JANUS

THE NEWSLETTER OF EWELL ASTRONOMICAL SOCIETY

May 2021 EDITION

Editor: ewellastro.editor@gmail.com
Email: ewellastro@gmail.com
Website: https://www.ewellastronomy.org

Editorial

Welcome to the May edition of Janus. Yes, a third of the year has already. gone by!

I think it's time we stopped commenting (adversely) about the (mis) use of the term "SuperMoon". Whilst purists will argue that there is no such physical reality (the Moon's size doesn't vary, only its distance from the Earth!), the fact is that many people (not just the lay press) talk about them, and they will continue to do so. Furthermore, I would venture to suggest that, since the most common names given to Full Moons have their origins in native American folk law, we should also acknowledge the use of these names; they are possibly more valid than the term "SuperMoon".

The current roadmap for exiting from the Covid-19 crisis appears to be going to plan. This means that from 17th May, gatherings of up to 30 people will be permitted outdoors, provided that social distancing rules are observed. Will this allow the return of group observing sessions? More importantly, under the current plan, 21st June is the date by which the government hopes to be in a position to remove all legal limits on social contact. If this date is met, the possibility of a return to physical meetings in September begins to look more realistic. The Society's web page currently shows all meetings for the remainder of 2021 as being virtual, but who knows? One for the committee!

Finally, a plea - it would be nice to have contributions to Janus from a wider range of readers. I've never rejected a contribution, so please think whether you might have something to offer - however small.

John

SkyUpdate
What's up this month?

The Solar System May

MERCURY: recently passed in front of the Sun at inferior solar conjunction. It begins the month not observable, reaching its highest point in the sky during daytime and is no higher than 6° above the horizon at dusk. By the end of the month, it remains not readily observable since it is very close to the Sun, at a separation of only 14° from it.

VENUS: recently passed in front of the Sun at inferior solar conjunction and begins the month not observable as it will reach its highest point in the sky during daytime and is no higher than 2° above the horizon at dusk. By the end of the month, emerging into the morning sky as it approaches greatest elongation W, it remains not observable. It will reach its highest point in the sky during daytime and is no higher than 6° above the horizon at dusk.

MARS: is currently a morning object. At the beginning of the month, it will become visible around 20:27 UT as the dusk sky fades, 30° above the W horizon. It will then sink towards the horizon, setting at 00:09. By the end of the month, it is no longer observable, reaching its highest point in the sky during daytime and is no higher than 13° above the horizon at dusk.

JUPITER: is currently an early evening object, now receding into twilight. It begins the month visible in the dawn sky, rising at 02:27 UT - 2 hours and 4 minutes before the Sun – and reaching an altitude of 13° above the SE horizon before fading from view as dawn breaks around 04:11. It ends the month rising at 00:38 UT - 3 hours and 11 minutes before the Sun – SE horizon before fading from view around 03:21.

SATURN: is also currently an early evening object, now receding into twilight. It begins the month visible in the dawn sky, rising at 01:53 UT – 2 hours and 38 minutes before the Sun – and reaching an altitude of 12°

above the SE horizon, before fading from view as dawn breaks around 03:47. It ends the month rising at midnight – 3 hours and 49 minutes before the Sun – and reaching an altitude of 18° above the SE horizon before fading from view as dawn breaks around 02:57

URANUS: begins the month approaching opposition, but is not readily observable since it is very close to the Sun. By the end of the month, having recently passed opposition, it remains not observable. It will reach its highest point in the sky during daytime and is 8° below the horizon at dawn.

NEPTUNE: is currently an early evening object and, throughout the month, is not observable. It will reach its highest point in the sky during daytime and never be more than 3° above the horizon at dawn.

MOON PHASES:

Full Moon	27 April
Last Quarter	3 May
New Moon	11 May
First Quarter	19 May
Full Moon	26 May

Notable Events:

Observation of some of these events may require a telescope, although some will be visible with the naked eye. More information at *https://in-the-sky.org*

3 May. Conjunction of Moon and Saturn
4 May. Conjunction of Moon and Jupiter
6 May. Aquariid meteor shower
8 May. Lyrid meteor shower
11 May. M5 is well placed
16 May. Conjunction of Moon and Mars
31 May. Conjunction of Moon and Saturn

Collected Observations (and thoughts) – Gary Walker

More on "SuperMoons" - 30 March

Predicably, the newspapers of 28/29 March covered the latest event. Even the previous Full Moon on 1st March was depicted with the same "dinner-plate" sized images, which always appear far larger than any real "SuperMoon" ever does.

