

SPACEWATCH

the newsletter of the Abingdon Astronomical Society

Next Talk
12th September 2016
Binocular Astronomy
Stephen Tonkin FRAS (Wessex AS)

EDITORIAL

At last month's AGM we discussed the future format of Spacewatch. Currently due to costs we are restricted to 4 pages of A4 in black and white. There have been some suggestions that we could perhaps move the majority of Spacewatch to an electronic format in PDF that could be downloaded from the website and only produce say a single sheet double sided with the most pertinent information on This would allow the reproduction of some of the fine images that our members produce plus perhaps more relevant stories etc. from the web. I know however that many people pick up Spacewatch at the meetings and may not be that comfortable looking on the website every month to download and read. The availability of the next edition could be announced on the Yahoo group. So the question comes: what do members think of this idea. We can have a discussion on this via the Abingdon AS news group or people can directly e-mail me at owen@online.rednet.co.uk with their thoughts on these ideas. The committee can then decide how they want to go. As always there has to be a default position of there is no feedback and I think the default position is that we change the format.

Note that the missing sky map in this edition is nothing to do with new plans but only because the Meeting report was long and it did not fit in the required four pages. It will be there in the PDF edition.

THE NIGHT SKY THIS MONTH

by **Bob Dryden**

Sun & Earth: On June 20th at 22.34 UT we reach the summer solstice and the days start to get shorter again. The Earth reaches aphelion on July 4th at 16.24 UT. This means we are as far from the Sun as we ever get (152,103,776 km if you want the distance).

Mercury: Currently in the morning sky, Mercury is moving back towards the Sun and is extremely difficult to see. It reaches Superior Conjunction with the Sun on 7th July and then becomes visible in the evening sky. By 15th July Mercury is 5° high at sunset and sets about 30 minutes later. By the end of the month it is 8° high at sunset and sets about an hour later. This is the best it is going to get this apparition. The planet will be shining at -1.0 magnitude so will be quite easy to see low in the south west. Greatest Elongation occurs on 16th August when Mercury will be 27° from the Sun. Unfortunately the planet will be losing altitude by then. At sunset it will be back to 5° altitude, setting 30 minutes later. Following greatest

elongation Mercury drops back towards the horizon very quickly and it will be gone by the third week of August. Inferior Conjunction is reached on 12th September.

On 15th July Mercury and Venus are about 1° apart but they will be very low on the horizon and maybe difficult to see. The 4th August sees a crescent Moon about 1° below Mercury but, again, they will be very low down. On 10th August three planets, Venus, Mercury, and Jupiter, make a nice line over about 20° of sky. They set less than one hour after the Sun so you will have to be out looking soon after sunset. The three planets will be getting closer together but at the same time they will be lower in the sky and closer to the Sun so will be harder to see.

Venus: Having passed through superior conjunction on 6th June, Venus very slowly reappears in the evening sky. However, it remains low down for a long time. By mid-July it is just 5° high at sunset and sets just 30 minutes later. In its favour is the fact that it is very bright at -3.9 magnitude, so you might be able to glimpse it in binoculars. The situation remains essentially the same throughout August. By the time this session ends on 12th September, Venus has only gained an extra 2° in altitude by sunset and follows the Sun below the horizon after 45 minutes. On the evening of 3rd September the thin crescent Moon is approximately 2° east of Venus.

Mars: As the Earth is now moving away from Mars it means the red planet is fading and getting smaller in the telescope. It fades from -1.8 magnitude to -0.2 magnitude but this is still easily bright enough for you to be able to find it easily. In the telescope the disc shrinks from 18" to 10", but again, this is still large enough to see surface detail under good conditions. Unfortunately, Mars is currently in Libra, and moves in to Scorpius on 2nd August, which means it stays very low down which will not help telescopic views. As this session begins, Mars is already 15° high at sunset, culminates around 22.00 UT at 18°, and sets at 02.00 UT in the south west. By sessions end on 12th September, it is 12° at sunset, just past culmination point in the south, and sets at 21.00 UT. In the last week of August Mars passes about 3° below Saturn. On the 24th August, Mars, Saturn, and the bright star Antares are in a vertical line around 4° long.

Jupiter: We are moving towards the end of this apparition of Jupiter, indeed, by the end of August it will be lost in the solar glare. However, before then it will be between -2.0 and -1.7 magnitude which means it will be quite easy to find as it moves across Leo and eventually enters Virgo on 9th August. Throughout this session Jupiter will be somewhere in the south western sky, slowly decreasing in altitude as the weeks pass by. In mid-June it will be a decent 25° above the horizon at sunset, and will set around 00.00 UT. By mid-July the planet is just 12° high at sunset and sets by 22.00 UT. Come mid-August, you will have barely an hour to see Jupiter once

the Sun sets which means Jupiter will be only visible against a bright twilight sky.

