



SOCIETY NEWS AND EVENTS

NEXT MEETING

FEBRUARY 23, 2024

7:00 p.m. **Board Meeting**
8:00 p.m. **Members Meeting & Program**

LOCATION AMERICAN RED CROSS
610 S. Collett St.
Lima, OH 45805

Program

Alternate ways to observe a solar eclipse

Presented by David Humphreys

This program will demonstrate safe methods for observing a solar eclipse using unique and/or historic methods.

Membership Dues are due

Members are requested to submit their dues by the end of February 2024. Dues rates have not changed.

Payment can be made in person, or online at:

<https://limastro.com/membership-form/>

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

UNDER THE DOME

Renovation progress at Schoonover Observatory

Work at the observatory is underway and will continue during the first quarter of 2024.

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

January Meeting Re-cap

The Society held the first meeting of 2024 at the American Red Cross in Lima. Member Blandey Doll hosted a captivating program examining several Winter constellations, examining the Greek naming and lore behind each one.

Planning has begun for future outreach events later this year, as well as continuing outreach in the weeks prior to the April 8 eclipse. Lima Astro is going to be all over town the next few weeks!

Eclipse Glasses

Thank you to everyone who has supported the Lima Astronomical Society with a purchase of eclipse glasses. If you have not picked yours up yet, we still have plenty in stock and they are available at multiple retail locations in the area. More information on page 3.



CONSTANT COMPANIONS: CIRCUMPOLAR CONSTELLATIONS, PART I

KAT TROCHE - NIGHT SKY NETWORK

Winter in the northern hemisphere offers crisp, clear ([and cold!](#)) nights to stargazers, along with better views of several circumpolar constellations. What does circumpolar mean when referring to constellations? This word refers to constellations that surround the north and south celestial poles without ever falling below the horizon. Depending on your latitude, you will be able to see up to nine circumpolar constellations in the northern hemisphere. Today, we'll focus on three that have gems within: Auriga, Cassiopeia, and Ursa Minor. These objects can all be spotted with a pair of binoculars or a small to medium-sized telescope.



The counterclockwise circumpolar constellations Auriga, Cassiopeia, and Ursa Minor in the night sky, with four objects circled in yellow labeled: Pinwheel Cluster, Starfish Cluster, Owl Cluster, and Polaris.

