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Newsletter September 2026

September already, and hopeful signs of spring are starting to appear. I hope you are getting ready for the fishing contest and flower show in early October.

September also means the start of daylight savings and later nights for stargazing, but there are still plenty of objects in the sky to watch out for.

Corrine spent the last week in August exploring Stonehenge at sunset, stargazing at Knowlton Church and Earthworks in an English Dark Sky Park, and researching various archaeological sites at Cranbourne Chase. More details and photos next month!

This month we take a closer look at comets and have introduced a new page to answer questions that have come up during star tours. The first question asks:

"Why do Astronauts float in space?"

Do you know the answer? Read on to find out. If you have any burning questions about space, then email them to us, and we'll attempt to answer in an upcoming newsletter.

Below: Knowlton abby and henge

Coming up this month:

- 11thSeptember: New Moon
- 23rd September: Equinox
- 26th September: Full Moon
- 27th September: Daylight savings starts

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World Astronomy News

The Quest to Explore Comets

Since we're taking a closer look at comets this month, it might be useful to know what scientists have been learning through probes and space missions—and there have been quite a few!

For centuries, comets were viewed as mysterious, fleeting visitors in our night sky. Today, we know these "dirty snowballs" are pristine time capsules preserved from the birth of our solar system over 4.6 billion years ago. To unlock their ancient secrets, space agencies around the globe have launched missions directly into their dusty pathways.

A Brief History of Comet Encounters

Our journey to intercept these cosmic wanderers began four decades ago and has relied on increasingly ambitious technology:

International Cometary Explorer (ICE, 1985): Made history in September 1985 by flying past Comet Giacobini-Zinner, becoming the very first spacecraft to visit a comet.

Halley's Comet "Flotilla" (1986): When the famous Halley's Comet made its periodic appearance, an international armada of five probes—the Soviet Vega 1 and Vega 2, Japan's Sakigake and Suisei, and the European Space Agency's (ESA) Giotto—teamed up to study it. Giotto captured the first close-up images of a comet's icy, dark nucleus.

Deep Space 1 (2001): Flew past Comet Borrelly, testing advanced ion propulsion while snapping high-resolution images of the comet's core.

Stardust (2004–2011): Completed a flyby of Comet Wild 2 in 2004, capturing comet dust and gas samples inside aerogel tiles and returning them safely to Earth in 2006. Stardust later visited Comet Tempel 1 during an extended mission.

Deep Impact (2005): In a dramatic cosmic collision, this mission intentionally smashed a heavy copper impactor into Comet Tempel 1, blasting open a crater to analyse the hidden subsurface debris ejected into space.

Rosetta & Philae: Escorting a Comet through Deep Space

While early flyby missions gave us incredible snapshots, the **European Space Agency's Rosetta mission (2014–2016)** completely revolutionized our understanding of comets by staying alongside one as it journeyed around the Sun.

Launched in 2004, Rosetta spent a decade traveling through the solar system, using gravity assists from Earth and Mars to match orbits with Comet 67P/Churyumov–Gerasimenko. In August 2014, Rosetta made history by becoming the **first spacecraft to enter orbit around a comet**.

Touchdown on a Rubber Duck

When Rosetta arrived, scientists were surprised to discover that Comet 67P wasn't a round ball, but a double-lobed body shaped remarkably like a giant rubber duck. On November 12, 2014, Rosetta deployed its small robotic lander, **Philae**, achieving the **first-ever soft landing on a comet nucleus**. Although Philae experienced a dramatic bounce upon landing and ended up in a shadowed crevice, it successfully transmitted valuable surface data before its batteries drained. In September 2016, Rosetta ended its groundbreaking journey with a controlled descent onto Comet 67P's surface, joining Philae on its eternal voyage through the solar system.

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Learn the night sky

This month...

The New Moon is on the 11th of September, and the Moon will be full on the 26th of September. Dark night begins at 7.55 pm on the 1st of September and begins at 9:32 pm by the end of the month on the 30th of September. (Daylight savings starts on Sunday the 27th of September). Yay for longer days!

In the Morning Sky

Jupiter is now in the morning sky and can be seen a few hours before sunrise. Mars starts the month in Gemini and slowly moves to Cancer. Matariki (Pleides) can now be easily seen in the morning sky, along with Taurus and Orion.