Depicting the moon in this way is just like showing an image of Jupiter as seen through a telescope and implying that it appears that size when seen with the naked eye! In reality, of course, the Full Moons are photographed with telephoto/telescopic lenses to enhance their size.

Newspapers also now keep giving the monthly name of each Full Moon, e.g. the "Super Worm Moon", as in this case, or the February one, known as the "Snow Moon" - and we still have 3 more "Super Moons" to come in this "season"!

Nova in Cassiopea - 30 March

I found that a nova had recently appeared in Cassiopea (actually on 18th March). It has been named as V1405 Cas. On discovery, it was magnitude 9.8, but had brightened up to magnitude 7.6. On 30th March, in order to view it, I inputted its coordinates into my GOTO. I could see a pair of stars, that looked like those in the images, of which the nova was one. Both were of about the same magnitude. They were easy to see in my telescope, even though Cassiopea was fairly low in the NW sky.

I could not, however, be sure if I had correctly identified the nova. To be certain, I would have to keep watching this starfield over time to see if, and when, one of these stars brightens up, and then fades, again.

Novas are erroneously termed "new stars" as they suddenly appear out of nowhere. In reality, they form when one star - a white dwarf in a binary system - drags off gas from its companion star, resulting in a thermonuclear explosion!

The constellation of Cassiopea is in the Milky Way, and novas commonly appear within it.

CPRE Star count in 2021 - 6 April

Today's BBC News featured an item highlighting the fact that the skies have been darker during the pandemic. This is as a result of less light pollution, due to some establishments being closed.

The results of the February CPRE star count that I took part in have been published. The objective of this exercise was to test how dark your sky was, by seeing how many stars you could see within the constellation of Orion with the naked eye (not counting the 4

“corner” stars of Orion but including the "Belt" and "Sword"). I saw 15 stars, but last year saw between 16 and 21 stars at most, indicating "some light pollution" on the CPRE scale. My results were reported in the March edition of Janus. A record number of 7,845 people took part this year. Of these, 51% saw 10, or fewer stars, and only 5% saw more than 30.

The news item showed dark skies at Kielder Observatory. It ended with the commentator saying that with darker skies we could be “seeing sights like this” (and a video of the Moon, through a telescope, was shown!). This was the only inaccurate thing in the item as, of course, the Moon is the only night sky object NOT affected by light pollution!

Galaxy Clusters - 10/11 April

I managed to watch the April Zoom meeting with Owen Brazell, on Galaxy Clusters. I saw that he belongs to the Webb Society; for many years, they exhibited at the London Astrofest, but they have not been there for a long time now.

I, of course, have observed the Virgo Galaxy Cluster frequently, over the years, as they are the easiest to see, with many galaxies being about magnitude 8, or so. I have seen M49, M58, M60, M61, M84, M86, M87, M89, M90, M104, and others in this group. M84, and M86, can be seen in the same field of view, and I have managed to see others too in the "Markarian’s Chain". However, as even my lowest power eyepiece of 62X still has a half a degree field of view, it is impossible to fit them all in the same field of view, unlike when you see them in photographs.

In my telescope, the brighter galaxies appear as fuzzy balls, often with a brighter centre.

Other galaxy groups are present in Leo, such as M65, M66, and NGC 3028, as well as M95, M96, and NGC 2903. M105, is also easily visible with NGC 3384, easily visible in the same field of view, even closer than M84, and M86 are. I have seen all of those! Given all these galaxies, it is not surprising that this region is known as the "Realm of the Galaxies"!

Spring is the season for galaxy hunting. My favourite galaxies include M81 and, especially, M82 (Ursa Major), which shows a long “spear” of light in my scope. I can see M104, in Virgo, as an elliptical shape. M65 and M66, in Leo, appear as another galaxy pair. I see NGC 3115, in Sextans, appearing as its name suggests, the "Spindle Galaxy". Of course, galaxies and nebulae are the most difficult objects to see, visually, as their light is spread out; thus, they appear much fainter than they are seen in images.