Credit: Stellarium Web

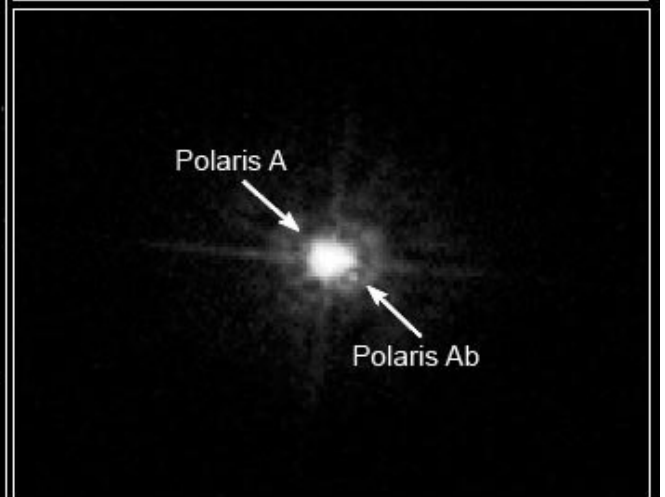
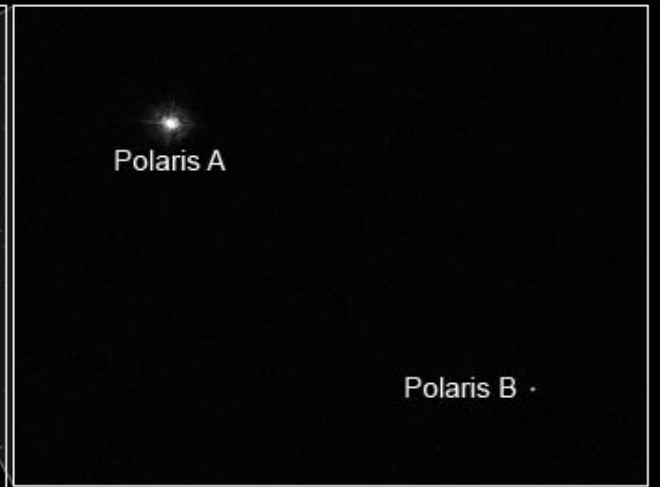
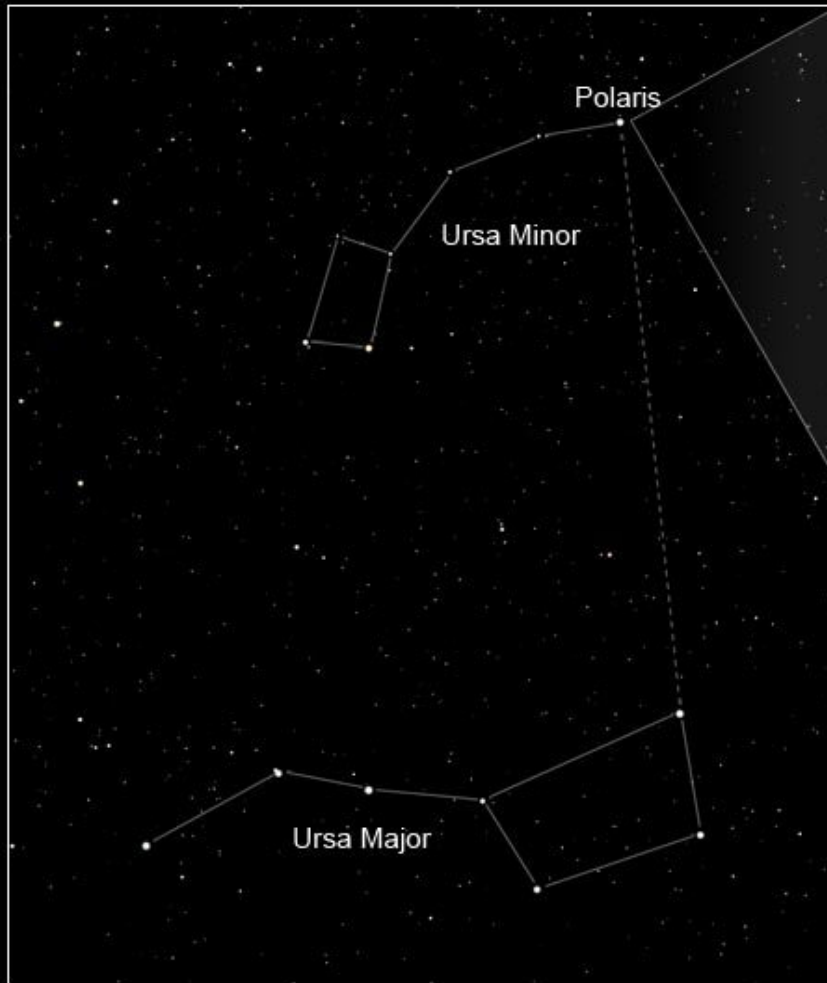
- **The Pinwheel Cluster:** Located near the edge of Auriga, this open star cluster is easy to spot with a pair of binoculars or small telescope. At just 25 million years old, it contains no red giant stars and looks similar to the Pleiades. To find this, draw a line between the stars Elnath in Taurus and Menkalinan in Auriga. You will also find the Starfish Cluster nearby.

- **The Owl Cluster:** Located in the 'W' or 'M' shaped constellation Cassiopeia, is the open star cluster known as the Owl Cluster. Sometimes referred to as the E.T. Cluster or Dragonfly Cluster, this group of stars never sets below the horizon and can be spotted with binoculars or a small telescope.

