

St Benedict's NIGHT SKY NEWS – Feb 2023

St Benedict's is a member of the **SOCIETY FOR POPULAR ASTRONOMY** and receives regular newsletters regarding astronomical events and information. If you would like to be included on the mailing list for these, please contact JGregory@st-benedicts.suffolk.sch.uk

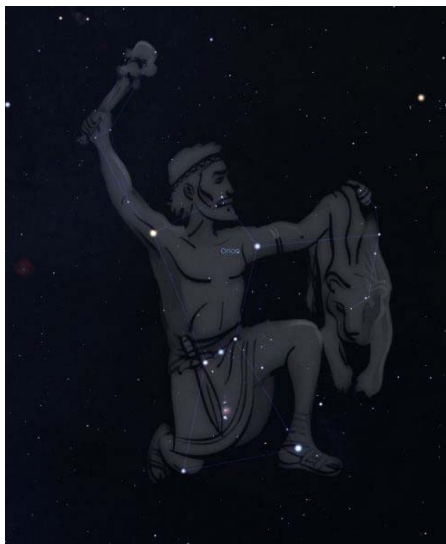
STARS IN YOUR EYES

During the months of February and March “classical” stargazers are spoilt for choice when it comes to the southern sky. Here we can see some of the brightest stars visible to us in the northern hemisphere – **Capella, Rigel, Procyon, Betelgeuse, Aldebaran, Pollux...**and the brightest of all, Sirius. There is one constellation that stands out from all the rest and is possibly the most recognisable of all constellations – the mighty **ORION**.

Mid-month, at 7pm, it will be riding high in the sky due south. The constellation Orion contains two of the ten brightest stars in the sky – **Rigel** (Beta Orionis) and **Betelgeuse** (Alpha Orionis) and a number of famous nebulae, the best known one being the **Orion Nebula** (Messier 42).

Rigel is the brightest star in the constellation. With an apparent magnitude of 0.18, it is also the sixth brightest star in the sky. It gets its name from the Arabic phrase *Riġl Ġawza al-Yusra*, meaning “the left foot of the central one”. Rigel is actually a triple-star system and what we see is the brightest one, Rigel A, which is classified as a **blue supergiant**. It is 17x the mass of our own Sun and 85,000x brighter.

Betelgeuse is the second brightest star in Orion and the eighth brightest star in the sky. It is a **red supergiant**, the colour being easily apparent when you compare it with the blue-white Rigel. This red supergiant is one of the largest stars known but its size cannot be accurately determined as it changes continually, as does its brightness. Betelgeuse is believed to be about 10 million years old, which is not much for a red supergiant, but the star is thought to have evolved very rapidly because of its enormous mass. It will likely end its life as a supernova in the next million years. When it does, it will be easy to find in the sky, not just at night, but also in broad daylight. At its current distance from the solar system, the supernova would shine brighter than the Moon and be the brightest ever recorded supernova in history.



The Orion constellation has a chequered mythology, with many stories from a number of ancient cultures. Probably the most well-known is from ancient Greece: In Greek mythology, the hunter Orion was the most handsome of men. He was the son of the sea god Poseidon and Euryale, the daughter of King Minos of Crete. In Homer's *Odyssey*, Orion is described as exceptionally tall and armed with an unbreakable bronze club. In one myth, Orion fell in love with the Pleiades, the seven sisters, daughters of Atlas and Pleione. He started pursuing them and Zeus scooped them up and placed them in the sky. The Pleiades are represented by the famous star cluster of the same name, located in the constellation Taurus (above and to the right of Orion). Orion can still be seen chasing the sisters across the sky at night.

Most myths about Orion's end involve a scorpion, but the stories differ from one mythographer to another. In one tale, Orion boasted to the goddess Artemis and her mother Leto that he could defeat any beast on earth. The Earth Goddess heard him and sent a scorpion, which stung the giant.