In the Evening Sky

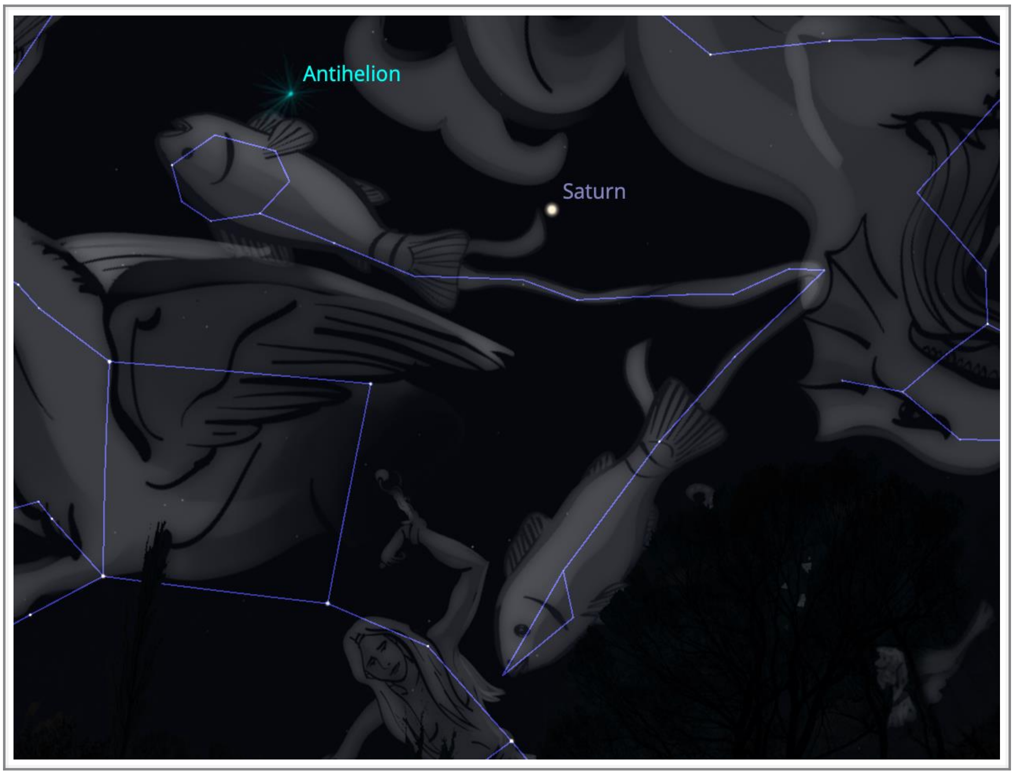
Venus is still our bright evening star this month. But Saturn joins the evening planets later in the month, as does Mercury.

In the Zodiac lineup of Constellations, Pisces is the next one to look for.

Pisces is an ancient constellation representing two fish with their tails tied together by cords.

The story of Pisces is centred around **Aphrodite** (the goddess of love, known as **Venus** in Roman myth) and her son **Eros** (**Cupid**).

According to the myth, the earth goddess Gaia unleashed **Typhon**—a terrifying, fire-breathing serpentine monster with a hundred heads—to overthrow Mount Olympus. Terrified by Typhon's incredible power, many of the gods fled and disguised themselves as animals to escape his wrath.



Aphrodite and Eros fled to the banks of the Euphrates River. To hide from the monster, they transformed themselves into fish and leapt into the water.

To ensure they would not be separated by the river's strong currents or lose each other in the dark waters, Aphrodite tied a cord or ribbon between their tails before diving in.

After successfully escaping Typhon, the pair was placed among the stars to commemorate their survival and bond. This is why the constellation Pisces is traditionally depicted as two fish linked together at the tail by a long, winding ribbon or cord.

The constellation's most distinctive feature is a ring of seven stars called the circlet, marking the body of one of the fish. It also has **NGC 520:** A spectacular **colliding galaxy pair**. This highly disrupted system consists of two disc galaxies crashing into each other, resulting in a chaotic, dust-filled asymmetric shape that can be picked up by amateur telescopes under dark conditions.

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Let's talk about Comets

Last month we discovered that Pluto lives in the Kuiper Belt, along with several other dwarf planets and lots of other icy bodies. The Kuiper Belt and its neighbour, the Ort cloud, are also where comets come from.

Think of comets as cosmic time capsules. Left over from the birth of our solar system about 4.6 billion years ago, these frozen wanderers are essentially "dirty snowballs"—chunks of ice, dust, and rock coated in dark organic matter. Scientists are fascinated by them because they might hold clues about how our solar system formed, and they may have even delivered the basic building blocks of life to early Earth.

FUN FACT: Comets were known as Broom Stars in ancient China because of their shape. The name comet comes from ancient Greek meaning "long haired"

Comets generally come from two deep-space neighborhoods:

The Kuiper Belt is a disk-shaped ring of icy objects beyond Neptune. Every so often, gravity nudges one of these dark bodies into an orbit closer to the Sun. These become **short-period comets**, completing an orbit in less than 200 years. Because they swing by regularly, their appearances are easy to predict.

