

St Benedict's

NIGHT SKY NEWS – Nov 2022

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

With the clocks going back an hour on 30th October everything gets put back, including the sunset. With the Sun setting between 4 and 5pm during November, the evening sky will become nicely dark quite early – well before bedtime! Between now and March are the best months for stargazing, as the cold winter skies become clear.

The featured constellation this month is another that is relatively dim and easily overlooked, **ANDROMEDA**. However, it has a wonderful story to tell in myth and legend and will also lead us to the only galaxy, other than our own Milky Way, that we can see with our naked eyes – the **ANDROMEDA GALAXY**. Stand looking south at about 8pm and move your gaze upwards from the horizon. You will notice a bright “star” almost halfway up the sky – this is actually the planet **Jupiter**.

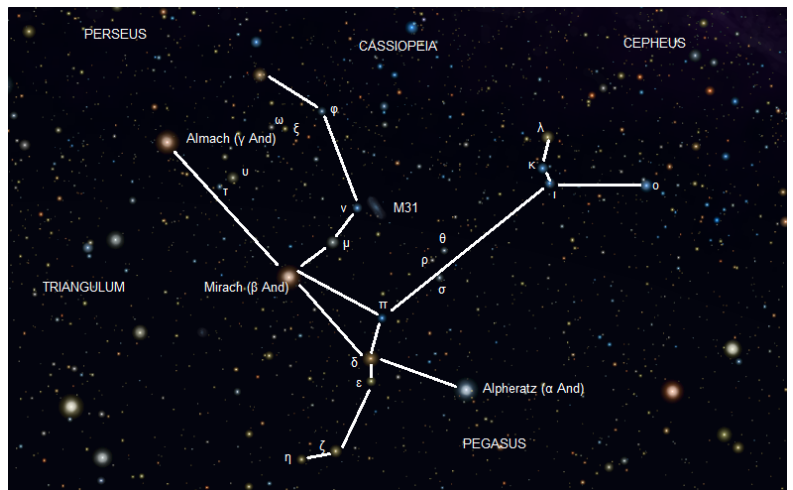


Move up again and you will see the “Great Square of Pegasus” – 4 bright stars that form part of that constellation. Use the top left star of the square and move on up and to the left (east) – you will now be moving into the constellation of **ANDROMEDA**.

Andromeda is one of the 48 Greek constellations, first listed in Claudius Ptolemy's *Almagest* in the 2nd century CE.

The constellation was named after the mythical princess Andromeda, the daughter of Queen Cassiopeia and wife of the Greek hero Perseus. It is also known as the Chained Maiden, Persea (wife of Perseus), or Cepheis (daughter of Cepheus).

Andromeda has three stars brighter than magnitude 3.00, the brightest being *Alpha andromedae*, also known by its traditional name, **Alpheratz**. This star is also the top left star of the square mentioned above.



Andromeda belongs to the Perseus family of constellations, along with Auriga, Cassiopeia, Cepheus, Cetus, Lacerta, Pegasus, Perseus, and Triangulum.

Andromeda is most famous for being home to the great **ANDROMEDA GALAXY**. In official catalogues it is known as **M31**, and **NGC224**. The following article is taken from the October 2021 issue of *Night Sky News* and describes the Andromeda Galaxy and the “Andromeda Myth”.....

In November, the Andromeda galaxy (M31) is visible high in the southern sky in mid-evening. Autumn and winter evenings are good for viewing the Andromeda galaxy. Although it is visible to the naked eye, it is not a bright object (mag 3.5) and you will need a clear, dark (moonless) sky with minimal light pollution. You will also need to know where to look. To do this you can use the constellation PEGASUS to “star hop” to it.

In the evening, the Andromeda galaxy is visible almost overhead standing looking south:

Find the square of Pegasus. Start at the top left star of the square - Alpha andromedae - and move two stars to the left and up a bit. Then turn 90 degrees to the right, move up to one reasonably bright star and continue a similar distance in the same direction. If there is a really dark sky, you will see it with your unaided eye; however, a small pair of binoculars will help. It will not appear as a pinpoint of light, like a star, but as a fuzzy smudge.

It is often referred to as M31, being the 31st on a famous list of fuzzy objects compiled by the French astronomer Charles Messier (1730-1817). In the modern astronomical catalogue it is NGC224.

The Andromeda and our own Milky Way galaxy reign as the two most massive and dominant galaxies within the Local Group of Galaxies, of which Andromeda is the largest.



