



SOCIETY NEWS AND EVENTS

UNDER THE DOME

Happy New Year! We have some important news about meetings and observing dates for 2024.

Please read this section.

The Society Board will meet in early January to discuss a revised meeting and observing schedule for 2024, as well as some additional odds and ends.

Expect the 2024 schedule to be different from previous years. Member meetings and public observing nights will not occur on the same date to better serve members and visitors, and to balance workloads for active members staffing events.

Once the details are hammered out, we'll be sure to announce them via email and social media.

We anticipate the next members meeting will occur later in the month, near the Full Moon.

Renovation work is beginning at Schoonover Observatory!

Beginning in early January, work will begin with HVAC and electrical updates. Projects will continue through the colder months, with much of the work anticipated to be completed prior to April 2024. Remaining projects and exterior work will continue after the April 2024 eclipse.

Important » While work is being performed, Schoonover Observatory will be closed for public observing and meetings.

We'll be sure to provide meeting and program updates via email and social media as the projects progress.

Membership Dues are due

The Society floated membership dues for existing members in 2023. Unfortunately, we do need to announce that annual membership dues are due by the end of February 2024. Dues rates have not changed.

Payment can be made in person, or online at:
<https://limaastro.com/membership-form/>

(Check the box "I am a current member renewing...")

Checks may be mailed to: LIMA ASTRONOMICAL SOCIETY, PO BOX 201, LIMA, OHIO 45802

Commemorative eclipse glasses are available **NOW!**



Glasses are available Sundays from 2-4pm* at Schoonover Observatory, or at Lima Astro meetings and events.

\$4.00 donation per pair

or

3 pairs for a \$10.00 donation

BULK DISCOUNTS are available.

Email: info@limaastro.com

**Our eclipse glasses are
Made in the USA and ISO certified safe
for solar observing.**

**Time subject to change based on staff availability.
Tune into social media for updates, or send us an email.*

Your donations help the club with outreach-associated expenses, guest speakers and programs, maintaining technology and equipment, administrative and operational fees, supporting membership benefits, and large initiatives like new club observing facilities.