- **Polaris:** Did you know that Polaris is a [triple star system](#)? Look for the North Star on the edge of Ursa Minor, and with a medium-sized telescope, you should be able to separate two of the three stars. This star is also known as a [Cepheid variable star](#), meaning that it varies in brightness, temperature and diameter. It's the closest one of its kind to Earth, making it a great target for study and [conceptual art](#).

Polaris ■ α Ursae Minoris

Hubble Space Telescope ■ ACS/HRC



NASA, ESA, N. Evans (Harvard-Smithsonian CfA), and H. Bond (STScI)

STScI-PRC06-02a

A black and white image from the Hubble Telescope of the Polaris star system, showing three stars: Polaris A, Ab, and Polaris B. Credit: NASA, ESA, N. Evans (Harvard-Smithsonian CfA), and H. Bond (STScI)

Up next, catch the King of the Planets before its gone for the season with our upcoming mid-month article on the [Night Sky Network](#) page through NASA's website!

Commemorative eclipse glasses are available **NOW!**



3 for \$10⁰⁰ or \$4⁰⁰ for singles

BULK DISCOUNTS are available

Email: info@limaastro.com

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

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.

**Lima Astro eclipse glasses are available at the following locations:
Lima Mall - Center Section - Saturday / Sunday through March.**

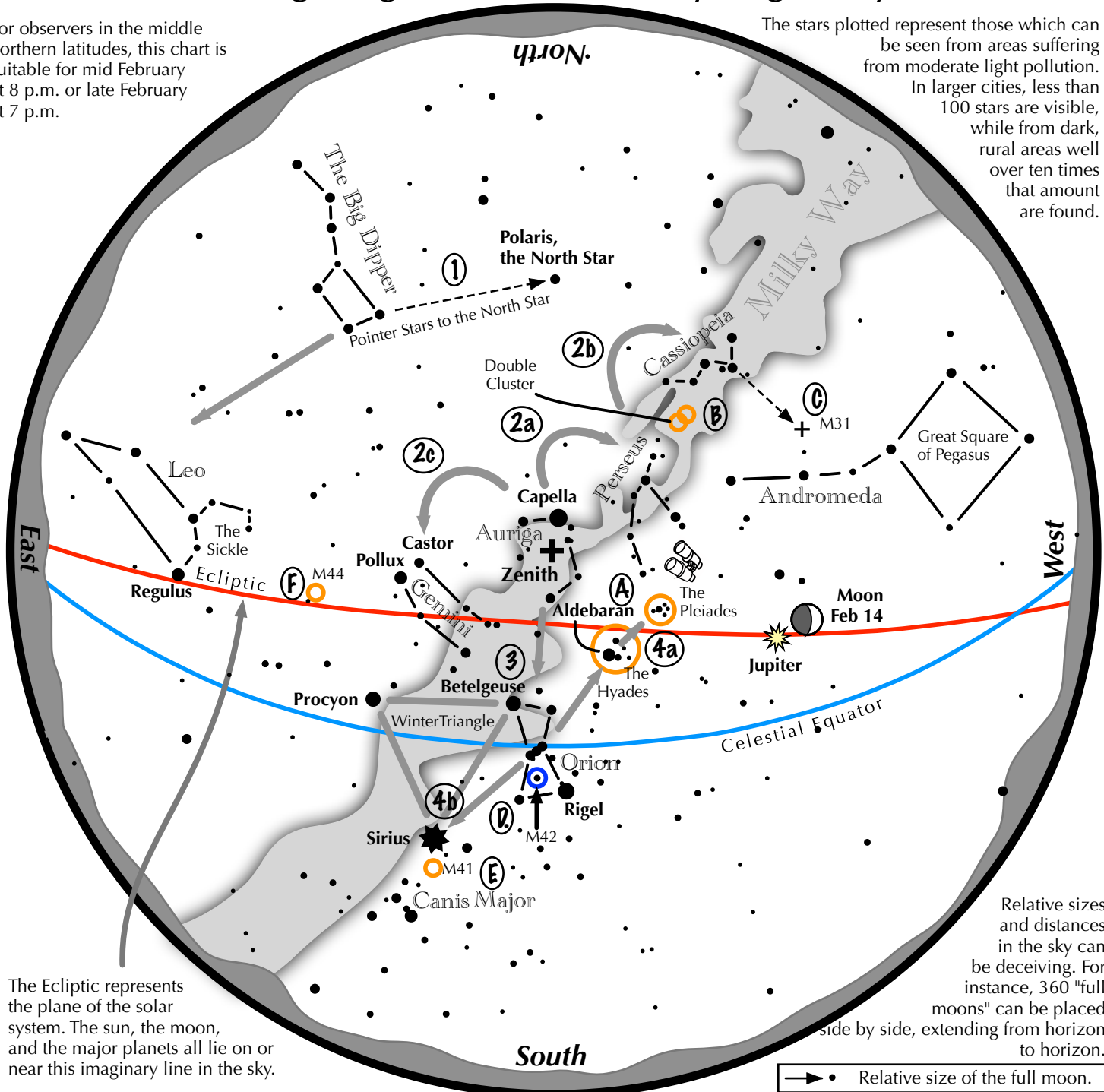
- The Meeting Place on Market, Lima
- Advantage Cleaners, Lima
- Independent Physical Medicine, Lima
- Outskirts Brewery, Lima
- Alter Ego Comics, Lima
- Pea of Sweetness, Lima
- Nana's Country Creations, Findlay
- Tabler's Carry Out, Columbus Grove

