WAS NEWS

Monthly Newsletter of the **W**orthing **A**stronomical **S**ociety

Official website: www.was.org.uk
Affiliated websites: www.observatory99.freeserve.co.uk

Number 176 **June 2004**

ALMANAC

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

LUNAR

June	Date	Time	Rise	Set
Full Moon	3rd	04.20	21.25	03.26
Last Quarter	9th	20.02	00.44	11.02
New moon	17th	20.27	02.51	20.44
First Quarter	25th	19.08	11.37	**-**
July				
Full Moon	2nd	11.09	21.17	02.545
Last Quarter	9th	07.34	23.39	12.37
New moon	17th	11.24	03.16	20.55
First Quarter	25th	03.37	13.26	22.58
Full Moon	31st	18.05	20.27	03.06

EARTH

June	Sunrise	Sunset
3rd	03.47	20.10
9th	03.44	20.16
17th	03.42	20.20
25th	03.44	20.22
July		
2nd	03.48	20.20
9th	03.54	20.16
17th	04.03	20.09
25th	04.14	19.59
31st	04.23	19.49

PLANETS

(As at June 25th.)

	Constellation	Rises	Sets	Mag.
Mercury	Gemini	04.16	21.03	-1.4
Unfavourable				
Venus	Taurus	02.42	18.01	-4.3
Morning object in the east				
Mars	Cancer	06.03	21.57	+1.8
Unfavourable				
Jupiter	Leo	10.01	23.25	-1.9
Brilliant evening object				
Saturn	Gemini	04.48	20.55	+0.1
Unfavourable				
Uranus	Aquarius	23.04	09.36	+5.8
Rises around midnight B.S.T.				
Neptune	Capricornus	22.15	07.36	+7.9
Due south an hour before sunrise				
Pluto	Serpens cauda	18.15	04.00	+13.8
Possible				

PHENOMENA

Day	Hour	**June**
8th	09	Venus in inferior conjunction (transit)
10th	16	Uranus at stationary point
11th	12	Pluto at opposition
12th	23	Venus 1° S of Mercury
16th	16	Venus 5° S of moon
17th	17	Mercury 3° S of moon
18th	21	Mercury in superior conjunction
19th	08	Saturn 5° S of moon
20th	11	Mars 4° S of moon
24th	02	Jupiter 3° S of moon
27th	00	Saturn 2° S. of Mercury
29th	23	Venus at stationary point
		July
5th	10	Earth at aphelion (152 M km.)
8th	17	Saturn in conjunction
11th	00	Mars 0.2° S. of Mercury
13th	22	Venus 8° S. of moon
15th	00	Venus at greatest brilliancy
16th	21	Saturn 5° S. of moon
19th	04	Mars 4° S. of moon
19th	19	Mercury 5° S. of moon
21st	16	Jupiter 3° S of moon

Minima of Algol

June Inconveniently situated
July 16th 03.12 19th 00.00 21st 20.54

Lunar Occultation's

Times as at W.A.S. Observatory

Date	U.T.	S.A.O.No	Mag.	Phase
June	h. m. s.			
11th	00.51.46	109192	5.9	Diss
11th	01.01.01	109192	5.9	Reapp
22nd	22.28.12	98944	6.2	Diss
24th	22.53.32	118983	7.5	Diss
July				
7th	21.07.26	128569	6.2	Diss
7th	21.29.48	128569	6.2	Reapp

This is only about 10% of the predictions for the W.A.S. Observatory, full list available on E-mail

Dave Wells

Editors Note

If you receive the Newsletter via email the big question is '*will* it be cloudy or clear', if you collect the Newsletter at the monthly meeting the big question is '*was* it cloudy or clear'.

To aid my fellow WASers with the viewing of the Transit of Venus I will leave the Country for the duration, thus attempting to take the curse of the overcast 1999 Solar eclipse viewing with me.(and many, many others)

Forced to wander the globe disrupting any astronomical event I should be shunned, and forced to leave any occasion where clear skies are a prerequisite.

Rob

Reports

The Planets in June 2004

Glen Thomas - Planetary Section Director

Mercury is at superior conjunction on the **18th**.

Venus, now past its historic transit of the **8th**, becomes a morning object and may be visible around dawn late in the month. Look 5° above the ENE horizon around **04.00** BST.

Mars sets soon after sunset by the end of the month so is now difficult to observe.

Jupiter is still high enough to observe during the evening but at the end of June it sets around midnight, so it is best seen as soon as the sky darkens.

