St Benedict's NIGHT SKY NEWS – July 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

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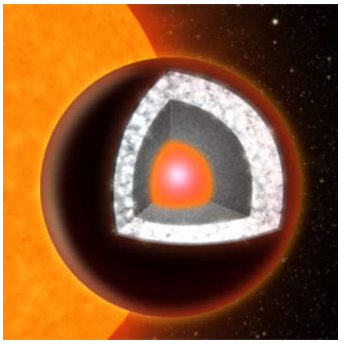
EDITOR'S NOTE: the frontpage article this month is provided by one of our keen Year 7 astronomers, **HANNAH THOMAS** (7A). Hannah is clearly fascinated by the variety of planets that have been discovered orbiting other stars in our Milky Way galaxy – *exoplanets*. Hannah has chosen to describe 3 planets in particular, each with unique characteristics.....

3 OF THE STRANGEST PLANETS IN OUR UNIVERSE

55 Cancri e

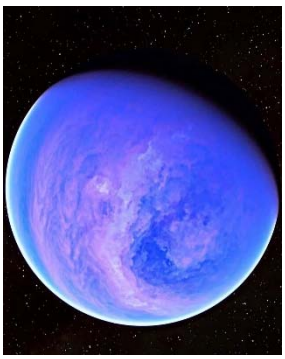
55 Cancri e (also known as Janssen), is located around 40 light-years away in the Cancer constellation. This exoplanet is made of diamonds. Scientists believe that Janssen is so abundant in carbon that due to the intense pressure and hot climate, its interior has turned into diamonds.



This world would be worth $ 27,000,000,000,000,000,000,000,000,000,000 (27 nonillions).

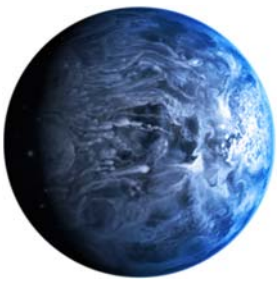
GJ 1214 b

Around nearly 48 light years away from Earth, in the constellation of Ophiuchus, is a planet made of water called GJ 1214 b. Its mass is 6 times that of Earth's. Its interior is most likely to be made of ice. This leads scientists to assume that it has no land.



HD 189733 b

In Vulpecula, a star constellation about 64.5 light years away, HD 189733 b is spun ferociously by winds blowing at around 5406 miles per hour. Due to the presence of silicate in its atmosphere, if you visited this planet you would be cut to shreds by glass rain.

