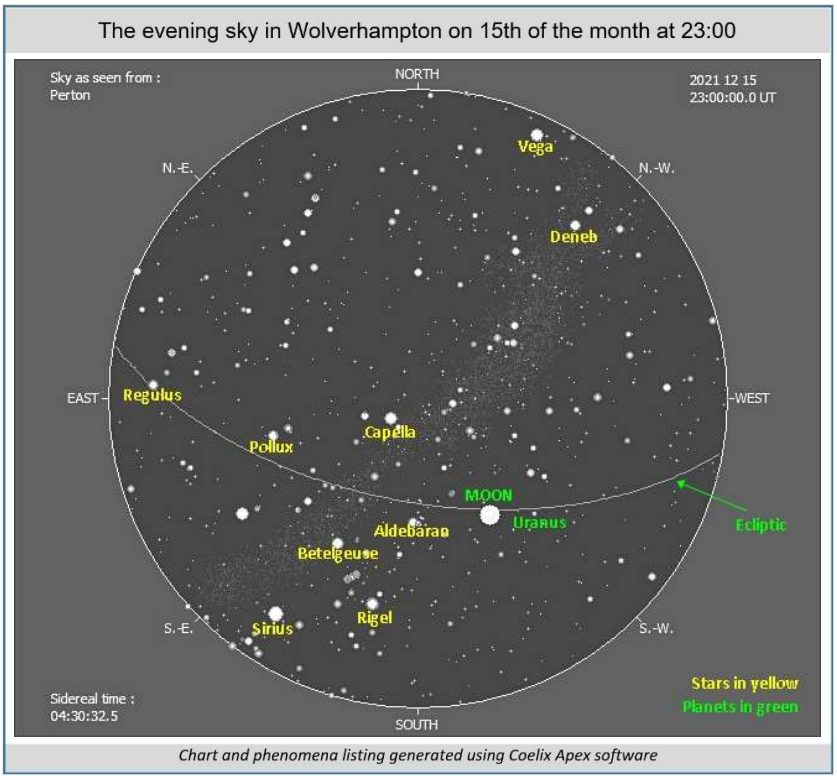
The Night Sky in January 2022
- a quick and easy guide



Perton Library Astronomy Group

Monthly Guide Compiled by Doug Bickley

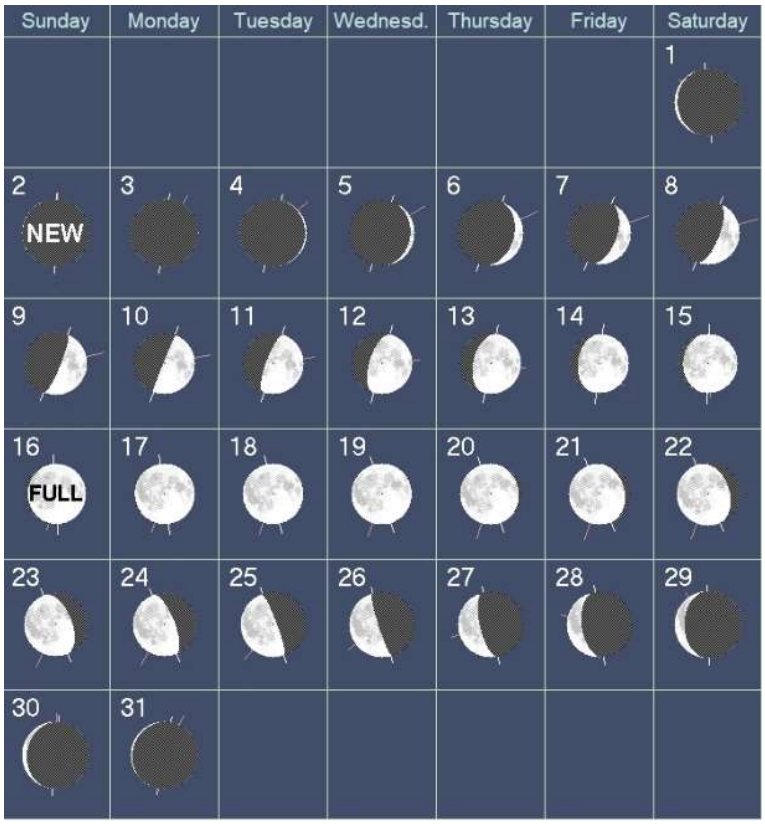
MOON PHASES	
New Moon	2 Jan
First quarter	9 Jan
Full Moon	17 Jan
Third (last) quarter	25 Jan

Moon:

On the right is my usual schematic of the Moon phases over the month of January.