Farther out lies a giant spherical shell called the Ort cloud that surrounds our solar system, sitting about 100,000 times farther from the Sun than Earth is. This region sends us **long-period comets**, which can take up to 30 million years to finish just one journey around the Sun.

At its heart, every comet has a solid frozen core called a **nucleus**, which is usually just a few miles wide. As the comet cruises toward the Sun, things start heating up:

The Coma Forms: The Sun's warmth turns the icy core directly into gas, creating a massive, glowing atmosphere called a **coma** that can stretch hundreds of thousands of kilometers across.

The Tails Appear: Sunlight and high-speed solar winds push dust and gas away from the comet. This creates two distinct tails that always point away from the Sun: a heavy **dust tail** and a glowing **ion (gas) tail**.

Meteor showers occur when Earth passes through the trail of dust and debris left behind by a comet as it orbits the Sun.

Comet melts: Heat from the Sun boils the comet's ice, releasing trapped dust and rock particles.
Litter trail: This debris continues orbiting the Sun, creating a thick stream of cosmic dust behind the comet.
Earth crosses path: Earth crashes into this stream at high speeds during its own annual orbit around the Sun.
Friction burns: Debris enters our atmosphere and burns up due to friction, creating bright streaks of light.
Tiny rocks: Most shooting stars during a shower come from dust particles no larger than a grain of sand.
Exact schedule: Because Earth hits these debris trails at the exact same point in its orbit every year, meteor showers happen on predictable annual dates.
The radiant: Meteors appear to shoot out from a single point in the night sky, usually named after a nearby constellation (like the Perseids appearing near Perseus).

When the European Space Agency's **Rosetta** spacecraft analysed the gases surrounding Comet 67P/Churyumov–Gerasimenko, its instruments detected a strong, foul odour mixture: **Rotten Eggs** (Hydrogen sulphide), **Horse Stables / Urine** (Ammonia), **Bitter Almonds** (Hydrogen cyanide), **Formaldehyde & Vinegar** (Formaldehyde and acetic acid), **Alcohol** (Methanol)

If you were able to take a whiff of a comet, it would smell like a sharp blend of a farmyard and a chemical laboratory!

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SPACE QUESTIONS

Why do astronauts float in space?

Here is a surprising truth: astronauts in space aren't actually floating. **They are constantly falling.**

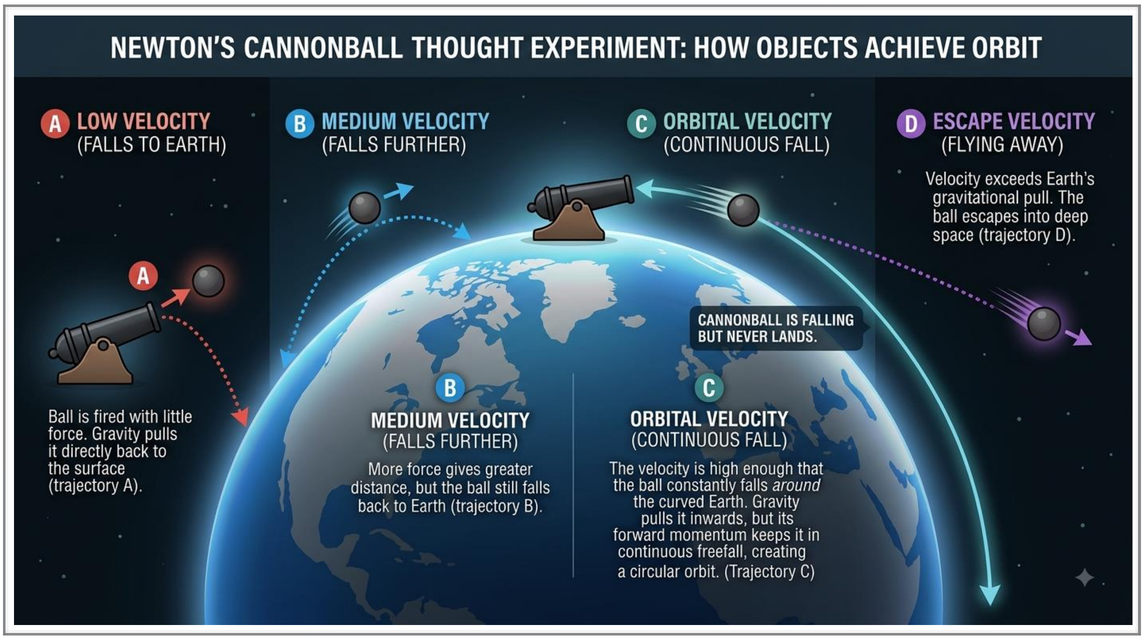
It sounds counterintuitive, but gravity doesn't just disappear the moment you reach space. Up on the International Space Station, astronauts still experience about 90% of the gravity we feel on Earth. So why aren't they crashing down? Because they are falling around the Earth, not straight down into it.