The Virgo Galaxy Cluster has about 2000 members, but most of them are too faint to see, even with my 8" SCT. When using the GOTO to find galaxies in this cluster, the fact that my telescope only moves a short distance between one galaxy and another is a give-away that this region is a galaxy cluster, as they are close together in angular distance. Some, like M84 and M86, can actually be seen in the same eyepiece field of view.

As I said earlier, galaxies are often about the most difficult sky objects to see visually. This is because their light is spread out over a larger area than a star, (which always appears as a concentrated point of light). For example, a magnitude 9 star will always be much easier to see, than a galaxy classified as being of magnitude 9.

Only by imaging them can their true glory be brought out, as long exposures cause the light of the galaxies to build up and even show colours. The human eye cannot do this!

Frustratingly enough, it is the galaxies that are presented face-on to us, and of a larger angular size, that are the most difficult ones to see well. These are often the "Grand Design" spiral galaxies that look so wonderful in images.

One example is M51, in Canes Venatici, which everyone will have seen in images, and is known as the "Whirlpool Galaxy" due to its Catherine Wheel appearance. Visually, however, it is far less spectacular, and I have only seen the two galaxy cores of M51 and NGC 5195 appearing like two cotton wool balls in my telescope. I think I have occasionally seen an area of fuzz around these two galaxy cores, but that is all!

Some astronomers say that M51 is the easiest galaxy in which to see spiral arms, and that they can be seen with an 8"

telescope. This is obviously, only possible under really dark skies. I can only see the centre cores of galaxies because they are more densely concentrated, so they are brighter. The spiral arms are much fainter, so they are not visible in my scope.

Large angular sized galaxies such as M101 and M33 are even worse, as I cannot see the extent of the spiral arms. All that I can see is the galaxy cores, and even they are very dim.

Few galaxies in my scope present as anything more than a "fuzzball", appearing perhaps with a brighter centre surrounded by a fainter area of fuzz. Those which do show a bit more structure, or shape, include M31, NGC 2903 (Leo), M104 in Virgo, NGC 7331 in Pegasus and NGC 3115 in Sextans, which show in my scope as definite shapes, often appearing elongated in a certain direction. When viewing M82, in Ursa Major, I can see it as a beautiful spear of light, much like it is in images - probably about the only galaxy that does this!

Mars Perseverance Mission 19 April

Today saw the first flight of the helicopter, of the Mars Perseverance Lander. It was successful, and there was a reasonably good item on the BBC1 News, (for once, not the final item!).

Over the last 50 years, even though manned spaceflights have declined since the Moon shots, one thing that is remarkable is the number of robotic space probes. These have now managed to visit every planet in the Solar system, and have even landed on Venus, Mars and also, Titan, (one of Saturn's moons!).

They have also flown past various asteroids, and landed on, or sampled, the asteroids of Bennu, Itokawa, and Ryugu. The asteroids of Cerus, and Vesta, have also been studied. This means that the former star-like asteroids have now appeared as real worlds.

Comet Nuclei have also been visited, such as Halley's Comet in 1986, Comet Wild 2, and a probe managed to land on Comet 67P, in the Rosetta Mission.

Not to be left out, Pluto, and its satellite system, has also been flown past, as well as a more distant Kuiper Belt object, Arrokoth, which was one Billion miles beyond Pluto.

These space probes have shown that planets and the cold, frozen moons of Jupiter, and Saturn, are far more dynamic than used to be thought. Some may have subterranean oceans, and Pluto, has been shown to have 11,000 ft high mountains upon it! Encelalada, has water vapour geysers, and of course, Io, is a heavily volcanic world!

Mars is the "easiest" planet to land on, and many probes have now orbited it, and landed on it. Unlike the early Mars probes, missions like Odyssey, Spirit, Curiosity and, most recently, Perseverance have not simply landed on Mars and remained static but have roved over the Martian surface for years. The geology, and metrology of Mars can now be studied in detail (e.g. "dust devils" have been imaged on the surface!).

Sunspot Group – 27 April

After a long period of only rare spots, on 26th April, there was a large group of 8 spots of small and medium size. They were well spread out, in the form of a W, like the constellation of Cassiopea - a sight that you don't usually see!