On 8th July the crescent Moon is 4° west of Jupiter while the next evening the Moon will be 3° east of Jupiter. The 5th August sees the crescent Moon again just west of the planet. On 27th August Jupiter passes less than half a degree from Venus but they are only 5° high at sunset and will set 30 minutes later making it very difficult to find them.

Saturn: Saturn is to be found in the constellation of Ophiuchus, not far from Mars and the first magnitude star Antares. In fact, from early August until early September all three of them are within 5° of each other. Saturn will be between 0.0 and + 0.5 magnitude so is an easy naked eye object. The rings are wide open at 26° so despite the low altitude, they will be easily visible in a telescope. Saturn, already 8° high at sunset in June, culminates at 23.00 UT when it is 18° high, and sets around 03.00 UT. It is still visible by 12th September, if somewhat lower at 15° by sunset. By then it is well past culmination and sets about 21.00 UT, three hours after the Sun. The waxing Gibbous Moon is 2° above Saturn on 18th June and about 2° west of Saturn on 16th July.

Uranus & Neptune: Uranus and Neptune are in Pisces and Aquarius respectively, with Uranus at +5.7 magnitude and Neptune slightly fainter at +7.8 magnitude. Uranus is currently rising 2 hours before the Sun and is 20° high in the east at sunrise. It rises earlier and earlier as the weeks go by until by mid-September it appears around 20.00 UT, culminates in the south at 37° about 02.00 UT and is 30° above the south western horizon by sunrise.

Neptune is further west and therefore rises earlier than Uranus. In mid-June it appears at approximately midnight. By mid-July it is culminating at 04.00 UT at 30° high around 04.00 UT which is just before sunrise. Neptune reaches Opposition on 2nd September so is then above the horizon for all of the night.

Meteors: The popular meteor shower, the Perseids, is active from 23rd July to 20th August but the night most people are really interested in is the night of maximum which this year is 12th August at 12.00 UT. Obviously, this is midday for the UK so our best viewing time will be just before dawn that day. At maximum, under perfect conditions, you might see 80 meteors an hour. The Moon is 2 days past First Quarter and is 20° high in the south at sunset, setting around midnight. This means conditions for early morning observations will be very good.

Occultations: There is just one occultation of a brighter star this session and that occurs on 15th June. The +4.2 magnitude star, Kappa Virgo is occulted at 22.19 UT. The waxing gibbous Moon will be 26° high in the south at the time.

Asteroids & Dwarf Planets: The dwarf planet, 1 Ceres continues to brighten, going from +9.2 to +8.2 magnitude (it will be at its brightest in October) as it crosses Cetus. 2 Pallas is faint at +10.2 magnitude, but it reaches +9.3 (its brightest this apparition) by September. It starts in Pegasus, and moves into Equuleus on 21st August.

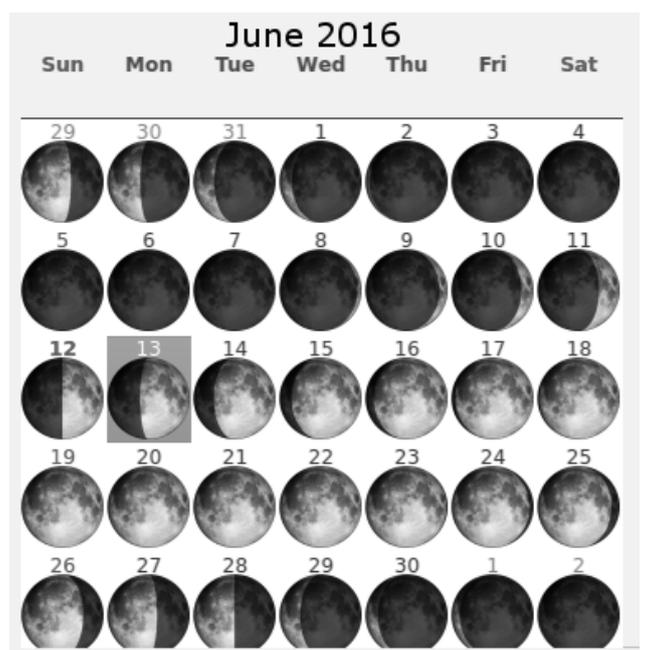
8 Flora is in Ophiuchus, and is very close to Saturn in late July and early August. This asteroid is fading however. After starting at +9.4 magnitude it falls to +10.4 in August. Finally, 18 Melpomene can be found in Pisces until 16th August when it enters the constellation of Cetus. In early September is very

close to 1 Ceres. Starting at a rather faint magnitude of +10.3, by September it will have brightened to +8.7 magnitude.