Saturn sets now as the sky darkens and is unsuitable for observation.

Uranus and **Neptune** are morning objects and are best observed around **04.00**. Wait until July for better conditions to spot these cold and distant objects.

Pluto is at opposition on **Jun 07th** so now is the time to spot this most difficult of planets. You will need a detailed map marking stars down to at least magnitude +14.5, a telescope of 20 cm aperture or more and a fairly dark southern aspect. Good luck.

Observing Meeting Report

The evening of Friday May 21st at High Salvington was the scene of the latest planets observing session. Twelve members gathered from sunset at High Salvington to observe a nice grouping of three planets and a two day old crescent Moon.

As the sky darkened the planets took turns to slowly become visible. The **Moon** showed along the terminator a wealth of detail not easily seen when the crescent is thicker. **Venus** was a fine crescent also, mirroring the Moon, although of course no other features can be seen due to the permanent cloud cover. **Saturn** was next, showing some shadow on the rings, the Cassini Division and two of its moons: Titan and the dimmer Rhea. **Mars** was very small and exhibiting no obvious phase or other details, apart from a reddish hue. Higher up and to the south was **Jupiter**, showing off cloud features and its four *Galilean* moons.

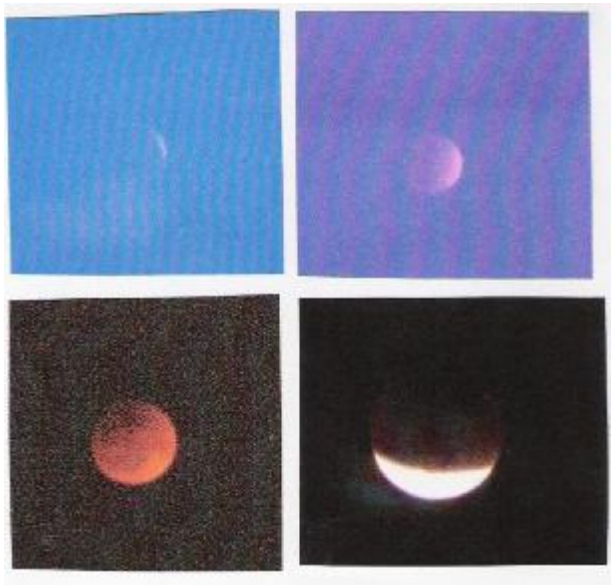
Everyony enjoyed observing through a variety of instruments, ranging from binoculars to a Maksutov spotting scope and a 30 cm Meade LX200.

Also observed were two Iridium satellite flares, the International Space Station and the comet **C/2001 Q4 NEAT**, which showed a coma but no clear tail.

Total Lunar Eclipse

Alex Vincent

On the evening of May 4 2004 there was a total eclipse of the moon and some WAS members and a couple of visitors came to Worthing Pier to view it. There was quite a bit of cloud about, but there were clear patches now and again. We first saw the eclipse about three minutes before the start of totality in a twilight sky. When totality commenced it was an orangey colour where it was brighter on the Moon's western limb.



Total Lunar Eclipse. 4 May 2004 – Alex Vincent

Cloud came over now and then and when it got darker the totally eclipsed moon was quite darkish appearing as a reddish-brown in colour. When totality ended the sky got clearer and we were able to watch the partial phase and

when this ended, there was a slight dusting noticed in the penumbral phase and one of our members said that the moon still did not look right. Some of us took photographs and it was a most enjoyable evening.

Solar Section Report - April, 2004

Brian Halls - Section Director

The month began with a varied show of sunspot types – most of which were located in the solar southern hemisphere.

By the start of the second week, sunspot activity had begun to quieten down with only one C-class group visible on the 9th at $S15^0$ $L=313^0$; a state of affairs that lasted until the 12th when more southern groups began to appear.

Most of the groups on the sun during April were classified as H class sunspots. The McIntosh sunspot classification system defines an H class spot as being a unipolar spot with penumbra whose diameter is at least 2.5^0. On the 14th four of the five active area visible were of this type.

Activity began to decrease once more by the closure of April.

The sun was observed on 22 days and reports from Graham and the Director were received.