CONNECTING THE 'DOTS' WITH ASTERISMS

KAT TROCHE - NIGHT SKY NETWORK

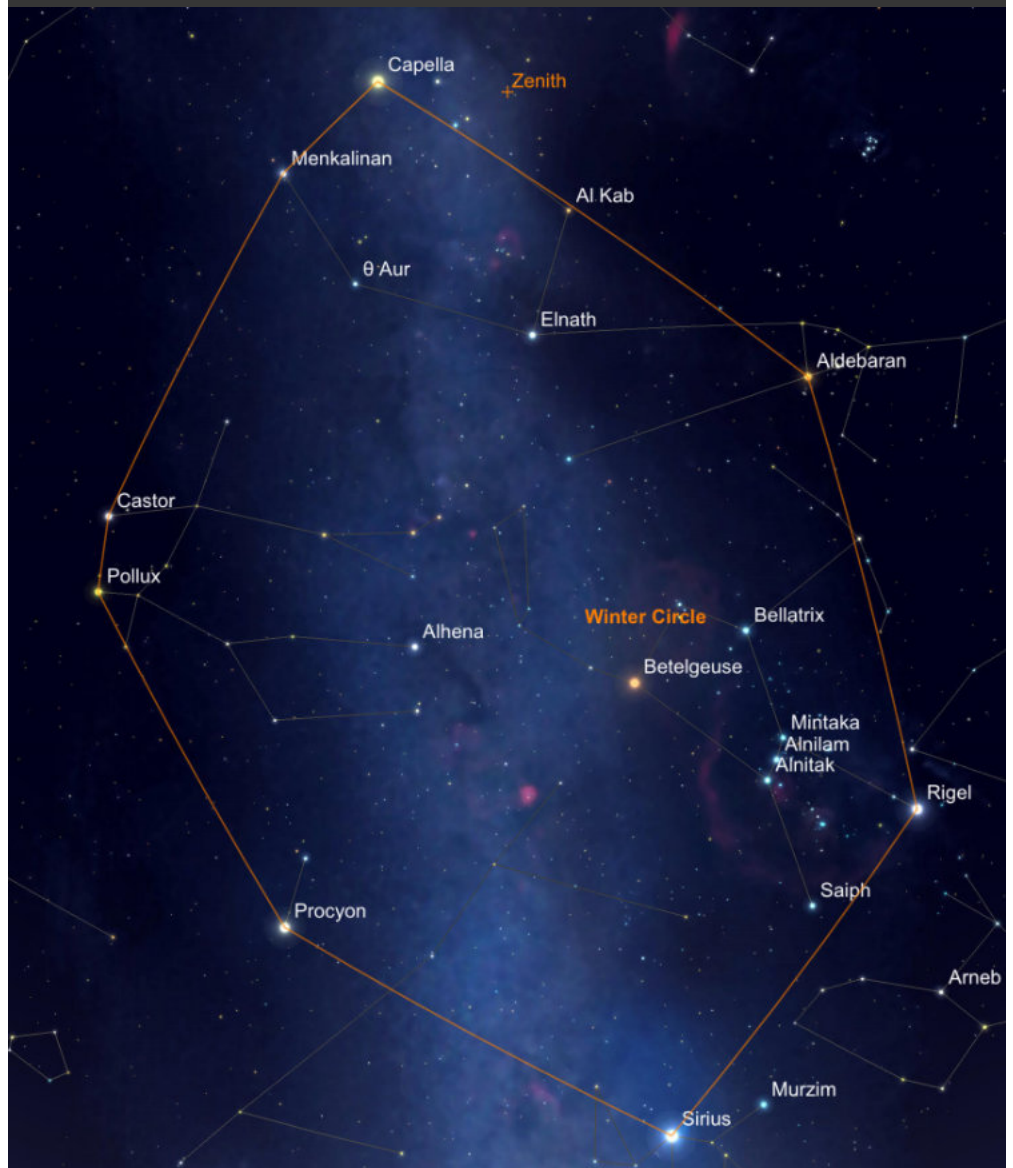
In our December Night Sky Notes, we mentioned that the Orion constellation has a distinct hourglass shape that makes it easy to spot in the night sky. But what if we told you that this is not the complete constellation, but rather, an [asterism](#)?

An **asterism** is a pattern of stars in the night sky, forming shapes that make picking out constellations easy. Cultures throughout history have created these patterns as part of storytelling, honoring ancestors, and timekeeping. Orion's hourglass is just one of many examples of this, but did you know Orion's brightest knee is part of another asterism that spans six constellations, weaving together the Winter night sky? Many asterisms feature bright stars that are easily visible to the naked eye. Identify these key stars, and then connect the dots to reveal the shape.

Try looking for these asterisms this season and beyond:

- **Winter Circle** – this asterism, also known as the Winter Hexagon, makes up a large portion of the Winter sky using stars Rigel, Aldebaran, Capella, Pollux, Procyon, and Sirius as its points. Similarly, the Winter Triangle can be found using Procyon, Sirius, and Betelgeuse as points. Orion's Belt is also considered an asterism.
- **Diamond of Virgo** – this springtime asterism consists of the following stars: Arcturus, in the constellation Boötes; Cor Caroli, in Canes Venatici; Denebola in Leo, and Spica in Virgo. Sparkling at the center of this diamond is the bright cluster Coma Berenices, or Bernice's Hair – an ancient asterism turned constellation!
- **Summer Triangle** – as the nights warm up, the Summer Triangle dominates the heavens. Comprising the bright stars Vega in Lyra, Deneb in Cygnus, and Altair in Aquila, this prominent asterism is the inspiration behind the cultural festival [Tanabata](#). Also found is Cygnus the Swan, which makes up the Northern Cross asterism.
- **Great Square of Pegasus** – by Autumn, the Great Square of Pegasus can be seen. This square-shaped asterism takes up a large portion of the sky, and consists of the stars: Scheat, Alpheratz, Markab and Algenib.