I continued watching the Nova in Cassiopea, and, unusually, it had not yet faded. I saw it as bluish-white in my telescope, but in images, it appeared an orangey colour.

All About the Moon - John Davey

In my editorial, I suggested that it was time to call a halt to discussions of "Super Moons". Some object strongly to the use of the term, but many, I suspect, probably don't really care. Part of the problem is that use of the term is not consistent. It's also not a formal astronomical term, although many astronomical sites use it – particularly when writing for the wider public.

As astronomers know, the moon's distance from Earth varies throughout its monthly orbit. Every month, because the moon's orbit isn't perfectly circular, this eccentric orbit carries it to apogee – its most distant point from Earth – and then, some two weeks later, to perigee – its closest point to Earth in its monthly orbit.

When the Full Moon coincides with perigee, it's often called a Super Moon. The same term can also be applied to a New Moon which coincides with perigee, but no one seems particularly interested in these thin crescents! A much less common term is "Micromoon". These occur when a Full Moon or New Moon coincides with apogee - but no one seems to talk about these either!

More astronomically correct terms for these various phenomena would be perigee Full Moon, perigee New Moon, apogee Full Moon and apogee New Moon – but does it really matter?

As to the names attached to the Full Moons occurring during the year, for those who would like to find out more about the ancient names associated with them - and what they mean - the following link to the Greenwich Royal Observatory provides more (hopefully useful) information.

https://www.rmg.co.uk/stories/topics/what-are-names-full-moons-throughout-year

April Meeting Report

Our April meeting was held via Zoom, and was well attended with 29 members logging in.

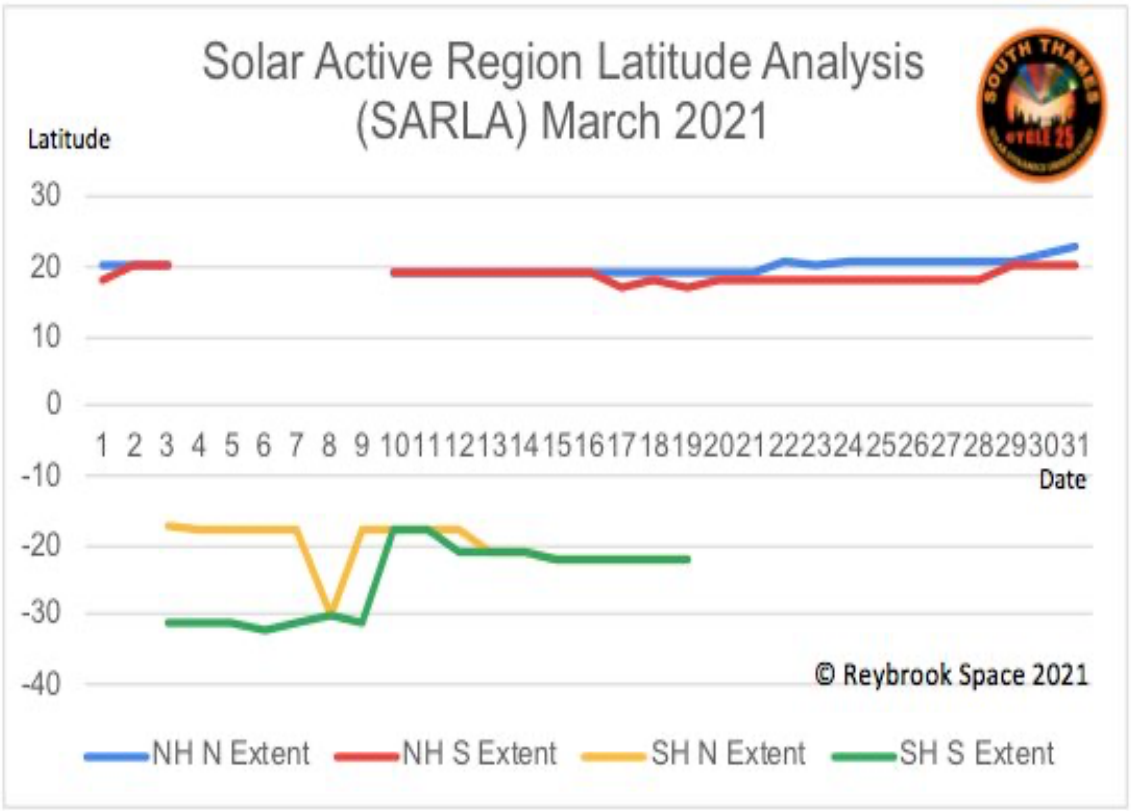
We were pleased to welcome Owen Brazell, of the *Webb Deep Sky Society*, who gave a captivating talk on Galaxy Clusters. Owen talked us through galaxy classification schemes, the nature of galaxy clusters, interactive galaxies, visual versus Infrared images of galaxies and the classification of galaxy clusters, as well as directing us to some of the more easily observed ones. More information can be found at: www.webbdeepsky.com