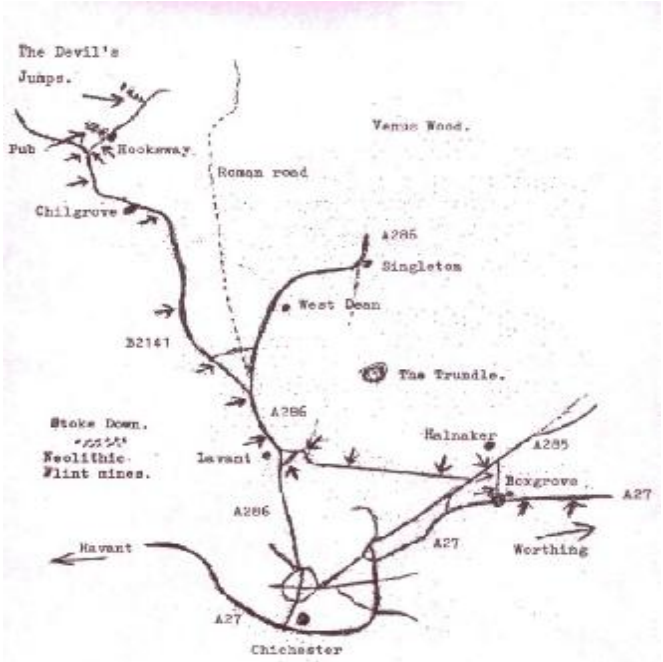
Average numbers were MDF 2.33 (R 31.7)
An MDF (**Mean Daily Frequency**) is an average count of the number of sunspot groups – often described as **regions** or **active area** – visible daily. This is a traditional method of indexing sunspot activity and is used by the solar section of the British Astronomical Association. The more popular method now used is the **Sunspot Relative Number** or **R** and is evolved from the number of groups visible, multiplied by 10 with the total number umbral spots visible added to this figure. The daily totals are added up and then divided by the number of days observed. The figures expressed in the report are the sum of all observations divided by the number of reporting observers.

Dates for your Diary

Summer Solstice

Alex Vincent

On June 21 some WAS members celebrate the longest day at The North Star Pub and some of us celebrate it at the Devil's Jumps, Hooksway near Chilgrove some ten miles north of Chichester. The Devil's Jumps are a group of Bronze Age round barrows (tumuli) and were built on the alignment of the setting sun on June 21. If it is clear then we shall see the sun setting in its full glory from the barrows.



The arrows along the roads show the best way to get there, bypassing Chichester. Take the Boxgrove turning at the roundabout on the A27, turn left at Halnaker then first into Lavant, then onto the A286 and turn left onto the B2141 to Chilgrove where there is a narrow lane that goes to the pub.

We meet at outside the WEA, Union Place, Worthing at 6.30 pm and then go on from there. We park at The Royal Oak Pub, Hooksway and they do a nice selection of meals and if you require one after sunset please place your order beforehand. This is a nice evening out and a good excuse for a party. The map helps you to get there from the A27 at Chichester.

Comets

Alex Vincent

Comet 2001 Q4 NEAT

Date	R.A.		Dec.		Mag.
	h	m	°	′	
Jun 10	09	58.8	+49	51	5.4
Jun 20	10	15.1	+52	60	6.0
Jun 30	10	30.0	+55	08	6.5
Jul 10	10	44.9	+56	47	7.0
Jul 20	11	00.8	+58	09	7.4

These Comets will be visible in binoculars and are circumpolar throughout this period. That of K4 LINEAR will be near Beta Bootis on July 10.

Comet 2003 K4 LINEAR

Date	R.A.		Dec.		Mag.
	h	m	°	′	
Jun 10	18	22.2	+45	40	8.2
Jun 20	17	22.5	+47	09	7.8
Jun 30	16	15.8	+45	32	7.5
Jul 10	15	15.9	+40	46	7.3
Jul 20	14	30.7	+34	09	7.2

The above co-ordinates are for Epoch 2000.0 for both comets

Articles

Stars & Plant Growth

Reginald Muntz

It is Fascinating to observe the effects of the stars on plant growth which can be studied without any technical apparatus.

Firstly it is rewarding to study seed sowing as much research (mainly in Germany) has been done in the last 50 years.

In the 1950s we used to try to sow 3 or 4 days before or after full moon. But now we try to sow according to the position of the moon in the 12 constellations of the zodiac. Each constellation appears to stimulate a certain part of the plant:-

1. Root crops (carrots, potatoes, beetroot, etc.) – Taurus, Capricorn & Virgo
2. Fruit / Seed crops (tomatoes, beans, corn, etc.) – Aries, Sagittarius, Leo (especially good for seed)
3. Leaf crops (lettuce, cabbage, cauliflower, etc.) – Pisces, Scorpio, Cancer
4. Flower crops (sunflower, daisy, bluebell, etc.) – Gemini, Aquarius, Libra.