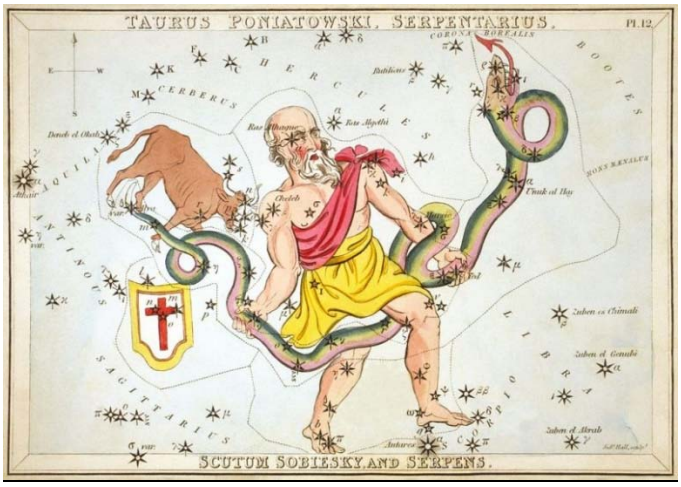


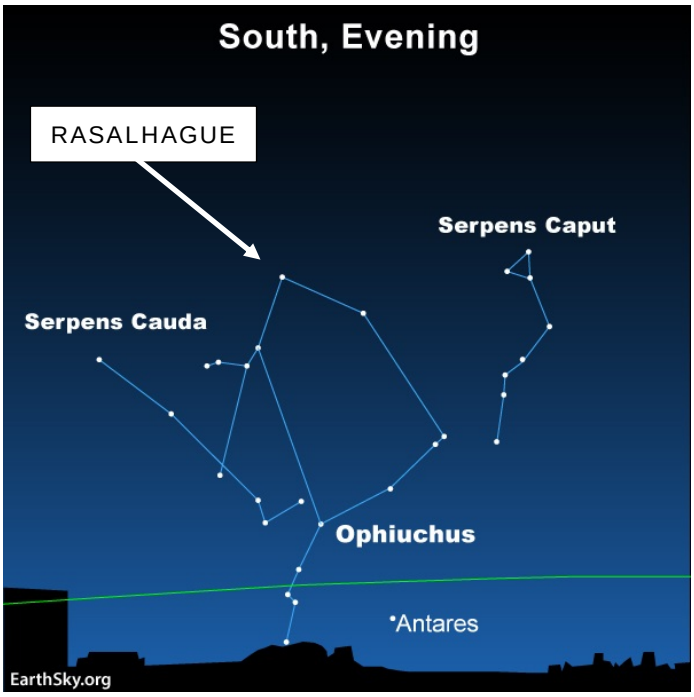
STARS IN YOUR EYES

Even though we are now past the Summer Solstice and the days are growing shorter, it is not really apparent. Consequently the night sky never darkens for good stargazing. However, this is still the season for observing **NOCTILUCENT CLOUDS** (see last issue). Even so, there is no excuse for not trying a bit of stargazing. This month's featured constellation is one of the largest in our skies: **OPHIUCHUS**.

Almost due south and just under half way up the sky, Ophiuchus is the 11th largest constellation in the sky. In English, the constellation is known as the **Serpent Bearer**. Ophiuchus belongs to the Hercules family of constellations, along with Aquila, Ara, Centaurus, Corona Australis, Corvus, Crater, Crux, Cygnus, Hercules, Hydra, Lupus, Lyra, Sagitta, Scutum, Sextans, Serpens, Triangulum Australe and Vulpecula.

The brightest star in the constellation is **Rasalhague**, *Alpha Ophiuchi*, with an apparent magnitude of 2.08. The star's name, Rasalhague, is derived from the Arabic *raʾs al-ḥawwā*, which means "the head of the serpent collector."





THE OPHIUCHUS MYTH

The constellation is associated with the figure of **Asclepius**, the famous healer in Greek mythology. It was one of the constellations first catalogued by the Greek astronomer Ptolemy in the 2nd century. Sometimes, it is also known by its Latin name, Serpentarius. Ophiuchus is generally depicted as a man holding a snake, represented by the neighbouring constellation Serpens, which is divided into two parts by Ophiuchus: Serpens Caput, the snake's head, and Serpens Cauda, the snake's tail. The snake is usually depicted coiled around his waist.

Asclepius was the son of the god **Apollo**, who was said to be able to bring people back to life with his healing powers. Asclepius learned how to do this after seeing one snake bringing healing herbs to another. This happened when **Glaucus**, the son of **King Minos of Crete**, fell into a jar of honey and drowned. Asclepius saw a snake slithering toward his body and did away with it. Then another snake came along and placed a herb on the first one, which miraculously brought the first snake back to life. Asclepius saw this and took the same herb and placed it on Glaucus' body. The king's son was miraculously resurrected.

Asclepius was raised by **Chiron**, the wise centaur, associated with Centaurus constellation, who taught him the art of healing. In one of the myths, Asclepius was given the blood of the **Gorgon Medusa** by the goddess **Athene**. The Gorgon's blood from the veins on her left side was poison, but the blood from the veins on the right side was said to be able to bring people back to life.

The constellation got a notable mention in John Milton's *Book 2 of Paradise Lost*, in which Satan was compared to a comet "that fries the length of Ophiuchus huge/In th' arctic sky."