Andromeda and the Milky Way are actually heading on a collision course that will alter the structure of the two galaxies forever. The galaxies are rushing closer to one another at about 70 miles per second (112 kilometres per second). Astronomers estimate that Andromeda will collide with the Milky Way in 4 billion years, with the merger concluding 6 billion years from now. By that time, the sun will have swollen into a red giant and swallowed up the terrestrial planets, so Earth will have other things to worry about.

Like many of the heavenly bodies that we can see in the night sky, planets/moons/stars/constellations, the Andromeda galaxy takes its name from Ancient Mythology, in this case GREEK MYTHOLOGY. It is so-named because it lies in the small, faint constellation named Andromeda, one of 48 listed by the Greco-Roman astronomer, PTOLEMY, in the 2nd century.

In 964, the Persian astronomer Abd al-Rahman al-Sufi described the galaxy as a "small cloud" in his "Book of Fixed Stars," the first known report of our nearest neighbour. When Charles Messier labelled it M31 in 1764, he incorrectly credited the discovery of what was then called a nebula to the German astronomer, Simon Marius, who provided the first telescopic observation of the object. The first photographs of Andromeda were taken in 1887, by Isaac Roberts.

ANDROMEDA was the daughter of CASSIOPEIA, Queen of Ethiopia, who bragged that her daughter was more beautiful than the NEREIDS, sea nymphs said to be blessed with godly beauty. Offended by this the sea nymphs asked the sea-god POSEIDON to punish the country of Ethiopia. Andromeda's father, the king CEPHEUS, was told that the only way to save his country was to sacrifice his daughter to the great sea monster, CETUS. Cepheus did this by stripping his daughter bare and chaining her to a rock by the sea. She was eventually saved by the hero PERSEUS who appeared on his winged horse, PEGASUS, and killed the sea monster with his diamond sword.



Note that many of the names, in addition to Andromeda, are also given to constellations in this region of the sky, all dedicated to the PERSEUS MYTH.

The picture on the right is a painting by the 19th century English painter FREDERIC LEIGHTON – it shows Andromeda chained to a rock at the mercy of the sea monster Cetus, but about to be saved by Perseus arriving on his winged horse Pegasus.

THE MOON THIS MONTH

PHASE

New Moon	25 th (October)
1st Quarter	1 st
Full Moon	8 th
3rd Quarter	16 th
New Moon	23 rd
1st Quarter	30 th



In ancient times, it was common to track the changing seasons by following the lunar month rather than the solar year, which the 12 months in our modern calendar are based on. For millennia, people across Europe, as well as Native American tribes, named the months after features they associated with the Northern Hemisphere seasons, and many of these names are very similar or identical.

Today, we use many of these ancient month names as Full Moon names. A common explanation is that Colonial Americans adopted many of the Native American names and incorporated them into the modern calendar. However, it seems that it is a combination of Native American, Anglo-Saxon, and Germanic month names which gave birth to the names commonly used for the Full Moon today.

The Full Moon in November is the **BEAVER MOON**, named after beavers who build their winter dams at this time of year. The beaver is mainly nocturnal, so they keep working under the light of the Full Moon. Other names for the November Full Moon are **Frost Moon**, **Trading Moon**, and **Snow Moon**. Traditionally, the last Full Moon before the winter solstice in December has also been named **Mourning Moon**. The astronomical seasons do not match up with the lunar months. Therefore, the month of the Mourning Moon varies. Some years, the Mourning Moon is in November, while other years, it is in December.

THE PLANETS THIS MONTH

MERCURY: Not visible this month.

VENUS: Venus will be lost in the glare of the morning twilight.

MARS: Rises in the north east just before 6pm and is visible throughout the night as it passes to the south. At magnitude -1.5, this is a good opportunity to view the “Red Planet”.

JUPITER: Becomes visible above the eastern horizon at around 4.30pm not long after sunset Although it is past its closest approach to us, and hence its brightest appearance, it is still unmistakably bright at magnitude -2.7. At around 8pm it will be high in the sky to the south.

SATURN: Further to the south than Jupiter, Saturn becomes visible around an hour later. At magnitude +0.7 it is not as bright as Jupiter or Mars, but will still be easy to spot.

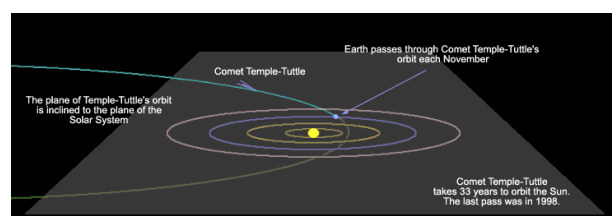
METEORS THIS MONTH

There are two meteor showers this month, although both are relatively minor. First to peak are the **NORTHERN TAURIDS** on 12-13 November, but with a rate of only about 5 per hour. Later in the month, the **LEONIDS** peak on the 17-18 Nov. The Leonids are associated with the trail of debris left by the comet **Tempel-Tuttle** and can produce fast, bright meteors. In the past their rate has sometimes exceeded 1000 per hour, but this year the estimated peak is only around 10 per hour. Observing this month’s meteors will be impeded by a bright, third quarter Moon.

