



March 2023 EDITION

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Editorial

The March edition of Janus marks the beginning of meteorological Spring. This brings with it a hope for slightly warmer, albeit shorter, evenings for our viewing sessions – something which I personally welcome!

Viewing sessions organised by Steve at Ranmore seem to be increasingly popular, allowing members to get together and, for those less experienced, to benefit from the knowledge of more experienced members. Sessions at Warren Farm have been fewer, but this edition of Janus contains a brief report of one such event, provided by Christine Beavon. Anyone else wishing to contribute some words (and pictures) about their observing experiences – either solo or as part of a group – would be welcomed.

Judging from the number of posts on the WhatsApp group, there's been much interest in Comet C/2022 E3 ZTF – aka the "Green Comet". Its green colour, and the fact that its orbit means it is destined never to be seen again, reinforce the "once in a lifetime" nature of its appearance. The other phenomenon interesting people is Aurora Borealis, visible unusually far South in the last few days.

The failure of Virgin Orbit's Launcher One has been attributed to a misplaced fuel filter in the rocket's second stage. This caused the downstream fuel pump to operate at a degraded efficiency level, resulting in the Newton 4 engine being starved of fuel, and the engine operating at a significantly higher than rated temperature. The abnormally high temperatures caused multiple components to malfunction, which in turn led to "early thrust termination" on the second stage, and the end of the mission. As is often the case, a minor problem led to mission failure.

John



The Solar System March

MERCURY: begins the month soon to pass behind the Sun and is not observable – it will reach its highest point in the sky during daytime and be 3° below the horizon at dawn. Throughout the month it remains, at best, difficult to see. By the end of the month, having recently passed behind the Sun at superior solar conjunction, it is again not observable – it will reach its highest point in the sky during daytime and be no higher than 7° above the horizon at dusk.

VENUS: recently passed behind the Sun at superior solar conjunction. At the beginning of the month, it becomes visible around 18:00 GMT, 21° above the SW horizon, as dusk fades to darkness. It will then sink towards the horizon, setting 2 hours and 45 minutes after the Sun at 20:24. At the end of the month, it is emerging into the evening sky as it approaches greatest elongation E, and will become visible around 19:51 GMT, 27° above the W horizon, as dusk fades to darkness. It will then sink towards the horizon, setting 3 hours and 28 minutes after the Sun at 22:58.

MARS: is currently an early evening object and begins the month visible in the evening sky, becoming accessible around 18:18 GMT, 63° above the S horizon, as dusk fades to darkness. It will then reach its highest point in the sky at 18:33, 64° above the S horizon, and will continue to be observable until around 01:34, when it sinks below 10° above the NW horizon. By the end of the month, still an early evening object, it will become visible around 20:17 GMT, 57° above the SW horizon, as dusk fades to darkness. It will then sink towards the horizon, setting at 03:07.

JUPITER: will soon pass behind the Sun at solar conjunction. It begins the month becoming visible around 18:00 GMT, 22° above the SW horizon, as dusk fades to darkness. It will then sink towards the horizon, setting 2 hours and 50 minutes after

the Sun at 20:29. By the end of the month, it is difficult to see, reaching its highest point in the sky during daytime and being no higher than 2° above the horizon at dusk.

SATURN: recently passed behind the Sun at solar conjunction and is a difficult target throughout the month. At the beginning of the month, it is very close to the Sun, at a separation of only 10° from it. By the end of the month, it remains difficult to observe, reaching its highest point in the sky during daytime and being no higher than 0° above the horizon at dawn.

URANUS: will soon pass behind the Sun at solar conjunction. It begins the month visible from around 18:58 GMT, 42° above the SW horizon, as dusk fades to darkness. It will then sink towards the horizon, before setting at 23:43. By the end of the month, it is not observable as it will reach its highest point in the sky during daytime and be no higher than 17° above the horizon at dusk.

NEPTUNE: begins the month soon passing behind the Sun at solar conjunction and will be extremely difficult to see as it is very close to the Sun, at a separation of only 14° from it. By the end of the month, it remains very close to the Sun, at a separation of only 14° from it, so is still extremely difficult to see.

