



WAS NEWS

Monthly Newsletter of the Worthing Astronomical Society

Official website: www.was.org.uk

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



Number 166

July 2003

ALMANAC

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

July./August./September.

LUNAR

Month	Date	Time	rise	set
July	First Quarter	7th	20.28	10.54
	Full Moon	14th	11.16	21.01
	Last Quarter	21st	14.45	00.24
	New moon	29th	18.39	02.57
August	First Quarter	5th	07.28	13.26
	Full Moon	12th	04.48	20.16
	Last Quarter	20th	00.48	22.18
	New moon	27th	17.26	04.08
September	First Quarter	3rd	12.34	14.08
	Full Moon	10th	16.36	18.54
	Last Quarter	18th	19.03	21.19
	New moon	26th	03.09	05.55

EARTH

Month	Date	Sunrise	Sunset
July	7th	03.52	20.18
	13th	03.58	20.14
	21st	04.08	20.05
	29th	04.19	19.54
August	5th	04.29	19.42
	12th	04.40	19.30
	20th	04.53	19.14
	27th	05.04	18.59
September	3rd	05.15	18.43
	10th	05.26	18.27
	18th	05.39	18.09

PLANETS (as at July 29th.)

Planet	Constellation	Rises	Sets	Mag.
Mercury	Leo	06.28	20.46	-0.1
Unfavourable				
Venus	Cancer	03.49	19.42	-3.9
Unfavourable				
Mars	Aquarius	21.33	07.28	-2.3
Morning object visible low in the south east				
Jupiter	Leo	06.05	20.36	-1.7
Unfavourable				
Saturn	Gemini	02.01	18.11	+0.1
Morning object				
Uranus	Aquarius	20.44	06.58	+5.7
Difficult but well placed				
Neptune	Capricornus	19.56	05.08	+7.8
Difficult but well placed				
Pluto	Ophiuchus	15.48	01.41	+13.8
Difficult				

PHENOMENA

Month	Date	Hour	Phenomenon
July	17th	08	Mars 0.3° S. of moon
	27th	00	Saturn 4° S. of moon
	29th	08	Mars at stationary point
August	4th	14	Neptune at opposition
	13th	16	Mars 2° S. of moon
	14th	21	Mercury at greatest elongation E. 27°
	18th	18	Venus in superior conjunction
	22nd	10	Jupiter in conjunction
	23rd	15	Saturn 4° S. of moon
	24th	10	Uranus at opposition
	28th	14	Mercury at stationary point
	28th	18	Mars at opposition
	29th	03	Pluto at stationary point
September	9th	12	Mars 1° S. of moon
	11th	02	Mercury in inferior conjunction
	20th	04	Saturn 5° S. of moon
	20th	09	Mercury at stationary point

Minima of Algol

July	15th 02.48	17th 23.42	20th 20.30
August	7th 01.18	9th 22.06	27th 03.00 29th 23.48
September	1st 20.36	16th 04.42	19th 01.30 21st 22.18

Lunar Occultations

Times as at W.A.S. Observatory

Date	U.T.	S.A.O.No	Mag	Phase	
July	h. m. s.				
	22nd	03.04.20	92941	7.5	reapp
	23rd	02.59.13	93331	7.6	reapp
August	16th	00.53.11	128868	6.9	reapp
	17th	01.01.23	109835	6.9	reapp
	18th	00.01.00	110328	7.2	reapp
	19th	01.08.42	93156	8.5	reapp
	20th	02.40.23	93552	8.2	reapp
	20th	04.15.10	93568	6.3	reapp
	20th	23.52.58	76602	5.4	reapp
	22nd	03.16.17	77144	8.2	reapp
	24th	02.37.42	79172	6.8	reapp
	24th	03.31.45	79206	8.1	reapp
Sept	6th	19.47.50	188778	4.9	diss
	12th	21.50.12	109613	8.0	reapp
	13th	00.51.15	109671	7.8	reapp
	13th	01.43.45	109687	8.9	reapp

This is only about 16% of the predictions for the W.A.S.observatory.

Dave Wells

Editors Note

A distinctly 'Mars' themed newsletter this month, but don't let that detract you from other important articles and issues herein. I would draw your attention to the Chairman's note on page 4. So until September – clearest skies!