Full Moon is on the 17 January, the Wolf Moon, named after the howling of hungry wolves (not many of those in Perton!) lamenting the scarcity of food in midwinter. Other names for this month's full moon include old moon and ice moon.

The Full Moon on 2 January will be a Super Full Moon - when the Full Moon or New Moon occurs near the Moon's closest approach to Earth, its perigee, it is often called a Supermoon. The Super New Moons, like any other New Moon, won't be visible from Earth, but the dark night skies will provide great opportunities for some night sky watching, especially around January 3, when the Quadrantids peak.



Space Diary

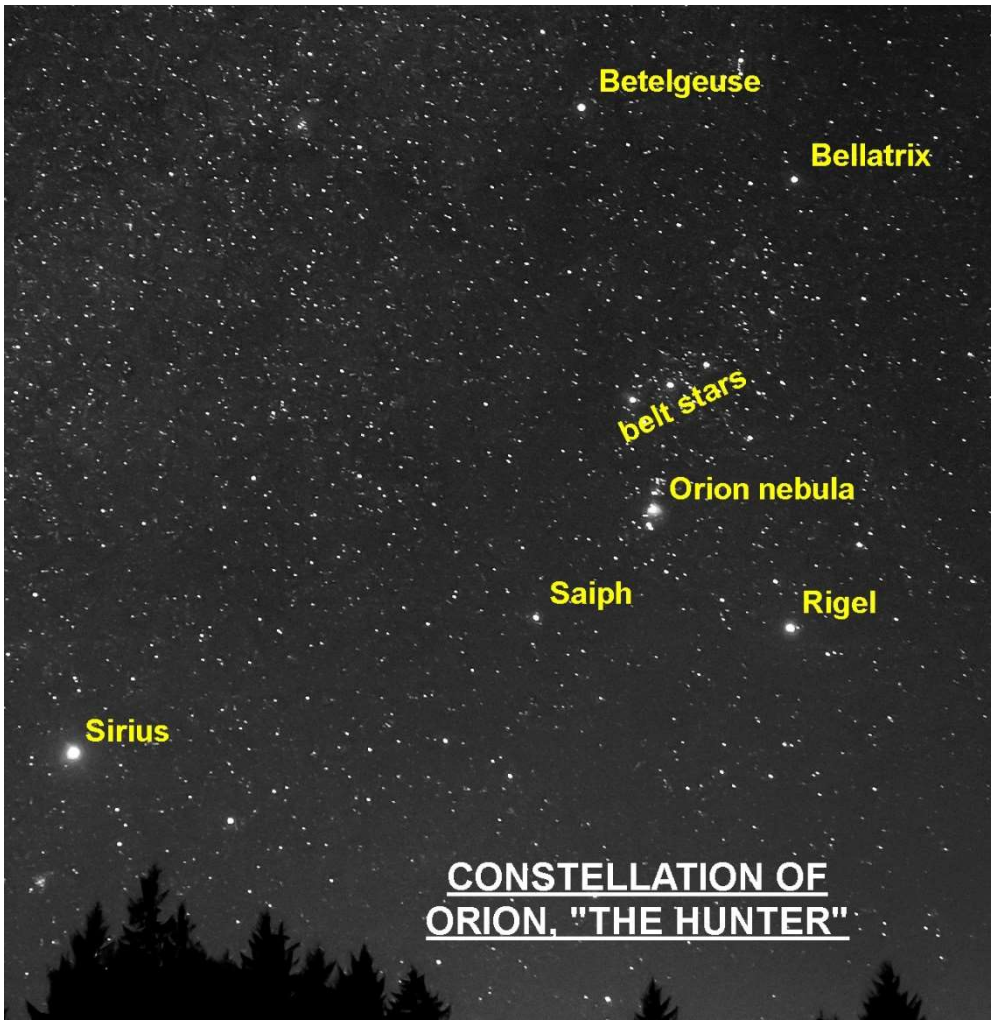
Events this month to look out for:

