



February 2023 EDITION

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Editorial

Welcome to February's edition of Janus. For those not already aware, this month's talk on Friday 10 February, which is about William Herschel and his telescopes, will be given by Robin Scagell from the Society for Popular Astronomy (SPA).

There were many events of note in January - two had significantly different outcomes.

The eagerly awaited first ever satellite launch from UK saw Virgin Galactic's modified Boeing 747 "Cosmic Girl" take off on schedule from Newquay airport and head out towards the Southern coast of Ireland. After climbing to 35,000ft, the 2-stage rocket, Launcher One, was dropped off from the aircraft and, its first stage having successfully ignited, it headed towards space carrying its cargo of 9 satellites. So far – so good. The second stage also ignited successfully but, unfortunately, failed to perform correctly resulting in the rocket and its payload failing to achieve orbit. Instead, they came down somewhere in the ocean off the West coast of Africa. At least the launch was insured!

On a happier note, NASA successfully predicted that Asteroid 2023 BU, an asteroid the size of a minibus, discovered by a Russian amateur astronomer on 21 Jan, would pass by the Earth at an altitude of 3,600km - an order of magnitude lower than the altitude at which GEO satellites operate (36,000km). Had their predictions not been correct, however, this small asteroid (estimated size 3.5-8.5m across) would probably have posed no threat to Earth, turning into a fireball, and disintegrating in the atmosphere. But isn't it good to know that should a more threatening asteroid be detected the technology exists to deflect it?

John



The Solar System February

MERCURY: begins the month visible as a morning object, having recently passed greatest elongation W. It is, however, difficult to observe, reaching its highest point in the sky during daytime and being no higher than 4° above the horizon at dawn. Although becoming slightly easier to observe over the next 10 days, it will soon pass behind the Sun and, by the end of the month will not be observable, reaching its highest point in the sky during daytime and being 2° below the horizon at dawn.

VENUS: recently passed behind the Sun at superior solar conjunction. It begins the month becoming visible around 17:11 UT, 13° above the SW horizon, as dusk fades to darkness. It will then sink towards the horizon, setting 2 hours and 6 minutes after the Sun at 18:55. By the end of the month, it will become visible around 17:58 UT, 21° above the SW horizon, as dusk fades to darkness. It will then sink towards the horizon, setting 2 hours and 44 minutes after the Sun at 20:21.

MARS: recently passed opposition. It begins the month visible in the evening sky, becoming accessible around 17:21 UT, 51° above the SE horizon, and will then reach its highest point in the sky at 19:45, 63° above the S horizon. It will continue to be observable until around 02:51, when it sinks below 9° above the NW horizon. By the end of the month, still visible in the evening sky, it will become accessible around 18:16 UT, 63° above the S horizon, as dusk fades to darkness. Reaching its highest point in the sky at 18:36, 63° above the S horizon it will continue to be observable until around 01:36, when it sinks below 10° above the NW horizon.

JUPITER: will soon pass behind the Sun at solar conjunction. At the beginning of the month, it becomes visible around 17:11 UT, 36° above the SW horizon, as the sky darkens. It will then sink towards the horizon,

before setting at 21:47. By the end of the month, it will become visible around 17:58 UT, 22° above the SW horizon, before sinking towards the horizon, setting 2 hours and 55 minutes after the Sun at 20:32.

SATURN: begins the month in a position where it will soon pass behind the Sun at solar conjunction. It will be extremely difficult to see, reaching its highest point in the sky during daytime and being no higher than 2° above the horizon at dusk. It will remain a challenging target throughout the month. Even at the end of the month, having recently passed behind the Sun at solar conjunction, it will not be readily observable since it will be very close to the Sun, at a separation of only 10° from it.

URANUS: is also currently an early evening object, now receding into evening twilight. It begins the month visible from around 18:12 UT 54° above the S horizon, and will then sink towards the horizon, setting at 01:30. By the end of the month, it will soon pass behind the Sun at solar conjunction. Becoming visible around 18:56 (GMT), 42° above the SW horizon, it will then sink towards the horizon, before setting at 23:47.