Rob

Dates for your Diary

Cancelled Observer's Evenings at the Observatory

Graham Boots - Curator of the Observatory

I am sorry but I will be away for the following Fridays listed below, so there will be no observer's evenings on those dates.

This should be the last cancellations for this year. Alex Vincent hopes to organise alternative activities for these four Fridays, in particular for the Perseids Meteors activity at Ferring Beach around the second week in August which was so successful last year. He can be contacted anytime on his mobile telephone number 07753 282714. Please see his announcements elsewhere in this WAS News.

The cancelled dates concerned are: -1st, 8th, 15th & 22nd August

Visit to Foredown Tower

Nick Quinn

Just a reminder about the society visit to Foredown Tower this Thursday at 7.00pm.

No need to pre-book, just turn up on the evening by seven o'clock; admission will be 2 pounds 50 pence.

I hope to see you there.

Observers Nights

Alex Vincent.

During August the curator of our observatory will be away on holiday and I normally arrange observer's nights at Hill Barn, but I have not yet heard whether or not that I can get permission to use that site now that it is privately owned.

Instead for the time being I shall be doing two observer's nights for the Perseids down at our Ferring Beach site on Friday the 8th and 15th August starting at about 8 PM. Maximum of the Perseids this year will be on the night of the 12/13th. Bring along a camera if you wish to take any

photographs and report forms to log down any meteors seen.

Besides the Perseids there are other active showers as well such as the Alpha Capricornids which have a ZHR of only five, but they are sometimes bright and slow fireballs. Also bring along a telescope because Mars will be visible. Although the full moon on the 12th interferes, but don't let this put you off.

Observing Mars At The Observatory

Graham Boots - Curator of the Observatory

On the 28th August 2003 Mars will be at opposition (due south at midnight GMT) and will make it's closest approach to Earth around this time. At this particular opposition Mars will be at a distance of 34,646,418 miles which is the closest approach for more than 59,000 years. The last time anyone saw Mars this well was under Neanderthal skies. Because of this event I plan special observing sessions to benefit members who cannot come to the Observatory on the usual Fridays evenings or who are beaten by the weather, as so often is the case, but in any event all are welcome anyway.

Mars will not be very high in the sky for our latitude at a declination of around minus 16 degrees in the constellation of Aquarius. Perhaps we can observe some of those objects I planned to observe a year ago when I chose this constellation for the Stellar and Deep Sky section but was beaten by Moon light and the weather.

The evenings I have planned are as follows.

Monday 1st September 5 day old Moon Diameter of Mars 25 seconds of arc 10.00 p.m. onwards

Tuesday 9th September 13 day old Moon Diameter of Mars 24 seconds of arc 9.45 p.m. onwards

Wednesday 17th September 21 day old Moon Diameter of Mars 23 seconds of arc 9.30 p.m onwards

Monday 22nd September 25 day old Moon Diameter 22 seconds of arc 9.00 p.m. onwards

Tuesday 30th September 4 day old Moon Diameter of Mars 21 seconds of arc 9.00 p.m. onwards

The Moon will only interfere on the 9th September. Uranus is also in Aquarius and Neptune is not far away in Capricornus.

The 12" Newtonian will give fantastic views of Mars, the southern polar ice cap should be visible along with dark markings. Lets hope we do not get a dust storm which so typically follow oppositions. The ochre colour of Mars should be striking.

The Celestron 8 will be available for photography at eyepiece projection. I recommend Kodak Kodachrome 64 and the price normally includes processing. These evenings will mainly be 'come and have a look' rather than 'electronic imaging' sessions but these detectors could be used for those who can stay very late.

Reports

The Planets in July and August 2003

Glen Thomas - Planetary Section Director

Mercury is on the far side of the Sun near the start of June, heading towards its greatest eastern elongation on **Aug 14th**. However, it will set at the end of civil twilight and so will not be well placed.

Venus is too close to the Sun to easily observe as it approaches an **Aug 17th** superior conjunction (far side of the Sun).

Mars is brightening rapidly, from approx. -1.7 to -2.9 over July and August. It is best seen around **04:00** early **July**, and around **01:00** around opposition at the end of **August**. Mars' apparent size reaches over 25", close to Jupiter's 30", and is the brightest object in the night sky (excepting the Moon). Any optical aid will help, with some surface detail visible even in small telescopes.