2 The New Moon arrives
3 Quadrantid meteor shower peak (very favourable) (see below)
4 Crescent Moon below Saturn and left of Mercury (evening twilight)
4 Happy perihelion day! Earth is closest to the sun today
5 Crescent Moon below Jupiter with Saturn and Mercury below right (evening twilight)
5 Conjunction of the Moon and Jupiter, waxing crescent moon will swing about 4.5 degrees to the south of Jupiter in the evening sky.
8 Mercury at greatest eastern elongation near Saturn (evening twilight)
Mercury reaches its greatest elongation from the sun in its current evening apparition. The innermost planet will be shining brightly at mag -0.6. Catch the elusive planet above the western horizon shortly after sunset. It will reach its highest altitude in the evening sky on 11 Jan.
12 Moon close to dwarf planet Ceres below the Pleiades M45 (evening)
12 Mercury closest to Saturn (evening twilight)
13 Moon above Hyades and Pleiades (evening)
17 The full moon of January, known as the Wolf Moon, arrives
29 Crescent Moon right of Mars and Venus (morning twilight)
This conjunction will have the waning Crescent Moon pass just 2.4 degrees north of the Red Planet. Look for the pair in the dawn sky in the constellation Sagittarius

The winter night sky is a fascinating reminder of the vast distances to the celestial objects we can see, often it is a humbling experience to spend a quiet time gazing at the night sky.

Sirius, whose name derives from the Greek word for 'glowing', is the brightest star in our night sky. It is nearly twice the size of our own Sun, and sits just eight light-years away.

Brighter stars, however, are not necessarily closer to us, the distance to Orion's bright red giant star Betelgeuse is around 700 light-years away, while the three stars of Orion's belt, Alnitak, Alnilam and Mintaka, and the Orion nebula, are all around 1,300 light-years away.



Planets this month:

Here is the usual run down of planetary movements for the month of January:

Jupiter is in the SW in Aquarius, at an altitude of around 23°. It is still a bright evening planet, visible from 5pm shining at mag. -2.0 at the start of the month above the SSW horizon. On the evenings of 5 and 6 January a waxing crescent Moon passes near the planet. By the end of the month Jupiter appears against the dusk twilight as opportunities to see it in the evening draw to a close.

Saturn is the SW in Capricornus at an altitude of 12°, still an evening planet, but now will be affected by the evening twilight glow. On 5 January mag. +0.9 Saturn is joined by mag. -0.6 Mercury and a thin 5%-lit waxing crescent Moon, about 80 minutes after sunset. Venus is there too, but closer to the Sun. On this day Mercury and Saturn appear similar in brightness, so good luck if you are planning an observation.

Mars is in the SE in Sagittarius at an altitude of 6°. It is a morning planet at the start of 2022, rising two hours before the Sun on the 1st when mag. +1.5 Mars lies 5.5° from bright star Antares. This offers a good opportunity to compare Mars with its mag. +1.0 stellar rival. Antares means “opponent to-Mars" due to its reddish hue, it is a giant red binary star, the brightest in the constellation Scorpio, about 424 light years from Earth.

Venus is the SE in Sagittarius at an altitude of 9°, and the planet is in its crescent phase this month which is a lovely sight if you manage to see it. You will need to look early in the month and try to catch it as early as you can after sunset, as it is heading for inferior conjunction on 9 January. This phenomenon occurs when an inferior planet passes between the Earth and the Sun. It is often impossible to observe the planet close to inferior conjunction, because it is hidden by the glare of the Sun, so as always be careful with your observations. Following inferior conjunction on the 9th, Venus rapidly re-emerges into the morning sky. At the start of the month the crescent is around 2% phase this month but this increases to 14% at month end.