MOON PHASES:

First Quarter	27 Feb
Full Moon	7 Mar
Last Quarter	15 Mar
New Moon	21 Mar
First Quarter	29 Mar

Notable Events:

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

March

2	Close approach of Venus and Jupiter
13	Lunar occultation of Delta Scorpii
20	March equinox
21	1 Ceres at opposition
24	Close approach of the Moon and Venus Lunar occultation of Venus

28	Close approach of the Moon and Mars
29	C/2019 U5 (PANSTARRS) at perihelion
30	136472 Makemake at opposition

April

3	The Sombrero Galaxy is well placed
5	Messier 94 is well placed
9	Mercury at dichotomy Lunar occultation of Delta Scorpii
11	Mercury at highest altitude in evening sky Mercury at greatest elongation East
15	The Whirlpool Galaxy is well placed
16	Close approach of Moon and Saturn
19	Messier 3 is well placed
20	Hybrid solar eclipse * 136108 Haumea at opposition
23	Lyrid meteor shower 2023 Close approach of Moon and Venus
24	Messier 101 is well placed
26	Close approach of Moon and Mars
28	Venus at highest altitude in evening sky
30	Asteroid 7 Iris at opposition

* A hybrid solar eclipse (see 20 April event) is a rare and strange phenomenon that combines a partial, annular, and total solar eclipse into one stunning event. These eclipses happen only about once a decade; the last one occurred on 3 November 2013.

Collected Observations (and thoughts) – Gary Walker

The “Green Comet” in the News at closest point to Earth! – 1 Feb

On 1 February, Comet C/2022 E3 ZTF reached its closest point to the Earth at about 26 million miles (which is, incidentally, about the same distance that Venus is from Earth at its closest approach). Being closer to us meant that the comet appeared to “speed up”, just as a low flying aircraft will always appear to be flying faster than one at much higher altitude!

I could easily detect the motion of the comet over a short period - on the night of 30-31

January, it moved a significant distance even over a period of an hour!

The comet appeared bright in my telescope and was strongly condensed at the centre of the coma. The comet and the faint tail were visible despite the presence of a bright gibbous Moon, high in the Southern sky. The position of the comet was near to the Pole Star, so it was easy to find its position. At this point, it was circumpolar, and it was now visible in the early evening sky, (when I first saw it on 11 January, it was only just visible, low down in the NE sky, even at 1am!)

Due to its (relative) closeness to Earth, the comet featured in the BBC News on 1 February and, because of the strong emerald colour that shows up in images of it, was again referred to as the "Green Comet". Sadly, visually, it does not show colour, due to the frustrating fact that the human eye cannot detect colour in faint objects. Cameras can detect it because they can expose for a long time, allowing time for the image to build up! The comet has come from the Oort Cloud, taking about 50,000 years, (give or take!) to get here. In fact, it is on a hyperbolic orbit, which means that it will be flung out of the solar system, never to return!

In images, the comet appeared a bizarre object, as not only did it have a long, thin tail, it also displayed an anti-tail at the "front end" of it.

The media also kept emphasising that its last passing of Earth was 50,000 years ago, and that this was a "once in a lifetime opportunity" to view it. Understandably, the media likes to pick up on big numbers and headline grabbing statements. That said, most non-astronomers would be disappointed in the comet as, at best, it would only just be visible to the naked eye, in a dark sky. It is certainly no Comet NEOWISE 2020 although, to astronomers, it is a fairly good comet, as many Comets never get anywhere near the brightness of this one!

When viewing the comet, I found that the tail was much easier to see when I moved my telescope back and forth, as motion can make faint objects easier to see. This is another useful technique to use when viewing faint objects, as well as the well-known one of "averted vision" or looking out of the "corner of your eye".

Mars – 4 Feb

Of course, Mars is now definitely shrinking in size as it is about 2 months past opposition. On 3 February it was down to 10.4' arcseconds, so it had lost 7' arcseconds since it was at opposition.