Jupiter is getting lower in the evening sky, setting before **23:00** at the start of **July**. It reaches conjunction with the Sun on **Aug 22nd** and will not be visible again until at least October.

Saturn becomes visible as a morning object. Look to the East at the start of the morning civil twilight (around **04:45** in early **Aug**) - Saturn will be shining weakly in Gemini. It will only be a magnitude brighter than the 'twins', Castor and Pollux, and 22° above the horizon, increasing to 37° at the end of August. Altitudes above 30° should be considered good enough for reasonably steady viewing.

Uranus is near **23 q Capricorni** and will be well placed during the next two months. Highest in the South around **04:00** early **July**, or **24:00 - 02:00** around opposition (**Aug 24th**). At magnitude 5.7 you will probably need binoculars even to see the planet, and a telescope to see any disc.

Neptune reaches opposition on **Aug 4th** and will be visible low in the sky (22° alt) throughout the next two months. Best around **02:30** in early **July**, **23:30** during late **August**. At magnitude 7.8 you will need binoculars and a good chart to identify Neptune.

Pluto is now well placed as it is just past a June opposition. Use a good finder map or planetarium software showing stars below magnitude +14, with

follow-up observations to confirm its identity by its slow motion. It is due south around **23:00** at an altitude of 26° early **July**. Don't leave it too long, as Pluto will disappear in the evening twilight before the end of the month. Pluto needs a telescope with an aperture of *at least* 20 cm (8 in).

Solar Section Report - June 2003

Section Director, Brian Halls

The beginning of the month started with little sunspot activity – with only three groups being visible on the 3rd.

By the second week, activity was more pronounced – two large groups (10375 N13⁰ L=022⁰ area=0800 type=Ekc and 100380 S15⁰ L=308⁰ area=550 type=Eki) had appeared and were described as both being magnetically complex areas. The former reached naked eye magnitude.

Activity peaked out during this time and once more began to decrease, though not to the same sort of levels of the first week.

This seesaw of activity carried on as the last week of the month once more began to see an increase in the number of sunspot groups. The last two days of the month saw a group - 100397 N12⁰L=034⁰ area=790 type=Fho appear.

Members observed on all 30 days of the month! Reports were received from Graham Boots, Brian States (who was able to observe the Sun on all 30 days) and the Director.

MDF = 4.82 (N= 2.5 S= 2.37)

R= 76.9

Young Moon Club Observation Report - June 30th

Glen Thomas - Lunar Section Director

Nine WAS members met in High Salvington on June 30th to get the chance to see a very young crescent Moon (1.3% illuminated, 24.7 h old). Although the cloud largely cleared above us as the Sun set, a thick bank of cloud hung stubbornly over the whole western horizon. Michael Marshall did claim to see a crocodile (!) in the cloud bank, and Jupiter was observed with binoculars hanging high in the twilight sky, but the Moon eluded us. The next favourable very young crescents will be in February and April next year.

For those than cannot wait, there should be a very 'old' crescent visible on the morning of Monday July 28th. The Moon may be just visible just 26.5 h before the new Moon, with only 1.5% of its surface illuminated. Look for it after moonrise at 03:47 until sunrise at 05:21.

Notices

From The Chairman

Brian Halls

BBQ

I am pleased to advise that the Society BBQ will be held on Saturday 30 August at 19.30 hours.

The venue will be 51 Kipling Avenue, Goring. I would like to express our thanks to Avril Swann who has kindly offered to organise and host the BBQ this year.

We expect tickets to be in the region of £2 per head. So if you are interested in attending please let us know NOW so Avril can cater accordingly.

This particular evening will see the end of National Astronomy Week and of course, Mars shall be well placed in the late evening sky – so fingers crossed for a good evening on the 30th.

COMMITTEE

With just one more Society monthly meeting left before the AGM in October, I thought I should remind you that at the AGM I shall be standing down as Chairman as my three consecutive annual terms of office will be over.

Each office on the Executive Committee becomes available at the AGM. So this year we shall require a **Chairman**. I have also been acting-secretary during much of my time as chairman and as I shall not graduate into the position of **Secretary** either, this position needs to be filled.

The job description of Secretary can be explained as follows: the Secretary is the first point of contact for members, prospective members and, officers of other astronomical societies. The position is very much that of a public relations officer. The secretary calls committee meetings – usually every two months. They keep the minutes of the monthly and committee meetings.