Newton's Cannonball

To understand how this works, we have to look back at Sir Isaac Newton. During the 17th century, people were just getting used to the idea that the Earth orbits the Sun. This sparked a whole new set of questions—like why the Moon orbits the Earth instead of floating off into deep space.

Newton realised that the same force pulling an apple off a tree to the ground—gravity—might also be keeping the Moon in orbit. But if gravity pulls on the Moon, why doesn't it crash into Earth?

To explain this, Newton came up with a famous thought experiment:



Imagine placing a massive cannon on top of a mountain high above the Earth's surface.

If you **fire a cannonball gently**, gravity pulls it down in a curved path until it hits the ground nearby.

If you **fire it with more force**, it travels much farther before landing.

If you **fire it fast enough**, something amazing happens: as the cannonball drops toward the ground, the surface of the Earth curves away beneath it at the exact same rate.

Gravity keeps pulling the cannonball toward Earth, but because of its fast forward speed, it keeps missing the ground entirely! The cannonball falls all the way around the planet, eventually returning to where it started.

Continuous Freefall

This is exactly what happens to astronauts on the International Space Station. The station and everything inside travel sideways at a mind-boggling speed—about 28,000 km/h. Earth's gravity pulls them downward, but their extreme speed causes them to curve around the Earth's edge constantly.

Because the space station and the astronauts are falling together at the exact same speed, they drift inside the cabin without pushing against the floor or walls. That state of endless freefall creates the illusion of zero gravity—making them appear to float effortlessly through space.

The Power of Warm Light:

Protecting Health, Ecosystems,

and the Night Sky

For millions of years, life on Earth evolved under a predictable rhythm: bright, blue-rich sunlight by day and total, amber-hued darkness by night. In a brief moment of evolutionary history, artificial lighting transformed our nocturnal world. While electric light brought modern productivity, cool, bright-white LED illumination has introduced unintended consequences. Choosing **warm light**—light with a Correlated Color Temperature (CCT) of 2700 Kelvin or lower—is one of the simplest, most effective steps to support biological health, preserve ecosystems, and restore views of the starry sky.

Human Health & Circadian Rhythms

Human biology is heavily regulated by circadian rhythms—internal 24-hour cycles driven by the hormone **melatonin**.

The Blue Light Trigger: High-kelvin "cool" lights (4000K–6500K) emit high concentrations of short-wavelength blue light, which directly suppresses melatonin production. This tricks the brain into believing it is mid-afternoon, causing sleep disruption and insomnia.

Long-Term Wellness: Chronic melatonin suppression is linked to elevated risks of metabolic disorders, depression, obesity, cardiovascular issues, and compromised immune function. Warm light (2200K–2700K) emits significantly less blue light, signaling to your brain that it is time to unwind and transition into restorative sleep.

Environmental & Ecological Integrity

Nighttime ecology is as vibrant as daytime ecology, but it relies on darkness to function.

Disrupted Wildlife Navigation: Migratory birds, sea turtle hatchlings, and nocturnal insects depend on natural light cues. Bright cool lighting disorients these creatures, drawing them off course into hazards or urban centers.

Ecosystem Collapse: Cool white lighting creates "ecological traps" for pollinators like moths, drawing them away from flowering plants and exhausting them to death. Warm-spectrum and amber lighting drastically reduces these disruptive attractant levels, helping protect local biodiversity.

Preserving Dark Skies

Over 80% of the world's population lives under a light-polluted sky. Brightness scattered across the atmosphere creates **skyglow**, erasing the Milky Way for urban and suburban residents alike.

Atmospheric Rayleigh Scattering: Short blue wavelengths scatter in the Earth's atmosphere far more efficiently than longer, warm wavelengths. As a result, cool white outdoor lamps generate up to three times more skyglow than warm, amber LEDs of the same brightness.

Visual Glare: High-kelvin outdoor lighting causes intense visual glare, making it harder for the human eye to adjust to dark surroundings and reducing overall night visibility.

What you can do

Check Colour Temperatures (CCT): Aim for 2700K indoors and ≤2200K outdoors.
When buying LED bulbs, check the package for Kelvin ratings. Use **2700K** for indoor living spaces and bedrooms, and choose warm amber **2000K–2200K** or DarkSky-approved fixtures for all outdoor fixtures.

"Darkness is as essential to our biological well-being and ecological balance as light is to our waking hours."