Available during business hours only. Locations may have limited supplies. Lima Mall availability subject to change with available volunteers. Tune into social media or email for updates..

Navigating the mid February Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid February at 8 p.m. or late February at 7 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

→ • Relative size of the full moon.

Navigating the February night sky: Simply start with what you know or with what you can easily find.

- 1 Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
- 2 Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
- 3 Directly south of Capella stands the constellation of Orion with its three Belt stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
- 4 Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius, a member of the Winter Triangle.

Binocular Highlights

- A: Examine the stars of two naked eye star clusters, the Pleiades and the Hyades.
- B: Between the "W" of Cassiopeia and Perseus lies the Double Cluster.
- C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
- D: M42 in Orion is a star forming nebula. E: Look south of Sirius for the star cluster M41. F: M44, a star cluster barely visible to the naked eye, lies southeast of Pollux.



Observing Lists

Top ten deep-sky objects for February

M 35	M 93
M 41	NGC 2261
M 46	NGC 2362
M 47	NGC 2392
M 50	NGC 2403

Top ten binocular objects for February

M 35	M 93
M 41	NGC 2244
M 46	NGC 2264
M 47	NGC 2301
M 50	NGC 2360

Challenge deep-sky object for February

IC 443 (Jellyfish Nebula)
Located in Gemini and approximately 5,000 light years from Earth, IC 443 may be the remains of a supernova that occurred 3,000 - 30,000 years ago.
Magnitude: 12.0

The Planets in February

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

Mercury: Mercury recently passed in front of the Sun at inferior solar conjunction. From Lima, it is not observable – it will reach its highest point in the sky during daytime and is no higher than 2° above the horizon at dawn.

Venus: Venus remains just about visible as a morning object, now well past greatest elongation west and returning closer to the Sun. From Lima, it is visible in the dawn sky, rising around 6:00am, just under 2 hours before the Sun – and reaching an altitude of 12° above the south-eastern horizon before fading from view as dawn breaks.

Mars: Mars recently passed behind the Sun at solar conjunction. From Lima, it is not observable – it will reach its highest point in the sky during daytime and is no higher than 2° above the horizon at dawn.

Jupiter: Jupiter is currently an early evening object, now receding into evening twilight. From Lima, it will become visible at around 6:30pm, 62° above your southern horizon, as dusk fades to darkness. It will then sink towards the horizon, setting around 1:00am.

Saturn: Will soon pass behind the Sun at solar conjunction. From Lima, it is not observable – it will reach its highest point in the sky during daytime and is no higher than 10° above the horizon at dusk..

