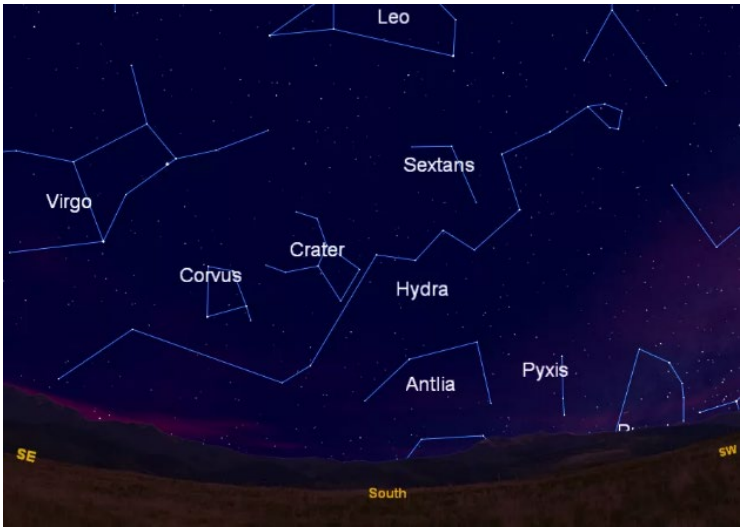
St Benedict's NIGHT SKY NEWS – Apr 2023

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

Following last month's equinox the nights are now shorter than the days, but there's still plenty of time for stargazing before going to bed. Our featured constellation this month is **HYDRA**, the Water Snake.

