

# Wadhurst Astronomical Society Newsletter September 2012

## MEETINGS

### ASTRO-BBQ

This year we were guests at the home of Brian Mills for an Astro-barbecue, there being no WAS meeting in August.

Nine members and friends came for what was socially a very successful evening. Brian's preparations covered everything anyone could want at a barbecue in weather that had been predicted by professional TV forecasters to be every combination of weather condition. Brian had built a stout brick barbecue and also provided us with a metal charcoal-burning trough barbecue and very adequate poor-weather cover.



*Plenty of discussion on the techniques of flame control*

Members brought their own food to cook and there wasn't one black burnt sausage to be seen all evening. A first for me!

As it turned out, the weather was dry for some of the time, but we only managed to glimpse just a few stars between the clouds; Arcturus, Vega and the stars that make up the "W" of Cassiopeia and the Plough but they weren't visible for more than a few minutes at a time. Phil Berry had his stabilised binoculars with him but there wasn't really time to make proper use of them. Some visitors had astronomical "aps" on their mobile phones so we weren't completely in the "dark"...

Other members had brought telescopes but it hadn't been thought even worth taking out of their cars.

It was a thoroughly enjoyable evening though and those who attended extend their very grateful thanks to Brian and his wife, Jean for its success.

## SEPTEMBER MEETING

**Wednesday 19<sup>th</sup> September 2012** – Ian King is giving a talk called "The Evolution of the IKHAROS Telescope". This is an interesting follow on from something Ian has spoken of earlier.

Meetings begin at 1930 although members are invited to arrive anytime after 1900 as this is a good time to exchange ideas and discuss problems and also relax before the meeting.

The venue as always is held in the Upper Room of the Methodist Church at the east end of Wadhurst Lower High Street, opposite the entrance to Uplands College. (For those with SatNav – the post code is TN5 6AT)

Anyone is welcome but non-members are asked if they wouldn't mind contributing £2 towards costs.

## FUTURE MEETINGS

**Wednesday 17<sup>th</sup> October 2012** – Bob Seaney is giving a talk on "The Lick Observatory"

**Wednesday 21<sup>st</sup> November 2012** – Jan Drozd talks about "Early Pioneers in Astronomy"

**Wednesday 12<sup>th</sup> of December, the second Wednesday of the month** (not 14<sup>th</sup> as stated in the last Newsletter) – Member Paul Treadaway continues his story of building his own telescope. His talk is called "The T200 Telescope First Light"

## OTHER NOTES AND INFORMATION

### ADVANCED CCD IMAGING COURSE

On Saturday December 1<sup>st</sup> 2012, Ian King is doing an "Advanced CCD Imaging Course".

This is an all day course (9.30 – 5.00) costing £35 with lunch provided.

It takes place in one of the domes (the Yapp 36" reflector) at Herstmonceux.

For further information go to the link below:-

[http://www.iankingimaging.com/show\\_products.php?category=169](http://www.iankingimaging.com/show_products.php?category=169)

### HERSTMONCEUX ASTRONOMY FESTIVAL

Also the Herstmonceux astronomy festival takes place from the 7<sup>th</sup> to the 9<sup>th</sup> September.

For anyone planning to attend, there is more information on the link below.

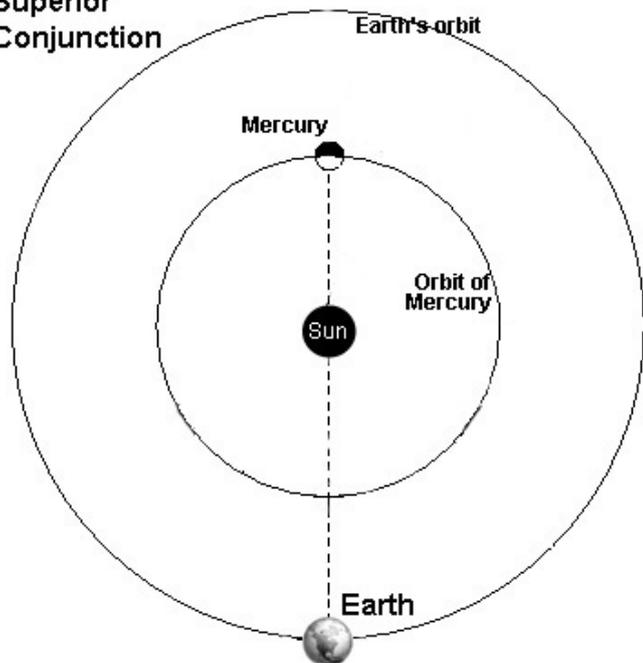
<http://www.the-observatory.org/astronomy-festivals>

## SKY NOTES FOR SEPTEMBER

### Planets

Mercury passes through a superior conjunction on the 10<sup>th</sup>, following which it will be very low in the evening sky and not observable from UK latitudes this month.