The comet’s full name is **55P/Tempel-Tuttle**. It was discovered twice independently, in 1865 and 1866, by Ernst Tempel and Horace Tuttle, respectively. The “P” indicates that it is a “periodic” comet, ie., it orbits the Sun so returns on a regular orbital basis.

Comet Tempel-Tuttle is a small comet—its nucleus measures only about 2.24 miles (3.6 kilometres) across. It takes Tempel-Tuttle 33 years to orbit the sun once. Tempel-Tuttle last reached perihelion (closest approach to the Sun) in 1998 and will return again in 2031. When comets come around the Sun, the dust they emit gradually spreads into a dusty trail around their orbits.

Every year the Earth passes through these debris trails, which allows the bits to collide with our atmosphere where they disintegrate to create fiery and colourful streaks in the sky – meteors.



ISS SIGHTING TIMETABLE

For an up-to-date timetable of ISS sightings, please use the link below:

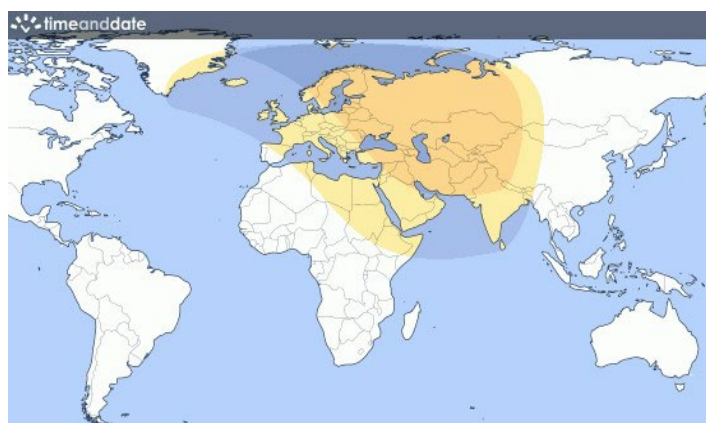
https://spotthestation.nasa.gov/sightings/view.cfm?country=United_Kingdom®ion=England&city=Newmarket#.YwCmOy7MKUk

ECLIPSE REPORT – partial solar eclipse 25th October

The weather was kind to us on the morning of Tuesday 25th, the clouds were broken and fast moving so we were able to get a good view of the partial eclipse of the Sun. Here in and around Bury St Edmunds the Moon was seen to take a sizeable “bite” out of the Sun’s disk – 17.3%, in fact.

Solar eclipses can only happen at New Moon because the Moon passes between the Sun and Earth during that Moon phase. However, not every New Moon results in a solar eclipse. This is because the plane of the Moon's orbital path around our planet is inclined at an angle of approximately 5° to Earth's orbital plane around the Sun, the ecliptic. The points where the 2 orbital planes meet are called lunar nodes. Solar eclipses occur only when a New Moon takes place near a lunar node.

About 35% of all solar eclipses are partial solar eclipses, meaning that they occur more often than total or annular solar eclipses. The larger size of the Moon's penumbra compared to its umbra, the shadow's dark centre producing total solar eclipses, also means that more places on Earth get to experience a partial solar eclipse. During a partial solar eclipse, the Moon's umbra, the shadow's centre portion, is cast into space just above the polar regions, missing Earth by a narrow margin. This means that partial solar eclipses, while potentially being visible at all latitudes, usually centre around a place close to one of the poles.



The world map (left) shows the areas where the eclipse was visible. The eclipse was seen at its greatest maximum, about 85%, in northern Scandinavia and through eastern Europe and Russia.

The next partial solar eclipse visible from Bury St Edmunds will be 29th March 2025. The maximum will be 41%, much greater than last Tuesday. This month will also bring a partial lunar eclipse, on the night of the 14th.

We shall have to wait much longer for the next total solar eclipse – that will be visible from the UK on 23rd September 2090!

PRINCIPAL SOURCES OF INFORMATION

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

<https://www.timeanddate.com/astronomy/moon/beaver.html>

<https://www.rmg.co.uk/stories/topics/meteor-shower-guide>

<https://solarsystem.nasa.gov/asteroids-comets-and-meteors/comets/55p-tempel-tuttle/in-depth/>

<https://www.timeanddate.com/eclipse/solar/2022-october-25>