NEPTUNE: will soon pass behind the Sun at solar conjunction. It begins the month very difficult to observe, reaching its highest point in the sky during daytime and being no higher than 20° above the horizon at dusk. By the end of the month, it will be virtually un-observable, being very close to the Sun, at a separation of only 15° from it.

MOON PHASES:

First Quarter	28 Jan
Full Moon	5 Feb
Last Quarter	13 Feb
New Moon	20 Feb
First Quarter	27 Feb

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>

February

- 1 C/2022 E3 (ZTF) at perigee
C/2022 E3 (ZTF) reaches its brightest
- 14 Lunar occultation of Delta Scorpii
- 18 C/2022 A2 (PANSTARRS) at perihelion
- 19 Messier 81 is well placed
- 22 Close approach of the Moon and Venus
Close approach of the Moon and Jupiter
Lunar occultation of Jupiter
- 25 Close approach of the Moon and Uranus
- 28 Close approach of the Moon and Mars
Lunar occultation of Mars

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

Collected Observations (and thoughts) – Gary Walker

First Space Launch from the UK – 10 Jan

Historically we have been used to seeing space launches from Cape Canaveral, Russia, or China, but now the first one from UK soil has taken place.

In the past, UK has lagged behind the Major Powers in Space missions, except for the odd one in the 1960's, with the Blue Streak British rocket, but that had to be launched from Woomera, in Australia!

In recent years, however, various companies in the UK, have been building instruments and satellites for space missions but, again, they had to be launched from elsewhere in the world. Companies such as Surrey Satellite Technology, based in Guildford, and Airbus at Stevenage are examples of these, as well as the Mullard Space Science Laboratory in Surrey (which our Society has visited a couple of times)

On the late evening of 9 January 2023, a repurposed Boeing 747 Jumbo Jet called "Cosmic Girl", from Virgin Galactic, took off from Newquay Airport in Cornwall, to launch a space rocket, Launcher One. This mission was not a conventional launch as we have been accustomed to, but one where it was carried piggy-back on the 747, the Jumbo then flying down the Bristol Channel out into the Atlantic Ocean where, at a height of 35,000 feet, the rocket would be dropped, and then it would fire up to go to orbit before releasing its cargo of 9 satellites.

I watched the events on my phone. Many sightseers went to Newquay to see the jet take off, even though it was night-time when it took off! It took off just after 10pm, and flew to the SW of Cork, in Ireland, and at about 11.04 pm, the rocket was dropped. The first stage of the rocket ignited as planned, and there was some brief coverage of the engines firing, taken from the aft camera. However, most of the time, apart from interviews, and some views of Cornwall space control, the only other views showed an animation of the path of the rocket ascending to orbit.

The launch was, therefore, successful, but an "anomaly" was subsequently reported, with Launcher One failing to reach orbit due to the second stage of the rocket not performing correctly.

Some of the events I tracked on the Flight Radar app, and I could see the plane flying over the Bristol Channel, to the North of St Ives. Later, I could see that it was flying in an oval "racetrack" pattern, before releasing Launcher One. I also tracked "Cosmic Girl" flying back towards Cornwall, before landing back at Newquay at about 11.50pm.

There were some predictions online that Launcher One would be visible in the night sky. Unusually, it was clear, locally, but I think the rocket was too far to the SW of us to be seen - even worse, it was flying Southwards, away from UK!

In all, at least 7 UK "Space Ports" are planned, including one on the island of North Uist, one of a group of 6 islands in the Outer Hebrides known, collectively, as Uist. Launches of rockets from here will be traditional vertical launches from the ground.

The day after launch, it was a case of "Newquay, we have a problem", when it was announced that although Launcher One did reach Space, it had failed to reach the correct orbit. Clearly, on this occasion, there was no way to fix the problem. They went on to say on the lunchtime news that they didn't know what had happened to the rocket but, so far, there were no reports of it crashing to Earth!

New Comet – 11 Jan

A new comet was due to pass across the sky and would be especially well placed by late January. This comet is memorably known as Comet C/2022 E3 (ZTF)!

Earlier in January, it was poorly placed as it was low down in the NE sky, but by about 10 January, it was at an altitude of about 20 degrees around 1 am, or so. This was just about "doable", so I tried for it on the nights of 9-10 January, and 10-11 January. Initially, I couldn't see it through my telescope, but I got it on the 2nd night!