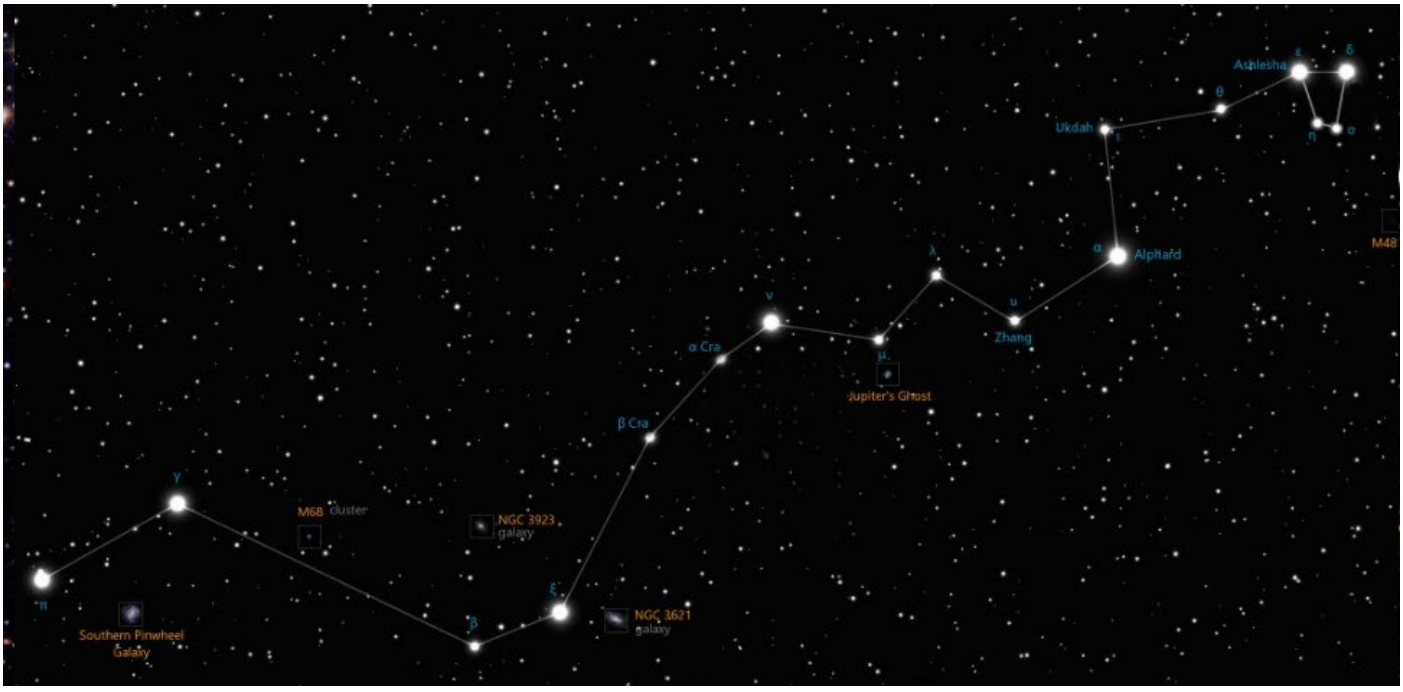


Hydra is best seen by us in the northern hemisphere between January and May. It is actually the largest of all the constellations and one of the longest. It is located in the sky to the south, fairly low. Although the constellation contains several stars brighter than magnitude 4, the brightest is still only 2.0. This, together with the fact that Hydra never rises very high above the southern horizon, means that it is tricky to follow the constellation unless you have a very dark sky with little or no light pollution to along the southern horizon. Nevertheless, all stargazers should have a go!

Best time is around 10.00pm.

Hydra begins just below **Cancer** with a boxy shape of five stars representing the snake's head, between Procyon and Regulus, and south of the faint Cancer, the Crab. Hydra's scraggly stream of dim stars then wriggles south-eastward past its lone bright star – ruddy second magnitude *Alphard*. This is the brightest star in the constellation with a visual magnitude of 2.0. It is an orange giant star that is 50 times the mass of our Sun. *Gamma(γ) Hydrae*, a yellow giant, is the second brightest star with a magnitude of 2.99.

Hydra is slithering underneath faint **Sextans**, the Sextant; **Crater**, the Cup; and brighter **Corvus**, the Crow. Hydra's trail of faint stars finally ends in a distant tail below **Virgo** that reaches almost as far to the east as **Libra**, the Scales. The entire snake, running from high in the southwest sky, over toward the south and finally down low to the southeast, is now in view as soon as it gets dark.



THE MYTH – HYDRA AND HERACLES (HERCULES)

Hydra is one of the 48 constellations first listed by the Greek astronomer Ptolemy in the second century. It is an ancient constellation with roots in many cultures. In Hindu mythology, it represented *Ashlesha*, one of the Nakshatras of Hindu astrology. The Chinese saw it as the Vermilion Bird and the Azure Dragon. In Greek mythology, it represents the water snake brought to the god Apollo by the crow, Corvus, as an excuse for being late from his errand to fetch water.

However, Hydra constellation is usually associated with the second of Heracles' labours in Greek mythology. Hydra had nine heads and one of them was immortal. The celestial Hydra is depicted with only one head, presumably the immortal one. The monster lived near the town of *Lerna*, where it ravaged the land. Heracles, faced with a difficult task, first aimed flaming arrows into the Hydra's lair and smoked it out. Then he fought with it, smashing the creature's heads one by one with his club. Every time he smashed one, two new heads would grow in its place. While the two fought, Heracles was distracted by a crab, which crawled out of the swamp and went for his foot. Heracles did away with the crab and Hera placed it among the stars as the constellation Cancer.