Mercury is still in the SW in Capricornus at an altitude of 8°, shining at mag. -0.7 in the evening twilight at the month's start when it sets, with Venus, about 80 minutes after sunset. It reaches greatest eastern elongation on the 7th, setting 100 minutes after the Sun, but dimming to mag. -0.5. The dimming continues and on the 12th, now shining at mag. +0.4, Mercury appears 3.4° from mag. +0.9 Saturn.

Uranus is in the South in Aries at an altitude of 52°. At the start of the month it is well placed but viewing deteriorates towards the month end. Uranus shines on the edge of naked-eye visibility at mag. +5.7 but should easily be spotted with binoculars or a small telescope.

Neptune is still in the SSW in Aquarius at an altitude of 30°, shining at mag. +7.9 as darkness falls, Its altitude decreases over the month and you will need good binoculars or a medium sized telescope along with good seeing conditions.

Meteor Showers: Quadrantids

The Quadrantids is an above average shower, it is thought to be produced by dust grains left behind by an extinct comet known as 2003 EH1, which was discovered in 2003.

The shower is visible annually in early January and this year peaks on the night of the 2nd and morning of the 3rd. The shower will peak close to new moon, and so moonlight will present minimal interference but best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Boötes, but can appear anywhere in the sky.

At its peak, the shower is expected to produce a “nominal” rate of around 120 meteors per hour (ZHR). However, this zenithal hourly rate is calculated assuming a perfectly dark sky and that the radiant of the

shower is situated directly overhead. In practice, any real observing sight will fall short of these ideal conditions. The number of meteors you are likely to see is thus lower than this and I have seen estimates of around 40 per hour.

Follow our guidelines for meteor observations in the August 2021 edition of this guide.

International Space Station (ISS) forecast time for evening passes visible this month.

The last week of January provides an excellent opportunity to see the ISS as it orbits our planet at around 27,700km (17,200m) per hour. I've picked out the brightest, highest passes across the sky, but you can visit the heavens-above website to see a complete list of passes.
[source: https://www.heavens-above.com/]

Date	Mag	Transit time	Start			High point	End		
			Time	Alt.degs.	Az.		Time	Alt.degs.	Az.
22-Jan	-3.0	02:44	18:57	10°	WSW	46°	18:59	46°	SSW
23-Jan	-3.0	04:35	18:09	10°	SW	41°	18:13	26°	ESE
24-Jan	-2.5	06:02	17:21	10°	SW	31°	17:27	10°	E
24-Jan	-3.5	03:04	18:57	10°	WSW	66°	19:00	66°	SW
25-Jan	-3.6	04:59	18:09	10°	WSW	63°	18:14	26°	E
26-Jan	-3.2	06:32	17:21	10°	WSW	51°	17:27	10°	E
26-Jan	-3.7	03:13	18:57	10°	W	75°	19:00	75°	SW
27-Jan	-3.7	05:11	18:09	10°	W	76°	18:14	25°	E
28-Jan	-3.6	06:42	17:21	10°	WSW	71°	17:27	10°	E
28-Jan	-3.6	03:24	18:57	10°	W	65°	19:01	65°	S
29-Jan	-3.7	05:28	18:09	10°	W	73°	18:14	21°	ESE
30-Jan	-3.0	03:44	18:57	10°	W	44°	19:01	40°	S
31-Jan	-3.2	05:57	18:09	10°	W	55°	18:15	15°	ESE

Phenomena of the month of January *(generated using Coelix Apex software)*:

