

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

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Paul McGale et al.
(Abingdon AS)
'Astrophotography'

Well many of us gathered at Bury Down at 4.45am last Wednesday morning to try to see one of the rarest spectacles in the solar system, a transit across the face of the Sun of the planet Venus. What? I hear you say, another one? Wasn't there one eight years ago. Well yes there was – they happen in pairs eight years apart but there won't be another one in any of our lifetimes. The next one is in 2117, so if you missed the last one and you missed this one then I'm afraid you'll never see one.

There was thin high cloud while we were there which was slowly clearing. We were all waiting for a large cloud to completely disappear, which of course it did after the transit was over. However, in the odd breaks that appeared a few people were able to glimpse the rare sight of Venus' silhouette against the solar disk.

One or two of our members did manage photograph the transit. Elfion Herbert caught a glimpse of it just as Venus reached the edge of the solar disk:



THE NIGHT SKY THIS SUMMER BREAK

by Bob Dryden

Noctilucent Cloud Season: While most events in astronomy are very predictable, the only thing we can predict about noctilucent cloud is that if they are going to appear, it will be in June and July.

We usually curse clouds, but we do like to see noctilucent clouds. They can only be seen during the short summer nights, often looking like silvery shredded spider webs draped across the northern sky.

It is impossible to say which nights they will be visible, or how big or small the display will be. You will just have to look. Generally, they will be low across the northern horizon but occasionally the display can reach up as high as Polaris, the North Star. Try looking at them with binoculars. Unlike normal weather clouds, noctilucent cloud can take magnification well, making it possible to see great detail within the clouds.

Sun & Earth: At 23.09 UT on 20th June the Sun reaches its most northerly point on the ecliptic – an event otherwise known as the summer solstice. This is the shortest night of the year which means after the 20th the evenings are drawing in again. July 5th, at 03.32 UT, sees the Earth reach aphelion in its annual orbit. The Earth's orbit is not a perfect circle which means we have a closest and furthest point from the Sun. Aphelion is the furthest point, which is 152,092,424 km (as opposed to 147,097,207 km at our nearest).

Mercury: Currently on view in the evening sky, Mercury reaches greatest eastern elongation on 1st July when it will be 26° from the Sun. Unfortunately this does not translate in to a very high altitude above the horizon. At best Mercury is 10° high until greatest elongation, after which it rapidly descends towards the solar glare. You will probably lose sight of Mercury by the second week of July. However, on the evening of 21st June you can see a thin crescent Moon a few degrees below and east of Mercury which should be a nice sight. Inferior conjunction occurs on 28th July, after which Mercury rapidly reappears in the morning sky for a favourable morning apparition. In fact it will be the best morning apparition of the year with Mercury reaching greatest western elongation on 16th August. As the angle of the ecliptic is quite steep with regard to the horizon, Mercury gains height quickly. At an elongation angle of 19° on the 16th, the planet will be 15° above the horizon by sunrise. This means it will be very easy to see, even without binoculars. On the morning of the 16th, if you do need a guide to find Mercury, the crescent Moon will be below and slightly west of the planet. Following greatest elongation Mercury starts to move back towards the Sun. Around the 25th/26th August it crosses into Leo and on 1st September it is close to the bright star Regulus. You will need a clear eastern horizon to see this meeting though as the pair will be barely 9° high at sunrise. Mercury quickly vanishes into the Sun's glare as superior conjunction is reached on 10th September.

Venus: Following the solar transit, Venus is now visible in the morning sky shining at an extremely bright magnitude -4.3. The planet rapidly moves away from the solar glare, reaching greatest western elongation on 15th August when it will be 46° away from the Sun. By 20th June Venus will already be 7° high at sunrise and it will be close to the Hyades star cluster in Taurus. By the time it

reaches greatest elongation on 15th August the planet will be over 30° high in Gemini at sunrise. As Venus is moving away from the Earth its apparent size decreases from a large 57" in June, to a much smaller 19" by September. The phase in June is just 0.013% so a telescope will show you a very nice thin crescent. This gradually increases to 0.5% by 15th August (or, a half phase). However, half phase does not usually occur exactly at greatest elongation and an observational project is to measure on what date it does occur. Following 15th August the phase becomes gibbous. There are two occasions when the Moon is close to Venus which is always pretty – especially so when the Moon is just a thin crescent. The first is on the morning of 18th June when the thin crescent Moon will be just east of Venus. The second is on the mornings of the 13th and 14th August and the crescent Moon will be just above and then below the planet.