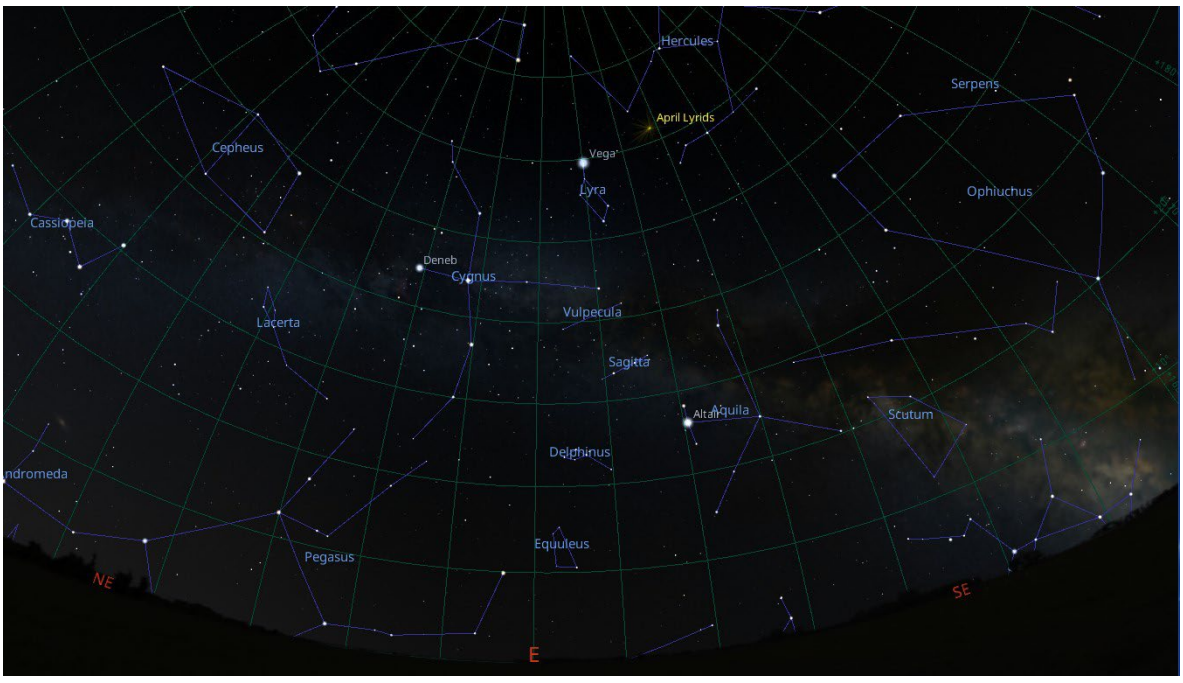
Heracles was able to defeat the Hydra when his charioteer *Iolaus* helped him by burning the stumps of each head that Heracles struck off, and eventually Heracles cut off the immortal head and buried it under a rock. He dipped his arrows in Hydra's poisonous blood, which would eventually lead to his own end.

THE MILKY WAY

Through the autumn and winter months in the northern hemisphere, the night-side of the Earth looks outwards, away from the centre of our galaxy, the Milky Way. In the spring and summer months, the Earth has travelled around to the other side of the Sun, and here the night-side of the Earth looks in towards the centre, or 'core', of our galaxy. This has a much greater concentration of stars, making the band of the Milky Way that we see from Earth much brighter than the outer arms of our galaxy that we observe through winter.

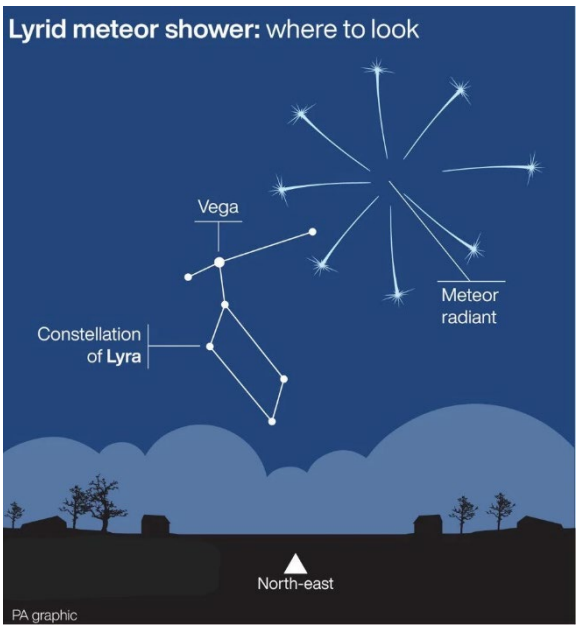
For the best chance to see this wonderful sight, pick a moonless night (the nights around the New Moon on 20th April should be darkest), get away from any sources of light that you can. It is best seen between the hours of 02.00 and 05.00am. It is faint in all but the darkest of skies, and fades quickly as the Sun rises after that, but if the conditions are right it makes an awe inspiring sight.