Noctilucent Cloud: Don't forget summer is noctilucent cloud season so keep an eye on the northern horizon for bright, silvery white, spidery type cloud that is still visible long after the Sun has set.

Just one brief note there is a bright (13th magnitude) supernova in NGC 4125 that some of the imaging members may like to go after. More details at <http://www.skyandtelescope.com/observing/dual-supernovae-light-up-june-nights/>

MOON PHASES:



LAST MONTH'S TALK

by Gwyneth Hueter

May's talk, 2016

Number one on the bucket list – total solar eclipse.

Whatever people say, there is a clear winner in the bucket list stakes. People may say 'oh yeah, solar eclipse; I've seen one of them and it was good...' But no, if you've ever seen a total one, you'd never be so blasé about it. And beware, they are very addictive.

My first one was in June 1983 in Java, Indonesia. It seemed a bit of a long way to go and it was a rather expensive holiday. But I'm glad the umbraphiles in Liverpool AS worked on me and I gave in. At least I could say I'd seen one and I'd be satisfied...

So, 8 eclipse trips later, two failures (Hawaii 1991, Cornwall 1999) I ended up back in eastern Indonesia, Manado, North Sulawesi, and flew over to Ternate, North Maluku on 8th March, 2016. Ternate, and Tidore and

famous for their spices, especially cloves, and are typical tropical volcanic bumps sticking out of the Maluku Sea. They were constantly capped by thick clouds on the summit. Ternate was on the centre line and many umbraphiles congregated at the Bela International Hotel there.

There's a rather special kind of relief when you arrive within the centre line. But, the more intrepid and energetic members of our tour group chose to venture out by boat early on eclipse day (9th March) so we could get to the south of Tidore and get about 20 seconds more of totality. We set out while it was still dark but it quickly began to get light as we clambered over other moored boats to get onto ours so we could make the quick trip across. There were taxis waiting for us to go down to the south of the island. Quite a hairy trip indeed, as they zapped past local traffic that had no lights. Lots of hooting and zipping down the middle of the road. (They do drive on the left side of the road normally.)

Tidore is a Muslim island, and eclipse day was a special calendar day for them too. They had also been preparing for our invasion for three years. We were quite nervous about seeing it as most of our mornings had been clear but we often had cloud come in later and the night before the eclipse there was a downpour. We had hoped it would stay clear long enough for us to see the eclipse but there was quite a lot of cloud to the south from where we finally stopped. If you saw my slides at the AGM you will see that it was a wonderful site. Incredibly clear water. One small island out to the east, which made for a picturesque view, and helped me to keep the eclipse in focus when I ran my camera on video during totality. The locals had set up on the beach behind us and had collected loads of plastic chairs (where from?) and had set up a large awning. They provided drinks and snacks, part funded by our hotel. They also organised a few dances, but really we just wanted to get on with it. They also wanted to take pictures of themselves with us, 'selfies' as they called them. They seemed to have a lot of smartphones for a place so isolated.

The clouds were threatening, and we just got first contact. You never really believe it will happen until you see that tiny bite out of the Sun. Then the bite gets bigger very quickly but by the time the Moon has covered about a third of the Sun nothing much really happens for ages, so it seems. Time seems to slow down. We'd been ready for ages. A sunspot became visible near the centre of the disc as our eyes dark adapted. Odd. You never realise the light levels dropping until something like that happens. The Sun was rising straight up, as we were just slightly north of the equator. Someone saw Venus above but it took me ages before I could see it. Mercury was also supposed to be visible but I was otherwise occupied.