Uranus: Currently an early evening object, now receding into evening twilight. From Lima, it will become visible at around 7:00pm, 65° above your southern horizon, as dusk fades to darkness. It will then sink towards the horizon, setting around 2:00am.

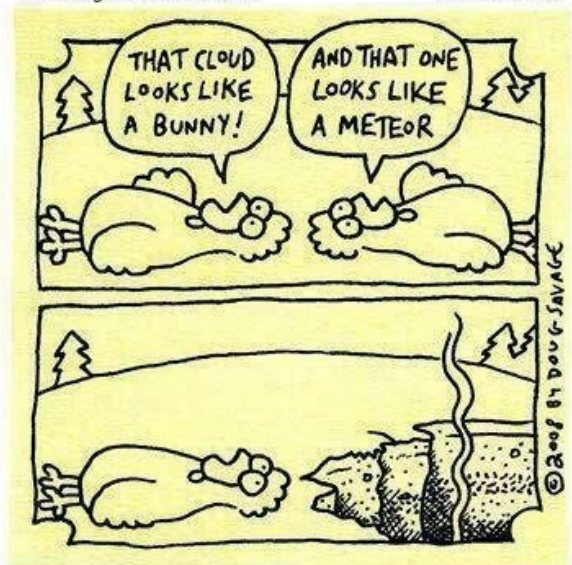
Neptune: Will soon pass behind the Sun at solar conjunction. From Lima, it will become visible at around 7:00pm, 23° above your south-western horizon, as dusk fades to darkness. It will then sink towards the horizon, setting just over 3 hours after the Sun.

Astronomy History This Month

- Nicolas Louis de Lacaille discovered the open cluster NGC 3228 in Vela on February 11, 1752.
- Nicolas Louis de Lacaille discovered the face-on barred spiral galaxy M83 in Hydra on February 23, 1752.
- Johann Bode discovered the globular cluster M53 in Coma Berenices on February 3, 1775.
- The planetary nebula M97 in Ursa Major was discovered by Pierre François André Méchain on February 16, 1781.
- Caroline Herschel discovered the open cluster NGC 2360 in Canis Major on February 26, 1783.
- William Herschel discovered the face-on barred spiral galaxy NGC 4027 in Corvus on February 7, 1785.
- William Herschel's 40-foot-focal-length telescope saw first light on February 19, 1787.
- Clyde Tombaugh discovered Pluto on February 18, 1930.
- James Hey detected radio waves emitted by the Sun on February 27, 1942.
- Gerald Kuiper discovered the Uranian satellite Miranda (magnitude +15.8) on February 16, 1948.
- The first pulsar, PSR B1919+21, was discovered by Jocelyn Bell Burnell and Antony Hewish on February 24, 1967.
- Supernova 1987A was discovered by Ian Shelton, Oscar Duhalde, and Albert Jones on February 23, 1987.

Savage Chickens

by Doug Savage



www.savagechickens.com

February 2024 Astronomy Events Calendar

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1 The cluster IC 2395 is well placed Spica 1.7°S of Moon	2 Mercury at aphelion Last quarter Moon	3
4 Antares 0.6°S of Moon	5	6	7 Conjunction of the Moon and Venus <div style="background-color: #e0e0e0; padding: 5px; text-align: center;">α-Centaurid meteor shower peaks</div>	8 NGC 2808 is well placed	9 New Moon	10 Lunar Perigee
11	12	13	14 Comet C/2021 S3 (PANSTARRS) passes perihelion	15 Conjunction of the Moon and Jupiter	16 First quarter moon Pleiades 0.6°N of Moon	17
18	19 Messier 81 is well placed	20 Pollux 1.6°N of Moon	21 The cluster NGC 3114 is well placed	22	23 Regulus 3.6°S of Moon	24 Full Moon
25 Lunar apogee	26	27 The cluster IC 2581 is well placed	28 Mercury at superior solar conjunction Saturn at solar conjunction Spica 1.5°S of Moon	29		

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.