03.00am is a good time – the Milky Way will be seen as a wide, misty area of dim light stretching, rather like a wide river, up from the south-eastern horizon – gaining height as you move northwards – before descending to the northern horizon. As a guide, look for a bright star directly to the east quite high up, about 60 degrees above the horizon. This star is **Vega** and it forms a small, distinctive triangle with two other, slightly fainter stars – this is the constellation **Lyra**. Now move your sight downwards and about 10 degrees below Lyra you should be able to make out the Milky Way. It will appear brighter to the south, becoming fainter as you move to the north.



METEORS THIS MONTH

April is the month of the **Lyrid Meteor Shower**. Look at the sky map on the previous page and just above and to the right of the constellation Lyra you will see the radiant point of the Lyrid meteor shower.



Meteors occur when small fragments of debris left in the wake of comets or asteroids, fall into our atmosphere. This month sees Earth pass through the material left behind the comet C/1861 G1 Thatcher, with the peak of the shower expected to fall on 22 - 23 April. This is good as it is around the time of the New Moon, so the sky will not be lightened by a bright Moon.

The Lyrids are active between 16 April and 26 April, so you have a good chance of seeing some anytime during this period. While the radiant of the meteors (the point to which all their paths can be traced back to) sits in the constellation of Lyra, they will be visible anywhere across the sky with an expected rate of 15 - 20 meteors an hour. The meteors are hitting Earth's atmosphere travelling at great speeds of around 50km per second, so for the best chance to see these streaking across the night sky, try to get away from any bright sources of light,

The Lyrids is the oldest recorded meteor shower, with Chinese astronomers recording its appearance in the night sky as far back as 687 BC, though the comet itself was only discovered in 1861. Comet Thatcher only visits the inner Solar System every 415 years, with its next passage around the Sun expected around 2283!

THE MOON THIS MONTH

PHASE

Full Moon	6th
3rd Quarter	13th
New Moon	20th
1st Quarter	27th

The Full Moon in April is named the **PINK MOON** after the pink flowers that bloom in spring. Other names are **Breaking Ice Moon**, **Budding Moon**, **Awakening Moon**, **Egg Moon**, and **Paschal Moon**.

It is thought that the name comes from the brightly-coloured pink phlox wildflowers that are native to North America and that often bloom around the time of April's Full Moon. The Native American names refer to the spring thaw and the signs of new growth each year—including names like the **Breaking Ice Moon** and **The Moon of the Red Grass Appearing**.

Common names in Europe also refer to the budding and birth of spring: with grass sprouting, birds laying eggs, and people planting seeds. The Celts had names like **Budding Moon**, **New Shoots Moon**, **Seed Moon**, and **Growing Moon**. A Neo-Pagan name is **Awakening Moon**.

It can also be the **EASTER MOON**. The **Paschal Moon** is the first Full Moon on or after March 21 and is used to determine the date of Easter. In some years, the Paschal Moon is the Pink Moon; in others, it's the Worm Moon (Full Moon in March). The dates for the Paschal Moon range from March 21 to April 18 – this year the Paschal Moon is on April 6th, a Thursday, hence Easter Sunday this year will be April 9th.

THE PLANETS THIS MONTH

Venus is the only planet easily viewed this month.

MERCURY: Very close to the Sun in the evening dusk and almost impossible to spot.

VENUS: Very bright "evening star", around mag 4.0, easily spotted in the west after sunset.

MARS: High in the sky to the south mid-evening, passing through the constellation Gemini.

JUPITER: Like Mercury it is lost in the evening dusk after sunset.

SATURN: Can be spotted mid-month rising in the east before dawn, but very low in the sky.