Mars: While still easily visible to the naked eye in the evening sky, Mars is well past its telescopic best. Just 7" across in June, the Martian disc is already tiny in the telescope but come September it will have shrunk to just 5". Equally, its brightness decreases from magnitude +0.7 in June to magnitude +1.2 by September. However, the planet will still be easy to see as it crosses Leo, Virgo, and Libra. The planet's movement along the ecliptic keeps it in the south west for much of the summer but its altitude steadily decreases. In June Mars is about 35° high at sunset but by September this has dropped to a meagre 10° which will make it harder to see. By the 4th August Mars is approaching Saturn and Spica, forming a nice triangle. By 14th the three form a short straight line in the south west, setting about 90 minutes after the Sun. On 21st August a crescent Moon joins the trio.

Jupiter: Jupiter is on view in the morning sky during the summer. It is positioned in the constellation of Taurus so gains height quite quickly as the weeks pass. In June it is around 8° high at sunrise and by 1st August this has increased to a whopping 40° with Jupiter rising a good 4 hours before the Sun. On the morning of 17th June a thin crescent Moon will be very close to Jupiter which should be a nice thing to see. During the first week of August Jupiter is just west of the Hyades star cluster. There is a very interesting occultation of Jupiter in July – see below for details.

Saturn: Now past opposition, Saturn fades just a tiny bit, going from magnitude +0.6 to magnitude +0.8 by September. This is still very bright, and as Saturn is just above the first magnitude star Spica, it is very easy to locate. The rings are easy to see in a small telescope and presently their angle towards Earth is increasing making them appear even larger. By September the angle will have increased to 14.6° (starting at 12.6° in June). Although Saturn is well placed in June, by September the planet is just 15° high at sunset, and sets itself about 60 minutes after the Sun. Saturn has a lunar encounter on 27th and 28th June when the Moon will be either side of the Saturn/Spica pairing, just west on the 27th and just east on the 28th. The next month, on 25th July, the Moon will be just below the pair.

Uranus & Neptune: Neptune is the more westerly of these two planets, currently slowly moving through Aquarius. This means it is above the horizon longer than Uranus and by mid July it rises by midnight.

Uranus, further east on the Pisces/Cetus border, takes until early August before it rises around midnight. So both planets will be at their highest during the morning hours. Uranus shines at magnitude +5.7 and Neptune at magnitude +7.8 so binoculars will pick them out of the starry background. A telescope will show you their discs but they will be tiny – but at least you will have seen them.

Meteors: There is only one major meteor shower active during the summer but at least it is a good one. The Perseids are visible from 23rd July to 20th August, with the maximum occurring on 12th August at 12.00 UT. Obviously this is midday in the UK and it will be daylight but activity should still be good by evening. Perhaps the best time to watch would be the morning of the 12th as activity is always better just before dawn – or even better, watch both morning and evening. Which ever you do, the Moon will not be too much of a problem. It will be at crescent phase (new Moon occurs on the 17th), rising around 00.30 UT on the 12th and about 01.30 UT on the 13th. The hourly rate is estimated to be 80 meteor an hour under perfect conditions, so, in reality you can expect 40 or so, which is one every minute or so.

Occultations: On the morning of 15th July there is a fairly rare lunar occultation of a planet. Between 01.57 UT and 02.09 UT Jupiter will go behind the Moon, and the four major jovian satellites may either be occulted, or graze along the lunar limb (depending on where you are situated). The Moon will be a crescent and as Jupiter is so bright (magnitude -1.9), binoculars are all you will need to see this event. It should be visible to the naked eye if you have no binoculars. The Moon will be low in east, barely 8° high, so a fairly clear horizon will be needed. It is quite a rare event so even though the time is very unsociable, try to make the effort to see it.

Asteroids: Three of the major asteroids are visible over the summer months.

1 Ceres is technically a dwarf planet not an asteroid, but even so, it was once an asteroid. It starts its latest apparition in August when it will be a fairly dim 9th magnitude. Visible in Taurus, it crosses the Hyades cluster in mid July before entering Orion in early September. By then it will have increased its magnitude to +8.8 – barely visible in binoculars (it will reach 6th magnitude by December).