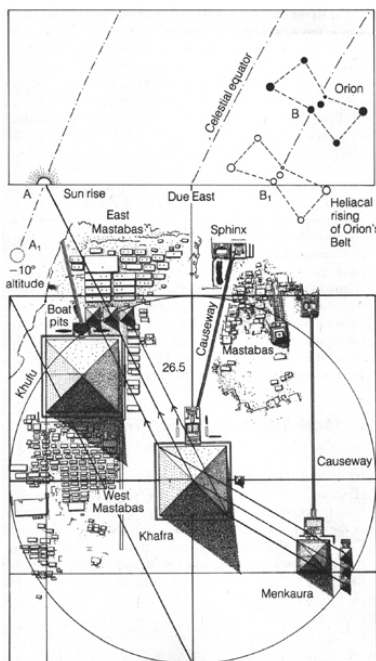
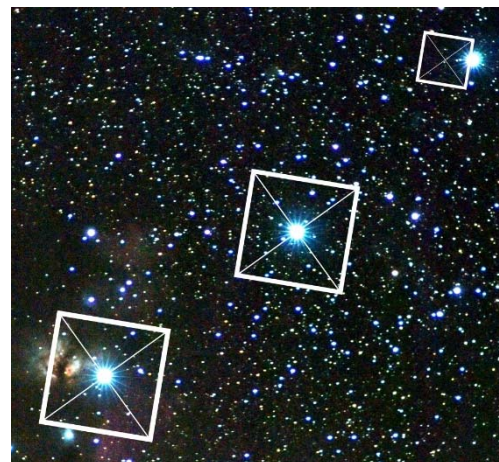
(Images are courtesy of Stellarium)

The Orion constellation is also prominent in ancient Egyptian mythology and this has given rise to a controversial theory surrounding the placement of the Great Pyramids and the Sphinx on the Giza plateau outside Cairo, particularly in relation to the three stars of Orion's Belt and the three pyramids.

The ancient Egyptians believed that the gods descended from the three stars of Orion's Belt, and the bright star Sirius in Canis Major. Orion was originally regarded as the god Sah (Sahu), the "father of the gods", with Orion's Belt imagined as a crown upon his head, while the star Sirius was his wife Sopdet (Sothis), a fertility goddess whose earliest depictions were either as a reclining cow with a flower between its horns, or as a woman wearing a tall crown adorned with a five-pointed star. Sah and Sopdet were later referred to the deities Osiris and Isis.

At the Giza Pyramid Complex there are three main pyramids: those of Khufu (or Cheops), Khafre and Menkaure. They are not positioned in a straight line, with the smallest and most westerly of the three, Menkaure, slightly offset. Given the importance of the Orion constellation to the ancient Egyptians, people started to remark on how the offset alignment of the three pyramids closely matched the offset alignment of the three stars of Orion's belt – from left to right: Alnitak, Alnilam and Mintaka. One author in particular, Robert Bauval, published a theory in 1989 that the alignment of the Great Pyramids was a deliberate act of construction to mirror the alignment of the three stars in Orion's Belt. This observation, and others, led Bauval to his **Orion Correlation Theory**.

Representation of the central tenet of the Orion correlation theory: the outline of the Giza pyramids superimposed over a photograph of the stars in Orion's Belt.



The theory posits that there is a correlation between the location of the three largest pyramids of the Giza pyramid complex and Orion's Belt and that this correlation was intended as such by the original builders of the Giza pyramid complex. The stars of Orion were associated with Osiris, the god of rebirth and afterlife by the ancient Egyptians. Depending on the version of the theory, additional pyramids can be included to complete the picture of the Orion constellation, and the Nile river can be included to match with the Milky Way.

Bauval also includes the nearby Sphinx in his theory: that the construction of the Great Sphinx was begun in 10,500 BC; that the Sphinx's lion-shape is a definitive reference to the constellation of Leo; and that the layout and orientation of the Sphinx, the Giza pyramid complex and the Nile River are an accurate reflection or "map" of the constellations of Leo, Orion (specifically, Orion's Belt) and the Milky Way, respectively.

It must be noted that there is much to *critique* in the Orion Correlation Theory and that it is not widely accepted among archaeologists. The proposed correlations that form the main tenets of the theory have been dismissed as a form of *pseudoarchaeology*.

Nevertheless, it does make an interesting story and, who knows, there may be some truth in it somewhere?

THE MOON THIS MONTH

PHASE

Full Moon	5th
3rd Quarter	13th
New Moon	20th
1st Quarter	27th



The Full Moon in February is known as the **SNOW MOON**, named after the snow on the ground in the Northern Hemisphere. Some North American tribes named it the **Hunger Moon** due to the scarce food sources and hard hunting conditions during mid-winter, while others named it the **Storm Moon**.