We were grateful to Ron Canham for his usual Sky Update, keeping us up to speed with the best objects to view in the coming month.

Also, thanks to Peter Scott, who discussed the growing issue of satellite constellations and their impact on astronomy, and who urges us to get involved with lobbying MPs and raise awareness of the problem.

And finally, our thanks to Sue for preparing this month's short quiz, from questions found in historic quizzes in the EAS archives.

March 2021 Solar Activity Report - Stephen



March was a generally unremarkable month in terms of solar activity. The chart once again shows a N/S hemisphere asymmetry, with a South hemisphere bias in the first half of the month and a North hemisphere bias in the second half. There were no days when active regions were completely absent from the solar disk, though it is fair to say that a majority of active regions were somewhat weak and not particularly magnetically complex, leading to a lack of significant solar flares. There also seemed to be an increase in the number of short-lived sunspot groups.

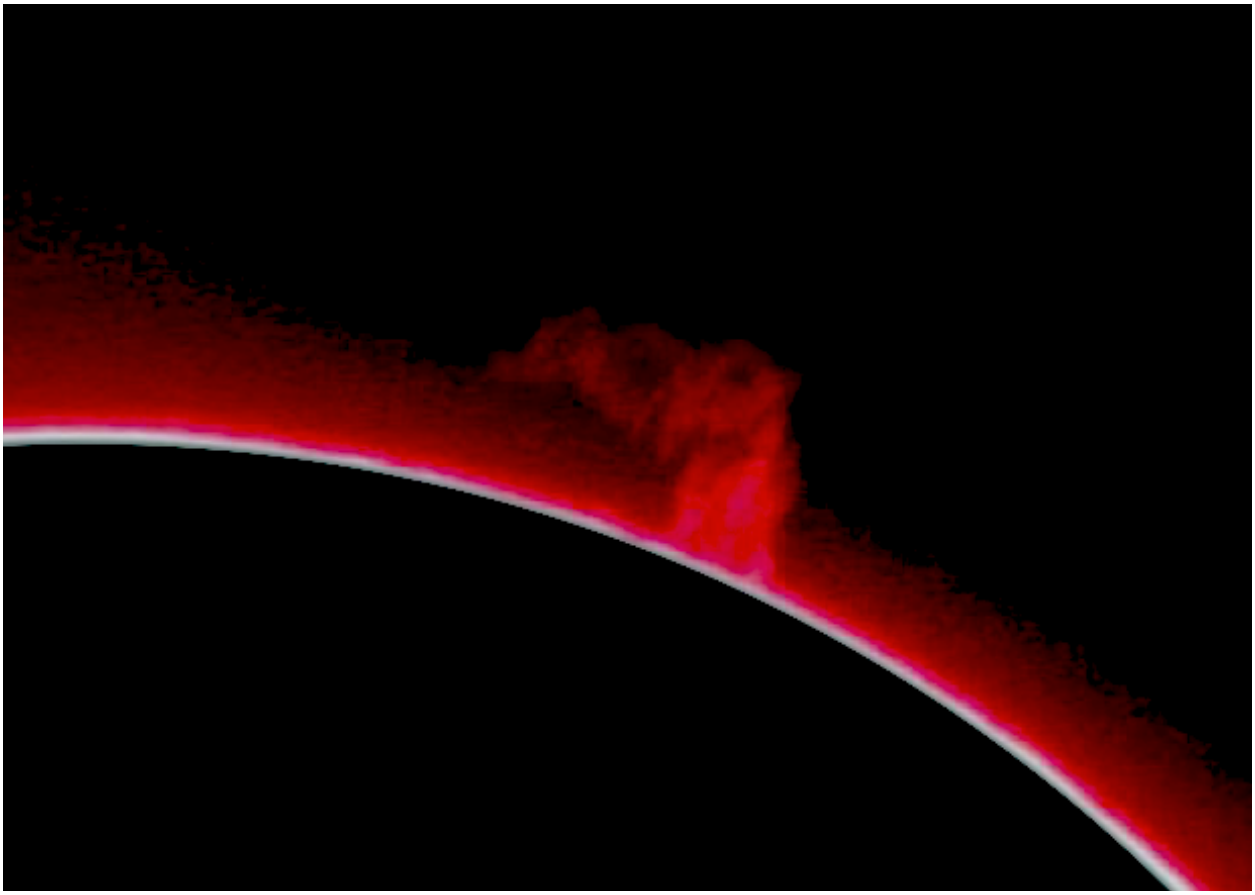
In the northern hemisphere, active regions remained grossly ~ +20º latitude, whilst in the southern hemisphere distribution of active regions was less consistent, ranging between ~ -17º and ~ -30º latitude. A wider band of activity is demonstrated in the South, than in the North. Higher latitude distribution of active regions is consistent with early solar cycle progression.