## Superior Conjunction



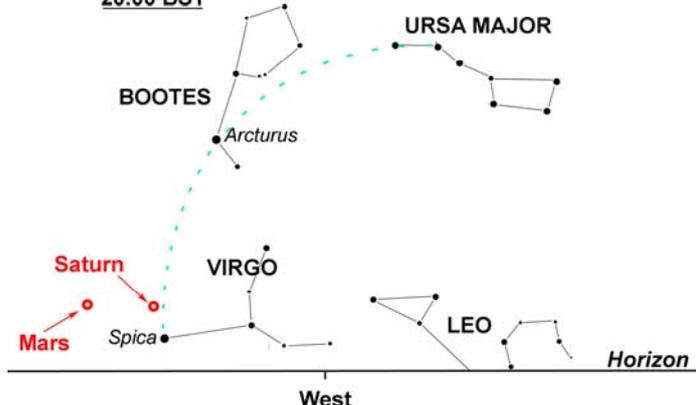
Venus is a brilliant object in the morning sky, at magnitude -4.1. At the beginning of the month it rises a little after 02.00 (in Gemini) which is four hours ahead of the Sun. By the end of the month it rises just after 03.00 (in Leo) which is still four hours before sunrise, by which time Venus is nearly 40° high towards the south east.

Earth On September 22<sup>nd</sup> at 15.49 BST the Earth, on its passage around the Sun, reaches the Autumnal Equinox.

One of the circles that cross the celestial sphere is the celestial equator which is the projection of the Earth's equator out into space. The other is the ecliptic which marks the Sun's yearly passage against the stellar background. At the points where these two great circles cross, we have the equinoxes. At the time of the Autumnal Equinox the Sun is crossing the celestial equator and moving south of it (along the ecliptic) after which time the nights become longer than the days. When the Earth is at these points its poles face neither towards the Sun nor away from it.

Mars at magnitude +1.2 may just be glimpsed in the twilight towards the west-south-west, but at 20.15 it is only 10° above the horizon so may be difficult to locate. As previously mentioned it is best to use the curve of the handle in The Plough (the tail of Ursa Major) to initially find Arcturus and then continue the imaginary line on to Spica.

### Positions of Saturn and Mars - 1st September 2012. 20.00 BST

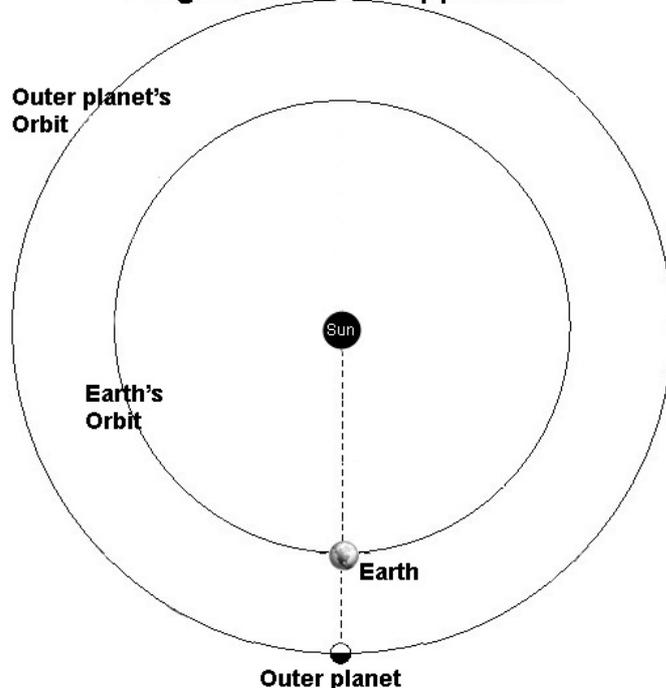


Jupiter is now an evening object rising at 23.10 at the start of the month, and at 21.10 by the end. Its magnitude is currently -2.3, but this is increasing as the planet heads towards opposition in early December when it will be superbly placed for observation at 60° above the horizon as it transits the meridian.