I could, with difficulty, just pick out a dark feature on Mars, which on later checking on the Sky & Telescope Mars Profiler Tool, showed that it was Syrtis Major, which is the most prominent dark feature on Mars. However, even at 222X and 300X, it was only just discernible, and not readily recognisable as such. I could also see the North Polar Hood, and a bright area along the Southern limb.

Mars was still brighter than Aldebaran, which was conveniently nearby, but not by very much.

I was still observing the Green Comet, which had now moved to nearly overhead in the sky, so it had become far better placed than earlier on. An almost-full Moon did not unduly affect it. Its magnitude was estimated at between 4.4 and 5, which was what had been predicted.

Comet by-passing Capella – 6 Feb

On the nights of 5 and 6 February, the comet passed close to the bright star, Capella, in the constellation of Auriga. At this time of the year, Capella is virtually overhead by the end of the evening. This made the comet much easier to find, especially with binoculars. It was about 2.5 degrees from Capella on the first night, and about 5.5 degrees from it on the second night. In my 11 X 80 binoculars, the comet appeared as a large, fairly diffuse, fuzzy ball, and was less concentrated than in the telescope.

Again, I could detect motion in the comet, and in 2 hours, it had moved over one quarter of a degree on the evening of 6 February. It was passing through a pretty starfield, known as "the Kids", near Capella.

Large and spectacular Prominence! – 7 Feb

During the afternoon of 7 February, I was fortunate enough to see a large and spectacular Prominence on the Sun's limb,

on the Eastern side of it, at about a 9' o' clock position. It appeared as several curving spears or rods, and at least 6 fragments could be seen extending well out into space away from the limb.

I first saw it about 2.10pm but, by about 3.07pm, it had virtually disappeared, with only a few small prominences on the limb, and one dimming spear-like prominence, detached from the limb! Thus, it was an "active" prominence, rather than one that just hangs around for hours, even days.

Sir William Herschel – 11 Feb

As we heard in Robin Scagell's excellent talk on Sir William Herschel and his family, modern astronomy owes him a great debt! Although he is best known as the discoverer of the planet, Uranus, as Robin pointed out, Herschel catalogued the night sky, including the various galaxies, nebulae and star clusters. In addition, his objects are today still used by modern amateur and professional astronomers. They are now known as the New General Catalogue, or NGC, and many deep sky objects are known by their NGC number. There are over 5000 objects in it - plenty for us all to be getting on with - and in my telescope GOTO menu, there is the NGC Catalogue, as well as the Index Catalogue (IC). In a GOTO telescope, one can just click on a particular NGC number and go to the associated object that you want to observe!

Robin stated that Sir William Herschel coined the term, Planetary Nebula, for certain nebulae that are disk-like in shape and, indeed, resemble planetary disks. Planetary nebulae come in all types from easy to observe, to very difficult. I particularly love observing them!

As Robin stated, some appear the same angular size as Uranus or Neptune. These can be some of the few deep sky objects that display colour during visual observing!

The planetary nebula of NGC 3242, in Hydra, appears in my telescope as a rather oddly shaped blob, light blue in colour. It has been nicknamed "The Ghost of Jupiter"!

NGC 6572 appears a beautiful green colour, as does NGC 7027. Indeed, 6572 has an

angular size of about 7.8' arcseconds, so is a similar size to that of the planet, Uranus!

NGC 6818 and NGC 7662 appear with a blue colour tinge, and so do NGC 7009, NGC 2022, and NGC 6543! I have seen some of them appearing a beautiful green, or blue colour.

As we were told tonight, Herschel's sister, Caroline, was busy taking down his observations, and it was reported that the ink froze solid in the inkwell on very cold nights, but they soldiered on! That is the true dedication that all astronomers and, for that matter, all members of this Society, might aspire to!

In the 19th century, the French Astronomer, Messier, catalogued 110 deep sky objects. Although he was actually more interested in finding comets, he kept on coming across numerous fuzzy objects that were not comets, so he classified them, so as to not confuse them with comets! Of course, many dim or moderately bright comets seen with binoculars or telescope appear fuzzy, just like the most recent one of C/2022. E3 ZTF. Deep sky objects can easily be confused with them! Ironically, Messier is today remembered for his Messier Catalogue, rather than the comets that he actually discovered.