ISS SIGHTING TIMETABLE

To check the latest sighting times, use the following link:

Newmarket, England, United Kingdom | Sighting Opportunity | Spot The Station | NASA

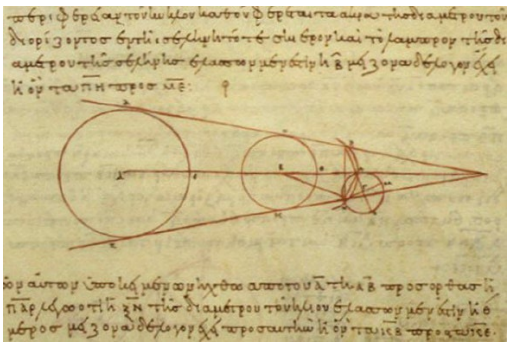
THE HISTORY OF ASTRONOMY – Part 1

Modern humans, *Homo sapiens*, have been around for more that 200,000 years and it is likely that our most ancient ancestors would have peered up into the sky and pondered the changing heavens, day and night. Astronomy as a science, the study of celestial phenomena and extra-terrestrial objects, began more recently although still a few thousand years ago. People began by measuring the positions of the stars and the story of the measurement of stars is a story of some of the most talented and dedicated scientists who have ever lived.

Archaeological records show that astronomy is one of the first natural sciences developed by early civilisations all over the globe. Ancient astronomers could perform only limited investigations of the sky, using rudimentary aids to the human eye. Even so, humankind had already begun the measurement of the positions of celestial bodies, making astrometry – the science of charting the sky – one of the oldest branches of astronomy. Curiosity alone did not inspire the earliest astronomers: astronomy and astrometry were practical sciences too. Monitoring the motions of stars and planets in the sky was the best tool to track time, which was fundamental for agriculture, religious rituals and navigation.

The first documented records of systematic astronomical observations date back to the Assyro-Babylonians around 1000 BCE. From this cradle of civilisation in Mesopotamia – in the southern part of present-day Iraq – astronomers had built up knowledge of the celestial bodies and recorded their periodic motions. But they had no idea how far away the stars and the planets were. The image on the right is the Babylonian stone tablet of Shamash, the Sun-god, dated early 9th century BC, from Sippar, southern Iraq.

It was much later, in the third century BCE, that Greek astronomers first attempted to use astrometry to estimate cosmic scales. Among other sciences, astronomy flourished at Alexandria, a Greek colony off the northern coast of Egypt, with a renowned library and museum. The dominant view of the cosmos among scientists was geocentric, with the Earth being at the centre of the Universe and everything else revolving around it, but there were some who were edging closer to the truth.



Aristarchus of Samos was one of the few supporters of the heliocentric system, identifying that the Earth travelled around the Sun rather than the other way around. A proficient mathematician, he tried to assess the relative distance of the Sun and the Moon from Earth, by measuring the angle between them when the Moon appears exactly as one quarter. He used trigonometry and had the right idea, but was rather wide of the mark as it turned out.

The image on the left is a 10th century CE Greek copy of Aristarchus of Samos's 2nd century BCE calculations of the relative sizes of the Sun, Moon and the Earth. Once again, the right idea in principle.

In the second century BCE, the famed Greek astronomer **Hipparchus of Nicaea** compiled the first stellar catalogue. A record of his work was handed down to **Ptolemy**, an astronomer writing three hundred years later at Alexandria – by then part of the Roman Empire. To measure angles in the sky, Hipparchus employed the ancient Babylonian practice, still in use today, of dividing a circle into 360 degrees, and each degree into 60 arc minutes. Hipparchus's catalogue, one of the earliest successful attempts to chart the heavens, lists the positions of 850 stars across the sky with a precision of about one degree (about twice the angular size of the full Moon). He was able to attain this precision exclusively with naked-eye observations and the few instruments available at the time – gnomons, astrolabes, and armillary spheres, as depicted in the image on the right. A remarkable achievement.

https://sci.esa.int/web/gaia/-/53196-the-oldest-sky-maps

PRINCIPAL SOURCES OF INFORMATION

http://www.seasky.org/constellations/constellation-hydra.html
https://www.space.com/11571-stars-constellations-snake-hydra.html
https://www.space.com/36381-lyrid-meteor-shower-guide.html
https://www.timeanddate.com/astronomy/moon/pink.html