Saturn at magnitude +0.8 in Virgo should be slightly easier to locate than Mars in the twilight. Its position is shown on the above map. By the end of the month the planet will have been lost in the solar glare as it heads towards a conjunction with the Sun in late October.

I have mentioned superior conjunctions already when talking about Mercury and you can see from the diagram in that section that these events take place when the three bodies are in a straight line (more or less) with the Sun in the middle. The inner planets, Mercury and Venus, can suffer two types of conjunction. Inferior conjunctions occur when they pass between the Earth and Sun, and superior conjunctions when they pass behind the Sun. The outer planets, because they are more distant, can never pass between us and the Sun although they do sometimes appear to pass behind the Sun (a conjunction). When one of the outer planets, the Sun and Earth form up in a line with the Earth in between we say that the outer planet is at opposition, meaning it is opposite the Sun in the sky. At such times the planet is at its most favourable for observation because it is rising as the Sun sets and is on view all night until sunrise.

## Diagram to Show Opposition



## Lunar Occultations

This month there are only four reasonably bright occultations that occur before midnight although there are many others that are either of fainter stars or take place at more unsociable hours. I have added an extra column headed "mm" (millimetres) to show the minimum aperture telescope required for each event. DD = disappearance at the dark limb whilst RD = reappearance at the dark limb. **Times are in BST.**

The two events on the 22<sup>nd</sup> may well be a graze occultation that we, as a society, can observe. We have done this before and subsequently been able to provide useful scientific data to both the European organisation and World clearing house (in Japan) responsible for collecting and analysing such results. Please let me know if you would like to take part. Previous experience is not essential, although having witnessed total occultations at our organised observing sessions would be a distinct advantage.

On two occasions during August WAS members gathered at a location on Ashdown Forest to attempt observations of total occultations. Sadly both times we were thwarted by the

weather. However, on September 26<sup>th</sup> we will be trying again, this time to observe the disappearance of a magnitude 5.1 star listed fourth in the table below. Although the Moon is 89% illuminated the estimate is that a telescope of only 40 mm is required to view the event. If you would like to try this type of observation please either let me know or fill in the form at the next meeting. The society owns some telescopes and digital stopwatches that members can use.

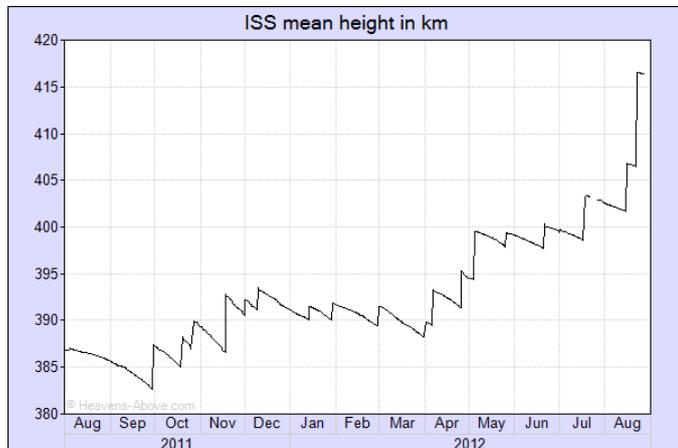
Sept	Time	Star	Mag	Ph	Alt °	% illu	mm
22 <sup>nd</sup>	19.13	SAO 185966	6.9	DD	17	49	100
22 <sup>nd</sup>	19.18	SAO 185966	6.9	RD	17	49	90
25 <sup>th</sup>	22.04	SAO 163946	6.8	DD	25	81	80
26 <sup>th</sup>	22.30	46 Capricorni	5.1	DD	30	89	40

### Phases of the Moon for September

Last ¼	New	First ¼	Full
8 <sup>th</sup>	16 <sup>th</sup>	22 <sup>nd</sup>	30 <sup>th</sup>

**ISS** There are no passes of the International Space Station (ISS) that occur before midnight this month although there are a few in the early hours of the morning. The details of all passes including those visible from other areas can be found at: [www.heavens-above.com](http://www.heavens-above.com)

The height above the Earth of the ISS varies due to atmospheric drag which itself is prone to variations caused partly by solar activity. This creates the need for the ISS to get a "boost" every now and again which can have an effect on predictions. The graph below (from "Heavens Above") shows how its altitude has varied with time over the last year.