Leaf crops keep better if picked on fruit / flower days.
If the sowing day is missed the plant can be stimulated by subsequent cultivations on the appropriate day.

Perigee (moon nearest to the Earth) should be avoided for sowing, also the lunar nodes (when the moon crosses the ecliptic)

Also when the lunar orbit is rising in the sky it is good for grafting (14 days) and when descending it is good for planting out (14 days)

The causes of these facts appear to lie in the heavens and merit considerable further study.

The annual sowing and planting calendar is available from:-
The B.D.A.A.
Painswick Inn Project
Gloucester Street
STROUD, Glos.
GL5 1QG
Cost £5.00 or £6.00

The Crescent Moon & Venus

Brian Halls

Salvington Hill on the 21st, of the crescent moon and Earthshine with Venus

Notices

Solstice Drink

Linda & Dave Storey

Sunday 20th June

The venue for this year's summer solstice drink is **The North Star**, Littlehampton Road, Worthing. Although the actual date of the solstice is the 21st at 01hr, the Sunday is probably a more convenient day.

Anyone wishing to join in this astronomical celebration (any excuse for a drink) can meet up 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 the Esso garage. If anyone would like more detailed directions please ring Linda/Dave Storey on 01903 264136.

WAS Ad

Telescopes for Sale – Part 2

Paul Farmer

As announced at the meeting on Wednesday evening I am now the Meade stockist for the area. I have a small selection of Meade telescopes in stock but the full range can be ordered.

I also have a selection of second hand scopes and far easten & german newtonians from 110mm to 150mm.

My main supplier is Broadhurst Clarkson & Fuller so I can obtain any item sold by them.

Creative Pine
16 Mulberry Lane
Goring by sea
Worthing
West Sussex.
Telephone 01903 247317
Email: creativepine@tiscali.co.uk
All Major credit cards accepted. Free local delivery if required.

WAS BBQ

Linda & Dave Storey

Saturday 14th August
from 6.30 onwards
Cost £3 per person (£5 per couple)
Must be booked in advance

This will be the nearest Saturday to the Perseids so hopefully we will see some meteors.

Please bring your own drink and possibly a garden chair!

Moonrise
Mill Lane
High Salvington
Worthing
Tel 01903 264136
phone for directions

Unfortunately it is not possible to park in the road outside, so please leave your car in Newling Way and walk down (it's not far!).
We will also need to know, in advance, if you require a vegetarian meal.

.

What's on the Box

Saturday 5th June 2004

BBC TWO

13:20 to 13:50: **Transit of Venus: Stardate**
In preparation for the upcoming transit of Venus across the Sun, Adam Hart-Davis, who heads up the live BBC coverage on Tuesday, explains how to watch the event safely.

Sunday 6th June 2004

BBC TWO

23.55 to 00.20: The Sky at Night
Patrick Moore previews the rare (it has only been observed five times) upcoming transit of Venus across the Sun, with advice on viewing and photographing the event. He explores the planet and dicusses future missions to understand more about Earth's forbidding neighbour.

Tuesday 8th June 2004

BBC TWO

09.50 – 09.55: **Transit of Venus: Stardate**
Live visit to the Royal Observatory Greenwich for coverage of the Transit of Venus, when the planet passes in front of the Sun.

12.00 – 12.15: **Transit of Venus: Stardate**
Adam Hart-Davis and the team are live in Greenwich for an attempt to measure the distance to the Sun, the climax of the Transit of Venus as the planet crosses the face of the Sun.

23.20 – 00.20: **Transit of Venus: Stardate**
Adam Hart-Davis is at the Royal Observatory Greenwich, reporting on the day's astronomical event when Venus passes over the face of the Sun. Also includes the results of the Open University's attempt to get viewers nationwide to time the Transit and make an accurate measurement of the Astronomical Unit, the distance from Earth to the Sun.

Although the above television programme's come before the monthly meeting, I have included the listings to aid those who receive this Newsletter via email on the preceding Sunday – Ed

WAS News News

Starburst eye of a galaxy produces a cosmic shower

University Of Wisconsin-Madison News Release

Combining images from orbiting and ground-based telescopes, an international team of astronomers has located the eye of a cosmic hurricane: the source of the one million mile-per-hour winds that shower intergalactic space from the galaxy M82.