Stars that make up the Winter Circle, as seen on January 1, 2024
Sky Safari

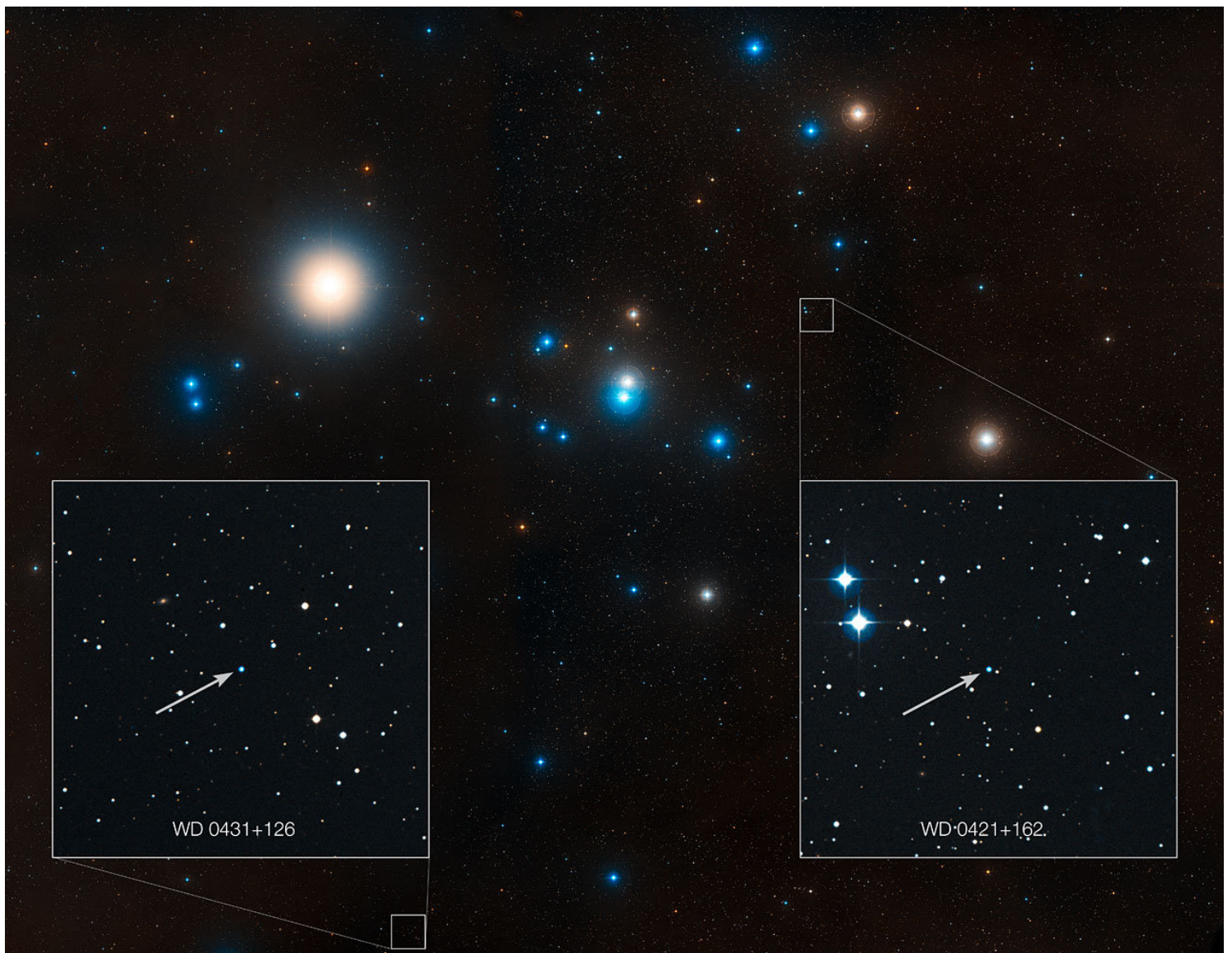


Tracing these outlines can guide you to objects like galaxies and star clusters. The Hyades, for example, is an open star cluster in the Taurus constellation with [evidence of rocky planetary debris](#). In 2013, Hubble Space Telescope's [Cosmic Origins Spectrograph](#) was responsible for breaking down light into individual components. This observation detected low levels of carbon and silicon – a major chemical for planetary bodies. The Hyades can be found just outside the Winter Circle and is a favorite of both amateur and professional astronomers alike.

How to Spot Asterisms

- **Use Star Maps and Star Apps** – Using star maps or stargazing apps can help familiarize yourself with the constellations and asterisms of the night sky.
- **Get Familiar with Constellations** – Learning the major constellations and their broader shapes visible each season will make spotting asterisms easier.
- **Use Celestial Landmarks** – Orient yourself by using bright stars, or recognizable constellations. This will help you navigate the night sky and pinpoint specific asterisms. Vega in the Lyra constellation is a great example of this.