Catalogues certainly provide an essential function for those wishing to observe deep sky objects, identifying them and giving their exact positions.

Many years ago, I saw a book, published in 1774, giving details of all the planets up to Saturn. It did not, of course, mention Uranus, as this planet was not discovered by Herschel for another 7 years!

Robin also mentioned Herschel assuming that bright stars are closer than faint stars. As a rule, this seems to be true, as we see Sirius, which is the brightest star in the entire sky, and is just over 8 light years away. However, some stars that are close to us can be the dimmest ones. These are the Red Dwarfs, which are feeble stars, and not even the brightest of them is visible to the naked eye, being only of about magnitude 7.

It is ironic that the closest star (apart from our Sun) is Proxima Centauri, which is only 4.4

light years away, and yet only has a magnitude of 11!

White Dwarfs are also feeble stars, and the companion to Sirius, known as Sirius B, or the "Pup" is of magnitude 8. This OUGHT to be an easy object to see in any telescope, but as it is always so close to Sirius, it means that it is always hidden in the glare of Sirius. If it was further away, there would be no problem with seeing it! I have tried a few times to see it, by moving Sirius just out of the field of view. I have THOUGHT that I MAY have glimpsed it as a spark of light, but only fleetingly. At present, it is about 11' arcseconds from Sirius, which is about its widest separation. This is therefore the best time to try and see it!

Comet C/2022 E3 ZTF just keeps on going – 15 Feb

As of 14 February, this comet was still bright in the telescope, and the faint tail was still visible. Over the last few nights, or so, the comet has been much easier to locate, even for non - GOTO users, as it has been passing through the constellations of Auriga and Taurus, which contain a number of bright stars. Consequently, it has passed within a short distance of the bright star, Capella, and, on 14 February, it was only about 2 degrees NE of the bright orange star, Aldebaran! Also, the Moon had finally cleared the evening sky, leaving it much darker. The movement of the comet was still noticeable over a 2-hour period. It remained visible in my 11 X 80 binoculars, and was still about magnitude 6.

In other news, Venus was now starting to become prominent in the early evening sky, with Jupiter higher up, and the two are set for a conjunction on 1 March!

Mars was still bright, significantly brighter than nearby Aldebaran, but it had shrunk down to only about 9' arcseconds in size. I could only glimpse dark features on it, with difficulty, even at 222X.

On the News, a fireball was seen from Southern England, and France, of a 3-foot sized rock, perhaps falling in the area of Rouen in France!

I have now been observing this comet for over a month - since 11 January. In that time, it has traversed a vast area of the sky from the East to the West. It is now travelling Southwards and will soon disappear from our skies! The website "Space Weather News" has been full of images taken of this comet by amateur astronomers.

Latest Observations – 24 Feb

As of 23-24 February, Comet C/2022 E3 ZTF had slowed down as it moves further away. I saw that it had moved just over half a degree in 24 hours. It still appeared obvious in my scope, but may now be getting a bit more diffuse, and the central condensation had become hard to see. Despite a bright, near-full, Moon being visible high in the sky I could, however, still see the faint tail. Actually, the comet has been easy to see in my scope, even during the periods of moonlight in the last 6 weeks!

The comet was now moving to the SW but was still not far from Aldebaran and the constellation of Orion.

Venus and Jupiter were steadily drawing closer together and, on 24 February, they were about 6 degrees apart. Above them, was the crescent Moon - all were in a straight line! At the end of February/beginning of March, Venus and Jupiter will only be about 1 degree apart.

The Northern Lights come South! – 28 Feb

In the last three days of February, the Northern Lights have been making the News (admittedly as the final item, and in the weather forecast!), with an unusually strong aurora visible, not only in the Northern UK, but as far South as St Albans, and Cornwall.

I tried to observe (and photograph) the Northern sky on 27 February, to see if I could see them - but I didn't see anything! The advice was to use a camera, as they can pick out faint colours far better than the human eye (same as with deep sky objects and comets). However, my camera didn't pick up anything either!

It is undeniable that the Sun has been far more active in the last few years, with some sunspots visible virtually every day.