Another new role that will require filling at the forthcoming AGM is the position of **Meetings Secretary**: this officer is responsible for organising speakers for the monthly meetings and ensuring that any equipment the speaker may require – overhead projector, slide projector etc can be organised. This job involves welcoming and looking after the guest speaker on arrival at our meeting place, making sure they have refreshments if required etc. Post care is sending the guest speaker a copy of the following months WASNews with a report of their talk in it.

The last new position is that of **Membership Secretary**. As the name implies, this officer helps the Treasurer

maintain an up to date list of Society members, and will be a point of contact for any visitors to the meetings.

Naturally all three posts will interact with each other as per the Constitution

Articles

Of the following two article, both by the guest speaker, the first is a article based on the talk given at last months (June) meeting –Ed.

Mars Global Surveyor

Jerry Workman B.s.c. F.R.A.S.

The early Martian probes showed Mars to be a freeze-dried planet, which was heavily cratered and possessed only a thin carbon dioxide atmosphere. Mariner 9 was to change this perception of the Red planet forever when it completely mapped the surface of Mars and sent back over 7000 images. Mars had four huge shield volcanoes over 15 miles high. A gigantic rift valley was also revealed and with a length of over 3000 miles. . In addition its greatest depth was over 3 miles and a width exceeding 100 miles in some places. . Clearly this feature would dwarf any canyon structure on Earth These geological structures were on an enormous elevated plateau called the Tharsis region. Presumably this region had been pushed up by tectonic forces when Mars had been more geologically active.

The polar caps were shown to be a mixture of carbon dioxide and water ice and were more substantial than had been previously thought. . Sometimes these caps could be a few hundred meters thick. Mariner 9 also showed an extensive network of what appeared to be water cut valleys, which had long since dried up.

The global view of Mars was astonishing because it showed a northern hemisphere dominated by low flat lava plains and a southern hemisphere dominated by cratered highlands.

Two Viking probes landed on Mars in the summer of 1976 and searched for life on the surface there. . The three experiments carried out suggested that the surface was sterile as no trace of organic material could be found in the soil. Two orbiters sent back many excellent aerial views of Mars which had ten times better resolution than Mariner 9. . The two orbiters and two landers between them sent back around 55,000 black and white and colour images.

Scientists had to wait another 21 years before Pathfinder landed in the Ares valley in July 1997. . This was more of a geochemical mission and was not really designed to search for life.

The Martian soil and rocks turned out to be silica rich and were really a mixture of metal silicates (rather like the rocks on Earth). . The iron oxide so dominant over the surface was really just a thin coating. . The Pathfinder

mission only operated for 3 months but in that time sent back around 16,000 images.

Mars global surveyor was launched in December 1996 and reached Mars in September 1997. . The main mapping phase which was due to start in March 1998 was delayed due to a faulty solar panel. When the main bulk of the images did start coming back from the spring of 1999 they were absolutely stunning.

Many of the more familiar features on Mars were viewed in greater detail by the spacecraft. Water gullies were shown on the walls of water cut valleys and craters. Geologically these looked quite recent and could have been produced by melting ice flowing down these walls before quickly evaporating. There were two main sources for these water cut features. Initially some were formed as out flow channels from larger bodies of water early in Martian history. The second source was from more recent flash flooding. Water could have been forced to the surface when permafrost melted during volcanic activity.

There were many surface deposits on the floor of Mariner valley. Some of these appeared to be permanent sedimentary layers hundreds of metres thick. Some of the looser material would be blown around all over the place and could reach the actual surface. The walls in various sections of the valley showed evidence of collapse and slumping. Close ups of these wall structures which in places were over two miles high showed remarkable layering. Very large sand dunes were also seen in various locations and in particular were found inside both large and small craters. There are sedimentary layers in many of these craters as well as the more fine wind blown material. Many of the collapsed and chaotic looking channels were probably water cut and show evidence of their walls having been cut by water as well. Volcanically Mars now seems to be dead but this has not always been the case. It is difficult to ascertain when this volcanism stopped, but at its peak it must have been absolutely extraordinary to produce those enormous domes on the Tharsis plateau.

The 3-D maps of Mars show the enormous elevation of the Tharsis bulge which looks like a huge bluster on the Martian surface. . This region is clearly the highest on the planet.