The starburst galaxy M82 is one of the most studied objects in the sky. Now, an international team of astronomers, using data from the orbiting Hubble Space Telescope and the ground-based WIYN Telescope, have traced the source of the enigmatic, million mile per hour winds that shower the cosmos to the starburst heart of the galaxy

Situated 10 million light years from our own galaxy, the Milky Way, M82 is one of the most studied objects in the sky. Known as a starburst galaxy for the intense, bright clusters of young stars at its heart, M82 is also characterized by massive jets of hot gas -- tens of thousands of light years long -- that blast into intergalactic space perpendicular to the starry plane of the galaxy.

Using images combined from the Hubble Space Telescope (HST) and the WIYN Telescope on Kitt Peak, Ariz., a team of astronomers from University College London and the University of Wisconsin-Madison has traced the origin of the galaxy's 'superwind' into the starburst heart of M82. The work shows that the wind is not a single entity, but is made up of multiple gas streams that expand at different rates to form a 'cosmic shower' of hot gas expelled from the starburst.

The galaxy's mighty winds, the astronomers say, were sparked by a near-miss collision with the neighboring giant spiral galaxy M81. That close encounter, according to University College London astronomer Linda Smith, set off an explosive burst of star formation.

"M82 shows intense star formation packed into dense clusters," says Smith. "This powers plumes of hot gas that extend for tens of thousands of light years above and below the disk of the galaxy. The jets of gas from this

pulsating cosmic shower are traveling at more than a million miles an hour into intergalactic space."
The emphasis of the new work, according to UW-Madison astronomer Jay Gallagher, was on the powerful high-temperature winds of M82 and using the Hubble and WIYN observations in combination to view the galaxy in a new way. "The Hubble and the WIYN data give us a new overall view of the M82 superwind stretching from deep within the starburst into intergalactic space."

The challenge of the new observations lay in visualizing data covering enormous distances and a huge range in brightness, says Mark Westmoquette, a graduate student at University College London.

"We solved this by overlaying the sharp images from Hubble that cover the inner galaxy, where resolving key details is critical, on top of WIYN data that show the extended wind," Westmoquette explains. "This approach allowed us to connect inner and outer features with specific sites of star formation."

Westmoquette likened the exercise to tracing widely dispersed plumes of industrial smoke back to the smokestack from which it originated.

"Just as in the terrestrial case, understanding the flow of chemically enriched matter from galaxies into diffuse intergalactic space requires maps extending from the source to where the plume is lost," Westmoquette says. "It is a challenge for astronomers."

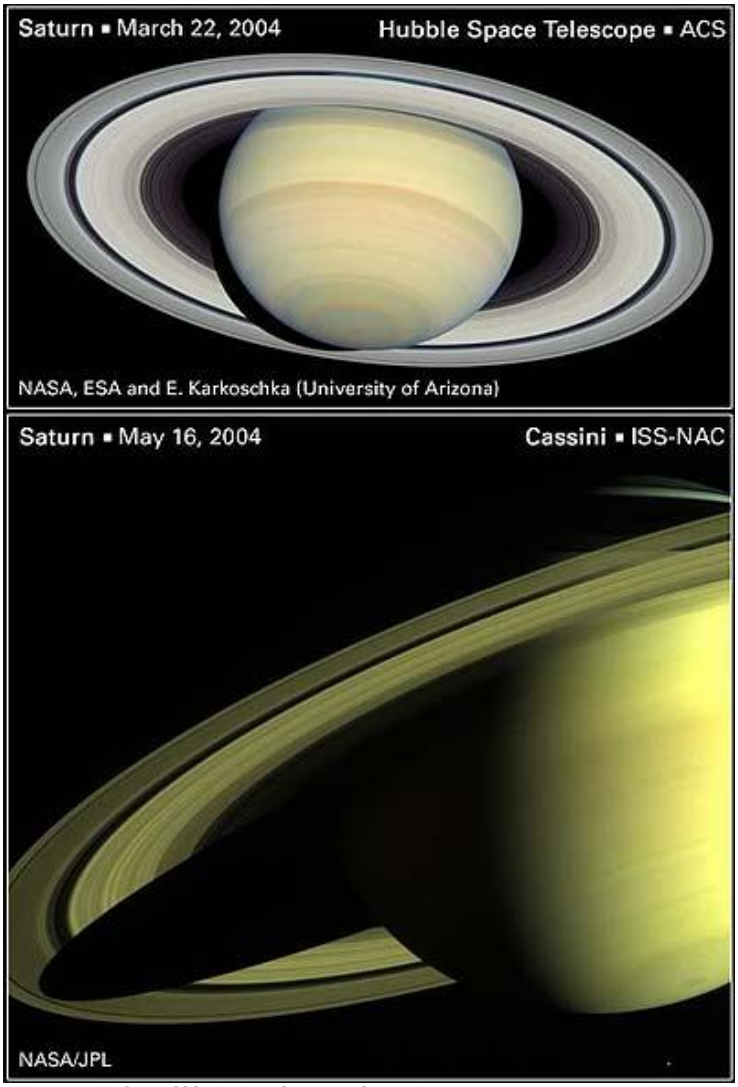
In addition to NASA's Hubble Space Telescope, data for the group's observations were obtained from the 3.5-meter WIYN Telescope at the Kitt Peak National Observatory in Arizona. The observatory is supported by the National Science Foundation and a consortium of American universities, including UW-Madison

