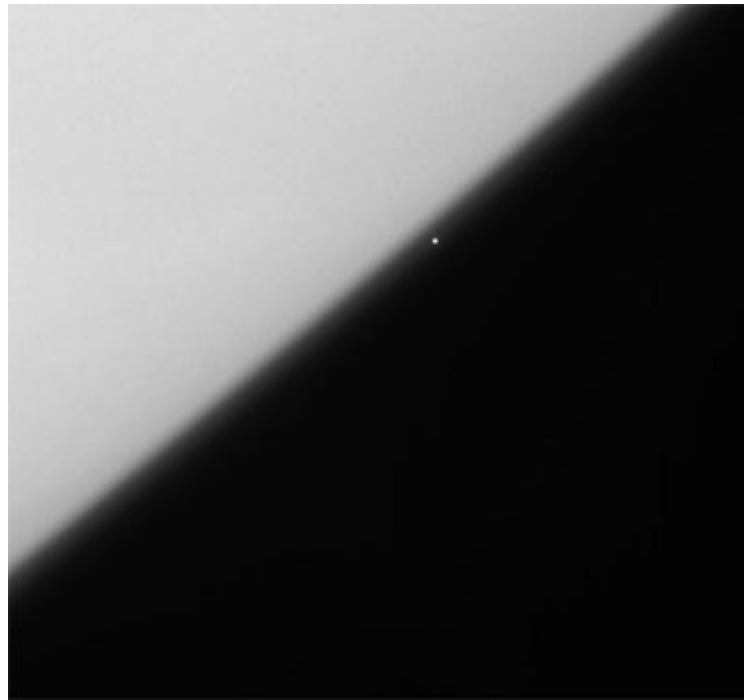
Stargazing at Saturn

Cassini Photo Release

The brilliant supergiant star, Rigel, emerges from behind the haze of Saturn's upper atmosphere in this Cassini view.

Rigel in is one of the 10 brightest stars in Earth's sky and forms the left foot (sometimes referred to as the left knee) of the familiar constellation Orion.

Imaging scientists use views like these to probe the vertical structure of haze in Saturn's upper atmosphere. The dimming of the star at each altitude in the atmosphere yields information on the density of the haze at that location.



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

The image was taken in visible green light with the Cassini spacecraft narrow-angle camera at a distance of approximately 663,000 kilometers (412,000 miles) from Saturn. Image scale is 4 kilometers (2 miles) per pixel.

Hubble sees galaxy on edge

Space Telescope Science Institute Release

This is a unique Hubble Space Telescope view of the disk galaxy NGC 5866 tilted nearly edge-on to our line-of-sight.

Hubble's sharp vision reveals a crisp dust lane dividing the galaxy into two halves. The image highlights the galaxy's structure: a subtle, reddish bulge surrounding a bright nucleus, a blue disk of stars running parallel to the dust lane, and a transparent outer halo.

Some faint, wispy trails of dust can be seen meandering away from the disk of the galaxy out into the bulge and inner halo of the galaxy. The outer halo is dotted with numerous gravitationally bound clusters of nearly a million stars each, known as globular clusters. Background galaxies that are millions to billions of light-years farther away than NGC 5866 are also seen through the halo.

NGC 5866 is a disk galaxy of type "S0" (pronounced s-zero). Viewed face on, it would look like a smooth, flat disk with little spiral structure. It remains in the spiral category because of the flatness of the main disk of stars as opposed to the more spherically rotund (or ellipsoidal) class of galaxies called "ellipticals." Such S0 galaxies,

with disks like spirals and large bulges like ellipticals, are called 'lenticular' galaxies.



Credit: NASA, ESA, and The Hubble Heritage Team (STScI/AURA) Download larger image version [here](#)

The dust lane is slightly warped compared to the disk of starlight. This warp indicates that NGC 5866 may have undergone a gravitational tidal disturbance in the distant past, by a close encounter with another galaxy. This is plausible because it is the largest member of a small cluster known as the NGC 5866 group of galaxies. The starlight disk in NGC 5866 extends well beyond the dust disk. This means that dust and gas still in the galaxy and potentially available to form stars does not stretch nearly as far out in the disk as it did when most of these stars in the disk were formed.