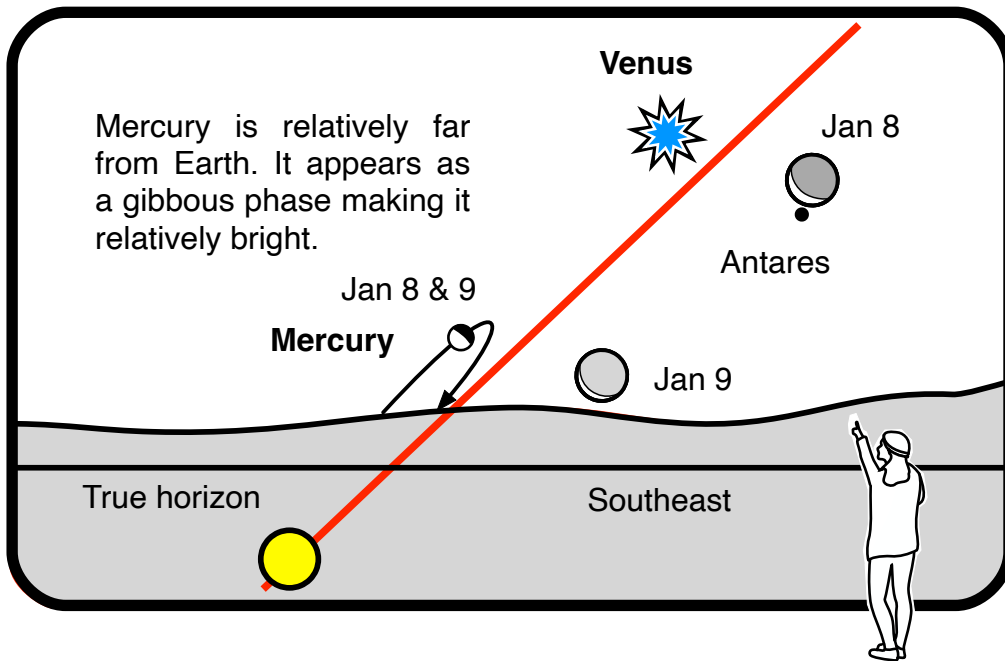
Learn more about how to stay warm while observing this Winter with our upcoming mid-month article on the [Night Sky Network page](#) through NASA's website!



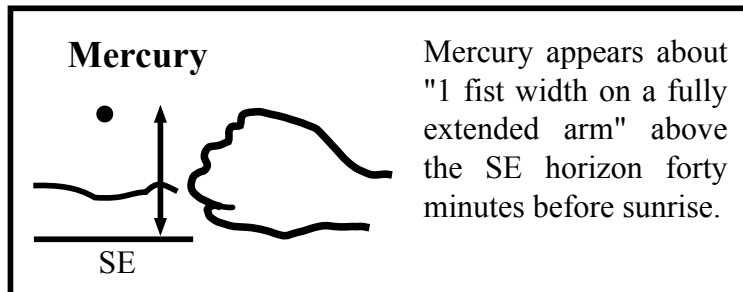
This image shows the region around the Hyades star cluster, the nearest open cluster to us. The Hyades cluster is very well-studied due to its location, but previous searches for planets have produced only one. A new study led by Jay Farihi of the University of Cambridge, UK, has now found the atmospheres of two burnt-out stars in this cluster — known as white dwarfs — to be “polluted” by rocky debris circling the star. Inset, the locations of these white dwarf stars are indicated — stars known as WD 0421+162, and WD 0431+126.