Although seeing an aurora this far south is rare, it can happen. One instance was in 1989, after a big solar storm. Patrick Moore said that one on 25 January 1938, was a vivid red colour - so strong that some feared that London was on fire..... Over two years later, it was, courtesy of the Luftwaffe!

I have never seen an aurora - unlike Noctilucent Clouds, which are also seen, low down in the North, in the summer months!

In other celestial events, Venus and Jupiter were making a spectacular pairing, especially as they are both very bright, and close together (only about 3 degrees apart on 27 February)

Object of the month – The Rosette nebula – Martin Howes

This month's object is the Rosette nebula, a beautiful emission nebula in the constellation of Monoceros, just to the east of Orion. This is well placed in March, lying over 40 degrees in altitude, and just East of the meridian (due South) at the beginning of the month of March.

The object is actually made up of two separate parts – a central young cluster of relatively newly formed stars plus the nebulosity from which they were formed. The cluster, known by the catalogue number NGC 2244, is about 5 million years old – compare that to our Sun which is about 4.5 billion years old, and even the “young” bright Pleiades cluster at 100 million years old! The cluster itself has a combined magnitude of +4.8, so theoretically visible to the naked eye, but sharp eyes, dark skies and binoculars would help, as it is a very concentrated cluster at just over half the width of the full Moon.

I have found the object relatively easily without the aid of GoTo functionality, but of course if you have the option of GoTo this would make it even easier to find! It lies just South and just under halfway along a line from Betelgeuse in Orion to the bright star Procyon in Canis Minor. This equates to about 10 degrees along this line from Betelgeuse, so the equivalent of a fist held at arm's length.