4 Vesta is a proper asteroid, and just by coincidence, it is very close to 1 Ceres, moving slightly behind it. In June it is in Aries, crossing into Taurus in the third week of June, and going through the Hyades in the third week of July. It increases in brightness from magnitude +8.3 in July to magnitude +8.1 by September (it peaks at mag. +6.5 in November).

2 Pallas is a bit fainter at magnitude +10 in June as it moves across Pisces. It is fairly close to Uranus until the end of July when it crosses in to Cetus. By September it has brightened to magnitude +8.5.

Comets: Comet 96P Machholz is predicted to reach magnitude +4.2 by 11th July which sounds excellent. Unfortunately, it will be very close to the Sun at that time and so out of sight. By 31st July it will have rapidly faded to magnitude +10.2 and as it will be crossing Leo and Leo Minor, it will be deep in twilight and probably very hard to see – or maybe not! Comets can be unpredictable at times so have a look just in case it is much brighter than expected.

MOON PHASES:

Last Qtr: 11th June; New: 19th June; First Qtr: 27th June; Full: 3rd July; Last Qtr: 11th July; New: 19th July; First Qtr: 26th July; Full: 2nd Aug.; Last Qtr: 9th Aug.; New: 17th Aug.; First Qtr: 24th Aug.; Full: 31st Aug.; Last Qtr: 8th Sept.

LAST MONTH'S TALK

by Gwyneth Hueter

'The Universe in the Classroom – the Faulkes Telescope Project', was given by Dr Sarah Roberts of Glamorgan University.

Sarah Roberts is the Education Director of the Faulkes Telescope Project (FTP), which is a network of seriously sized telescopes that are available for educational organisations to use, free of charge.

The FTP was started up by a £10 million donation by Dill Faulkes, who got himself a PhD in London and made a fortune in computing in the USA. This little pot was not enough, and he did get some other backup, but he sold it in 2005 and it is now run by the Las Cumbres Observatory Global Telescope (LCOGT) network based in California, under the guidance of Wayne Rosing.

The showpiece telescopes are both 2 metre f/10, one in Hawaii and the other in Siding Springs (Australia). Schools can book up to half an hour of live observing, and they can do some serious research or just look at pretty things. They can ask for different filters to be used, and there is free processing software available to them. They can also arrange to have observations made at a time when the telescopes have some free time. The number of telescopes is expanding all the time, with a network of 40cm, 80cm and one metre telescopes going live all around the world, including Australia, South Africa and South America.

The FTP started off in Liverpool, and Liverpool is now getting a 40cm telescope as a 'test scope'.

Some schools have managed to carry out quite advanced asteroid, minor planet and comet observations. (It appears the professionals are not always as concerned about inner solar system objects and near-Earth objects as we are led to believe!) It all makes science fun; real science makes kids learn, as Dr Roberts puts it. If you are lucky, you may also

spot the Apollo 10 Lunar Ascent module, which is still in orbit somewhere. (She calls it 'Project Snoopy', and there are now eight years of shots to look through, if you are interested.) Comet and asteroid searches are also very popular.

For the rest of us whose school days are behind us, we can apparently still register and look at the archives. We could be like Nick Howes (a past speaker), who saw comet Elenin beginning to break up. There are plenty of online resources on all things astronomical, including materials for GCSE Astronomy, software advice, and you can play with a hypothetical asteroid impact and mass extinctions calculator.

The website is www.faulkes-telescope.com.

FURTHER DISCUSSION

If you are not already on our internet mailing list, then why not log on to YahooGroups. The list is called 'abingdonas'. Members use the list to alert each other about celestial events and to chat about amateur astronomy. The list is quite active, with several messages most weeks. To read through previous messages click on:

<http://groups.yahoo.com/group/abingdonas/> .

To join the abingdonas list, please go to <http://www.yahogroups.com> . You can also unsubscribe from the list here.

To post messages to the list, please send them to abingdonas@yahogroups.com . Please note that you will need to sign up with a YahooID if you do not already have one. You can do this on the above page.

Further information about the mailing list can be found on the abingdonas webpage at :

<http://groups.yahoo.com/group/abingdonas/> .

Further discussion on astronomy and many other topics takes place at the Spread Eagle pub in Northcourt Road after the main meetings. You are most welcome to join us.

DATES FOR YOUR DIARY

25th June 8pm Beginners' Meeting in the main hall.

8th Sept. 8pm First speaker meeting of the new season.