**Iridium Flares** The flares that I've listed are magnitude -3 or brighter although there are a lot more that are fainter, occur after midnight or at a lower altitude. If you wish to see a complete list, or obtain timings for somewhere other than Wadhurst, go to:

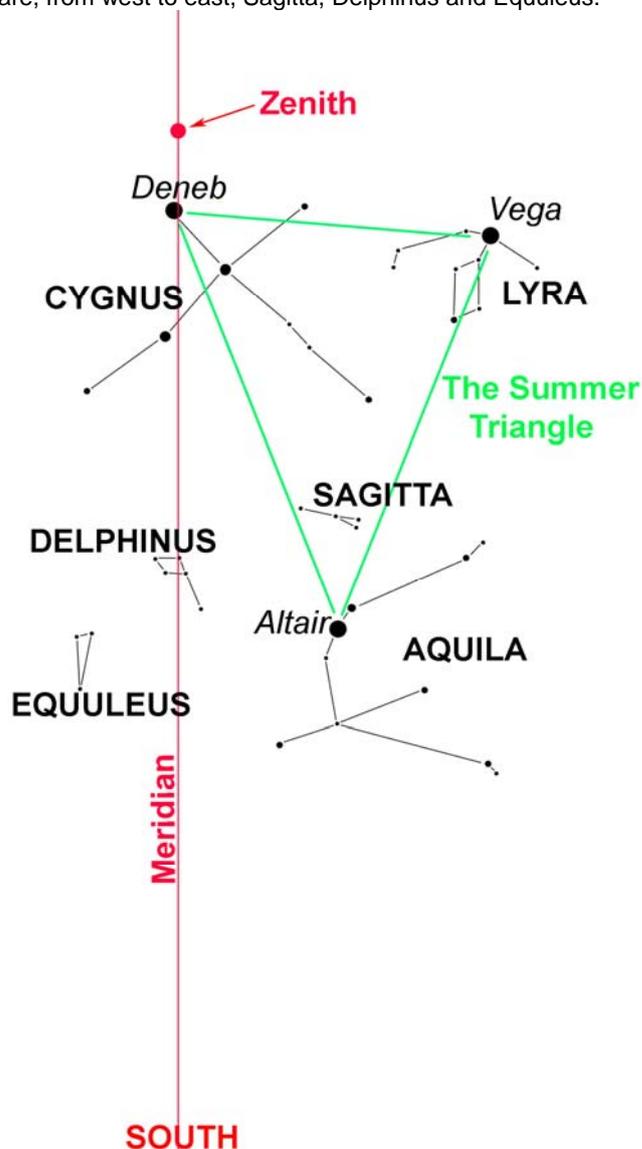
[www.heavens-above.com](http://www.heavens-above.com)

Remember that when one of these events is due it is sometimes possible to see the satellite in advance of the "flare", although of course it will be much fainter at that time. **Times are in BST.**

Sept	Time	Mag	Alt°	Az.
14 <sup>th</sup>	21.39	-6	9	N
15 <sup>th</sup>	21.23	-3	15	N
16 <sup>th</sup>	21.16	-4	16	N
17 <sup>th</sup>	21.10	-3	18	N
26 <sup>th</sup>	20.04	-5	38	N
27 <sup>th</sup>	19.58	-3	40	N
28 <sup>th</sup>	19.52	-3	41	N
30 <sup>th</sup>	19.40	-3	45	N

### The Night Sky in September (Written for 22.00hrs BST mid month)

In the south the Summer Triangle is high in the sky with Deneb almost at the zenith and right on the meridian. In the area that lies roughly between Deneb and Altair can be found three small constellations that are straddling the meridian. They are, from west to east, Sagitta, Delphinus and Equuleus.



Looking west Arcturus is just 10° above the horizon, whilst Corona Borealis and Hercules are due west and still at a respectable altitude. See last month's sky notes for a map showing how to locate them from Ursa Major. Fortunately the large and somewhat faint summer constellations of Ophiuchus and Serpens are now making their way towards the western horizon.

In the north Ursa Major is moving closer to the horizon as Capella in Auriga is climbing clear of it. Now is a good time to identify the twists and turns of Draco as it winds between the bears.