Events:
There were no significant solar flares during March.

There were a number of geomagnetic events, caused by fast-moving solar wind streams, including a Kp6 (G2) event on 1st March, with solar wind speeds around 534 km/sec; Kp5 (G1) events on 2-3rd March, with solar wind speeds reaching 611 km/sec; and a Kp5 (G1) event on 14th March driven by a solar wind of 565 km/sec. No suspected space weather impacts were reported.

A Coronal Mass Ejection (CME) on 20th March, was probably caused by a magnetic filament eruption, and although not Earth-directed, it did strike us a glancing blow, but did not spark a geomagnetic response.

Prominences:
There were a number of large prominences during March, in keeping with the apparently increased number of filaments observed crossing the solar disk during the month, and I managed to capture a particularly nice example on 30th March, using my Lunt 35/400mm Hydrogen-alpha scope with a CMOS camera:



This prominence was seen at the Sun's NE limb, and is a good example of a high-altitude magnetic filament, raining plasma back onto the solar surface.

Daily solar dynamics reports and space weather alerts can be found on Twitter @RyeBrookSpace, and at www.ryebrookspace.co.uk

Suspected space weather impacts can be reported at: https://ryebrookspace.weebly.com/report-a-spaceweather-impact.html

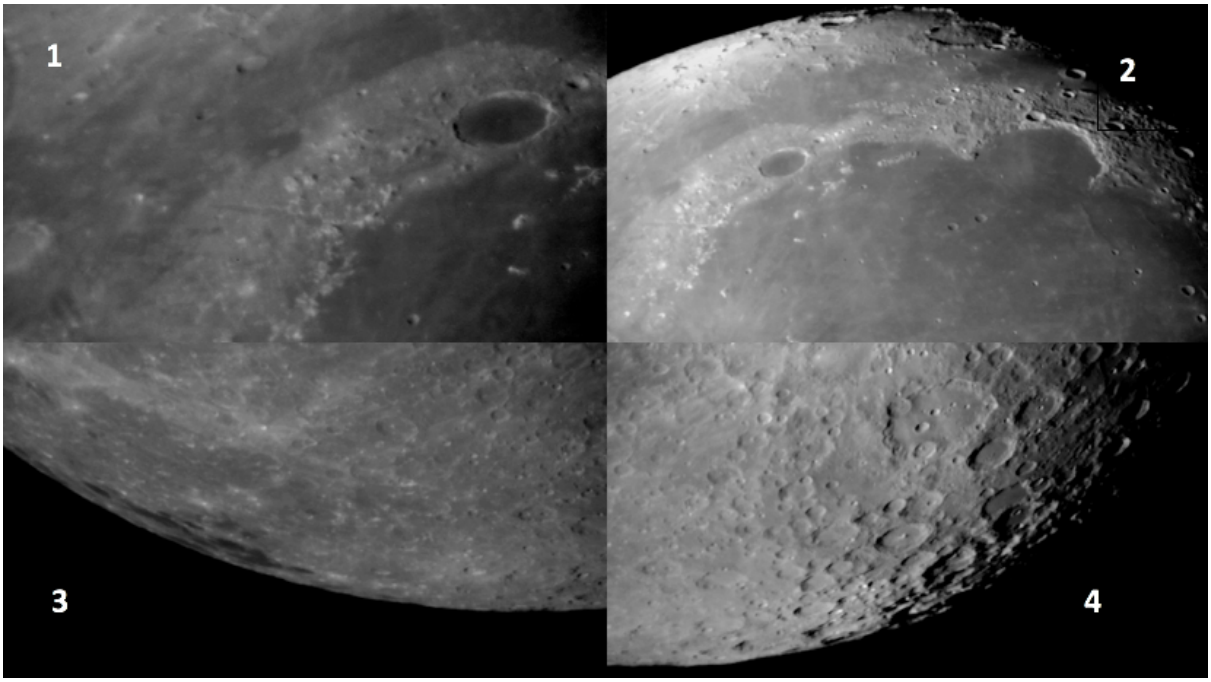
Reporting suspected space weather impacts such as WiFi and ICT network outages, SatNav errors and power grid fluctuations helps us to better understand the risks that space weather presents in our modern digital age, and to plan mitigation strategies. We are more reliant on digital technologies now, than we have been at any time in history, and those technologies are highly vulnerable to disruption by solar emissions. Also, at this time in history, when we are contemplating sending Humans into interplanetary space, we have an urgent need to better understand the impacts of space weather, and to find ways to protect Humans when they are in space. This now needs to become a global effort, with pooling of data and knowledge, as well as collaborative working to find solutions.