NASA, ESA, STScI, and Z. Levay (STScI)

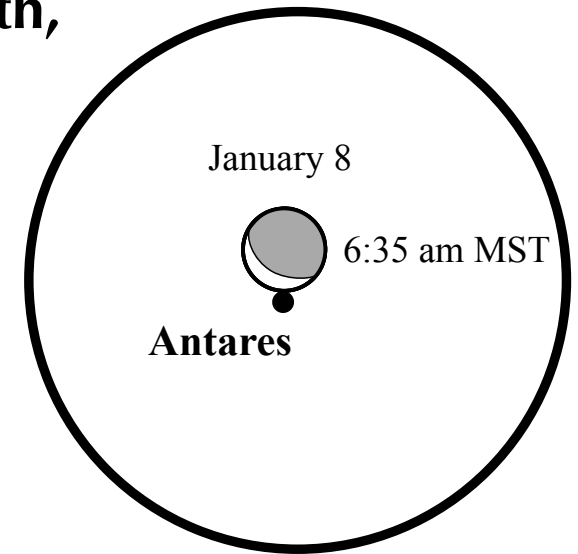
If you can observe only one celestial event this month, see this one:



January 8 and 9, 2024: Mercury, Venus, and the moon forty minutes before sunrise in the southeast



View through
10x50 binoculars
on January 8



The Scene:

The crescent moon, Antares, Venus, and Mercury in the morning twilight

On January 8, the crescent moon approaches Antares low in the southeast 90 minutes before sunrise.

- The moon occults Antares for viewers living in the southwestern portion of the US. (NM, UT, AZ, and So CA.)
- The event begins at 6:39AM MST, location dependent.
- Use common household binoculars to watch the occultation and begin viewing at 6:35 MST.
- * The very bright object to the moon's left is Venus.
- 40 minutes before sunrise, look for Mercury low in the southeast to the far lower left of Venus.

On January 9, an even thinner crescent moon lies right of Mercury and below brilliant Venus.

Observing Lists

Top ten deep-sky objects for January

M 1	M 43
M 36	M 78
M 37	M 79
M 38	NGC 1501
M 42	NGC 2024

Top ten binocular objects for January

Cr65	M 42
Kemble 1	NGC 1528
M 36	NGC 1647
M 37	NGC 1746
M 38	NGC 1981

Challenge deep-sky object for January

IC 2118 (Witch Head Nebula)

An extremely faint reflection nebula believed to be an ancient supernova remnant or gas cloud illuminated by nearby supergiant star Rigel in the constellation of Orion.

Apparent Magnitude: +13.0

The Planets in January

*All times listed are local to Lima, Ohio (-5:00 UTC).
Data sourced from In-The-Sky.org*

Mercury: Emerging into the morning sky as it approaches greatest elongation west. Will reach half phase (dichotomy) in its Dec 2023–Feb 2024 morning apparition. It will be shining brightly at mag -0.2. From Lima, this apparition will not be one of the most prominent and tricky to observe, reaching a peak altitude of 15° above the horizon at sunrise on 8 Jan 2024.

Venus: Visible as a morning object, having recently passed greatest elongation west. From Lima, it is visible in the dawn sky from about 6:30 a.m. to sunrise all month long, shining at magnitude -4.0.

Mars: Too close to the Sun to be seen.

Jupiter: From Lima, it is visible in the evening sky. Early in the month it sets around 2:00 a.m. and will set by 12:30 a.m. by end of the month. Shines brightly around magnitude -2.5 all month long.

Saturn: January is the last chance to see Saturn for a while, as it will soon pass behind the Sun at solar conjunction. Visible in the evening skies at mag. +1.0 all month. Begins the month setting around 8:20 p.m., and sets by 7:00 p.m. by end of the month. Saturn won't appear in local dark skies again until late April, when it begins rising in the early morning hours.

Uranus: Remains visible in the evening sky at mag. +5.7 through the month. Easily observed with a moderate telescope as a greenish disk.

Neptune: In the evening sky through the end of January at mag +7.9. A larger telescope is required to observe Neptune, and it will appear as a deep blue speck in the eyepiece. Stunning to see, but can be difficult to locate.

Astronomy History This Month

- Galileo Galilei discovered Io, Europa, Callisto, and Ganymede in January 1610.
- Nicolas-Louis de Lacaille discovered the emission nebula NGC 3372 (the Eta Carinae Nebula) on January 25, 1752.
- Charles Messier discovered the globular clusters M56 and M80 in January 1779.
- William Herschel discovered the spiral galaxy NGC 1084 on January 10, 1785.
- Pierre François André Méchain discovered Comet 2P/Encke on January 17, 1786.
- William Herschel discovered Titania and Oberon, two satellites of Uranus, on January 11, 1787.
- Giuseppe Piazzi discovered the first asteroid, 1 Ceres, on January 1, 1801.
- Louis Daguerre took the first photograph of the Moon on January 2, 1839.
- The 36-inch Clark refractor at the Lick Observatory saw first light on January 3, 1888.
- Clyde Tombaugh photographed Pluto on January 23, 1930.
- Mike Brown, Chad Trujillo, and David Rabinowitz discovered Eris on January 5, 2005.