Names for this month's Moon have also historically had a connection to animals. The Cree traditionally called this the **Bald Eagle Moon** or **Eagle Moon**. The Ojibwe **Bear Moon** and Tlingit **Black Bear Moon** refer to the time when bear cubs are born. The Dakota Indians also call this the **Raccoon Moon**, certain Algonquin peoples named it the **Groundhog Moon**, and the Haida named it **Goose Moon**.

Black Moon is not a well-known astronomical term. Because February is the shortest month of the year, about once every 19 years it does not have a Full Moon. Instead, there are two Full Moons in January and March, also known as a double Blue Moon. The next Black Moon by this definition will occur in 2037, while the last one was in 2018. Because of time zone differences, these Black Moons may not happen all over the world.

THE PLANETS THIS MONTH

MERCURY: Will be invisible in the twilight.

VENUS: Will become a bright “evening star” as the month goes on. Will be seen closing on Jupiter on the 28th.

MARS: Well-placed and good altitude throughout the month when due south.

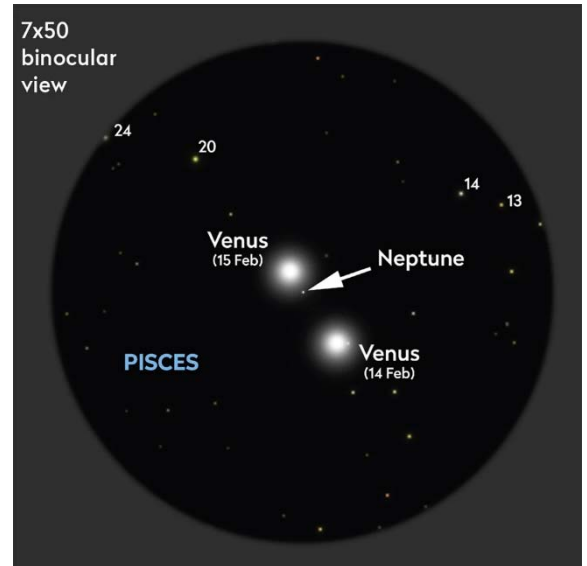
JUPITER: Bright evening planet, loses altitude throughout the month. Near Venus on the 28th.

SATURN: In its orbit around the Sun, Saturn is now on the other side of the Sun in our view – known as *superior conjunction* – it will therefore not be visible this month.

HAVE A GO AT SPOTTING NEPTUNE!

Although the *News* is primarily for naked-eye astronomy, occasionally it is worth getting out some modest binoculars – 7x40/50 or 8x40/50 will do nicely – and this month there is a good opportunity to have a go at spotting a planet that you would never be able to see with the naked eye: **NEPTUNE**. Even with binoculars it is easy to miss the planet among the general background of stars; however, if you have a bright object very close by, this can act as the perfect guide. This month there is just such an opportunity: at around 6.30pm on 15th February the planet Venus, bright and low in the west after sunset, will be very close to Neptune in the sky. At magnitude 8 it will be invisible to the naked eye but, using Venus as your guide, you should be able to spot it through binoculars, provided the sky is clear and dark.

The diagram on the right gives you an idea of the binocular view and the proximity of Neptune to Venus. Note that it will also be fairly close on the 14th too.



METEORS THIS MONTH

There are no major meteor showers this month. However, the Earth is constantly passing through bits of ice and rock as it orbits the Sun, so you can spot a single meteor at any time if you're lucky.

ISS SIGHTING TIMETABLE

The following ISS sightings are possible from Tue Jan 31, 2022 through Sun Feb 5, 2023.

[Newmarket, England, United Kingdom](#) | [Sighting Opportunity](#) | [Spot The Station](#) | [NASA](#)

Date	Visible	Max Height*	Appears	Disappears
Tue Jan 31, 6:18 PM	6 min	36°	10° above W	14° above SE
Wed Feb 1, 5:29 PM	7 min	48°	10° above W	10° above SE
Wed Feb 1, 7:07 PM	4 min	14°	10° above WSW	11° above S
Thu Feb 2, 6:18 PM	5 min	20°	10° above W	10° above SSE
Fri Feb 3, 5:30 PM	6 min	28°	10° above W	10° above SSE
Sun Feb 5, 5:31 PM	4 min	15°	10° above WSW	10° above S