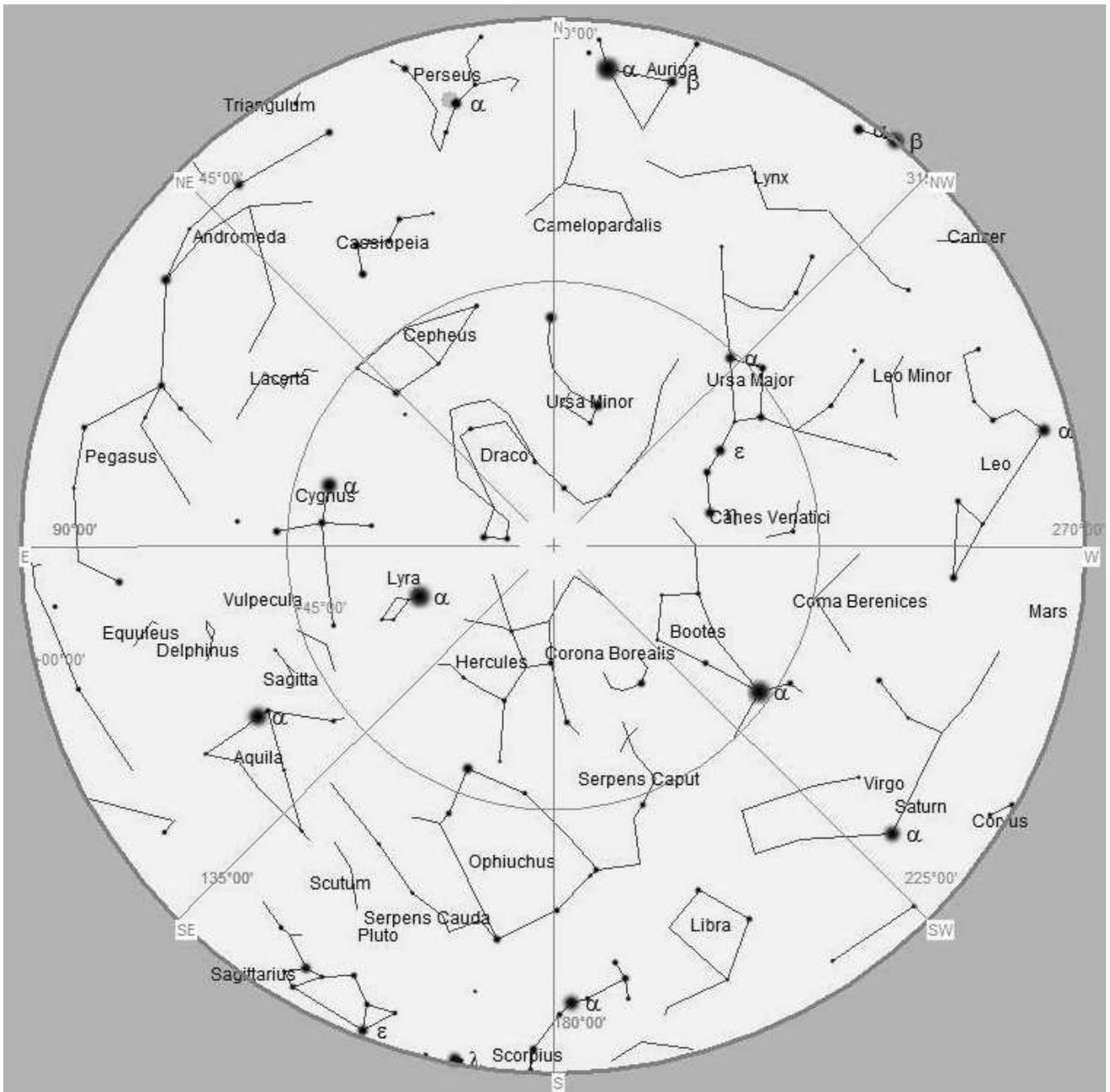
The editor of "SpaceWatch" is Andrew Ramsey, who would very much appreciate your stories & contributions. Please send any news, observations, photos, etc. to:

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STAR CHART



The Night Sky at 11.59pm (BST) next Saturday (17th June)

This is how late you will need to stay up to get a dark sky. M13 in Hercules makes a good sight – it is due south and quite high up. Saturn is low in the south-west but will make a good observing object earlier in the evening. The summer triangle of Vega, Altair and Deneb are getting higher in the south-east and will dominate the view overhead during the summer.