It appeared like the usual fuzz ball that a typical comet produces. I could even see it through the Oxygen 111 filter that I usually use for planetary nebulas. It appeared fairly "bright" and "large". Someone has reported its present magnitude as 7.5.

Of course, it had no colour to it (unless you count grey as a colour!), but images have already shown it as a beautiful emerald-green colour. Unfortunately, visually, our eyes cannot pick up colours, except in bright objects.

The sky was mostly clear, and the comet was visible despite a bright gibbous Moon high in the Southern sky. It was moving slowly across the sky in early January and would speed up by late January as it came closer to the Earth. That was the main reason why it would soon be well placed in the sky.

In other news, a Fireball was reported on the News, as being seen over the London area at about 8pm, on 9 January. It was even picked up by door Ring cameras (at least that's a better subject to see than burglars on your driveway!). Unfortunately, I didn't see it, as I wasn't outside then; in any case, unlike meteor showers, fireballs are not predictable! The same night, a meteor shower was reported as having been seen

from Sussex. It seemed to be a bit late for the Quadrantids shower, which was a week earlier, (unless of course it was Launcher One making an unscheduled early return to Earth!).

My SLR Camera – 13 Jan

On hearing Martin Howe talk on SLR cameras, it made me think about the SLR camera that I used to have. I had it from 2005-2012, and it was a film camera (remember those?). I took some good photos of astronomical objects with it, and it took far better-quality photos than my present non-SLR digital camera!

I took some images of constellations - Orion was a particularly good one of course. The Orion Nebula showed the red colour that it does in images. I also deliberately took some images of star trails, and the various colours of the bright stars showed up very well. Even the Orion Nebula, in its trailed image, still showed its red colour!

I also managed to take photos through my 8" SCT, especially of the Moon, and Sun. I took a couple of solar eclipses too and obtained some good photos of prominences with my Ha telescope.

Venus was the easiest planet to photograph, whilst others such as Jupiter and Saturn were more challenging, but I just managed to photograph the Equatorial Belts of Jupiter.

The weird Comet Holmes, which suddenly brightened up to naked eye visibility at the end of 2007, appeared as a large fuzz ball which showed up well in my photos.

I could also deliberately take photographs of aircraft trailing across the sky, and once of a Police helicopter, circling nearly overhead, so I obtained a circular light trail of it! I could also do light "writing" by moving a torch around, to form letters!

My present digital camera can take images of astronomical objects, but it is much more difficult. With the SLR camera, it was easy to point the lens straight down the telescope eyepiece, and I could photograph what was visible there, as I could see through the camera viewfinder exactly what I was photographing. With the digital camera, however, it is very difficult to get it to point

down the eyepiece. Even when I do get it pointing correctly, with bright objects like the Sun or Moon, I keep getting dark splotches in the way (and no, it is not dust or scratches on the lens!).

You would think that it would be easy to photograph through a telescope with my digital camera, but it's far harder to do than with my non-digital SLR camera.

A further constraint is that I can only get a maximum exposure of 15 seconds whereas, as Martin pointed out, with a digital SLR, you can make the exposure whatever length you like (battery permitting). As Martin also pointed out, however, too long an exposure means that the image soon gets washed out! The colours of the stars are not so clear either and the Orion Nebula only appears whitish, rather than red.

One major disadvantage of a film SLR camera was that, when changing a film, it was easy to damage the shutter curtains inside without realising it. I once took several films, only to find that nothing came out! One of the lost photos was of an Iridium satellite flaring, which I got by chance, as I had set up the camera and started a long exposure of the sky!

My SLR camera got damaged in rain in 2012, so it no longer worked but, as it was a film camera, it would, by now, be obsolete any way.

More Observations of Comet C/2022 E3 (ZTF) – 15- 23 Jan

I have been observing this comet again. Now, happily, rising earlier than before, by the middle of the month it was visible from my garden by about 1am.

On the night of 14/15 January, it was quite easily visible in my telescope as a reasonably bright and large fuzzy ball, which was brighter and more concentrated in the centre. This despite there being a bright waning fat crescent Moon in the sky! I still could not, however, see it in the 8 X 50 finder scope, or in binoculars.