THE MOON THIS MONTH

PHASE

Full Moon	3rd
3rd Quarter	10th
New Moon	17th
1st Quarter	25th

In July, the Full Moon is the **BUCK MOON**, named after the new antlers that emerge from a buck's forehead around this time of the year. Male deer, or bucks, shed their antlers and grow new ones every year. Deer belong to the Cervidae family along with elk, moose, reindeer, and other species.

Other Native American tribes call it **Salmon Moon**, **Raspberry Moon**, and **Thunder Moon** because of the frequent thunderstorms in the summer.

In Celtic, this Moon was known as the **Claiming Moon**, **Wyrt Moon**, **Herb Moon**, and **Mead Moon**, indicating that July is the time to gather herbs (or wyrts) to dry and use as spices and remedies. The Anglo-Saxons called it the **Hay Moon** after the hay harvest in July.

The Full Moon has been integral to tracking the change of months and seasons since ancient times. Today, we use many of these ancient month names as Full Moon names, and many of them come from the Colonial Americans adopting Native American names into their calendars. Although the most commonly used Full Moon names are English interpretations of Native American names, some are also Celtic, Anglo-Saxon, medieval English, and Neo-Pagan.

THE PLANETS THIS MONTH

MERCURY: Poorly positioned evening planet, best seen mid-month, but low in the west-northwest as the sky darkens.

VENUS: Best at the start of July in the west, as by the end of the month it is setting before the Sun. Currently in a very thin crescent phase, but still very bright.

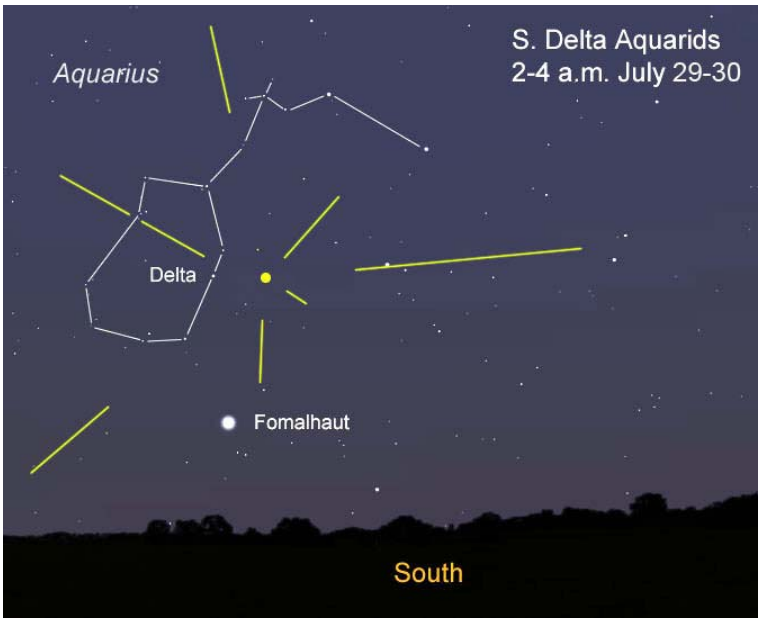
MARS: Well positioned evening planet, which is low in the west as twilight darkens. Mars is near Venus at the start of July.

JUPITER: Improving morning planet, best at the end of the month. There is a waning crescent Moon nearby on 12 July.

SATURN: Morning planet, best at the end of July. The Moon is close on 7 July.

METEORS THIS MONTH

A moderate meteor shower peaking in late July (30th), the **Delta Aquariids** kick off the summer meteor season in the northern hemisphere. Although best viewed from the southern hemisphere, those living at mid-latitudes in the northern hemisphere, that includes us in the UK, will still be able to catch a glimpse of the meteor shower.



The name of the shower comes from the constellation in the night sky that it appears to be travelling directly outward from. For the Delta Aquariids, the radiant of the shower lies inside the constellation of **Aquarius** near the bright star Delta Aquarii.

This year, the shower's maximum occurs when the Moon is two days before full, so observing conditions are particularly unfavourable as the night sky will be awash with bright moonlight.