As the crescent becomes slimmer in the final 15 minutes or so the sky takes on a metallic quality, but there were some high clouds and it didn't seem so obvious this time. You can also get odd effects when you look at the shadows of leaves. You can get a pinhole effect which produces lots of crescent images of the eclipse. You also notice that shadows become blurry along one side and sharp on the other. In the final ten minutes the light levels dropped rapidly. At this point you usually get a sharp wind picking up, because of the temperature drop. It didn't seem to happen much here in the tropical heat. My little compact camera was fixed to one of the plastic chairs with a Gorillapod. The tide was also going out in front of me, so I

decided I would be able to jump down on the sand and not be bothered by the locals who were surrounding us and putting me on edge. The locals were totally fascinated by this invasion of mainly tall, pale people with lots of gadgets. I still couldn't believe how many had smartphones. Normally the final phases before third contact seem to go quite quickly but my body seemed to be on high alert and the last five minutes lasted a lot longer than usual. You have to protect your eyes when looking at the Sun, even in those final minutes. I was using my small binoculars with astro-solar filters on them and my 15x70 binoculars were ready for viewing totality. So I was able to watch the crescent dwindle. In my first eclipse the crescent broke into three very distinct Baily's beads before totality, but this time the light must have come across a more bland area on the Moon's profile as the crescent just got lumpy in its final stages. Then suddenly... I have videoed three eclipses now, so that I can just admire the view through my eyeballs and my binoculars, so I started the camera running before totality and stood in front of it to protect it. Wham, and the Sun imploded. So difficult to describe those few seconds as the light drops and this wonderful apparition appears, the Moon just seems to slot itself quickly over the Sun and trembles there. I had never got such an impression of the light falling into a hole and the Moon acting as a plug. Maybe it was because this eclipse was so high, 49 degrees up. China 2009 was much higher but there was a film of cloud. The Moon became very 3d, maybe because my dark adapted eyes were seeing some Earthshine. Our atmosphere means there is a constant sort of trembling. I jumped down onto the sand in front of the camera, and there is a special feeling I cannot describe. The eclipse lasted just over three minutes, and the whole body seemed to tingle and boil all over. You have to be there. I looked through the binoculars and there was a very impressive coronal streamer out at 5 o'clock on the disc and a bright pink and long prominence at 8 o'clock, near where the final crescent disappeared. The horizon around me seemed to stay very light, which surprised me, but the video shows that there was a lot more high cloud than I realised, so this would have kept the light levels up. There is usually a blackening and reddening effect where you can see the edges of the Moon's shadow around us but not this time. The clouds also prevented us from seeing shadow bands, an effect of light refraction in the atmosphere in the very final seconds before second contact. I was grabbed by a local while I looked through my binoculars and elbowed him away, as you see in the video. The video shows some of the locals photographing us, backs to the Sun! The locals are probably still afraid of eclipses. As in Java '83 there was lots of banging as the locals tried to scare the demon away that was trying to eat the Sun. You hear the racket on the video but I was oblivious to it at the time. Of course, all this hooah worked, and the demon spat the Sun out. (it works every time.) Someone shouted it was finishing and within a second a bright diamond ring came up at 12 o'clock. It seemed long and wide and the sky seemed to light up all over at the same time. That seemed odd to me, but then I noticed the high cloud all around it.

I have overused the word 'gawp' in describing eclipses, but the brain just focuses all attention on visual input, and excludes everything else. The video shows me wiping my eyes. I am usually pouring my eyes out by the time the eclipse ends, but am not aware of it at the time. So, forgive me if I get silly when I talk about my eclipse trips, but there is something about them that makes me feel real. Go get one for your bucket list and you'll see what I mean. How about August 21 next year, central USA, or for a really good one, Gibraltar/Egypt, August 2nd 2027? That is part of the same Saros as Hawaii 1991 and China 2009, which has given us two of the longest eclipses in these two centuries.



CORRIDOR GALLERY AT THE JR

Members who have visited the JR in recent years may have noticed the varying art work adorning the walls of the main Level 2 corridor. This is the Corridor Gallery of the JR (as opposed to the Link Gallery in the Portacabin-style corridor from car park 1). Our new chairman, Clifford Marcus, has examples of his astrophotography on display in the Corridor Gallery until 25th June. See

<http://www.ouh.nhs.uk/artlink/exhibitions/corridor-gallery.aspx>

FURTHER DISCUSSION

Why not take a look at our website? It's at: www.abingdonastro.org.uk.

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/>.

DATES FOR YOUR DIARY

20th June 8pm Beginners' Meeting in the Main Hall, talks to include Eyepieces and Noctilucent Clouds. Note this is the last beginners meeting of the session. Beginners' meetings start again in September.

Observing evening: There will be no more observing meetings until the Autumn because it does not really get dark. Specials may be organised though so keep a look out on the AAS group mailing list.

The editor of "SpaceWatch" is Owen Brazell, who would very much appreciate your stories & contributions. In particular whilst many fine images are being posted on the discussion group it would be nice to have some in the SpaceWatch. Please send any news, observations, photos, etc. to:

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STAR CHART

The night sky at 10 pm (BST) on Wednesday 15th June 2016