By 22 January, it still appeared reasonably bright and large in my telescope. It remained brighter and more condensed in the centre,

surrounded by an area of fainter fuzz, and had reached about magnitude 6.5.

Some media reports are calling it the "Green Comet" due to its strong green colour that shows up in images though, sadly, not visually.

On one night, I could detect motion in a few minutes, as it approached a star, and then covered it up

On the night of 22/23 January, I realised that I could see a definite TAIL! It appeared very faint in my telescope, but was clearly present, especially when I moved the telescope back and forth! It must have been about half a degree in length, as it filled the width of my 100X eyepiece field of view! I had suspected a tail a few nights earlier but wasn't sure if I was just imagining it! I could see this tail best with 100X magnification, but not with the 62X onwards.

Once again, there was a heavy white frost. This very cold weather is good for astronomy, but it has caused me some problems. For one, as I mentioned previously, my telescope GOTO refused to work properly in the very cold temperatures. It would fire up OK, but only move a little way, and then stop. Even though my telescope is stored in my shed, the temperature in there got too cold, and when I set my telescope up, I found that the GOTO failed! So, I got the idea of putting the telescope in my loggia, where it was a bit warmer (or, at least, slightly less cold!) in the early evenings. Then, when it was time to take it out, I found that the GOTO worked fine! Getting it in and out of the loggia was, however, a right hassle, as things like the door, washing machine and a shelf kept getting in the way. Also, the Arctic temperatures meant that my shed padlock kept on jamming, so I had to boil a kettle of water, and pour some over the padlock to free it up again!

In the middle of the month, the Sun was busy, with at least 6 separate spot groups upon it.

Venus – Saturn Conjunction – 22 Jan

After a long hiatus, Venus is starting to reappear in the sky. This follows its poor showing last year when it was badly placed.

On the early evening of 22 January, I managed to see the Venus - Saturn Conjunction. They were about half a degree apart, with Saturn appearing "above" Venus. Both were easily visible in my telescope at 62X, and just about visible at 100X. Of course, Saturn was much dimmer than Venus, so it took some time for it to appear, even though my telescope!

Saturn is dimmer for several reasons. For one thing, it is much further away than Venus, and it also receives much less sunlight than Venus, which is much closer to the Sun. The Venusian clouds are also far more reflective. I was also able to see the pair with binoculars once it got a bit darker. Venus was nearly at full phase, being at about 92%, and just below 11' arcseconds in angular size.

Yet More Observations – 27 Jan

I have continued observing Comet C/2022 E3 (ZTF) on clear nights. It is the 44th comet that I have seen in nearly 40 years of Comet observations since I saw my first comet, Comet IRAS-Araki-Alcock, in May 1983!

Mars was still bright in the sky, but it is now getting hard to see features on it, as its angular size has now shrunk down to about 11' arcseconds. I could still see dark features, but it has now reached the point where they are merely discernible, rather than being able to see them as definite forms and shapes.

Night Sky Conditions 2022 – Ron Johnson

Those who attended the January EAS meeting will have seen Ron's customary presentation summarising the night sky conditions for the previous year. For those who missed out on it, or would like to study the statistics more closely, the following paragraphs and table provide a summary of the night sky condition during 2022.

The three classifications used are as follows:

Clear Night: No cloud in the sky throughout the period.
(Notionally dusk – 23.00UT)

Clear / Cloudy Night: passing from time to time with clear periods long enough to permit observations to be made.

Cloudy Night: Sky completely covered in cloud throughout the period.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Clear	5	6	8	3	4	3	5	9	2	2	0	5
Cle/Clo	8	3	3	8	6	4	6	8	6	9	13	5
Cloudy	18	19	20	19	21	23	20	14	22	20	17	21

Totals: Clear 52 Clear/Cloudy 79 Cloudy 234

Longest run of consecutive clear nights: 4 nights
24 – 27 February
7 – 10 December

Longest period between clear nights: 57 days
11 October – 6 December

Longest run of consecutive cloudy nights: 14 nights
18 July – 5 August

Best Month: August (9 + 8)

Worst Month: June (3 + 4)

Object of the month: The Horsehead nebula – Martin Howe

The horsehead nebula in Orion is one of the more iconic narrow-band imaging targets for Astrophotographers in the sky. Although it can be imaged with a DSLR from dark sky locations, it does respond extremely well to imaging with a narrowband hydrogen-alpha filter. These filters allow a narrow set of wavelengths through to the sensor and are centred on one of the prominent emission lines of ionised hydrogen atoms – 656 nanometres. Unfortunately, being near the far-red end of the visible spectrum, these wavelengths are not readily detectable by the human eye.