To the east the familiar autumn groups of Pegasus, Andromeda and Pisces are now on view along with the smaller constellations (Aries and Triangulum) that lie below the outstretched line of stars that make up Andromeda.

### Forthcoming Occultations

There are some occultations of reasonably bright stars, in the coming months, that I have listed below. I have also mentioned the first one in the occultation section above. If you are interested in joining us to observe some or all of them (possibly on Ashdown Forest) please let me know. Maps are available of the location that we use.

## Times are in BST.

Date	Time	Mag	Moon data	mm
26 <sup>th</sup> Sept. 2012	22.30	5.1	moon 89% 30° high	40
19 <sup>th</sup> Oct 2012	18.57	6.3	moon 24% 11° high.	40
21 <sup>st</sup> Oct. 2012	17.54	5.7	moon 45% 20° high	70
26 <sup>th</sup> Oct. 2012	18.48	5.6	Moon 91% 24° high	60
16 <sup>th</sup> Nov. 2012	16.05	3.8	Moon 11% 15° high	120
17 <sup>th</sup> Nov. 2012	17.05	4.9	Moon 20% 17° high	40
23 <sup>rd</sup> Nov. 2012	21.48	5.8	Moon 81% 42° high	50

Brian Mills

## NASA SPACE PLACE

### **A Brand New Age: Queue Observing at Mt. Paranal**

By Dr. Marc J. Kuchner

First a caravan of white observatory cars arrives, winding up the narrow road to the 2600-m- (~8500-foot-) high summit. Then the shutters around the domes open, and rays from the setting sun alight on colossal mirrors and metal struts. It's the beginning of another busy night at Mt. Paranal, Chile, where I am learning about new, more efficient ways of managing a modern observatory.

I stepped into the observatory's control room to soak up some of the new, unfamiliar culture. Here, under florescent lights and drop ceilings are banks of computer screens, one bank to control each of the four big telescopes on the mountaintop and a few others too. At each bank sits two people, a telescope operator and an astronomer.

The layout of this workspace was not unfamiliar to me. But the way these Mt. Paranal astronomers work certainly was. When I was cutting my teeth at Mt. Palomar observatory in California, I would only go to the telescope to take my own data. In stark contrast, everyone observing at Mt Paranal tonight is taking data for someone else.

The Mt. Paranal astronomers each spend 105 nights a year here on the mountain performing various duties, including taking data for other astronomers. The latter, they call "executing the queue." Headquarters in Germany decides what parts of the sky will have priority on any given night (the queue). Then the Mt. Paranal astronomers march up the mountain and carry out this program, choosing calibrators, filling the log books, and adapting to changing conditions. They send the data back to headquarters, and from there it makes its way out to the wider astronomical community for study.

This new way of working allows the Mt. Paranal astronomers to specialize in just one or two telescope instruments each. Surely this plan is more efficient than the old-fashioned way, where each of us had to learn every instrument we used from scratch—sifting through manuals at 3:00 AM when the filter wheel got stuck or the cryogen ran out, watching precious observing time tick away. Here at Mt. Paranal, much of the work is done in a big room full of people, not off by yourself, reducing some dangers of the process. Also, queue observing cuts down on plane travel, an important step for cutting carbon emissions.

It's a brand new age, I thought as I watched the giant domes spin in the silent, cold Chilean night. And maybe with queue observing, some of the romance is gone. Still, my colleagues and I couldn't help saying as we stared out across the moonlit mountains: I can't believe how lucky we are to be here.

Dr. Marc J. Kuchner is an astrophysicist at the Exoplanets and Stellar Astrophysics Laboratory at NASA's Goddard Space Flight Centre. NASA's Astrophysics Division works on big questions about the origin and evolution of the universe, galaxies, and planetary systems. Explore more at:

<http://www.science.nasa.gov/astrophysics/>

Kids can explore these topics at:

<http://spaceplace.nasa.gov/space>



*European Southern Observatory at Mt. Paranal, Chile.*

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[www.wadhurst.info/was/](http://www.wadhurst.info/was/)

**SAGAS web-site** [www.sagasonline.org.uk](http://www.sagasonline.org.uk)

**Any material for inclusion in the September 2012 Newsletter should be with the Editor by August 28<sup>th</sup> 2012**