The Hubble image shows that NGC 5866 shares another property with the more gas-rich spiral galaxies. Numerous filaments that reach out perpendicular to the disk punctuate the edges of the dust lane. These are short-lived on an astronomical scale, since clouds of dust and gas will lose energy to collisions among themselves and collapse to a thin, flat disk.

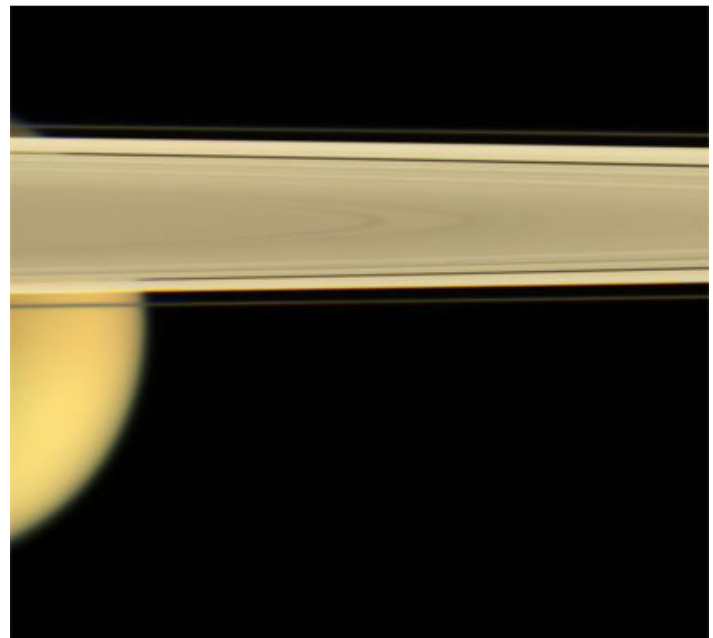
For spiral galaxies, the incidence of these fingers of dust correlates well with indicators of how many stars have

been formed recently, as the input of energy from young massive stars moves gas and dust around to create these structures. The thinness of dust lanes in S0s has been discussed in ground-based galaxy atlases, but it took the resolution of Hubble to show that they can have their own smaller fingers and chimneys of dust.

NGC 5866 lies in the Northern constellation Draco, at a distance of 44 million light-years (13.5 Megaparsecs). It has a diameter of roughly 60,000 light-years (18,400 parsecs) only two-thirds the diameter of the Milky Way, although its mass is similar to our galaxy. This Hubble image of NGC 5866 is a combination of blue, green and red observations taken with the Advanced Camera for Surveys in November 2005.

Titan on the side

Cassini Photo Release



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

Saturn's largest moon, Titan, peaks out from under the planet's rings of ice.

This view looks toward Titan (5,150 kilometers, or 3,200 miles across) from slightly beneath the ringplane. The dark Encke gap (325 kilometers, or 200 miles wide) is visible here, as is the narrow F ring.

Images taken using red, green and blue spectral filters were combined to create this natural color view. The images were taken with the Cassini spacecraft narrow-angle camera at a distance of approximately 1.8 million kilometers (1.1 million miles) from Titan. Image scale is 11 kilometers (7 miles) per pixel on Titan.

Diary

- 14th June** Peculiar Stars & Lick Observatory Visit in California - Dr Mike Dworetzky F.R.A.S., University College London
- 12th July** Venus Express - Andrew Coates
- 13th September** Sir Arthur Stanley Eddington -Mark Hurn
- 11th October** AGM & Members Contributions
- 8th November** Campaign for Dark Skies – Update - Bob Mizon
- 13th December 2006** Aurorae & Glows in the Atmosphere Professor Alan Aylward Head of Atmospheric Physics Laboratory University College London followed by member's images on the same topic
- 10th January 2007** New Year Social & Member's Contributions
- 14th February 2007** The Enigma of Neptune's Prediction Dr. Nicholas Kollerstrom Science & Technology Studies University College London
- 14th March 2007** Space Astronomy: XMM-Newton X-ray satellite & Swift the gamma-ray watchdog satellite Dr. Graziella Branduardi-Raymont F.R.A.S., Mullard Space Science Laboratory Dorking
- 11th April 2007** Member's Contributions
- 10th May 2007** TBA
- 14th June 2007** TBA
- 12th July 2007** TBA
- 12th September 2007** Cosmology & WMAP - Professor Malcolm MacCullum F.R.A.S., Department of Mathematics Queen Mary University of London

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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