Spacecraft near and far are watching Saturn

Space Telescope Science Institute News Release

As Saturn grows closer through the eyes of the Cassini spacecraft, which is hurtling toward a rendezvous with the ringed world on June 30 (July 1, Universal Time), both Cassini and the Earth-orbiting Hubble Space Telescope snapped spectacular pictures of the planet and its magnificent rings.

Cassini is approaching Saturn at an oblique angle to the Sun and from below the ecliptic plane. Cassini has a very different view of Saturn than Hubble's Earth-centered view. For the first time, astronomers can compare views of equal-sharpness of Saturn from two very different perspectives.



Saturn as seen by Hubble (top) and Cassini (bottom).
Download larger image version here

The view from Hubble, taken on March 22, 2004, is so sharp that many individual Saturnian ringlets can be seen. When Cassini returned its picture of Saturn on May 16, it was so close to the planet that the Imaging Science Subsystem narrow-angle camera could not fit the whole planet in its field-of-view. Cassini is still about 12.4 million miles (about 20 million kilometers) away and only 36 days from reaching Saturn.

Hubble's exquisite optics, coupled with the high resolution of its Advanced Camera for Surveys, allow it to take pictures of Saturn which are nearly as sharp as Cassini's, even though Hubble is nearly a billion miles farther from Saturn than Cassini. Cassini will ultimately far exceed the resolution of Hubble during its close encounter with Saturn. Cassini's sharpness began to surpass Hubble's when it came to within 14 million miles (23 million kilometers) of Saturn earlier this month.

Diary

9th June 2004 History of the WAS Observatory Graham Boots - Curator of the Observatory

14th July 2004 Inside Stars - Cooking Pots for the Elements - James Fradgley Wessex Astronomical Society

8th September 2004 The History of the Almagest - Mark Hurn, Institute of Astronomy Cambridge

13th October 2004 AGM and Member's Contributions consisting of their observational results and shorts talks on various astronomical subjects

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

8th December 2004 ' Observing the Sun - Lee Macdonald

All Meetings **(bold)** are held on the second Wednesday of every month unless otherwise stated, at Heene Church Rooms, Worthing at 7.30 p.m. Meetings include the latest astronomical work, reports and, photographs by members. For further information please call 01903 521205, on the Internet at *www.was.org.uk* or email: *chairman@was.org.uk*

Executive Committee

Chairman: Glen Thomas

20 Wayside Avenue
Durrington
BN13 3JU
Tel: 01903 261723
Email: chairman@was.org.uk

Vice-Chairman: Bob Turner

21 Beechwood Ave
Worthing
West Sussex
BN13 2HR
Tel: 01903 692522
Email: vice_chairman@was.org.uk

Business Secretary: Christa Sutton

8 Tower Road
Lancing
BN15 9HT
Tel: 01903 523764
Email: secretary@was.org.uk

Meeting Secretary: Graham Boots

101 Ardingly Drive,
Worthing,
West Sussex
BN12 4TW.
Tel / Fax: 01903 505346
Email: grahamboots@observatory99.freeserve.co.uk
Web Site: www.observatory99.freeserve.co.uk

Membership Secretary: Colin Knappitt

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

Treasurer: Michael Marshall

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

Curator of the Observatory: Graham Boots

101 Ardingly Drive,
Worthing,
West Sussex
BN12 4TW.
Tel / Fax: 01903 505346
Email: grahamboots@observatory99.freeserve.co.uk
Web Site: www.observatory99.freeserve.co.uk

Note to Contributors

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

a b c d e f g h i j k l m 0 n o p q r s t u v w x y z