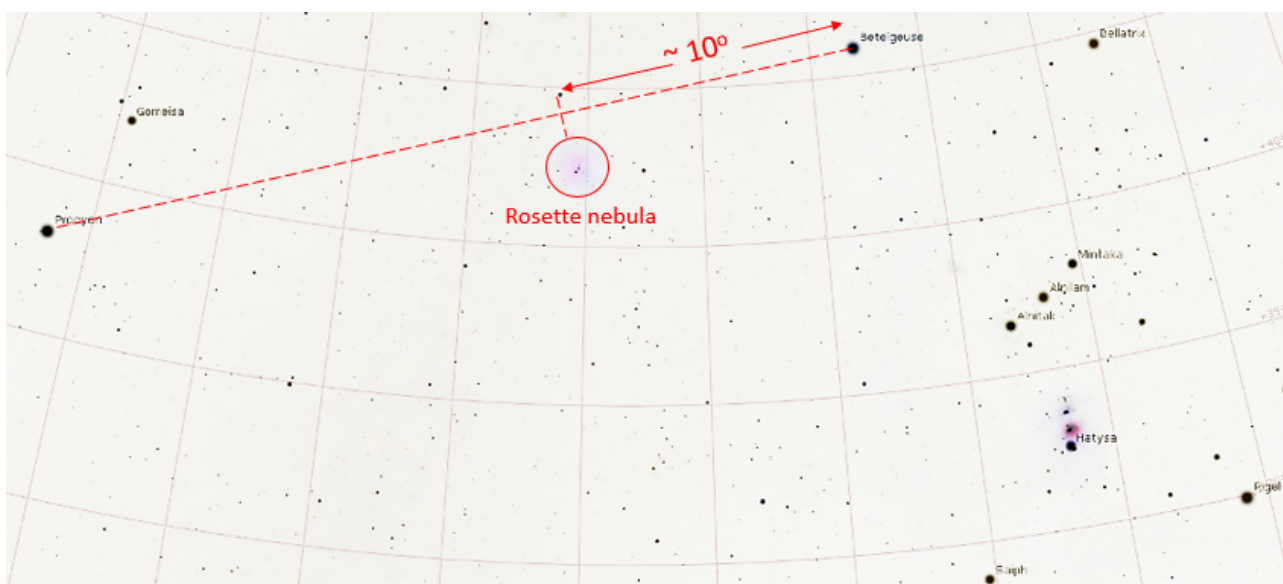
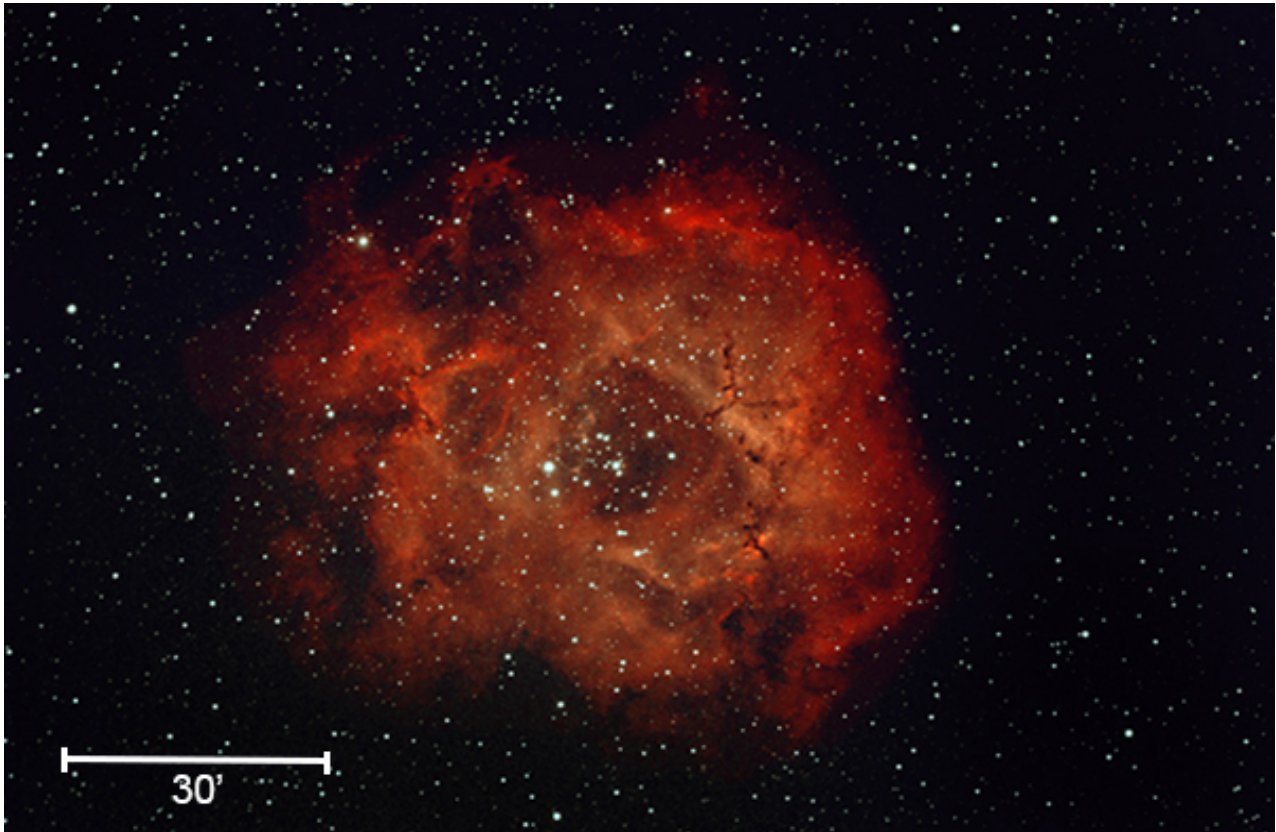


Image adapted from Stellarium

The nebulosity has a separate catalogue designation, NGC 2237, and is much fainter than the star cluster at magnitude +9, so one would need a telescope to see this. The nebulosity is estimated to

have a mass of 10,000 solar masses and so has the potential to create many more stars yet – I wonder what the object will look like a few millions of years from now?

Although the nebulosity is quite faint it is quite large and it responds well to imaging, especially using a hydrogen alpha filter. The image below was taken with a mono ATIK CCD camera attached to a 200mm Canon lens, with a total of 15 five-minute exposures through Ha and OIII filters. This was mounted on a Skywatcher EQ5 Pro mount and auto guided using PHD2. There is a scale on the image indicating the approximate width of a full Moon.