Two huge impact basins Argye and Hellas stand out prominently in the southern highlands. . The Hellas basin is actually the deepest part of the Martian surface, with a depth of around six miles. It is also interesting to note that both Polar Regions are elevated above their surrounding terrain like two up turned saucers. The vast craterless plains in the north also stand out prominently, as do the cratered highlands south of the equator.

Mars global surveyor has showed us that the Red planet is

a truly wonderful geological sight and a planet where even more spacecraft exploration is required. At present another spacecraft called Mars Odyssey is busy mapping the Mars terrain and will continue to do so for some years to come. Three more missions will reach Mars in early 2004 and all contain landing craft. These rovers will further enhance our knowledge of the red planet.

A Special Report On The Solar Annular Eclipse Which Took Place On Saturday 31 May 2003

Jerry Workman B.s.c. F.R.A.S.



May 2003 – Annular Eclipse Near Dalvík (North Iceland, 40 miles south of the Arctic Circle). Approx:- 04.05 UTC 1/1000 sec on Icodaic Elite Chrome 200

In Britain on Saturday 31/05/03 at around 4.45am BST an usual annular eclipse took place just after sunrise.

This event could be seen from the extreme north of Scotland. The prospects of seeing this eclipse from that location was always going to be marginal due to the possibility of cloud cover. Unfortunately this is exactly what did happen as much of Scotland was completely clouded out, from a warm front which came across from the Atlantic that night.

The best view was from Lewis, where there was a clear horizon. Observers would have had a splendid view of a rising Sun, which was almost annular. The eclipse was also nearly two and one half minutes in duration, which was the longest on UK shores.

Shetland had mixed fortunes. The top half was completely clouded, whereas the bottom half had a view of the partial phases. It is unlikely however that anyone on those islands saw annularity.

Orkney was completely clouded out due to thick blanket cloud. This was most unfortunate, as many people had chosen these beautiful islands for their observation site. The mainland also had mixed fortunes. Observers had a

good view from Durness, where the Sun would have risen as a very thin oval crescent. Twenty minutes later the annular phase would have taken place, with annularity lasting for over two minutes, making any long drive from England or indeed Southern Scotland well worthwhile.

The more east you went the more cloudy it became. Thurso, Dunnet Head, John O'Groats and Duncansby head were completely clouded out. This was also true for Wick which had been my original choice for this eclipse. Inverness was completely fogged in, though there were reports that people had seen annularity from Lossiemouth. The duration from here was very short however and certainly did not exceed 40 seconds.

This Atlantic warm front also affected Iceland and by the morning of the eclipse the island saw complete blanket cloud, except one area in the extreme north of the country. Fortunately I happen to be in this favourable location. More remarkably just a few hours before the eclipse was due to take place the prospect of seeing it from this area went from the original 30 to about 50%.

The exact location was Just north of Dalvik, which is 40 miles south of the Arctic circle. The Sun had set here at about midnight and rose again at 2.30 am, so had been below the horizon for barely 150 minutes. Not surprisingly it never got dark at all.

When I got to the eclipse site at 2.00 am you could easily read without any artificial illumination at all. The early sunrise also meant that theoretically we could see the entire eclipse from here, because first contact was not until after 3.00am. Anywhere elsewhere along the eclipse track including southern Iceland would see a Sun rise partially eclipsed. We would be the only ones on Earth to see the whole disk of the Sun rise above the horizon. This was not quite true however because one party visiting Iceland was able to board a plane and got an excellent unobstructed view of the whole event above the thickening cloud base that was developing over the whole of north Iceland.

At Sunrise the sky was relatively clear with only wispy cloud up to an altitude of about five degrees above the horizon. After this we were in to very thick cloud, the same sort that was to ruin much of the viewing from Scotland. It needed to stay like that however, if we were to stand any chance of seeing the annular phase At this stage the odds of seeing the eclipse were still looking quite favourable and were certainly more than 50%. Typically as the Sun started to rise, so the thick cloud started to descend. It looked very likely that we would be clouded out right at the vital moment The Sun did indeed disappear into thin cloud just before annularity, but miraculously a break in the cloud gave all those people present a view of most if not all of the annular phase.