A Lunar Observing Session - Stephen

Date: 2021-04-23 **Time:** 2045 – 2130UT
Object: 86% illuminated Moon
Equipment: 127/1500mm Maksutov + CMOS eyepiece camera +/- x2 Barlow
Seeing: A IV to A III **Cloud:** 2/8 **Transparency:** Not formally assessed.
Humidity: 40% **Temp:** 9C

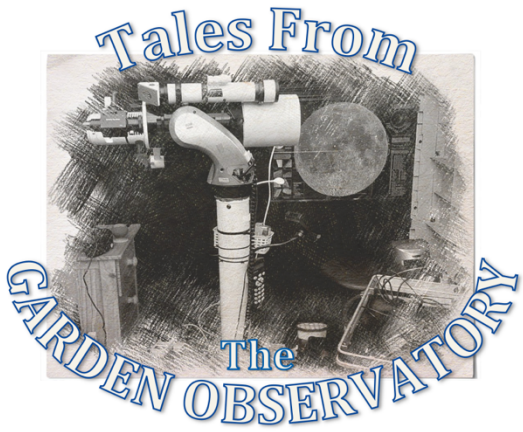
Findings:
Observing in conditions of light haze. Marked corona visible around moon.
Observing visually at X187, Plato A and Plato B are seen with ease. Dark lava-flooded craters and basins are noted at the SW limb – revealed by favourable libration. Most northerly of these craters is Crater LYOT. Others do not seem to be named. Excellent views of Plato, Sinus Iridum, Crater Schiller and the Southern Highlands are enjoyed.

30+ images obtained by single exposure. These are suboptimal due to unsettled seeing.



1. Plato & Vallis Alpes – Plato A is just visible.
2. Plato & Sinus Iridum
3. Dark lava flooded craters and basins revealed by favourable libration
4. The Southern Highland

Tales from the Garden Observatory - Stephen



It's been another quiet month in the observatory. I have passed-up a number of opportunities to observe this winter, partly because I have been too tired to stay up, and partly because it has been so cold. I think it's my age - I just seem to feel the cold more than I used to - but also the many warm summer nights during LockDown 1 that were spent at the eyepiece, have made me a bit soft. I have ventured out a couple of times for the mandatory look at the Great Nebula in Orion, but quickly scuttled back inside shivering after half an hour or so.