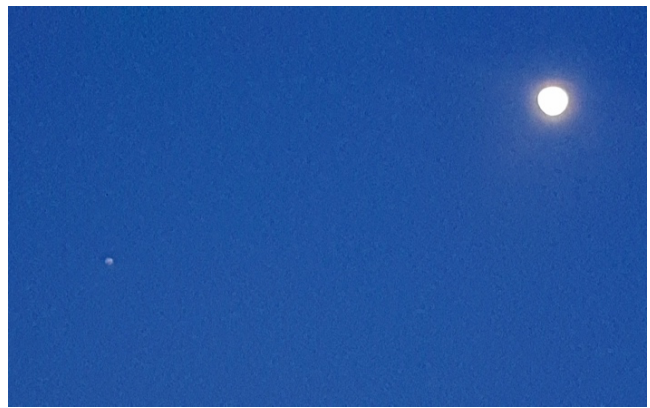
Viewing from Warren Farm on 2 Jan – Christine Beavon

A very enjoyable late afternoon and early evening was spent at Warren Farm with several members of Ewell Astronomical Society. Peter, Steve, and Casper had brought along their telescopes and were already set up when I arrived at around 4:30pm.



The sky was clear, and the Sun's last glow was visible behind the trees as it set in the West, with Venus shining brightly, following its path. All the planets were going to be visible but, by the time I arrived, Mercury had already set, and it turned out that the others also missed it.

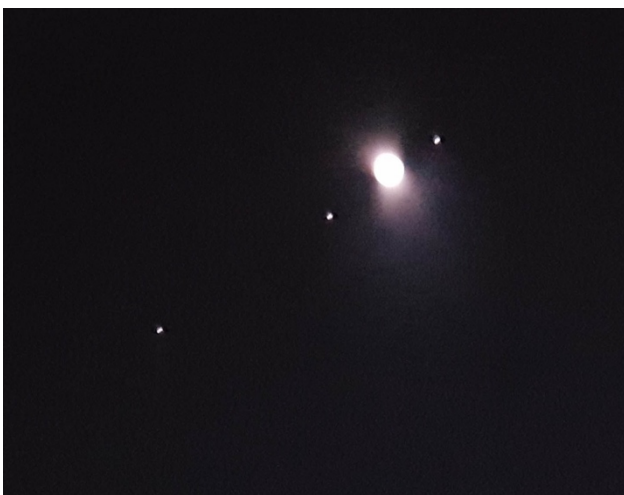




Apart from that, it was a great viewing session, and we all got to view all the other planets.



Saturn was beautiful, with its rings well seen as well as one of its moons, Titan, which was clearly visible.



Jupiter didn't disappoint, with 4 moons visible. We were also very lucky, as we got to watch through the telescopes as Ganymede disappeared behind Jupiter, very exciting to see.

Neptune was viewed through the telescopes, but I was unable to find it with binoculars. You could clearly see it was a disc even though it was very small.

Uranus was slightly better, being slightly larger, and its colour was discernible too, a blue-green colour. Mars was lovely, and clearly red.

A few people stopped on their way past. We asked them if they wanted to take a look, and it was great to hear their excitement at seeing the planets.

Thanks go to Steve, Peter, and Casper for bringing their telescopes.

Important Note:

To allow sufficient time to compile Janus and place it on the EAS Website by the 1st of the month any submissions for publication are required at least 3 days before the end of the month. Any items received after this date will be held over until the following month

Up Next:

NEXT MEETING: 8pm Friday 10 March – Nonsuch High School

George Seabroke from the Mullard Space Science Laboratory will talk about the Gaia Spacecraft.

Ron Canham will also give a presentation on the sky at night for the coming month.

NEXT USER GROUP:

Suspended until further notice.

NEXT DENBIES OBSERVING SESSION:

The next session, allowing for moon rise & set times and cloud conditions, may be sometime around the new moon on 21 March. The precise date and timings of any session will be advised by email and WhatsApp a few days in advance

AD HOC OBSERVING AT WARREN FARM:

These will be at short notice when the weather is favourable. Please watch our WhatsApp feed for alerts