Although people often refer to the whole region as being the horsehead nebula, strictly speaking the nebula is just the dark silhouette that resembles the shape of a horse's head. The astronomer EE Barnard, among many of his other achievements, created a catalogue of dark nebulae (clouds of cold dark gas and dust), and the horsehead is number 33 in his catalogue and hence also (less well) known as Barnard 33.

The reason that the dark horsehead nebula shows up so well is that the gas and dust block the light from the large emission nebula in the background. This emission nebula, known by its separate catalogue designation of IC 434, is about 1,500 light years away, versus the horsehead nebula which is about 100 light years closer to us.

Like many other objects in the sky, such as the Andromeda galaxy and the California nebula, the wider emission nebula (IC 434) spans a large region of the sky – but unfortunately too faint to be seen with the naked eye. The image below has a scale attached showing a span of 30' – about the size of the full Moon. From this, it can be seen that the nebula spans a length of at least 3 full Moons!



This image of the horsehead nebula, with the nearby flame nebula, was taken on one of our society's visits to Ranmore Common last year. It was taken with a mono ATIK CCD camera attached to a 200mm Canon lens, with a hydrogen-alpha filter. This was mounted on a Skywatcher EQ5 Pro mount and autoguided using PHD2. The final image comprises of 10 eight-minute exposures.

FOR SALE

Over the years I have collected a number of pieces of kit which I no longer make full use of and so are up for sale. Please feel free to contact me at the monthly meeting or drop me an email on howem@hotmail.co.uk if you have any interest. I am happy to take a further 10% off if you buy more than one of these items (excluding the first two items which already have a joint discount)

1. Camera Tripod – Manfrotto 732CY carbon fibre (Boxed)

Carbon fibre tripod that I previously used with the StarAdventurer mount. Does not include a tripod head. **£40, or £60** including the separate tripod head below. Selling because I have upgraded to a new tripod. (Note this is a tripod only and does not include a tripod head)



2. Camera 3-way Tripod Head (Boxed, as new)

Boxed and as new (unused) **£30, or £60** including tripod above



3. Skywatcher Star Adventurer Pro Pack (Boxed)

Original model (not the more recent 2i (WiFi) model), with Pro extension pack (dovetail, L-bracket and counterweight for use with small telescopes), and ball-head mount for use with DSLRs ([Sky-Watcher Star Adventurer 2i Wifi Pro Pack | Wex Photo Video](#) – note this link is for the later (WiFi) model, but the basic functionality is similar to the original). Selling as I have just updated to the latest Star Adventurer mount. **£160**. Note, the tripod is not included, but I have used this mount very successfully on the tripod which is also for sale separately above.



4. Televue 0.8x Focal Reducer / Flattener (Boxed)

Focal reducer by Televue. Selling as I have three focal reducers but only need one! **£200**.

[TeleVue 0.8x Reducer/Flattener - Widescreen Centre \(widescreen-centre.co.uk\)](http://widescreen-centre.co.uk)



5. Revelation 203mm Ritchey-Chretien reflecting telescope (with padded soft-sided carry bag on wheels)

Reflecting telescope used no more than a couple of dozen times. Selling as I now prefer smaller more portable kit for wide-field astrophotography. Excellent condition, just a few marks on the dovetail bar. **£250**. No longer in production, but the model (with specifications) is shown in this link:

[Revelation Ritchey-Chretien RC 203/1624 OTA \(astroshop.eu\)](https://astroshop.eu/203/1624-OTA)



Note that the tube weighs 7.3 kg.

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 February – Nonsuch High School

Robin Scagell from the Society for Popular Astronomy (SPA) will give a talk on 'William Herschel and his Telescopes'.

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 20 February. 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