	Date	Hour	Description of the phenomenon
	yyyy mm dd	hh:mm	
1	2022 01 01	22:59	Moon at perigee (geocentric dist. = 358033 km)
2	2022 01 02	18:33	NEW MOON
3	2022 01 03	13:23	Meteor shower : Quadrantids (110 meteors/hour at zenith; duration = 16.0 days)
4	2022 01 03	17:55	Close encounter between the Moon and Pluto (topocentric dist. center to center = 3.2°)
5	2022 01 04	02:01	Close encounter between the Moon and Mercury (topocentric dist. center to center = 3.6°)
6	2022 01 04	20:31	Close encounter between the Moon and Saturn (topocentric dist. center to center = 4.6°)
7	2022 01 06	02:55	Close encounter between the Moon and Jupiter (topocentric dist. center to center = 4.7°)
8	2022 01 07	13:13	Close encounter between the Moon and Neptune (topocentric dist. center to center = 4.6°)
9	2022 01 09	00:48	INFERIOR CONJUNCTION of Venus with the Sun (geoc. dist. center to center = 4.9°)
10	2022 01 09	18:11	FIRST QUARTER OF THE MOON
11	2022 01 11	11:59	Close encounter between the Moon and Uranus (topocentric dist. center to center = 2.2°)
12	2022 01 13	23:47	Close encounter between the Moon and Aldebaran (topocentric dist. center to center = 5.9°)
13	2022 01 14	09:27	Moon at apogee (geocentric dist. = 405805 km)
14	2022 01 15	19:31	Close encounter between the Moon and M 35 (topocentric dist. center to center = 1.3°)
15	2022 01 16	14:49	CONJUNCTION between Pluto and the Sun (geoc. dist. center to center = 1.7°)
16	2022 01 17	23:48	FULL MOON
17	2022 01 23	10:28	INFERIOR CONJUNCTION of Mercury with the Sun (geoc. dist. center to center = 3.3°)
18	2022 01 25	13:41	LAST QUARTER OF THE MOON
19	2022 01 26	05:48	Close encounter between Mars and M 8 (topocentric dist. center to center = 0.5°)
20	2022 01 29	05:59	Close encounter between Mercury and Pluto (topocentric dist. center to center = 5.2°)
21	2022 01 29	16:29	Close encounter between the Moon and Mars (topocentric dist. center to center = 3.1°)
22	2022 01 30	07:09	Moon at perigee (geocentric dist. = 362252 km)
23	2022 01 31	03:19	Close encounter between the Moon and Pluto (topocentric dist. center to center = 3.2°)

PERTON LIBRARY ASTRONOMY GROUP (PLAG)

In the December meeting on Thursday 16 at the library I gave a talk on the Star of Bethlehem. The next meeting will be held on Thursday 20 January, we have not decided on a theme, but if the skies are clear we may try to do some observing, subject to the library doing a Covid risk assessment. If not there will be a presentation and discussions, and don't forget beginners always very welcome. Unfortunately the library are still limiting numbers so if you wish to attend please contact the library and book your place.

WOLVERHAMPTON ASTRONOMICAL SOCIETY LECTURES

We are continuing with our programme of online lectures and will supplement these with "in person" meetings for astronomical events, so keep an eye on our social media for announcements. We also have regular Monday evening chat nights on Zoom throughout the year, the first 30 minutes for beginners to ask questions, in these sessions we give basic astronomy advice and swap tips, sometimes with a short talk.

Invitations to all talks are emailed to members. For the coming year Wolvas subscription remains a bargain at £10 per annum and you can sign up now our website www.wolvas.org.uk and pay your subscription by bank transfer or other means (see website).

Lectures online will only be available to paid-up members of Wolverhampton Astronomical Society. We continue to try and bring you some of the best speakers around and we have an exciting line up for the coming season. Our programme of speakers for the remainder of the 2021/22 season is shown below and plans are well under way for the next season.

Lectures for the 2021/22 season:

10/01/22	Prof Rene Breton	Cosmic Fireworks
24/01/22	Dr Julian Onions	Crazy Interstellar Rockets
07/02/22	Steve Clifton	Astrophotography Then and Now
21/02/22	Mike Frost	Against the Odds: A Patagonian Eclipse
07/03/22	Prof Fran Bagenal	NASA's mission to Juno – Extended! Annual free public Paul Pope Lecture, from the University of Colorado
21/03/22	Pete Williamson	The Moons of our Solar System
11/04/22	Paul Fellows	Fire & Ice: The Volcanic Worlds of the Solar System
16/05/22	Damian Hardwick	The Life of Albert Einstein
13/06/22	Katrin Raynor-Evans	Exploring Astronomy & Space through Philately

Watch out for updates

As well as our webpage www.wolvas.org.uk we will be posting details of events on social media, so keep an eye on our Facebook (https://www.facebook.com/wolvasuk) and Twitter (https://twitter.com/wolvasuk) accounts for the latest updates and news.