A meteor shower occurs when the Earth passes through a stream of debris left behind by a comet. As the bits of rock and dust in the stream of debris collide with the Earth's atmosphere, they burn up and create fiery streaks across the sky. There is still some uncertainty regarding the parent comet responsible for producing the Delta Aquariid meteor shower. It was thought that the meteor shower originated from the breakup of the Marsden and Kracht sungrazing comets – comets that get within about 850,000 miles (approx. 1 400 000 kilometres) of the Sun at their closest approach.

Recently however, another sungrazing comet called Comet 96P/Machholz has been identified as the likely source of the meteor shower. Discovered in 1986 by Donald Machholz, the comet has an estimated diameter of 4 miles (6.4 kilometres) and takes just over 5 years to complete one orbit around the Sun. As the comet gets heated by the Sun, ice in the comet vaporises and loosens small bits of rock and dust which forms the stream of debris that produces the Delta Aquariids meteor shower.

ISS SIGHTING TIMETABLE

Date	Visible	Max Height*	Appears	Disappears
Fri Jun 30, 3:02 AM	4 min	18°	14° above S	10° above E
Sat Jul 1, 2:14 AM	2 min	13°	13° above SE	10° above ESE
Sun Jul 2, 3:00 AM	5 min	33°	17° above SSW	10° above E
Mon Jul 3, 2:12 AM	3 min	24°	22° above S	10° above E
Mon Jul 3, 3:46 AM	7 min	67°	10° above WSW	10° above E
Tue Jul 4, 1:25 AM	1 min	16°	16° above SE	10° above E
Tue Jul 4, 2:58 AM	6 min	54°	14° above WSW	10° above E
Wed Jul 5, 2:10 AM	5 min	42°	26° above SSW	10° above E
Wed Jul 5, 3:45 AM	7 min	82°	10° above W	10° above E
Thu Jul 6, 1:23 AM	3 min	31°	31° above SSE	10° above E
Thu Jul 6, 2:57 AM	7 min	75°	10° above WSW	10° above E

To keep up to date with future sighting opportunities, go to....

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

HOW EARTH'S ORBIT AFFECTS OUR VIEW OF THE NIGHT SKY

The stars and constellations appear to move throughout the year. But it's not the stars that are moving - it's us!

Constellations not only shift their position from night to night, but come and go as the seasons change. Each season has its own sky, with its own prominent constellations – which is why Orion, for example, dominates the winter sky but is absent in summer. These changes are entirely due to the motion of Earth and are nothing to do with the stars far out in space.

As Earth orbits the Sun, it moves around the host star by approximately one degree a day and at the same time is completing one rotation every 23 hours and 56 minutes. This is why we see the constellations shift westwards by one degree each night and rise in the east four minutes earlier.

We can even see the effect of Earth's rotation within one evening. Head out and find a bright star in the night sky, and remember its position relative to a terrestrial object like a lamp post or a distant tower. Head outside again two hours later, stand in the same spot in your garden and you'll see that the star has appeared to move in the sky. This apparent motion is often captured by astrophotographers by taking long exposure images known as star trails (which you can see in the image on the right).

Over the course of the year, whole constellations seem to come and go. Other constellations close to the north celestial pole in the night sky are visible all year round, and these are known as circumpolar constellations.

What this all essentially means is that as Earth goes around the Sun spinning like a top, our view changes as we look out at different parts of the Universe at different times of the year.

PRINCIPAL SOURCES OF INFORMATION

https://www.constellation-guide.com/constellation-list/ophiuchus-constellation/
https://www.timeanddate.com/astronomy/moon/buck.html
https://www.skyatnightmagazine.com/advice/skills/astronomy-guide-viewing-planets-night-sky/
https://www.rmg.co.uk/stories/topics/delta-aquariid-meteor-shower-2023-when-where-see-it-uk
https://www.skyatnightmagazine.com/space-science/earth-orbit-affects-view-night-sky/