January 2024 Astronomy Events Calendar

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1 Lunar Apogee	2 Earth at Perihelion	3 Last quarter Moon Quadrantid Meteor Shower Peaks Late Wed. night into early morning Thurs.	4	5 Pollux 1.6° N of Moon	6
7 Mercury at Dichotomy	8	9	10	11 New Moon	12 Mercury greatest elongation W	13 Lunar Perigee
14	15	16	17 First quarter Moon Moon & Ceres Conjunction (9')	18	19	20 Pluto at Conjunction
21	22	23	24	25 Full Moon	26	27 Mercury & Mars Conjunction (14')
28	29 Lunar Perigee	30	31			

ASTRONOMY CALENDAR TERMINOLOGY

Aphelion – The point in the orbit of a planet, asteroid, or comet at which it is furthest from the Sun.

Apogee – The point in the orbit of the Moon, planet, or satellite at which it is furthest from the Earth.

Ascending Node – The point along a planet's orbit where it crosses the ecliptic (Earth's orbital plane) from S to N.

Conjunction – When the Moon or a planet appears especially close to another planet or bright star.

Descending Node – The point along a planet's orbit where it crosses the ecliptic (Earth's orbital plane) from N to S.

Dichotomy – An intermediate “half-phase” of a planetary body, i.e. the halfway point between phases.

Elongation – The angular distance the Moon or a planet is from the Sun. Mercury and Venus are best seen when at “greatest” elongation, and will appear at their highest position above the horizon before sunrise or sunset.

Heliocentric Latitude – The longitude of a heavenly body, as seen from the Sun's center (the Sun is at the center in the heliocentric model of the solar system). Essentially, if you could stand in the center of the Sun and draw a plane straight out in front of you (this would be 0.0°), heliocentric latitude is the number of degrees above or below that plane where the planet appears.

Inferior Conjunction – When a planet (Mercury or Venus) passes between the Earth and the Sun.

Occultation – When the Moon or a planet passes directly in front of a more distant planet or star. (*Occult, as a verb, means to obscure the view of an object*).

Opposition – When a planet or asteroid is directly *opposite* the Sun in the sky. Just like the Full Moon, a planet will appear brighter and fully lit during this time.

Perigee – the point in the orbit of the Moon, planet, or satellite at which it is nearest to the Earth.

Perihelion – the point in the orbit of a planet, asteroid, or comet at which it is closest to the Sun.

Superior Conjunction – When a planet (Mercury or Venus) passes behind the Sun, out of our view.

Transit – When a smaller object passes in front of a larger object. Such as when Mercury or Venus pass in front of the Sun, silhouetting them against the disc; or when one of Jupiter's Galilean moons pass in front of the planet.

Zodiacal Light – Sunlight that is reflected off celestial dust that is concentrated in the plane of the Solar System. It appears as a faint glow in the sky extending from the horizon visible during certain times of the year, and requires the darkest skies to be observed. In the darkest sky conditions, zodiacal light can cast very faint shadows.

Examples

Mars 1.1° S of Moon, occultation

On this night, Mars would appear in the sky very close to the Moon – only 1.1 degrees away from it. At a point during this night the Moon would pass in front of Mars, hiding it from view.

Double shadow transit on Jupiter

On this night, two of Jupiter's Galilean moons will cast shadows on the surface of Jupiter simultaneously, appearing as two dark discs moving across the face of the planet. If you were standing on the surface of Jupiter as one of these shadows passed over, you would witness a solar eclipse.

Mercury greatest elongation E

On this night, Mercury will be at a point in its orbit where it appears highest in the sky. From our point of view, this is the furthest apart Mercury and the Sun will appear from each other. E or W indicate which side of the Sun the planet appears on in its orbital cycle, and can also tell you when to look for Mercury. The planet can be found in the evening sky during the greatest elongation E, and in the morning sky in the greatest elongation W.