PRINCIPAL SOURCES OF INFORMATION

<https://www.constellation-guide.com/constellation-list/orion-constellation/>

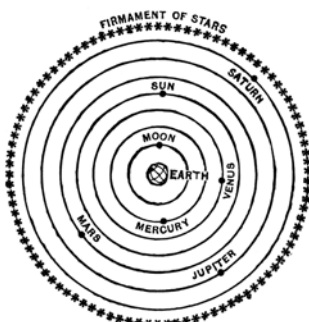
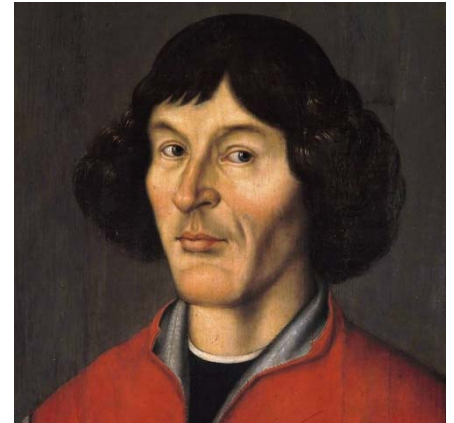
<https://www.timeanddate.com/moon/phases/@2654186>

<https://www.skyatnightmagazine.com/advice/skills/astronomy-guide-viewing-planets-night-sky/>

ALL OUR YESTERDAYS

THIS MONTH – 550 YEARS AGO

On the 19th February 1473 one of the world's greatest astronomers and mathematicians was born in what was then the Crown of the Kingdom of Poland - **NICOLAUS COPERNICUS**. Also described as a *polyglot* (he spoke many languages) and a *polymath* (an individual whose knowledge spans a substantial number of subjects), he obtained a doctorate in canon law and was a mathematician, astronomer, physician, classics scholar, translator, governor, diplomat, and economist. In the science of astronomy he is forever associated with his proposition of **HELIOCENTRISM** – the theory that put the Sun, rather than Earth, at the centre of the Solar System and further dismissed the idea that the Earth was at the centre of the Universe.



The predominant description of the Universe in many European ancient civilizations, such as those of Aristotle (384-322 BC) in Classical Greece and Ptolemy (100-170 AD) in Roman Egypt, placed the Earth at the centre and was described as **GEOCENTRISM**. It is interesting to note that Aristotle's idea did not go unchallenged – another Greek philosopher, Aristarchus of Samos (310-230 BC), was the first to propose an alternative: the first known heliocentric model that placed the Sun at the centre of the known Universe, with the Earth revolving around the Sun once a year and rotating about its axis once every day.

However, the so-called Ptolemaic Geocentric Model persisted into the Middle Ages until Copernicus came along. Having completed all his studies in Italy, the 30-year-old Copernicus returned to Poland in 1513, where he would live out the remaining 40 years of his life. It was while he was in Italy that he began pondering the movements of the Sun, stars and planets across the sky and he continued this after he returned to Poland. He made astronomical observations, such as viewing Mars, Saturn and the Earth's eccentricity in relation to the movement to the stars. These observations continued to inform and develop his heliocentric view of the universe. Sometime before 1514, Copernicus wrote an initial outline of his heliocentric theory known only from later transcripts.

Over later years Copernicus shared his radical ideas and observations in private letters but held back from publishing because he feared receiving criticism and scorn for his revolutionary new theories. In particular, he was aware of his position within the Catholic Church. He was very reluctant to publish, despite some favourable interest shown by friends and even the Pope and Catholic cardinals in the Vatican. Eventually, in 1532, Copernicus finished writing his life's great work that he would publish in 1543: ***Dē revolutionibus orbium coelestium***. The major points of the work included:

"The sun is not inappropriately called by some people the lantern of the universe, its mind by others, and its ruler by still others. The Thrice Greatest labels it a visible god, and Sophocles' Electra, the all-seeing. Thus indeed, as though seated on a royal throne, the sun governs the family of planets revolving around it."

1. There is no one centre of all the celestial circles or spheres.
2. The centre of the earth is not the centre of the universe, but only of gravity and of the lunar sphere.
3. All the spheres revolve about the sun as their midpoint, and therefore the sun is the centre of the universe.

Encouraged by friends, students and elements within the Church, he finally published in 1543, the year of his death. He died on 24 May 1543 – one story says that on the very day he died, he awoke from a coma to view his life's work finally printed – before dying peacefully in his sleep.