But that is after all, one of the main benefits of an observatory - you can leave everything set up ready to go and just pop out for a short observing session as the mood takes you. You would never go through the agony of hauling your kit out onto the patio and setting up, aligning your GoTo and waiting for your scope to cool off, just for a quick half-hour look at Orion.

There are of course, disadvantages of an observatory, one of which is that it is static, and what you want to observe is not always visible from your observatory, whereas if you have a portable telescope, you can set it up in a position from which you can observe that object. This has often been the case with my observatory, and I actually have a fairly restricted view of the sky, so I have to resign myself to only observing what is available. Nonetheless, I can honestly say that constructing an observatory in my garden is the very best thing that I have ever done in my 40-something years of astronomy.

So, this month, I have been reconfiguring things in the observatory to take into account the sort of astronomy that I am likely to be doing as I get older, softer and lazier. With the increasing solar activity of Cycle 25, of course, solar observing is very much going to be on the agenda, and this fits very well with the plan - no late nights, and by definition, it has to be sunny, and so it is likely to be warm. So, I have my Hydrogen-alpha scope piggy-backed on my 127/1500mm Maksutov, and I have now fitted a handy bracket to mount my laptop in a convenient position for imaging. I have also made a cardboard cowl to keep glare off the screen so that I can see what I'm imaging. This is a problem peculiar only to daytime astronomy.

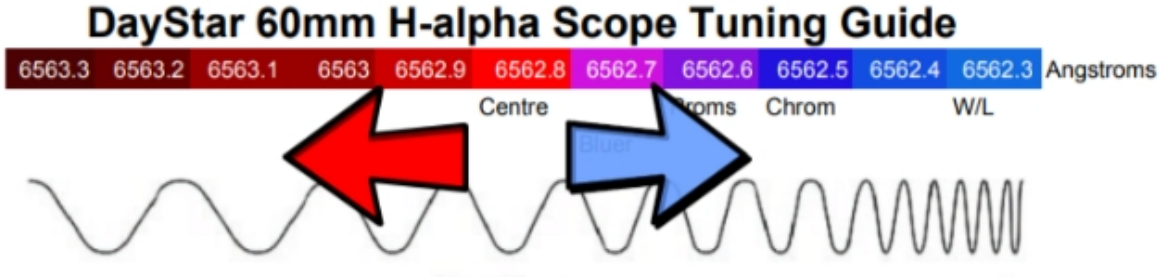
I still want to retain the ability to do night-time observing though, especially when the Moon or planets are well placed, and although I thought about swapping-out the Maksutov for a smaller refractor with a solar filter, it seems more sensible to keep the Maksutov and use the blue-end of the Hydrogen-alpha band to get near-white light images. I have also managed to find a way to fit my 2" diagonal to the Maksutov, and have fitted this with a Baader zoom eyepiece, with the intention of only using the Maksutov for visual work. I plan to spend much more time in the future, just *looking* through my telescope, rather than imaging.

All of this said, as my Lunar Observing session report shows, I have recently spent an evening indulging in Lunar imaging! Best laid plans and all that…

FOR SALE

DayStar® Solar Scout 60mm Hydrogen-alpha solar scope.

Heater-tuned, effectively double-stacked Hydrogen-alpha telescope, complete with solar finder, diagonal, 25mm and 32mm eyepieces, Lithium-ion batteries, power cable and sunshade.
Transportation case and tripod are **not** included.
The telescope can be tuned from 6563.3 to 6562.3 Angstroms in indexed 0.1 steps, allowing views of prominences, chromosphere and red/blue shift features, as well as near-white-light views of sunspots at the blue end of the range.



The telescope has a standard dovetail mounting bar and has hardly been used. Reluctant sale as part of an equipment rationalisation strategy.

£500 no offers.

If interested, please email Stephen at *ewellastro.engagement@gmail.com*

Up Next:

NEXT MEETING: 8pm Friday 14 May 2021 - Virtual meeting via Zoom

Peter Bull will talk about a Window through the Universe.

Ron Canham will also deliver his Sky at Night presentation for the month to come.

NEXT USER GROUP:

Suspended until further notice.

NEXT DENBIES OBSERVING SESSION:

Suspended until further notice.

AD HOC OBSERVING AT WARREN FARM:

Suspended until further notice.