The view was truly fantastic both through the camera lens and with the naked eye. A thin golden ring could be seen all the way around the black disk of the Moon. This ring was quite bright and easily seen, which is somewhat surprising considering the amount of cloud around. This just goes to show that cloud does not always interfere with eclipse viewing.

Five minutes later the Sun did indeed disappear into that cloudbank and was not seen again for quite a few hours. You could say that we were very lucky and indeed we were, but there is always an element of luck involved when attempting to view astronomical events. I should know as I have been clouded out often enough in the past. This time the astronomy gods shined on us. Some people present said that they noticed a decrease in light levels and temperatures. Personally I was not convinced about this. Certainly these differences were much less dramatic, than they had been from Cornwall, where I was completely clouded out for the 1999 total eclipse.

The most interesting point of all was that I did not need to use my solar filter at all during the annular phase when taking images through my 1000 mm lens. The Sun was simply not bright enough and the cloud acted as a natural filter anyway.

Most of the partial phases also did not require any form of filtering. Using a filter with the unaided eye or through a camera lens rendered the image of the Sun virtually invisible.

For naked eye observers the use of eclipse glasses was again totally unnecessary for any of the partial phases. These eclipses glasses were also rendered completely useless for the annular phase as the cloud once again acted as a natural filter.

So at 4 o'clock on the morning of Saturday 31/05/03 and in one of the remotest places in Europe. I saw an unusual annular eclipse at an altitude of only four degrees above the horizon. It was truly an unforgettable experience and was summarised by one of my fellow observers as being "absolutely fantastic" and it most certainly was.

What's on the Box

Saturday 12th July 2003



11.30 – 12.00 ~ **The Sky at Night.**

S*pace Scouts* The world of astronomy. Patrick Moore looks at how the world of astronomy is on the threshold of a new era of discovery.

Friday 18th July 2003



00:30 - 01:30 ~ **Beagle 2 - A Mission to Mars.**

Keith Allen presents this documentary following Professor Colin Pillinger and his team as they endeavoured to send Beagle 2, a small spacecraft capable of conducting pioneering experiments, to the red planet. Putting a human face on pioneering British space science, the film shows them trying to get the project official approval and the money needed for lift-off.

WAS News News

Mars orbiter eyes Phobos over planet's horizon

NASA/JPL News Release



A high-resolution image of Phobos was taken by Mars Global Surveyor from about 6,010 miles away. At this distance, the image resolution is about 470 ft. per pixel. Credit: NASA/JPL/Malin Space Science Systems

Images from the Mars Orbiter Camera aboard NASA's Mars Global Surveyor capture a faint yet distinct glimpse of the elusive Phobos, the larger and innermost of Mars' two moons. The moon, which usually rises in the west and moves rapidly across the sky to set in the east twice a day, is shown setting over Mars' afternoon horizon.

Phobos is so close to the martian surface (less than 6,000 kilometers or 3,728 miles away), it only appears above the horizon at any instant from less than a third of the planet's surface. From the areas where it is visible, Phobos looks only half as large as Earth's full moon. Like our satellite, it always keeps the same side facing Mars. The tiny moon is also one of the darkest and mostly colorless (dark grey) objects in the solar system, so for the color image two exposures were needed to see it next to Mars. The faint orange-red hue seen in the wide-angle image is a

combination of the light coming from Mars and the way the camera processes the image.

The top picture is a high-resolution image that shows Phobos' "trailing" hemisphere (the part facing opposite the direction of its orbit). At a range of 9,670 kilometers (6,009 miles), this image has a resolution of 35.9 meters (117.8 feet) per pixel. The image width (diagonal from lower left to upper right) is just over 24 kilometers (15 miles).



Diary

July 9	<i>White Dwarf Stars</i> – Konrad Maylin-Smith Corydon AS
July 12	SAGAS annual convention
September 10	<i>Cosmology</i> - Caroline Beevis
October 8	<i>AGM & Members Contributions</i>
November 12	<i>Space Weather</i> - Dr. Andrew Coates of Mullard Space Sciences Laboratory University College London
December 10	<i>The Relevance of Astronomy to Human Culture</i> - Dr Francisco Diego University College London
January 14 2004	TBA
February 11 2004	<i>Solar Neutrinos</i> - Dr. Robert C. Smith University of Sussex

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

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 Beechwood 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 Chiland

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 **September** issue of WAS NEWS should be with the Editor by **September 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

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